

Conclusion

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Forest certification has presented those seeking to ameliorate enduring environmental and social problems one of the most innovative policy designs of the last half-century. By turning to the market place, it sidesteps governmental arenas many criticize as inadequate, as well as gridlocked international negotiations that have consistently failed to achieve a binding global forest convention. While sometimes described as a narrow “policy instrument,” forest certification has turned out to be considerably more, stimulating an intensified global dialogue on how to implement sustainable forest management, and fostering institutional dynamism at the international, national and local levels. At the same time, numerous challenges have emerged about how to institutionalize support for forest certification across the market’s transnational supply chain, including the difficulty in simultaneously ensuring that the certification program’s standards are strong enough to make a difference, while not being so burdensome that the costs of compliance outweigh existing and future economic benefits.

These dynamics provide the context in which to address three key questions surrounding the emergence and institutionalization of forest certification globally. First, why is it that certification has received considerable interest and support from industrial forest companies and commercial forest owners in North America, Western Europe, and Eastern European transitioning countries, but more limited, albeit variable, support within Oceania, Latin America, and Africa (with important exceptions such as in South Africa)? Second, why have some forest firms and owners chosen to support the Forest Stewardship Council, whose institutions do not permit business interests to dominate and which attempts to provide a global approach, and why have others chosen to support FSC competitors – now largely housed under the Program for the Endorsement of Forest Certification (PEFC) – whose policy processes give a greater role to forest owner and business interests and whose program explicitly champions national sovereignty?

The third question concerns the transience or durability of existing limited support for certification in developing countries. That is, does the explanation to our first and second questions have to do with the limited *time* that certification has had to institutionalize there (after all, in 1995 there was limited support for forest certification in industrialized countries), or are there factors within developing

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countries that simply make it impossible for widespread support and adoption to be obtained? Addressing this last question will also shed light on two competing viewpoints seen in international dialogues: the claim that certification can only work when governments have the capacity to oversee and develop democratic institutions and policy versus the claim that certification's greatest benefit is its influence over behavior in countries where governments lack the capacity to enforce, or in some cases develop, meaningful forestry regulations.

This conclusion reflects on these questions in the following analytical steps. First we review general support for forest certification in our cases – which, following our introductory chapter's review of the amount of land certified, undertakes a more qualitative assessment of the various types of support that emerge from the preceding pages. Second, reviewing the case studies, we identify the key factors that appear to facilitate and hinder efforts to build forest certification, and reflect on what this means for whether further institutionalization is possible or insurmountable. This section takes care to assess the factors we identified in the research template (see Introduction, page 20) as well as other factors, such as regime change, that were not explicitly incorporated in our original model. Third, we identify *existing* effects that forest certification is currently having which may not register as global trends, but which have been significant locally. This analysis ranges from whether certification improved a specific local resource problem to analysis of forest certification in fostering policy learning and enhanced multi-stakeholder participation in policy processes generally. Fourth, we reflect on the potential of forest certification in the future and associated research needs that arise. This section develops hypotheses about how support might eventually institutionalize, including such issues as whether certification in the tropics might need to follow a “Fair Trade” model and emphasize at least initially, social issues, such as community and rural livelihood (Taylor 2005).

Support for Forest Certification

Our case studies demonstrate considerable variation in support for forest certification across regions, subregions and actors.

Regional and Sub-Regional Support

The highest level of support for forest certification among the four regions is in Eastern Europe and Russia. This support is evident not only in the certification statistics presented in the introductory chapter (Figures 1 and 2, page 9), but also in the commitments recorded by our case study authors of state and non-state actors to the certification process. Within the region, Poland stands out as being highly committed to forest certification, but the major factor that motivated it to endorse FSC-style certification so heavily – defending state management against possible privatization – is also evident in Estonia and Latvia. In each case, this strategy was also reinforced by the expressed need to access European markets. Russia is more ambivalent toward certification and has been unwilling to endorse a particular scheme. However, there is

considerable and growing interest in certification in the western part of the country. This too reflects the importance of retaining access to Western European markets, which, accurately or not, are widely believed to demand certified products from Eastern Europe.

In contrast to Eastern Europe, forest certification is much less institutionalized in other regions, perhaps most especially in Africa. In Gabon, Uganda, and Zambia, forest certification has a tentative status. It is employed in Uganda as a mechanism to verify a Dutch-sponsored carbon offset project, and in Gabon and Zambia to support a small number of producers targeting overseas markets. South Africa is the big exception in this region, with strong support for certification from large, privately-owned plantation companies producing for EU and U.S. markets. We also note a correlation between Eastern Europe and Africa over market access issues. During the 1990s and early 2000s, the Eastern European countries under review that adopted forest certification dramatically improved their access to European markets, while at the same time, heavily export-dependent Gabon saw its European market share decline while its Asian market share increased (particularly in exports to China). While more research needs to be done to assess whether a direct relationship exists between the shifting markets of export-dependent countries in Africa and Eastern Europe, our cases illustrate the need to assess the impacts of certification in a global and comparative context.

Certification has received some support in Latin America and Asia. It is more strongly institutionalized in Latin America, with Bolivia standing out as a country that has invested heavily in certification to support sustainable forest management in conjunction with its New Forest Law, introduced in 1996. In Guatemala, too, the government used certification to negotiate with other civil society actors on arrangements to enable logging within the Mayan Biosphere Reserve (MBR) multiple-use zone, preventing it from becoming an exclusive conservation zone. In contrast, FSC certification has had difficulty becoming institutionalized in Brazil, where industry resistance has led to the development of an FSC competitor scheme, CERFLOR, although this may indicate that the institutional practice of certification is also taking root in Brazil.

In the Asia Pacific a tremendous amount of energy has been devoted to certification, but results on the ground are quite disappointing. In large measure the energy has been devoted—in Indonesia and Malaysia—to developing competitor schemes to FSC to meet the concerns of domestic industry and to satisfy demands for state sovereignty (although there is increasing interaction between the FSC and the domestic LEI program). Actual FSC certification on the ground in both countries is quite marginal. Recently, MTCC certified at the stroke of a pen the states of Peninsular Malaysia, dramatically increasing hectares certified, although the degree of environmental and social protection provided by this scheme remains in dispute.

Governmental Support

Across our case studies, huge variation exists in the degree of governmental support for forest certification. In several countries, governments have driven the process by

requesting FSC certification of state forested lands. While this is especially true of Eastern European countries like Poland, Latvia and Estonia, governments in Latin America and Africa have also seen FSC as a solution to specific policy problems. In Uganda, certification was used by the Dutch Electricity Generating Board (SEP) to verify the appropriateness of the forest management practices of a carbon offset project run by its subsidiary, the FACE Foundation. In Mexico, federal resources have been used in cooperation with NGOs to subsidize certification assessment costs, while in Guatemala, FSC solved the problem of balancing environmental conservation of the Maya Biosphere Reserve (MBR) with commercial logging to provide economic opportunities to local communities.

While some governments have wholeheartedly supported FSC certification, others have vigorously objected to this form of external civil society regulation by helping to develop alternative, competitor schemes such as CERFLOR in Brazil, MTCC in Malaysia and LEI in Indonesia. Such schemes are viewed by their respective governments as preserving national autonomy and sovereignty and as being more compatible with domestic circumstances. Invariably, however, such schemes have difficulty obtaining international recognition through the timber chain and have come under pressure from environmental and social actors for their deficiencies. The practical consequences are that those being certified under them also often seek certification under FSC, or defend their programs by claiming that they have the same, or similar, environmental and social benefits as the FSC would provide.

Finally, for a number of governments, certification has been a non-issue. Many remain mostly unaware of the approach, or if aware, simply indifferent, neither endorsing nor condemning the FSC. In the Solomon Islands and Papua New Guinea (PNG) for example, and despite some familiarity with certification via externally funded projects in the case of PNG, little interest has been shown to date in this new approach to forest management. Instead, government officials have focused much of their attention on traditional regulatory arrangements through the development of forestry codes of practice. The situation is similar in Africa, where governments likewise have not paid a great deal of attention to certification.

Industry Support

Large industry, like government, varies considerably in its support of forest certification. In South Africa, 80 percent of the plantation sector supports the FSC, which it has found to be a solution to market access difficulties. In Brazil, too, managers of plantations have been more responsive to certification than have many of the companies operating in the Amazon. In Russia, some large companies exporting timber to European Union markets have also endorsed FSC certification, having come under pressure, or influence, of Scandinavian companies.

Despite such endorsement, however, large industry in a number of other jurisdictions has vigorously opposed FSC and worked tirelessly through its industry associations (and at times with governments) to develop alternative schemes. The Indonesian timber industry, for example, initiated its own scheme in the early 1990s in response to the FSC threat—but later was obliged by the Indonesian government

to participate in a broader process that over time gave rise to LEI. Revealing the dynamic nature of the role of competitor schemes, the Indonesia study reveals that through policy learning and international pressure, the LEI now coordinates its efforts with those of the FSC. In Brazil, the industry worked through the country's national standards setting agency (INMETRO) to develop a scheme—CERFLOR—that would compete with FSC and better correspond to industry preferences.

While large industry support for FSC certification has been variable across and within regions, community-based operations have been generally more receptive. In most of our case studies, it is clear that community groups supported the idea of certification in principle, with many seeking to become certified, often assisted by external aid agencies. Community support for certification, however, has tended to wane after receiving FSC certification—with communities facing a range of problems in maintaining their certificates that result from high costs, low economic benefits, inadequate integration into global production chains and problematic management arrangements.

Civil Society Support

FSC certification has been most heavily endorsed by environmental organizations, which have played a crucial role in its initiation in several countries. In our case studies, WWF emerges as a key environmental NGO with national offices around the world that were pivotal in introducing the idea of certification within the local forest policy community and in funding practical projects to prove its worth. Likewise, the Rainforest Alliance has played an active role, with its SmartWood program certifying the first-ever developing country forest operation, Perum Perhutani, in 1990, and its TREES program assisting certified community forestry operations in Mexico and elsewhere to find international buyers for their products.

However, not all environmental NGOs support certification in all jurisdictions. In Indonesia, the World Rainforest Movement, allied with local forestry NGOs such as WALHI, called for a moratorium on FSC and LEI certification pending resolution of indigenous peoples' conflicts. In Gabon, environmental NGOs objected to the certification of Leroy Gabon due to the absence of a management plan, poor stakeholder consultation processes, and the presence of a neighboring protected area—efforts which ultimately resulted in Leroy Gabon's decertification. More recently, a large number of NGOs including the Native Forest Network, Robin Wood, World Rainforest Movement and the Swedish Society for Nature Conservation (Native Forest Network *et al.* 2005), have called for a moratorium on the certification of forest plantations pending the outcome of an FSC review of their environmental, social and economic consequences.

Perhaps most under-represented in our case studies are social actors—especially those that can claim to genuinely represent forest workers. This appears to reflect the relatively poor organization of social interests in the forestry sector. With respect to workers, some governments still do not permit independent unions to form, while in countries that do, forest workers still find it difficult to become organized, most often due to the seasonal and casual nature of the work. Even when forest workers are

organized and represented, however, union leaders often view environmental and conservation issues through a rather narrow lens, focusing on the potential negative impacts of supporting forest certification on jobs, wages and entitlements. Ironically, in many jurisdictions our case study authors report significant improvements in labor conditions – established wage rates, timely payment of wages, improved safety equipment and practices, better health and benefits packages, better training – but these appear to have occurred without the active involvement of the labor movement.

Factors Facilitating and Hindering Efforts to Institutionalize Certification

What factors account for the observed diversity in regional, sub-regional and actor support for forest certification? Our template identified four key factors: dominant forestry problems, public policy responses, land ownership patterns and market orientation. As a first approximation, interactions among these four factors, set out in Tables 1 through 4 below, explain why forest certification was facilitated or hindered in a specific region or sub-region.

Asia-Pacific

In the Asia-Pacific region, the general structural conditions for effective certification have not been present (see Table 1). Countries in the region are responding to a large number of domestic problems in the forest sector, most especially rampant deforestation and forest degradation due to corruption, illegal logging, lack of enforcement capacity and a heavy emphasis on the forests' timber values to the exclusion of their environmental and social values. In addition, in Papua New Guinea and Solomon Islands, the industry is in the hands of foreigners who lack a long-term commitment to forest operations. In response, governments in the region have generally sought to introduce reduced impact logging (RIL) via logging codes of conduct (PNG and SI) and through nationally-based forest certification schemes (LEI and MTCC). However, RIL only addresses the technical aspects of how logging is done—reducing the degree of collateral damage from forest activity but failing to tackle a myriad of other forestry, environmental and social issues. While FSC certification is well placed to bring stakeholders together to address these additional forestry, environmental, social and indigenous peoples issues, governments in the region, in collaboration with powerful industry groups, have constituted a formidable barrier to its introduction.

These forest problems and policy responses interact with two other factors that play an especially important role in the region—tenure arrangements and market orientation. The Asia-Pacific region is bifurcated with respect to official tenure arrangements, with land rights formally vested in the state in Malaysia and Indonesia and in traditional customary tenures in PNG and SI. While many environmental NGOs presume that customary tenure constitutes a suitable arrangement for the introduction of FSC-style certification, our case studies suggest a much more complex and problematic outcome. Communities operating on customary tenure lands encounter numerous difficulties implementing forest certification in practice,

despite their strong desire to do so. These difficulties relate to lack of community managerial capacity in general, as well as specific forest management capacity to produce sizeable volumes of good quality timber in a timely fashion for foreign markets. In addition, communities have found the direct and indirect costs of certification high in relation to the benefits, resulting in an increasing number of them deciding not to renew their certificates.

In contrast, large-scale operations in the region appear to be better positioned to engage with certification should the demand arise. Here, however, our fourth factor exercises a dominant influence—the overwhelming focus of all countries in the region on production for the non-environmentally sensitive timber markets of Asia, especially China, Japan and Korea. Given this orientation, whether for raw logs from PNG and SI or processed panels from Indonesia and Malaysia, most timber companies in the region do not see the need to adopt a high-level certification system like FSC. The general industry consensus is that FSC imposes high costs without resulting in tangible benefits in the form of increased market access, price premiums or competitive advantages.

Interestingly, our four factors can also be used to understand better those fascinating exceptions to the generally inhospitable climate for FSC certification in the Asia Pacific. Across the region, as noted in the Regional Overview of the Asia-Pacific section, there have only been a total of 12 FSC forest management certificates issued—five community forest, three plantation, and four natural forest operations—with only five operational in 2004. Of the five operational certificates, none was a community forestry operation, signaling the extraordinary difficulties confronting such organizations. While three of the five operational certificates were for natural forest management (the predominant source of most timber across the region), notably two of the five were for operating plantations.

Eastern Europe and Russia

Table 2 outlines the various factors affecting forest certification in the Eastern European and Russian cases. In comparison to the other regions, the adoption of forest certification in Eastern Europe and Russia has been relatively straightforward. Although some of the region's forests, particularly in eastern Russia, have suffered serious damage, most appear to be in relatively good shape. Management capacity, while seriously challenged by the transition process, is also fairly good. For all but central and eastern Russia, the desire to maintain ready exports to Western Europe eased the adoption of certification. In the Balkans and Poland, moreover, FSC certification seems to have been seen as a way of validating the quality and capacity of state forest management organizations, although it was also used as an avenue for policy and management. In this way, certification was able to attract broader social support necessary to the continuation of forest management operations. Finally, the transnational environmental NGOs often provided key resources to demonstrate the nature and viability of the international management standards embodied in the FSC system. They were also relatively skillful in drawing upon existing experts to bring these ideas into the larger policy world.

Table 1 Factors affecting the emergence of forest certification in the Asia-Pacific region

Country	Dominant forestry problems	Forest policy response	Land ownership patterns	Market orientation	Effect on certification
Indonesia	Widespread corruption; illegal logging; lack of enforcement capacity; over-emphasis on timber values; conflict over indigenous peoples' customary rights; shifting cultivation; plantation agriculture; large-scale forest fires.	Devolution of responsibility to sub-national levels; anti-corruption campaigns; improved practices via Indonesian Selective Logging and Planting System.	Land vested in the state and leased to forest concessionaires; customary tenure widespread but not recognized by the state leading to significant levels of conflict.	Focus on value-added production; substantial exports to non-eco-sensitive Asian markets (China, Japan, Korea); some eco-sensitive markets in Europe.	FSC certification mostly hindered due to non-resolution of indigenous peoples' rights question and lack of ecosensitive markets in Asia; National scheme (LEI) facilitated due to concerns over sovereignty, less emphasis on social and environmental issues, and avoidance of indigenous peoples rights issues.
Malaysia	Over-emphasis on timber values; lack of enforcement of existing legislation (especially Sabah & Sarawak); shifting cultivation; plantation agriculture; conflict over indigenous peoples' customary rights.	Marketing campaigns in eco-sensitive product markets; promotion of Malaysian silvicultural system.	Forest land vested in states, which lease to concessionaires; customary tenure widespread but not recognized in most cases leading to conflict, especially in Sabah & Sarawak.	Focus on value-added production, but less so in Sabah and Sarawak; substantial exports to non-eco-sensitive markets in Asia (China, Japan, Korea); some eco-sensitive markets in Europe.	FSC certification mostly hindered due to non-resolution of indigenous peoples rights questions and lack of eco-sensitive markets in Asia; National scheme (MTCC) facilitated due to concerns over sovereignty and less emphasis on social and environmental issues and avoidance of indigenous peoples rights issues.
Papua New Guinea	Foreign domination of forest industry; widespread corruption; illegal logging; lack of enforcement; shifting cultivation; over-emphasis on timber values.	Establishment of a resource development and allocation process; introduction of a Logging Code of Practice, emphasizing Reduced Impact Logging (RIL); work commenced on ITTO C&I.	97 percent of land under customary tenure arrangements.	Focus on raw timber production; substantial exports to non-eco-sensitive markets in Asia (China, Korea, Japan); foreign domination of timber industry.	FSC certification mostly hindered by lack of interest of foreign dominated industry and government indifference; NGOs work to introduce FSC certification worthwhile but encounters several challenges related to fragmented, low-

Country	Dominant forestry problems	Forest policy response	Land ownership patterns	Market orientation	Effect on certification
Solomon Islands	Foreign domination of forest industry; widespread corruption; illegal loggings; lack of enforcement; shifting cultivation; plantation agriculture; over-emphasis on timber values.	Introduce Code of Logging Practice, emphasizing Reduced Impact Logging; incentives to establish forest plantations.	90 percent of land under customary ownership;	Focus on raw timber production; substantial exports to non-eco-sensitive markets in Asia (China, Korea, Japan); foreign domination of timber industry.	<p>volume production, low community forest management and managerial capacity, lack of forward linkages to national and international timber product chains, and high cost of certification; ITTG facilitated community-based certification by providing small markets in New Zealand/Australia.</p> <p>FSC certification mostly hindered by lack of interest of foreign dominated industry and government indifference; NGOs work to introduce FSC certification worthwhile but encounters several challenges related to fragmented, low-volume production, low community forest management and managerial capacity, lack of forward linkages to national and international timber product chains, and high cost of certification.</p>

Table 2 Factors affecting the emergence of forest certification in Eastern Europe and Russia

Country	Dominant forestry problems	Forest policy response	Land ownership patterns	Market orientation	Effect on certification
Estonia	Poor forestry regulation and planning; over-harvesting; illegal logging.	Separation of regulation from management; discussion of best practices; growing involvement of NGOs.	40 percent state; 39 percent private; 20 percent still undetermined; private ownership very small and fragmented.	Rapidly growing timber industry; European market was significant, but internal development also important.	FSC certification of all state forests. Notable specific changes in forestry practices as a result of FSC standard setting process. Much of the political debate on forestry took place in the context of the FSC standard setting process.
Latvia	Need to satisfy green buyer demands; illegal logging; low transparency; socialist structure.	Radical reform of socialist structure 1999-2000; division into policy making, oversight, and management functions.	50 percent state; 42 percent private; 8 percent other; private ownership small and fragmented.	Need to keep green buyers.	FSC certification of state enterprises: certification has become a forum for national policy discussions.
Poland	Access to western European markets; coordination with EU policies; challenge to traditional state management system.	Consolidation of state forestry agency control; vigorous efforts to demonstrate best practices; rejection of privatization.	80 percent publicly owned, and the great majority of that managed by the State Forests Agency.	Western European markets key to viability of Polish forestry industry; exports include both finished and raw wood products.	FSC certification quickly adopted, but PEFC effort now also taking root.
Russia	Economic restructuring, ineffective state policy; illegal logging.	Continual restructuring; adoption of a leasing system; growing role of NGOs as external critics.	Complete federal ownership; undefined but often respected local rights to NTFPs.	Rapidly expanding; European market is fairly controlled, Asian very powerful and turbulent.	FSC certification growing relatively quickly in western Russia; much more tentative elsewhere in the country; prospects of other certification systems unclear.

While forest certification has been relatively rapidly accepted in much of the region, however, and is continuing to expand in Russia, it does not yet appear to be deeply embedded in management practices. Domestic public support for certification also appears to be tepid at best. Therefore it is difficult to be confident of its ultimate level of institutionalization.

Latin America

In Latin America, as Table 3 indicates, structural conditions for successful certification are present in some countries and sectors, but absent in others. In places where governments have seen certification as a means of reaching their own goals – such as technical assistance among community forestry operations or responding to outside pressure for forest sector reform – certification has generally been facilitated by government incentives and actions. In Guatemala, for example, the government used FSC certification to justify creating forestry concessions in the Maya Biosphere Reserve multiple use zone. In Bolivia, the government felt pressure for reform and created a forestry law that would facilitate certification, while in Mexico the government saw certification as a means of reaching its own goals of capacity building in community forestry operations, and created incentives to make certification accessible to this group.

However, the predominance of community forestry operations, as seen in Mexico and Guatemala, seems to have facilitated certification in the short term only. While governments and transnational NGOs in the mid- to late-1990s assisted community operations to achieve certification by subsidizing assessment costs and conducting training activities, in the long term, the dominance of community forestry in a region has tended to make certification more challenging. Community operations typically lack business experience and have low efficiency and product quality, making it difficult to access environmentally sensitive markets, which are almost exclusively international. On the other hand, those countries and forestry sub-sectors with high product quality and the business savvy to access international markets have seen more momentum behind certification. The Brazilian plantation sector, which dominates the global short-fiber cellulose market, industrial forest companies in Bolivia, as well as producers in northern Mexico that sell to green buyers in the U.S., have all successfully accessed environmentally-sensitive markets in the U.S. and Europe.

Perhaps the only hindrance to certification that was common to all Latin American case studies was illegal logging. In each of the countries studied, illegally logged forest products were blamed for flooding the markets with cheap alternatives to certified products and driving down prices, making the financial viability of certification even more tenuous. Current efforts to discourage illegal activity in Latin America must be supported and strengthened. Still, in some regions, such as Brazil, legal deforestation may be as destructive as illegal logging.

Table 3 Factors affecting the emergence of forest certification in Latin America

Country	Dominant forestry problems	Forest policy response	Land ownership patterns	Market orientation	Effect on certification
Bolivia	Illegal logging; high-grading of valuable species such as mahogany; social conflict over preferential access of industrial timber companies to forest.	Mounting societal outcry about unsustainable forestry and weak enforcement of forestry laws led to reform through the creation of the Forestry Law of 1996; changes to fee system reduced corruption in the concession allocation process and discouraged over-harvesting.	All forests are owned by the government, which allocates 40-year concessions mainly to industrial companies but also to some local communities and indigenous peoples; minimal private land.	50 percent of production exported, mainly as secondary products (e.g. furniture) to U.S. and UK.	FSC certification facilitated by financial support from NGOs and by the Forestry Law of 1996, which prepared companies and landowners for certification by building a solid legal, technical and administrative forestry platform; certification of industrial companies also facilitated by strong sales to green markets in Europe and North America though community forestry operations have had difficulty accessing these markets; certification hindered by competition with products stemming from illegal logging.
Brazil	Illegal logging in the Amazon; conversion of endangered coastal forests to plantations; legal deforestation.	Federal Forest Code requires sustainable forest management but provides little specific guidance; federal enforcement activities are criticized as weak and sometimes corrupt; several state governments in the Amazon region have created pro-active forest policies, including support for community forestry operations and pilot concessions.	Widespread tenure disputes in the Amazon, although considerable amounts of forests there are in public lands; the federal government proposal to create a state "production forest" covering 10 percent of the Amazon involves these lands; tenure arrangements are better defined in the Atlantic Forest region.	Large majority (86 percent) of timber from Amazon consumed in Brazil, mostly for construction; Brazilian plantations export-focused (primarily Europe and Japan) and dominate global cellulose markets.	Green export markets, corporate social responsibility and image issues facilitated certification of plantation forests, which currently make up around two-thirds of certified forests in Brazil; certification is hindered in Amazon by domestic markets that are flooded by wood from rampant illegal logging and deforestation; CERFLOR certification scheme recognized by the PEFC in 2002 and developed with support from industry and participation of government.

Country	Dominant forestry problems	Forest policy response	Land ownership patterns	Market orientation	Effect on certification
Guatemala	Conversion of forests to agriculture; illegal logging, especially of high value species (mainly mahogany); use of forests for firewood.	In 1990, the government created the 2.1 million hectare Maya Biosphere Reserve to conserve biodiversity-rich forests of the Peten region and revoked all logging permits within the reserve.	An even mix of state, community and private lands; tenure conflicts on 5 percent of land.	Nearly all (90 percent) domestic production is consumed domestically; high quality products exported.	In an effort to assure NGOs that new industrial forestry concessions within the Maya Biosphere Reserve Multiple Use Zone were well-managed, the government made FSC certification a requirement of all concession holders within the reserve; financial support of FSC certification by international donors also facilitated the process; certification activity outside the reserve is minimal; low production volumes and technical capacity of community forests make accessing certified markets difficult.
Mexico	Illegal logging and legal deforestation; low technical capacity of community forestry operations.	Government initiatives (through CONAFOR) provide technical assistance and training for communities and ejidos and financial support for silvicultural activities, sometimes in partnership with NGOs; a government department was created to develop new markets for Mexican forest products.	80 percent forest lands community-owned, 15 percent private, 5 percent government.	Low level of value added, with the exception of a few firms in Durango and Chihuahua; 65 percent of production exported, primarily to the U.S.; recently, sharp increase in forest product imports to Mexico.	FSC certification facilitated by Mexican government, which sees it as a means of reaching community capacity-building goals and provides financial and technical assistance for certification, sometimes in partnership with NGOs; also, U.S. demand for certain certified products facilitated certification in northern Mexico; however, lack of approved FSC standard hinders certification and low production volumes and technical capacity of community forests make accessing certified markets difficult.

Table 4 Factors affecting the emergence of forest certification Sub-Saharan in Africa

Country	Dominant forestry problems	Forest policy response	Land ownership patterns	Market orientation	Effect on certification
Gabon	Degradation of forest land of "exceptional bio-diversity" which currently covers 20 million hectares or 4/5ths of land base; limited institutional design, low enforcement capacity, lack of trained staff, limited scientific knowledge of complex forest ecosystems; (low population density means that deforestation is not as significant a problem as in other African countries.)	In 1992 Gabon government took a "top down" approach, reforming institutional and legal frameworks, including development of forest planning and harvesting. New forest code adopted required private concessionaires to manage forests according to specified sustainable forestry goals; creation of community forestry and local development initiatives financed by logging operations.	All forests part of publicly owned "national forest domain" comprised of two sections: permanent forests that cannot be converted to other uses and non-permanent forests: rights to harvest forests come through forest concessions (between 50,000-200,000 hectares (which cover 11 million hectares); "associated forest permits" for Gabon nationals that cannot exceed 50,000 hectares, but can be managed in conjunction with concession lands; and "mutual agreement" permits that Gabonese citizens can obtain to harvest 50 trees or fewer.	Strong reliance on timber export markets has resulted in forest sector being second largest source of Gabon's export revenues; the domestic market remains very small – and only small scale businesses are interested in supplying wood products to the national market traditionally, France and other European countries constituted Gabon's dominant timber market; however since 1995 Gabon's most important market has shifted to China and other parts of Asia; in 2001 Gabon exported more than 2.5 million cubic meters of raw round logs, with about 45 percent of it going to China (OIBT 2002).	Limited demand for certification has come from external markets; aid projects from external NGOs have focused on non-timber products such as honey and wild mushroom certification; one pine plantation certified in anticipation of higher prices they would command in foreign markets.

Country	Dominant forestry problems	Forest policy response	Land ownership patterns	Market orientation	Effect on certification
South Africa	<p>South African plantation forest industry practiced in high rainfall, mostly grassland sites, with no natural forests; concerns about impact of forest operations on reduction of stream runoff on ecologically sensitive mountain catchments; forest work force affected by extremely high HIV/AIDS infection rates.</p>	<p>Since 1972, permits must be obtained for any new tree plantings; since late 1990s forestry has been classified as a Stream Flow Reduction – afforestation permits replaced with water-use licenses; forestry companies also required to pay a water tax; these efforts, alongside requirement that new afforestation must pass intensive environmental impact assessment, have reduced expansion of plantation industry.</p>	<p>Forestry comprises 1.1 percent of South African's land base of 122.3 million hectares; private ownership-dominated, with 12 timber companies holding vast majority.</p>	<p>Forestry among South Africa's top exporting industries; products for export included pulp, packaging, paper and board and wood chips; Europe important market.</p>	<p>FSC acceptance of plantations established pre-1993 and government regulations of plantations in 1990s created climate highly hospitable for industry to seek FSC certification; more than 80 percent of South Africa's timber plantations are FSC certified.</p>
Uganda	<p>Historically overharvesting of forests with exceptional biodiversity – estimate at loss of 13-15 percent per decade; illegal logging, inadequate capacity to enforce existing laws; poaching of bushmeat in protected areas; White Rhinos extinct in the wild.</p>	<p>In 1974, Amin government land decree declared all land to be under state control; in 1990s championing of decentralization and established Uganda Wildlife Authority & privatization occurred; then National Forest Authority to oversee protected areas and plantations; establishment of “timber stamping” tracking to stop illegal trade, control harvesting in plantations and natural forests, and overall data improvement.</p>	<p>Gazetted (protected areas) managed by “parastatals,” government (public) owned land, and private ownerships consisting of four types of tenures: <i>Customary</i> (limited to a description or class of persons); <i>Freehold</i> (holding of land in perpetuity subject to statutory and common law qualifications); <i>Maito</i>; under specific requirement of the “Uganda Agreement;” <i>Leasehold</i>; (holding of land for a given period).</p>	<p>Government 1994 ban of round wood timber (logs) exports has limited role of external markets; most if not all timber consumed locally; Kenya, Sweden, China, Belgium, Germany top list of export markets which FAO ranks as “insignificant.”</p>	<p>Government ownership facilitated early support of NGOs in helping National Resistance movement government to achieve conservation objectives; idea of forest certification has not threatened government, given historical NGO participation in facilitating government objective; given lack of external markets, certification could be used to seed “certified emissions reductions” (CER) status, as carbon credits under Kyoto's Clean Development Mechanism (CDM) for protection of some of its</p>

Country	Dominant forestry problems	Forest policy response	Land ownership patterns	Market orientation	Effect on certification
Zambia	Deforestation and forest degradation; illegal loggings; poverty in forest dependent communities; lack of enforcement and resources.	Development of new forest policy in 1998 which introduced "Joint Forest Management" as a practice to encourage communities and other stakeholders participation in management of forest resources.	All land is publicly owned, divided among State land (six percent); Reserve (no open access) land, 35 percent; Trust land (open access), 50 percent; National Parks (no forest extraction allowed, managed for biodiversity), 9 percent.	Before 1964 net importer of forest products (mainly softwood for construction); development of forest plantation led to net exporter (softwood timber and other forest products) after 1964; major timber export markets as of 2001 were South Africa (38 percent), the United States (27.15 percent); and Zimbabwe (15.48 percent); firms and communities are granted the right to harvest through "forest certificates."	critically important areas of forest biodiversity; public land ownership and reliance on export markets is expected to facilitate future certification efforts; however, shift from Europe to China during 1990s may lessen this influence; exceptional biodiversity has led to concerns about certifying operations in Gabon, with the only FSC certificate awarded eventually withdrawn following international criticism.

Sub-Saharan Africa

The African cases are important for revealing, with the exception of South Africa, the significant challenges for institutionalizing forest certification in Sub-Saharan Africa, but also the unique obstacles and opportunities within each country. One facilitating factor is that, with the exception of South Africa, the land is publicly owned – a feature which poses fewer transaction costs than is the case for smaller ownerships considering certification. However, government capacity to enforce existing laws and to employ forestry experts is so weak that, until addressed, it is unlikely that public ownership can be used to Africa's competitive advantage. Ironically, FSC-style certification in South Africa was supported by its privately-owned plantation industry, which covers just over one percent of this country's land base, for highly unusual reasons – it wanted to get approval for operations that have been criticized for negatively impinging on natural, treeless ecosystems. In this case, plantation owners, who did come under significant scrutiny from European export markets, saw FSC certification as a way to maintain existing foreign markets.

The role of export markets in the other cases varied considerably – Uganda's export market has been deemed "insignificant" by the Food and Agricultural Organization. Zambia has become a net exporter, owing to its 1964 policy to encourage plantations, but its three leading export markets are South Africa, the United States, and Zimbabwe, respectively, rendering insignificant the real and/or perceived higher demand from European markets for certified products. Arguably as a result, the limited interest in forest certification was sparked through aid projects promoting forest certification as a way of expanding markets for non-timber forest products such as honey and wild mushrooms. As curious, while Gabon relies more heavily on export markets than any of our other cases, its market share of the European market, as discussed above, declined after the mid-1990s as FSC-friendly Eastern European countries increased their access. Instead, Gabon shifted its emphasis to Asia, with 45 percent of its export market going to China, which currently places almost no emphasis on certified products (although recognition of this has led to increased NGO effort to create interest in, and awareness of, forest certification in China).

Certainly the forestry policy problems would seem to give support to encouraging certification, since issues of biodiversity (especially Gabon), deforestation (especially Uganda and Zambia) and subsistence use confront basic worldwide concerns about global forest degradation. Indeed, concerns exist that previous efforts, including 1970s efforts that emphasized "top down" approaches, followed by 1990s "bottom up" decentralization efforts championed by the World Bank and other international aid agencies, (Glück, Rayner and Cashore 2005) cannot, by themselves, be completely effective and appear to provide an opening for certification as part of a suite of policy options.

Finally, factors such as regime change, poverty, famine, disease and civil war that challenge this continent on every level have significant impacts on what any kind of policy initiative – public or private – might accomplish in the current context. What our review does show is that if these fundamentals are tended to, it is possible, though not inevitable, that forest certification could still emerge as an important tool for promoting responsible forest management.

Existing Effects

Despite its very uneven institutionalization across the globe and within regions, it is clear that where it is being implemented, forest certification is having a range of positive effects on power relations, workers and communities, business, and the environment. In this section we present an aggregated analysis of what we consider to be forest certification's major effects, drawing examples from all case studies.

Forest Policy Network Effects

FSC certification – and certification more generally – has exercised one of its most important effects on power relations within the forest policy network. These changes in power relations have taken two forms broadly – an increase in the inclusiveness of the forest policy network and a rebalancing of power relations away from business-industry clientelist networks to more pluralistic arrangements involving environmental, community, and indigenous peoples' interests. Another observed effect of FSC certification as a consequence of the creation of a larger, more inclusive forest policy network is an increase in cross-interest deliberation, leading parties not merely to articulate their positions but also to alter them based on a greater appreciation of the complexity of the problems and consequences of proposed actions.

We observe an increase in the inclusiveness of forest policy networks in several case studies. It is most clearly evident, perhaps, in the Latin American and East European/Russia cases, where case study authors highlight shifts in authority from government and industry partnerships to a broader array of actors. In Mexico, Fonseca argues that certification has increased forest communities' and *ejidos*' access to national and state-level resources, with the latter now viewing community forestry management as important and deserving of attention. In Guatemala, too, Carrera *et al.* observes a substantial increase in the activity of individuals and organizations in relation to decision-making. This observation is confirmed by Ahas *et al.* for Estonia, where discussion occurred among more than 40 organizations across a diversity of sectors. Tysianchiouk observes that in Russia, especially in the Arhangelsk region, the working group formulating the FSC regional standard included forestry specialists, environmental NGOs, business representatives and administrative officials, a stark contrast to the previous arrangements that included only forestry experts and governmental agencies.

While FSC-style certification has been hindered in much of the Asia-Pacific, competitor schemes have had to respond to criticisms concerning the narrowness and exclusivity of their consultative arrangements. These criticisms were especially evident in Indonesia, where the decision to pursue a national forest certification scheme through LEI included a commitment to move beyond a narrow business-government policy circle and adopt a broader, multisectoral approach. As Muhtaman and Prasetyo note in their study, the process of establishing and developing LEI, as well as endeavoring to make it more compatible with FSC, led to a steady increase in the range of stakeholders being consulted and integrated into the process,

culminating in LEI's stated intention to become a constituency-based organization. While this ratcheting-up effect on the forest policy network is not quite so evident in Malaysia, Shahwahid argues that proponents of MTCC are having to reckon with the shifting power relations among actors, especially to NGOs as a consequence of the pressure they can apply in foreign markets for action to deal with the social and environmental consequences of unsustainable and illegal logging.

In addition to the simple increase in the size and diversity of the forest policy network, an even more interesting effect of FSC certification is the promotion of cross-stakeholder dialogue and deliberation on the meaning of "sustainable ecosystem-based forestry management" that has in some settings resulted in a reconfiguration of interests. While this point is most clearly made in the case study of Estonia by Ahas *et al.*, their observation is recapitulated in other studies. Ahas *et al.* note that their interviews "indicate that certification has caused changes in the very thinking and attitudes of many people in the Estonian forestry sector" with "more attention given to environmental and social issues." This reconfiguration of interests is evident in the Latvian case, where Actins and Kore observe that "the certification process has opened the doors for collaboration among the various forest sector groups" and the certification process has been "helpful in improving cooperation and communication among forest sector groups."

The capacity of forest certification processes such as FSC's to transform the social construction of interests is not confined to Eastern Europe/Russia. A similar translation in attitudes to specific constituencies is evident in Mexico, where Fonseca observes how government perspectives on the significance and importance of forest communities and *ejidos* changed with the introduction of forest certification. Such attitudinal change is not limited to those participating in the certification process, and extends at times to a reappraisal by the public of the contribution forestry makes to the economy and to society more generally. In a number of our case studies, it is evident that the overall image of the forestry profession has improved as a consequence of forest certification. This is a point made by Quevedo in the Bolivian case study, where he observes that "credibility has increased, at least for certified companies" and that "in general, the forestry sector has a better reputation than 10 years ago." A similar point is made by Carrera *et al.* for Guatemala, when he observes that "with more than half a million hectares certified, the image of the forest sector has considerably improved, bringing together representatives from conservation groups and forest management operations." This transformation in public attitudes to forestry is significant – in part vindicating the view of foresters who point out that practices in agriculture, mining and infrastructure development can be far more environmentally and socially damaging. However, the image of forestry can only be improved once foresters themselves move beyond an exclusively technical focus on growing trees to better understanding of the environmental and social consequences of their actions.

Notwithstanding these generally positive effects of forest certification on the national forest policy networks, some case study authors introduce notes of caution, observing that some constituencies can be empowered, perhaps to the overall

disadvantage of others. In the Brazilian case study, May intimates that “the effect of certification has enhanced the market power of those firms that have assumed leadership in the global market,” resulting in the possibility of a “greater degree of concentration in the industry over the past few years.” Likewise, Ham notes in relation to the South African case: “Certification has had a negative effect on small-scale timber growers and placed them in a situation where their very existence is threatened.” The reasons relate to the economics of certification and, especially, to the high direct and indirect costs per hectare for small operations and the lack of price premiums to compensate.

Social Effects

Certification has had important social effects, especially in terms of community and workers rights. Our case studies clearly reveal some consistency across regions and countries in these social effects, which include improved pay and conditions for workers, the development of community infrastructure, and the provision of training. Country case studies that especially focus on improved social conditions include Gabon and Uganda in Africa, Bolivia and Guatemala in South America, and Estonia, Latvia and Russia in the Eastern Europe/Russia region. Even in the Asia-Pacific region, where FSC certification is much less developed, some improvements in social outcomes have been noted.

Perhaps the most important social effect has been increased attention to worker safety. Quite a number of our case studies observe improvements in certified companies in this regard. In Guatemala, for example, Carrera *et al.* reports an increase in the use of safety equipment, the availability of first-aid kits in logging camps, and the provision of life insurance for workers. In Estonia, Ahas *et al.* note that certification of the state forest agency, RMK, significantly improved arrangements for training, security and health care of staff. In Latvia, worker safety improved too, with the provision of helmets.

In addition to worker safety, several other social benefits have been reported from certification. In Malaysia, Shahwahid reports that a certified operation, PITC, developed two programs to meet its social obligations under FSC, one for the Orang Asli that lived in proximity to PITC’s concession and another aimed at developing local industry through the Bumiputra Entrepreneur Development Program. In Gabon, communities have also benefited by increased transparency in the provision of a range of community benefits including roads, schools and health centers. Eba’a Atyi notes that while it is normal practice for forest companies to provide these facilities, “forest certification has made the process more transparent and companies that have certificates are more open to showing records of their contributions to local development.” And Tysiachniouk notes that a timber company, Kozikhinski Leskhoz, has contributed money to a “Life Without Drugs” program, financed a hospice, and reconstructed and equipped a local kindergarten in Russia.

Not all social effects have been positive, however. Some of our case studies highlight the potential for certification to have negative social effects. In Solomon Islands, for example, Wairiu notes that women have concerns about their husbands

spending more time on timber production (in part as a consequence of certification) and less time in food production. Other studies report industry concern about the costs of improving social arrangements when, at most, marginal economic benefits can be derived from certification. This was an issue in Estonia, where our authors cite concerns from forest industry representatives and government officials about the negative social effects of certification in reducing timber harvesting levels resulting in lower rates of employment than otherwise.

Economic Effects

Certification has also had important economic effects, both at the level of the firm and more widely. To examine these effects as they are reflected in our case studies, we have divided this section into microeconomic and macroeconomic effects. As a broad generalization, certification is having quite a number of positive effects at both the level of the firm and the level of the economy as a whole. However, the case studies present contradictory data at both levels, indicating the need for further research to clarify more precisely the nature of the effects.

Microeconomic Effects

At the level of the firm, our case studies identify a wide range of positive effects of certification that include improved market access, better prices, more stable contracts, favorable credit arrangements, improved production efficiency, and enhanced public image. Perhaps the most consistent finding across our case studies is reports of improved market access. Fonseca notes that this has been an important benefit to charcoal producers in northern Mexico, who have been able to access markets in the EU and U.S. as a result of becoming certified.

Market access was also increased for Guatemalan producers, reflected in increased production of certified products over the 1998 to 2003 period. Ham notes in the case of South Africa that certification has assisted firms to consolidate and secure existing markets as well as to obtain new orders from overseas companies keen to purchase certified products. Shahwahid makes a similar observation in the case of Malaysia, where he reports that markets for certified timber have been “brisk,” with some orders not being met as demand exceeds supply. In Eastern Europe and Russia, too, our case study authors remark on this market access effect. Actins and Kore note that some Latvian producers have benefited from certification by accessing niche markets, while Ahas *et al.* are quite positive about the Estonian case, reporting that “new markets and competition opened for certain products, such as garden and various ‘do-it-yourself’ products sold on UK markets.”

In addition to improved market access, our case studies report the existence in some instances of price premiums for certified forest products. Price premiums appear to be available to most producers in the Asia-Pacific, with Shahwahid drawing on his own ITTO study to report that PITC, for example, received a price premium of 37 percent for sawn timber exported to niche markets. While this premium includes a margin that would normally go to marketing firms (PITC sold its timber

directly, not through an intermediary), it signals nonetheless the existence of a substantial price premium. Shahwahid further observes that different price premiums are associated with different overseas markets, with the highest prices available in Germany. Muhtaman and Prasetyo report that Perum Perhutani in Indonesia received a 15 percent price premium on its timber when it was certified, and these observations on the existence of a price premium are substantiated by Wairiu for Solomon Islands and Bun and Bwang for PNG. Wairiu reports an increase in price from \$US100 to \$US297 per cubic meter for SIEF timber marketed through VETE.

Despite these positive reports from the Asia-Pacific, price premiums in other regions appear much less evident. In Eastern Europe, the consensus view from the case studies is that price premiums are not being earned, perhaps because there are already quite large volumes of certified timber available from other sources in EU markets. In Africa, Ham quotes a spokesperson from the Department of Water Affairs and Forestry to the effect that no price increase of certified over non-certified wood was observed at auction. In Latin America, Quevedo cites a study by Sandoval indicating that better prices were not received, although this was contradicted by another study by Nebel *et al.* who found price premiums existed and varied between 5 and 51 percent. The overall conclusion is unclear: some producers in some places are clearly receiving very high price premiums for certified timber, while others are not receiving any margin whatsoever. The apparently contradictory findings likely reflect the extremely small samples used, variations in methodology, a focus on different products at different points in forest product chains, with production targeted for different markets and at different times.

While improved market access and price premiums are the two most important theoretical effects of certification, our case study authors draw attention to a number of other important microeconomic benefits. One is increased stability of contracts in the highly competitive and globalizing forest products industry, which enables companies to engage in forward planning and investment, leading to future increases in production and efficiency. Another, noted in several studies (Bolivia, Guatemala, Mexico), is improved efficiency at the level of the firm as a consequence of the need to engage in more planning, inventorying and managing of the forest operation. Finally, several case study authors point to better access to credit markets as a consequence of obtaining certification.

Against these positive effects of certification, however, are several negative effects to which our case study authors also draw attention. The most obvious negative effect of certification is increased costs to the firm. These are identified in the majority of case studies, with several attempts made to quantify the increase. Shahwahid estimates that production costs increased between 15-50 percent based on a study of costs incurred by PITC and KPKKT respectively. Interestingly, Shahwahid's KPKKT study apportions these costs to different groups, with just over one-tenth incurred by the forestry department, two-tenths by the concessionaire, and the remaining seven-tenths by the harvesting contractor. The increased forestry department costs result from incremental expenditures on supervision and monitoring of operations during tree marking, mapping and road design; for concessionaires, in terms of wages on

supervision and monitoring; and for logging contractors, for wages, materials and machinery rental. Ahas *et al.*, while not able to quantify the additional costs, report that there was substantial consensus in Estonia that forest certification increased costs related to training, safety and technology. Staff costs increased as well since it became more important to recruit staff with appropriate technical qualifications. Likewise, Paschalis-Jakubowicz lists the increased costs in Poland as due to restrictions in certain forestry practices (especially the use of pesticides and herbicides) and the introduction of new safety equipment. Finally, Actins and Kore report that forest owners in Latvia incur increased costs from certification ranging from \$US0.3 per hectare in state forests and \$US6.00 per hectare in private forests.

Turning to Africa, it is clear that the economic effects have thus far been minimal – since the potential of certification, except in South Africa, has yet to be realized. There is no question that in the South African case, certification has been a powerful tool in maintaining and enhancing market access for the controversial plantation industry and for giving it economic advantages following stringent government regulations enacted in the 1990s.

Macroeconomic Effects

A range of macroeconomic effects are theoretically possible from the introduction of certification and our case studies identify some of these. Data limitations do not enable a definitive analysis to be made of these effects. There is evidence from our case studies, however, of the following positive and negative consequences for the economy in introducing forest certification. On the positive side, improvements are noted in taxation collection, market transparency, employment and wages, and investment. Tax collection can be improved via certification since companies undertake to comply with all laws of the country, including those related to tax. This is the most important economic benefit of certification noted in the Gabon case study, where Eba'a Atyi reports that certified companies pay taxes on time, unlike non-certified companies. Paschalis-Jakubowicz also observes improved local tax collection in Poland.

A number of studies suggest that certification has the effect of increasing market transparency, generating positive, economy-wide effects. Ham notes improvements in the operation of the timber chain in relation to South Africa, where defects in production can be traced to individual producers, improving overall quality. Eba'a Atyi notes how certification has made companies more open to showing records of their contributions to local development projects, ensuring that commitments made are implemented, improving overall compliance with contracts. Transparency aids in combating illegal logging, too, which is an endemic problem in many of our case study countries. Ahas *et al.* note that volumes of illegal logs in the Estonian market appear to have dropped following the introduction of certification, since the State Forest Management Centre (RMK) can only purchase timber from legally established companies.

Two other economy-wide effects of certification are suggested in our case studies. The first relates to employment and wages, where several authors observe an increase in employment (in the Ugandan case, for example, the FACE project has become the

major employer in the Mt. Elgon region) or an improvement in wages and working conditions. Increased wages clearly improve purchasing power in local areas, potentially boosting demand for locally produced commodities. Improved working conditions can also have important positive economywide effects, reducing working days lost to sickness and injury. Finally, evidence in our case studies suggests that certification may improve a company's investment attractiveness related to the greater security of its markets, improved management systems, and lower perceived risk. May makes the point in the case of Brazil that private bankers in the country (ABN-AMRO/Banco Real and BASA) are offering investment credit to firms committed to certification. Obviously, if such an observation proves to be more generally true, it would have economy-wide effects in channeling resources that might go to sectors other than forestry.

Offsetting some of these potential positive macro-economic effects of certification are examples from our case studies of negative economic consequences. Perhaps the most widely reported of these is the effect certification has on overall production of timber as a consequence of moving towards a more explicitly ecosystem-based approach to forest management in natural forests. The consequences of this approach, as Ahas et al note for Estonia, is a decline in hectares available for timber production as well as in the per hectare volume produced. A substantial decline in the volume of timber produced clearly has important system-wide consequences, resulting in fewer jobs, increased demand over supply, potentially higher prices in the absence of imports, and potentially reduced processing efficiencies if mills designed for large volumes must make do with less.

It is not possible at this stage to make any definitive comments about the net economic effects of certification. While our case studies do highlight many positive effects, more detailed micro- and macro-economic studies are required to tease out the interactions at both the level of the firm and the level of the economy. There are significant research design issues involved in undertaking such studies that require close attention.

Environmental Effects

Our case studies identify numerous positive environmental effects of forest certification. These come under the headings of forest planning and inventorying, silviculture, biodiversity protection, and monitoring and compliance. While there is broad agreement across our case studies that these effects are real, some authors note a degree of skepticism among a minority of industry and environmental groups, the former arguing that the effects are real but unnecessary and the latter that the effects are illusory and examples of corporate or governmental public relations.

Planning and Inventorying

Several of our case studies argue that an important effect of certification is improved forest planning and inventorying. The point is made forcefully in Carrera *et al's* account of certification in Guatemala, where improved management planning in

previously weak operations is cited as a major environmental benefit of certification. Better planning is reflected in more appropriate estimates of harvesting rates, adjusting the length of the rotation and the volume logged to better match local conditions. In addition, five-year plans were developed for each forest operation, preventing “high grading” of stands, and NFTP’s were included for the first time in the Petén region. A similar point is made in Ahas *et al.*’s account of certification’s environmental effects in Estonia, where RMK is keeping records and engaging in systematic planning to protect endangered species and improve road construction.

Eba’a Atyi notes a similar focus on planning of forest management operations in Gabon, where forest operations have implemented a 30-to-40 year cutting cycle based on growth and mortality estimates and logging damage, and more attention to the impact of the forest road network. Shahwahid also notes an improvement in forest management planning in Malaysia based on reviews of certification audits and comments from state forestry departments. For the state of Terengganu, forest plans had to be redrafted to take account of certification audits and include environmental and social concerns. Indeed, the format for completing the forest management plan itself was changed by the Terengganu State Forestry Department to provide more information on environmental features and community and social participation.

Silviculture

Linked to improved forest management planning and inventorying are changed silviculture practices. Shahwahid notes that in Indonesia mother trees and threatened or endangered trees were marked to protect them against felling, with at least four mother trees required to be retained for every hectare felled. Ahas *et al.* note that prior to the introduction of certification, logging rules and methods were virtually absent in Estonia. Certification has ensured their introduction to minimize negative impacts on ecosystems and soils. In Zambia, Njovu notes a marked contrast between a certified and an uncertified operation, with the former (NPP) being well managed with all silvicultural operations completed and a management plan that is being followed. The contrast is significant, since the two companies were originally one single company only three years earlier and management practices diverged significantly as one became certified and the other did not. In several countries in the Asia-Pacific, certification has improved silviculture practices through the introduction of Reduced Impact Logging (RIL). This is also one of the major environmental effects of certification noted in May’s account of Brazil, where, in one example, low rates of timber extraction coupled with low impact extraction methods that use animals rather than machines mitigate excessive biodiversity loss.

Biodiversity Protection

A number of our studies note improvements to forest management practices from certification aimed at biodiversity protection. Njovu notes how NPP in Zambia has reserved areas for their high conservation values and created conservation corridors to improve connectivity through the landscape. Carrera *et al.*, notes that certification

has focused the attention of Guatemalans on the identification of threatened species, protection of seed trees, and habitat conservation. In Estonia, Ahas et al describe the development of an Estonian methodology for biodiversity protection involving reserving key biotopes and leaving snags and dead wood. In Estonia, too, a unique “Spring Truce” has been arranged where no logging takes place between April 15 and June 30 to minimize the disturbance to animals during the breeding season. Tysiachniouk describes how certified companies are required to identify and protect high conservation value forests in Russia, reducing threats of biodiversity loss on certified lands.

Monitoring and Compliance

Several case studies draw attention to how certification has improved forest monitoring and compliance. Ham notes in the South Africa case study how forest certification led to improvement in the system of checks and balances, including the formalization of previously ad hoc adherence to company policies and the systemization of processes to ensure consistent implementation. Practical mechanisms included the development of internal checklists and the addition of staff with environmental expertise. Monitoring has improved in Malaysia as state forestry departments are now committed to incorporating information monitoring environmental impacts, including areas lost or destroyed after logging, the number and length of second roads and skid trails, and the area of log yards.

Training

There is also evidence that much more training is taking place to ensure that staff are aware of environmental issues, can recognize endangered species, and incorporate biodiversity protection into their job requirements. In Estonia, senior corporate managers in certified operations are more interested in environmental issues than previously and extensive training exercises have been held and manuals produced. According to Ahas et al, “These initiatives have in turn changed behavior in everyday forest management and resulted in more close-to-nature forest management practices.” Muhtaman and Prasetyo note that companies involved in certification “continuously conduct training of employees and community participants in various topics relating to sustainable development.” In community forest operations too, such as those in PNG, Solomon Islands, Indonesia, and Mexico, NGOs have established training schemes to encourage local people to employ better management practices. Thus, for example, Wairiu notes in the Solomon Islands case study that “some communities managed to halt commercial logging in their forest areas through awareness training in certification standards.”

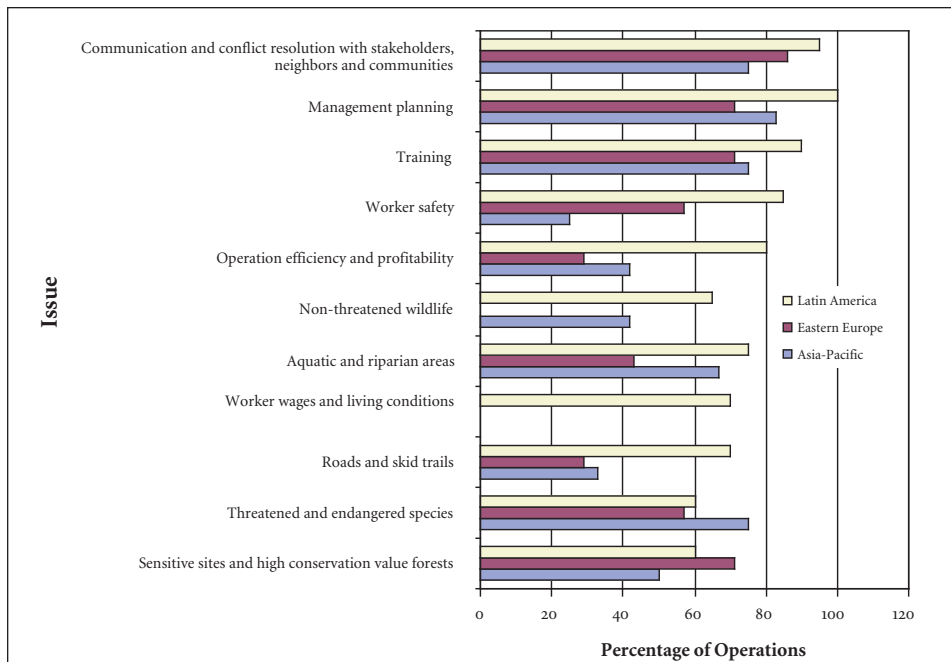
Attitudinal Change

While difficult to measure formally, many of the case studies also draw attention to certification’s role in generating significant attitudinal change, especially in forest managers. Paschalis-Jakubowicz makes this point in the case of Poland, where he

notes that certification provoked extended debates in the forestry community about the technical soundness of the certification rules, resulting in increased appreciation of environmental issues and greater awareness of the multifunctional nature of forests. Ahas et al identify how certification has raised the profile of environmental issues, a point strengthened by Ham in the South Africa case study, where stakeholders came to appreciate the possibility that plantations could be managed for a diversity of values. Actins and Kore also comment on the way in which certification promotes attitudinal change because it legitimizes concern about the environment as a central activity of forest management.

The effects of certification described above are also observed in a recent study by Newsom and Hewitt (2005). The study explores the effects of certification by examining the changes that 129 SmartWood-certified operations in 21 countries were required to make as a result of the certification process. The following graph summarizes the portion of Newsom and Hewitt's data that pertains to certified operations in Asia-Pacific, Eastern Europe and Latin America (there were no SmartWood-certified operations in Africa). In line with our own observations, it illustrates that SmartWood has requested companies to make numerous changes to their operations to improve social (conflict resolution with stakeholders, training and worker safety and wages), economic (management planning and operation efficiency and profitability), and environmental (protection of aquatic and riparian areas, high conservation forests, and threatened and endangered species) outcomes.

Table 5 Percentage of SmartWood-certified operations in Asia-Pacific (n=12), Eastern Europe (n=7) and Latin America (n=20) required to make changes to various issues during their certification assessment



Future Potential

Forest certification appears to have considerable potential to improve forest management in developing countries and countries in transition. However, to realize that potential, some significant difficulties need to be overcome, requiring focused action by FSC, sympathetic industry, national governments, environmental NGOs and certification supporters. The major issues that need to be addressed are market demand, illegal logging, foresters' attitudes, community capacity, certification standards, certification costs, and closed forest policy networks.

Market Demand

Market demand has been a driver of certification in many of the case study countries. Future efforts will have to focus on spurring additional demand for certified products, especially in regions whose export markets have not shown an interest in green products, such as Asia. The approach of creating more "pull" for certified products appears to have more potential than approaches that create more "push" by subsidizing certification costs for operations with questionable market access. Also, studies of marketing strategies will be very beneficial to those certified operations that are struggling to sell their product.

Illegal Logging

Illegal logging is a problem that not only destroys forest ecosystems in its own right, but also threatens the viability of forest certification by depressing the price of timber and creating extremely low-priced competitor products. New EU efforts under the Forest Law Enforcement, Governance and Trade (FLEGT) Action Plan appear to have significant potential for curbing this problem. Such efforts should be supported and also expanded to encompass more countries, especially major consumers such as Japan, China, Korea and the United States.

Foresters' Attitudes

Forest certification is often resisted by foresters, in part because they perceive it as an incursion on their traditional authority. Yet many of our cases demonstrate that forest certification has served ultimately to bolster the authority of foresters, provided they are prepared to practice to emerging global standards. Given the critical importance of foresters to the adoption and implementation of certification, more effort should be devoted to explaining the process and its benefits to them. "Model forests," such as those that have been developed in Russia and elsewhere, are an effective method of doing so. These have served to reorient the thinking of many foresters and to persuade them of the feasibility and benefits of more ecologically and socially responsible forestry.

Community Capacity

Many of the case studies—in particular Mexico, Guatemala, Solomon Islands, and Papua New Guinea—emphasize the difficulties faced by certified community forestry

operations, which often lack the resources and capacity to fully engage with this new mode of regulation. There is a large group of community operations whose FSC certificates have expired (or are soon to expire), but who choose not to re-certify given the low level of economic benefits to have materialized. While some case studies document new efforts by NGOs to address this problem and connect community groups with international markets, greater effort is required to avoid losing this important group.

Certification Standards

FSC has a “one size fits all” set of generic P&Cs which can be modified to fit local circumstances. It has also introduced a variety of mechanisms (group certification and SLIMFs) to address the requirements of small and community operators. A number of phased or “step-wise” approaches to certification have also emerged, which generally outline a series of phases or steps that a candidate operation must achieve, usually beginning with legality and culminating in FSC certification. This approach provides recognition and market incentives to operations that have committed to sustainable forestry, but require extra time and effort to come into full compliance with the standards. Originally developed by ProForest under the auspices of the WWF-IKEA Partnership on Forest Products, the phased approach is also offered by groups such as the Rainforest Alliance, whose SmartStep program currently has clients in Bolivia, Brazil, China and Ghana. The ecoforestry standard supported by the International Tropical Timber Group (ITTG) is likewise enabling community operators in PNG and Solomon Islands to export certified timber to New Zealand. To ensure that these initiatives constitute genuine steps towards full FSC certification rather than competing programs in their own right, it will be important to more clearly integrate these initiatives into the FSC approach, establishing criteria and timelines for moving from a lower to a higher step.

Certification Costs

In a number of cases discussed in this book the costs of certification appear to outweigh the benefits, especially for smaller operations. This is due to a variety of factors, including those listed above (lack of demand, illegal logging, etc). How can the costs of certification be reduced and the benefits increased so that more companies, communities and individuals will have an incentive to embrace it? One approach being tested by the FSC and its accredited certifiers is a lower-cost, more streamlined assessment procedure for low risk operations under its SLIMF program. Other groups – such as the Global Forest & Trade Network (GFTN) – are focused on developing markets for certified products. This is being done by increasing consumer demand, but also by assisting certified operations to access those markets through, for example, group marketing strategies for small landowners. The Asian market – especially China, Japan and Korea – is key here and the efforts, already commenced, to convince Chinese, Japanese and Korean consumers to consider the ecological shadow of their actions must be redoubled.

Another initiative, again already commenced, would work with governments to reduce the flow of illegal timber around the world that unfairly competes with legally produced timber by ensuring that existing forest laws are obeyed. This is the objective, as noted above, of the FLEGT, but this initiative is currently limited to Europe and needs to be expanded. Forest certification could make a major contribution here if governments were to review different schemes and rank them as to their ability to differentiate legal from illegal timber and make this information publicly available. While such a step is, ultimately, quite modest because mere legality does not ensure that the timber is, in fact, sustainably produced, it constitutes a significant step forward within the global timber market from where we currently are.

Our case studies suggest that larger producers can offset some of the costs of certification from improved efficiencies in production that emerge from a systematic analysis and restructuring of their corporate operations. These efficiencies are not, however, being achieved by smaller and community-based operations where numerous hurdles confront managers related to lack of capital, management ability, and market access. More systematic study of the barriers confronting small operators is required, and the results linked to loan and technical support schemes to secure the production of reasonable volumes of high-quality timber for global markets.

Forest Policy Networks

In many parts of the world, forest policy networks remain either closed or semi-open, with environmental ideas vilified and ridiculed in an attempt to preserve the status quo. For these reasons the more inclusionary processes associated with forest certification appear to provide a new model with which to promote innovative and constructive dialogues. Future research efforts, we believe, ought to explore the role of forest certification in the discourse of forest science, the relationship between a forest policy network and the practice of democracy and good governance within which it is embedded, and the concept of tolerance (where governments and civil society organizations accept the rights of others to dissent).

Certification as Part of a Sustainable Future

The sixteen cases in this book reveal complex interrelationships among a range of macro political, micro-institutional, and economic factors. Perhaps the broadest lesson to be drawn is that, given that certification represents such an exceedingly dynamic field, it would be a mistake to make decisions solely based on existing support and immediate effects. Instead, environmental groups, forest companies, forest owners, workers and governments ought to make decisions thinking not only of the present, but also about the future and potential of forest certification. Moreover, forest certification is best understood as part of a larger ensemble of forest management institutions, which, if aligned correctly, could significantly help to improve sustainable forest management and conserve biodiversity. Our cases reveal considerable challenges, but also untapped possibilities, that anyone who cares about the world's biosphere and the role of forests within it can feel justifiably motivated to unlock.

This volume has revealed many types of keys that might open this door. One key, with arguably the most transformative potential, concerns the potential role that consumers of forest products can play. Indeed, we discern a narrow window of opportunity for consumers of forest products to drive improvements in global forest management. While there is widespread support from forest owners for some type of forest certification in Europe and North America, the ambivalent economic signals from consumers in these same countries has placed the future role of forest certification on an uncertain path. Yet, given limited government capacity and persistent poverty in many developing and transitioning countries, market-based efforts could arguably have the greatest influence. As the market's supply chain becomes increasingly transnational – with some developing countries acting as suppliers of raw material to other developing countries, who in turn manufacture products destined to wealthy Northern consumers – certification's emphasis on tracking along the market's supply chain could offer a more efficient, effective and fairer solution for curbing global forest deterioration. These trends are illustrated by developments in China, where White and others (2006) found that while China's increasing demand for forest products is often seen as encouraging forest deterioration by indiscriminately importing forest products from Indonesia, Myanmar, Papua New Guinea, and the Russian far east, as well as African countries such as Gabon, its exports of manufactured forest products have been climbing as fast. Indeed, White and others (*ibid*) found that the U.S. is China's largest importer of forest products – the volume of which increased 1000 percent between 1997 and 2005 and now accounts for 35 percent of China's total forest products exports. Similarly exports to Europe, China's second largest market – increased 800 percent during this same time.

These trade relationships, and the cases in our book, highlight the need for all customers of forest products, but especially those in North America and Europe – from big box shoppers to institutional customers such as home builders, universities, and governments – to undertake an immediate transformation in their purchasing behaviour if forest certification is to move to the next stage of institutionalization. For years customers had no way of knowing whether the products they were purchasing were contributing to the destruction of the world's most critical forests. Now that this ability exists, consumers are facing a narrow window of opportunity to be part of a solution to the problem about which they are understandably concerned. Depending on these choices, certification could become relegated to yet another failed policy instrument that serves to legitimate, rather than improve, existing practices. Alternatively, if consumers in the wealthiest countries, whose purchasing habits currently feed forest degradation, can move themselves to demand environmentally and socially responsible behavior from the firms whose products they purchase, we could witness, in the next decade, one of the most important innovations in global forest management.

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