

Chapter 4

Drivers of Illegal and Destructive Forest Use

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4.1 Congruence Between the Drivers of Deforestation, Forest Degradation and Illegal Logging

This chapter reflects upon the drivers of illegal logging and associated timber trade. Much of this discussion is related to a broader debate about the drivers of forest degradation and deforestation (FAO, 2016a; Kissinger et al., 2012; Geist and Lambin, 2001). In this debate illegal logging is primarily interpreted as harvesting of timber for export by logging companies that take advantage of flaws in regulations and law enforcement (Kissinger et al., 2012). This framing has been partly driven by the lobbies of timber importing countries to bring the issue of deforestation within the legality debate, and so to extol those policy measures aimed at improving forest legality as a means to tackle deforestation (see Chapter 7). In practice, however, the relationships between logging, legality, forest degradation, deforestation, and various social goods and bads are much more variable and dynamic. For example, the legal use of forest can be quite destructive as in the case of inadequately implemented operations in forest concessions, whereas, illegal or informal forest uses do not necessarily have to be negative when considering, for example, the occasional collection of non-timber forest products by indigenous communities without permission of the national authorities (see Chapters 2 and 7). Furthermore, forest conversion to agricultural land represents a larger amount of both illegal and legal forest activities than the use of timber or other forest products (Pokorny and Pacheco, 2014). The complexity further increases when considering the aspect of legitimacy (see Chapter 2). For example, the legalized harvest of timber in forest concessions can be illegitimate from a human rights perspective if violating the customary rights of indigenous communities.

While, from a conceptual point of view, it is important to parse apart the phenomena of deforestation, forest

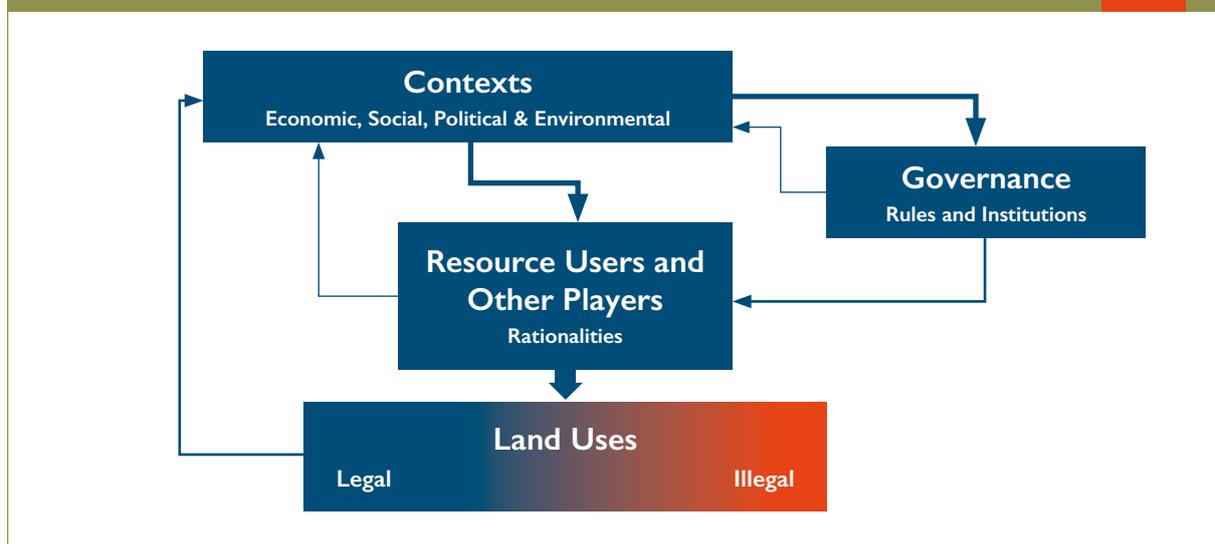
degradation and illegal logging, this complexity makes it difficult to do so. This is particularly visible in the distinct literature about the drivers for illegal logging, forest degradation and deforestation. Despite different entry points, most of these studies and reports discuss, as a common denominator, the reasons for destructive forest use, and consequently hint at similar, largely congruent, sets of drivers. Accordingly, to draw a comprehensive picture of the drivers for illegal logging, this chapter includes the vast amount of aggregated knowledge generated by studies on the drivers of forest degradation and deforestation. More specific statements regarding the aspect of illegality are made whenever meaningful.

The driver literature basically distinguishes between direct or proximate drivers, and indirect, enabling or underlying drivers. Direct drivers represent human activities that directly affect forests such as harvesting of timber and other forest products, agricultural expansion and the construction of roads. These activities are triggered by indirect drivers covering the complex interactions of economic, political and institutional, technological, cultural, socio-political and demographic factors (Geist and Lambin, 2001; MEA, 2005; Kissinger et al., 2012; FAO, 2016a). Additionally, some studies consider a layer of immediate individual drivers that consider the rationalities and decision-making parameters of land users (Kaimowitz and Angelsen, 1998; Perz, 2002; Walker, 2004).

To discuss the drivers for illegal and destructive forest use, based on these considerations, a conceptual framework is proposed that puts the motivations of resource users and other economic players such as traders, brokers, processing industries, dealers and consumers in the centre (Figure 4.1). In this framework, actors decide about the use of forest and land in response to societal contexts determined by local and global factors which, in turn are affected by these decisions. Accordingly, the sum of illegal and destructive land uses may reinforce the conditions that lead to these. In this context, forest governance

The conceptual framing of drivers for illegal and destructive forest uses

Figure 4.1



is interpreted as a bundle of measures to control and channel the effect of societal reality on economic actors and their decisions. The framework recognizes that these measures are also influenced by the same reality or contexts.

4.2 Rationalities of Individual Decisions

Forests are managed, exploited, converted or destroyed by people. Thus, before an activity with potential impacts on forests is realized, resource users make a decision. Understanding the nature of this decision-making process is a fundamental prerequisite to discuss the drivers of illegal and destructive forest uses.

4.2.1 Decision-making

There is broad agreement that resource users essentially make rational decisions. However, in practice this is a complex process, and several theories attempt to explain this phenomenon. The academic debate particularly discusses the interference and roles of individual agents versus societal structures in decision-making processes (Sewell, 2005) notably along a continuum starting from individual rational decisions to behavioural theories, to discussions about how individual trajectories are bounded by and even determined by their societal context. We briefly present some of these theories in the following paragraphs.

Rational choice

There is broad consensus that the desire for personal benefit is the driving force behind individual decisions. Classic neoliberal thinking sketches the *homo oeconomicus* as a rational agent narrowly interested in the pursuance of subjectively-defined interests to maximize individual utility (Rittenberg and Trigarten, 2009). Accordingly, only those costs and benefits perceived by the decision-maker as immediately relevant matter, while so-called externalities are ignored. In the decision process, the individual costs and benefits of available alternatives are compared. A decision for one option necessarily implies waiving a number of alternative options. These forgone opportunities to generate benefits are called opportunity costs (Gregersen et al., 2010). Rational decisions also take into account the risk of not achieving an expected benefit in the future because of, for example, price fluctuations, fire, storm, wind, robbery and changing policy frameworks. The higher the risk, the less attractive is an economic option. Generally, economic actors prefer short-term investments because of lower risks and shorter repayment periods (Da Silva et al., 2009). Accordingly, investors with access to many attractive economic alternatives tend to set high profit expectations to compensate for the risk of long-term investments.

Behavioural economics

Although economic rationality plays a significant role in individual decisions, in practice, people themselves

influence their assessment by subjectively framing their decision on the basis of their own experiences and opinions provided by trusted peers (Kahneman and Tversky, 1979). Often, these reference points represent the status quo. Outcomes of decisions above these reference points are considered as gains and below them as losses (Thaler, 1980). Accordingly, individuals perceive relative changes rather than absolute values, particularly those near the reference point, and again rely in their assessments on subjective feelings, which they tend to interpret as objective and valid information. Losses and gains are not

Box 4.1

Why do people break laws?

Criminologists hold different and sometimes competing views about the causes of law-breaking behaviour. The conceptual levels at which law-breaking behaviour is explained vary from individual (micro) to group (meso), to society (macro) levels (Walklate, 2007): the individual level is being stimulated by certain biological factors, or genetic or psychologic predispositions, such as personality disorder, limited self-control or empathy, and a desire for thrill-seeking behaviour possibly triggered by certain social or environmental factors; at the level of family, group or neighbourhood, law breaking behaviour is learned from important others or where socialisation into conventional behaviour and social ties to society are weak; at the level of society and state, law-breaking is interpreted as a coping mechanism for people experiencing pressure that results from an imbalance between social structures (accepted means) and culture (accepted goals).

Law breaking can also be interpreted as the result of a rational decision based on risk-benefit interpretations. Thus, opportunity is required for a crime to be acted upon, which is in itself an influencing motivation (Katz, 1988). If motivation is sufficiently high in the presence of an attractive opportunity, a crime may occur if the person has the ability to commit it. The more attractive and more easily accessible an opportunity, the lower predisposed individual motivation has to be. Thus, even people with a low criminal motivation may become engaged in crimes if the opportunity is big enough. This phenomenon partly explains why well-paid politicians or managers become engaged in white-collar crime despite their social and economic status. Finally, laws and the degree of their enforcement can be reasons for crime. This perspective highlights that regulations result from specific decision and power relationships within a society at a certain moment in time (Becker, 1963). Examples of laws being increasingly questioned are those that prohibit homosexuality and marijuana or, related to illegal logging, indigenous forest uses. Examples of law enforcement that is being questioned is if law enforcers merely go after the “small fish” (e.g. drug sellers on the street, or poor forest dwellers who sell a few logs to sustain their families), and not after the “big fish” (e.g. leaders of criminal drug gangs, white collar criminals or businesses well organized in timber trafficking networks).

considered equivalent: losses hurt more than gains feel good (Kahneman and Tversky, 1979). Consequently, people tend to systematically overestimate the status quo and require (a belief in) disproportionately high payoffs to change their behaviour; a net benefit alone is insufficient. This phenomenon, called “endowment effect” or “status-quo-bias” partly explains why people often maintain their daily practices even if they are not meaningful from a more objective standpoint. Also, consumers are relatively unresponsive to small changes (Thaler, 1980) and require strong incentives to change behaviour (Kahneman et al., 1991).

Bounded individual trajectories

Individual decisions are not always amenable to axiomatic constructions but derive from specific environments. They are bounded within subjective framing and assessments determined by specific experiences and societal contexts (Berg, 2003). Complex interactions between genes and environment influence the intellectual, emotional and physical attributes of an individual person, affect the value placed on material and symbolic resources, as well as the ability to successfully access relevant options (Fishbein, 1990). These processes, at least to a certain degree, are transmitted from generation to generation and thus may shape typical traits, such as being a farmer, a trader, a politician, as well as being altruistic, a leader, or a criminal (Berg, 2003). Accordingly, individual views on the world reflect a specific cultural and social imprinting induced by knowledge, belief, art, morals, law, custom and any other capabilities and habits that the surrounding society has developed over time (World Bank, 2015; James, 2015). From this collective action perspective, individuals behave to maximise their interests based on shared expectations about the behaviour of others (Ostrom, 1998). Accordingly, it is difficult for individuals to take decisions that contradict existing cultural and societal norms. This is particularly obvious regarding the societal phenomenon of corruption (see Section 4.4.2) and criminality (see Box 4.1).

Political ecology

In addition to the surrounding environment and the behaviour of others, the scope of individual land use decisions is also strongly restricted by a context characterized by inequality and unfair power structures as suggested by the literature on political ecology (Bryant and Bailey, 1997; Bryant, 1998; Blaikie, 1999; Neumann, 2008; Nygren and Rikoon, 2008) and the chronicles of power (Green and Hulme, 2005; Harriss, 2007). Centuries of exploitation, colonisation, settlement and exploration in many rural regions worldwide have shaped a societal structure that continues to impact events today. Since the beginning of the colonial period, Europeans have established mechanisms to exploit people and resources of interest (ivory, gold, sugarcane, drugs, timber etc.) in many parts of the world. Societies were stratified vertically so that a small group of elites had control over the majority of land and resources. Still today, rural areas are characterized by historically unfair power structures where changes in land

use respond to urban and global interests rather than local needs and priorities (Pokorny et al., 2013). Political and economic elites, due to their position, resources and privileges, have the power to influence decisions about land and resources in accordance to their individual interests. They are often well connected with decision-makers across administrative tiers (Fischer et al., 2007) and use their power to pursue illegal and destructive resource use strategies to obtain the major share of the benefits from these activities (Ribot, 1998). The rural poor, on the other hand, are systematically deprived from many economic options (Sunderlin et al., 2005), and often find it difficult to have their voices heard (IFAD, 2010). The political, social and economic differences within different societal groups account for an uneven distribution of costs and benefits, which inevitably reinforces or reduces existing social and economic inequalities.

4.2.2 Rationality of Resource Users

Applying the above-presented theoretical considerations to illegal logging, one can posit that individual decisions on the use of resources mainly depend on the accessibility of economic opportunities to maximize individual utility in accordance to individual preferences prescribed to a lesser or larger degree by societal context. In these considerations, the accessibility to relevant economic alternatives largely depends on the availability of financial and human capital, as well as the level of information. The more capital an economic actor has, the better connected to relevant networks and logistics, and the better provided with knowledge and skills, therefore, the wider the choice of options. Accordingly, less capitalized, less connected, and less qualified actors are more limited in their choices and, in the case of land users, are less flexible and depend more on their labour and natural resources (Barbier, 2012). This dependency may combine with individual preferences resulting from specific trajectories embedded in a given societal context, which may further reduce their scope for action due to asymmetric power relations. While poorer land users often traditionally rely on specific land use practices, capitalized actors, instead, may more often follow specific investment avenues (Da Silva et al., 2009).

Although, in practice, economic actors might follow a wide range of interests and priorities, from an economic perspective, the above described differences translate into actor-specific profit expectations and varying degrees of environmental and social concerns. It is more likely that a more flexible resource user and one with more opportunities, will have higher profit expectations, and a lower dependency on the social and environmental conditions in a given place. Accordingly, one can imagine arranging different economic actors along those two variables: environmental and social concerns versus expected level of profit.

Generally speaking, capitalized land users such as for example agro-industrial companies have far higher profit expectations than less capitalized ones such as local timber companies, peasants or forest dwellers. Large,

international companies and entrepreneurs not only dispose of the capital, know-how and information needed for investments in highly productive technologies but are also flexible regarding the application of their capital. Decisions might consider social and environmental aspects when they do not significantly compromise profitability, or if third parties effectively enforce social or environmental standards (OECD, 2012). If profitability of a chosen land use becomes marginal, they tend to shift to other more attractive economic options.

In contrast, poor peasants, as well as poor forest dwellers, strongly depend on their ability to benefit from a relatively limited portfolio of assets (Ribot and Peluso, 2003). They fully rely on those few resources within their immediate surroundings (Banerjee and Dufló, 2007) and family labour, often including contribution of children (Berdegué and Fuentealba, 2011). They suffer from a notorious lack of liquid capital and have only very limited access to bank loans (D'Antona et al., 2006). In addition, they are much less connected to commercial networks (IFAD, 2013; Pfitzer et al., 2009). Due to their personal situation, their emotional ties to land and resources (Quinn and Halfacre, 2014), and their emphasis on social reproduction goals, risk avoidance and securing livelihood sustenance are at the centre of their decisions (Perz, 2005). The lack of capital and connectivity in combination with their socio-cultural preferences greatly restrain their economic choices, which partly explains why poor forest dwellers, if provided with legal access to larger forest areas, function as effective caretakers of the forests (Campos and Nepstad, 2006). At the same time, they are strongly interested in possibilities to generate immediate income, but are satisfied with relatively low profit margins. Accordingly, they show a preference for low-input, low-risk entrepreneurship that avoids costly inputs such as machines, fertilisers, pesticides and seeds. Despite an increasing importance of non-farm income and the chance for rural-urban migration (Wunder, 2001; Hecht, 2011), the possibility of producing food on their land for own consumption and markets still is essential to secure their livelihoods (IFAD, 2013). This, in combination with limited technical knowledge (IAASTD, 2009) and the marginality of their resources makes smallholders susceptible to degradative land uses including the destructive exploitation of marketable forest products (Barbier, 2012). Accordingly, poverty is an important driver of forest degradation (Kissinger et al., 2012).

Beyond the different land user groups, there are several other players that due to their capacities, assets and societal position can promote or hinder certain land user groups and shape their decisions. Actors such as intermediaries, processing industries, consumers, and investors are directly or indirectly engaged in value chains. Based on the above-mentioned theories, one might expect them to be driven by profit-seeking behaviour, and thus, systematically explore opportunities to maximize profits. This is particularly relevant for large investors such as, for example, banks, stockbrokers and insurance companies, but also regarding consumers of agricultural and forest products, who generally highlight price and quality in their consumption decisions (TradeExtensions, 2014). In sum, these actors may



Daily life around Lake Sentarum, West Kalimantan, Indonesia.
Photo © Tim Cronin for CIFOR

pressure the providers of the demanded goods and services to reduce costs, for example, by enhancing productivities, or by reducing environmental and social standards (Colen et al., 2008). In contrast, societal groups such as premium consumers, NGOs, policymakers and overseas aid, at least in their discourses, highlight the need for a less destructive use of resources, which, in the case of forests explicitly includes the legality aspect (see Chapter 7). However, some of these groups have conflicting interests. For example, policymakers may support environmental goals but may be even more interested in economic goals such as the creation of jobs, infrastructural development and access to consumption markets; overseas aid may engage in environmental and social initiatives but also cooperate in large infrastructure investments, the agro-industrial production of commodities and the exploitation of minerals in forest areas (Pokorny, 2015).

4.2.3 Land Use Options

From an economic perspective, land uses present opportunities for resource users to satisfy their demands and expectations outlined above. In this utilitarian sense, the decision for or against a specific land use option reflects individual rationalities and capacities as described above. Land uses happen, legally or illegally, sustainably or unsustainably, if motivation of at least one relevant user is sufficiently high, the opportunity is there, and the capacity for its implementation exists. Land uses comprise a wide range of activities including commercial and subsistence agriculture, infrastructure extension, urban expansion, mining, commercial logging, shifting cultivation, livestock grazing in forests, fuelwood collection and charcoal production (Geist and Lambin, 2001; Hosonuma et al., 2012; Kissinger et al., 2012; FAO, 2016a).

A comparison of level of risk and achievable profit margin for different land use options, suggests that in many cases several other land uses may be more attractive



Cattle farming is a major driver of deforestation in Brazil. Landscape near Rio Branco, Acre, Brazil. Photo © Kate Evans for CIFOR

than sustainable forest management (Box 4.2.). This signifies the existence of a strong incentive for forest conversion, informal logging and other illegal forest activities. In fact, legality may reduce or increase the competitive disadvantage of legal forest uses or may even be a precondition for a specific land use option. In practice, there is at least one resource user group whose motivation for a subjectively attractive land use is stronger than the disincentive of eventually existing legal constraints; respectively, policymakers and major societal groups might be insufficiently interested in setting up and effectively enforcing legal constraints. In this context, the following paragraphs explain the most common non-forest and forest land uses, describe their geographic relevance, clarify why they are attractive to whom, and if and to what degree they might be related to illegality.

Agro-industrial production of agricultural commodities for global markets requires significant investments in land and technologies as well as a good integration into international value chains. In parallel, commercial agriculture promises large profits in short time periods. The production of soybeans, for example, can generate discount rates of 10 percent during a 10-year production period (Boerner et al., 2010). Similarly, other types of food production in many tropical contexts generate two-digit profit margins (Pokorny and Pacheco, 2014). In the case of cattle ranching, investments costs, management intensities but also profit margins are lower. Nevertheless, particularly if realized at a larger scale, it is attractive because profits are generated at a comparatively low risk. This attractiveness partly stems from public incentives including the provision of cheap land and credit programmes, as well as indirectly, through subsidies notably for energy and materials (e.g. fertilisers and pesticides). In sum, agro-industrial production fits perfectly with the interest and capacities of capitalized, often international and urban, investors. Large-scale agriculture including

cattle ranching is most important in Latin America. In particular, in the Amazon region but also in Southeast Asia agribusinesses producing meat, soybean and palm oil for global markets play an increasing role (Rudel et al., 2009; DeFries et al., 2010). In some regions also the production of non-timber forest products (NTFPs) at a large scale plays a role, as for example in the case of rubber plantations in mainland Southeast Asia and Southwest China (Warren-Thomas et al., 2015). It is estimated that the expansion of agro-industrial land uses is responsible for up to 80 percent of deforestation worldwide (Geist and Lambin, 2001; Gibbs et al., 2010; FAO, 2016a). If fire is used for forest clearing, particularly in dry woodlands or on flammable peat soils, large forest areas can be affected (FAO, 2007). Many of these land uses are established on forest lands and violate customary rights (Larson et al., 2008; RRI, 2015) or forest laws; though, economically poorer countries in search for international investors offer favourable (legal) conditions to international investors increasingly interested in such opportunities described as “land grabbing” (De Schutter, 2011; Borrás et al., 2012).

Small-scale agriculture concentrates on the cultivation of food and other materials for local consumption and local markets. It comprises extensive shifting-cultivation as well as intensively-managed agricultural fields mostly done on plots of less than 2 ha (Barbier, 2012). Cultivations might also include tree components. Due to the local utility of the products, the possibility for the application of family labour, the low level of investments and technical know-how needed, and simple logistics, this land use is attractive for small, often poor farmers. They might manage their land since generations, arrived during planned settlement programmes, or simply encroached public or private (forest) land (Kissinger et al., 2012). Often, these farmers lack formal land titles (RRI, 2015). While many small farms are effectively managed since a long time, others suffer from gradual degradation due to misuse and marginal size and properties (Barbier, 2012). Shifting cultivation although, in its original form, was well adapted to the conditions and needs of forest dwellers in the tropics (Denevan and Padoch, 1988), plays a larger role in deforestation especially in Africa and Asia (DeFries et al., 2010; Fisher, 2010; Silva et al., 2011). Particularly, the widespread practice of using fire to prepare agricultural fields, if insufficiently managed, signifies an enormous threat to forests (Cochrane, 2009) especially in years of dry conditions exacerbated by the El Niño effect.

In many forested regions worldwide, there are large investments in the exploitation of minerals, oil and gas as well as the construction of dams for the generation of energy (Kissinger et al., 2012). While the industrial exploitation of gold and diamonds often happens at a smaller scale, the economically much more relevant surface mining of high bulk, low value commodities like coal and iron ore affect very large areas. This is also the case regarding dams built for the generation of hydro energy (Edwards et al., 2014). In expectation of positive impulses for economic development, international cooperation often collaborates in these initiatives with the business sector (Ledec and Quintero, 2003). Also, national governments

massively support these investments and provide the legal basis for land and resources (UNEP, 2016). Often, these deals include high-level corruption, violate existing customary rights to land and resources as well as national regulations for forest protection (Edwards et al., 2014; León Moreta, 2015). Due to the immense capital requirements, such land uses are only accessible to corporate actors, often multinational companies. Once established, their profitability can be very high.

The harvest of wood and non-wood products, including game from natural forests, plays an enormous role particularly for local dwellers (see Chapter 2). Most of this harvest lacks formal authorization; and in some countries even regulations for such uses are missing. The low technical and financial requirements for the harvest of NTFPs in combination with the absence of bureaucracy, and a low level of control make them accessible to poor dwellers (Wunder, 2001). While some NTFPs are used on the basis of well-defined traditional norms (Shanley et al., 2002), others, such as fuelwood and charcoal in semiarid regions, ignore social or environmental thresholds (e.g., Ahrends et al., 2010). Particularly in Africa, fuelwood collection and charcoal production, often in combination with livestock grazing in forests, contribute to forest degradation (Kissinger et al., 2012).

Timber has always been at the centre of the commercial interest in forests. In the tropics, commercial timber logging concentrates on a few valuable tree species, of which often only a few trees exist per hectare (Pokorny and Steinbrenner, 2005). Accordingly, in the tropics, timber harvest tends to be highly selective. In contrast, boreal forests dominated by only one or two species are mostly harvested with clear-cuts (Sizer et al., 2015). If forests are not reachable by rivers, significant investments in the

construction of access roads are necessary so as to allow the use of heavy machinery and to enable the transport of the logs to the saw mills. The fact that natural forests are often located in somewhat remote regions makes the transport of logs the highest single cost factor. The harvest itself is technically not too demanding. This makes timber logging an interesting option for smaller timber companies that dispose of basic equipment and know-how. However, the organization of regional and international trade of timber requires elevated know-how and capital, and thus relies on capitalized, well-connected actors (see Chapter 5). The fact that timber from valuable species is a transferrable and transportable asset with an elevated value fairly easy to harvest, transport and sell, favours trafficking (Lawson and MacFaul, 2010). Selective logging (both legal and illegal) of high value trees is seen as a first step for the subsequent conversion of forests into other land uses (Asner et al., 2006), and thus has contributed to deforestation in many regions of Asia and Latin America, and is still growing in Africa (Fisher, 2010; Laporte et al., 2007). Timber may also originate from authorized land clearings (i.e. ClientEarth, 2015; Ardiansyah et al., 2015; Alarcon-Diaz, 2012). Nevertheless, in many cases forests are converted into agricultural land uses without using the timber (Pokorny and Pacheco, 2014), a fact that indicates the limited attractiveness of timber logging compared to other land uses. The legal use of timber is mostly related to forest concessions managed by timber companies on the basis of authorized management plans in accordance with the principles for sustainable forest management (see Box 4.2). In the tropics, concessions may cover areas of several 10,000 hectares. Concession rights are often provided on the basis of bidding processes, in many cases influenced by corruption (Pokorny, 2015). Concessionaires

Limited attractiveness of Sustainable Forest Management in the Amazon (adapted from Pokorny and Pacheco 2014)

Box
4.2

Sustainable Forest Management (SFM) is seen as the principal approach for the legal production of timber. SFM foresees the application of techniques to reduce the environmental impacts of harvesting, avoid damage to future crop trees, and to improve the production efficiency of operations. It requires planning, the application of specific felling techniques, intensive monitoring and post-harvest forest protection. Government agencies are responsible for authorising and monitoring SFM. In the Amazon region as in many other regions, timber companies adopting SFM tend to also seek Forest Stewardship Council (FSC) certification to facilitate the export of well-paid timber into industrialized countries. Yet, SFM is insufficiently attractive for most land and forest users because: (1) consumers are only interested in a few well-known noble species from which only three to six trees per hectare stock in highly diverse tropical forests; (2) harvest operations are costly due to great investments into the building or infrastructure, and the large transport distances; (3) regulations for the protection of water sources, rare species and seed trees may drastically reduce the harvestable timber stocks while the fulfilment of other legal requirements entails high administrative costs; (4) human resources for planning and administration results in significantly increasing a company's fixed costs thus reducing its flexibility. There are problems related with excessive bureaucracy, corruption and the glacial pace of public agencies. Due to their accessibility, FSC-certified enterprises additionally suffer from intensive scrutiny, auditing and bureaucratic challenges. For the eastern Brazilian Amazon, average total harvesting costs run between 30-100 USD per m³. Considering that technologically outdated saw mills need 3-4 m³ logs to produce one m³ sawn wood, raw material costs alone are around USD 80 to 200 to which another USD 100 has to be added for milling. This results in a cost of more than USD 200 per m³ for sawnwood not including shipping. In consequence, harvesting timber is only attractive to a few larger timber companies well connected to global markets. For the vast majority of land users, SFM cannot compete with nearly all alternative land use options, including illegal logging.

have to pay fees and royalties, and normally also bear the cost for infrastructure. This, in combination with the elevated bureaucratic and technical requirements to set up and implement management plans, requires capacities often only available within larger export-orientated timber companies. For forest communities to comply even with simplified standards for small-scale logging requires massive external support (Pokorny, 2013). Although concessions provide an internationally-recognized legal basis, in practice, most of them insufficiently consider or even ignore eventually existing customary rights (Pokorny, 2015; IASS, in press). Additionally, a larger proportion of concessionaires' forest operations do not comply with the technical standards outlined in regulations and fail to effectively protect forest areas in the long-term (Sabogal et al., 2007; Pokorny, 2015).

Nowadays, the production of forest goods is moving away from primary forests towards plantations, where they can be produced at much lower costs (FAO, 2010). While initial investment costs in plantations can be high, benefits are equally high and achievable in the short term. The forest plantation sector is dominated by a few very large, mostly international companies which, however, may cooperate with small and medium-sized producers in out-grower or contract farming schemes (Hoch et al., 2009). Plantations, even if established on already deforested land imply the removal of natural vegetation. Despite a reduction in the practice of replacing “unproductive” natural forests with plantations, in some regions, forest areas are still being converted as for example in the case of oil palm plantations in Indonesia (Vijay et al., 2016).

4.3 Contexts

The use of forest lands in rural regions is strongly influenced by complex interactions of social, economic, political, cultural and technological processes at the local, national and global levels (Kissinger et al., 2012; FAO, 2016a). They prescribe the accessibility and attractiveness of land use options for the different resource user groups. The specific local configurations of land tenure, regulatory and institutional frameworks, markets, finances and public services are in turn influenced by broader processes such as demographic and economic dynamics, conflicts and crises, as well as climate change (Geist and Lambin, 2001; Obersteiner et al., 2009; FAO, 2016a). This section describes relevant context conditions and trends to sketch their influences on decisions about illegal and destructive forest uses.

4.3.1 Current Situation

An estimated 3.4 billion people live in rural areas (World Bank, 2016) from which nearly a half is dependent upon forests to some extent. An estimated 300-350 million people, most of them indigenous, are classified as being highly dependent on forests (FPP, 2012). About 86 percent of the world's forests are publicly owned (Siry et al.,



Trucks carrying logs in Gunung Lumut, East Kalimantan, Indonesia. Photo © Jan van der Ploeg for CIFOR

2010), however, in practice, the land tenure situation is often unclear and conflicting (Larson et al., 2008; RRI, 2015). Globally, around 60 percent of land and resources are managed on the basis of customary rules although less than a fifth is formally recognized (RRI, 2015). Recognition of local rights is often limited to some forest areas with protected area status, and properties in agricultural settlements. Poverty rates in and around remote forest areas are significantly higher compared to those of cultivated and urban areas (Chen and Ravallion, 2011). In many cases, these areas are characterized by power imbalances, patronage systems and social isolation including very restricted access to public services (Barbier, 2012; Green and Hulme, 2005). Often, local elites and authorities arbitrarily provide rights to resources on the basis of personal preferences (DFID, 2015). The combination of remoteness and poverty results in vicious circles that imply absence of attractive economic options (Barrett and Swallow, 2006).

Over the last few decades, newly constructed roads have made many forested landscapes more accessible. While road construction in rural regions is a key policy of most developing countries, a large share is constructed by logging companies, cattle ranchers and agro-industries, and even as a collective effort of smallholders (Walker et al., 2013). Roads have made markets and public services accessible for a larger part of rural populations, opening up new economic opportunities (Barber, 2014) and creating new urban-rural networks (Padoch et al., 2008). In parallel, roads act as entry points for non-local actor groups including small and large-scale farmers and cattle ranchers, forest companies, agro-industries, mining and other companies who use their resources, capacities and social connections to appropriate land and resources (Pokorny, 2013). Nearly 50 million hectares of foreign investments into large-scale land acquisitions in developing countries have been documented so far (Land Matrix, 2016). Concurrently, the delivery of timber concessions

is making large forest areas available to non-local actors (Pokorny, 2015). In this process, customary rights of local people are regularly violated which results in further marginalization and displacement of poor forest dwellers (RRI, 2015; De Schutter, 2011).

Several studies have shown that improved accessibility of remote forest areas promotes over-use and conversion of forests into agricultural land uses (e.g. Laurance et al., 2014) which are seldom sufficiently adapted to the specific local conditions. They often rely on the continuous application of fertilisers and pesticides or show gradually declining productivities. As a result, massive degradation of soils is frequent (MEA, 2005; Kissinger et al., 2012; Weigelt et al., 2014). Many smallholders continue residing in or migrate into such environmentally fragile landscapes in search for land (Barbier, 2012). This highly dynamic situation latently threatens the few successfully established long-term farm and forest management schemes, including well-managed forest concessions and forest conservation areas.

4.3.2 Future Trends

Land use dynamics are affected by a still growing population and improved levels of economic well-being among large parts of particularly urban populations, especially in the so-called BRIICS countries¹, as well as in most economically less developed countries including those in Africa (UNDP, 2015). Typically, population growth and improved well-being induce a significantly growing demand for food, mineral resources, energy for transport, electricity and heating (UNDP, 2015). Particularly, the anticipated two- to three-fold increase in demand for both food products and biofuels by 2050 (OECD/FAO, 2011) is expected to result in a further expansion and intensification of agro-industrial production (FAO, 2009), much of which through encroachment in forest areas. It is estimated that at least 25 million kilometres of new roads will be built by 2050, many of them to improve the access to rural production areas (Laurance et al., 2014). To satisfy a nearly 50 percent increase in worldwide energy demand by 2040 while achieving the reduction in fossil fuel consumption agreed in Paris, governments will likely invest in the construction of large-scale hydro-energy dams (IEO, 2016). Equally, many new mining areas will likely be established or enlarged in pristine forest areas, regardless of any pre-existing legal protection status (Rademaekers et al., 2010). In parallel, rising prices will stimulate small-scale, informal mining operations (Swenson et al., 2011; Schueler et al., 2011).

Globalization of value chains and trade will further intensify due to innovations in communication technologies and transport logistics, as well as the international processes for trade liberalization (Love and Lattimore, 2009). Improvements and standardization of technologies for the production of global commodities will allow for

higher productivity (Rademaekers et al., 2010; Pacheco and Pocard-Chapuis, 2012) and profit margins (Boucher et al., 2011; Rudel et al., 2009). Pushed by cost-sensitive consumers in economically-developed regions and urban centres, capitalized actors will most likely use their increasing control over resources and markets to enforce highly productive technology packages for the production of a limited number of standardized goods (FAO, 2016a). This will further discriminate against small-scale producers of agricultural and forest products.

Also, the demand for forest products is expected to increase, primarily for pulp and timber (Rademaekers et al., 2010) while consumption of fuelwood may stabilize as a result of economic development and the related switch to other energy sources (Klenk et al., 2012). However, the demand for charcoal is likely to increase because of the growing number of urban inhabitants. Consequently, the pressure on shrinking natural forest areas is likely to increase in the near future (Lapola et al., 2010) even though an increasingly larger share of forest goods will be produced in intensively-managed tree plantations (FAO, 2016a).

Population growth and economic development fuelled by global commodities trade, accelerating infrastructure development and urbanization in combination with an ongoing degradation of resources and an increasing welfare gap between rural and urban areas, will further aggravate the problem of illegal and destructive uses of continuously shrinking forest areas. Climate change will exacerbate these problems by causing shifts in land uses in response to ecosystem change (HLPE, 2012). In combination with an increasing number of economic and political crises (IFAD, 2010), this is likely to mobilize millions of rural families who will leave their land in search of new economic opportunities (Burrows and Kinney, 2016). It will also create new spaces for actions falling outside the law. As evidenced in many regions such as the Central African Republic, Liberia and Myanmar, crises and conflict are potent drivers of illegal and destructive forest use, with timber proceeds being used to pay for weapons or to fund other illicit activity (see also Chapter 5).

4.4 Forest Governance

The above section demonstrated that resource users have a propensity to opt for destructive, often illegal, forest uses to satisfy their demands. At the same time however, humans have always invested in protecting their natural resources against overuse and destruction. Such attempts have been most successful where the users of the ecosystem goods and services had the possibility to negotiate and establish collective governance mechanisms within an area little affected by non-local actors (Coase, 1960; Ostrom, 1998). There are also manifold examples of effective nature protection organized hierarchically,

¹ BRIICS is a grouping acronym that refers to the countries of Brazil, Russia, India, Indonesia, China and South Africa, which are all deemed to be at a similar stage of newly advanced economic development.

however, often at high social costs (Cole and Grossmann, 2002). However, in an increasingly globalized and dynamic world, the challenge for effective forest governance is becoming more and more complex. In this situation, the international community, multilateral, regional and bilateral processes, national and local governments, as well as a wide range of civil society organizations have massively invested in forest governance to soften the above outlined scenario (see also Chapter 7). But, despite some impressive achievements (Elias, 2012; Hoare, 2015), the problem of illegal and destructive forest use still persists in many parts of the world, a fact attributed to a phenomenon commonly called “weak” governance. This section summarizes the reasons listed for this phenomenon, and highlights some more structural problems of contemporary forest governance efforts.

4.4.1 Forest Governance Initiatives

Conditions for effective forest governance have significantly improved in recent years thanks to the global connection of people and initiatives through rapidly improving technologies, in combination with national governments that are more and more integrated into binding political and economic international processes (Huwart and Verdier, 2013). Already in the late 1980s and early 1990s, with the support of the international community, progressive forest management regulations were enacted by the governments of many timber producing countries. Implementing organizations and mechanisms were established at all levels from environmental and forest ministries down to local governmental agencies that defined technical guidelines and bureaucracies to manage and control forest management and conservation activities (Lawson and MacFaul, 2010). There have been significant investments in equipment, technologies, and training and capacity building (Hoare, 2015). Decentralization was pushed forward to achieve more transparency and accountability as a basis for effective cooperation with forest users. At the same time, universities and international and national research organizations received funds for forest-related scientific research and teaching (Jagger et al., 2010; Lambin and Meyfroidt, 2011). International initiatives to fight illegal timber trade were set up (see Chapter 7). Efforts also included cross-sectoral commitments, most importantly regarding human rights, although, insufficiently taken up in many countries (León Moreta, 2015; IASS, in press). More recently in the context of actions to reduce and mitigate climate change, multi-stakeholder initiatives such as round tables on soy and palm oil emerged (Paoli et al., 2010), although again with mixed results in terms of indigenous peoples’ rights and forests (Colchester, 2016). The lively discussion about environmental and social safeguards also relates to these processes (World Bank, 2010).

Many timber producing countries in the tropics invested in the clarification of land tenure to reduce land conflicts, to enhance interest of resource users in legal and more sustainable management schemes, and to facilitate the control of forest activities. Herein, security of tenure

was often given more importance than the issuing of private property rights (Robinson et al., 2011). This process was accompanied by the elaboration of National Forest Plans with an active involvement of relevant stakeholder groups (FAO, 2016b). In the course of these initiatives, forest areas and their functions were defined, including the demarcation of forest concessions offered to companies with the interest and capacity to implement the principles of sustainable forest management. Other forest areas received protection status, in some cases accompanied by the delivery of collective rights to the indigenous and traditional communities living there, with legal use defined by authorized management plans (Pokorny et al., 2013; Pokorny, 2015; IASS, in press).

Finally, initiatives included a bundle of economic instruments to stimulate land users’ interest in sustainable forest management as an alternative to illegal and destructive forest uses. Instruments included tax reductions and the payment of subsidies, in addition to the training and capacity building of timber companies as well as forest communities (i.e. FAO, 2016c). These classic governmental instruments were accompanied by global initiatives for certification (FAO, 2016d), the setting up of carbon markets (Engel et al., 2008) and performance-based payments for climate mitigation under the framework of REDD+ (Brockhaus et al., 2016).

4.4.2 Reasons for Limited Success

Corruption

Corruption is a complex, dynamic and multi-faceted phenomenon. There is no unique definition of corruption agreed in the literature because different disciplines bring different perspectives to the issue (Mungiu-Pippidi, 2015). It generally refers to the abuse of entrusted power and the misuse of resources or power for private gain (DFID, 2015), a definition that has been popularized by the work of Transparency International. Corruption is also categorised on the basis of the type, actors involved and the sums exchanged (e.g. political corruption involving politicians, bureaucratic corruption involving government administrators etc.). When large sums of money are involved, it is called “grand corruption” (and may involve corruption of the political process or of bureaucratic processes). In contrast, “petty corruption” involves the exchange of small amounts and normally takes place in the implementation and enforcement of laws and regulations by mid- to low-level government employees, for example, payments made to forestry personnel or the police to enable illegally-logged timber to be transported (Cerutti et al., 2013).

Corruption may occur if an authority is unable to effectively monitor the providers of a public service, but can also be understood as a collective problem particularly in contexts that show low levels of social and political trust, and deficient mechanisms for institutional and societal accountability (DFID, 2015). Paradoxically, corruption may also be fostered by an excess of complex, and possibly contradicting, formal and informal rules and regulations (Blundo and Olivier de Sardan, 2006)



Box used for reporting corruption notices and cases. Nairobi, Kenya. Photo © Andre Purret

typical for (neo-)patrimonial systems grounded in patron–client relationships or in kinship, ethnicity or religion (DFID, 2015).

Foreign corporations may reinforce corruption patterns through the bribing of officials for contracts, promoting tax avoidance and evasion (Kolstad et al., 2008). This happens especially in countries rich in natural resources where the state has the possibility to generate revenues by selling the rights on these resources to, often international, companies without consulting the affected stakeholders (DFID, 2015). Here politicians run vast patronage networks where the delivery of public services is perceived as a favour rather than a right (Unsworth, 2010).

Aid and specific donor practices may also have these effects (Schultz and Søreide, 2006). It is also debated that donor support to corrupt (and often authoritarian) states has helped sustain and recreate corruption and entrench their power even further (DFID, 2015). It is, however, not always easy to define the boundaries between corrupt practices and other behaviour or actions because corruption may result from non-corrupt interactive networks within a social landscape that relies on social ties and the moral imperative to help one's kin (Olivier de Sardan, 1999). In this sense, investments in personal relationships with public officials can be an insurance strategy to provide for possible future needs (Blundo and Olivier de Sardan, 2006).

Deficient regulations and inefficient law enforcement

Literature on illegal logging points to inefficient detection, policing and enforcement of forest activity due to weaknesses of the instruments set up and ineffectiveness of forest agencies, notably because of corruption (Lawson and MacFaul, 2010). Furthermore, the technical regulations and methods guiding the implementation of the usually well-defined regulatory forest frameworks

are often insufficiently elaborated, and the bureaucracies are complex and slow. In many countries, forest agencies suffer from a notorious lack of financial and human resources to comply with their complex tasks (Lawson and MacFaul, 2010; UNODC, 2015). Institutional as well as global information and communication systems about forests and timber markets are insufficiently developed. Deficient timber and chain of custody tracking instruments seriously affect the transparency of markets. Another issue is the low levels of prosecution, partly grounded in the problem of corruption. Poor forest owners often do not have a realistic chance to seek justice when their rights are violated. Even persons and companies caught for environmental crimes or illegal trade are rarely prosecuted. In many countries, it is common practice to only indict a small number of high profile cases, while a much larger number of smaller offences go unnoticed. Often, criminal justice systems fail to view illicit timber trade as an organised crime (UNODC, 2015). The low fines and minimal criminal sanctions for offenders make taking the risk to commit a crime more worthwhile (see Chapter 5). Independent from this, the effect of penalties and intensified law enforcement is generally overestimated because informal and illegal forest users systematically underestimate the probability of getting caught (see Section 4.4.1). Also at the government level, the lack of enforcement may provide additional incentives for officials to allow forest conversion (UNEP, 2016; U4, 2011; Downs, 2013).

The effectiveness of established forest governance instruments is further reduced due to incoherent and ambiguous legislation. Environmental laws may stand in sharp contrast to other sector regulations and practices and often play only a marginal role (Lawson and MacFaul, 2010). In fact, most countries emphasise economic and financial policies for the development of agriculture, industries and infrastructure (Chandra et al., 2009). This is true for economically poorer countries where the environmental sector is financed to a large degree by overseas aid (Pokorny, 2015) as well as for economically well-developed countries (OECD, 2016), although in the latter the application of environmental regulations is stricter, at least regarding the national forest areas.

Efforts to clarify land tenure, the demarcation of areas for the management and conservation of forests, and the subsequent attribution of rights and responsibilities, are making only slow progress due to the complexity of the problem, inadequate information systems, insufficient financial and human resources and the influence of strong lobbies trying to impose their particular interests (RRI, 2015). Often, too little attention is given to identify and respect customary rights to land and resources (see section on misguided foci).

Limited financial incentives for legal forest uses

Economic instruments such as certification, payments for climate mitigation, subsidies and tax reliefs, have resulted in some successes. Certification, as one of the most successful market-based examples globally, has managed to create a consolidated market niche for timber from

Effects of increased forest regulations on the informal forest sector

The informal timber sector carried out by smallholders in small-scale operations with artisanal means and serving local or domestic timber markets (Bayol et al., 2013) has an enormous economic and social importance for many sub-Saharan tropical timber producing countries from Liberia in West Africa to the DRC in the Congo Basin (IIED et al., 2016; Cerutti et al., 2014). In fact, in most countries such local markets are much more important than the export markets (Wit et al., 2010; Putzel et al., 2015; Cerutti et al. 2014). Yet, a growing interest in the monitoring and verification of legality has put a lot of pressure on this informal network. New forest regulations primarily developed for the large-scale export-orientated forest sector are incompatible with the realities and capacities of traditional forest users. Hence, the new regulations leave little or no room for smallholders and artisanal loggers to justify any of their operations. Forest codes essentially contain only one or two legal options accessible to artisanal loggers, and since the 1990s, they have almost all been suspended or considered illegal (see Chapter 2 for details). Yet, local artisanal loggers have to keep harvesting timber to fill the growing local demand. This criminalization, as with many other informal value chains (Putzel et al., 2015), makes them vulnerable to corrupt state officials (Cerutti et al., 2013), threatens their livelihoods and fosters conflicts in rural areas. Frequently, the same resources are attributed to larger-scale loggers with the political connections and financial means

well-managed sources. However, price incentives are insufficient for significant further expansion (Meijaard et al., 2011) notably because the parallel international effort to promote legal trade may negatively affect the interest in certification of producers and consumers. Furthermore, for smaller enterprises and, more so, for poor forest communities, transaction costs are too high (Medina and Pokorny, 2014).

This also holds true regarding the emerging massive voluntary carbon markets. Also here, the technical and bureaucratic requirements needed to document and report carbon values regularly exceed the capacity of local forest users. Additionally, the payments themselves may be too low to compensate for lost economic opportunities. For example, net present value of oil palm plantations ranges between USD 6,000 and USD 9,000 per hectare while carbon credits for standing forests range between only USD 614 and 994 per hectare (Pacheco et al., 2012; Fisher et al., 2011). Attempts to scale up locally successful payment schemes for other forest services such as the provision of clean water and clean air, have been even less attractive, so far (Pearce et al., 2001).

Misguided Foci

Many of the efforts for improved forest governance also suffer from systemic problems caused by questionable assumptions and insufficient consideration of reality. Some governance measures instead of contributing to the legal and sustainable management and conservation of forests may even accelerate illegal and destructive forest uses.

Overregulation

Efforts to regulate the forest sector themselves may create perverse incentives. Technical guidelines, legal requirements and bureaucratic processes imply costs and uncertainties for forest managers. Thus, instead of generating the benefits needed to convince forest managers to switch from illegal and destructive to legal and sustainable forest regimes, in practice, regulations often have the opposite effect. For the vast majority of local forest managers, it is literally impossible to comply with the newly established regulations that are beyond their capacities and realities

(Pokorny, 2013). De facto, forest regulations exclude most local forest managers from the possibility to legally use their forests without massive external support by NGOs, or, often unfavourable, arrangements with timber companies (Pokorny, 2013). Forest regulations further accentuate the appeal of the much less-regulated agricultural sector over the forestry sector. This problem is reflected by the fact that in many countries prices for deforested land are higher than those for forest lands (Pokorny and Pacheco, 2014). In other cases, people intentionally destroy their forests or hinder natural regeneration to avoid legal constraints to future land uses (Adler, 2007).

Ignorance of customary forest users' potential

One of the main shortcomings of contemporary efforts to improve forest governance is its, often implicit, preference for larger timber companies and export markets. The potential interest by customary forest users, local value chains or informal markets to use resources wisely is widely ignored or even opposed (Lawson and MacFaul, 2010) although recent research clearly indicates that the economic and social importance of the informal forest sector in most countries exceeds by far the magnitude of the formal sector (IIED et al., 2016; Cerutti et al., 2014). The informal sector may include customary forest uses for subsistence and the commercialization in local, regional and national markets, as well as the involvement of local forest managers as providers of logs for international value chains. Ignorance of this potential is not only visible in the incompatibility of forest regulations with the reality of local forest users, but also through the lack of willingness to recognize customary rights to land and resources (HLPE, 2011). In the extreme, countries may not even provide the possibility for local communities to legally use forests. In fact, newly set up forest regulations have shifted the vast majority of local forest managers from informality into illegality (see Box 4.3).

Notorious short-term focus on economic growth from an urban perspective

Despite serious efforts and a societal desire to protect forests and to fight illegal logging, many actor groups

in producer and consumer countries are motivated by other priorities. Many entrepreneurs, companies and consumers but also poor forest dwellers are more interested in profits, affordable prices, good quality, the generation of urgently required income and, in the case of people living in remotely located forest regions, better access to consumption markets and public services (IFAD, 2010). Moreover, policymakers tend to follow their individual interests and thus favour economic over environmental aspects in their calculations (Beniers and Dur, 2007); they frequently ignore the long-term economic costs of soil erosion, water quality and quantity impacts or greenhouse gas emissions when setting policies. Governmental decisions in favour of mining and energy installations and the construction of roads into protected forest areas, the establishment of settlements in inadequate forest settings, and the attraction of agro-industrial investors (Pokorny, 2015), often accelerated by corruption, reflect this lack of concern. Consequently, an existing collective interest in environmental protection is overruled by the cumulative sum of individual interests, or, in more general terms, by the wish for short term economic gain and development. A broad phalanx of actors interested in individual benefits creates an unfavourable context for good forest governance and may, at least partly, explain why contemporary measures are so hesitant to tackle the “real” reasons for illegal and destructive forest use, including road construction into forest areas, the expansion of commercial agriculture, an inequitable global economy, power imbalances, aspirations for consumption and unregulated financial markets (Kissinger et al., 2012). Current efforts for improved forest governance also suffer from unrealistic expectations regarding the possibility to control and repair the environmental damages caused by exploitation of nature. Discourses still uphold the idea that effective control, technical innovations and professional management can make the exploitation of forests and other natural resources compatible with the lifestyle and societal systems of modern mass consumption societies (Weizsäcker et al., 2009) despite evidence to the contrary (MEA, 2005). In parallel, there is an assumption that the internalization of environmental costs in the decisions of economic and political elites is possible, although research suggests not (Beder, 2011).

4.5 Conclusions

Illegal and destructive forest use is driven by several mutually reinforcing factors. People make decisions to maximize individual benefits and insufficiently consider externalities and the related costs sustained by all. Thus, capital-endowed actors as well as poor forest dwellers may drive illegal and destructive forest uses, albeit for different reasons. Poor resource users favour land uses that immediately generate urgently-needed income and tend to inadequately manage or overuse accessible resources due to a lack of assets and alternatives; capital-endowed actors enforce the most profitable land uses to

satisfy excessive profit expectations at lowest risk; and consumers are especially interested in low prices and the quality of the product. Sustainable management of forests on a legal basis does not respond to the needs, interests and capacities of most resource users, be it due to low profit margins, major technical and bureaucratic requirements, or the risk related to long-term investments. From an economic perspective, only resource users strongly committed to the resource and with low profit expectations may feel sufficiently attracted by such an option. These may include some conservative indigenous and traditional communities, as well as corporate actors interested in improving their market position by capitalizing on a growing group of consumers demanding green products (Pokorny and Pacheco, 2014).

Decisions of resource users are embedded in a broader societal context characterized by a strongly unequal distribution of power and wealth that allows economic elites and better-off societies to enforce their interests at a global scale. Within this context, illegal and destructive forest uses are often more practicable and attractive than those that are legal and sustainable. This already problematic situation is expected to worsen due to a massive increase in demand combined with improved technologies for the agro-industrial production of commodities, and funded by profit-seeking banks, insurance companies, multinationals, entrepreneurs and private households. Particularly remote forest regions may be a target for these investments.

These contexts and trends that favour illegal and destructive forest uses are difficult to change. In an attempt to improve this scenario, the international community, multilateral, regional and bilateral processes, national and local governments, as well as civil society organizations have invested massively in forest governance. While impressive achievements are reported, a number of shortcomings place limits on the success of these initiatives, namely: the problem of corruption, deficiencies in the design and performance of regulations and enforcement institutions, as well as the existence of some strategic errors. The emphasis on larger timber companies and export markets given by governance measures, and the insufficient consideration of the potential and needs of customary forest dwellers active in informal market networks are particularly critical.

Despite the existence of many examples from both developed and developing countries of governance approaches that have succeeded in shifting old patterns of illegal and destructive logging to legal and sustainable forest use, it remains open to what degree such schemes can effectively influence the overwhelming adverse global momentum fuelled by economic and demographic development on the one hand, and economic, political and environmental crises on the other.

In such a situation, short term efforts may have to concentrate on controlling capitalized profit-seeking actors because of their high impact and the likelihood of influencing them. In parallel, it makes sense to support customary forest users and actors with interests that are realistically achievable through legal management of

forests. Research needs to invest in the identification and promotion of such opportunities.

To achieve broader success in the fight against illegal and destructive forest use, however, requires a better understanding of the carrying capacity of our world, the nature of economic actors, and responsibility in this complex setting. Honesty and awareness is a fundamental prerequisite for effective action (Kollmuss and Nagyeman, 2002). This would provide the basis for a profound transformation from a mass-consumption society towards one that prioritizes environmental and social goals over material well-being: a noble task for academia.

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