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Illegal logging in the context of the sound use of wood¹

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Paper by Mrs Laura Bouriaud and Mr. Anssi Niskanen
European Forest Institute, Finland

ABSTRACT

From legal perspective, illegal cuttings can be understood as logging done with the infringement of criminal law (timber robbery) or of administrative law (harvest regulation). Timber robberies diminish the owner's propensity for long term investments and increase the costs of forest management, whilst the infringements of harvest regulations signify often non sustainable forest practices (unsustainable cuttings, logging of immature stands and trees, logging in areas reserved for nature protection, etc.). Also, illegally cut wood – being cheaper in the markets – compete on unfair terms with wood from sustainable managed forest, thus resulting to a market failure.

The paper makes a short review on what illegal logging mean by definition and presents some data about the importance of illegal logging in selected CEE countries. The results indicate that the recorded volume of illegally removed timber generally varies from one to six percent from the total volume harvested. The amount of wood illegally harvested but not included in the official statistics was not possible to estimate. However, in the case of private forests, illegal logging may reach up to 10 % of the total harvests. The paper discusses the economic losses due to the illegal logging and how these losses are distributed between the main stakeholders of forest sector.

Using data and examples from selected CEE countries, the paper draws attention under which conditions illegal logging may threat sustainable forest management and forest preservation and how they may affect the efficient utilisation of forest resources.

Key words: Illegal logging, sustainability, economic, sound use of wood

¹ The results and conclusions presented in the paper are only of the authors, based on their research work on the subject in the second half of year 2002.

WHAT IS ILLEGAL LOGGING?

The definitions of illegal logging vary between countries and time (Callister, 1999; Contreras-Hermosilla, 2002; Ahas, 1998; Morozov, 2000; WWF' Forest Conservation Portal; Transparency Moldova; Global Forest Watch, etc.), and it is difficult to find a single explanation on what logging is illegal. In this paper the category of law encroachment instead of the forms of illegal logging are investigated. The definition to include timber robbery and unauthorised logging on illegal logging is applied (Fig. 1).

From the legal perspective, illegal logging can be understood as logging done with the infringement of criminal law (timber robbery) or of administrative law (e.g. legally binding forest management and harvesting regulations). The definition that what the law says is illegal is illegal might be considered somewhat tautological, but in fact it represents a definition to illegal logging helpful for analytical purposes and endorsing several international initiatives in this field. It is also in line with the outcomes of the European Commission workshop on illegal logging outcome that included a conclusion that legality in logging activities means the respect of the laws of timber-producers countries (FLEGT, 2002: 12).

In CEE countries, as elsewhere, the rules of logging as part of forest management activities are settled out by basic forest laws (Forest Act, Forest Code) and detailed at the stand level by regulations and guidelines for forest management. In this respect, illegal logging can be seen to mean all harvests done in the infringement of forest law and of regulations for forest management. With this definition approach and within the framework of CEE forest legislations, illegal logging may be defined as trees harvested without the owner's agreement (robbery, or illegal appropriation) or without respecting the constraints imposed by law (unauthorized harvests).

It should be noticed that illegal logging is only a part of illegal activities in forest sector, which can also include illegal timber processing and illegal trade of wood and wood products. Nevertheless, illegal logging is often classified to include "timber robbery" and "unauthorized logging", rather than the spectrum of illegal aspects in the whole forest wood chain. In some cases (Lithuania, Czech Republic) the statistics on illegal logging record also the violations against other administrative norms, e.g. environmental, labor protection, tax rules, etc. In these cases the illegality in logging is not, however, forest-specific.

Definitions also exist that all timber produced with illegal methods is illegal, and contributes to create parallel markets difficult to control regardless the nature of rule infringed (Ahas, 2001). The Estonian Green Movement, for example, has identified as illegal logging – measured in percentages of the total volume of felled timber: timber robberies - 5%; violations against felling regulations - 20%; fellings not providing necessary documentation - 20%; fellings where employer's taxes and/or income tax are not paid- 50%; and fellings where value added tax and other taxes are not paid - 15%.

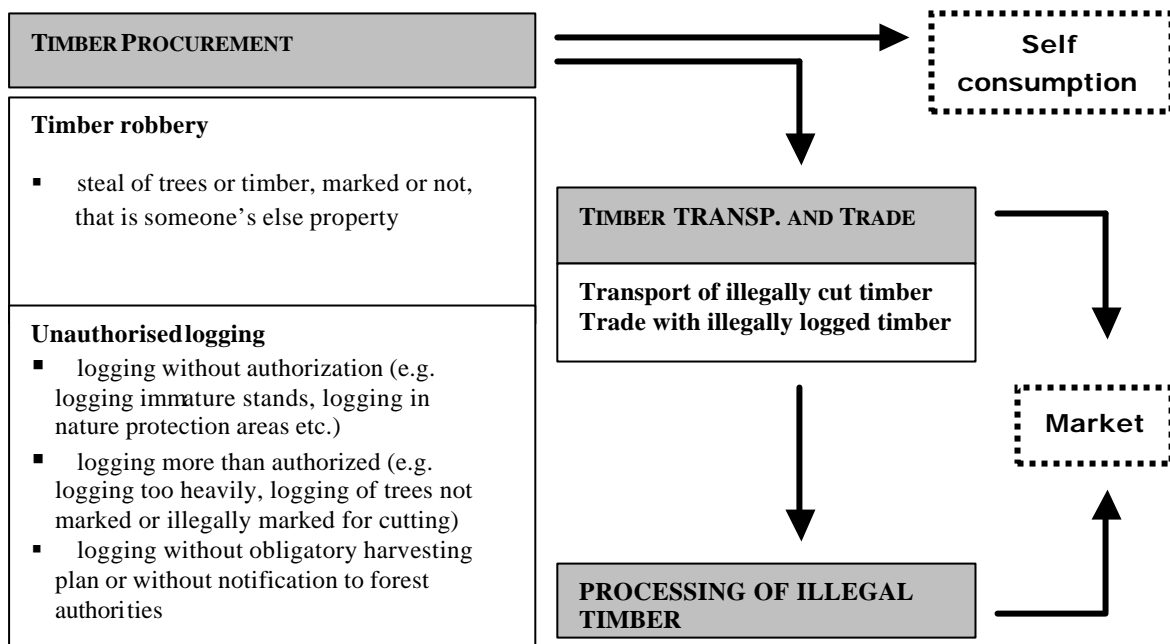


Figure 1. Illegal logging and forest wood chain.

A special point often connected to illegal logging is corruption. Despite of particular interest on this matter in conjunction with illegal logging (see Callister, 1999; Contreras-Hermosilla, 2002), there is no formal definition for corruption². For example, some ten different infractions that are described in Romanian penal law could be put under the “corruption” umbrella, but no record exists on the number of corruption cases³. In the context of illegal logging, corruption could be narrowly defined as the illegal logging done or facilitated by public officials. Illegal logging represents a wider issue than corruption: some illegal logging may be, indeed, apparent manifestation of corruption, but all illegal logging are not connected to corruption at any way.

Also some lawful management practices could in fact mean to infringe the objectives of the law. For example, sanitary logging may constitute a “grey” area of timber logging (“loophole” in Contreras-Hermosilla’s, 2002, study), if control on their intensity does not exist or is insufficient. The issue of violations against law with legally sound operations has been analyzed, for example, in the case of thinnings and sanitation cuttings of the public forest service in Russia (Morozov, 2000).

² Contreras-Hermosilla (2002) quoted three definitions, coming respectively from Schleifer and Vishney, 1993, Transparency International, 1996, and World Bank, 1997. According to these, corruption involves public officials, who sale or use public or government property for private (personal) gains. Transparency Moldova made known on Internet recently some facts of corruption between forest administration in Moldova, in publishing the official investigation report of the Financial Court (Curtea de Conturi).

³ The reason is the profession of the person who infringes the law. In “corruption” activities, the person should be a public official, whilst in “illegal” activities the profession of the person *per se* does not matter.

HOW MUCH TIMBER IS ILLEGALLY LOGGED IN CEE COUNTRIES?

Table 1 illustrates the available data on the volume of timber illegally logged (stolen and unauthorized cuttings) and its relative share in comparison to the total volume of annual timber harvests in selected CEE countries. It should be noted that the figures from official statistics may be unreliable and rather underestimate than overestimate the real amount of wood illegally cut.

Table 1. The volume of timber illegally logged in selected CEE countries.

Country	Year	Stolen 1000 m ³	Unauth. 1000 m ³	Illegal log. total 1000 m ³	Vol. total harvested 1000 m ³	Illegal log from total vol.	Source Remarks
Albania	1997	na	na	565	706	80.1%	Pettenella, 1999
	1998	na	na	124	298	41.6%	
Romania	1997	112	25	137	14500	0.9%	RNP, Internal sources
	1998	120	28	148	12600	1.2%	
	1999	122	26	148	14200	1%	
Estonia	1999	na*	129	129	2985	4.3%	Yearbook of forests, 2001
	2000	na*	172	172	2923	5.9%	
Czech Republic	1998	na	111	111	14990	0.7%	Ministry of Agriculture, different years
	1999	na	152	152	14200	1%	
	2000	na	148	148	14400	1%	
Slovenia	1998	na	na	122	2500	4.8%	Statistical yearbooks of Slovenia
	1999	na	na	95	2400	3.9%	
	2000	na	na	91	2600	3.5%	
Lithuania	1999	1.4	15	16.4	4900	0.3%	Lithuanian forest statistics
	2000	1.4	25	26.4	5300	0.5%	

na - not available

For Estonia, the records of illegal logging include the number of cases and the total value of economic loss, but not the volume of illegally logged timber. The relative share of illegal logging presented in this table for Estonia is less than the estimated volume of illegal logging by the Estonian Green Movement (in Ahas, 2001).

In the system of records of illegal logging, large differences exist between countries. In some records illegal logging consists of both timber robbery and unauthorized logging, in other records illegal logging includes only unauthorized logging. In some cases, (for example, Yearbook of Forests, Estonia, 2001: 85), the records make reference to the number of cases of illegal logging and to the total value of loss, but not to the volume of wood. Thus, the figures presented in Table 1 should be seen as indicative and at best giving an overview of how much is officially recorded as illegal logged timber. In practice, the figures in the Table 1 represent the low estimates of the volume of timber illegally logged.

The figures in Table 1 indicate that, except in Albania, the recorded volume of illegally removed timber generally varies from one to six percent of the total volume harvested. How reliable these figures are, was not possible to estimate. In comparing the differences between the volumes of illegal logging, one should keep in mind that they have been obtained from official records and that they are therefore dependent on a specific institutional context. Accordingly, the relatively high level of illegal logging recorded in Slovenia does not necessarily mean

particularly high share of illegal logging in the country in comparison to other CEE countries. It may rather be a result of functioning organization on the control of law compliance in forestry. In Slovenia the strong assistance of private forestry by the state forest service representatives (FAO, 1997) may make it easier to monitoring illicit activities in forestry.

Illegal logging may be higher in private than State owned forests. For example, in Lithuania, the volume and number of illegal logging recorded in private forests doubled between 1999 and 2000, whereas the number of cases recorded in State forests remained approximately at the same level. Also in Romania, according to the forest authorities, timber robberies tend to be located now more in private forests than earlier. The example from the Suceava County in Romania illustrates the significant differences on the intensity of illegal logging according to the holder of forestland (Table 2).

Table 2. The volume and intensity of illegal logging in different ownership categories in Suceava County, Romania.

	1992	1993	1994	1995	1996	1997	1998	1999	Total
Volume of illegal logging, cubic meters									
in State forests	17379	8867	10189	11186	12863	12979	15101	10391	98955
in private forests	1949	10603	70286	202362	100820	45242	25440	25428	482130
in municipal forests	3376	1453	3307	2302	1200	2003	10152	1068	24861
Intensity of illegal logging cubic meters /100 ha of forests									
in State forests	4,1	2,2	2,4	2,7	2,9	2,9	3,6	2,2	
in private forests	12	68	453	1304	646	283	158	150	
in municipal forests	48,2	21	47,9	33,4	17,4	20,4	11,6	12,7	

Source: *Directia Silvica Suceava, different years*

In principle, the average volume of timber stolen per case could be an indicator of the final destination of timber and of the amplitude of the phenomenon. The higher the average volume per case, the more likely the final destination of timber stolen is in wood processing. On the other hand, low volumes of timber robberies may indicate the household use of wood. According to the recorded cases, the average volume of stolen timber per case in 1999 was 3 cubic meters in Romania and 12 cubic meters in Lithuania, whilst the data available for Estonia for 1998 show an average volume of illegal felling (unauthorized logging) of 64 cubic meters.

DO ILLEGAL LOGGING MATTER IN THE CONTEXT OF SOUND USE OF FORESTS?

Timber robberies diminish the owners' benefits from his/her forests, whilst the infringements of harvest regulations means often non sustainable forest practices (unsustainable cuttings, logging of immature trees, logging in area reserved for nature protection, etc.). In both cases, the cost of forest management increase and the value of future forest revenues decrease. In the following, the consequences of illegal logging upon the sound use of forest resources are discussed from the sustainability and economical viewpoints.

Violation against sustainability

Sustainability has been commonly accepted as the leading principle for forest management in new forest laws adopted in CEE countries during the last decade. The traditional criteria for sustainability that was mainly concerned on sustainable forest yield has been updated with objectives on multifunctional forest management and biodiversity protection. A common judgement to remark that illegal activities are unsustainable is because they break the “rules” of sustainability fixed on the forest laws. The question of illegal logging violating sustainability includes not only the share of illegally harvested timber, but also the role of illegal logging in deforestation, diminishing the value of preserved forests and decreasing the quality of forest stands.

At a first sight, the amount of illegally logged timber appears a small threat for sustainable forest yield (assuming that officially recorded volumes are reliable). Even in taking into account the volume of illegal logging, the total harvested volume often still remains lower than the annual allowable cut would be, for example, in Romania, Lithuania or Estonia. However, when the amount of illegal logging are considered in some specific areas like in private forests, or the potential overharvests in sanitary cuttings or the likely violations against the sustainable forestry after its broader definition, the impact of illegal logging clearly becomes a matter of concern. If looking the Romanian example more closely, the authorised volume to be harvested that is marked⁴ by the forest authorities in private stands was about 4.9 million cubic meters during the last decade (1989-1999). Only 70%, or 3.4 million cubic meters of this volume has been actually harvested. If one, however, adds to this figure the volume of timber from illegal cuttings in private forests, that is approximately 6.6 million cubic meters (MAPPM-RNP-ICAS, 1999; Bouriaud, 2001), the overall result would be that the harvests from private forests increased up to 10 million cubic meters. This is 40 % higher than the allowable cut for the same period in private forests. In this Romanian example, an obvious consequence from illegal logging in private forests has been deforestation as definitive change of land use, resulting partially to the loss of 30 thousand ha of forests during last decade (Anuarul statistic al Romaniei, insee.ro). Another obvious consequence has been the increase in an area of damaged stands, because of extensive uncontrolled thinnings.

Costs of illegal logging

Illegal logging create conditions for an inefficient use of timber and may lead to a vicious circle of resource waste (FLEGT, 2002). Illegal activities lower the propensity to invest in long term options, depress market value of forest products, misallocate investments in forest management and reduce governments income (Contreras-Hermosilla, 2002). From an economical viewpoint, illegal logging represents socially negative phenomenon for two reasons: illegal loggings increase forest management and transaction costs; and secondly, illegal logging leads to market failures.

⁴ The marking of trees, used in Romania, Lithuania and Slovenia in private or public forests while harvest is planned, consists in putting a mark with the help of an official hammer on each tree sold, at the level of the stump and at the level of the log. The idea is to cut only selected trees (sylvicultural objective), but also to control the removal of timber. The forest warden and/or the forest owner are responsible if stumps are found without the mark of the official hammer.

The utilisation of forest resource is more costly in the case of presence of illegal logging than without them. Different categories of costs that are affected by illegal logging include:

- Direct costs. Because the economical and/or ecological value of the forest asset is reduced due to illegal logging, e.g. also the lost tax revenues. Theoretically, the value of illegal logging and the value of growth loss could be compensated through penalties, which might also include a premium for environmental damage. Nevertheless, the compensation remains theoretical unless the authorities can discover the actors behind the illegal logging and unless the criminal process results to a penalty through actual financial payment. As it is very obvious that most of the actors of illegal logging will never be identified, as is in 70% of cases in Romania, illegal logging represents a real economic cost for the forest owner and to a great extent also to the society. It is likely that the direct costs of illegal logging are higher than the direct benefits from the use of illegally cut timber.
- Opportunity costs. These costs appear because the resources used to prevent illegal logging would result to economic gains if used for other purposes.
- Transaction costs. The transactions costs are related to the reinforcements and the measurement of property rights (North, 1990). The higher is the value of timber, the higher are the costs of specification of harvesting rights, and the more costly it is to monitor the compliance to the rules. Also, the higher is the value of an asset, the greater are the efforts and costs of individuals to prevent its unwanted use (Barzel, 1997).

Forest guarding represents an example of a direct cost related to the reinforcement of property rights. Guarding aims to ensure the exclusivity of owner's property rights against timber robbers. Other measures aim to ensure the legality of timber harvests: the marking of trees (Romania, Lithuania, Slovenia), the administrative harvest permits (in all CEE countries), the control of timber transportation (an official document is required in the case of timber transportation for example in Lithuania, Romania, Hungary and Estonia). The costs of property rights reinforcement and the costs of legality control are sometimes in the charge of forest owner, sometimes they are shared between the State and the forest owner. An example of the latter is a situation where the marking of trees is compulsory, and the owner has to partially pay an official forest representative to do it. In some cases the costs of property rights reinforcement and the costs of legality control are exclusively in the charge of the State, like in the case of timber transportation control.

The market failure appears also when the illegally cut wood, being cheaper in the markets, competes on unfair terms with wood from sustainable managed forest. The marginal rent of agents operating illegal logging is represented by the stumpage prices that they do not pay. In the Albanian case that is 20% of the final price of timber sold (Pettenella, 1999). In reality, the rent is lower than 20%, because illegal trade involves transaction costs higher than in the case of legal trade. In the CEE countries, a supplementary rent appears because of comparative lower prices of wood in international trade. Thus the incentives to do illegal logging are very high: for example, a cubic meter of ash costs one dollar if stolen in Russian forests, and it could be sold in 600 dollars to Japan (Contreras-Hermosilla, 2002).

On the other hand, the illegal harvested volume of timber leads to an increased supply of wood into the markets and to a lower price of timber. This may significantly impact on the financial return to the forest owner and also the state forest service via reduced tax revenues.

As a part of forest management activities, the state forest service has to perform forest guarding due to a risk of timber robberies. It has to also organise the marking of trees, establish

forest management plans for private forest owners, organise the control of timber transportation, etc. which all cause additional costs for state forest service. Moreover, the state forest management may be affected indirectly by the illegal logging: if illegal quantities of timber become available at lower prices from other forest owners, the State will obtain lower price on wood also.

DISCUSSION

Illegal logging will inevitably shape in the long run the characteristics of forests in those countries where it is a severe problem. Due to the clear violation against the principles of sustainability, illegal logging is a threat not only for forest management and forest environment, but also to the system of forest and related policies aiming to support sustainable development.

The major problem in assessing the magnitude of illegal logging is the availability of data. The data presented in this paper was based on official records and statistics, but it is unlikely to represent the magnitude of illegal logging correctly. Most obviously illegal logging is higher than recorded officially. This may be due to restricted resources and possibilities to find and report all illegally cut wood.

How severe threat to sustainability illegal logging represents, is a complicated issue where at least the following points should be made:

- The significance of illegal logging to sustainability differ if the sustainability is considered over large areas or reported to some particular categories of forests (private versus public; remote forested area versus forests near to villages or towns; woody regions versus woodless regions).
- Illegal logging do not necessarily significantly contribute to resource depletion; for example, in all other countries studied except Albania, illegal logging did not overreach the annual allowable cut when calculated at the national level, irrespective to the category of forests or to the location of forests. Nevertheless, illegal logging may represent a clear risk, if they are added to other felling of illegal nature (as part of sanitation cuttings may be), or if more strict than timber yield criteria for sustainability are applied.
- Illegal logging may results to severe ecological consequences. Besides the diminishing stand timber quality (often, illegal logging represent the harvest of the most valuable trees of the stand), and the location of illegal logging (illegal logging affect often protected forests and forest reserves), the stability of the stands may also be negatively affected. Illegal logging may, for example, decrease the stability of stands against storms and other natural hazards.
- Illegal logging are often much higher in private forests than in public forests (up to two or three times in Estonia and Romania), whereas the average age of stands, the production class and stand density are often lower. While the forest legislation in CEE countries hardly accepts discrimination between rules of management in private estate and in public estate (see Cirelli, 1999), these differences could probably not be explained totally by physical characteristics of soil and site production characteristics. Rather, the difference may be due to different forest management practises but also higher share of illegal logging in private forests.

For the future, especially the questions of scale and the timing are essential issues to be considered for clarifying the relationship between illegal logging and the sound use of forests. The scale issue requires further analyses on illegal logging, such as: How much wood is illegally cut? Which are the consequences of illegal logging, especially if they concentrate on a certain area? Which characteristics of private forests are influenced because of illegal logging, and how this affects on sustainability? How illegal logging affect the potential of forests to regenerate? How illegal logging could be taken into account when making the annual allowable cut decisions?

The question of timing forwards the emphasis of illegal logging issue to the field of politics. The political will to cope with illegal logging represent an expression to equally prefer the welfare of future generations as that of present generation. Illegal logging benefit the welfare of present generation at the cost of future generations.

Means to restrict illegal cuttings are largely debated. Should they be based on better law enforcement, what is the role of international agreements and public pressure to lead for a better control on illegal logging, how different actors in forest wood chain could influence on illegal logging and would forest certification provide tools to help decrease illegal logging? These are some of the questions for future research in this field.

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