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## NON-REGULATED AND ILLEGAL LOGGING IN ARMENIA AND ITS CONSEQUENCES

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*Key words - illegal logging, forest area, forest programs,  
forest policy, forest monitoring system*

### INTRODUCTION

#### **Current status and recent trends with respect to forest area of total land area**

Today the forest cover in Armenia is less than one third of the estimated coverage 4000-6000 years ago. Given the current economic, social and political conditions in the country this decline is likely to continue and probably accelerate. This poses a serious threat to the long-term sustainable development of the country. The best possible estimates indicate that as much as 35% of the country's territory was covered by forests 4,000 to 6,000 years ago (Moreno-Sanchez R. and Sayadyan H., 2005). According to the assessments of prof. P.Khurshudyan the forest cover in Armenia was around 35-40% (Khurshudyan, P.1999). By the XVIII century it is estimated that this coverage had been reduced to 18%, and by the early 1990s, according to the last, reliable forest inventarization works to 11.2% (Khurshudyan, P.1999). The most recent estimates put the total forest cover at around 7 to 8% of the total area of the country or approximately 245,000 hectares (Moreno-Sanchez R. and Sayadyan H., 2006). Studies, by involvement of satellite images, in this respect are continued. Chief forester of Armenia, during personal communication with author, has mentioned that circulation of such a rate of forest cover lost is absurd, as forest cover in term of land-use has not changed (despite forest could not be there) and nobody can approve something before national forest inventory will take place (Personal Communication, 2006). According to other sources forests in Armenia constitutes 12,7% (Statistical Yearbook of Armenia-2004) or 12,4% (State of the world's forest-2005, FAO) of total area. The north-eastern and south-eastern parts of the country, and the eastern bank of lake Sevan naturally have the most favorable climatic and environmental conditions for the growth of forests. In 1991 62% of the forest cover is found in the northeast, 36% in the southeast, and only 2% in the central region of the country. In 1992 the growing stock was around 41 million m<sup>3</sup>. Some 9 million m<sup>3</sup> of these are located on steep slopes at high elevations without access roads.

#### **Ongoing major forestry programs**

The on-going major programs to address the governance weaknesses in the sectors relevant to forestry included: World Bank (WB) Natural Resources Management and Poverty Reduction Project (NRMPRP) and Reforestation and Forest Development Fund (RFDF) activities initiated by Armenian government. RFDF was established by Armenian Government Decree N891 of June 10, 2004. Assisted by the Ministry of Agriculture (MoA), the RFDF had managed to implement specific action aimed at forest rehabilitation in Armenia since that time. In particular, according to the executive

director of RFDF, in compliance with the agreement signed with "Hayantar" CSJSC, AMD20.5MN-worth of reforestation work was carried out on 34 hectares of the Nork Forest in Yerevan.

NRMPRP is the biggest on-going activity in the forestry sector to address governance weaknesses. For 2002-2008 periods WB initiated NRMPRP, which is divided into four components including forestry. The total worth of project is US \$16 million, from which US \$4,03 million is dedicated for forestry component to strengthen legal and institutional framework, increase human resources capacity and demonstrate improved forest management practices. Forest Institutional Support Project (FISP) of forestry component granted by Swedish Agency for International Development (SIDA) produced Illegal logging report (Illegal logging, 2004) and Action Plan (Action plan, 2004).

SIDA provided support for Swedish University of Agricultural Sciences (SLU) and State Agrarian University of Armenia (SAUA) for the long-term (2001-2007) cooperation in the forest education filed. Thanks to this cooperation in 2003 Forestry Department were established at SAUA. This is very important, as before higher forestry education were absent in the country and few specialists get their professional education in Russia, Ukraine, Georgia and elsewhere. SLU-SAUA cooperation will provide material-technical bases, reference library and other facilities for forestry education, training and consultancy. This is a good chance to fill the professional lack in the forestry sector which is very urgent (Tarverdyan A. et al. 2003; Vardanyan Zh. and Sayadyan H., 2005).

#### DEFINITION OF ILLEGAL LOGGING

There is no national definition of illegal logging in Armenia. According to the 1978 USSR Forest Code all forests in USSR were divided into 3 major groups: protected forests (Group I); forest with restricted industrial uses (Group II) and industrial forests (Group III). In the I group forests only sanitary (cutting dead, infested or diseased trees), treatment and reproduction (cutting over mature forests) cuttings were allowed. In 1978 all Armenian forests were designated as Group I forests, where all types of logging which do not meet Group I definition are considered as illegal.

The compatibility of Armenian understanding of illegal logging with World Bank definition of illegal should be considered cuttings: outside a concession area, in excess of quota, in a protected area, without appropriate permits, without complying with bidding regulations, without submission of required management plans, in prohibited areas such as steep slopes, river banks, and water catchments, that contracts with local entrepreneurs to buy logs from protected areas, removing of under/over sized trees from public forests, reporting high volumes extracted from forest concessions to mask that part of the volume is from non-authorized areas outside of the concession boundaries, using bribes to obtain logging concessions, using deceptive transfer pricing and other illegal accounting practices to distort prices, volumes, cash flows and debt service levels, that engages in the illegal transport and trade of timber or the smuggling of timber, that is processed with out the required licenses and that is not in compliance with environmental, social and labor laws.

## ILLEGAL LOGGING

### Volume of illegal logging

According to official report from 1995 (Ter-Ghazaryan, K. et al. 1995) plans were made to supply fuel-wood to the population during 1993. Before 1993, the fuel-wood cut was usually fixed at 60 000 m<sup>3</sup> per year. In 1993 the harvest was raised to 100,000 m<sup>3</sup>, of which about 45,000 m<sup>3</sup> was allocated for fuel-wood. Approximately 200,000 m<sup>3</sup> quotas were allocated among the several FE. In reality, the plan was difficult to realize because of fuel limitations, and the transportation of the wood to distribution areas was a major impediment. Estimates (National environmental action plan for Armenia, 1997) of the volume of the illegal cutting suggest that 700, 000-1, 000 000 m<sup>3</sup> of wood were cut illegally in each of three winters 1992-1995. According to forest resources assessment data (Thuresson, T. et al. 1999) forested areas close to population centers became the main source of fuel-wood during the winters of 1991-1993 and were heavily damaged. As a result, nature protection, aesthetic and sanitary-hygienic situation in the settlements has substantially worsened. Legal and illegal cuttings during 1991-1996 resulted 600 thousand m<sup>3</sup>/year (Thuresson, T. et al. 1999).

According to (Action plan, 2004) illegal logging in Armenia is conducted mainly by local communities for survival through unauthorized timber extraction from the state forests. The timber consumed by rural households was estimated to be 568 000 solid m<sup>3</sup> annually. Unauthorized timber selling for commercial purposes was estimated to be 150 000 solid m<sup>3</sup>. The overall timber production was estimated 847 000 solid m<sup>3</sup> in 2003, from which officially allowed and registered volume constituted 63 000 m<sup>3</sup> (Illegal logging, 2004). According to country profile (Armenia country profile, 2002, (<http://www.un.org/esa/agenda21/natlinfo/wssd/armenia.pdf>)) in each of the last six years at least 1,000,000 m<sup>3</sup> of wood has been illegally cut. Thus cuttings in average is 1,000 000 m<sup>3</sup>/year, which makes 13, 000, 000-14, 000 000 m<sup>3</sup> for last 13-14 years (1992-2005) (Table 1). The last figure could be compared with absolute annual growth which constituted about 450, 000 m<sup>3</sup> (officially accepted).

*Table 1*

Summary of legal and illegal logging volume in m<sup>3</sup>, according to different references  
(Level of official loggings always could be considered 65-70 000 m<sup>3</sup> annually)

<b>Total volume of illegal logging</b>	<b>Fuel-wood share in legal+illegal logging</b>	<b>Industrial wood share in legal+illegal logging</b>	<b>Reference</b>
206 600 (1993)	190 500	10 100	Ter-Ghazaryan, K. et al. 1995
700 000-1 000 000 (1997)	600 000-850 000	100 000-150 000	National environmental action plan for Armenia, 1997
600 000 (1998)	450 000-400 000	150 000-200 000	Thuresson, T. et al. 1999
1 000 000 (2002)	800 000-750 000	200 000-250 000	Armenia country profile, 2002
847 000 (2004)	568 000	279 000	Illegal logging, 2004

### **Types of illegal logging**

Before 1991, Armenian wood processing industry demanded about 900, 000-1, 000, 000m<sup>3</sup> timber, which by 95% (mainly as round wood and sawn wood) were transported by rail from Russia. Just after 1991 this import was fully ceased and changed by wood supply from Armenian forests through mainly illegal cuttings. Illegal logging study (Illegal logging, 2004) claim local communities in illegal timber extraction, which is too far from reality. It might be that it was a case in 1992-95, when in Armenia there were real energy crises and people were enforced to cut forest for fuel-wood. Currently in many parts of Armenia natural gas is intensively introducing, which hopefully will decrease pressure on forests as a main source for fuel-wood and heating. From the other side it's evident that local community members will not cut valuable trees for fuel-wood. Instead it is logic to think that there is well formulated wood processing industry, which started directly in the forest and ended in Yerevan or other big cities or even exported. Local community members, as cheap labor force could be used by private wood processing companies, which most probably will be interpreted in other way. As example of those type of private wood processing industry are Max-wood (already moved from Armenia to Mountain Karabagh), Caritas, etc (<http://www.maxgroup.am>, <http://www.caritas.am>).

In 1998 the Yerevan Brandy Company (YBC) agreed with Armenian government to buy annually 2 000 m<sup>3</sup> of high-quality oak from Armenian forests for a period of five years in order to produce new barrels for the ageing of the brandy produced in Yerevan. According to Armenian Forest code from 1994 (and 2005), only sanitary, tretament and improvement cuttings are allowed in Armenian forests (i.e. removal of dead, infected and very old trees), and cutting down healthy oak trees is prohibited under any circumstances. It is evident that the agreement with YBC was against legislation as it is impossible to provide high-quality oak timber for barrel preparation based on wood from sanitary and improvement cuttings (Thuresson, T. 2003). The country's forestry service provides wood to the distillery at an agreed price of \$ 120 per m<sup>3</sup>. Experts estimate that the market value of timber of this quality oak is \$ 200 per m<sup>3</sup>.

### **Impact on government finances**

As a result of the economic collapse, which affected wood processing industries disproportionately, the reported contribution of the forestry sector to the national economy has shrunk to less than 0,5% of GDP(National environmental action plan for Armenia, 1997). The contribution of forest sector (including legal and illegal parts) to national economy is not presented in the complete Statistical Yearbook of the Armenia-2004. The number of employees in the forest sector constitutes 1370 (2004), 1135 to 1175 in Hayantar of Ministry of Agriculture (MoA) and 195 in Bio-resources Management Agency (BMA) and Inspectorate of Ministry of Nature protection (MoNP).

Currently energy crises and energy related fuel-wood cutting has somehow solved, however it is estimated that 4% of budget will be required to stop any further degradation of natural resources

(<http://www.cornellcaspiian.com/sida/sida-reg-6.html> ). One can think from the opposite side, that Armenian government each year loss about 4 % of national budget due to in –appropriate forest management and utilization. 4 % in the case of US \$ 600 million budget (2004) will constitute US \$24 million. This is very general figure, which gives an idea of illegal logging impact on government finances.

### **Threats to forest quality and environment**

Extensive forest cuttings caused soil erosion and also affected on water resources of forested areas. Heavy soil erosion process has started on the clear-cut areas near the town of Vanadzor. Already during 1994-1997 more than 100ditches of different depth appeared (Petrossian, R. 1997). Landslides, salinization and other soil degradation factors have also been observed.

The forest is overall poorly managed, with bad cutting regimes, scarce regeneration activities, “creaming” forest operations, etc., meaning that right now the forest is over-utilized. This is not only in terms of volumes but what is worse in terms of useful tree species. The valuable beech, oak and pine trees, which primarily are being logged, is to large extent replaced by forest is rich in hornbeam. Besides, the age structure of forests has a negative impact on future development of forest resources in the country (State of the Environment, 2000, <http://www.aua.am> ). In the basin of lake Sevan about one fourth of artificial forests were cut clear. After these cuttings the ecological state of lake became worse. The other bad ecological situation is concerning cutting process of bushes, especially in southern part of republic where climatic conditions are quite dry.

### **POLICY AND GOVERNANCE**

Th reasons behind illegal logging in the proposed new forest policy is mentioned the followings: low salary of Hayantar employees, the absence of economic, legislative and other mechanisms/tools to prevent illegal forest utilization, the absence of illegal logging damages (damages to state, public, economy and environment) counting systems, the un-effective system of illegal forest utilization registration and instructions’ applications, absence of proper economic control, the un-coordinated activities of local communities and forest enterprises to find and minimize illegal forest utilization, etc. As a solution to this problem it is suggested to develop legal forms of forest utilization and minimize share of illegal loggings. There should be put more attention on forest management problems in governmental anti-corruption programs. In the new forest policy special attention and importance is given to community forestry issue.

Forest inventories during the Soviet period were characterized by the use of “visual assessments”. It has been proven that these practices grossly underestimated the mean annual growth of the Armenian forests (1.5m<sup>3</sup> per hectare versus 3m<sup>3</sup> per hectare by using sampling methods) (Thuresson et. al., 1999). This underestimation had a major impact on the determination of allowable cuts and management regimes. Periodical forest inventories were carried out in Armenia in 1956-58, 1966-68,

1976-78 and 1986-88. Most of the forest management practices carried out in Armenia during the Soviet period were protectionist in nature and ineffective. Over the years these protectionist policies created mature and over-mature forests (with an average age of 100 years) with low densities, very slow growth, and very low natural regeneration (Thuresson et al., 1999). It has been estimated that the current forest cover is growing at only 30-40% of the potential growth that could be achieved on an average stand condition. For 1950-1980 period approximately 90,000 hectares of forests plantations were established to protect soils and water resources (Khurshudyan et al., 1987). This activity increased the forest cover in Armenia from 8% in the 1950s to 11.2% at the beginning of the 1990s.

The main forest management body in Armenia is Hayantar CSJSC, which till January, 2004 was in the MoNP. Since that time Hayantar moved to the MoA and passed through structural changes. Hayantar has central office in Yerevan, with 5-6 divisions and 22 forest enterprises directly belonging to Hayantar. Hayantar is lacking of professional foresters, corresponding material-technical bases, modern forest machinery, equipments and tools. At the end of 2005 was established Forest monitoring center in the MoA, which suppose to monitor all kind of activities in forest sector.

MoNP has two main bodies- BMA and Inspectorate- mainly dealing with forest resources inventory, monitoring and inspectorate. Forest Research and Experimental Centre (FREC) of MoNP provide inventory data and management plans for Hayantar. Essential point with MoNP is that about 25% of state forest estate is governed by National Parks, Reserves and Arboreta division of BMA. Inspectorate controls utilization of natural resources (including forest resources) legal utilization issues, also put control posts to check movement and sale of timber and NWFP. The problems here are lack of skilled human resources and financial means conditioned very poor management practices.

## CONCLUSIONS AND RECOMMENDATIONS

Today the forest areas in the country are in very poor condition and are very fragmented. Legal and illegal cuttings are occurring in most of them. If the current economic conditions, forestry laws and policies continue, the country runs the risk of losing its forest cover within the next few decades. On the base of these conclusions the following recommendations could be proposed:

1. Timber: work out effective monitoring and control systems on timber extraction, transportation, processing and export, make an inventory of all wood processing and exporting companies and bring them under state (Hayantar) control and corresponding tax field, make sure that part of legally and illegally processed timber income is returned back to reforestation and forest re-habilitation activities, introduce timber certification practices.
2. Fuel-wood: delineate between poverty-driven (for survival) and illegal fuel-wood extraction for business illegal cuttings, investigate the possibilities of alternative energy sources, establish effective control and monitoring system on fuel-wood extraction and consumption tracks, develop effective control on price formulations and market of fuel-wood in term of effective tax extraction for national economy.
3. Forest Sector: have a clear picture of all forest stakeholders, with their objectives, responsibilities and rights, integrate all forest related projects and initiatives, create a vision of future forest by involvement of all relevant sides and stakeholders, put special stress on forest education, training, science and material-technical bases.

- Governance: adopt nationwide and nation-wise forest policy, forest law, national forest program, create reliable information systems through GIS, Remote sensing and information database management, create database for tracking legally and illegally cut logs, implement wise illegal logging action plan, organize an independent forest monitoring unit.

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ՉԿԱՐԳԱՎՈՐՎԱԾ ԵՎ ԱՊՕՐԻՆԻ ԱՆՏԱՌՀԱՏՈՒՄՆԵՐԸ ՀԱՅԱՍՏԱՆՈՒՄ ԵՎ ԴՐԱՆՑ ՀԵՏԵՎԱՆՔՆԵՐԸ  
Հ.Սայադյան, Հայաստանի պետական ագրարային համալսարանի  
անտառագիտության ամբիոն

Հայաստանի սակավ անտառային ռեսուրսների կառավարվումը, օգտագործումը և պահպանվումը խիստ անարդյունավետ է: Մինչդեռ անտառները ունեն բացառիկ բնապահպանական և սոցիալ-տնտեսական նշանակություն, հատկապես լեռնային և չոր ցամաքային կլիմայական պայմաններ ունեցող երկրի համար: Ապօրինի անտառահատումները և անվերահսկելի փայտամշակման արտադրությունը անվերադարձ վնաս են հասցնում հանրապետության արժեքավոր ծառատեսակներից կազմված անտառների վերականգնմանը, նրանց հողապաշտպան, ջրապաշտպան և ջրակարգավորիչ ֆունկցիաների իրականացմանը, գենետիկական և կենսաբանական բազմազանությանը, անտառամերձ համայնքների սոցիալական վիճակի վատթարացմանը, ինչպես նաև անտառային ոլորտի՝ երկրի տնտեսական զարգացմանը նպաստելու իրական ներուժին:

## НЕРЕГУЛИРУЕМЫЕ И НЕЛЕГАЛЬНЫЕ ЛЕСОРУБКИ В АРМЕНИИ И ИХ ПОСЛЕДСТВИЯ

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Управление, использование и охрана малолесных ресурсов Армении реализуется очень неэффективно, несмотря на то, что леса здесь имеют исключительную природоохранную и социально-экономическую роль. Это особенно важно для горной страны с континентальным климатом. Нелегальные рубки и неконтролируемая деревообработка невозможны влияют на лесо-восстановление ценных древесных насаждений, их почво-защитные, водно-защитные и водно-регулируемые функции, генетическую и биологическую разнообразия, социальное состояние прилесных общин, а также на потенциал контрибуции лесного сектора реального экономического развития страны.