

AMERICAN UNIVERSITY OF ARMENIA

A STUDY OF THE ARMENIAN INSTITUTIONS OF FOREST GOVERNANCE

TRAGEDY OF THE ARMENIAN FOREST COMMONS

A MASTER'S ESSAY SUBMITTED TO

THE FACULTY OF THE GRADUATE SCHOOL OF

POLITICAL SCIENCE AND INTERNATIONAL AFFAIRS

FOR PARTIAL FULFILLMENT OF THE DEGREE OF

MASTER OF ARTS

BY

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YEREVAN, ARMENIA

MAY 2013

SIGNATURE PAGE

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May 2013

## **Acknowledgement**

This research project would not have been possible without the support of many people. First and foremost I would like to express my deepest gratitude to my academic supervisor Dr. Douglas Shumavon who was extremely helpful and offered invaluable assistance, support and guidance throughout the research process. As the first attempt to analyze deforestation in Armenia applying the conceptual framework of the tragedy of the commons, the study would have been impossible to materialize without the encouragement and guidance of Dr. Shumavon. Analyzing forest governance institutions of Armenia required extensive data on the current state of Armenian forest commons and management practices in forest sector. I take this opportunity to express my gratitude to Mr. Ayser Ter-Khazaryan, project manager of German Society for International Cooperation (GIZ), for his kind cooperation and invaluable guidelines in the study of the Armenian forest sector. My thanks and appreciations also go to my classmates and my sister as well as all the people who have willingly helped me out with their knowledge and abilities.

## **Abstract**

The study employs the conceptual framework of the tragedy of the commons to analyze the rapid deforestation taking place in Armenia. The primary focus of the research is the institutional framework of forest governance of Armenia. The research aims to identify institutional ills and defects that allow for the tragedy of Armenian forest commons. Particularly, the study analyzes the correlation between a) the centralized institutions of forest governance and high rates of illegal logging b) centralized system of forest governance and the existing corruption risks in the sector. My research dwells on the current prominent theoretical body on the tragedy of the commons and the policy strategies of averting the phenomenon which advocates inclusion of the local communities in the forest management as a means of prevent overuse of the forest commons. Elaborating on that approach, this study comes up with policy recommendation to decentralize the system of forest governance in Armenia and actively engage the local population in the decision making process in the forest sector.

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## Introduction

Armenia is one of the 70 countries in the world with less than 10 % of forest area (so called low forest-covered countries). According to the German Society for International Cooperation (GIZ Armenia, 2008) study of satellite image data, currently forest comprises 332333 ha of the RA area. Since the last accurate inventory conducted in 1990, the forest cover of Armenia has shrunk from 536400 ha to the current 332333 ha, i.e. during the 20 years of independence around 200000 ha of forest has been destroyed ( Economy & Values, 2007). That is, Armenia annually loses 1.77% of its primary forest cover (Mongabay, 2013). The situation can exacerbate further as over 750,000 cubic meters of forest coverage are being cut annually despite the official forest-cutting limit of around 30,000 m<sup>3</sup> a year for sanitary and care purposes (Transparency International, 2010; World Bank, 2007). Hence the continuing deforestation of already scarce forest resources presents a significant environmental threat, fraught with dangerous consequences for habitats, irreversible losses of biodiversity, lost revenue from the taxation of illegal logging and production, loss of the revenue from the alternative benefits of the forest (e.g. tourism development), as well as increasing risks of the landslides in deserted areas (Sayadyan, 2005). At the current rate of deforestation, Armenia faces the probability of turning into a barren desert within 50 years (World Bank, 2008).

Illegal wood-cutting is primarily associated with 2 major reasons: 1) logging for industrial wood products and 2) fuel wood for household heating among the poor rural population (World Bank, 2007; Armenian Tree Project, 2010).

In both cases we are dealing with overuse of scarce forestry resources. Individual households and enterprises have strong incentives for extracting as much as possible from the pool as long as timber is an affordable alternative to gas and electricity for local households. Private companies exploit the lucrative potential of the resource by selling timber in the black market or exporting it to other countries where prices for timber are many times higher than in Armenia. As a result, satisfaction of their short-term needs, leads to destruction of the forestry resource, overlooking the long-term benefit of the society. In this light, the phenomenon represents a classic case for drama of the commons: "degradation of common-pool resource as a result of overuse" (Ostrom et al, 1994). According to the one of the authors of the concept G. Hardin, drama of the commons is inherent to all common pool resources: "Man is locked into a system that compels him to increase his herd without limit- in the world that is limited" (Hardin, 1968). As the concept became increasingly prominent with Hardin's influential article "The Tragedy of the Commons", the question of tackling the problem and averting the tragedy of the commons was raised by many authors in the field. Among others, one of the most debated issues was the institutional arrangements for common pool resources that would bring down the risks for the tragedy of the commons to occur. Although, there is no consensus among scholarly community as to which is the best way for managing the commons, the authors agree that institutional features are key to tackling the problems of overuse of common pool resources and that the institutions should be designed based on the local peculiarities and existing risks associated with the specific case (Agrawal, 2012).

This research is an attempt to analyze the institutional framework of forest governance of Armenia so as to identify existing institutional ills. Institutions are broadly defined as "frameworks for supporting human activity" (Scott, 1987). They may refer to both formal and

informal institutions including social and cultural ones such as the local tradition of using the forest, eco activism, the existing value system and social awareness on environmental issues, and social capital by large. Although, the role of informal institutions in the management and usage practices of forestry commons should not be underestimated, the current paper, though, is more focused on the existing formal institutional framework of Armenian forestry management, i.e. the administrative and legal structures of forestry management. More precisely, in the Armenian case the corresponding institutions primarily are “Armles” (Hayantar) state non-commercial organization of Ministry of Agriculture of RA, Ministry of Nature Protection, and the legal framework on forestry which regulates the above mentioned bodies.

Questions to pose are: what are the institutional gaps and malfunctions that allow for/lead to overuse of the Armenian forestry resource? How can the identified problems be tackled?

In order to address this issues this study draws parallels between the patterns of Armenian forestry management and the existing theoretical body on the governance of common pool resources, i.e. the conceptual body on governance of the commons will be used as a tool to analyze the Armenian institutions of forest management and identify institutional ills which lead to overuse of Armenian forestry.

The following section discusses the theoretical paradigm on institutional arrangements of common pool resources and the extent to which the theoretical body is applicable for understanding and tackling the issues of Armenian forestry institutions.

This review focuses on the issue of managing common pool resources so as to avert exploitation and the tragedy of the commons. Particularly, the primary focus of the review is the literature on institutional arrangements for managing the commons. Under this light, section 2 of the literature review discusses the particular case of Armenian deforestation based on the evidence provided



by the reports of international organizations and NGOs. Section 3 of the review discusses the literature on the relationship between corruption and illegal logging with a reference to the Armenian case and a particular focus on frequently cited institutional ills that are fraught with corruption risks.

### **State of the Armenian forest commons: evidence from the reports of international organizations and NGOs**

More than forty years ago G. Hardin came up with his influential study on common pool resources wherein he described the phenomenon of the tragedy of the commons and sparked a huge body of research on common pool resources and their management. Hardin defines common pool resource as resources where property rights are absent, i.e. when there is open access and no individual bears the full cost of resource degradation (Hardin, 1968). Based on this formulation Armenian forestry resource does not make a case for a common pool resource, as the property rights on this resources are clearly defined by law. In fact, the Armenian forest code allows for all three types of forest ownership. In practice, though nearly all the forestry is currently owned by the state. Private and communal property only refers to the forest which was established by communities and individuals. Armenian primary forest is owned by state and managed by the Ministry of Agriculture and the Ministry of Nature Protection. About 80% of the primary forest is under jurisdiction of “Armler” (Hayantar) state non-commercial organization of Ministry of Agriculture of RA, the remaining 20% of the forestry resource fall under the jurisdiction of the Ministry of Nature Protection as special protected areas, e.g. national parks,

reserves, etc. Although the property rights over some forest areas are disputed among the two ministries, generally there is no forest in Armenia which is de jure “everyone’s”. In this regard, Armenian forestry resource cannot be analyzed in line with Hardin’s concept of the tragedy of the commons.

Hardin's definition of common pool resources however was later argued in a number of influential studies in the field. It was claimed that Hardin had seriously confused the concept of common property with open access conditions where no rules existed to limit entry and use: “common property is not everyone’s property” (Ostrom, 2002).

One of the well-received studies on commons by E. Ostrom (1994) revisits the concepts of common pool resources and comes up with somewhat broader definition: "a common-pool resource is a valued natural or human-made resource or facility that is available to more than one person and subject to degradation as a result of overuse". Another prominent author of commons Wilson (2002) states that the term "common-pool" refers to the actual patterns of the exploitation of the resource rather than the legal arrangements of managing those: "...Such a resource could be left as open access without rules or could be managed by a government, as private property, or by a common property regime" (Wilson, 1998). In this light, Armenian forestry resource constitutes a case for a common pool resource, as the legal provisions and institutional arrangements in practice fail to insure exclusion, which leads to overuse and degradation of forestry resource.

Although property rights are established over all forest areas in Armenia, with the significant chunk of these resources being owned by the state and managed by the Armles (Hayantar) State Non-Commercial Organization, the resource still falls under the category of a common-pool one,

based on its practical patterns of exploitation. Thus, de jure government property frequently becomes de facto open access due to the lack of enforcement and institutional ills such as insufficient management, poor monitoring, corruption, etc.

As Ostrom (2002) states, the diversity of property rights regimes that can be used to regulate the use of common-pool resources is very large, including the broad categories of government ownership, private ownership, and ownership by a community. Each of these ownership types bears risks for the tragedy of the commons: overuse and over exploitation of the resource given that exclusion from the resource is costly or impossible and one person's use subtracts from what is available to others (Ostrom, 1994). Given the rates and amount of illegal logging in Armenian forestry resource, the existing property regulations do not provide exclusion from the resource, and Armenian forestry is certainly not immune to over exploitation and hence can be studied as a case for the tragedy of the commons. Below I'll provide a more in detailed discussion of the current patterns of illegal logging in Armenia and the potential reasons underlying the phenomenon.

The tragedy of the Armenian forestry started almost immediately after the country became independent in 1991. Since then Armenia has seen a rapid change in forest use. Social and economic turmoil, energy crisis following the collapse of the Soviet Union, and a conflict with Azerbaijan resulted in dramatic changes in the use of forests. Mass logging in accessible forest areas, public parks and even side road trees was carried out by the communities in order to meet their basic needs, i.e. heat the apartments, make food, etc. Additionally, as the communities reorganized after the collapse of the Soviet Union and the lucrative potential of illegal logging became a source for economic profit for some groups who initiated illegal logging for

commercial purposes (Economy and Values Research Centre, 2008). Consequently, Armenia, which has previously been a net importer of timber due to its scarce forestry resource, not only began to supply the local black market for wood, but also became an exporter country of timber (Global Institute of Sustainable Forestry, 2009). Today the nearly forestless Armenia exports not only wood products but unprocessed timber as well. The official statistics of the customs service reports quite high volumes of wood export for the years 2010-2011. Based on that data the volume of exports of timber and timber made products comprised around 900 tons (Armenian Custom service, 2012).

About 93% of this volume was registered as unprocessed or primary processed wood. The average export price was approximately 190 USD per 1m<sup>3</sup> of wood and article of wood (AM Partners Consulting Company, 2010). Poorly developed wood processing sector, along with the high price for unprocessed timber on the international markets, will stipulate for export of low price Armenian wood. Although Hayantar reports decreasing quantities of exported wood, volume of unprocessed wood still remains high for nearly forestless Armenia (1300-1500m<sup>3</sup>).

The same goes for the internal market dynamics. With the gasification and restoration of energy sector the amounts of illegally logged fuel wood started to decrease, whereas the constructions boom of early 2000s increased the demand for harvested timber and lead to significant increase of illegal wood harvesting (Economy and Values Research Centre, 2008). According to a number of studies (ICARE, 2011, Environment and society, 2012) currently the main purpose of illegal logging is the demand for fuel wood especially in the rural households. With the increase of gas tariffs in the recent years, even some of the gasified communities switched back to fuel wood. It is calculated that there is a demand for 500000m<sup>3</sup> fuel wood annually (ICARE, 2011). Hence, the extensive part of illegally cut wood is being sold to the rural

households whether is directly logged by the locals who have easy access to the forest.

As a result of that logging, currently, the primary forest accounts only for 10.1% of land area of Armenia. The rate of deforestation has risen in recent years and is now around 1.7% per year and is most serious in the northern regions of the country (Transparency International, 2010). Most of the forest resource is concentrated in three regions: Tavush (104857, 6ha) Syunik (49990, 5ha) and Lori (85799, 6ha). These regions have been subject to the mass logging more than others.

Overall, timber harvesting continues to exceed the rate of natural and manmade reforestation, which results in unsustainable forest management ( World Bank, 2007). Research suggests that the absolute minimum of annually cut wood is 450.000 m<sup>3</sup> (Fleg, 2011). Other estimates state that 630,000 m<sup>3</sup> of timber are illegally logged in Armenia annually, earning over \$140 million for wood processing industries each year. Companies are using approximately 10 times the amount permitted by government (Transparency International, 2010; World Bank, 2007). Understandably, these numbers contradict the official government statistics provided by Hayantar, the official responsible body for issuing timber harvesting permits, which reports only 56561 m<sup>3</sup> of harvested timber (for the year 2010). Given the significant underreporting on behalf of the governmental bodies, data provided in the paper predominantly draws on the reports of international organizations and NGOs operating in Armenia.

Among those studies, one of the most frequently cited reasons for illegal logging in Armenia is corruption (Economy and Values Research Centre, 2008; World Bank, 2007; Armenian Tree Project, 2012). According to surveys conducted in the northern regions of Armenia, corruption

risks exist in all the stages of the illegal wood harvesting: starting from bribing the loggers and foresters up to the custom service, and officials of corresponding bodies, such as Hayantar (Armenian Tree project, 2012). According to Transparency International (2009) without corruption there would be very little illegal logging.

Corruption perception survey in turn reports that the majority of the respondents (54%) think that the corresponding institutions of forestry control are corrupt: 22, 4%- somewhat corrupt, 18,3- corrupt, 17, 3- highly corrupt (Transparency International, Anti- Corruption Center, 2011).

The existing theoretical data on corruption and deforestation also identifies strong correlation between the two. As Camphol et al state in their prominent study on corruption: “the driving forces for forest corruption are complex and often more “institutionalized” (Campos et al, 2007). Logging companies routinely pay bribes and (legal) political contributions to officials for preferential access to forest resources. This is termed grand corruption and typically involves high-level officials and substantial amounts of money given as bribes, kickbacks, speed money, etc. (Campos et al, 2007). Armenia is not immune to grand corruption and high level rent seeking practices. The commonly brought example in Armenia is the introduction of 20% VAT on the imported timber; a move which supports the local loggers to a great extent (Transparency International, 2009).

Another potential risk group for forest corruption is the rural poor who extract wood to meet their basic needs and to do so they often have to bribe forest rangers protecting the forests to look the other way so that the rural poor can meet their fuel wood needs from the forests. This situation is defined as petty or need-based corruption, and is supported by anecdotal evidence (World Bank, 2006).

The widespread of corruption in Armenian forestry is often associated with institutional gaps and malfunctions which allow for corruption or create incentives for corrupt practices among the bodies responsible for forest management. Reportedly, the current institutional framework for forest management is not able to provide for proper management of the Armenian forestry and avert the overuse and degradation of the resource. Particularly, the two key institutions responsible for forestry in Armenia, Hayantar under the Ministry of Hayantar SNCO and the Ministry of Nature Protection currently seem unable to keep up with their primary objective, i.e. conservation of the Armenian forestry commons. Both institutions can be characterized as highly centralized bodies with their main administrative and decision making units being concentrated in the capital Yerevan head office and the 19 forestry branches in the periphery (represented in 8 marzes) are deprived of actual participation in decision making. During the Soviet period Hayantar was a forestry industrial association under the direct subordination of the Council of Ministers of the Republic of Armenia and was funded completely from the budget of the Republic of Armenia. After the independence the structure and competencies of Hayantar were changed. By resolution 538 of the Government of the Republic of Armenia, issued November 1997 Hayantar State Enterprise was modified into Hayantar SNCO (State Non-Commercial Organization), and subsidiary forest production units of Hayantar state enterprise were modified into subsidiary production units of Hayantar SNCO. This modification converted Hayantar into a profit organization. The organization has been a matter of discourse between the Ministry of Agriculture and the Ministry of Nature Protection and Mineral resources and has been transmitted from one ministry into another several times. By resolution 7-N of the Government of the Republic of Armenia, issued in January 2004, Hayantar again was transferred

to the Ministry of Agriculture where it belongs till now. In addition to that the 22 (currently 19) forest production units were modified into forestry branches of Hayantar upon the decrees of October 1998 and July 2005. In practice, this made Hayantar an organization with an over centripetal structure, with the center being in charge for everything and the peripheries- the regional forestry branches, being deprived of decision making power or even participation in decision making in the organization. In fact, there is no existing legal framework for regulating the forestry branches (Investigative Journalists NGO/OSCE, 2012). The forest enterprises are just there to carry out the decisions made by the central administration of Hayantar. Moreover, there are no regulations that would insure or at least encourage participation of the local communities in the decision making process on the management of the local forest resource. No community meetings or public hearings are ever being organized to discuss the issues of management of the local forest. Further in this paper I argue that this kind of centripetal organization of forest management institutions as well as the exclusion of the local communities from the decision making processes leads to degradation of the forest resource as a result of ineffective management, corruption and resulting illegal logging.

In this regard, the research aims to delve into the institutional peculiarities of Armenian forestry management and to identify gaps and defects that allow for degradation of the resource and lead to tragedy of the forestry commons. Particularly, the primary focus will be on the organizational and management practices of the institutions in charge for the forestry, such as Hayantar (under the Ministry of Agriculture), the Ministry of Nature Protection of Armenia, as well as the legal framework for the operation of the respective agencies. In this regard my main research questions to answer are: what are the institutional malfunctions and organizational ills that allow for the degradation of Armenian forestry resource? Given the existing record on



corruption in the sector another important question to ask is what are the corruption risks in the sector? What are the weaknesses and flaws in the current institutional setting that allow for corrupt practices to occur? Correspondingly, the current study evolves around two main hypotheses:

*Hypothesis 1: Existing centralized regime of forest management in Armenia allows for the tragedy of the forest commons.*

*Hypothesis 2: Centralized Institutions of forest governance in Armenia contain high risks for corruption practices.*

The research will mainly dwell on the two correlations provided in the hypotheses: a) correlation between the overuse of Armenian forestry commons and over centralization of forestry administration, b) correlation between the corruption in the forestry sector and the centralized system of forestry management.

## **Methodology**

The testing of the hypotheses will require thorough analysis of the existing institutional and legal framework of forestry management in Armenia in order to identify the institutional gaps and malfunctions that lead to/allow for overuse of Armenian forestry resource. The first part of the paper studies the correlation between the overuse of Armenian forestry commons and over centralization of forestry administration. In doing so, I deploy the following methods of analysis:

1. Study of the existing literature on management practices of the forestry commons
2. Case study of the Armenian institutions of forest management

Particularly, the research dwells on the existing body of literature on management practices of forestry commons and best international practices for tackling the tragedy of the forestry commons on institutional level. Further, I precede with the case study of Armenian forest management institutions by applying the existing concepts and cineraria of forest management to the Armenian case. Put it differently, the criteria for effective forest management suggested by prominent authors of common-pool resource management will be used as a tool for the assessment of Armenian forest management institutions.

The second part of the paper deals with the second hypothesis and studies the assumed correlation between the corruption in the forestry sector and the centralized system of forestry management. In order to do that, I employ an assessment tool developed by Transparency International- *Generic Map of Corrupt Practices in the Forestry Sector* (see Appendix 3). For each of the identified forest governance chains the tool outlines a generic map of corrupt practices. The TI tool helps to analyze institutions, both at national and district level, and to identify the corruption risks associated with each level of governance as well as the type of threat associated with each corrupt practice. A particular focus will be on centralized design of Armenian forest management institutions to see if this type of centralized governance creates incentives/allows for corrupt practices to occur and how significant the assumed correlation is. As the TI tool builds on detailed data about the existing institutional arrangements of the forest governance; patterns and peculiarities of the administrative bodies, the employment of the tool will require in detailed data on the Armenian institutions of forest management and actual

patterns of their functioning. In order to obtain the required data I will primarily use the following methods of data collection:

1. Study of the available data on the Armenian forest management institutions, namely Hayantar under Ministry of Agriculture including both the official statistics and reports of international and local organizations, NGOs
2. Key informant interviews with government and private sector specialists, independent watchdogs, civil society (media, NGOs), donors, academics.

The available tools for data collection in this study are bounded by a number of factors. First, the underreporting on behalf of the government when it comes to mismanagement of the forest sector, corruption, illegal logging, shadow businesses, etc. Hence, the data provided by the official statistics and forest management bodies should not be relied on as the primary source of data collection. For that reason, the study goes on with cross-check analysis of available data provided by the official governmental statistics, local and international NGOs as well as independent experts.

The following part of the paper continues with a more in detailed study of the Armenian forestry by applying the existing scientific data on institutional arrangements of the forestry commons, corruption risks associated with those institutions, as well as best international practices for aversion of overuse and degradation of the resource.

## Chapter 2

### Tragedy of the Armenian Forest Commons

#### 2.1 Institutional arrangements of common pool resources

When it comes to institutional settings of common-pool resource management, there can be three broad categories: government property, private property and common property.

Understandably, these categories have many sub- categories that come with different variations of institutional design. When no institutional framework is established for managing the common-pool resources, the commons become an open-access resource.

The theoretical body on the tragedy of the commons is not univocal when it comes to identifying institutional arrangements to avert the tragedy of the commons. Instead there can be identified three major streams throughout the development of scholarship on the commons management. Three broad schools of thought emerge from the literature of common property on the institutional arrangements to avert the tragedy of commons. The first two approaches which emerged almost simultaneously -in the early 1960s - both stem from the rational choice theory and reject communal property. The underlying reasoning is that self-interested actors are never able to restrain their utility for the sake of the community and sustainable use of the natural resource: “Those who restrain their use of a common-pool resource lose out economically in comparison to those who continue unrestrained use. Thus, evolutionary processes will select for those who exercise unrestrained use and against those who restrain their own harvesting” (Dietz et al, 2002).

According to the property rights school the problem of over exploitation and degradation of common property resources can be resolved only by creating and enforcing private property rights (Demsetz, 1967, Johnson, 1972, Smith, 1981; Cheung, 1970). The second school of thought advocates that only the allocation of full authority to regulate the commons to an external agency, in other words a state property regime, can reduce over-exploitation of common pool resource (Hardin, 1968). Hardin's influential study gave a spark to quite a skeptical body of literature in the 1960-1970s which was consistent with Hardin's thesis that "freedom in a commons brings ruin to all" (Hardin, 1968). This school advocated unitary ownership-including government monopoly and privatization. The policy implications resulting from prevalence of this school was legislation in many countries, particularly developing countries, that transferred forests, pasture land, in-shore fisheries, and other commons from their previous property rights regimes to government ownership (Dietz et al, 2002). In many of these countries, though, the turn to government monopoly in commons ownership resulted in adverse consequences and degradation of natural resources. Extensive data, gathered through numerous case studies by Ostrom (1999), Wade (1994), Mckean (1992) that the turn to government ownership led to rejection of existing indigenous institutions; overharvesting that came as a result of poor monitoring, as the governments generally lacked the capacity and resources to effectively monitor the commons. As the empirical data indicates, very often de jure government ownership led to de facto open access condition (Wade, 1994). As I already argued previously, this condition is well applicable to the Armenian forest commons, wherein we have de jure government ownership of 90% of the forest, but the extensive illegal logging by private companies and the local population creates de facto open access condition. Under those

conditions, the corrupt officials have the incentives to collect side-payments from the companies and households which exploit the resource for their needs (Ostrom, 2002). In this regard, government ownership creates significant risks for free-riding and leads to depletion of the resource.

As the first pieces demonstrating the adverse consequences of state ownership on the commons appeared in the early 1980s, Hardin's thesis on "agreed upon coercion" was widely challenged in academia. The criticism was in several fronts. Scholars of property rights accused Hardin for seriously confusing the concept of common property with open access conditions where no rules existed to limit entry and use. Hardin builds his theory on the famous example of the pastures which are being overgrazed, as each of the shepherds tries to get as much as possible for his herd without really thinking of the overall condition of the pastures and the shares of other shepherds (Hardin, 1969). However, Hardin doesn't specify what kind of property rights apply to those pastures; is it a community property or open access resource (Ostrom, 2002).

Another front of criticism was brought up by the game theorists who by mid 1970s have expanded their scope of analysis from two-player competitive games to multi-player cooperative games. In one-shot competitive games the rational players are deprived of the opportunity of communicating with each other and have only one dominant strategy yielding a better individual outcome no matter what the other actor does, i.e. defection. In repeated, cooperative games the players can communicate with each other and cooperate in order for the both to benefit from coordination. Game theorists argue that Hardin's thesis holds only under the conditions of one-shot competitive game wherein the users of the common-pool resources do not communicate and have only one dominant strategy of exploiting the resource as much as possible without taking

into consideration the other users and depletion of the resource (Dietz et al, 2002). More usually, though, common-pool resources are shared by the communities who have long prehistory of living next to each other and intend to do so in the future. Given that these communities are also highly dependent on the availability of natural resources, scholars argue that the users are likely to be concerned with the condition of the resource and should be highly interested in preventing the depletion of the resource on which they and their future generations are going to depend on. Hence the collective usage of common-pool resources should be analyzed as a repeated cooperative game, where Hardin's thesis can hardly apply. Currently, game theory literature conceptualizes the common-pool resource usage issues as a coordination problem rather than a prisoner's dilemma (Agrawal, 2001; Dietz et al, 2002). As coordination game states, institutions succeed when they provide rules which make voluntary contributions to public goods a utility-maximizing strategy (Runge, 1984).

As Hardin's thesis of agreed upon coercion being the only way of averting the tragedy of the commons became wildly challenged in theoretical literature as well as by empirical evidence, the third school on common-pool resource management studies emerged as a move from government or private property to decentralization and community-based management of the commons.

The third school believes in the 'public choice approach' based on voluntary compliance. Scholars of this school advocate decentralized collective management of common pool resource by their users, as an appropriate system for avoiding the tragedy of commons (Wade, 1994; Ostrom, 2002; Baland and Platteau (1996). As mentioned above, the underlying reasoning behind the private and state ownership schools is that the primary reason for the overuse of common pool resources in the absence of a "mutually agreed upon coercion", by which the

authors imply government and private property as the only ways to manage common-pool resources and avert drama of the commons (Hardin, 1968; Ostrom et al, 2002). Hardin generally believes in rational, self-interested users who are not able to cooperate for the common good. E.Ostrom, on the contrary, in her influential study of the commons, suggests that state property and centralized ownership of common pool resources is fraught with destructive consequences and ecosystem degradation, as these types of centralized systems are not adaptive and can lead to all sorts of organizational ills such as corruption (Ostrom, 2002).

Instead, she suggests that the community management of common pool resources provides a more flexible and cooperative framework for appropriate management of the commons and prevention of over exploitation. Based on the cross-country empirical evidence, Ostrom concludes that immediate users of the forest come to care about the forests more and to use them in a more sustainable way when they are given responsibility and power to manage the forest commons. The author suggests that this happens because the local population is dependent on that forest and could witness the ill effects of illegal logging and over harvesting (Ostrom, 2002). Hardin and the proponents of his thesis define the essence of the tragedy of the commons as the "impossibility of the exclusion of beneficiaries" which is to say there is no way to exclude or limit the benefits derived from the common-pool resources on voluntary bases. As oppose to this, proponents of the common property identify the issue not in the impossibility, but rather in the cost of excluding potential beneficiaries from deriving benefits from the common-pool resources, just as in case of other public goods: " the core problem related to the use of common-pool resources is the cost of preventing access by potential users unless they agree to abide by a set of rules" (Diarz et al, 2002). Whenever the existing institutional arrangements fail to make the beneficiaries to take into account the social costs of resource exploitation the free-riding problem



occurs. That is to say, beneficiaries pay only the individual cost for benefitting from the commons, whereas the social costs and the opportunity costs of resource depletion are disregarded. Put it simply, as long as it is impossible to exclude anyone within the group from the consumption, the users will have strong incentives to free ride at the expense of the group, i.e. free riding is a dominant strategy (Runge, 1984). According to rational choice school, the only way solve the free rider problem is by state coercive apparatus. Despite these theoretical predictions, Ostrom, Wade, McCain, and Runge bring vast amount of empirical evidence wherein we observe substantial voluntary contributions to public goods without external enforcement.

Wade (1994) investigated commonly managed irrigation systems in 32 South Indian villages to examine how common property institutions evolve and what accounts for the sustainable management of those irrigation systems.

Ostrom (1990) conducts meta-analysis of 14 cases in different countries where the communities attempted to establish and sustain institutions to manage the commons. She employs the same set of dependent and independent variables to analyze the cases and comes up with generalizations regarding the factors which lead to the sustainable management of the commons.

Mckean (1992) reviews cases from around the world which have a successful experience of community-based management of the commons. By conducting a comparative analysis of those cases, Mckean draw similarities between these cases to sort out common factors potentially contributing to successful community-based management and averting depletion of the resources.

According to the common property school when not deprived of communication in the settings where the users of common property resources constantly interact with each other,

generation after generation, the rules of non-cooperative game theory do not hold because the users perfectly realize their interdependence. Ostrom builds her theory on the very example of Hardin's pastures, with somewhat a different scenario: now the agreement is not enforced by an external agent, instead it's the herders who negotiate the terms of the agreement between themselves. Any proposal made by one herder that did not involve an equal sharing of the carrying capacity and of enforcement costs would be vetoed out by the other herder in their negotiations. Subsequently, the only way the herders can possibly agree is to equally share the yield from the pastures and the costs of enforcing the agreement. In this case the users of the resource do not depend on the accuracy of the information provided by the centralized actor, e.g. government. If one player suggests a contract based on incomplete or biased information, the other player can easily disagree and break the contract (Ostrom, 1990). The herders who use the meadows year after year have much better information on the resource than the central authority. Moreover, self-interest of those who negotiated the contract will lead them to cross-monitor each other and to report observed infractions so that the contract is not violated.

Accordingly, Ostrom employs three new important parameters as a solution to commons dilemma: users design their contract on their own; cost of enforcing the agreement is shared by the users; and accuracy of information among the immediate users (Ostrom, 1990).

She further concludes that central control agency can function adequately only when there is accuracy of information, monitoring capability, sanctioning reliability and zero cost of administration.

The same thesis was later supported by many other researchers of the fields, some of the prominent ones being Baland and Platteau (1996). In their comprehensive review of a large number of studies on the commons Baland and Platteau dwell on the examination of competing

theoretical claims by scholars of different types of property regimes, they suggest that the core argument in favor of privatization “rests on the comparison between an idealized fully efficient private property system and the anarchical situations created by open access” (Balland and Platteau, 1996). Furthermore, they argue that the privatization of common-pool resources or their appropriation and regulation by central authorities tends to eliminate the implicit entitlements and personalized relationships that are characteristic of common property arrangements. These steps, therefore, are likely to undermine efficiency, and even more likely to disadvantage traditional users whose rights of use seldom get recognized under privatization or expropriation by the state.

Wade’s (1998) important work on commonly managed irrigation systems in South India states that effective rules of restraint on access and use are unlikely to last when there are many users, when the boundaries of the common-pool resource are unclear, when users live in groups scattered over a large area, when detection of rule breakers is difficult, and so on (Wade, 1998).

Dietz et al (2003) emphasize the importance of adaptive governance which implies employment of mixtures of institutional types e.g. markets and community self-governance, in order to come up with better strategies of decision making and induce compliance.

This shift in literature from centralized coercion to agreement between the local users influenced the policy discussions over what kind of institutional arrangements account for sustainable resource use. Although the above mentioned authors study different types of commons, e.g. forests, fisheries, air basin, etc., and employ different methodology; their findings on governance of the commons are quite similar. The relevance of these findings is supported by large body of empirical research by Dietz, Stern, Wade, Balland & Platteau, Mckean, Ostrom

and others. The shift in theory resulted in considerable changes in policy-making; a total of 200 million hectares of forest were transferred from central government tenure to community tenure regime worldwide in the past twenty years (Agrawal, 2011). The systematical research in the field has produced a number of generalizations regarding the sustainable institutional practices for governance of the commons. Those generalizations can be summarized as follows: (i) Rules that are easy to understand and enforce, (ii) Locally designed and accepted, (iii) Take into account the types of violations, and (iv) hold users and officials accountable (Ostrom, 2009). Although these generalizations provide theoretical common ground for the current research on commons, they cannot be easily applied as ready-to-use policy solutions. In order to become relevant to policy they must undergo further translation into actual policy strategies. The latter, implies dozens of other variables, and far more precise formulations and definitions of the concepts employed. As Agrawal (2011) points out, this translation process “is true for all efforts to turn scholarly research into operational guidelines.” Indeed, different authors employ different variables when it comes to operationalizing the above mentioned sets of factors. For example, Ostrom (1990) identifies the following set of arrangements as key to sustainable governance of the commons: (i) Well defined boundaries, (ii) locally devised access and management rules, (iii) ease in enforcement of rules, (iv) Graduated sanctions, (v) availability of low-cost adjudication, (vi) accountability of monitors and other officials to users.

Wade (1988) comes up with somewhat different set of institutional arrangements which account for proper management of common pools resources: (i) Small size of the resource, (ii) clearly defined boundaries, (iii) match restrictions on harvest to regeneration of resources (iv) locally devised access and management rules, (v) Rules are simple and easy to understand.

Baland and Platteau (1996) cast a wider net, and incorporate variables in their conclusions such as external market demand, supportive external sanctioning institutions, poverty, etc.

Agrawal (2001) summarizes different institutional properties described by the authors. He identifies the common pattern in the conclusion of the above mentioned landmark studies and draws out the following principles as important in promoting sustainable use of common-pool resource:

- (i) Small size of the resource
- (ii) Well-defined boundaries
- (iii) Rules are simple and easy to understand
- (iv) Locally devised access and management rules
- (vi) Accountability of monitors and other officials to users
- (vii) Ease in enforcement of rules
- (viii) Match restrictions on harvest to regeneration of resources
- (ix) Graduated sanctions

Although the above mentioned studies indicate positive correlation between the sustainability of resource management and the listed factors, those factors should not be taken as ready-to-use universal solutions. The listed properties apparently need some further translation into actual policy that would provide more detailed definitions and would take into account the peculiarities of a given case.

Nevertheless, there is a consensus among the scholars of the field to consider the principles described above as "facilitating conditions for establishment and continuity of sustainable

institutions for forest management" although the existing work has not yet fully developed a theory of what makes for sustainable common-pool resource management (Ostrom, 2002).

## **2.2 Armenian forest institutions and the tragedy of the commons: Case study**

In essence, each of the above discussed principles has far reaching practical implications in designing and managing institutions for common pool resources. Keeping this in mind, I will now continue with the case study of Armenian forest management institutions employing the above listed criteria as a roadmap for analyzing the Armenian case. Being aware of the limitations of those principles I will use them as a roadmap for analyzing the Armenian case, rather than a precise measurement tool of analysis.

### **(i) Size of the resource**

The total size of the Armenian forestry is not certain. The official numbers significantly differ of the number provided by international organizations, NGOs and independent experts. Hayantar reports 344, 1 thousand hectares of forest land of which 305, 5 thousand hectares forest cover. A 2010 Global Forest resource assessment (FAO) estimated forest cover at 262,000 hectares (ha) in Armenia. A study by Moreno-Sanchez (2005) estimated forest cover at 245,000 ha. In fact, even the numbers provided by different state agencies differ: Hayantar reports 344, 1 thousand hectares of forest land of which 305, 5 thousand hectares forest cover, State Forest Monitoring Center reports 460 thousand ha forest land of which 334, 1 forest cover. These kinds of differences may also come as a result of unclear definition of forest in the legislation, which I will discuss below. Whatever the real number is, the fact remains that Armenian forestry

resource is very scarce, less than 10% of the total areas.

Nearly all the forestry resource (more than 90%) in Armenia is owned by the state.

The governance and monitoring of the resource is divided among three state agencies. Hayantar SNCO under Ministry of Agriculture- disposes more than 80% of the forestry; Ministry of Nature Protection- disposes about 20% of the resource (forests that have a status of special protected areas: reserves, preserves, national parks). State Forest Monitoring Centre (SFMC) was established in 2005 as a monitoring agency to track down illegal practices of forest use.

Previously, this function was performed by Hayantar SNCO, which, in fact was responsible both for regulating, using and monitoring the forest. Apparently, this kind of centralization of power results in conflict of interests and inefficient management. SFMC was created to separate those functions and introduce a new system of checks and balances. The objective, however, was not fully reached, as Hayantar still remains an agency responsible for conducting inventories and inspections. Moreover, Hayantar is also the main user of the forest, as an agency setting yearly permissible amounts of timber harvesting, holding public bids for leasing of forest lands and issuing leasing contracts. As Forest Law Enforcement and Governance (FLEG) main report on Armenia sponsored by Eastern Partnership Program (2011) correctly points out “Hayantar (ArmForests, the national forest agency)embodies a dual role as both manager and user of forests which gives rise to conflicting incentives, especially in times of tight budget constraints”. All the above mentioned responsibilities are performed by the central agency of Hayantar; the 19 regional branches (enterprises) do not participate in the decision making process, instead they simply implement the decisions made in the center (ICARE, 2011).

## **(ii) Well-defined boundaries**

Well-defined boundaries first of all entail precise definition of the forest in the legislation in order to have a clear understanding of the amount, location and distribution of the resource. The Armenian forest code, however, does not provide clear definitions of forest and its boundaries which creates additional difficulties for the protection of the resource. The forest code defines forest as "interconnected and interacting integrity of biological diversity dominated by tree-bush vegetation and of components of natural environment on forest lands or other lands allocated for afforestation with the minimal area of 0, 1 ha, minimal width of 10 m and with tree crowns covering at least 30% of the area, as well as non-forested areas of previously forested forest lands".

The formulation "forest lands...or non-forested areas of previously forested forest lands" is quite contradictory, as it considers virtually forestless areas to be forest. Such questionable formulations can lead to confusions and misreporting during the inventory of the forest resource; it potentially allows the central agency conducting the inventory to report forestless areas as a forest. The formulation "previously forested area" is also questionable, as it does not provide any time limit; it can refer to any time period in the past (Investigative Journalists NGO/OSCE, 2012).

The second part of the definition is also argued by experts as a formulation that potentially undermines sustainable usage of the forestry. The requirements of "...minimal area of 0, 1 ha, minimal width of 10 m and with tree crowns covering at least 30% of the area" might be scientifically correct as properties of forest area, however in practice this definition may lead to unsustainable practices. Due to illegal logging or fires the forest may no longer meet those



requirements and, legally, it will no longer be considered a forest area, i.e. it will no longer be protected by law as a forest. Further, the forest code classifies forest by its main special-purpose significance as follows: a) forests of protection significance; b) forests of special significance; c) forests of production significance. The patterns of the usage of forestry depend on this classification: "harvesting forests of production significance shall be carried out through intermediate (maintenance) and sanitary cuttings, whereas in the forests of special significance and forests of protection significance- through forest regeneration cuttings.

The boundaries between these types of forest areas are also very much blurred. Article 11 of the forest code defines Forests of protection significance as those "located on steep slopes (more than 30 degree); forest belt with the width of 200 m on the upper and lower timberline; forests within the radius of 100 m surrounding botanical gardens, zoological parks and arboretums. Given the small territory and diversity of its relief there can be forest pieces which meet one of the above mentioned criteria in close proximity with forest areas that do not comply with requirements. Boundaries are not well defined between the forests under the jurisdiction of Hayantar and Ministry of Nature Protection. According to law, only the forest land having a status of protection significance is under the jurisdiction of MoNP, the rest is managed by Hayantar. As experts point out that the boundaries of the forest area enjoying the status of protected forest are not well defined (personal communication with I. Zarafyan 04.12.2013; A. Khazaryan 01.21.2013). There are disputed forest areas where both Hayantar and MoNP claim to have authority. The disputed status of those forest areas creates additional difficulties for their management and monitoring. The two agencies blame one another for the violations that take place in those areas and avoid responsibility (personal communication with A. Khazaryan 01.21.2013).

As Investigative Journalists NGO and OSCE joint publication correctly points out, in many instances it's practically impossible to tell one type from the other. Consequently, they blur boundaries between the forests types that come as a result of existing legislative loopholes allow for illegal harvesting or overharvesting in the forest areas which need to be protected, or otherwise, allow the loggers to escape full responsibility (personal communication with A. Khazaryan 01.21.2013; K. Vardanyan 09.14.2012) .

### **(iii) Rules are simple and easy to understand**

The above mentioned contradictions in the forest code as well as its inconsistencies with the practical characteristics of the forestry and its usage patterns make the existing rules extremely difficult for an average user to understand and apply. The above stated examples are not the only ones. The overall declarative character of the legislation, numerous inconsistencies and the complexity of the rules make it difficult for the users to understand the rules and allow for loopholes in the legislation.

A vivid example is the regulation of wood harvesting. Article 36 of the Forest code states that wood harvesting can be carried out through sanitary, intermediate and regeneration cuttings. According to article 25 "Sanitary cuttings shall be carried out for the improvement of sanitary state of the forests, as well as for elimination of trees which lost viability due to negative impact of pests and diseases or of trees dead on the top and dead trees". The other two types of harvesting, are only mentioned in the glossary of terms, whereas in the chapter 9 of the code which defines the aims and means of forest regeneration and afforestation, nothing is said about intermediate and regeneration cuttings (Investigative Journalists NGO/OSCE, 2012).

In fact, no instructions are provided as to what are the aims, methods and mechanisms of

conducting intermediate and regeneration cuttings, which creates confusion among the users. Moreover, experts (personal communication with K. Khazaryan 01.21.2013) argue that those terms were simply put in the law without any norms and regulations, in order to justify any loggings by simply calling it intermediate and regeneration cuttings.

The same goes with the definitions of forest resource forest reserve in the article 3. Forest resource is defined as integrity of wood, plants, other forest products reproduced in forests and fauna. Forest reserves are the allowable proportion of forest resources subject to use. However, in the following articles which regulate the forest management, monitoring and forest economy the term "forest reserve" somehow disappears and the timber which is subject to use is simply called "forest resource". As Investigative Journalists NGO/OSCE joint publication (2012) points out, this "omission" allows for the exploitation of forest resource which hasn't been classified as forest reserve. Moreover, the law does not provide any clear instructions as to the bases and criteria on which the forestry resource can be made forest reserve (Ecolur, 2011).

#### **(iv) Locally devised access and management rules**

Chapter 3 of the forest code defines the competences of the government, state authorized bodies and local governing bodies in the sphere of sustainable forest management. Based on this law, all the crucial functions are allocated to state agencies which are responsible for:

- a) possession and use of the state forests according to this Code and other legal acts;
- b) development and implementation of the state policy;
- c) classification of forests by functional significance;
- d) organization of the running of the state forest enterprises of RA ;
- e) approval of the forest management plans of the state forests;
- f) maintenance of the state forest cadaster of the Republic of Armenia and state stock- taking of forest lands;

- g) development of purposeful programs aimed at the improvement of forest productivity, forest rehabilitation, afforestation and tending;
- h) improvement and maintenance of forest lands fertility, safeguarding of their purposeful use;
- i) organization of the implementation of fire safety measures, fire spotting and prevention of forest fires, prevention of the harmfulness of forest pests and diseases, etc.

The competencies of local government bodies are confined to:

- a) participation in the development of state programs and safeguarding of their implementation within their administrative territories according to the order determined by the law;
- b) involvement of specialized services, forest users and population in the works to fight forest fires;
- c) giving consent to change special-purpose significance of lands and carry out engineer-geological studies for the activities on construction, blasting, extraction of useful minerals, installation of cables, pipe-lines and other communications, drilling and others having no connection with the running of forest economy and forest use on community forest lands (Forest Code, 3.19.03).

"Participation in the development of state programs" stated in point a, is again quite declarative and vague. The law does not provide any methods or means as to how that participation should take place. No mechanisms for the engagement of the local community in the decision-making and designing the rules of forest management or at least consulting with the locals are in place; no public hearings or community meetings are ever organized in this regard.

As we see, the local governments are only left with giving their consent to decisions made by the central agencies and involvement in special services such as firefighting.

The large scale projects of forest management are also designed without the participation of the locals. The ministry of nature protection recently has approved a number of projects which imply mass loggings in the national parks and reserves, such as the road construction in Shikahogh reserve, which will require cutting down over 100,000 trees (ATP, 2012); the notorious Teghut mine case where 600 hectares of forest is going to be destroyed for an open pit mine, etc. As a

result, the communities which are directly affected by the changes in the resource management and in many cases are dependent on forestry are deprived of any participation in designing the rules of forest management.

**(v) Accountability of monitors and other officials to users**

Forest management plans are key obligatory technical documents "for the current and prospective planning for the running of forest economy" (Forest code, 03.15.05). These plans are developed for each forest enterprise and provide full evaluation of the running of forest economy and forest use for the previous period, as well as the measures to be implemented for the running of forest economy in coming 10 years. Plans are developed by Hayantar SNCO without engagement or consulting with local populations living next to forestry. The law contains no single line that would instruct the state authorized body Hayantar, to engage local communities in the development of those plans. Forest management set the allowable volumes of regeneration, maintenance and sanitary cutting for each forest enterprise. And as mentioned before regeneration and maintenance cuttings are often questioned by experts and NGOs as in some cases forest management plans do not provide adequate justification for the purpose and appropriateness of those cuttings (Investigative Journalists NGO/OSCE, 2012).

Another example is the lease of forest. According to the law, the right to lease state forests and forest lands shall be provided through public biddings, which are organized by state authorized body Hayantar. The final decision on provision of leases is made by Hayantar, which is not obliged to justify or at least consult its decision with the local government and local communities living in close proximity to the leased forest. The company that got a leasing contract for

running forest economy shall have a right to build temporary constructions and carry out those types of forest use, envisaged by the contract, including timber harvesting for up to 60-year period. The fees collected from the lessees, however, do not stay in the community budget, nor does it contribute to the corresponding forest enterprise; instead that money goes to state budget (RA Forest Code, 03.22.05/07/11).

The same goes with issuing forest coupons. The forest cutting coupon shall include quantitative and qualitative characteristics of wood and secondary wood products to be harvested, their cost, timeframe for the work implementation, terms of forest regeneration and logging area cleaning works. The allowable amounts of harvesting must be in line with cuttings envisaged by the forest management plans. The allocation of coupons, however, is not transparent. There is no publicly available data as to how many coupons are issued for each forest enterprise and who the buyers are, and how they are being selected. Moreover, number of studies and all the interviewed experts claim that those coupons are being used in a semi-legal way: the harvested amount of timber often exceed the amount indicated in the coupon by far or the same coupon is used several times (Investigative Journalists NGO/OSCE, 2012). Most overexploitation comes from the abuse of legitimate procedures – specifically, cutting in excess of the permit amount, and misclassification of timber logging as “sanitary cutting”. At the same time, the survey of the communities living next to forest conducted by FLEG, showed that that it has become much harder for them to access the forest and obtain permits for logging, resulting in an increase in purchases of fuel-wood from middlemen (Fleg, 2011). ICARE (2011) survey indicates that respondents in communities near the forest often complain that they are denied access to forest even for collecting the fallen branches which are being rotten and have to buy even the wood of the fallen trees from the middlemen. The interviewed experts claim that those

middlemen, who cut down and sell trees, obtain these right informally, without a fair selection process, and it is highly likely that in many cases they share their gains with officials who grant them access (personal communication with A. Khazaryan 01.21.2013; K. Vardanyan 09.14.2012).

The above mentioned legislative loopholes make the process easier. Although these kinds of violations have been brought up by journalists, NGOs and environmental activists, they didn't receive proper attention by Hayantar and law enforcements bodies (Investigative Journalists NGO/OSCE, 2012). Some of the interviewed experts also state that the multiple usage or of the coupons and overharvesting is being done with the consent of the officials who collect side payments for their silence (personal communication with H. Sayadyan 03.19.2013, A. Khazaryan 01.21.2013). Although, State Forest Monitoring Centre (SFMC) publishes an annual report wherein they provide data on the annual amount of illegal logging, the reported numbers are often disputed by NGOs and independent experts. As FLEG report (2011) point out: "In 2009, the total recorded volumes of illegal timber sales were 2,287 trees. Under the assumption that each tree provides 1m<sup>3</sup> of wood, this would equate to roughly 2,287 m<sup>3</sup>. However, these records have little to do with the unregistered cutting, which occurs at a scale far above the trees identified as illegally cut". Contrary to common perceptions and Hayantar claims, only a minority of people collect their own fuelwood. In 2010, the ICARE survey results show that more than 64% of households bought fuelwood from the middlemen, rather than collecting from the forest directly. This is an increase from 52% of households in 2003. In that year, 40% of households collected fuelwood directly from the forest, dropping to 28% in 2010. The middlemen are typically brigades, who log the trees themselves and transport logs on trucks (ICARE, 2011).

Even the total estimation of Armenian forestry provided by Hayantar and SFMC is disputed by NGOs and international organizations. The official number provided by Hayantar is 344, 1 thousand hectares of forest land of which 305, 5 thousand hectares forest covers. A 2010 Global Forest resource assessment (FAO) estimated forest cover at 262,000 hectares (ha) in Armenia. A study by Moreno-Sanchez (2005) estimated forest cover at 245,000 ha. Moreover, a remote sensing data obtained and analyzed by German Agency of International Cooperation (GIZ) in 2011 indicated that there is over 23000 hectares of forest which is not included in the inventory done by Hayantar, or in the reports of State Forest Monitoring Centre. A leading expert from GIZ, who was interviewed for this study, told that the "hidden" forest was most probably used by the officials to cover the extensive amount of illegal logging in other forest areas, i.e. the destroyed hectares of forest were substituted by hectares from the unreported forest.

Overall, lack of transparency and accountability in the sector exacerbates the environment of mistrust between the communities and forest sector institutions. As FLEG report (2011) on Armenian forest sector correctly points out “Lack of reliable data, and publicly available information inhibits good understanding of the situation and thus decision-making. It also increases suspicions regarding forest sector activity among the public and among NGOs, which may or may not be warranted. A poor information environment also allows powerful and cynical stakeholders to act with impunity and avoid accountability”.

#### **(vi) Ease in enforcement of rules**

Despite the above mentioned loopholes, the RA forest legislation can be characterized as quite a strict one. Overall it can be called a declarative, command and control type of regulatory framework which leaves little room for flexibility and dialogue with local users. However, when

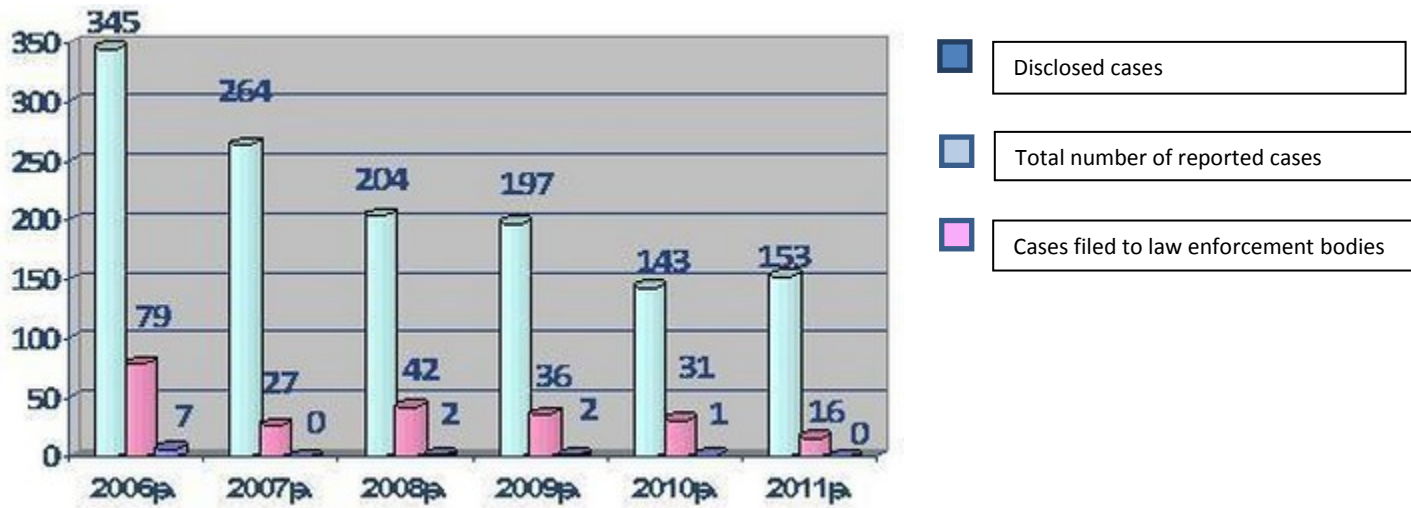


it comes to implementation and enforcement of the rules, it becomes clear that forest institutions lack financial and human resources to insure compliance with the rules. Article 58 of the forest code states that "The objective of state control over use of forest legislation is to secure observance of the determined order of running forest economy, forest lands use by forest users, forest use norms, forest guarding rules as well as other norms determined by the forest legislation". In reality, though, the forest governance bodies lack the resources to protect the forest. The staff of the branch forest enterprises does not have sufficient equipment and human resources to monitor the forests. The number of foresters (rangers) in forest units is not sufficient to provide proper monitoring. Several thousand hectares of forest is protected by just one forester, who is not even equipped with a vehicle and a weapon. The average salary of foresters is extremely low- 40.000-50.000 AMD (about \$110), which creates incentives for these people to engage in corrupt practices. Technically, the foresters cannot stop the large brigades that usually come with cutting coupons but cut in excess of the permitted amount (FLEG, 2011). Inspections by Hayantar and SFMC are only held once a year. In fact these inspections can only detect the amount of timber that has already been cut. The heads of branch forest enterprises are usually much better aware of what happening in the areas under their jurisdiction, however, as a number of field studies and interviewed experts (personal communication with K. Vardanyan 09.14.2012; I. Zarafyan 04.12.2013) argue, that these people are very often in agreement with the illegal loggers, and share revenues with them (FLEG, 2011; ICARE, 2010; Economy & Value research, 2007).

## **(vii) Graduated Sanctions**

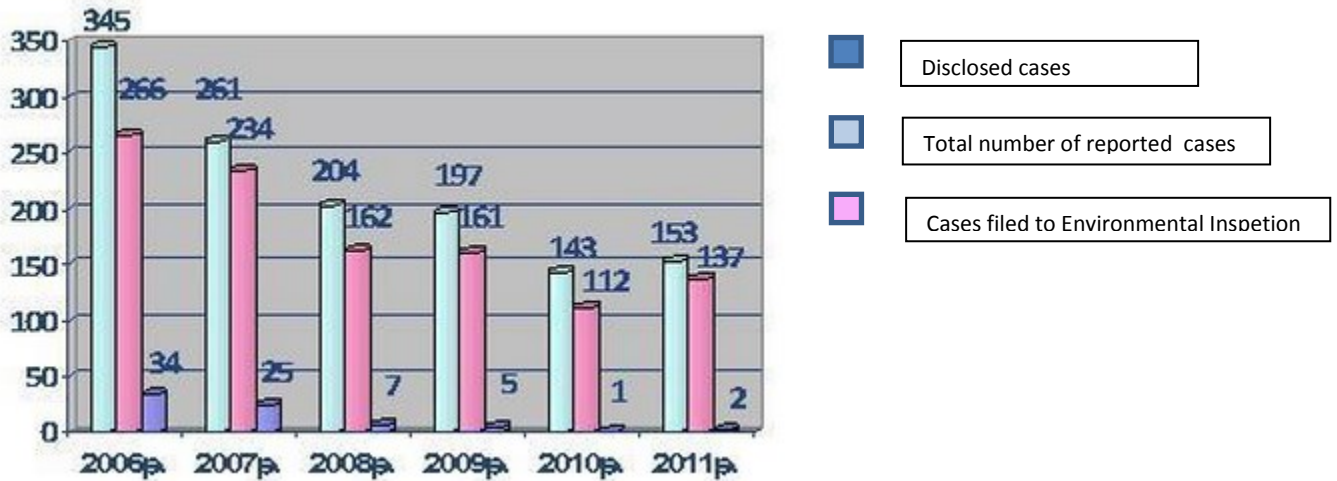
RA law on "On tariffs for compensation of damage caused to flora and fauna as a result of environmental violations" constitutes sanctions and tariffs for illegal cutting of different sort of trees. The tariffs can be between 1000 to 22500 AMD based on the diameter of the bole of the tree. The compensations are seldom paid, though, because the loggers are not found. As mentioned above, SFMC and Hayantar hold yearly inspections in the forests; the number of illegally logged trees found during the inspections is included in their annual reports. However, of those cases of illegal logging very few are actually filed to law enforcement bodies, and even fewer criminal proceeding are instituted upon those charges. As graph 1 show, in 2011 Hayantar reported of 153 cases of illegal logging of which only 16 were filed to law enforcement bodies. None of the 16 cases was discovered. The annual reports of Hayantar and State Forest Monitoring Centre do not provide information as to why only 16 of the cases were filed, and why none of them was resolved.

Graph 1: Progress of cases on forest violations in law enforcement bodies (2006-2011)



Source: State Forest Monitoring Center, 2012

Graph 2: Progress of the cases on forest violations in State Environmental Inspection (2006-2011)



Source: State Forest Monitoring Center, 2012

### **(viii) Match restrictions on harvest to regeneration of resources**

Although a number of successful programs of reforestation and afforestation were implemented mainly with the help of international donors, reforestation rates are still far behind the deforestation. Approximately 33,540 ha of forest land were planted over the past 10 years, although of this 3,854 ha has been replanted, and 5,944 ha are designated for the promotion of coppicing. The remaining area has been left for natural regeneration through fencing or mineralization (FLEG, 2011). Still, the annual rate of deforestation is about 750,000 cubic meters. The official limit of annual amount of cut is 30,000-35,000 cubic meters which are quite low.

According to Hayantar estimates, forest growth range is from 1.5 to 3 m<sup>3</sup> which can potentially result in 393,000 to 686,000 m<sup>3</sup> growth (Hayantar, 2013). However, given the excessive amount of illegal logging, harvested amount exceeds the regeneration rate by far.

As it is shown in the above presented analysis of Armenian forest institutions, the Armenian institutions of forest governance contains some of the above described features which are typical to centralized regimes and lead to unsustainable practices of forest management. First, what we have in the Armenian case is a virtual state monopoly over forest ownership in Armenia with hyper centralized institutions of forest governance and monitoring, i.e. Hayantar, Ministry of Environmental Protection and SFMC. At the same time, the local communities are being deprived of participation in the design of rules and policy implementation. Local communities, who are most effected by the changing condition of the forest resource, do not have a say in leasing of the forest areas, allocation of cutting coupons, permits of construction, etc. As shown above, very often this kind of centralization leads to ineffective rules and policies that allow for

illegal logging and deforestation. Moreover, this kind of a system wherein the local population is not involved in decision making allows for the corrupt officials to abuse their position and collect side-payments benefitting from the above mentioned legislative loopholes and a not transparent system.

The second obvious shortcoming of the existing centralized governance is the inability of the government to insure the compliance with the rules and proper policy implementation. The scarce financial and human resources that the government disposes do not allow for sufficient management and monitoring. Moreover, the concentration of too many responsibilities within Hayantar, i.e. regulation, monitoring, wood harvesting, leads to conflict of interests and incentives for power abuse.

Thirdly, the information asymmetry between the branch forest enterprises and Hayantar, together with the low monitoring capacity allows for the local officials to come into agreement with local "powerful groups" and share benefits from illegal harvesting.

Based on the evidence provided in the case study, it appears that the existing centralized system of forest management which excludes the local population from decision making process leads to de facto open access condition and allows for violators (often in agreement with officials) to free ride and illegally harvest extensive amounts of timber, i.e. a phenomenon referred to as tragedy of the commons. These findings confirm hypothesis #1.

## Chapter 3

### Centralized Institutions of Forest Management and Corruption Risks

This section discusses the correlation between deforestation and corruption in the centralized system of forest governance. Corruption, as a complex social phenomenon, has many faces and a great variety of definitions in different social and political contexts. In most general terms, corruption is defined as “abuse of entrusted power for private gain” (Transparency International, 2006). In the forest sector the main corrupt practices listed by Transparency International are the following:

- Bribes and political influence may be used either to facilitate logging without appropriate permits or to gain access to forests through questionable land concessions
- Enforcement officials are bribed to turn a blind eye to trucks carrying logs
- Corrupt transactions may similarly occur in order to process and trade the logs once they have been harvested, in a form of ‘timber laundering’ similar to money laundering
- Timber certifiers can be paid off to «whitewash» illegally sourced logs
- When violations are found, judicial corruption may prevent prosecution and accountability, leaving citizens without legal recourse

- Financial transactions also can be corrupted as a way to hide paper trails of sales and to keep the timber trade flowing. (Transparency International, 2011)

As mentioned in chapter 2, whenever there is an exclusion of the locals from the governance of the commons, when the central authority lacks resources and capacity to insure the compliance with the rules and when there is information asymmetry between the center and periphery, the officials have the incentives and proper environment to collect side payments for allowing illegal logging (Ostrom, 1990). As I demonstrated in the previous chapter, these conditions are all present in the Armenian case. If we add to this the low salaries of the forest sector employees in Armenia, the incentives for corrupt practices will grow even higher. As a framework for understanding how corruption operates in the system of forest governance, it should be said that the general mechanism is the same everywhere, although there might be peculiarities to each specific case: companies approach public officials to offer bribes for favorable treatment or to allow an illegal practice (sometimes referred to as supply-side corruption). On the other, corrupt officials will demand favors from companies (demand-side corruption), before they will perform routine tasks such as issuing documents required for legal operations. In this case the bribery becomes some sort of an "entrance fee" to allow illicit activities (Campos et al, 2007). The end-consumers very often cannot discriminate regarding the legality of the wood they buy, as illegal timber is usually laundered into the legal supply chain, making the consumer complicit in illegal activities (Transparency International, 2009). As I will describe below, the Armenian case is not immune to any of those practices.

The general implication from the theoretical body is that as long as the probability of being cut and disciplined for accepting bribes is negotiable, forestry officials have little to lose from corruption. If the probability of being cut and disciplined increases the minimum amount

acceptable as bribe also increases. If the minimum amount rises above certain level, the corruption will disappear because the producer's maximum willingness to pay will be less than the forestry official's minimum willingness to accept bribe (Tropical Timber Organization, 2005; FAO, 2012).

Judging from expert interviews and the available reports, the described mechanisms seem to very well apply to the Armenian case. In this section, I will employ the corruption assessment tool developed by Transparency International in order to map the corruption risks in the existing system of forest governance. The mapping of corruption risks is primarily done by expert interviews and secondary data analysis - report of international organizations, NGOs and media on corruption in Armenian forestry were used for the analyses. The tool helps to map the institutions and actors involved, the areas of their authority and associated corruption risks. Ultimately, the tool is employed in order to pin down institutional ills, overlaps and concentration of power within the existing system; factors which allow for corruption practices to occur. The map divides the forestry sector into its major constituent chains: regulatory/licensing chain, timber supply chain; revenue chain, reporting chain, enforcement chain (see Appendix 3). A generic map for corrupt practices first describes the actors (both at national and district levels), second it identifies the type of corruption threat associated with each actor, i.e. issue identification. Next it examines the potential impacts associated with each practice, and the likelihood of the practice actually occurring. Impact and likelihood are both ranked on a scale from 1 to 5. In ranking the impact, the two most important factors at stake are: 1) number of individuals/ communities affected; 2) the amount of financial losses (See table 1).



**Table 1: Ranking criteria for the impact of a practice**

| Rank     | Consequence   |                  |                         |
|----------|---|------------------|-------------------------|
|          | Governance  | Human            | Financial               |
| <b>1</b> | <b>Nil</b><br>no impact   | none             | \$ 0                    |
| <b>2</b> | <b>Minor</b><br>not undermined  | few individuals  | < \$ thousand           |
| <b>3</b> | <b>Moderate</b><br>if stopped, would recover rapidly                  | many individuals | \$ thousands - millions |
| <b>4</b> | <b>Major</b><br>even if corrected, would be compromised for some time | many communities | \$ millions - billions  |
| <b>5</b> | <b>Catastrophic</b><br>undermined irreparably                         | national         | >\$ billions            |

*Source: Transparency International, 2012*

In ranking the likelihood of occurrence of corrupt practices the factor is the reported past experience and frequency the specific practice (See table 2).

**Table 2: The ranking criteria for the likelihood of a corrupt practice occurring**

| Rank | Likelihood of occurrence   |
|------|--|
| 1    | <b>Impossible</b><br>never happens                                   |
| 2    | <b>Rare</b><br>has been known to occur in other similar environments |
| 3    | <b>Unlikely</b><br>uncommon, but does occur                          |
| 4    | <b>Likely</b><br>commonly occurs                                     |
| 5    | <b>Highly Likely</b><br>frequently occurs                            |

*Source: Transparency International, 2012*

The last step is the risk assessment column, which is a product of the two previous variables (impact x likelihood). In a risk assessment, the value to each practice is assigned not so much based on the actual importance and implied threat of each practice, but rather based on its position relative to the other practices in the matrix. The key questions asked at rating the practices are: “How will the practice impact society? How each practice would impact the major constituencies involved in forestry. Who will benefit and who will lose” (Transparency International, .2010). Hence, the risk assessment part is more about identifying priorities rather than ascribing independent values to each practice.

Below, is the analysis of corrupt practice in Armenian forest sector with the TI corruption map. For the ease of analysis, I will refer to each constituent chain separately.

- 1. Regulatory/Licensing chain** refers to policy formulation phase when rules and regulations that govern forestry are being made.

### **Passing forestry legislation/regulation:**

In Armenia the responsible bodies for adopting rules and regulations on forestry are RA National Assembly, Standing Committee on Agriculture and Environment of NA, Ministry of Nature Protection, Ministry of Agriculture. Local actors do not participate in the process. According to a number of reports (Fleg, 2011; Icare, 2010; Economics & Value research, 2007) and expert interviews (personal communication with A. Khazaryan 01.21.2013; K. Vardanyan 09.14.2012; I. Zarafyan 04.12.2013), corrupt practices are not rare at this stage. They may include bribery (including kick-backs) to strike or delay bills, include subsidies (i.e. law fees), weaken regulations, increase the annual allowable harvest and/or, set up ineffective institutions. Passage of rules and regulations that benefit a certain group of businessmen and overlook the needs and interests of the communities in the Armenian environmental sector is often brought up by environmental NGOs, activists and independent experts. Some of the controversial decisions adopted by NA include the decision to subsidize Teghut open pit mining project where 600 hectares of forest is going to be destroyed, road construction in Shikahogh reserve, which will require cutting down over 100,000 trees, construction of HES in Igevan and Arjatghelu reserves which also will require mass loggings (ATP, 2012). Environmental NGOs claim that these kinds of regulations are approved due to corrupt practices of decision makers, e.g. kick-backs, low fees (“Trchkan” civic initiative, 06.11.2011; “Save Teghut” civic initiative, 2012). Another example, are the legislative loopholes discussed in chapter 2. The passage of rules with uncertain definitions and confusing instructions allows the corrupt officials to maneuver, apply double standards and favorable treatment towards “powerful actors” who offer commissions. Given that the amount of communities and resources affected by national legislation include virtually all the country, the impact is given a value of 5 (see table 3). Most of the interviewed experts assessed

the likelihood of similar practices to be 4 given the past experience and existing loopholes in the legislation.

**Forest zoning changes:** Agencies responsible for forest zoning are RA Parliament, RA government, Ministry of Nature Protection, Hayantar SNCO, Municipality, Regional Administrative Units (marzpetaran).

Nork forest in Yerevan had a crucial importance for the city as a green belt absorbing the dust particles and carbon dioxide. 122 ha of Nork forest were partly cut during the energy crisis of 1990 and used as fuelwood for households. Later, though, instead of replanting the forest, private villas appeared in the area and their construction started to grow over time. RA government did not do anything to stop the illegal construction; instead it changed the zoning of the area and privatized 100 ha of forest (ATP, 2005). In 2001 the legal status of “Black lake” reserve was downgraded to merely a restricted area. In 2002 “Dilijan” reserve’s status was changed into a national park. This means that those areas currently are without “special preservation condition”. ATP forest experts claim that those changes were made to meet the private interests of some “powerful” individuals. Hence, the likelihood of the practice is assessed 4 (likely). The far-reaching consequences of those practices are not only deforestation and environmental degradation but also significant risks of state capture - the phenomenon wherein the government officials and civil servants use their offices to pursue personal benefits (Fleg, 2011); which is why the impact is assessed 5 (see table 3).

Another prominent example is Teghut case. Teghut mine controversial project which was fiercely opposed by the local environmental groups, got subsidies for the upcoming three years by the RA government decision of 27.02.2011.

**Table 3: Regulatory (how 'rules' get established)**

| Activity  | Actors involved   |   | Corruption Threat  | Corrupt practice  | Ranking<br>(1-5) |            | Risk                   |
|---|---|---|--|---|------------------|------------|------------------------|
|   | National  | District  |  |   | Impact           | Likelihood | Impact x<br>Likelihood |
| <b>Regulatory (how 'rules' get established)</b> |   |   |  |   |                  |            |                        |
| Passing forestry legislation/ Regulations       | Parliament a(and its standing committee on agriculture and environment); Ministry of Nature Protection; Ministry of Agriculture | Local assemblies; Operators<br><br>N/A                  | Undue influence on forest laws and regulations (state capture) | Commission: Bribery (including kick-backs) to strike or delay bills, include subsidies (e.g. low fees), weaken regulations, increase the annual allowable harvest and/or, set up ineffective institutions | 5                | 4          | 20                     |
| Forest zoning Changes                           | Parliament; Ministry of Nature Protection; Hayantar SNCO;   | Agencies; Assembly; Governors/ District head; Operators | State capture  | Commission: Bribery to change the zoning of an area to allow logging  | 5                | 4          | 20                     |
| Privatizing forestry-sector firms               | MoF; Parliament; Operators  | Agencies; Assembly; Governors/ District head; Operators | State capture  | Commission: Bribery to sell state assets at below-market value  | 5                | 4          | 20                     |

*Source: Transparency International 2012*

## 2. Timber supply

**Planning:** Currently the allowable annual harvest is set quite low-30.000-35000 ha. This is, perhaps, done in order to offset continuing high levels of illegal logging, so that an informal approach to planning is taken to address informal activities (Fleg, 2011).

**Logging operations:** Virtually all the interviewed experts, as well as the studied reports of international organizations and NGOs state that over harvesting and introduction of logs from illegal sources is a very common practice in Armenia. As described in chapter 2, the activities can be characterized as semi legal, wherein one cutting coupon is used multiple times or cutting is done in excess of the permit amount. According to the reports, there is a whole chain of corrupt practices: the brigades of illegal loggers and their enablers usually bribe the local foresters and police officers so that they don't report trucks with illegal timber. As the experts and number of reports claim (ICARE, 2009; FLEG, 2011, Economics & Value research, 2007; ATP, 2005) the heads of regional forest enterprises are also usually part of the chain and receive benefits from the loggers. ICARE (2009) surveyed the truck drivers carrying timber. Although, the majority of the approached drivers refused to provide any information, 8 of the drivers agreed to talk and confessed that they use one Hayantar coupon several times: coupon for 20m<sup>3</sup> is used to get 40 or 60 m<sup>3</sup> of wood, whereas in the books only 20m<sup>3</sup> cut is registered. Their deal is then negotiated with the representative of local forest enterprise with informal payment. Moreover, some of the interviewed drivers said that forest enterprise encourages them to use the ticket multiple times (ICARE, 2009). Although the impact of such practice is restricted to small local

forest area, the value given to it might not be so low, as the practice is widespread all over the country and is the major mechanism of illegal logging. Accordingly, I assessed the impact and likelihood of the practices to be 5 (see table 4).

**Illegal locations; conservation areas; outside licensed areas:** Ecolur NGO has several times reported about the illegal logging in Dilijan national park. The areas are being cleaned mainly for the construction of restaurants and for the tourists visiting the national park. The NGO claims that concessions of forest area are being done illegally due to corrupt practices of the responsible agencies (Ecolur, 07.17.2011). The Head of World Wild Life Fund Armenian office Karen Manvelyan reported in 2008 that the pine-tree forests of Stepanavan – considered to be a preserve – were cut: “The head of the village administration was charged, but he was backed, naturally, by officials – just as in all cases of large-scale logging” (Hetk,04.28.2008) .

The majority of the interviewed experts claim that the impact is moderate, i.e. large number of communities is not affected; the damage is not irreversible- if stopped would recover. Hence the impact and likelihood are given a value of 3 (see table 4). Again, it should be noted that the values are assigned in comparison with the existing risks in other categories.

**Bribery to allow the harvest of unauthorized or protected species:** Protected species of high value such as oak and Greek walnut are being logged because of their high market price as valuable material for furniture. According to ATP (2008) loggers offer generous bribes to forest officials for issuing false licenses that the high value species being cut are diseased and need sanitary cutting. Hayantar chief forester Ruben Petrosyn in his interview to ATP (2008) affirms



that illegal loggers bribe the corresponding agencies in order to get falsified documents that oaks or walnuts are being cut for sanitary reasons (Armenian Tree Project, 2008). Given this evidence the likelihood of the practice is assessed to be 4 (likely). Protected species have an endemic value for the Armenian forestry resource and logging of those trees undermines the biodiversity of the local flora. Hence, the impact is assessed 4 (even if corrected would be compromised for a period of time) (see table 4).

**Fraudulent documentation for harvesting CITES protected species:** CITES databases do not include trees growing in Armenia, which is why the risk of corrupt practices is assessed to be 1.

**Use of illegal labor for logging/use of illegal security forces (illegally armed groups):** No similar practices have been reported. Corruption risks in this category are assessed to be 1.

**Table 4: Timber supply (how 'rules' are operationalized)**

| Activity   | Actors involved   |   | Corruption Threat  | Corrupt practice   | Ranking<br>(1-5) |            | Risk                   |
|--|---|---|--|--|------------------|------------|------------------------|
|  | National  | District  |  |  | Impact           | Likelihood | Impact x<br>Likelihood |
| <b>Timber supply (how 'rules' are operationalized)</b> |   |   |  |  |                  |            |                        |
| Planning   | Hayantar<br>SNCO,<br>Ministry of<br>Nature<br>Protection                  | N/A   | Inflate annual allowable harvest   | Commission: Bribery to overestimate harvest  | 1                | 1          | 1                      |
| Logging<br>Operations                                  | Hayantar<br>SNCO,<br>Ministry of<br>Nature<br>Protection;<br>Forest plans | Hayantar SNCO,<br>Regional Hayantar<br>enterprises,<br>Forest Land leases<br>Middlemen;<br>Landowners;<br>Communities;<br>Forestry agencies | Over-harvesting (illegal volume),<br>allowing introduction of logs from<br>illegal sources (timber laundering) | Extortion of 'field expenses' for<br>issuing permits required for<br>harvest,<br>Bribery to turn a blind eye on<br>harvesting in excess of the<br>permitted amount | 5                | 5          | 25                     |
|  |   |   | Illegal locations; conservation<br>areas; outside licensed areas   | Omission: Bribery to allow logging<br>outside concessions (in parks, for<br>example)   | 4                | 3          | 12                     |
|  |   |   | Illegal product  | Omission: Bribery to allow the<br>harvest of undersized or<br>protected species  | 4                | 4          | 16                     |
|  |   |   | Fraudulent documentation for<br>CITES-protected species  | Commission: Provide false<br>documents   | 1                | 1          | 1                      |
|  |   | Police; Immigration;<br>Ministry of Labor   | Use of illegal labor including<br>imported workers; unsafe<br>working conditions, debt bondage                 | Omission: Bribery to allow labor<br>trafficking; ignore labor violations   | 1                | 1          | 1                      |

**Salvage logging:** Similar practices were observed in 1992-1995 when a number of high-rank military officials were illegally cutting timber in Dilijan national park. According to “Hetq” investigative journalism periodical the commander of the tank regiment near Dilijan, commanded the soldiers to illegally cut wood in Dilijan national park, exporting from two to four trucks of timber and selling it to the population in forestless areas of the country. The government resources were utilized to carry out the logging, e.g. trucks, fuel. According to some reports the armed force resources were used to block the forest roads leading to logging sites, so as to prevent Hayantar inspectors from entering the forest. Several other generals were also accused for similar violations by media outlets; however no criminal proceedings were instituted on any of those cases. Currently, there is no record on similar violations taking place in forestry. Taking into account previous experience, the likelihood of occurrence of such practices is assessed 3 (unlikely). The impact of the practice, though, should be assessed as major (4); as such instances set precedence for state capture and undermine the reputation of state and local government (see table 5).

**Transport licenses:** According to a number of reports (Fleg, 2012; Icare, 2009; Economics & Value, 2007) and expert interviews (personal communication with A. Khazaryan; H. Sayadyan; K. Vardanyan) police are a part of corruption chain and illegal logging business. The trucks with illegal wood must pay bribes to road police so that they turn a blind eye on the trucks. According to Fleg (2012) the bribery is usually about 10 000 AMD per truck. As the practice is widespread in Armenia and creates proper environment for further logging, both likelihood and impact are assessed to be 5 (see table 5).

**Table 5: Timber supply (how 'rules' are operationalized)**

| Activity              | Actors involved   |  | Corruption Threat   | Corrupt practice  | Ranking<br>(1-5) |            | Risk                   |
|-----------------------|---|--|---|---|------------------|------------|------------------------|
|                       | National  | District   |   |   | Impact           | Likelihood | Impact x<br>Likelihood |
|                       |   | Police;<br>Military  | Use of illegal security forces<br>(illegally armed; violating<br>human rights)  | Omission: Bribery to allow illegal<br>security operations<br><br>Extortion to employ government forces<br>as security   | 1                | 1          | 1                      |
| Salvage<br>logging    | Hayantar,<br>military and<br>other<br>government<br>offices | Hyanatar regional<br>enterprises ,<br>regional<br>administrative units | Salvage licenses for non-<br>salvage operations; dam<br>projects to access wood<br>without normal<br>restrictions/processes | Omission: Bribery to allow illegal,<br>undocumented or fraudulent<br>operations   | 4                | 3          | 12                     |
|                       |   |  | Fraudulent documentation for<br>CITES-protected species   | Commission: Provide false documents   | 1                | 1          | 1                      |
| Transport<br>licenses | Ministry of<br>Nature<br>Protection,<br>hayantar            | Police; Hayanatar<br>regional enterprises                              | Transport of logs without<br>proper documents   | Commission: Bribery to issue false<br>permits for illegally sourced or sized<br>logs, and/or illegal species<br><br>Omission: Bribery to allow<br>undocumented transport of logs<br><br>Commission: Extortion to issue valid<br>permits | 5                | 5          | 25                     |

Source: Transparency International, 2012

**Wood processing industry:** The experts and the available reports state loud and clear that there is a huge gap between the demand and supply of timber in Armenia. Timber supply of households, timber processing industry, restaurants and export far exceed the official supply. The absolute minimum of demand calculated by Fleg (2011) is 457,000m<sup>3</sup> (solid wood) for the year 2010. Whereas the amount of wood legally obtained from forest enterprises reported by Hayantar in 2010 is only 75.000m<sup>3</sup>, plus 18.000m<sup>3</sup> of import. The supply-demand gap is being met informally. According to Fleg (2011) report there is also a wide cost gap between legally and illegally procured timber: illegal procurement of 1m<sup>3</sup> of timber is 50.000-70.000 AMD cheaper than the legal procurement of the same amount. The gap occurs because of the state enforced price predetermined by Hayantar (72.000 AMD per 1m<sup>3</sup>); in black market, though, the price of 1m<sup>3</sup> timber is 4000 AMD. Hence the real market price at which rural households and sawmills purchase wood is generated in black market by illegal suppliers. The existing cost and demand/supply gap create huge incentives for illegal logging. No certain number of operating sawmills is available at Hayantar or National Statistical Service. According to Icare (2009) there are more than 120 operating entities. The survey of those sawmills indicates a very high non response rate (70%). From the surveyed sawmills only 65% had permission from Hayantar. The rest 45% is operating without a legal permit. 10% of the respondents confessed that they pay unofficial charges to police, environmental inspection and tax officers (Icare, 2009). Experts and the available reports claim that a much larger percentage of illegal loggers and shadow sawmills share benefits with the respective agency representatives. As Fleg report (2011) points out, “everything above and beyond the 75,000 m<sup>3</sup> registered by Hayantar and 18,000m<sup>3</sup> in fuelwood imports, is off the books (primarily through under-invoicing)”. Contract terms are violated when loggers cut in excess of the amount allowed by permit, when sawmills buy wood without

certificate of Hayantar, when environmental and tax inspectors are bribed to turn a blind eye on those practices. Understandably, there is no quantified data regarding the exact numbers of corruption, as the operations are illegal and take place in black market. However, based on the existing strong incentives for corrupt practices, the amount of “off-the books” product, the interviews with truck-drivers and sawmill employees, both the impact and likelihood of “using illegal wood to keep costs low” and “failure to respect contract terms” are given the highest value of 5 (see table 6).

### **Sale/Export; Illegal export of protected species**

The high prices of timber in the international market create incentives for the export of timber from Armenia. The average price of 1m<sup>3</sup> of unprocessed timber is about 9000 AMD. The average price in EU is about 43 Euros for 1m<sup>3</sup> (Eurowoodnet, 2013). According to official statistics more than 80% of wood exports from Armenia is unprocessed or primary processed wood (Armenian National Statistical Service, 2012).

Economics & Value research (2007) has cross-checked the recorded amounts of exports against the amount of product recorded as imported by those countries from Armenia (that is, Armenia’s export records have been compared with other countries’ import records) via the international trade database of the UN Comtrade (see Table 9, Appendix 1). As shown in the table there is a considerable underreporting on behalf of NSS on the amounts and values of exported wood to the selected countries. According to the NSSA, in 2005 Armenia’s wood exports amounted to \$920,000; the UN statistics stipulate export in the amount of \$2,686,000 – representing around 12,000 cubic meters of wood. As the experts claim, these kinds of “omission” might be a result of illegal cooperation and revenue sharing between the customs service and illegal loggers (personal communication with I. Zarafyan 04.12.2013; K.Vardanyan 09.14.2012).

What is worse, the protected species of high value such as oak and Greek walnuts are also being logged because of their high market price. According to Armenian Tree Project, high-value tree species are being cut and exported to Germany, France, Italy, United Arab Emirates, Iran and Turkey, by bribes and kickbacks to custom service officers (ATP, 2008). Hayantar chief forester Ruben Petrosyan in his interview to ATP (2008) states that illegal loggers bribe the corresponding agencies in order to get falsified documents that oaks or walnut being cut are diseased trees (Armenian Tree Project, 2008).

Based on this evidence, the likelihood of such practices is assessed 4. The impact of bribery at customs service is assessed 3 (-if stopped would recover rapidly), however, the impact of corrupt practices for exporting protected tree species is assessed 5 as a major threat for the valuable resources of high-value species (see table 6).

**Table 6: Timber supply (how ‘rules’ are operationalized)**

| Activity                 | Actors involved                              |  | Corruption Threat   | Corrupt practice  | Ranking<br>(1-5) |                   | Risk<br><br><i>Impact x<br/>Likelihood</i> |
|--------------------------|--|--|---|---|------------------|-------------------|--|
|                          | National                                     | <i>District</i>  |   |   | <i>Impact</i>    | <i>Likelihood</i> |  |
| Wood processing industry | Hayantar SNCO, Ministry of Economy           | Hayantar Forest Enterprises; Private sawmills; Police; | Use of illegally sourced wood to keep costs low or to meet demand when production capacity outstrips legal supply | Commission: Bribery to issue false permits  | 5                | 5                 | 25   |
|                          | Ministry of Nature Protection, Hayantar SNCO | Forestry agencies; Police; Operators                   | Failure to respect contract terms   | Commission: Bribery to issue false permits<br><br>Omission: Bribery to ignore contract terms<br><br>Extortion to issue permits  | 5                | 5                 | 25   |
| Sale/Export              | Customs Service; Ministry of Economics       | Customs; Police  | Smuggling (black market)  | Omission: Bribery to allow fraudulent or undocumented shipments across borders<br><br>Extortion to issue permits  | 3                | 3                 | 9  |
|                          |  | Customs; Forestry agencies                             | Illegal export of protected Species   | Omission: Bribery to allow fraudulent or undocumented export of protected species<br><br>Commission: Bribery to issue false documents or to ignore other forms of timber laundering | 3                | 5                 | 15   |



### 3. Reporting

**Annual harvest:** As provided in previous sections, underreporting and bribery to falsify data are common in many stages of forest management: logging in excess of the permits is usually done by bribing the representatives of local forest enterprises, who in return do not report overharvesting. As a result, the amount of illegal logging by Hayantar is far less than the more realistic data provided by NGOs and international organizations. The absolute minimum of annual logging in Armenia, given the number of households using fuelwood, the wood industry and the exports, is 457,000 m<sup>3</sup> (Fleg, 2011). Other sources report annual rate of deforestation to be 600,000- 750,000 cubic meters (ATP, 2012; economics & value research, 2007; Icare, 2011) Despite these estimations State Forest Monitoring Center officially reports only 1597 illegally cut trees (967.5m<sup>3</sup>). Virtually all the interviewed experts report widespread corrupt practices for under reporting the illegally logged and transferred wood, in nearly all the chains of forest management and timber supply (personal communication with A. Khazaryan 01.21.2013; K. Vardanyan 09.14.2012; I. Zarafyan 04.12.2013).

**Timber revenue:** Understandably, the revenue from the timber also is not reported which not only creates huge tax revenue losses but also provides for huge black market of timber in Armenia wherein the lion's share of local timber transactions are taking place. The second way of trading the illegal wood is through timber laundering. According to the available reports the illegal logs are usually mixed with legally logged timber, or false documents are issued to claim that the logged trees were sick and that there was a need for sanitary cutting Forest officials and police officers are bribed to turn a blind eye on those practices (ATP, 2008; Icare, 2011). Given these data both, the likelihood and impact of corrupt practices at this stage are given the value of 5 (see table 7).

**Table 7: Reporting (how operations are monitored)**

| Activity  | Actors involved  |   | Corruption Threat   | Corrupt practice   | Ranking<br>(1-5) |            | Risk                   |
|---|--|---|---|--|------------------|------------|------------------------|
|   | National   | District  |   |  | Impact           | Likelihood | Impact x<br>Likelihood |
| <b>Reporting (how operations are monitored)</b> |  |   |   |  |                  |            |                        |
| Annual harvest                                  | Hayantar<br>SNCO,<br>Ministry of<br>Nature<br>Protection,<br>State<br>Environment.<br>Inspection | Regional<br>Hayanatar<br>enterprises;<br>Operators;<br>Heads of<br>districts; | Under-reported volume,<br>undervaluing production   | Commission: Bribery to falsify data<br><br>Omission: Bribery to refrain from<br>reporting to other agencies or to<br>withhold information from the<br>public | 5                | 5          | 25                     |
| Timber<br>consumption<br>(production)           | Hayantar;<br>Wood<br>processors  | Forestry<br>enterprises;<br>Operators   | Overestimated use of 'old<br>Stock' (laundering illegally<br>sourced wood);<br><br>Fraudulent documents<br>(changing volumes, areas of<br>origin, etc.) | Omission: Bribery to fail to check<br>stock volumes  | 5                | 4          | 20                     |
| Timber revenue                                  | MoF;<br>Operators  | Forestry<br>agencies;<br>Operators;<br>Financial<br>accounting<br>firms       | Failure to fully and<br>accurately<br>report revenues, including<br>unpaid/underpaid fees   | Commission: Embezzlement of<br>forestry revenue<br><br>Omission: Bribery to fail to<br>accurately record fees paid   | 5                | 4          | 20                     |

#### **4. Enforcement**

As described in previous sections, operators violating the law and the terms of the contract avoid penalties by offering bribes and kickbacks to corresponding agency representatives. Bribery to avoid reporting infractions or levying sanctions is a common practice. Interpretation of law/regulations favorable to certain operators described in chapter 2 make it possible for the forest officials to avoid internal sanctions, e.g. by issuing cutting coupons for intermediate or regeneration cuttings which terms and conditions are vaguely described by the law. SFMC statistics on the number of cases on illegal logging disclosed by the police and State Environmental Inspection indicates that (see graphs 1, 2), in fact only a few of those cases are being disclosed at those agencies. In 2011 none of the 16 cases filed to police, was disclosed: investigations were dropped, no indictments were issued. The experts claim that the extremely low number of disclosed cases, sanctions and penalties are once again a result of corrupt practices among operators, forest officials and law enforcement bodies. Under these conditions, both the likelihood and impact of those practices is very high. Three of the categories are marked with 0, as no data was found on those practices.

There is no available data on the cases of collusion in seizure and auction of timber (no public notification of auction, tip off loggers so no personnel are arrested, etc.); however the process of public bids for forest land leasing and issuing cutting coupons is not transparent. There is no publically available data on the selection criteria and the results of the bids. According to Investigative Journalists NGO/OSCE joint publication (2012) many of the companies that win the bids are violating the contract terms, overharvesting, starting an illegal construction etc. Although there is no record on the corrupt practices in this sphere the likelihood

of such practices is quite high due to not transparent procedures. 5 of the interviewed experts assessed the likelihood of such practices to be 4 (see table 8).

**Table 8: Enforcement (how rules are enforced)**

| Activity                             | Actors involved   |                              | Corruption Threat   | Corrupt practice  | Ranking<br>(1-5) |            | Risk                   |
|--------------------------------------|---|------------------------------|---|---|------------------|------------|------------------------|
|                                      | National  | District                     |   |   | Impact           | Likelihood | Impact x<br>Likelihood |
| Enforcement (how rules are enforced) |   |                              |   |   |                  |            |                        |
|                                      | Hayantar SNCO; State Forest Monitoring Center; State Environmental Inspection | Forestry enterprises;        | Failure to punish operators that violate regulations (e.g. fail to penalize or withdraw licenses); Interpretation of law/regulations favorable to certain operators; Failure to enforce internal sanctions against officials or agencies that violate regulations on reporting or revenue | Omission: Bribery to avoid reporting infractions or levying sanctions<br><br>Extortion of 'field expenses' for forestry authorities to conduct monitoring | 5                | 5          | 25                     |
|                                      |   | Police                       | Failure to investigate  | Extortion of suspects<br><br>Bribery by suspects  | 5                | 5          | 25                     |
|                                      |   | Customs; Ministry of Finance | Timber laundering   | Commission: Collusion in seizure and auction of timber (no public notification of auction, tip off loggers so no personnel are arrested, etc.)            | 5                | 4          | 20                     |
|                                      |   |                              | Charges reduced; only laborers arrested/indicted  | Commission: Bribery to reduce charges or to avoid arrest  | 0                | 0          | 0                      |
|                                      |   |                              | Evidence ruled insufficient for Charges   | Commission: Bribery to influence evidence   | 0                | 0          | 0                      |
|                                      |   |                              | Investigations dropped  | Commission: Bribery to drop investigations  | 5                | 5          | 25                     |
| Prosecution s/Issuing indictments    | Attorney General's office   | Prosecutor's office          | Failure to issue indictments; Flawed indictments issued using more lenient statutes   | Commission: Bribery to manipulate indictments<br><br>Extortion of accused   | 5                | 5          | 25                     |
|                                      |   |                              | Manipulation of evidence/witnesses or court arguments; Failure to meet time deadlines, jeopardizing the case (e.g. appeal of acquittal)   | Commission: Bribery of witness or judicial official   | 0                | 0          | 0                      |

As mentioned above, the assigned scores do not reflect the independent value of each corruption risk, rather those are the comparative values that reflect the level of corruption risks in different chains of the current system of Armenian forest management, i.e. the impact and likelihood of one practice are evaluated based on a comparison with impact and likelihood of other practices in the chain. Overall, the comparative assessment of corrupt practices indicates high corruption risks at nearly all the chains of forest management and wood industry. 24 categories were assessed out of 28. In case of 4 categories no sufficient data were available for the assessment. Thirteen categories out of the 24 the corruption risk categories are assigned a value of 20 and 25 (very high). The chains that scored the highest are timber harvesting and reporting chains. Each of the chains includes at least one category where the corruption risk is above 20. Generally, the map indicates that the existing system of forest management can be characterized as one carrying high corruption risks. It also reveals widespread practices of inter-institutional corrupt relationships between the forest management agencies municipalities, local authorities, and customs service and law enforcement bodies.

Judging from the above presented analysis of the categories, the risks are exacerbated by non-transparent procedures, concentration of decision making power in Hayantar SNCO, poor monitoring capacity of the same agency, inefficiency of law enforcement bodies. The collected evidence supports hypothesis #2: the existing centralized regime of forest governance allows for extensive corrupt practices. It should be noted, though, that the conducted research reveals strong relationship between the existing centralized system of governance and corruption, but not causation between the two. Further study of the corrupt practices and center-periphery relations of forest management system is required in order to make judgment regarding the specifics of that relationship.

## Conclusions

The current study generally indicates that the Armenian case of forest resource management is very much in line with the phenomenon that is known as the tragedy of the commons. The detailed analysis in the institutional ills and mapping of the corrupt practices in the sector presented in the previous chapters indicate that the institutional arrangements of forest management and the unsustainable practices of forest governance make a case for the tragedy of forest commons. Generally, the detailed study of the factors leading to/allowing for the illegal logging of this extant can be summarized into the following ones:

- legislative loopholes in the Forest Code
- legislation does not provide for any type of participation of the local communities in the governance of the forest
- no available mechanisms of holding the state agencies of forest governance accountable to local communities
- vague boundaries between the forest areas of Hayantar property and MoNP property
- non-transparent procedures of granting forest concessions, e.g. public bids, forest leasing contracts, cutting permissions, construction permits, etc.
- total exclusion of the community from the above mentioned processes
- poor capacity of the state agencies to enforce the terms of forest concession contracts
- low salaries of the forest sector employees
- high rates of corruption and state capture practices in the sector

- underreporting on behalf of Hayantar and State Forest Monitoring Center on the real amount of illicit activities in the sector and rates of deforestation
- failure of law enforcement bodies to prosecute the violators

When analyzing the reasons behind the failure of the Armenian forest institutions to sustainably manage the forest resource we find factors described by Ostrom (1990) as the main defects of the centralized institutions of forest management: exclusion of the local communities from the decision making processes regarding the forestry; inability of the central agency to monitor the resource and insure compliance with the contract terms; information asymmetry between the center and periphery. The Armenian forestry sector is not immune to any of those conditions. Hayantar and Ministry of Nature Protection are the sole actors that can make decisions regarding all the aspects of forest governance, starting from setting the annual allowable amount of cutting to holding public bids, granting leasing and logging permissions, etc. Local communities, though, who are most affected by those decisions do not have any available mechanism to participate in the design or implementation of those decisions.

The branch forestry enterprises do not have a say in decision making either, and stand as implementing branches of Hayantar. At the same time Hayantar and Ministry of Nature Protection lack sufficient financial and human resources to monitor the forestry and insure compliance with the rules. This creates information asymmetry between the central agencies of Hayantar and MoNP on one side and local forest enterprises on the other, i.e. the branch forest enterprises although deprived of decision making power, have a real time information on the state of the resource, the amount of illegal logging, the local groups engaged in the business, middlemen operating in the market, etc. If we add to this the extremely low salaries of the forestry sector employees, we will get the picture of current forest management system and the



high corruption risks it cares. Consequently, we have a system wherein the immediate users of the forest and its nearby residents do not have a say in the management of the forest and face selective application of law which denies them access to forest even for gathering fallen branches but allows some "powerful" individuals to log hectares of healthy forest. As the hypothesis #1 claims, such kind of a system leads to tragedy of the forest commons whereby the individuals can bypass the law and "free ride" at the expense of the community without being prosecuted. As a result, we are facing rapid deforestation in Armenia, with the absolute minimum of 450.000 m<sup>3</sup> of forest being annually cut (Fleg, 2011).

The mechanisms of illegal cutting generally include some powerful locals getting logging coupons or winning a leasing contract from Hayantar and cutting five six times the permitted amount. The overharvesting is usually being done through agreement with the local foresters and heads of forest enterprises that turn a blind eye on the illegal activities in return of bribes and kickbacks. Further, the illegally logged wood is either being sold as fuelwood through middlemen, or go to sawmills for manufacturing furniture and construction material. The wood of high-value species is often being exported to Iran, Georgia, Germany, Italy, United Arab Emirates, etc. As the analysis of the corrupt practices in the forestry sector with Transparency International reveal, there are high corrupt risks at nearly all the chains of forest management and timber supply. Although, there is not sufficient evidence to claim causation between the centralized system of forest governance and the existing high corruption risks in the sector, the relation between the two is obvious and is shown in the analysis of corrupt practices in chapter 3. The above described nontransparent processes and centralization of decision making power within Hayantar state agency largely contributes to corruption risks in the center. However, the study of corruption threats with the employment of Transparency International is just a mapping

of corrupt practices and corruption risks in the forest governance system. Further study needs to be conducted in order to find out more about the specifics of the existing relationship between the centralized system of forest governance and corrupt practices in the sector.

## **Policy Recommendation**

The above presented evidence on unsustainable practices of forest management in Armenia, bring up the urge of institutional reforms in the sector. The failure of the Armenian institutions to sustainably manage the forest resource come as a result of concentration of decision making power within Hayantar state agency, the existing high corruption risks in the sector as well as of total exclusion of the local population from all the stages of forest management. Having analyzed those institutional ills of the existing system, the current study comes up with policy recommendation to decentralize the existing system of forest management. Particularly, this entails the inclusion of the local population in the management of their nearby forest. For the reasons described in chapter 2 the participation of the local communities in the governance of the forest can well help to solve or mitigate the existing institutional defects that undermine the sustainable management of the forestry and avert tragedy of the forest commons.

Decentralization of forest governance as a means of fighting unsustainable forest management and illegal logging is currently the prevailing trend in the international practice. A total of 200 million hectares of forest was transferred from state to community tenure regime worldwide within the past twenty years (Agrawal, 2010).

Advisably, the participation of the local communities should take place both in the stage of designing the rules of forest access as well as implementation of those rules. The communities

should have a say in the decisions regarding the leasing of the forest land, allocating cutting permits, allowing construction in the forest land, choosing the heads of forest enterprise etc. Engaging the communities in those processes will deprive Hayantar from its monopoly as a sole decision maker of the sector and make the agency more accountable to the communities. Moreover, this would help to create a system of checks and balances which will make the decision making processes in the sector more transparent and lower the corruption risks by limiting the authority of the state agency officials. The engagement of the locals can take forms of regular public hearings, meetings, voting and consultation. The study does not urge an abrupt change of property rights of the forest by passing all the resource from state to community property. Rather, there is a need for gradual decentralization of the system and more active engagement of the local communities in the management of their nearby forest. Further research is required in order to find out mechanisms of the engagement and participation of the local communities taking into account the peculiarities of the Armenian forest management experience.

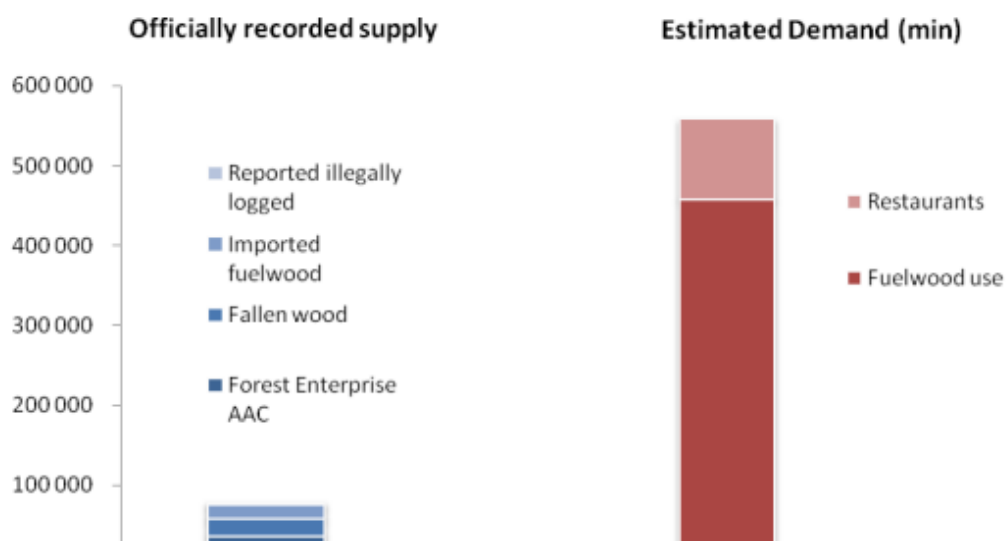
## **Further Research**

Current study was the first attempt to apply the prominent theoretical body and international practice on the tragedy of the commons to the Armenian institutional framework of forest management. The analysis of the institutional arrangements of the Armenian forest management system demonstrates a number of institutional ills and defects which scholars describe as typical to centralized systems of forest management. Further research and particularly field research of the functioning of Hayantar forest enterprises is required in order to find out more specifics

regarding the relationship of centralized institutional system and deforestation. The same goes with the relationship between the centralized institutional arrangements and existing high corruption risks in the sector. The analysis presented in chapter 3 is a general mapping of corruption risk in the sector of forest management. The research identifies the generic trends of relationship between the variables. Collection of more empirical data is required for a more elaborate analysis of the relationship between the two as well as to quantify the strength of that relationship.

## Appendix 1: Tables and Graphs

Graph 3: Gap between supply and demand of wood



Source: FLEG Report 2011

**Table 9: Comparison of exports data of wood products (excluding furniture) to selected countries from the sources of National Statistical Service of RA (Armstat) and UN Comtrade, USD**

| Country | 2003      |           | 2004      |           | 2005    |           |
|---------|-----------|-----------|-----------|-----------|---------|-----------|
|         | NSS       | Comtrade  | NSS       | Comtrade  | NSS     | Comtrade  |
| Total   | 1,340,200 | 1,311,695 | 1,213,600 | 1,672,337 | 920,800 | 2,686,085 |
| Iran    | 802,100   | 822,416   | 962,200   | 1,331,343 | 758,600 | 1,252,437 |
| Czechia | 0         | 0         | 0         | 0         | 91,400  | 718,859   |
| Russia  | 240,400   | 259,179   | 105,200   | 143,833   | 18,200  | 231,754   |
| USA     | 7,200     | 4,725     | 47,800    | 53,349    | 11,200  | 161,807   |

Source: Economics & Value Research, 2007

## **Appendix 2: List of the interviewed experts**

Vardan Melikyan – Armenian Tree Project (ATP) Cheritable Foundation, Program Manager

Ayser Ter-Khazaryan - German Society for International Cooperation (GIZ) in Armenia,  
“Sustainable Management of Biodiversity in the South Caucasus” project manager

Marianna Vardanyan – Environmental specialist, USAID

Inga Zarafyan – Director of Ecolur NGO

Hovik Sayadyan - Dr. at Armenian State Agrarian University, PhD in forest studies

Mariam Sukhudyanyan – environmental activist, founder of "Teghut" civic initiative

Ani Haykuni – Armenian Tree Project, Forestry services manager

### Appendix 3: Generic Map of Corrupt Practices in the Forstry Sector

| Activity   | Actors Involved   |   | Corruption Threat   | Corrupt Practice   | Ranking<br>(1 – 5) |            | Risk                |
|--|---|---|---|--|--------------------|------------|---------------------|
|  | National  | District  |   |  | Impact             | Likelihood | Impact x Likelihood |
| <b>Regulatory</b> ( <i>how 'rules' get established</i> ) |   |   |   |  |                    |            |                     |
| Passing forestry legislation/ regulations                | Parliament (and its special committees); MoF; Logging/ plantation operators (including foreign owned) | Local assemblies; Operators                             | Undue influence on forest laws and regulations ( <b>state capture</b> ) | <b>Commission:</b> Bribery (including kick-backs) to strike or delay bills, include subsidies (e.g. low fees), weaken regulations, increase the annual allowable harvest, and/or set up ineffective institutions |                    |            |                     |
| Forest zoning changes                                    | MoF; Parliament; National Planning Boards; Operators  | Agencies; Assembly; Governors/ District head; Operators | <b>State capture</b>  | <b>Commission:</b> Bribery to: <ul style="list-style-type: none"> <li>change the zoning of an area to allow logging</li> </ul>   |                    |            |                     |
| Privatising forestry-sector firms                        | MoF; Parliament; Operators  | Agencies; Assembly; Governors/ District head; Operators | <b>State capture</b>  | <b>Commission:</b> Bribery to sell state assets at below-market value  |                    |            |                     |

| Activity   | Actors Involved |   | Corruption Threat   | Corrupt Practice  | Ranking (1 – 5) |            | Risk                |
|--|-----------------|---|---|---|-----------------|------------|---------------------|
|  | National        | District  |   |   | Impact          | Likelihood | Impact x Likelihood |
| <b>Timber supply</b> (how 'rules' are operationalised) |                 |   |   |   |                 |            |                     |
| Planning   | MoF             | Forest agencies; Operators  | Inflate annual allowable harvest  | <b>Commission:</b> Bribery to overestimate harvest  |                 |            |                     |
| Logging operations                                     | MoF             | Operators; Subcontract loggers; Middlemen; Landowners; Communities; Forestry agencies | Over-harvesting (illegal volume), allowing introduction of logs from illegal sources ( <b>timber laundering</b> ) | <b>Omission:</b> Bribery to submit false timber inventories (weak sampling, fraudulent documents) that over-estimate legal volumes<br><br><b>Extortion</b> of 'field expenses' for issuing permits required for harvest, or to submit routine documents/reports |                 |            |                     |
|  |                 |   | Illegal locations; conservation areas; outside licensed areas   | <b>Omission:</b> Bribery to allow logging outside concessions (in parks, for example); to allow roads on steep slopes or near stream beds<br><br><b>Extortion</b> of 'field expenses'   |                 |            |                     |
|  |                 |   | Illegal product   | <b>Omission:</b> Bribery to allow the harvest of undersized or protected species  |                 |            |                     |
|  |                 |   | Fraudulent documentation for CITES-protected species  | <b>Commission:</b> Provide false documents  |                 |            |                     |
|  |                 | Police; Immigration; Ministry of Labour   | Use of illegal labour including imported workers; unsafe working conditions, debt bondage                         | <b>Omission:</b> Bribery to allow labour trafficking; ignore labour violations  |                 |            |                     |



| Activity   | Actors Involved |  | Corruption Threat  | Corrupt Practice  | Ranking<br>(1 – 5) |            | Risk                   |
|--|-----------------|--|--|---|--------------------|------------|------------------------|
|  | National        | District   |  |   | Impact             | Likelihood | Impact x<br>Likelihood |
| <b>Timber supply</b> (how 'rules' are operationalised) |                 |  |  |   |                    |            |                        |
| Planning   | MoF             | Forest agencies;<br>Operators  | Inflate annual allowable harvest   | <b>Commission:</b> Bribery to overestimate harvest  |                    |            |                        |
| Logging operations                                     | MoF             | Operators;<br>Subcontract loggers;<br>Middlemen;<br>Landowners;<br>Communities;<br>Forestry agencies | Over-harvesting (illegal volume), allowing introduction of logs from illegal sources (timber laundering) | <b>Omission:</b> Bribery to submit false timber inventories (weak sampling, fraudulent documents) that over-estimate legal volumes<br><br><b>Extortion</b> of 'field expenses' for issuing permits required for harvest, or to submit routine documents/reports |                    |            |                        |
|  |                 |  | Illegal locations; conservation areas; outside licensed areas  | <b>Omission:</b> Bribery to allow logging outside concessions (in parks, for example); to allow roads on steep slopes or near stream beds<br><br><b>Extortion</b> of 'field expenses'   |                    |            |                        |
|  |                 |  | Illegal product  | <b>Omission:</b> Bribery to allow the harvest of undersized or protected species  |                    |            |                        |
|  |                 |  | Fraudulent documentation for CITES-protected species   | <b>Commission:</b> Provide false documents  |                    |            |                        |
|  |                 | Police;<br>Immigration;<br>Ministry of Labour  | Use of illegal labour including imported workers; unsafe working conditions, debt bondage                | <b>Omission:</b> Bribery to allow labour trafficking; ignore labour violations  |                    |            |                        |

| Activity                 | Actors Involved                                 |  | Corruption Threat   | Corrupt Practice  | Ranking (1 – 5) |                   | Risk<br><i>Impact x Likelihood</i> |
|--------------------------|---|--|---|---|-----------------|-------------------|------------------------------------|
|                          | National  | District   |   |   | <i>Impact</i>   | <i>Likelihood</i> |                                    |
| Wood processing industry |   | Forestry agencies; Police; Wood processors             | Use of illegally sourced wood to keep costs low or to meet demand when production capacity outstrips legal supply | <b>Commission:</b> Bribery to issue false permits   |                 |                   |                                    |
|                          | MoF   | Forestry agencies; Police; Operators                   | Failure to respect contract terms regarding infrastructure development  | <b>Commission:</b> Bribery to issue false permits<br><b>Omission:</b> Bribery to ignore contract terms<br><b>Extortion:</b> to issue permits  |                 |                   |                                    |
| Sale/Export              | Customs; Ministry of Finance; Ministry of Trade | Customs; Police; Navy; Coast Guard                     | Smuggling (black market)  | <b>Omission:</b> Bribery to allow fraudulent or undocumented shipments across borders<br><b>Extortion:</b> to issue permits   |                 |                   |                                    |
|                          |   | Customs; Forestry agencies (log scalers); Accountants; | Transfer pricing (undervaluation of exports to subsidiary in another country in order to evade taxes)             | <b>Commission:</b> Bribery to undervalue timber<br><b>Omission:</b> Bribery to ignore irregularities in pricing   |                 |                   |                                    |
|                          |   | Customs; Forestry agencies                             | Illegal export of protected species   | <b>Omission:</b> Bribery to allow fraudulent or undocumented export of protected species<br><b>Commission:</b> Bribery to issue false documents or to ignore other forms of timber laundering |                 |                   |                                    |

| Activity  | Actors Involved                                  |  | Corruption Threat  | Corrupt Practice  | Ranking (1 – 5) |                   | Risk<br><i>Impact x Likelihood</i> |
|---|--|--|--|---|-----------------|-------------------|------------------------------------|
|   | National   | District   |  |   | <i>Impact</i>   | <i>Likelihood</i> |                                    |
| <b>Reporting (how operations are monitored)</b> |  |  |  |   |                 |                   |                                    |
| Annual harvest                                  | MoF; Operators; Consultants/certification bodies | Forestry agencies; Operators; Heads of districts; Certification bodies | Under-reported volume, undervaluing production   | <b>Commission:</b> Bribery to falsify data<br><b>Omission:</b> Bribery to refrain from reporting to other agencies or to withhold information from the public |                 |                   |                                    |
| Timber consumption (production)                 | MoF; Wood processors                             | Forestry agencies; Operators; Accounting operators                     | Overestimated use of 'old stock' (laundering illegally sourced wood); Fraudulent documents (changing volumes, areas of origin, etc.) | <b>Omission:</b> Bribery to fail to check stock volumes   |                 |                   |                                    |
| Timber revenue                                  | MoF; Operators                                   | Forestry agencies; Operators; Financial accounting firms               | Failure to fully and accurately report revenues, including unpaid/underpaid fees   | <b>Commission:</b> Embezzlement of forestry revenue<br><b>Omission:</b> Bribery to fail to accurately record fees paid  |                 |                   |                                    |
|   |  |  | Excessive credits for fees and taxes; Unacknowledged subsidies   | <b>Commission:</b> Bribery to issue payment documents (when underpayment or no payment was made);   |                 |                   |                                    |

| Activity                                    | Actors Involved  |                    | Corruption Threat  | Corrupt Practice  | Ranking (1 – 5) |            | Risk<br><i>Impact x Likelihood</i> |
|---|--|--------------------|--|---|-----------------|------------|------------------------------------|
|   | National   | District           |  |   | Impact          | Likelihood |                                    |
|   | Banks and other financial institutions; Financial intelligence units | Accounting firms   | Neglect of <i>Know Your Customer</i> due diligence/Suspicious Transactions and other financial reporting | <b>Omission:</b> Bribery to fail to implement financial regulations<br><br>(See financial regulations – Appendix 2) |                 |            |                                    |
|   | Political candidates; Financial institutions; Operators              |                    | Money laundering of proceeds from illegal logging to support political campaigns                         | <b>Omission:</b> Bribery to allow money laundering  |                 |            |                                    |
| Failure to distribute tax revenue           | Ministry of Finance; MoF   | Heads of Districts | Failure to distribute tax revenue to regions   | <b>Omission:</b> Bribery to funnel tax revenue away from appropriate recipient                                      |                 |            |                                    |
|   | National auditing body; Company accountants                          |                    | Falsify audits   | <b>Commission:</b> Bribery to falsify audits  |                 |            |                                    |
| Alternative Remittance Systems              |  |                    | Failure to enforce regulations on remittance systems; Laundering proceeds of corruption/forestry crime   | <b>Omission:</b> Bribery to avoid financial regulations   |                 |            |                                    |
| <b>Enforcement (how rules are enforced)</b> |  |                    |  |   |                 |            |                                    |
|   | MoF  | Forestry agencies  | Failure to punish operators that violate regulations (e.g.   | <b>Commission:</b> Inducement so officers will undertake enforcement crackdowns on                                  |                 |            |                                    |

| Activity      | Actors Involved    |                              | Corruption Threat   | Corrupt Practice   | Ranking (1 – 5) |            | Risk<br><i>Impact x Likelihood</i> |
|---------------|--------------------|------------------------------|---|--|-----------------|------------|------------------------------------|
|               | National           | District                     |   |  | Impact          | Likelihood |                                    |
|               |                    |                              | fail to penalise or withdraw licences); Interpretation of law/regulations favourable to certain operators; Failure to enforce internal sanctions against officials or agencies that violate regulations on reporting or revenue | competitors<br><br><b>Omission:</b> Bribery to avoid reporting infractions or levying sanctions<br><br><b>Extortion</b> of 'field expenses' for forestry authorities to conduct monitoring |                 |            |                                    |
|               |                    | Police                       | Failure to investigate  | <b>Extortion</b> of suspects<br>Bribery by suspects  |                 |            |                                    |
|               |                    | Customs; Ministry of Finance | Timber laundering   | <b>Commission:</b> Collusion in seizure and auction of timber (no public notification of auction, tip off loggers so no personnel are arrested, etc.)                                      |                 |            |                                    |
|               |                    |                              | Charges reduced; only labourers arrested/indicted   | <b>Commission:</b> Bribery to reduce charges or to avoid arrest  |                 |            |                                    |
|               |                    |                              | Evidence ruled insufficient for charges   | <b>Commission:</b> Bribery to influence evidence   |                 |            |                                    |
|               |                    |                              | Investigations dropped  | <b>Commission:</b> Bribery to drop investigations  |                 |            |                                    |
| Prosecutions/ | Attorney General's | Prosecutor's office          | Failure to issue indictments;   | <b>Commission:</b> Bribery to manipulate   |                 |            |                                    |

| Activity            | Actors Involved                 |   | Corruption Threat  | Corrupt Practice   | Ranking (1 – 5) |                   | Risk<br><i>Impact x Likelihood</i> |
|---------------------|---------------------------------|---|--|--|-----------------|-------------------|------------------------------------|
|                     | National                        | District                                    |  |  | <i>Impact</i>   | <i>Likelihood</i> |                                    |
| Issuing indictments | office                          |   | Flawed indictments issued using more lenient statutes  | indictments<br><br><b>Extortion</b> of accused                           |                 |                   |                                    |
|                     |                                 |   | Manipulation of evidence/witnesses or court arguments;<br>Failure to meet time deadlines, jeopardising the case (e.g. appeal of acquittal) | <b>Commission:</b> Bribery of witness or judicial official               |                 |                   |                                    |
| Trial               | Supreme Court;<br>Federal Court | Criminal court judge; Appellate court judge | Dismissal of case;<br>Rulings on evidence  | <b>Commission:</b> Bribery by suspect<br><br><b>Extortion</b> of accused |                 |                   |                                    |
|                     |                                 |   | Judgments in favour of the accused   | <b>Commission:</b> Bribery by suspect<br><br><b>Extortion</b> of accused |                 |                   |                                    |
|                     |                                 |   | Sentencing, including jail time and financial penalties that favour the accused  | <b>Commission:</b> Bribery by suspect<br><br><b>Extortion</b> of accused |                 |                   |                                    |

## References:

AM Partners Consulting Company. (2010). Wood Processing Sector Survey. Ordered by WWF Armenia.

Armenian Tree Project. (2006). From need to greed. The impact of rapid deforestation in Armenia. (Documentary). Vem Media Art Studia, WWF.

Thuresson, T, B. Drakenberg & K. Ter-Gazaryan. (1999). Armenia Forest Resources Assessment, Report on Sample-based forest resource assessment of the forests possible for exploitation in Armenia.

State Forest Monitoring Center. Official website. <http://www.forest-monitoring.am/en/armenian-forests>. Last accessed: 23.04.2013

Carlisle Ford Runge. 1984. Institutions and the Free Rider: The Assurance Problem in Collective Action. The Journal of Politics. Cambridge University Press 46 (1). 154-181.

Ecolur NGO official webpage. (2011). Illegal Logging in Dilijan National Park. Retrieved from: <http://www.ecolur.org/>. Last accessed : 04.21.2013

Economy and Values Research Center. (2008). The Economics of Armenia's Forest Industry. EV publication. Yerevan.

Transparency International. (2011). Corruption Rankings, Retrieved from <http://www.worldaudit.org/corruption.htm>. Last accessed: 12.01.2012.

Campos, J. Edgardo , Pradhan, Sanjay . (2007). Many Faces of Corruption : Tracking Vulnerabilities at the Sector Level. Herndon, VA, USA: World Bank Publications.

Transparency International. (2009). Best Practices for Improving Law Compliance in the Forest Sector. International Tropical Timber Organization, Rome.

Transparency International, Anti- Corruption Center. (2006). Corruption Perception in Armenia. Center for Regional Development, Transparency International Armenia.

Investigative Journalists NGO, OSCE. (2012). Environmental issues and society: Review of Armenian ecological issues. Chapter 5: Forestry resources (49-61).

Nils Junge& Emily Fripp. (2011). Forest Law Enforcement and Governance(FLEG) Main Report. Understanding Forest Sector of Armenia: Current Condition and Choices.

McKean Margaret. 1992. Success on the Commons: A Comparative Examination of Institutions for Common Property Resource Management. Journal of Forest Economics 11(4). 247-281.

National Assembly of the Republic of Armenia. 2005. Republic of Armenia Forest Code. <http://www.parliament.am/legislation.php?sel=show&ID=2423&lang=rus> (Accessed August 27, 2012).

Ostrom, Elinor , National Research Council, Committee on the Human Dimensions of Global Change Staff . (2002). Drama of the Commons. Washington, DC, USA: National Academies Press.

Ostrom, Elinor, Moran, Emilio F. (2005). Seeing the Forest and the Trees: Human-Environment Interactions in Forest Ecosystem. MIT Press.

Ostrom, Elinor, E.R. Gardner, and J. Walker. (1994). Rules, Games and Common Pool Resources. Ann Arbor. University of Michigan Press. Peluso, N.L.

Ostrom, Elinor. 2009. A General Framework for Analyzing Sustainability of Social-economical Systems. Science 325 (419-422).

Hardin, G. (1968). The Tragedy of the Commons. Science, 162(3859), 1243-1248.

Wade, R. [1988]1994 Village Republics: Economic Conditions for Collective Action in South India. San Francisco, CA: ICS Press.

Agrawal, A., and E. (2001) Collective action, property rights, and decentralization in resource use in India and Nepal. Politics and Society.

Agrawal, A., and G. Yadama. (1997). How do local institutions mediate market and population pressures on resources? Development and Change 28(3):437-466.

World Bank. Draft Final EA Report. (2007). Integrating Environment into Agriculture and Forestry. Progress and Prospects in Eastern Europe and Central Asia MoA. Washington, DC: World Bank.

World Bank .(2006). Enforcement and Governance : Strengthening Forest Law. Addressing a Systemic Constraint to Sustainable Development.

Sayadyan,H.Y. (2005).Draftreport.In:WorldBankproject,  
Ensuring Sustainability of Forests and Livelihoods through Improved Governance and Control of  
Illegal Logging for Economies in Transition. World Bank, Yerevan, Armenia. 36 pp.

Scott, R., (1987). The Adolescence of Institutional Theory. Administrative Science Quarterly.  
4(32), 493-511.

Wilson, E.O. (1992) The Diversity of Life. New York: W.W. Norton.

Food and Agricultural Association of the United Nations.(2012). Country  
profile/Armenia/Forestry sector.

Ostrom, Elinor. (1990). Governing the Commons. New York: Cambridge University Press.

Policy Forum Armenia. 2010. The State of Armenia's Environment. State of the Nation  
Series. [http://www.pfarmeria.org/fileadmin/pfa\\_uploads/PFA\\_Environmental\\_Report.pdf](http://www.pfarmeria.org/fileadmin/pfa_uploads/PFA_Environmental_Report.pdf)  
(Accessed August 27, 2012).

Retrieved from<http://www.fao.org/countryprofiles/index/en/?iso3=ARM&subject=5>

Last accessed: 12.05.2012



Global Institute of Sustainable Forestry. (2009). Sustainable Forestry Manual for Armenia: Evaluation and Implementation of Sustainable Forestry Models in Northern Armenia. Global Institute of Sustainable Forestry Publication.

Thomas Dietz, Elinor Ostrom, Paul C. Stern. (2003). The Struggle to Govern the Commons. Science 302(1907). 1907-1912.

Transparency International. (2010). Analyzing Corruption in the Forestry Sector; A manual for Risk Assessment of Corrupt Practices. Forest Governance Integrity Program. Berlin.

Baland, J., and J. (1996). Halting Degradation of Natural Resources: Is There a Role for Rural Communities? Oxford, Eng.: Clarendon Press.

Armenian Tree Project (2012). Facts and Figures About Armenia's Environment. Retrieved from [http://www.armeniatree.org/thethreat/facts\\_figures.pdf](http://www.armeniatree.org/thethreat/facts_figures.pdf). Last accessed: 12.07.2012

Mangabay (2013). Climate Change monitoring. Armenian Forest Information and Data. <http://rainforests.mongabay.com/deforestation/2000/Armenia.htm> . Last accessed: 02.09.2013

ICARE Foundation. (2011). Assessment of the Social and Economic Impact of Unsustainable Forest Practices and Illegal Logging on Rural Population of Armenia.