Extraordinary Cuts and Its Effects on Artvin Forests

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Abstract:

Extraordinary Cuts are due to natural and man-made cuts in unusual events which, replaces the normal course of forestry activities, changes the structural status of forest areas and interrupts the goals. In forests of the Eastern Black Sea Region, especially in the 1990s and early 2000s, Extraordinary Cuts were obtained because of damages of bark beetles (Ips typographus and Dendroctonus micans). Bark Beetles ,which are caused serious damage in spruce forests, economically reduced quality of wood and caused structural changes in forest areas .In some Chief of forest management, spruce which is the main tree species, lost its dominant place in the mixture and gave way to hardwood, especially beech. In this paper which is about extraordinary cuts and its effects on forests, primarily conceptual issue is discussed in. And then extraordinary cuts were obtained in forest enterprises which are neighboor with Georgia and ıts situation have been introduced as quantitatively. Extraordinary revenue ethane uses instead of agreed ETAs in forest management plan, because of this also not taken an eta. For this reason, regular maintenance and rejuvenation of forest areas are which will be changing the course of the work.

Keywords: Forest Management, Extraordinary cut, Artvin Regional Directorate of Forestry

Introduction:

Besides providing economic benefits as the raw material of wood and as forest products other than wood, the forests also offer lots of ecological and social values such as water production, soil protection, regulation of watercourse regimes, aesthetics, etc. The forests have been /are being used for purposes like sheltering, defending, hunting, heating and obtaining raw materials.

The natural development course, the actual and the optimal structure of the forests in Turkey are put forward numerically at the level of forestry departments with the inventory studies of forest management committees affiliated to department of forest administration and planning. First, the purposes of the forests enterpirses are determined in a participatory manner with regard to factors like technical capacities of the forestry enterprises, the biological structure of the species of trees, the demands of the market and the public, the growth environment etc., and then the forestry enterprises are sorted into classes. The annual allowable cuts are decided for each stand and fragment of forest, silviculture plans are also being prepared. A negative direction-ed 10 to 40% elasticity is ensured in annual allowable cuts taking into account the problems that may arise during implementation, the natural events and other factors.

In Turkey, together with the final yield annual allowable cut “the annual allowable cut taken with the regeneration works in the forest lands which have completed their administration duration”, the intermediate yield annual allowable cut (the annual allowable cut taken with the forest care works) and the uptake of extraordinary cut, approximately 40 million meter cubes of annual allowable cut is taken. According to the records of the General Directorate of Forestry (GDF), the largest industrial wood and firewood production is obtained in the Balack Sea Region; in regional directorate of forestry of Kastamonu, Amasya, Bolu; the smallest wood productions are obtained in Eastern Anatolia and Central Anatolia Regions in regional directorates of Elazığ and Konya (Anonymous, 2011, OGM, 2006).

Extra ordinary cuts are made on forests due to lots of abiotic and biotic factors such as highway constructions, pasture, energy transfer lines, illegal cuts, insects, fires, fungus harms, leaf dry ups due to polluting gases,

storms and landslide harms. The wood property obtained by any kind of tree cut because of such natural or man-made events happening out of the natural growth course of the forest ecosystem is defined as extraordinary cut. Even though those works are done for protecting the forest ecosystem, amending it structurally or offering better services for humanity, they interrupt the routine process of the forestry activities. The extraordinary cuts both increase the workload of the enterprise and also cause severe economical losses since they are taken in extraordinary cases out of the intermediate technical annual allowable yield.

In our country, the natural factors and the man made forest demolitions present diversity end variety with fire and insects being encountered frequently in Mediterranean, Marmara and Aegean regions, snow knock downs and drought in Eastern Anatolian region and storm, insect and snow slide harms in Black Sea Region (Acatay and Gülen, 1971, URL-1). In Eastern Black Sea Region, the extraordinary cut taken due to harms given by scolytidae is more than the extraordinary cut taken due to factors like fire, highway construction works, snow knock down, energy transfer lines. The extraordinary cuts taken due to the harms given by some scolytidae such as Ips sbp. and Dendractanus sbp. encountered in lands in which spruce and fir predominate has replaced the annual allowable cuts given in the forest management plans, in technical terms it has been offset-ted. Such large amounts of extraordinary cut was taken that it exceeded the planned annual allowable cut in some forest lands. In the latest years those harms have been encountered also in protected lands besides the enterprise forests. Especially in the Hatilla Valley National Park, it was observed that lots of trees got weakened and dried in the pure Eastern Spruce stances with the effect of Ips typographus, Ips sexdentatus and Dendroctonus micans insects and they were knocked down if there were no interventions. The extraordinary cut was realized due to the extinction danger on this wondrous forest ecosystem (Anonymous 2009a, Anonymous 2011a).

In the article in which the extraordinary cut in the Artvin Regional Directorate of Forestry is addressed; the venue forest enterprise directorates, tree species of occurence, the distribution on the yearly basis and the types and amounts of harms of the extraordinary cuts happening due to abiotic and biotic factors are reported.

Materials and Method:

The research field is Artvin Regional Directorate of Forestry (RDF). Artvin RDF covers the territory within province borders of Artvin which is a border line province in the Eastern Black Sea Region. The east and south-east of Artvin Regional Directorate of Forestry are surrounded by Ardahan, the west is by Rize, south and south east are by Erzurum, the north is by Republic of Georgia and the south west is by the Black Sea. There are 6 forest enterprise directorates in its organizational structure as being Ardanuç, Arhavi, Artvin, Borçka, Şavşat and Yusufeli, and there are 33 forest administration chiefs affiliated to them. The total land of the Regional Directorate is 7120764,4 ha; 400089,9 of that is forest land and 311986,5 of it is empty space. From the point of view of wood production, 54% (208.066,3) of the forest land is constituted by efficient and 46% (192023,6 ha) of it is constituted by inefficient forest lands. The growing stock of trees from the forest lands is 53795799 m^3, annual tree volume increment is 1189371 m^3 the Borçka Forestry Enterprise holds the greatest share with a proportion of 28% (Anonymous, 2010, 2011b).

Of the land in general, 18% is reserved for preventing erosion, 28% for wood production, 1% for national defense, %19 for hydrologic purposes and 34% for nature protection functions. In addition there are 4 important plant lands, 2 national parks, 1 biosphere reserve land, 3 nature protection lands and 1 nature park within the Borders of Artvin and besides those the region in which the Black Sea climate, Mediterranean climate and partly terrestrial climate dominate was discovered to be quite rich in terms of flora (Anonymous, 2011b, Eminağaoğlu ve Bak, 2009).

The data utilized in the article are obtained from the Forest Administration and Planning Office of Artvin RDF. The extraordinary cutting reports issued every year by the branch office at the scale of forestry departments are classified annually.

The extraordinary cut reports prepared due to biotic or abiotic reasons between the years 2007-2012 in the forestry departments affiliated to Artvin RDF were analyzed. The total annual allowable cuts and extraordinary cuts were classified with respect to their reasons as being biotic or abiotic and are presented both as amounts and as proportions. The extraordinary cut uptakes are generally taken due to insect harms, snow, storm knock downs, fire harms, land slides, highway constructions, energy transfer lines, facility constructions and other harms. On the tables of extraordinary cuts prepared, the reason of annual allowable cut uptake is written clearly, the species of the tree is reported and tree volume is calculated. In this section, the details taking place in the reports are analyzed setting forth the details about the years, the forestry enterprise and the conifer - broadleaved difference.

Results and Discussion:

The yearly distribution of total annual allowable cuts of Artvin Regional Directorate of Forestry is shown on Table 1. The yearly annual allowable cut of approximately 84 thousand nearly doubled in 2009 and the increase continued in the upcoming period.

Table 1. The yearly distribution of total annual allowable cuts of artvin regional directorate of forestry with respect to conifer and broadleaved species

Years	Annual Allowable Cuts (m^3)	Distribution of Annual Allowable Cuts (m^3)		Proportional Distribution of Annual Allowable Cuts (%)	
		Conifer	Broadleaved	Conifer	Broadleaved
2007	84.139	59.564	24.575	%71	%29
2008	84.139	59.564	24.575	%71	%29
2009	151.753	120.255	31.498	%79	%21
2010	178.376	145.620	32.756	%82	%18
2011	215.047	147.391	67.656	%69	%31
2012	215.047	147.391	67.656	%69	%31

When the data is analyzed, it will be seen that the annual allowable cuts taken from conifer tree species is twice the one taken from the broadleaved species. Of the total annual allowable cuts in the six year period 26% was taken from broadleaved and 74% were taken from conifer species. The greater amount of conifer species in the Artvin RFD in terms of growing stock of trees and increment is an important factor for such distribution of annual allowable cut. When the forest management plans were analyzed, it was seen that the annual allowable cuts belonging to broadleaved species were taken from Arhavi, Borçka and Artvin Forestry Enterprises and the broadleaved forests predominate in this region in terms of land. The Ardanuç, Şavşat and Yusufeli Forestry Enterprises are generally covered with conifer tree species. Since the predominant tree species particularly in Arhavi are beech, chestnut, redwood the broadleaved species constitute 95% of the annual allowable cut.

The greatest share from the yearly average annual allowable cut belongs to Artvin Forestry Enterprises (FE) with 42% and Yusufeli FE which has no annual allowable cut uptake goes to the last rank. While Ardanuç FE takes the greatest annual allowable cut with 32% in the year 2009, there no cuts were done in Yusufeli FE, in turn. No cuts were done in Yusufeli FE in the years 2007, 2008 and 2009. The inclined topographic structure and lack of sufficient and wood production effective forest lands has been influential in this respect. It should also be noted that the not renewed forest management plans of Yusufeli FE at that period and the allocation of forest lands more to ecological and social functions in the new plans have been influential in not taking any annual allowable cuts. While in the year 2010 the

greatest annual allowable cut was taken from Ardanuç FE with 27% and the smallest annual allowable cut was taken from Arhavi FM with 4%, in the years 2011 and 2012 the greatest annual allowable cut uptake was realized from Artvin FM with 22% and the smallest uptake was realized from Yusufeli FM with 10% (Anonymous 2007a, 2008a, 2009b, 2010a, 2011b, 2012a).

Table 2. Yearly Distributions of Extraordinary Cuts and Harms

Years	Extraordinary Cuts (m^3)	Distribution of Harms (m^3)			Proportional Distribution of Harms (%)		
		Abiotic	Biotic	Other	Abiotic	Biotic	Other
2007	97.234	33.081	57.288	6.865	% 34	% 59	% 7
2008	63.071	28.957	26.597	7.517	% 46	% 42	% 12
2009	27.675	13.168	10.684	3.823	% 47	% 39	% 14
2010	39.175	29.838	6.006	3.331	% 76	% 15	% 9
2011	32.720	27.070	1.892	3.758	% 83	% 6	% 11
2012	70.146	57.078	3.851	9.217	% 82	% 5	% 13

As it is seen on Table 2; 330021 m^3 of extraordinary cut was taken in Artvin RFD in the last 6 years. It has been determined that the greatest extraordinary production was in the year 2007 and 59% of this production was due to biotic harms caused by insects, 34% was due to abiotic harms namely fire harms, storm harms, snow harms, highway construction and maintenance works, facility constructions and soil slides, and 7% was formed due to other reasons. While the greatest harm occurred because of abiotic factors in the years 2008 and 2009 the insect harm affected in 42% and 39% respectively. In the year 2010, extraordinary cut increased because of abiotic harms and particularly due to highway construction and energy transfer lines. In the year 2011, the extraordinary cut uptake occurred because of highway construction. Although there was insect harm in the year 2012, the greatest extraordinary cut uptake was caused by highway construction with 37 thousand m^3 and by energy transfer lines with 16 thousand m^3.

In the last 6 year period, extraordinary cut was taken instead of the 84 thousand m^3 of yearly plan annual allowable cut in the year 2007. In the year 2007, approximately 15% of the yearly plan annual allowable cut was realized with extraordinary cuts caused generally by scolytidae. This ratio was 75% in 2009, 21% in 2010, 14% in 2011 and 32% in 2012 (Anonymous 2007b).

Table 3. Yearly Distribution of Extraordinary Cuts of Directorates of Forestry Enterprises

Directorates of Forest Enterprises	Extraordinary Cuts (m^3) Years					
	2007	2008	2009	2010	2011	2012
Artvin	53,598	26,825	9,898	16,129	10,632	21,986
Ardanuç	9,997	3,760	1,268	1,640	3,127	11,725
Arhavi	1,908	2,296	1,259	2,922	2,393	3,663
Borçka	13,228	17,528	11,557	10,288	10,621	17,262
Şavşat	12,601	8,500	1,464	4,626	4,509	13,890
Yusufeli	5,902	4,162	2,229	3,570	1,438	1,620

When the distribution of extraordinary cuts on Table 3 was analyzed, it was seen that in the year 2007 its 55% is taken from Artvin, 14% from Borçka, 13% from Şavşat, 10% from Ardanuç, 6% from Yusufeli, 2% from Arhavi FE's. 76% of the insect harms encountered in that year occurred in Artvin FE. Snow harm, storm harm and cut made for energy transfer lines were observed again in Artvin FE. In contrast to this situation, the least extraordinary cut caused by road construction and roadside illumination was taken in Arhavi FE.

While 42% of the extraordinary cut was taken again from Artvin FE, the least was taken from Arhavi FE with 4%. The reason of the loss in Artvin FE are insects again. In the year 2009,

proportionally the greatest share was taken from Borçka FE with 41% and the smallest from Arhavi FE with 5%; in the year 2010 the greatest was from Artvin FE with 42, the smallesat was from Ardanuç FE with 4%, in the year 2011 the greatest was from Artvin FE with 33% and the smallest was from Yusufeli FE with 4%, in the year 2012 it was observed that the greatest proportional share originated from Artvin FE with 31% and the smallest from Yusufeli FE with 2%. In this respect, when the average of the extraordinary cuts are considered on the last 6 yearly basis, it is seen that the greatest proportional annual allowable yield was taken from Artvin FE with 42% and the smallest belonged to Arhavi FE with 4%.

According to the extraordinary cut reports issued for the research lands, in the 2007-2012 period, in 5575 ha of land approximately 138 thousand m^3 of spruce, 74 thousand m^3 of fir, 34 thousand m^3 of yellow pine, 16 thousand m^3 of oak, 38 thousand m^3 of beech, 21 m^3 of redwood, 10 thousand m^3 of chesnut, 2 thousand m^3 of horn beech, and 2 thousand m^3 of other broadleaved trees constituting a total of 335 m3 of trees were harmed due to abiotic and biotic reasons and were taken as extraordinary cut (Anonymous 2007b, 2008b, 2009c, 2010b, 2011c, 2012b).

In addition, when the extraordinary cuts taken on the last 6 year basis were considered, it was determined that the greatest lost was caused by Ips Tpographus immersed in spruce trees especially in the Atila Forestry Departmant within the borders of Artvin FE and in the year 2012 it was caused by highway construction and roadside illumination along with energy transfer lines which take place among the abiotic harms and that those were encountered in Artvin and Ardanuç FE's most frequently.

In addition, when the effect of harm types on total extraordinary cut is considered, it is seen that the biotic harms caused by insects is 32%, the abiotic factors caused by factors such as highway and facility, energy transfer lines, fire harm, storm harm is 57% and other harms caused by allowed accessions, air line, physiologic dry up, chestnut branch cancer, mushroom effect is 11%. Among the biotic factors, the one which causes the greatest harm and leading to the greatest uptake of extraordinary cuts is insects with 35%. This is followed by roadside illumination with 21% and soil slide and energy transfer lines with 12%.

Conclusion and Recommendations:

Extraordinary cut uptake is realized every year in Artvin FRD. Extraordinary cut is offset-ted to final yield annual allowable cut and intermediate yield annual allowable cuts becacuse of the forestry legislation in Turkey, the technical processes of forestry activities, the technical capacity and workloads of the forestry enterprises. Extraordinary cut uptake will affect the increase in workload and also especially the maintenance annual allowable cuts not to be taken and therefore the increments in growing stock of trees, diameters and lengths. Consequently, the technical forestry activities will be interrupted.

In Artvin RFD a decrease in extraordinary cut uptake and especially in biotic caused extraordinary cut uptake is observed within the last six year period. The main factor in the decrease is the successful protection activities performed by Artvin RFD in fighting with bio-technical and mechanical factors. But in economical terms, it is known that the regional directorate has faced with loss of quality in the wood produced and has had great expenses in fighting with biotic factors.

As it was seen, for the uptake of extraordinary cuts the most important factor was insect harms, this factor was followed by highway constructions and energy transfer lines. In the latest period, Artvin is becoming a natural energy center with hydroelectric plants being constructed on both the main streams and the side streams. Although electrical energy is naturally obtained from flowing rivers and streams using the water power, the forestry activities are affected negatively both during construction phase and also with the transfer lines established later on. Energy transfer lines cause the forest lands to be diminished and uptake of annual allowable cuts other than the

annual allowable cuts given in the forest management plans.

When the budgets of the Artvin RFD are analyzed, it is known that there is a loss in economical terms. Every forest administration unit should be examined in detail in terms of intermediate and final yield annual allowable cuts besides the extraordinary cuts. It would be convenient to reveal other factors causing loss and to handle much more comprehensive studies with an interdisciplinary approach.

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