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FOREST POLICY AND BALANCE OF WOOD SUPPLY AND DEMAND IN TURKEY AT THE TURN OF THE CENTURY¹⁾

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Abstract

Recently, Turkey has gone through of rapid economic, social and cultural changes. A revolutionary transformation from a rural economy into an industrial society has taken place.

Industrial developments and the rapid growth in population caused a great impact upon the use of natural resources and increased the necessity of conservation and expansion of forests.

About ten million people, called "forest villagers", about one sixth of the total population, live within, or adjacent to, the forests in Turkey. As a result of the economical and social conditions they have a negative effect on the forests (improper cutting, clearing land for crops, forest fire). It is estimated that they are responsible for the destruction of about 20 000 hectares forest land annually.

According to the estimations of the Forestry General Plan a 6.2 million m³ deficit in industrial wood supply is expected in 2009.

A significant problem encountered in the conservation of vegetation and soil in Turkey originates from the inadequacy in the delineation of boundaries between private lands and forest owned by the state. Since the cadastral surveys of forests are incomplete, soil conservation, and afforestation projects are hindered.

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Nevertheless, the forestry policy in Turkey helps to develop long and short term solutions to the problems concerning wood production, soil and vegetation conservation, and afforestation.

1. INTRODUCTION

Forest policy is concerned with the relations between man and forest, and also with the social, economic and political systems around these two elements. Therefore, forest policy is a plan for activity developed according to the economical and social targets. This plan helps to guide the relations between forestry and other land use forms by establishing general principles. It is developed considering the wrong and extreme uses of the forests by the society.

Presently, the main objective of the forest policy of Turkey is to supply wood and other type of forest products continuously demanded by the society. Its additional objectives are regulating the water regime, protecting the soil against erosion, providing health to the society in a healthy environment, assuring recreational facilities with the idea of optimal balance between the social demands and forestry activities.

The major principles of forest policy in Turkey are established in the Constitution and in the other laws. Development plans and programmes also give directives related to the forest policy in Turkey. According to the Sixth Five Year Development Plan (1990-1994), which is the latest of a series of plans, these directives are given as follows :

- Forests should be planned, managed and developed mainly according to the needs for the forest products and services of the society. In meeting these needs the principles of sustainability, multiple use, human health, healthy plant-water-wildlife relations, care for landscape, and the protection of natural values are the main considerations.

- Expansion of the forests and development of the forest villagers are to be assured by fiscal measures; the private forests are supported by governmental grants.

- The forest landuse plans should be renewed considering the changing social needs, disturbed natural balance, polluted environmental elements, and multiple use principles.

- In the forest nurseries, the main purpose is the production of high quality plants of proper origin.

- The species to be used in the stand improvements and the afforestations should be selected according to the management objectives, other technical decisions, ecological conditions, consumer demand, the principles of multiple use, the criteria of biological desertification and genetic erosion.

- Energy forests, memorial forest, and green belts will be established; wind screens and forest zones for erosion protection will be created; in the afforestation multiple purpose species and *Sativa* spp. will be used; similar agricultural and social forestry activities will be supported and expanded.

- In accordance with the recently defined functions of forest resource, the forestry establishment will be reorganized and the education system modernized.

- Measures to fight forest fires will be developed and expanded; their effectiveness will be increased.

2. FOREST RESOURCES OF TURKEY

In the distribution and extension of the forests, the climate, the properties of the soils, the geomorphologic structure of the land, the competition between the plants, etc. play roles. In Turkey, in addition to these, the extension of the forests are affected significantly by the human element. Over hundreds of years the forests were misused, which resulted in reduction of their extension as well as their quality. Many of the forests were replaced by less valuable formations such as maquis, sparsely vegetated steppes or by completely arid and barren landscapes.

2.1. Extension of the Forests

The forested area of Turkey is 20.2 million hectares, which constitutes 26 % of the total area of the country.

Turkey's forests are composed of 42 % coniferous, and 58 % of broad leaved trees. Fifty-four percent of them are classified as high forests, the remainder as coppices (Table 1).

As seen in Table 1, fifty-six percent of the Turkish forests are degraded and therefore unproductive; the remaining 44 % can be considered productive.

Table 1 : Extension of the Forested Areas

Tablo 1 : Orman Alanlarının Büyüklüğü

TYPE	PRODUCTIVE		UNPRODUCTIVE		TOTAL	
	1000 ha	%	1000 ha	%	1000 ha	%
High Forest	6177	31	4758	23	10935	54
Coppice	2680	13	6585	33	9265	46
TOTAL	8857	44	11343	56	20200	100

Source : Ministry of Forestry. Forest Inventory of Turkey (1980).

Kaynak : Orman Bakanlığı. Türkiye Orman Envanteri (1980).

2.2. Volume of the Growing Stock

The volume of the growing stock in Turkish forests is 927 million m³, 87 % of this occurring in high forests, and the remainder in coppices (Table 2).

Table 2 : Volume of the Growing Stock**Tablo 2 :** Ağaç Serveti Hacmi

TYPE	VOLUME		
	1000 m ³	m ³ /ha	
High Forest	Coniferous	593107	-
	Broadleaved	219975	-
	Total	813082	74
Coppice		114268	12
TOTAL		927350	46

Source : Ministry of Forestry. Forest Inventory of Turkey (1980).

Kaynak : Orman Bakanlığı. Türkiye Orman Envanteri (1980).

2.3. Annual Increment and Allowable Cut

The annual increment in high forests is 22.1 million m³, and in coppices 5.5 million m³, the total being 27.7 million m³ (Tablo 3).

As seen in Table 3, the annual allowable cut from high forests is 16.8 million m³, from coppices 5.6 million m³, the total being 22.4 million m³.

Table 3 : Annual Increment and Allowable Cut**Tablo 3 :** Yıllık Artım ve Eta

TYPE	INCREMENT		ALLOWABLE CUT	
	1000 m ³	m ³ /ha	1000 m ³	m ³ /ha
High Forest	22135	2.024	16820	1.538
Coppice	5533	0.597	5563	0.600
TOTAL	27668	1.370	22303	1.108

Source : Ministry of Forestry. Forest Inventory of Turkey (1980).

Kaynak : Orman Bakanlığı. Türkiye Orman Envanteri (1980).

3. SUPPLY AND DEMAND FOR WOOD IN TURKEY

Industrial developments and increase in population will affect the demand for wood in Turkey. According to the estimations presented in the Forestry Plan of Turkey (1988) a negative balance in wood demand and supply will develop for several wood products in the near future (Table 4).

The shortage in sawlogs is expected to be significant; it will increase during the period underconsideration (1990-2009). The shortage in wood for panel materials will continue until 2007.

There are no shortages of transmission poles, mining timbers, short industrial wood, and pulpwood, and none are expected to occur during this period. The total of the shortage of industrial wood (Table 5) is expected to reach 6.2 million m³ level in 2009. In fuelwood (Table 5), the shortage, which is significant at present will be reduced during this period to reach zero level in 2006; thereafter, there will be an oversupply of it.

4. EFFORTS TO ENSURE THE BALANCE BETWEEN WOOD SUPPLY AND DEMAND

The measures considered to prevent the shortage of forest products can be put into two categories : Those aiming at an increase of wood, and those aiming at a decrease in demand.

4.1. Measures to Increase Wood Supply

- Fifty-six percent of the Turkish forests are unproductive. Improving these areas is one of the measures to be taken. Besides the work carried out by the state, the private sector is encouraged, and supported, in its effort to ameliorate existing forests and establish new ones.

- The protection of forests in Turkey depends on the completion of the cadastral surveys being carried out to establish boundaries between state owned forests and private land. Wood supply would be affected positively by efficient forest protection and rapid afforestation, which are possible only after establishing the boundaries of the forests.

- To reach the optimal productivity the forest stands should receive proper treatments at all stages of their developments.

- Approximately ten million, or one sixth, of the population, is living in, or near, forests. There the economical and social conditions enforce them to misuse the forest. It is estimated that the human element is responsible for the destruction of 20 000 ha forest annually as a result of illegal cuts, intentional fires etc. To minimize this destruction it is suggested to develop social forestry practices and an internal migration policy.

- By using fast growing species of domestic or foreign origin in the afforestations the need for small diameter material should be met.

- To minimize damages occurring during harvesting, modern techniques should be used in felling, logging and transportation phases.

- It is estimated that in Turkey in certain agricultural products a surplus will develop after the turn of the millennium. New forest areas should be established at such areas released from agriculture if ecological conditions are suitable for productive forestry.

- Southeast Anatolian Proect (SAP) is one of the greatest dam construction projects of the world. It will produce electricity and will make water available for agricultural irrigation. It is suggested that a fast growing tree, poplar, be planted at 5 % of such land, which covers large areas along the rivers and newly created lakes.

Table 4 : Estimated Supply and Demand For Industrial Wood For The Years 1990-2009 (According To The Type Of Products)**Tablo 4 :** 1990-2009 Yıllarına Ait Endüstriyel Odun Arz ve Talep İlişkisi (Ürün Tiplerine Göre)

YEARS	PRODUCT TYPE (million m ³)																	
	SAWLOGS			TRANSMISSION POLES			MINING TIMBERS			SHORT INDUSTRIAL WOOD			PULPWOOD			WOOD FOR PANEL MATERIALS		
	SUPPLY	DEMAND	DIF.	SUPPLY	DEMAND	DIF.	SUPPLY	DEMAND	DIF.	SUPPLY	DEMAND	DIF.	SUPPLY	DEMAND	DIF.	SUPPLY	DEMAND	DIF.
1990	5.44	7.87	-2.43	0.15	0.15	-	0.48	0.48	-	0.82	0.89	-0.07	1.87	1.87	-	1.33	1.85	-0.52
1991	5.83	8.13	-2.30	0.15	0.15	-	0.49	0.49	-	0.91	0.91	-	1.87	1.87	-	1.44	1.97	-0.53
1992	5.70	8.39	-2.69	0.14	0.14	-	0.50	0.50	-	0.84	0.93	-0.09	1.87	1.87	-	1.51	2.09	-0.58
1993	5.94	8.66	-2.72	0.14	0.14	-	0.52	0.52	-	0.95	0.95	-	1.87	1.87	-	1.59	2.22	-0.63
1994	6.01	8.93	-2.92	0.14	0.14	-	0.54	0.54	-	0.98	0.98	-	1.87	1.87	-	1.74	2.35	-0.61
1995	6.11	9.22	-3.11	0.14	0.14	-	0.59	0.59	-	1.00	1.00	-	1.87	1.87	-	1.95	2.47	-0.52
1996	6.23	9.51	-3.28	0.14	0.14	-	0.63	0.63	-	1.02	1.02	-	1.87	1.87	-	2.02	2.59	-0.57
1997	6.38	9.82	-3.44	0.14	0.14	-	0.64	0.64	-	1.04	1.04	-	1.87	1.87	-	2.10	2.77	-0.67
1998	6.54	10.13	-3.59	0.14	0.14	-	0.65	0.65	-	1.04	1.04	-	1.87	1.87	-	2.21	2.84	-0.63
1999	6.83	10.46	-3.63	0.14	0.14	-	0.65	0.65	-	1.09	1.09	-	1.87	1.87	-	2.33	2.97	-0.64
2000	6.90	10.79	-3.89	0.14	0.14	-	0.66	0.66	-	1.11	1.11	-	1.87	1.87	-	2.43	3.09	-0.65
2001	6.97	11.14	-4.17	0.14	0.14	-	0.66	0.66	-	1.13	1.13	-	1.87	1.87	-	2.50	3.22	-0.72
2002	7.15	11.49	-4.34	0.14	0.14	-	0.67	0.67	-	1.15	1.15	-	1.87	1.87	-	2.57	3.34	-0.77
2003	7.89	11.86	-3.97	0.14	0.14	-	0.67	0.67	-	1.74	1.74	-	1.87	1.87	-	3.26	3.47	-0.21
2004	7.79	12.24	-4.45	0.14	0.14	-	0.68	0.68	-	1.20	1.20	-	1.87	1.87	-	3.45	3.59	-0.14
2005	7.94	12.63	-4.69	0.14	0.14	-	0.69	0.69	-	1.22	1.22	-	1.87	1.87	-	3.65	3.72	-0.07
2006	7.98	13.04	-5.06	0.14	0.14	-	0.69	0.69	-	1.24	1.24	-	1.87	1.87	-	3.83	3.84	-0.01
2007	8.04	13.46	-5.42	0.14	0.14	-	0.70	0.70	-	1.26	1.26	-	1.87	1.87	-	3.96	3.96	-
2008	8.09	13.89	-5.80	0.14	0.14	-	0.70	0.70	-	1.29	1.29	-	1.87	1.87	-	4.09	4.09	-
2009	8.10	14.33	-6.23	0.14	0.14	-	0.71	0.71	-	1.31	1.31	-	1.87	1.87	-	4.21	4.21	-

Source : The Forestry Plan of Turkey (1988)

Kaynak : Ormancılık Ana Planı (1988)

Table 5 : Estimated Supply and Demand For Industrial Wood and Fuelwood For The Years 1990-2009 (Totals)**Tablo 5 :** 1990-2009 Yıllarına Ait Endüstriyel Odun ve Yakacak Odun Arz-Talep İlişkisi

YEARS	INDUSTRIAL WOOD (million m ³)			FUELWOOD (million m ³)		
	SUPPLY	DEMAND	DIF.	SUPPLY	DEMAND	DIF.
1990	10.1	13.1	-3.0	13.3	20.9	-7.6
1991	10.7	13.5	-2.7	13.8	20.6	-6.8
1992	10.5	13.9	-3.4	13.3	20.2	-6.9
1993	11.0	14.3	-3.3	14.2	19.8	-5.6
1994	11.2	14.8	-3.6	14.0	19.4	-5.4
1995	11.6	15.2	-3.6	14.5	19.1	-4.6
1996	11.9	15.7	-3.8	14.5	18.8	-4.3
1997	12.1	16.2	-4.1	14.5	18.5	-4.0
1998	12.4	16.7	-4.3	14.9	18.2	-3.4
1999	12.9	17.1	-4.2	15.0	17.8	-2.8
2000	13.1	17.6	-4.5	14.6	17.7	-3.1
2001	13.2	18.1	-4.9	14.9	17.4	-2.5
2002	13.5	18.6	-5.1	15.4	17.3	-1.9
2003	15.0	19.1	-4.1	15.9	17.1	-1.2
2004	15.1	19.7	-4.6	14.9	16.8	-1.9
2005	15.5	20.2	-4.7	16.2	16.6	-0.4
2006	15.7	20.8	-5.1	16.5	16.3	+0.2
2007	15.9	21.3	-4.4	17.7	16.1	+1.6
2008	16.1	21.9	-5.8	17.4	15.9	+1.5
2009	16.3	22.5	-6.2	17.4	15.7	+1.7

Source : The Forestry Plan of Turkey (1988)

Kaynak : Ormancılık Ana Planı (1988)

- To increase the wood supply it is also necessary to improve the storage conditions for freshey cut material, and for wood products, until marketing.

4.2. Measures to Decrease the Demand for Wood

- The need for wood as a raw material should be reduced by using its substitutes, whenever possible, and by rationalizing the methods of production.

Examples : Lumber for construction should be well dried. Timbers for the production of scaffolding should be treated by chemical preservatives, or substituted by metal components.

- For heating and cooking, wood should be substituted by other energy sources, such as natural gas and electricity.

5. CONCLUSION

Forest policy establishes the nature of the benefits the society should receive from the forests and the areas of a country which should be allocated to the forestry. If there are problems, such as soil erosion, the role of erosion prevention in the forests will assume priority. If need for wood as a raw material for the industry is high, then wood production and afforestation policies will play a major role. The utilization goals of forests, and the size of the land allocated for forests, are related to the natural, economic, and social conditions in a country. These conditions are changing continuously in Turkey, a country experiencing rapid industrial development, and this change is accelerating.

In agreement with this development, the demand for wood as an industrial raw material, and its uses, are increasing. To keep in step with the development and changes the forest policy of Turkey aims at reducing wood shortages by assuring the protection and improvement of the forest and by extending them.

Achieving a balance between supply and demand of wood as raw material at the turn of the millennium, will depend on the establishment of a correct forest policy and on the success of its application.

20. YÜZYILIN SONUNDA TÜRKİYE'NİN ORMANCILIK POLİTİKASI VE ODUN ARZ-TALEP DENGESİ¹⁾

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Kısa özet

Türkiye'de odun hammaddesine olan talep gerek nüfus artışı ve gerekse göreli olarak toplumun gelir düzeyinin yükselmesi gibi nedenlerle her geçen gün biraz daha artmaktadır. Buna karşılık odun arzının talebe paralel olarak artmaması, yakın gelecekte dengesizlik oluşacağını göstermektedir. Odun arz-talep dengesinin sağlanması için alınması gerekli önlemler bu makale içinde ele alınmıştır.

ÖZET

Son yıllarda Türkiye hızlı bir ekonomik, sosyal ve kültürel değişim evresi geçirmektedir. Kırsal ekonomiden endüstriyel topluma geçiş süreci yaşanmaktadır.

Endüstriyel gelişim ve hızlı nüfus artışı doğal kaynaklar üzerinde baskı oluşturmakta, ormanların korunmasının ve genişletilmesinin gereksinimini artırmaktadır.

Türkiye'de "orman köylüsü" olarak adlandırılan ve nüfusun altıda birini oluşturan yaklaşık 10 milyon insan ormanların bitişiğinde ve içerisinde yaşamaktadır. Ekonomik ve sosyal koşulları nedeniyle ormanlar üzerinde birtakım olumsuz etkiler (kaçak kesim, tarla açma, orman yangını vb.) yapmaktadırlar. Onların bu olumsuz etkisi yılda yaklaşık 20.000 hektar ormanın yok olmasına neden olmaktadır.

Ayrıca Ormanlık Ana planı tahminlerine göre 2009 yılında sadece endüstriyel odun arzında 6.2 milyon m³ bir açık oluşacaktır. Türkiye'de toprak ve vejetasyonun korunmasında önemli bir

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problem de kamu ormanlarıyla özel alanlar arasında sınırların belirsizliğidir. Kadastro çalışmalarının tamamlanmaması toprakların korunmasını ve ağaçlandırma projelerini engellemektedir.

Türkiye'de ormancılık politikasının amacı odun üretimi, ağaçlandırmalar, toprak ve vejetasyonun korunmasıyla ilgili problemleri çözümlenmektedir.

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