

# Forest Cadastral Surveys in Turkey

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**Key words:** Cadastre, Forest, Forest Cadastre,

## SUMMARY

In Turkey the forest is one of the most important natural resources. Sustainable forest management is required for the forests meet the social, economic, ecological, cultural and spiritual needs of the next generation. To prevent deforestation is possible with the cadastral studies. Of the forest lands for which cadastre works were completed, 80% were registered to the land registers and the registration for the remaining 20% failed. This situation is among the major causes of boundary and possession disputes between the people and the forest administration. A protocol was signed between General Directorate of Forestry and General Directorate of Land Registry and Cadastre in the later 2013. In this context, forest cadastre works were started at a total of 5.527 units and an area of about 20 000 km<sup>2</sup> and are targeted to complete by the end of 2016. Real property cadastre works were finished in the ratio of 99 percent by the end of 2014. Although real property cadastre works were almost completed, forest cadastre works weren't registered significantly.

## ÖZET

Ormanlar ülkemizin zenginlikleri arasında sayılırken, ülkemizin temel orman sorunu ormansızlaşma olmaktadır. Ormanların gelecek kuşakların sosyal, ekonomik, ekolojik, kültürel ve ruhsal gereksinimlerini karşılayabilmesi için sürdürülebilir yönetimi gerekmektedir. Orman alanlarının korunması ve güvence altına alınması, sürdürülebilir orman yönetimi için ilk yapılması gereken çalışmadır. 2014 yılı sonu itibariyle kadastro çalışmalarının tamamlandığı alanların % 80'inin tapuya tescili yaptırılmış, %20'sinin ise tapuya tescili sağlanamamıştır. Bu durum halk ile orman idaresi arasında mevcut ciddi sınır ve mülkiyet ihtilaflarının önemli nedenleri arasında yer almaktadır. Orman kadastro çalışmalarının kısa zaman içerisinde tamamlanması amacıyla Orman Genel Müdürlüğü ile Tapu Kadastro Genel Müdürlüğü arasında 2013 yılı sonu itibariyle protokol yapılmıştır. Bu kapsamda toplam 5.527 birimde ve yaklaşık 20000 km<sup>2</sup>'lik alanda orman kadastrosu çalışmaları başlatılmış ve 2016 yılı sonu itibariyle çalışmaların tamamlanması hedeflenmektedir. 2014 yılı sonu itibariyle mülkiyet kadastro çalışmaları %99 oranında tamamlanmıştır. Mülkiyet kadastro çalışmaları bir taraftan tamamlanırken, diğer taraftan orman kadastro çalışmaları önemli oranda tescil edilememiştir.

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## 1. INTRODUCTION

The Ottoman Empire was about to collapse when cadastral works began in Europe. Meanwhile Empire lost its power on land properties; gradually lands were civilized day by day. Therefore among other problems the most important problem was the land civilization when Republic of Turkey was established. New regulations and laws such as acquire by prescription on land management brought in to force to make easier land civilization. After that, one more thing was to be considered that was the finding real ownerships of the land properties and arrange their safety. For this aim, the method called “inspection” was applied in addition to cadastral works (Bıyık, 1987). In Turkey, the “forestry cadastre” works and “ownership cadastre” works are carried out by different institutions and by using different technical standards. The forestry cadastre, defined as “demarcation of forests and their registration into the land registry in the name of ‘state’ as a public property”, is carried out in Turkey by forestry cadastral committees formed by five members appointed by the Ministry of Environment and Forestry. These committees functioning in subordination to the General Directorate of Forestry perform their works in accordance with the Forestry Law No. 6831 dated 1956 and the Implementation Regulation dated 11 April 1990 (Köktürk and Köktürk, 2004).

Forest cadastral works began in 1937 by governing law numbered 3116. In contrast to other developed countries the reason for, why forest cadastral works made by institute different from national cadastral department was the great lack of technical problems and technicians at that time because beyond ordinary land management and cadastral planning there was a need of planning forested lands. When socially and economically considered, the forest villager’s income depends mostly on agricultural activities therefore forested land planned to extend agricultural areas in favor of villagers (Tüdeş and Bıyık, 1995). Because of the these negative conditions, in 1921 “Coppice Law” brought in to force to meet the need of villagers and give to them live assurance, according to this law 2 hectare of forest land left for their private usage. In contrast to expectations, a great deal forest land devastated after this regulation brought in to force. Shortly after these forest lands were turned in to arable areas by the villages and their ignorance of the forest. This event showed that forested land must be considered real property and nationalized and must not be served to privatization. This played very important role to make general rule on land management politics (Ayaz, 1998).

After so-called 4785 “Nationalizes the Forest Area law” put in to force, all forestry land (foundation’s land, private land, legal entity) was considered for public use and nationalized. Even if since 1945, 4785 so called law governs forestry land, forestry cadastral planning was not carried out in parallel with this rule and some arid or forest areas became mixed. As result

when some areas became agricultural areas some others remained heavily forested. In the course of time, this mixing caused important problems in real rights of ownerships. Hanging up the application of new regulation was not a remedy actually it was turned to huge problem day by day. Different problems were encountered when forest cadastral works put in action. By passage of nearly half century, characteristic of forestland was mixed and turned to almost unsolvable. Many civil cases were opened between forestry department and landowners. To make the local forestry department more effective and productive, investigation of ownership and ownership rights relation must be clear and secure. Land ownership problem became very important according to time and proposed forestry management plans and income. In the context of the forestry management and planning that problem plays very important role (Atasoy et al., 2004).

## **2. FOREST CADASTRE AND OWNERSHIP**

Area, position and owners of the forests should be determined while developing policies for sustainable forest management. Depend on forest management plans approximate data are known. However real and absolute scores will ensure with completing forest cadastre (Ayaz and Alkan, 2009). From foundation years of Turkish Republic, forests that procure habitability are seen as one of main principle of development. By law of estovers, forest lands were assigned to forest peasants, who just came out of war and had no staying power, for using at their need. Also need of taking all forests under protection was alleged (Diker, 1947). By the law no 3116 which was the first tidy promulgated forest law, determining owners and boundaries of country's forests as soon as possible was aimed. The law foresaw that forestry organization start bordering forests and finish works within 10 years. Unfortunately a period over 75 years passed but forest cadastre couldn't be completed although a great number of law amendment made. Causes that forest cadastre cannot be finished until now are laws which were legislated constantly and changing at the definition of forests which generates legal basis of these works (Özdönmez et al., 1996). In consequence of instability at legal structure, works returned to beginning many times at forest cadastre and sometimes work requirement was ensued 4-5 times at the same area (Ayaz, 1996).

In view of continuously changing at the definition of forest property, difficulty of forest cadastre works can be understood easier. According to the law no 3116 effectuated at 1937, compass distance measuring method was implemented at forest cadastre works. By this method, application mean error of forest boundaries was identified as  $\pm 7.85$  m (Tokmanoğlu, 1978). The law no 4785 which was forest nationalization law, was enacted at 1945. As of this date, owning forests with deed of real estate was lost validity and these areas were processed as public property with cadastral works. Because of that people living at forest related villages reacted, some amendment was done at the forest law no 3116 at 1950. Reactions of people were continued about cadastral works due to amendment failed to satisfy about expectation of community who wants to own forest with registration (Atasoy, 2004). Forest law no 6831 went in effect at 1956. There was no changing at frame of forest restriction committee by the law. But because of reasons such as adopted personnel policy, not existed enough personnel, not to attached importance to by political power and technical equipment deficiency, expected return didn't procure (Table 1) (DPT, 1999).

**Table 1.** Forest cadastre and 2B applications planned period and before (DPT, 1999)

Planned Periods	Year	Forest Cadastre		Application	2B Application
		Programmed (Ha)	Completed (Ha)	Completed (Ha)	Completed (Ha)
		<b>Before PP</b>		3.839.936	
I	1963-1967		800.391		
II	1968-1972		1.766.824		
III	1973-1977		1.368.156	1.396.231	62.564
IV	1978-1982		1.463.202	1.334.442	39.996
V	1984		51.992	533.401	11.707
VI	1985-1989	1.577.500	1.401.639	1.117.031	147.721
VII	1990-1994	3.850.000	2.292.260	1.331.279	130.974
VIII	1995-1999	4.960.000	2.448.990	966.210	55.448
Total		10.387.500	15.433.390	6.678.591	448.410

Forest cadastral works were continued by compass until 1965. After this date photogrammetric cadastral mapping was added to agenda. Taking aerial photographs was started for forest activities as of this planned period at 1963. These aerial photographs were used both forest management plans and forest cadastral works. By this method, 1/20.000 scaled panchromatic aerial photographs were taken by General Command of Mapping by marking forest boundary points at terrain. By plotting forest boundaries on these aerial photographs, maps were produced scaled-up 1/10.000 and mean error of location was identified as  $\pm 28.38$  m (Erdin, 1988; Tokmanoğlu, 1978).

According to Forest Cadastre Regulations and Forest Cadastre Prospectus, forest boundaries measured by ground surveying methods official reports were made at areas 1/5000 scaled standard topographic map and coordinates of boundaries were calculated and charted. Also forest boundaries neighboring valuable lands were measured by ground surveying methods and plotted. Tachometric method, used real property cadastre works, was also started to use at determining forest boundaries (Biyik and Acar, 1999). Ground surveying method was begun to use instead of photogrammetric assessment method at 1982. By this way, susceptibility increased but productivity was decreased at a considerable amount. By introducing regulation at 1986, electronic distance measurement were started to use for base line measurement to increase susceptibility and velocity.

Rural cadastre was finished faster than forest cadastre and at forest villages, land registrations were done without completing forest cadastre. Because of that, broad forest areas were registered in the name of individuals. In this context forest organization sued numerously. At 1987, cadastre law no 3402 that aimed to be worked forest cadastre and real property cadastre in coordination for increasing property problems. Although it was made progress at forest cadastre by upholding amendment at cadastre law, problems weren't overcome. At many areas forest organization couldn't determine forest boundaries that would be a base for rural cadastre and was faced local objection (Ayaz and Alkan, 2009).

Key issues of failure cause of land and forest cadastre works in east black sea areas are that forest and urban areas are in complex frame, social unrests rises after cadastre works and as a result of these a great number of cases about forest property sued (Atasoy, 2004). Real property, forest and pasture cadastre works were made by 3 different institutes and it was caused multiple problems such as lack of coordination, delayed cadastre works and in coordination of maps that were produced with different scales (Atasoy and Bıyık, 2005). For making cadastre works faster, ensuring works will be resumed even if local expert not participate and creating the coordination between institutes, the law no 5304 was produced in 2005 by amendment of some clauses in cadastre law no 3402 (Ayaz and Alkan, 2009).

## **2.1 Service Procurement from Private Sector**

Within the completion of the Cadastre Project was actualized by the General Directorate of Land Registry and Cadastre, property cadastre works was completed the percentage of 99 by the end of the 2014. Countrywide, cadastre works have been completed in 51.622 units of totally 52.161 and it's aimed that cadastre works will be completed by the end of the 2015 on other 247 units that about the complete, except 292 units which has problems (Cadastre rejected by the citizens, boundary conflict, security, Expert problem etc.) in terms of cadastre. While property cadastre works will be completed soon, forest cadastre works have not been registered yet substantially. Forest cadastre maps which have been produced in previous years don't have the standards that necessary for registration. So it hasn't been registered by the directorate of land registry.

On the other hand, with amendments at cadastre law no 3402 at 2005 both property cadastre works and forest cadastre works were recorded significant progress. After these years, technical works which have been made by private sector in cadastral works have been an important factor in the completion of cadastre. By the end of the 2011, by lawful amendments of 2005, within the law no 5304, forest cadastre has been completed at 9.104 unit, 14.141 parcels and 80.785 km<sup>2</sup> area by General Directorate of Land Registry and Cadastre. For where the cadastral realization rate is disadvantaged, a major breakthrough has been achieved with law no 5304 that provide comprehensive works. Cadastral works, accelerated efforts with the implementation of the law, have become more qualified technically in terms of location and it has been taken important steps about providing coordination between institutions. To prevent deforestation is possible with the cadastral studies. Of the forest lands for which cadastre works were completed, 80% were registered to the land registers and the registration for the remaining 20% failed. This situation is among the major causes of boundary and possession disputes between the people and the forest administration. Currently, part of forest cadastral works are conducted by forest cadastral commissions under the General Directorate of Forestry, and the other part of forest cadastral works are conducted by a team composed of land surveying teams of General Directorate of Land Registry and Cadastre with the participation of a forest engineer representing the General Directorate of Forestry.

**Table 2.** Cadastre and registration state in forest areas, 2014

Type	Area (hectare)
Lands with Cadastral Plan Made	20.774.691
Lands with Registration	16.950.000
Lands without Registration	3.824.691

Practices of law resolved problems at determining forest boundary works were done simultaneously, harmonization of different scaled map, to be found forest boundary point easily and recovered cadastre commission about liability at determining forest boundary. But it couldn't measure up personnel working simultaneously and compatible and not to hinder each other's job (Ayaz and Alkan, 2009). It can't be said that mistakes don't be made again, works are cleared sailing and people are adopted forest cadastre. Relying on fifth article which was added to law no 3402 by law no 6495 published in the official gazette 02.08.2013 dated and no 28726, a protocol was signed for completing forest cadastre and application between General Directorate of Forestry and General Directorate of Land Registry and Cadastre. Works is targeted to finish at 2016 if enough fund is allocated and it hasn't a delay in the process of tender because of reasons such as objection, cancellation etc. Within this framework forest cadastre works are aimed in 3 steps, totally 5.527 units and almost 20.000 km<sup>2</sup> area.

### 3. CONCLUSION

Area, position and owners of the forests should be determined while developing policies for sustainable forest management. Depend on forest management plans approximate data are known. However real and absolute scores will ensure with completing forest cadastre. Within the completion of the Cadastre Project was actualized by the General Directorate of Land Registry and Cadastre, property cadastre works was completed the percentage of 99 by the end of the 2014. While property cadastre works will be completed soon, forest cadastre works have not been registered yet substantially. Forest cadastre maps which have been produced in previous years don't have the standards that necessary for registration. So it hasn't been registered by the directorate of land registry.

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## REFERENCES

- Atasoy, M., Bıyık, C., Demir, O., Karşlı, F., 2004, A Sound Approach for Resolving the Forest Property Problems with Digital Photogrammetric Method, XX.th ISPRS Congress, 12-23 July, İstanbul.
- Atasoy, M., 2004, Kadastro Çalışmalarında Karşılaşılan Orman-Mülkiyet Sorunlarının Çözümünde Dijital Fotogrametrinin Uygulanması (Doğu Karadeniz Bölgesi Örneği), Doktora Tezi, Fen Bilimleri Enstitüsü, KTÜ, Trabzon.
- Atasoy, M. ve Bıyık, C., 2005, Türkiye Kadastrosunun Yeniden Yapılanmasında Orman Mülkiyet Sorunlarının Çözümüne Bir Yaklaşım: Doğu Karadeniz Bölgesi Örneği, 1. Çevre ve Ormancılık Şurası, Mart, s. 640-649, Antalya.
- Ayaz, H., 1996, Orman Sınırları Dışına Çıkarılan Alanların Satışı ile İlgili Son Değişiklik (4127 Sayılı Kanun), KTÜ Orman Fakültesi Güz Yarıyıl Seminerleri, Seri No: 1, Trabzon.
- Ayaz, H., 1998, Orman Sınırları Dışına Çıkarma Uygulamasının Yasal Boyutu ve Sosyoekonomik Nedenleri Üzerine Bir Araştırma (Ordu ili örneği), Yüksek Lisans Tezi, FBE, KTÜ, Trabzon.
- Ayaz, H., Alkan, S., 2009, 5304 Sayılı Yasaya Göre Yapılan Orman Kadastrosu Uygulamalarının Taraflarınca Değerlendirilmesi, II. Ormancılıkta Sosyo-Ekonomik Sorunlar Kongresi, 19-21 Şubat, SDÜ, Isparta.
- Bıyık, C., 1987, Doğu Karadeniz Bölgesinde Tapulama Çalışmalarının Organizasyonu, Doktora Tezi, FBE, KTÜ, Trabzon.
- Bıyık, C. ve Acar, H.H., 1999, Orman Tahdit Kadastro Çalışmalarında Uygulanan Ölçme Tekniklerinin Değerlendirilmesi, Doğu Karadeniz Bölgesinde Orman Mülkiyet Sorunları Sempozyumu, 8-10 Ekim, Trabzon.
- Diker, M., 1947, Türkiye’de Ormancılığın Dün-Bugün-Yarın, TC Tarım Bakanlığı OGM Yayınları, sayı 61, Ankara.
- DPT, 1999, Sekizinci Beş Yıllık Kalkınma Planı Bölgesel gelişme özel ihtisas Raporu (2001-2005), <http://plan8.dpt.gov.tr/>, 05.05.2002.
- Erdin, K., 1988, Ormancılık Çalışmalarında Temel Altlık Harita Sorunu ve Ortofoto Haritalar, Türkiye’de Orman İşletmeciliğinin Gelişimi Sempozyumu (Tebliğler), 9-10 Şubat, Ankara.
- Köktürk, E. and Köktürk, E., 2004, The Role of Photogrammetry and Remote Sensing on to Determining of the Forest Boundaries and Unauthorized Buildings in Turkey (An Example Area: Beykoz/İstanbul), XX. ISPRS Congress, Poster Presentation at the session "PS ThS 19Urban Modelling, Visualization and Tracking", 12-23 July, İstanbul.



Özdönmez, M., İstanbullu, T., Akesen, A. ve Ekizoğlu, A., 1996, Ormancılık Politikası, İÜ Basımevi ve Film Merkezi, İstanbul.

Tokmanoğlu, T., 1978, Orman Kadastro ve Aplikasyon, Orman Kadastro Kongresi Orman Kadastro Politikası ve Ölçme Tekniği, 6-10 Temmuz, Ankara.

Tüdeş, T., Bıyık, C., 1995, Orman Kadastro ile Mülkiyet Kadastro Arasındaki Uyuşmazlıklar, 1. Ulusal Karadeniz Ormancılık Kongresi, Bildiriler, 3. Cilt, Trabzon.

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