



**THE WORLD
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Registration Needs in the Third-Dimension Cadastre

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History of Turkish Cadastre

In Turkey, the history of the land registration and cadastral works reach to the middle of the 19th century.

Turkish Republic has a big area, the cadaster of this big country is completed by the General Directorate of Land Registry and Cadastre (TKGM), almost in one hundred years period.

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History of Turkish Cadastre

After establishing of Turkish Republic Cadastral works were started in 1925 under law No. 658.

Then cadastral works were attended in some major cities and urban areas in 1934 under the law 2613.

In 1950, the “Land Registry Law” numbered 5602 was put into practice to speed up cadastral work in rural areas.



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History of Turkish Cadastre

Known as ‘land cadastre’ was changed in 1964 and 1966 and became the Land Registry Law (No 766).

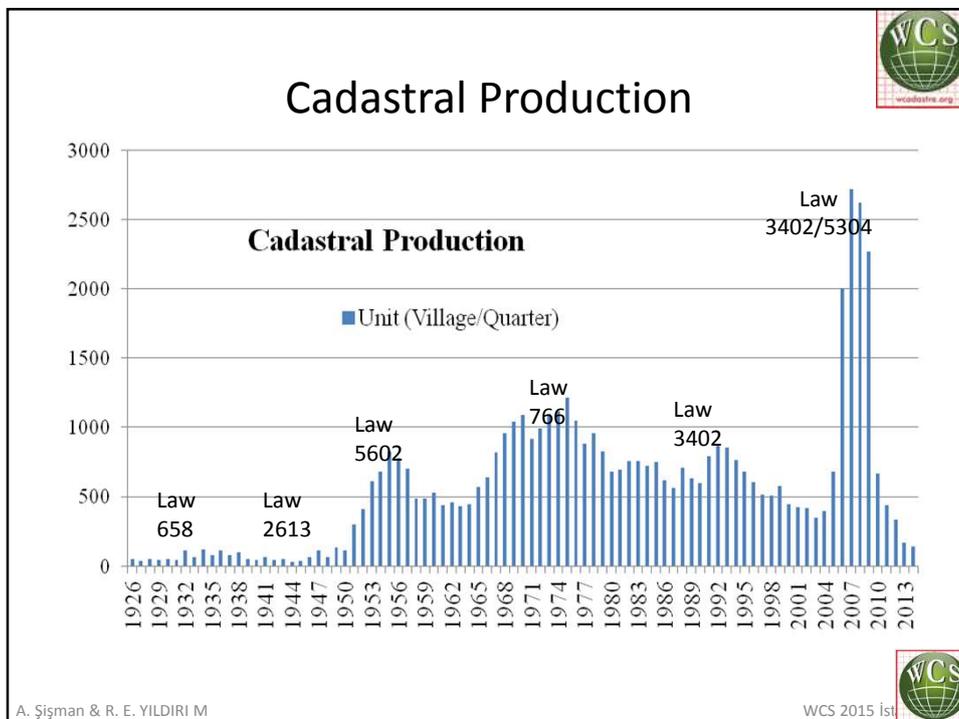
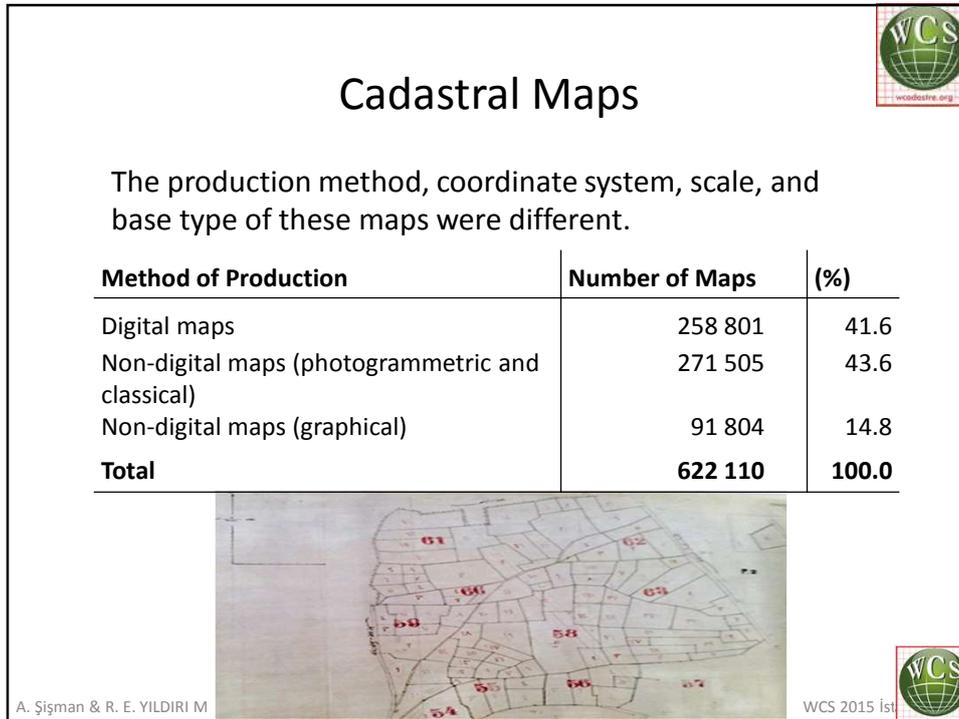
Cadastral work had been carried out in urban and rural areas under two different laws until 1987. The Cadastre Law Numbered 3402

Cadastral Law numbered 3402 was amended by law numbered 5304 in 2005. It was include great changing about cadastral work, one of the most important changing was private sector could take a place in cadastral works with the new law of cadastre.



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Third Dimension in Cadastre



The first article of current Turkish Cadastre Law is instruct that “The purpose of the Turkish Cadastre Law is, **defining boundaries and the legal status of real estate’s and making cadastral or topographic cadastral map** according to the national coordinate system and establishing Turkish Land Registry system and building the infrastructure of spatial information systems”.

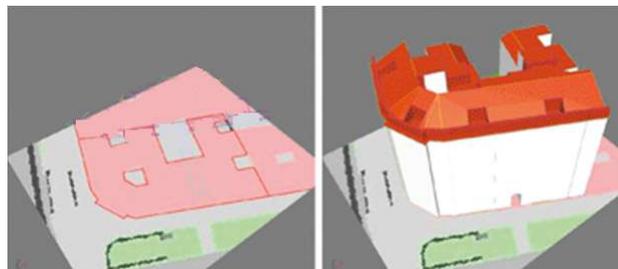
According the current cadastral law there isn’t any obligation about surveying under surface objects in the cadastral works.



Registration of Third Dimension

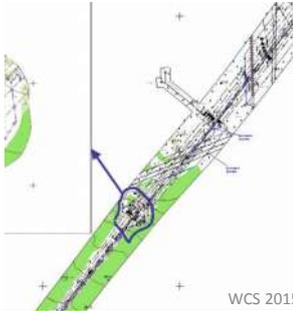


If there is a built on a parcel, each separate unit of the building which located under or over the surface has to be registered in land register system as a property unit of the land parcel, so the ownership status of the land parcel completely changes and a three dimension ownership occurs according to the condominium law number 634.



Registration of Third Dimension

A pipe line project is applied in a region, using of some parcels will be restricted, so before project the all route of pipe line which located in registered parcels either **expropriated** or **appurtenances procedure** is applied for all parcels. After then, the route of pipe line is uploaded onthe cadastral map and a three dimension ownership occurs according to the Turkish Civil Law number 4721.

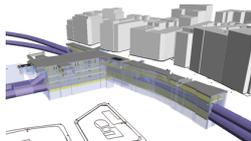


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Registration of Third Dimension

But all ownerships are drawn in two-dimension cadastral map.

- Cadastral parcels,
- Buildings,
- Pipe lines,
- Electric-power transmission lines,
- Metro lines,
- Trams,
- Road Tunels ect...



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Problems on Registration in 3D

Nowadays to provide growing demands of living in the city and to serve them better, in urban area land surface and subsurface is used, and especially their business centers has led to overlapping and interlocking constructions.

Subways, streets, rail roads, underground pipe lines, power lines, communication lines, drinking water, wastewater lines etc. are important urban infrastructures.

Under Surface	Surface
Metro stations	Car park, pavement, offices shops
Shopping centers	Road, pavement, building, offices shops
Pedestrian subways	Pavement
Parking lots	Road,
Bus/tram/railway stations	Car park, pavement, offices shops
Infrastructure Objects: Electricity, water, communication, cables, pipelines, sewers, etc.	---

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Some cases about Infrastructural cadastre

In august 2006 a building contractors had pierced the tube of the Taksim-Levent subway while they were making a geological drilling (thankfully nobody was died or injured).

The diagram shows a 3D cross-section of a city block. A green 'Parcel' is on the surface. Below it, a subway tunnel is shown with a train. A red vertical line indicates 'geological drilling' that has penetrated the tunnel. Two photographs are included: one showing the drilling rig in operation, and another showing a close-up of a hole in the concrete with a red circle around it, labeled 'A hole top of the metro line'.

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Some cases about Infrastructural cadastre

In November 2007 an excavator operator had broken off the main fiber optic cables of BIST (an important stock exchange of the Europe) while he was digging of the street.

It was an important accident so any stock market operation and trading activities weren't made in the morning session. Approximately 500 million dollars the stock market operation could not be performed.



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Some cases about Infrastructural cadastre

In Turkey 74 cities were provided with natural gas other 7 cities are in engineering or construction phase so almost all cities in Turkey used natural gas. Although natural gas distributors work very carefully, a lot of accidents can happen.

One of the important reasons of these accidents is unregistered infrastructure objects. Pipelines and other infrastructure objects don't belong to any registered parcel so they cannot be registered in city center.



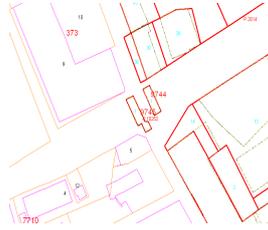
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Pedestrian subways & Shops



The shops located under street aren't registered according to the current cadastre law, because they don't belong to any registered parcel as pipe lines. To solve this problem TKGM has declared some opinions and streets were registered according to these opinions. Shops located under the street were registered as a real estate in spite of the cadastre law article 16.



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Results



The current Turkish cadastral system can be defined two-dimension cadastre and there isn't any obligation about surveying and registering public places like roads, squares, bridges.

Nowadays to provide growing demands of living in the city and to serve them better, in urban areas land surface and subsurface is used. All infrastructure facilities, such as, drink water, wastewater, tunnels, pipelines (natural gas, crude oil) metro lines, subways, pedestrian subways ect. have to be registered in an infrastructure cadastre system. But currently registering subsurface objects don't have any legal basis.



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Results

Under these circumstances following works have to be done;

- Some regulations are needed about three-dimensional cadastre
- The outlines of ownership must be defined, how deep or how height,
- Public places (road ect) should not be registered, if we have to register a public place, It must depend on a “public interset” decision.
- The Second Cadastre should be discussed and put into practise in Turkey.



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