



**UDH**

Republic of Turkey Ministry of Transport  
Maritime Affairs and Communications



**GENERAL DIRECTORATE  
of HIGHWAYS**

# **MAINTENANCE ASSET MANAGEMENT SYSTEMS OF TURKEY**



**16 JUNE 2014  
VILNUS / LITHUNIA**

**TEM/HEEP Area V 2014 ANNUAL MEETING**



# OUTLINE

**1**

**GENERAL OVERVIEW of HIGHWAY NETWORK**

**2**

**ROAD INFRASTRUCTURE INVESTMENTS**

**3**

**ASSET MANAGEMENT SYSTEMS & IT**



# GENERAL OVERVIEW of HIGHWAY NETWORK

Type: Village and Forest roads  
Responsibility: Special  
Provincial Administration

Type: Urban roads  
Responsibility: Municipal  
Authorities



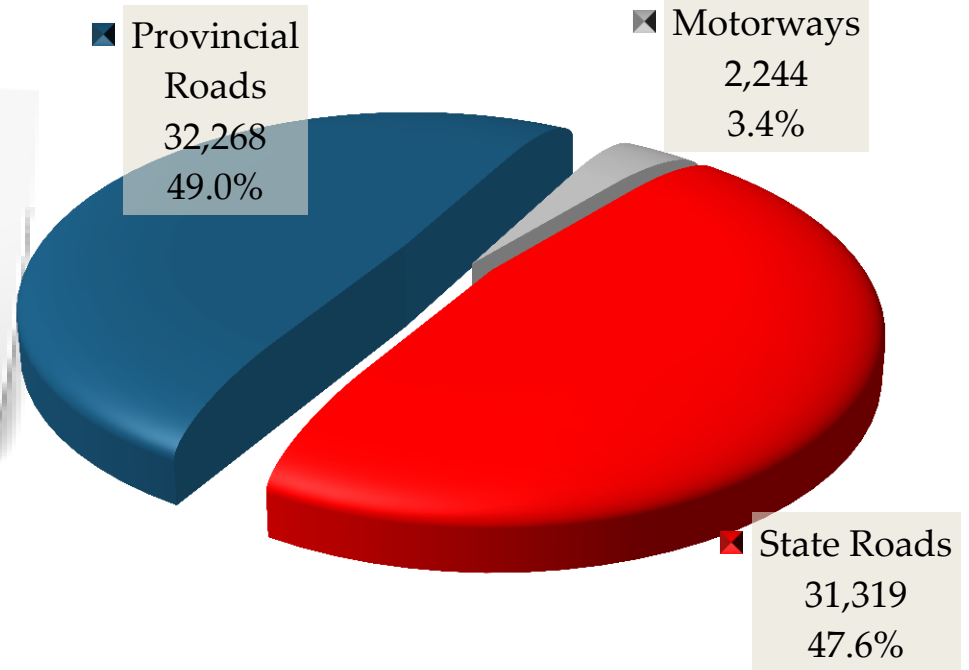
Type: Motorways, State & Provincial roads  
Responsibility: General Directorate of Turkish Highways

The road network excluding urban roads is about 385.000 km in length

# NATIONAL HIGHWAY NETWORK

## Road Network (Km)

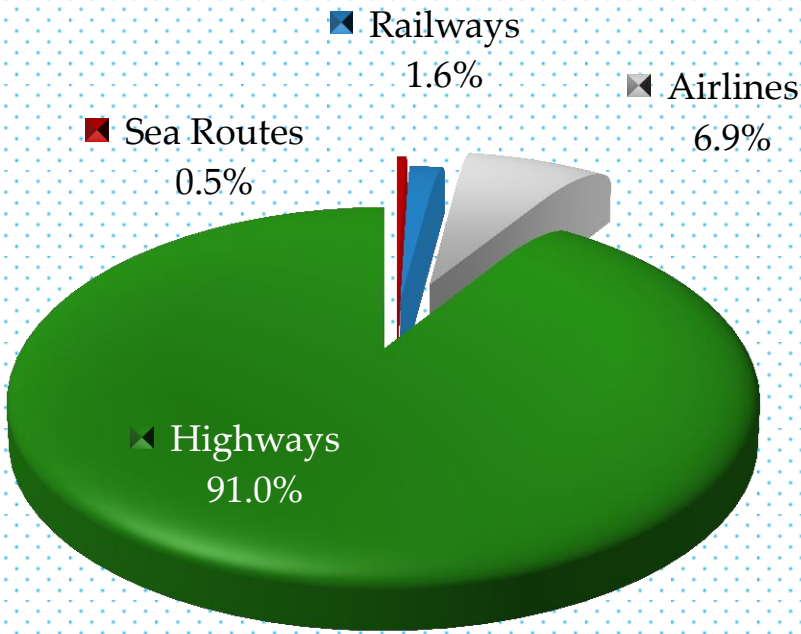
- Total road network is 65.831 km.
- 35% of total road network (23.064 km) is dual carriageway



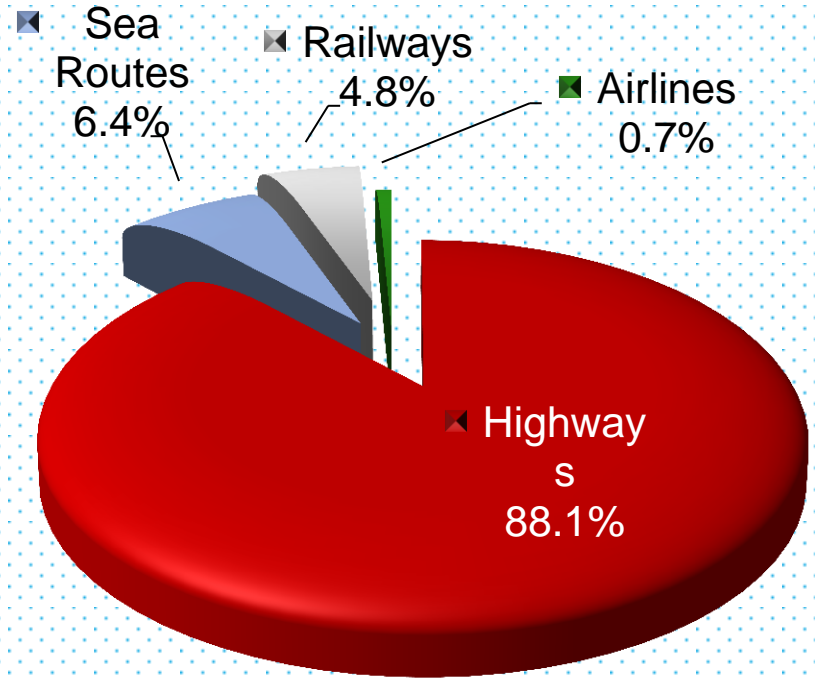
- Total Asset Value: **62 Billion €**
- Road Density: **50 km / 100 km<sup>2</sup>** (Excl. Urban Roads)
- Motorway Density: **2.85/ 1000 km<sup>2</sup>**



# PASSENGER & FREIGHT TRANSPORT



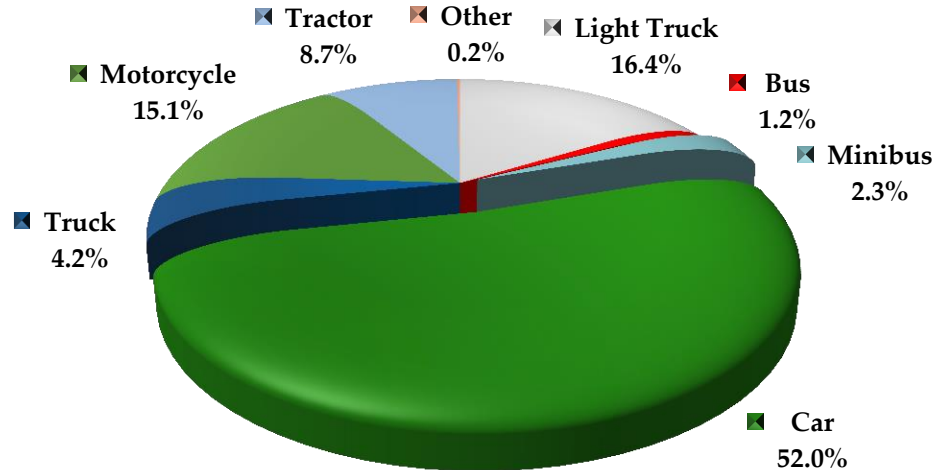
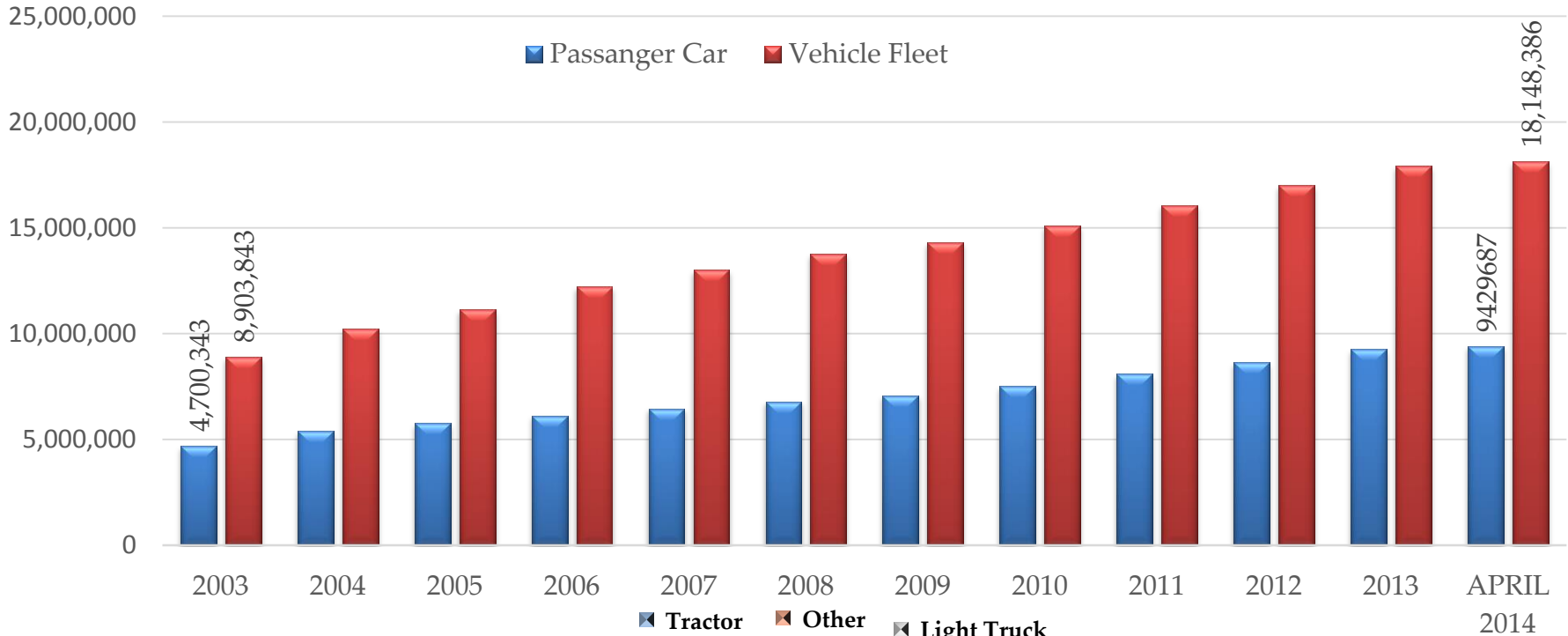
**Passenger Transport**  
Highways: 91.0%



**Freight Transport**  
Highways: 88.1%



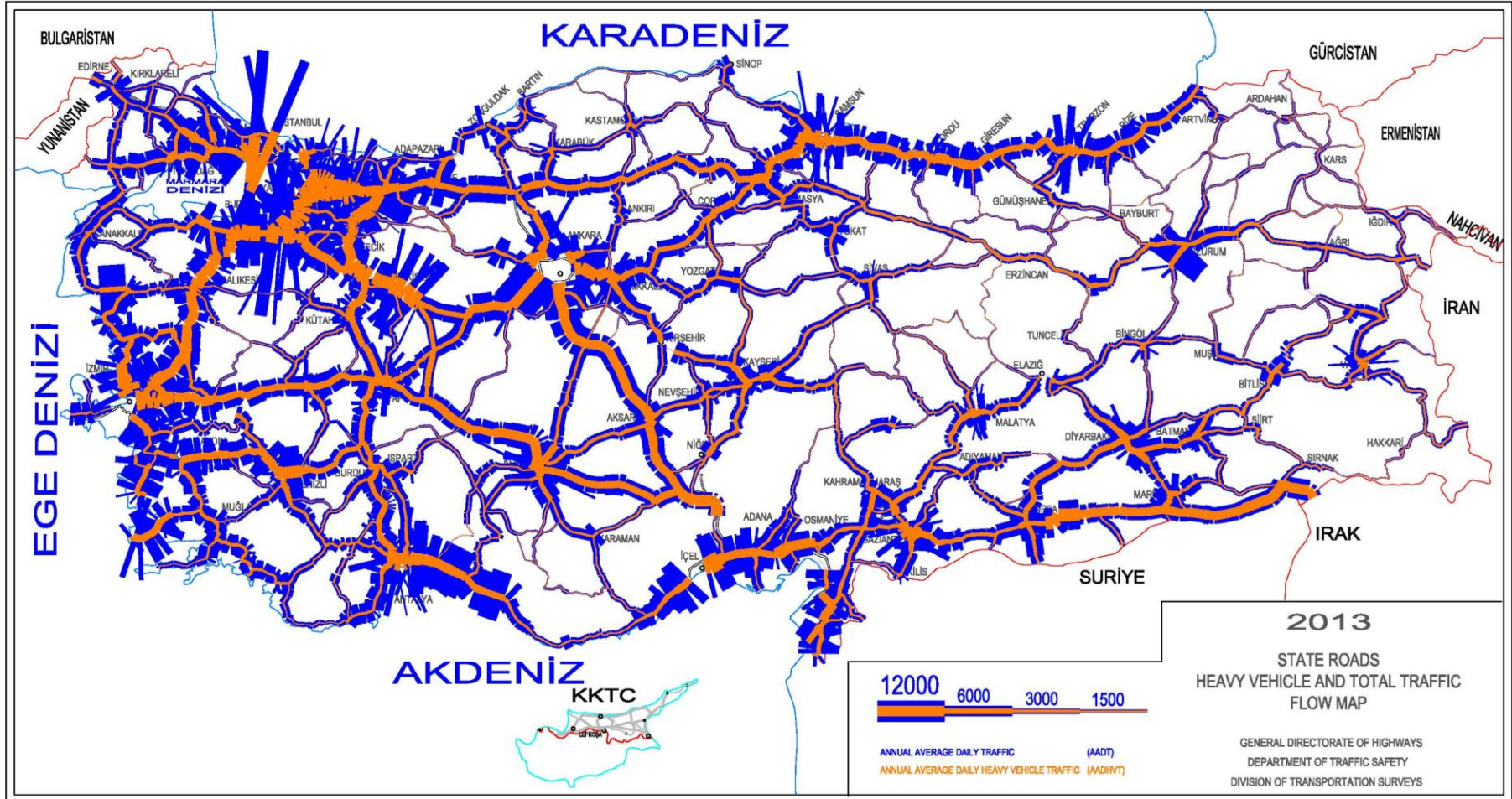
# VEHICLE FLEET (Apr 2014)





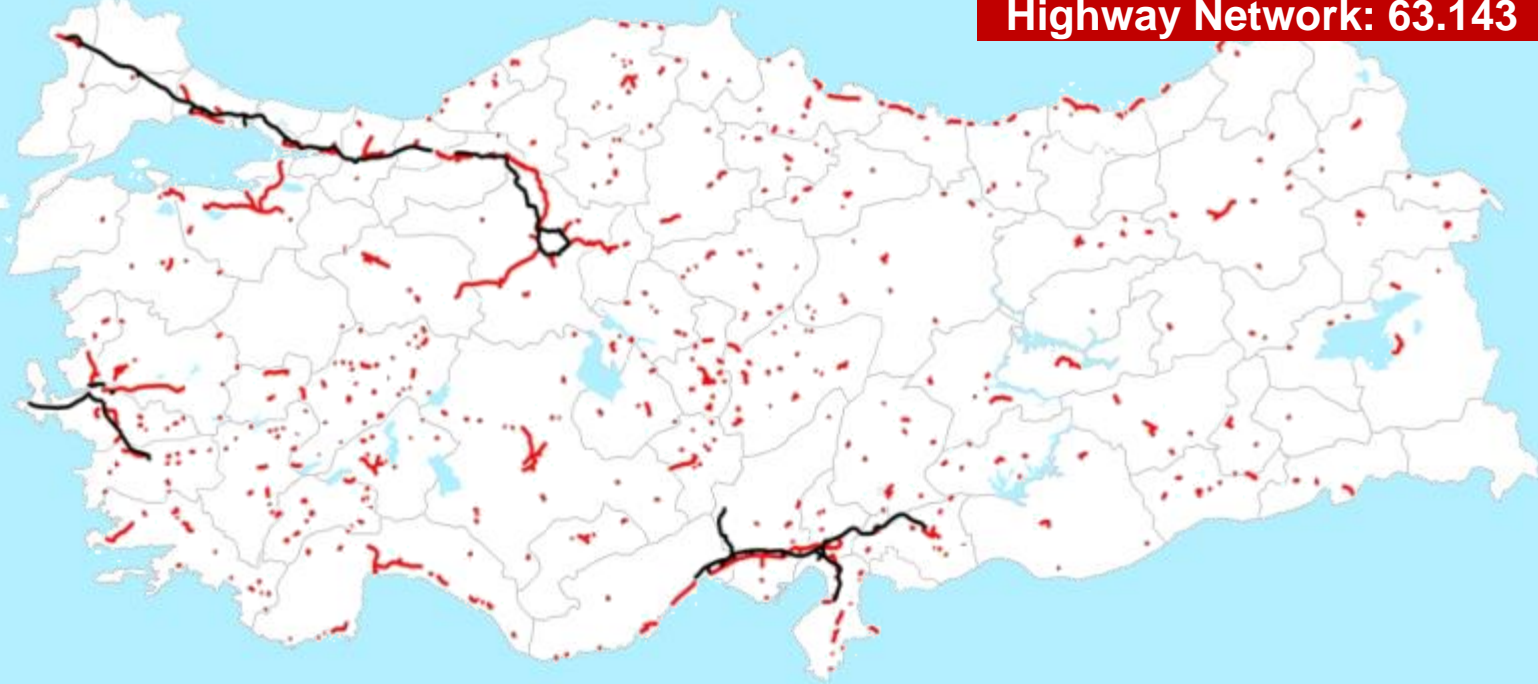
# TRAFFIC VOLUME MAP 2013

➤ In our highway network, the rate of heavy vehicle traffic volume is 26%



**DUAL  
CARRIAGEWAY  
NETWORK  
(Jan 2003)**

**Highway Network: 63.143**



**1.714 Km**

Total Motorway

**4.387 Km**

Dual Carriageway  
State and  
Provincial Roads

**6.101 Km**

TOTAL

**DUAL  
CARRIAGEWAY  
NETWORK  
(April 2014)**

**Highway Network: 65.831**



**2.244 Km**

Total Motorway

**20.820 Km**

Dual Carriageway  
State and  
Provincial Roads

**23.064 Km**

TOTAL

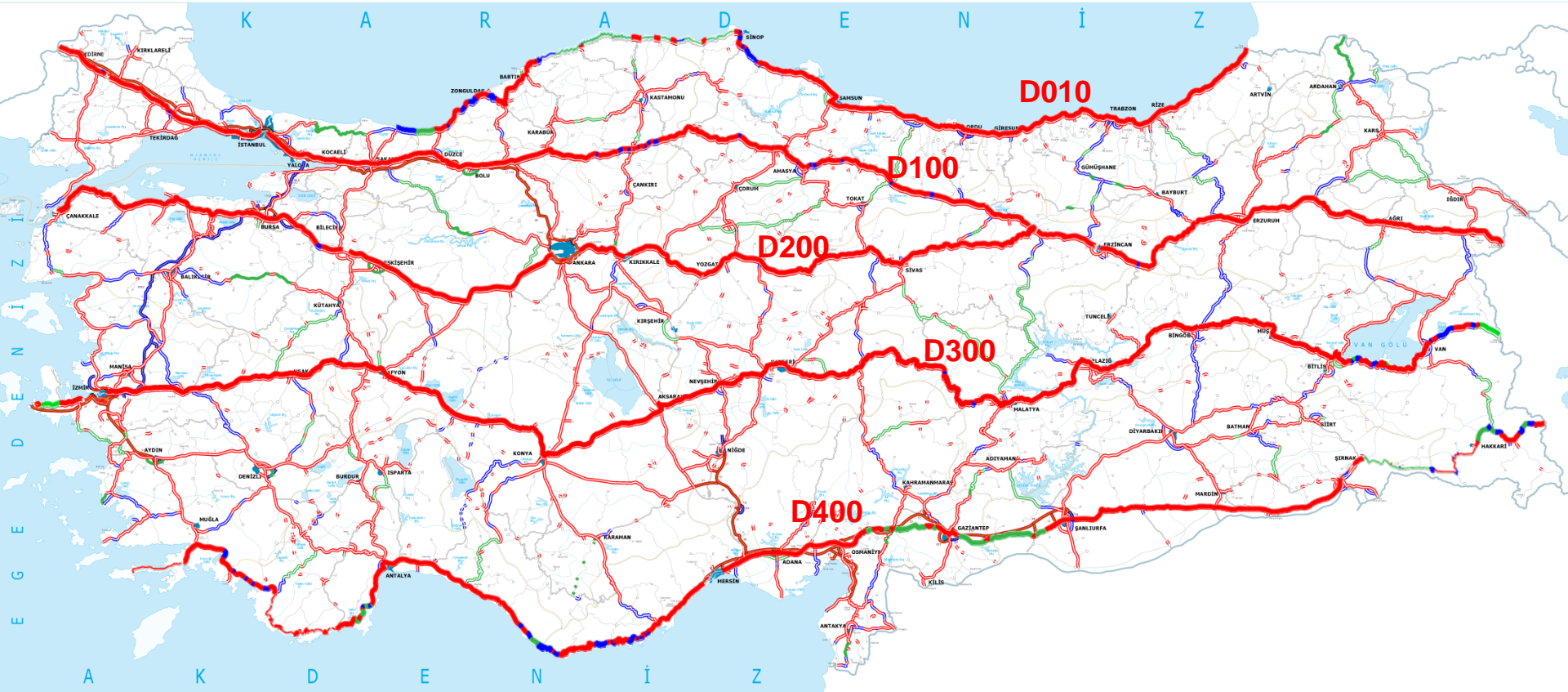




# DEVELOPMENT OF WEST-EAST AXES

**D010 : Karasu-Zonguldak-Sinop-Samsun-Ordu-Giresun-Trabzon-Rize-Sarp Border Gate**

**D100 : Kapıkule Border Gate-Edirne-İstanbul-Gerede-Amasya-Erzincan-Erzurum-Gürbulak B.G**



**D200 : Çanakkale-Bursa-Eskişehir-Ankara-Kırıkkale-Yozgat-Yıldızeli-Refahiye**

**D300 : Çeşme-İzmir-Afyon-Nevşehir-Kayseri-Malatya-Elazığ-Muş-Bitlis-Van-Kapıköy B.G.**

**D400: Datça-Fethiye-Antalya-Mersin-Adana-Şanlıurfa-Cizre-Yüksekova-Esendere B.G**



# DEVELOPMENT OF NORTH-SOUTH AXES



	DUAL CARRIAGEWAY	SINGLE CARRIAGEWAY	TOTAL
<b>IN OPERATION</b>	<b>8.678</b>	<b>511</b>	<b>9.189</b>
<b>UNDER CONSTRUCTION</b>	<b>1.204</b>	<b>222</b>	<b>1.426</b>
<b>WILL BE TENDERED</b>	<b>856</b>	<b>283</b>	<b>1.139</b>
<b>TOTAL</b>	<b>10.738</b>	<b>1.016</b>	<b>11.754</b>



## **ASSET MANAGEMENT SYSTEMS & IT**

**DEVELOPMENT OF GIS BASED HIGHWAY INFORMATION SYSTEM**

**ROAD INVENTORY DATA UPDATE**

**GIS BASED ROAD MAINTENANCE MANAGEMENT SYSTEM**

**ROUTE ANALYSES & ROAD MAINTENANCE**

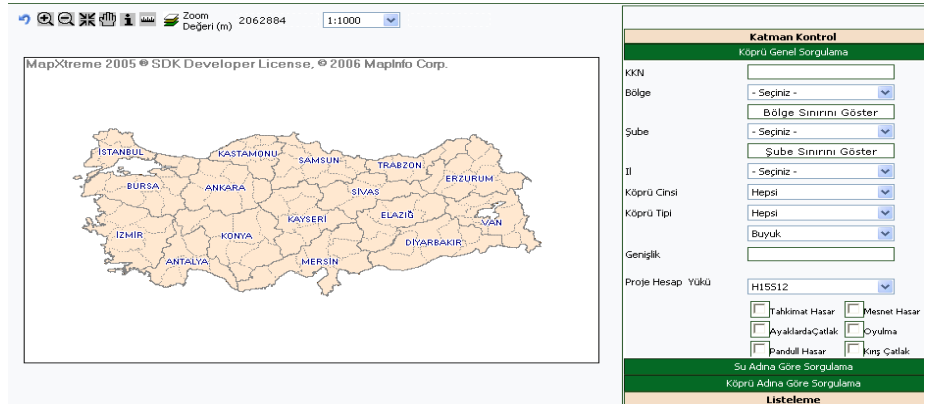
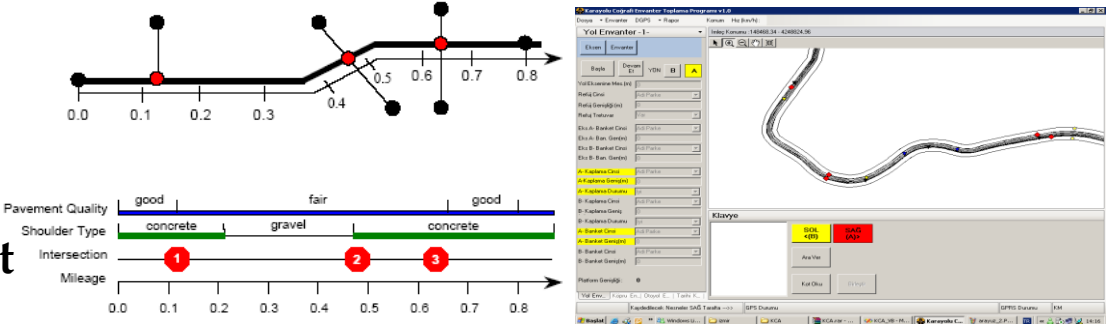
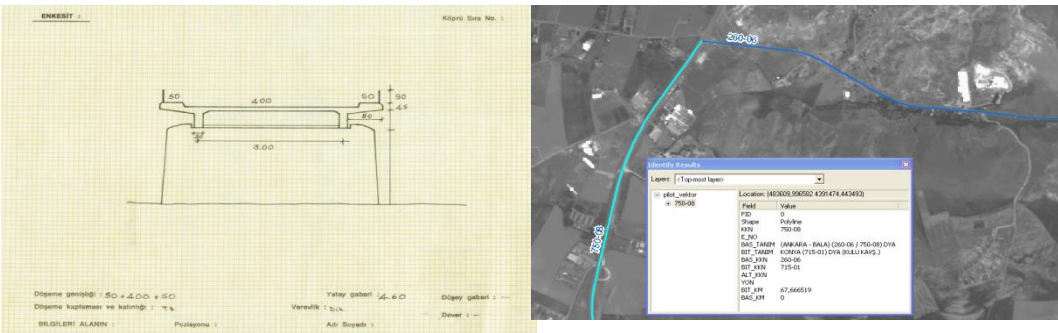
**ROUTE ANALYSES & EXCESS LOAD VEHICLE PERMISSION**

**BITUMEN STORAGE SYSTEM**

**PAVEMENT MANAGEMENT SYSTEM**

# DEVELOPMENT OF GIS BASED HIGHWAY INFORMATION SYSTEM

- Existing Data Conversion
- Base Map Development
- Development of Roadway Inventory Systems
- Database Design
- Data Acquisition
- Web Application Development



# ROAD INVENTORY DATA UPDATE

- Updating Regional Road Inventory Data



**Field trip**



**GNSS Receiver**

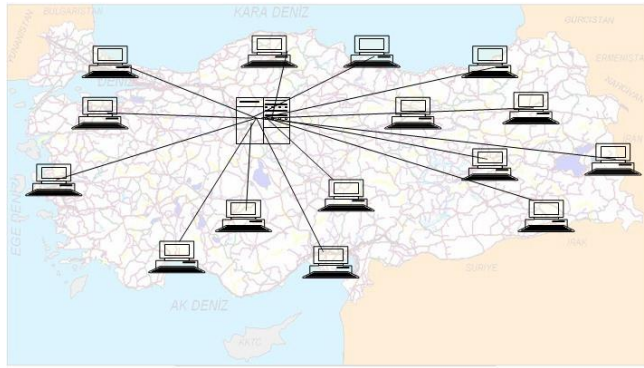


**DGPS receiver & antenna**

**GNSS data acquisition unit**



- Data Transfer and Updating Database.



**Laser meter**





# GIS BASED ROAD MAINTENANCE MANAGEMENT SYSTEM

<http://yol.kgm.gov.tr/kbys/uygulama.aspx>

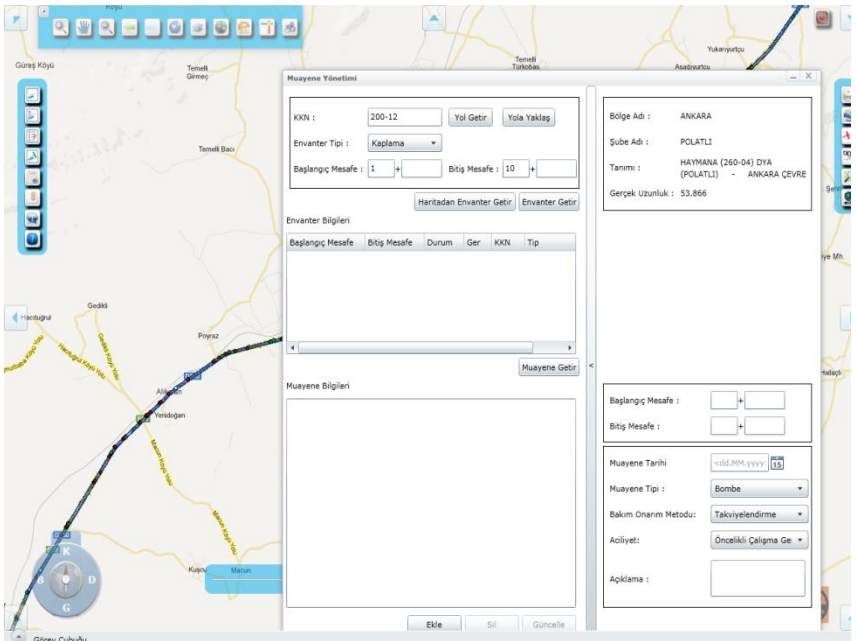
The screenshot displays a web-based GIS application interface. On the left, a vertical toolbar contains icons for navigation and map manipulation. A red box highlights a subset of these icons. A red arrow points from this box to a larger vertical toolbar on the right side of the map. This right-side toolbar contains eight icons, each with a red arrow pointing to a corresponding function label:

- Inspection Management
- Inventory Query
- Layer Query
- Maintenance Management
- Report
- Autherization
- Info
- Help

# GIS BASED ROAD MAINTENANCE MANAGEMENT SYSTEM

## Updating & querying & reporting

- Road Inventories,
- Road Structures,
- Maintenance History
- Maintenance Management Program from web.

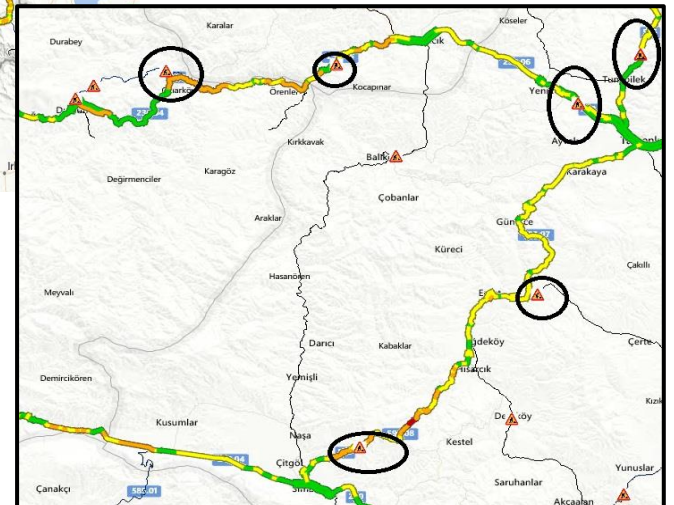




# ROUTE ANALYSES & ROAD MAINTENANCE

The screenshot shows the KGM Karayolları Genel Müdürlüğü website interface. On the left is a map of Turkey with traffic flow data overlaid in green and yellow. On the right is a sidebar menu with options: 'Haritalar', 'Uydu', 'Yol Tarifi', and 'Online Trafik Harita'. Below the map is a search bar and a 'KAYIT' button.

**INSTANT TRAFFIC FLOW DATA COMBINED WITH ROAD MAINTENANCE & REHABILITATION DATA**







# ROUTE ANALYSES & EXCESS LOAD VEHICLE PERMISSION

**Ana Sayfa** **Yabancı Firma Bilgileri** **Araç Bilgileri** **Şifre Değiştir** **Güvenli Çıkış**

**Taşımayı Yapan**  
 Yerli Firma/Şahıs  Yabancı Firma  
Vergi No/T.C. No: [ ]

**Araçlar**  
 EGM Tarafından Tesclil  Diğer Araçlar  
Plaka: [ ]  
Tescil Belgesi No: [ ]

**Taşımaya Ait Bilgiler**  
Belge Süresi:  Bir Taşıma İçin  Süreli  
Başlangıç Tarihi: 27.03.2014 Bitiş Tarihi: 11.04.2014  
Taşımaya Özel Bilgiler: [ ]

**Yüke Ait Bilgiler**  
Yükün Cinsi/Markası/Tipi: [ ]  
Yüke Ait Özel Bilgiler: [ ]  
Genişlik(m) [ ] Yükseklik(m) [ ] Uzunluk(m) [ ] Ağırlık(kg) [ ]  
0-9 0-9 1-80 >100

**Araç Yüklü Durumdaki Bilgileri**  
Genişlik(m) [ ] Yükseklik(m) [ ] Uzunluk(m) [ ] Ağırlık(kg) [ ] Sıfır(kg) [ ] Ekipman(kg) [ ]  
0-9 0-9 1-80 >100  
Toplam Dingil Sayısı: [ ] Toplam Boş Ağırlık: [ ]

**Bilgilendirme Servisleri**  
 Kısa Mesaj İstiyorum  Elektronik Posta İstiyorum

**Odeme Türü**  Vergi Dairesi  Banka  Harçtan Muaf

**Odeme Bilgileri**  
Vergi Dairesi: [ ] Alındı No: [ ]  
Odeme Tarihi: [ ] Vergi No: [ ]  
T.C Kimlik No: [ ] Tc Kimlik No: [ ]

Yol üzeri noktalara tıklayarak ya da listeden ilçe seçerek güzergahınızı belirleyin. **ADANA** **ALADAĞ** **Ekle**

Güzergahı noktalarla belirledikten sonra güzergahı çizdirme yapın. **Güzergah Çiz** **Temle**

**Odeme Türü**  Vergi Dairesi  Banka  Harçtan Muaf

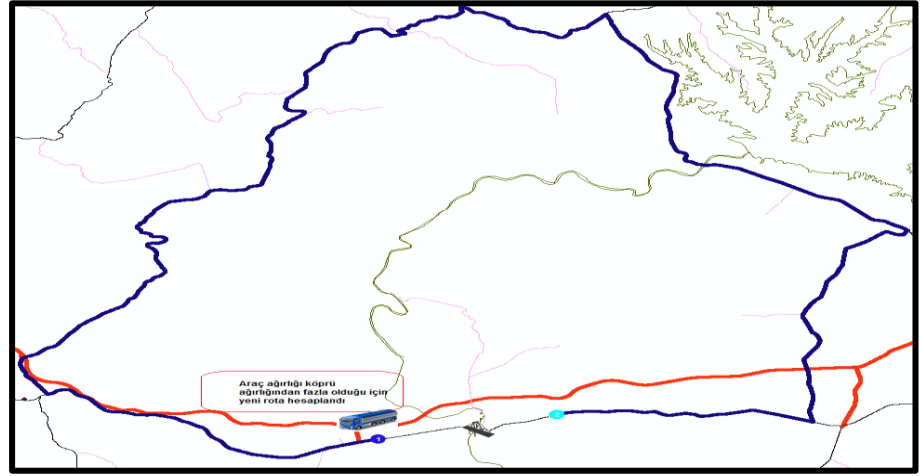
**Odeme Bilgileri**  
Vergi Dairesi: 003107-SINANPAŞA Seri Sıra No: 112233  
Banka: T.VAKIFLAR BANKASI T.A.O. Odeme Tarihi: 25.03.2014  
T.C Kimlik No: 12345678900 Vergi No: 3321313212

Yol üzeri noktalara tıklayarak ya da listeden ilçe seçerek güzergahınızı belirleyin. **ESKİŞEHİR** **MERKEZ** **Ekle**

Güzergahı noktalarla belirledikten sonra güzergahı çizdirme yapın. **Güzergah Çiz** **Temle**

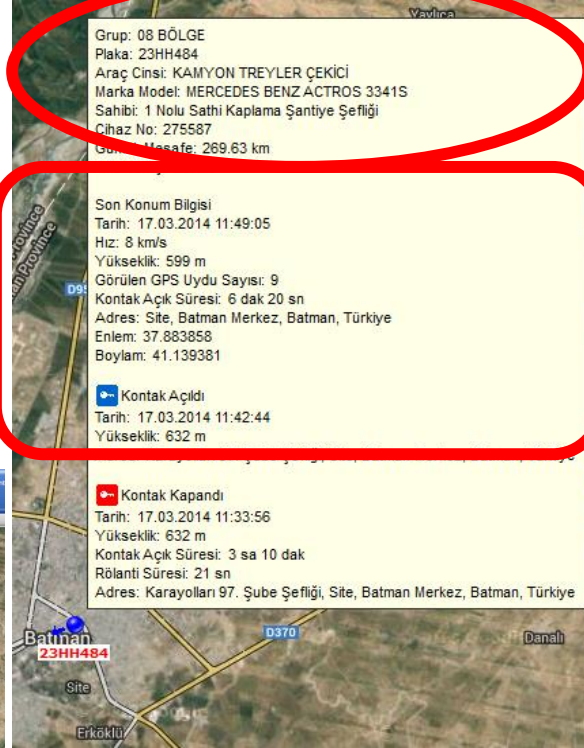
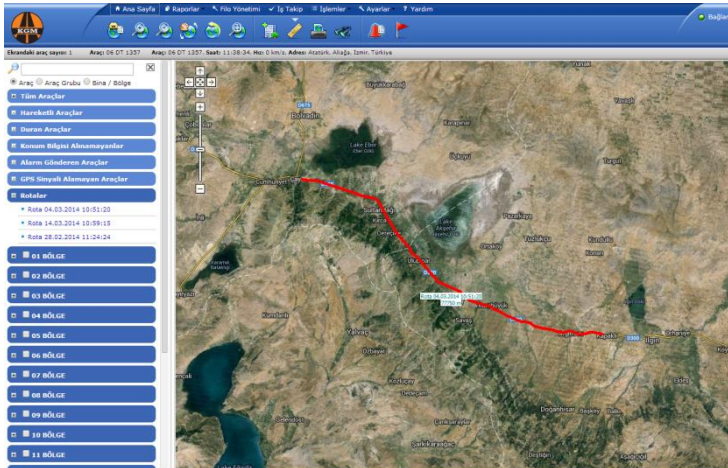
Toplam Mesafe: 708.67 km Toplam Sıra: [ ]

ESKİŞEHİR	Tepebaşı
AKSARAY	Merkez
ADANA	Seyhan





# VEHICLE TRACKING & MANAGEMENT SYSTEM



Vehicle data

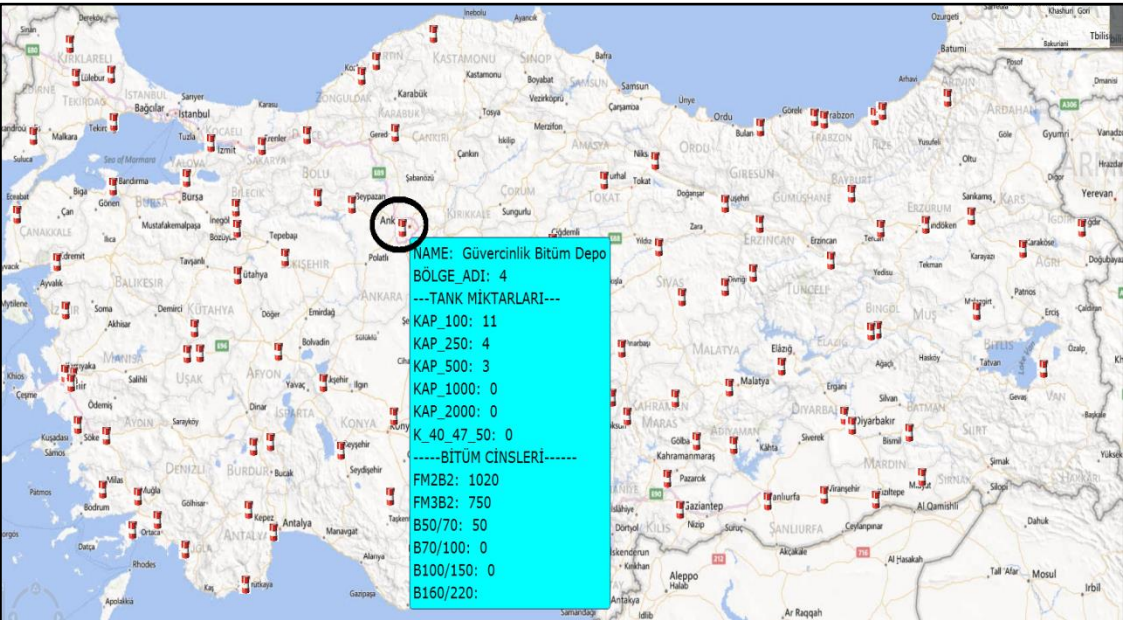


GPS data

Tracking GDH' s and contractors Bitumen Carrying Trucks



# BITUMEN STORAGE SYSTEM



- Online and up to date data like Storage capacity, Unused capacity, Bitumen types, annual usage and stock of Bitumen etc... Can be easily accessed.

# PAVEMENT MANAGEMENT SYSTEM

- ROAD INVENTORY
- PAVEMENT INVENTORY
- PAVEMENT PERFORMANCE
- TRAFFIC COUNTS
- CLIMATE
- COST

DATABASE

ANALYSES

