The Mediterranean Partner Countries’ Perspective on the Cooperation in R&D in Sustainable Urban Mobility

MORE FOR FUTURE: ISTANBUL CASE

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ISTANBUL METROPOLITAN MUNICIPALITY
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III. NEEDS & PROBLEMS on PUBLIC TRANSPORTS & URBAN MOBILITY;
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I. GENERAL INTRODUCTION of CITY

- **Area**: 5.461 Km²
- **Population**: ~ 14 Million
- **Daily Trips**: ~ 20 Million
- **Number of Vehicles**: ~ 3.4 Million
- **Vehicles Added to the Traffic Daily**: ~ 400 Veh.
- **Transportation (Headway) Ntwrk Length**: 27.000 Km
- **Railway Network Length**: 142 km (96 km is under construction)
- **Daily Trips Between Continents**: ~ 1.1 Million
- **Number of public buses**: 6.298*
- **Number of ferries**: 469

*: including contracted buses
I. GENERAL INTRODUCTION of CITY

PUBLIC TRANSPORT PASSENGER TRIPS

- Buses: 3,1 Million
- Metrobuses (BRT): 750,000
- Shuttles: 2,4 million
- Minibus – Taxi: 3,3 Million
- Railways: 1,6 Million
- Waterborne: 300,000
I. GENERAL INTRODUCTION of CITY

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II. ISTANBUL METROPOLITAN MUNICIPALITY IN GENERAL

- 27 municipal enterprises,
- 2 subsidiary public utility corporations (Transport Authority and Water & Sanitation Authority)
- ~ 53,000 employees in total.
- Responsibility for wide variety of areas...

- transportation,
- environment,
- natural-gas supply,
- energy,
- infrastructure,
- planning and development,
- community services and vocational education,
- health-wellness,
- food & catering,
- culture,
- tourism, etc.
- Information Communication technology (IT),
II. IMM’s ROLE in TRANSPORTATION MANAGEMENT

- Responsibility for operating the function of «Transportation Systems Coordination Branch»
  - Regulating and controlling the activities of operating private public transportation systems,
  - Controlling and planning the transportation projects, getting, providing and producing required technical and statics analysis for the planned and ongoing projects,
  - Controlling, rehabilitating and improving traffic controlling facilities and traffic flow directions.
III. NEEDS & PROBLEMS

- Mostly based on highway transportation.
- Limited usage of waterways.
- Pick hours problem.
- Needs of extension in Railway lines.
- Promote cycling routes.
- Limited Bus lanes.
IV. WHAT KIND OF SOLUTIONS?

1. MARMARAY PROJECT
2. METROBUS (BRT SYSTEM)
3. AKYOLBIL - Satellite Tracking and GPRS Fleet Control Management System
4. ISTANBULKART
5. TRAFFIC CONTROL CENTER
6. TRAFFIC DENSITY MAP / SMART PHONE APPLICATION
7. PARKING GUIDANCE SYSTEM
8. EDS RED LIGHT VIOLATION DETECTION SYSTEM
9. METEOROLOGIC SENSORS
10. CYCLING ROADS
11. TRANSPORTATION APPLICATIONS FOR DISABLED CITIZENS
1) MARMARAY PROJECT

- **Capacity:** 75,000 passengers per hour in one way.
- Approximately **300,000 people per day** are using Marmaray.
- 5 stations have already started giving service to public 1.5 years ago.
- **42 stations in total.**
- **Total length:** 77 kms. After completing construction for all line in 2017,
- It will be able to pass the city through EAST-WEST direction on one line.
1) MARMARAY PROJECT
CONNECTING CONTINENTS !!!
IN NEAR FUTURE...
2) METROBUS (BRT SYSTEM)

- **24 hours serving** public transport buses on the line allocated only for them,
- Travelling on **52 km line** with 44 stations,
- The buses **ply within averagely 30 seconds** period,
- Averagely **750,000 people** per day.
- Construction: 2007-2012
2) METROBUS (BRT SYSTEM)

**ADVANTAGES**

- **Shortening the travel times**: The 180 minute travel on the 52 km line has been decreased to 83 minutes,
- **Integration** with the other transportation modes,
- **“Distance based fare” policy**,
- **Environmental friendly system**: hybrid technology which decreases the amount of gas emission,
- **Uninterrupted travel possibility between the two continents** of Istanbul,
- **Decreasing waiting durations for public.**
3) AKYOLBIL - Satellite Tracking and GPRS Fleet Control Management System

- To provide line monitoring, line management and line optimization
- equipped by GPS: buses and BRT sys.
- a web-based system for fleet tracking/guidance and passenger information.
- Bus arrivals are determined and displayed on LCD screens at the bus stops.
- For the disabled, voice assistance is also available.
All the buses are being monitored by GPS and the data is sent to the center.
It is possible to monitor the buses as topologically line based.
FLEET MONITORING & CONTROLLING

It is also possible monitoring the departure and arrival times of buses and it can be used for line optimization.
JOURNEY PLANNING & ARRIVAL TRACKING APPLICATIONS FOR PASSENGERS
4) ISTANBULKART

- A media in the **Electronic Fare Collection System** which is a secure, fast and accurate information management system that provides users pre-paid travelling in the mass transportation modes.

- Istanbulkart is the contactless smartcard that is available to be used in the municipal services of Metropolitan Municipality.
4) ISTANBULKART

- **User friendly system:** contactless working property provides being used in a wallet.
- **Highly secured** against counterfeiting.
- **Large memory storage capacity** enables multiple applications and a flexible structure. It allows different scenario buildings according to the fare policy.
- Up to the **international standards** for contactless smart cards.
- The technology which is being used is the first and only in Turkey and **one of the first ones worldwide**.
1995 - Akbil
- The First Electronic Ticket of Turkey

2003 - Integrated Ticketing
- Akbil is valid for the complete journey:
  - Buses, trains, subways, ferries

2009 - istanbulkart
- Mifare based Contactless Smartcard, istanbulkart
- Electronic Tickets for single journeys: birGeç, ikiGeç, beşGeç, onGeç were being used

2010 - NFC Ticketing
- NFC ticketing test transitions began

2012 - City Card Integration
- istanbulkart for all municipality services such as parking, cultural activities, restrooms etc.

ELECTRONIC FARE COLLECTION SYSTEM of ISTANBUL

- AKBİL, was a contact based technology and used touch on memory.
- Today, its technology has been updated to contactless smart card, called as Istanbul card.
- It’s also compatible to NFC.
CURRENT ITS ELEMENTS in ISTANBUL
5) TRAFFIC CONTROL CENTER (TCC)

- **Dedicated center** to monitor & control traffic flow & provide **24/7 real-time traffic info.** to citizens.
- Center where **ITS solutions are developed** using collected traffic data for efficient traffic management.
- **Route advising** to drivers & passengers & pedestrians (6000 calls per day)
- **Informing** related departments about incidents on the roads
5) TRAFFIC CONTROL CENTER (TCC)

- In order to publish all the collected and evaluated data to Istanbul there is a call center & a broadcast room in Traffic Control Center.
- Entering appropriate traffic info to variable message signs.
- In addition Live broadcast is provided to 10 TV channels and 36 radio stations in a day.
6) TRAFFIC DENSITY MAP / SMART PHONE APP.

- Real time traffic density map-speed ranges illustrated with different colors.
- Actual information about road infrastructure/maintenance works/sudden speed changes/warnings related with traffic/traffic statistics.
MOBILE TRAFFIC INFORMATION – IBB CepTrafik

Traffic Cameras
Traffic Density Map
Travel Time Estimation
+2,5 Million Individual Installation
7) PARKING GUIDANCE SYSTEM

- A mobile application integrated to Traffic Density Map and Mobile Application.
- It provides **real time data about the capacity and availability** of municipality’s parking areas all over the city.
- At first, the project started in a pilot area with 4 information charts on the road, providing required data to public.
7) PARKING GUIDANCE SYSTEM (WEB)
7) PARKING GUIDANCE SYSTEM (MOBILE)
8) EDS RED LIGHT VIOLATION SYSTEM

- On the **commonly used junctions** Electrical Detection System was established.

- In this system the **Red Light Violations** are automatically detected by the cameras.

- The **detected violations** are sent to the police and the fines are posted to the violator’s house automatically by this system.
9) METEROROLOGIC SENSORS

Automatic Road & Weather Observation Sensors (RWOS)

- 28 RWOS in metropolitan area & 6 RWOS in tunnels,
- In 2016, plans for providing 15 more RWOS.
- Broadcast of real time road & weather condition info. (by VMS, VTS, SMS & internet)
- Prediction of:
  - road surface freezing time ,
  - its thickness ,
  - amount of rain / snow fall which are vital in some cases.
10) CYCLING ROADS

- To extend Carbon free zone areas; pedestrianization projects and cycling roads projects are being increased.

- Bicycle paths has been planned and put into practice:

  - Total **Current Bicycle Roads** in Istanbul : 88.3 km
  - Completed Construction Project / **Planned** to Construct : 106.1 km
  - **Ongoing** Construction Project : 67.7 km
  - **Target** Bicycle Road of Istanbul Metropolitan Municipality : 1.050 km
Current Bicycle Roads: 88.3 km
Planned to Construct: 106.1 km
Ongoing Construction Project: 67.7 km
11) TRANSPORTATION APPLICATIONS FOR DISABLED CITIZENS

- In old ships, disabled citizens are able to travel with their attendants for free.
- Overpasses are accessible via ramp and/or lifts.
- Audio traffic signalization system
- For the last term purchases, it is a must for public buses being accessible.
- Accessible rail systems, buses and seaports for disabled people.
THANK YOU VERY MUCH FOR YOUR KIND ATTENTION!

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