





REPUBLIC of TURKEY ISTANBUL METROPOLITAN MUNICIPALITY

STUDIES on DISASTER PREPAREDNESS

AKOM 2007

ESTABLISHMENT OF AKOM



No: 7269 Disaster Law,

No: 586 Decree Law,

No: 5216 Metropolitan Municipality Law,

•30.03.1998 / 98-403 Main Order of Istanbul Governorship,

•12.12.2000 date and No: 686 Act of Istanbul Metropolitan

Municipality Parliament

TASKS OF AKOM



- To provide coordination and cooperation between the related agencies and the units of Metropolitan Municipality to mitigate the effects of any type of damages before disaster, on disaster time and post disaster period.
- To coordinate the assignments of Metropolitan Municipality by the orders from the Mayor of IMM and Crisis Center of Province.
- To organize the search and rescue teams which are well trained, to lie ready for any task which is under the responsibility of the Municipality.
- To prepare weekly, monthly and annual reports by monitoring the seismic activity in the World, Turkey and Marmara Region.
- To digitize the precipitation data's and to prepare the graphics of the meteorology regions of Istanbul and to inform the related units of the municipality.

ORGANIZATIONAL CHART



President of AKOM (General Secretary)

Deputy President of AKOM (Head of Fire Brigade Department)

Consultants (Experts)

• NGO's

Press Secretary

Director of AKOM (Subsidiary Director of Fire Brigade)

Department of Fire Brigade Department of Transportation Department of Technical Affairs Department of Resource Development and Municipal Economic Enterprises Department of Health Department of Data Processing Directorate of Road Maintenance and Repair **Directorate of Social and Administrative Affairs Directorate of Soil and Earthquake Research Directorate of Foreign Relations Civil Defence General Directorate of Water and Sewage Administration (ISKI) General Directorate of Gas Distribution (IGDAS) Istanbul Bus Operator (IETT)**

BUILDING





In this building project, raft-foundation equipment which increases building resistance against earthquake has been chosen as basic equipment. On the other hand, by using high resistance reinforced concrete BS40, ironless concrete BS20, 150 dose rubble concrete, concrete steel BÇIII as iron reinforcement, concrete steel BÇI in S iron and lateral reinforcement, dramix against to being cracked, super concrete plasticizer equipments and vibrator; the building structure was provided to work completely. It has been calculated that this building can resist on magnitude 8.3 in Richter Scale.

AKOM Building is constructed as a sample of the Disaster Management Center in Los Angeles , USA.





Display Systems:

Videowall System: It is formed of 32 cubes with 48 m² size which can show 128 different images from computer, network and video sources in different sizes at the same time.





Display Systems:

Plasma and LCD Systems: There are two Plasma systems

(5x4 and 5x2 PDP Wall) and two LCD systems (2x2-twice). All videos coming from 128x128 video matrix can be displayed.

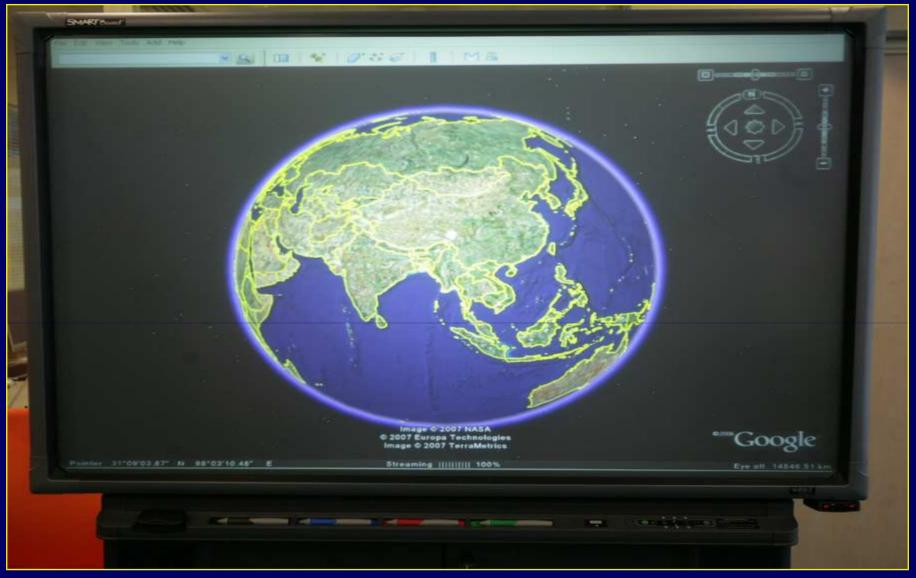




Display Systems:

Modis (LCD with remote control): 30 times MODIS are placed in the meeting hall. 128 different images from computer, network and video sources can be displayed.





Display Systems:

67" Smart Board (Touchable screen)









Audio System:

Microphone System: It is formed of wireless and cable microphone systems

Simultaneous System: It supports translation of two foreign languages

Audio Mixer : The audio signals coming from 16 different sources

can be transferred to main audio system.





Control and Recording System:

Work Stations

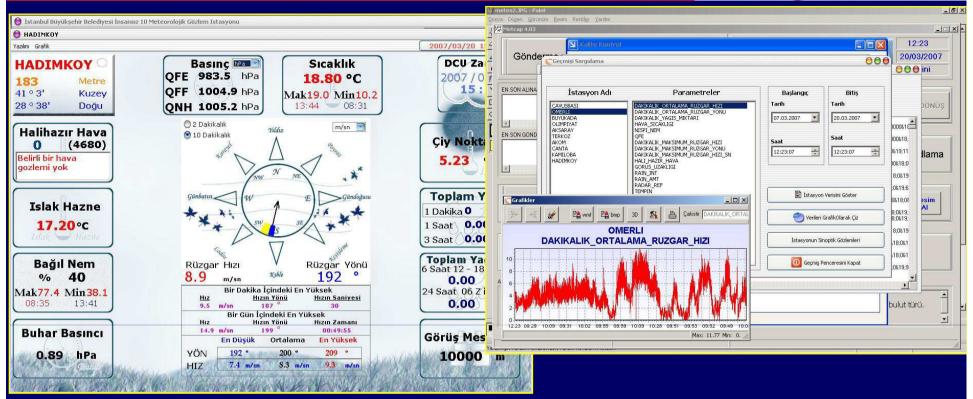
: 11 times work stations are used for controlling of video and audio systems.

Recording Devices: There are DVD, DVCAM, SVHS, VHS, VCD, DAT TAYP devices for recording video and audio. Records can also be edited and re-montaged for the distribution.

Matrix Systems

: They are used for transferring the signals coming from different sources (like RGB, cameras, TVs) to different locations (like Videowall, PDP, etc.)



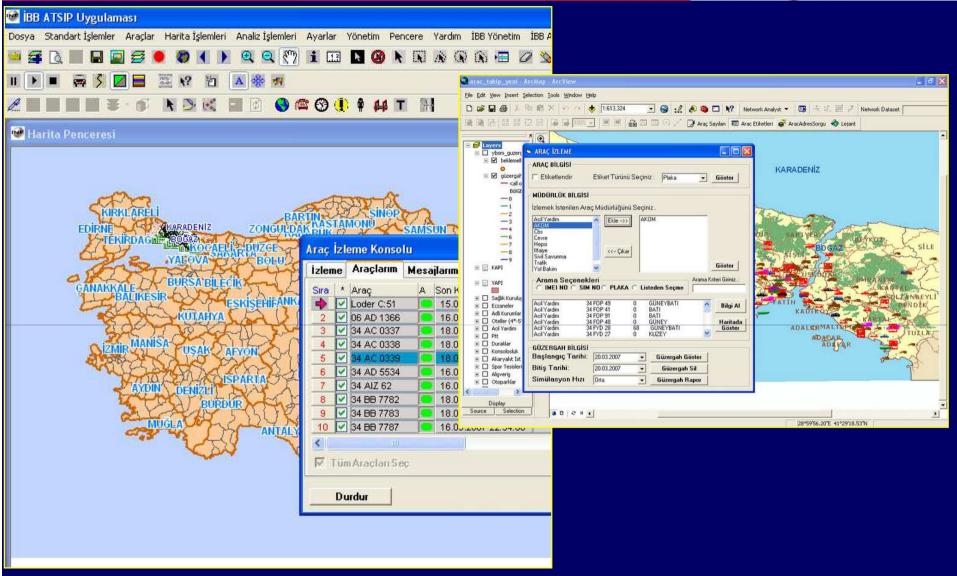


Servers:

Back-up Servers for I.M.M Units: The back-up data of the units and companies of Istanbul Metropolitan Municipality are being transmitted to the servers of our center by the fiber optic cables.

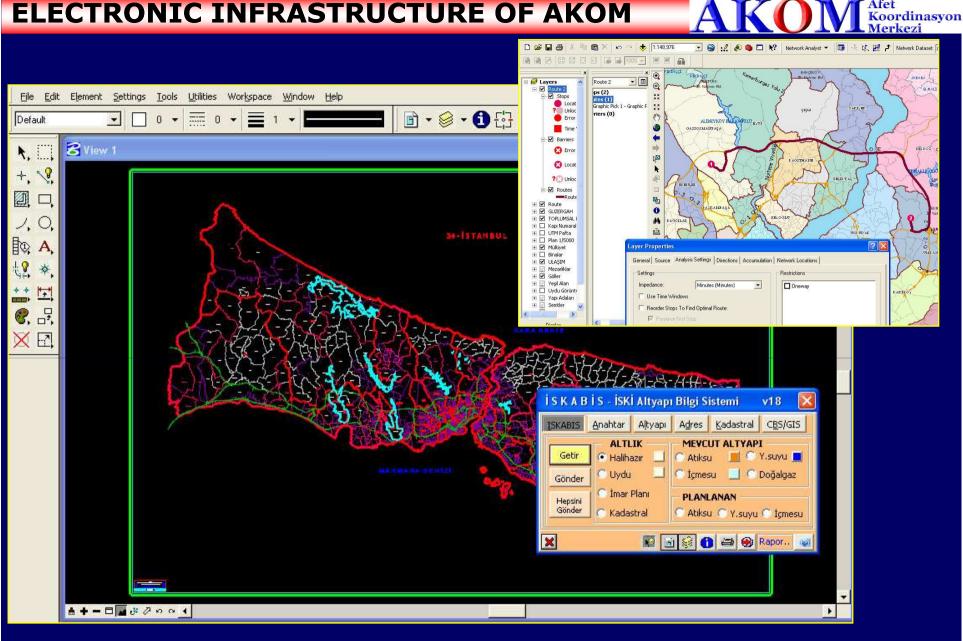
Meteorological Server: It provides to take and store data from 10 different meteorological stations which belong to Istanbul Metropolitan Municipality.





GIS Servers:

* Vehicles are being monitored by using GIS.



GIS Servers:

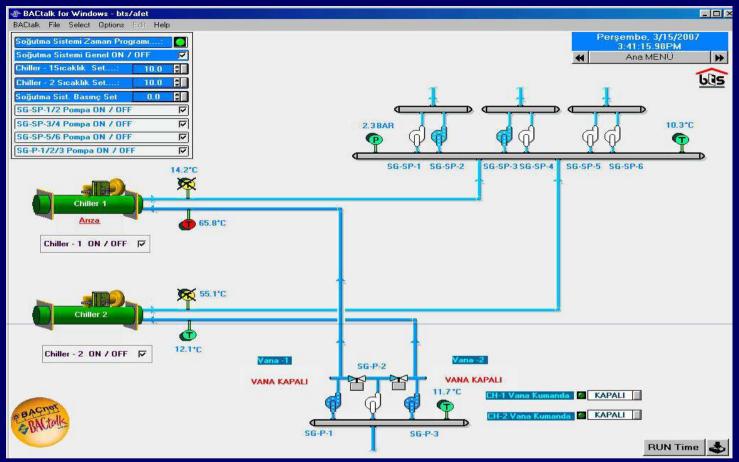
* All the data on infrastructure, buildings, roads...etc. is available in the system.

ELECTRONIC INFRASTRUCTURE OF AKOM STANBLE - Archiop - Arc View File Edit Yew Insert Selection Tools Window Help Network Analyst Analyst Analyst File Edit View Iheme Graphics Ulaşım Ağı TgokuTaşıma Ulaşım Albyapıları Trafik UKOME Tesisler Harita XToolis Window Help UBS Etiket ON DODON'S STATE 375.645.14 # 4.557.295.40 # a 😝 Layers _ | | × E yagmur_suyu istanbul RavilSistem Ist. istanbul RavliSistem Ha # TOPLUMSAL NON Topoloji_yapiadasi.shp □ kanalizasyon Yollari - DE J DERELER Bahçelievler Tum Mahaliele ⊕ □ UTM Pafta. # Plan 1/5000 ■ Milliovet 歐 Dinalar 0 H W LLASIM ✓ istanbul Zemin * Mezorlélar ✓ istanbul_Deniz # P Yesl Man hava fotolar □ Pafta5000BackC # Vapx Adalari # SINIRLAR ₩ 🗭 Denizier

GIS Servers:

* Emergency facilities and transportation analysis can be determined and examined.





Automation System: Heating and cooling system, level of room temperatures, pumps of fire and air pressure tank, illumination, fuel and water tanks can be controlled by this automation system.

UPS and Generators: Online working 2 UPS with 100 kVA exists. There are three generators. One of them is 1100 kVA and two of them are 550 kVA.





IP Telephone System: CISCO IP Telephone System is available.

Video Conference System: Three video conference devices in different locations in AKOM provide communication between Istanbul Governorship, Istanbul Metropolitan Municipality, Istanbul Police Headquarter, Kandilli Observatory and AKOM.







LIVE BROADCAST VEHICLE

Mobile Live Broadcast vehicle was bought to serve for AKOM and other units in a potential disaster case.

MOBILE COMMAND VEHICLE

Mobile Command Vehicle is for in use of unusual conditions. The vehicle is equipped with newest communication devices (Telephone, Wireless phone, GPS, fax, server etc).

COMMUNICATION VEHICLES

10 communication vehicles with 4 satellite phones were purchased.



SATELLITE COMMUNICATION

There are <u>78 satellite phones</u> from 2 different operators.

(24 Stationary Satellite Phone) (54 Mobile Satellite Phone)





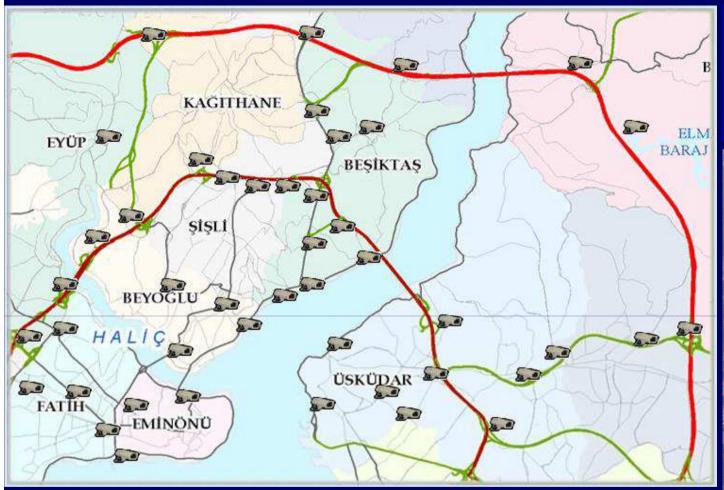
INTERNET

3 ways for internet access

LocalNetwork 60 Mbit/s
ATM 10 Mbit/s
ADSL 2 Mbit/s







TRAFFIC AND MULTI DIRECTIONAL CAMERAS

The <u>images of 175 important junction</u> are transferred on live time. Also, directions of the cameras can be controlled from our center.









TRAFFIC AND MULTI DIRECTIONAL CAMERAS

10 cameras are established at the important locations of the city. These cameras will be used for affective response activities at a potential disaster.





TRAFFIC AND MULTI DIRECTIONAL CAMERAS

Fire brigade Cameras: 15 mobile teams are established and the images that are taken can be transferred to AKOM.

Mobese Cameras: According to the protocol, 350 Mobese camera images of Provincial Police Department can be monitored form AKOM.

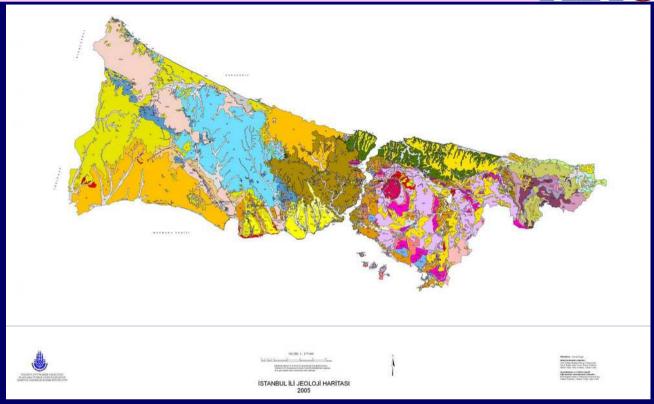


AKOM CARRIES OUT THE STUDIES ON 5 MAIN TOPICS:

- 1- SCIENTIFIC AND TECHNICAL STUDIES
- 2- STUDIES ON BUILDING SAFETY
- 3- STUDIES ON VEHICLE-EQUIPMENT AND RESCUE STAFF
- 4- STUDIES ON COMMUNICATION AND INFORMATION TECHNOLOGIES
- 5- OTHER STUDIES

1- SCIENTIFIC AND TECHNICAL STUDIES 1- SCIENTIFIC AND TECHNICAL STUDIES





URBAN GEOLOGY STUDIES

1/5000 scaled Land use maps for development plans, Geotechnical/Geological Mapping studies for Istanbul in 27 district are completed by Earthquake and Soil Investigation Directorate and are approved by General Directorate of Disaster Affairs.

1/25.000 scaled geology studies are completed in the whole province area which is defined by the law no:5216.



MICROZONNING REPORT and PREPARATION OF MAPS

The studies that are going to be done in the "Southern part of European Side" project which covers 182 km² of Istanbul:

- . 1/2000 scale of Slope Map
- . 1/2000 scale of Geology and Engineering Geology
- . 1/5000 scale of Source water depth map
- . 1/5000 scale of Ground Shaking Map
- . 1/2000 scale of Liquifaction Map
- . 1/2000 scale of Landslide Map
- . 1/2000 scale of Flooding Map
- . 1/5000 scale of Vs (0-30) Shear Wave Velocity Map
- . 1/2000 scale of Ground Map according to the Earthquake Code
- . 1/2000 scale of Ground Suitability Map
- . 1/2000 scale of Ground Classification Map according to NEHRP Also:
- . 1/25.000 scale of Earthquake Hazard Map for whole Istanbul
- . 1/2000 scale of Tsunami Hazard Map for whole Istanbul coast areas

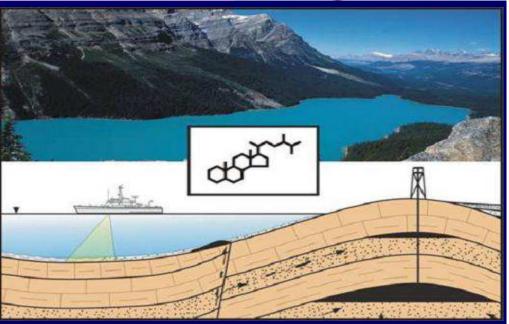


*Microzoning studies for Anatolian side are targeted to start within this years.



STUDIES ON FAULTS and LANDSLIDES

Researches on landslides and faults under the sea of Marmara is continuing with ITU and MTA



FORESIGHT

In cooperation with TUBITAK, Risk Management System for European Union Countries (FORESIGHT) Project under the European Union 6th Framework Program is completed.

EVALUATIONS OF REPORTS

"GROUND SURVEY REPORTS" of our Municipality and Districts for Urban Planning Issues are being evaluated according to the existing code. 1200 report were evaluated in 2006.





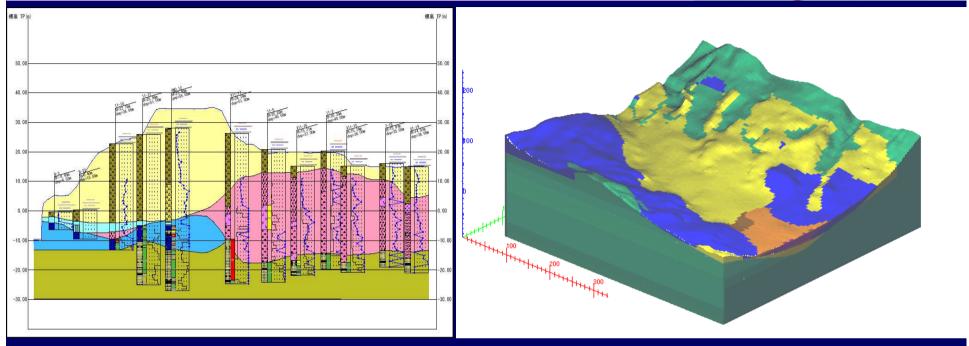


EARTHQUAKE STATIONS and EARTHQUAKE MONITORING PROJECT:

Earthquake Monitoring and Record Stations are established in cooperation with B.U. Earthquake Observatory for monitoring the micro earthquake activities.

In cooperation with TUBITAK, physical and chemical changes of the ground waters and daily radon gas changes are being monitored and the relation with a possible earthquake are being watched at the 16 hydraulic stations which are placed on the existing fault lines in Marmara Region.





DATABASE ON GROUND ENGINEERING

All of the ground engineering data prepared for Metropolitan area are digitised.

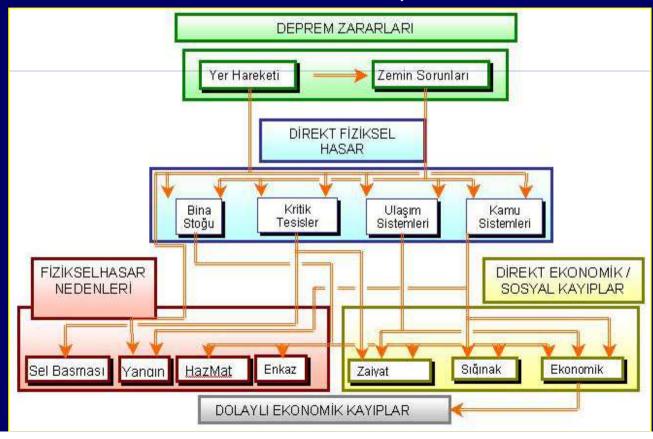
STUDIES ON GROUND CLASSIFICATION

In the scope of Earthquake analysis research project the microtremor Vs shear wave velocity will be estimated for the ground classification of Anatolian Side are implemented with TUBITAK and Kandilli Observatory.

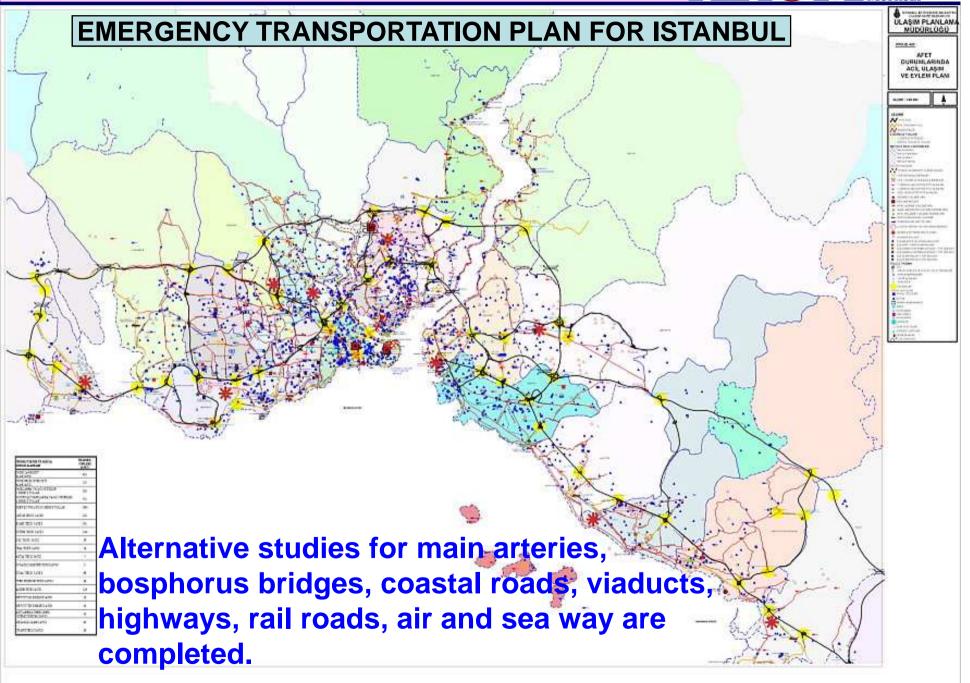


HAZTURK: To develop American FEMA patented HAZUS program to national scale of HAZTURK version for to use in pre-disaster, disaster time and post-disaster. The aim of the project which is in cooperation with SPO, TUBITAK and ITU is; emergency management, risk mitigation, planning, preparedness, response and rehabilitation.

Similar type of this program is being used in the world. The implementation of this program in Istanbul has an essential importance.









AKOM MEETINGS AND ORGANIZATIONS

264 meeting on disaster were held in AKOM. Also, preparedness meetings on world wide organizations (NATO meeting, Formula 1, Final League of Championship, etc.) were done.



INTERNATIONAL MEETINGS AND PUBLICATIONS

- "2nd Earthquakes and Mega Cities Initiative" meeting was held in Istanbul by the sponsorship of municipality.
- "Istanbul Earthquake and Safe Buildings" meeting was held by the attendance of the academicians and specialists of Turkey, and the papers were compiled in a book.
- A symposium with the name of "Rehabilitation of Istanbul" was held.





EDUCATION STUDIES

INALAR SEMINER

Fire Brigade – IBITEM, Directorate of Emergency and Rescue Services, Secretariat of Civil Defense, AKOM had trained <u>70.000 people on fire, rescue and first aid</u>. In addition, for to make citizens conscious of earthquake different types of books and handbooks are distributed.

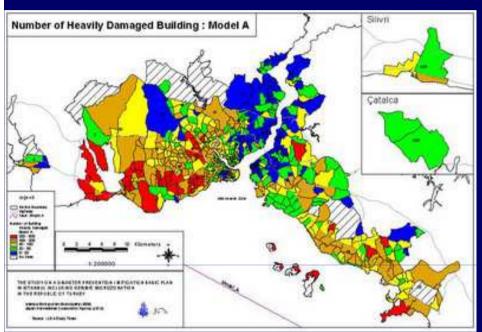
AKOM Afet Koordinasyon Merkezi 2- STUDIES ON BUILDING SAFETY 2- STUDIES ON BUILDING SAFETY

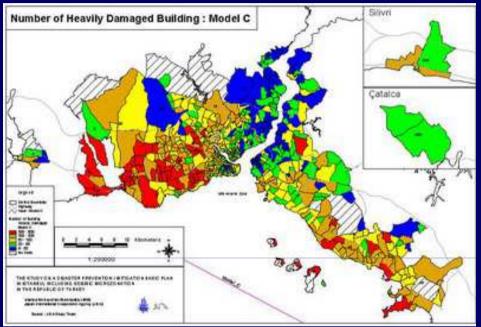
2- STUDIES ON BUILDING SAFETY



Model A: Magnitude: 7,5

Model C: Magnitude: 7,7





MICROZONING AND DISASTER PREVENTION/MITIGATION BASIC PLAN (DIAGNOSIS)

This project was done in cooperation with Japan Cooperation Agency. Sub-district based possible substructure and infrastructure damages were estimated according to 4 different scenario earthquakes.

2- STUDIES ON BUILDING SAFETY



POSSIBLE DAMAGE AND LOSS ESTIMATION ACCORDING TO IMM – JICA STUDY:

If an earthquake with 7.7 or 7.5 magnitude occurs;

Approximately 3.040.000 household (9.000.000 people) in 750.000 building will be affected!

- √ 50.000 60.000 heavily damaged buildings,
- √ 500.000 600.000 homeless people,
- ✓ 70.000 90.000 life loss,
- √ 120.000 to 130.000 heavily wounded, 400.000 slightly wounded people
- √ 1.000 2.000 water pipe damages,
- √ 30.000 natural gas service box damages,
- ✓ Rupture at 3% of the electricity lines,
- √ 140 million tons of debris,
- √ 40 billion US\$ economic loss are estimated,
- ✓ Rescue operations for 1.000.000 people,
- √ 330.000 tents.



ISTANBUL EARTHQUAKE MASTER PLAN (EMPI)

The scope of Earthquake Master Plan for Istanbul comprised of works to be done in the following areas;

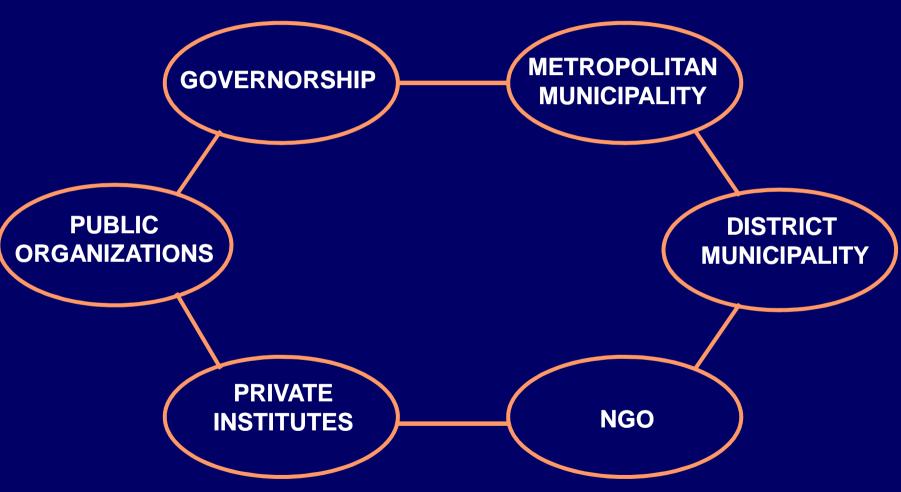
- Assessment of current situation
- Seismic assessment and rehabilitation of buildings
- Legal issues
- Land use issues
- Financial issues
- Educational issues
- Social issues
- Risk and disaster management issues

Studies that must be completed and planned under the above topics are continuing in stages under a programme.



ISTANBUL EARTHQUAKE MASTER PLAN (EMPI)

is a social contract between



Identifying responsibilities commitments, methods of supervisory functions

2- STUDIES ON BUILDING SAFETY



Heavily Damaged Districts



EMINÖNÜ

FATIH

BEYOĞLU

ZEYTİNBURNU

BAKIRKÖY

BAHÇELİEVLER

AVCILAR

BAYRAMPAŞA

K.ÇEKMECE

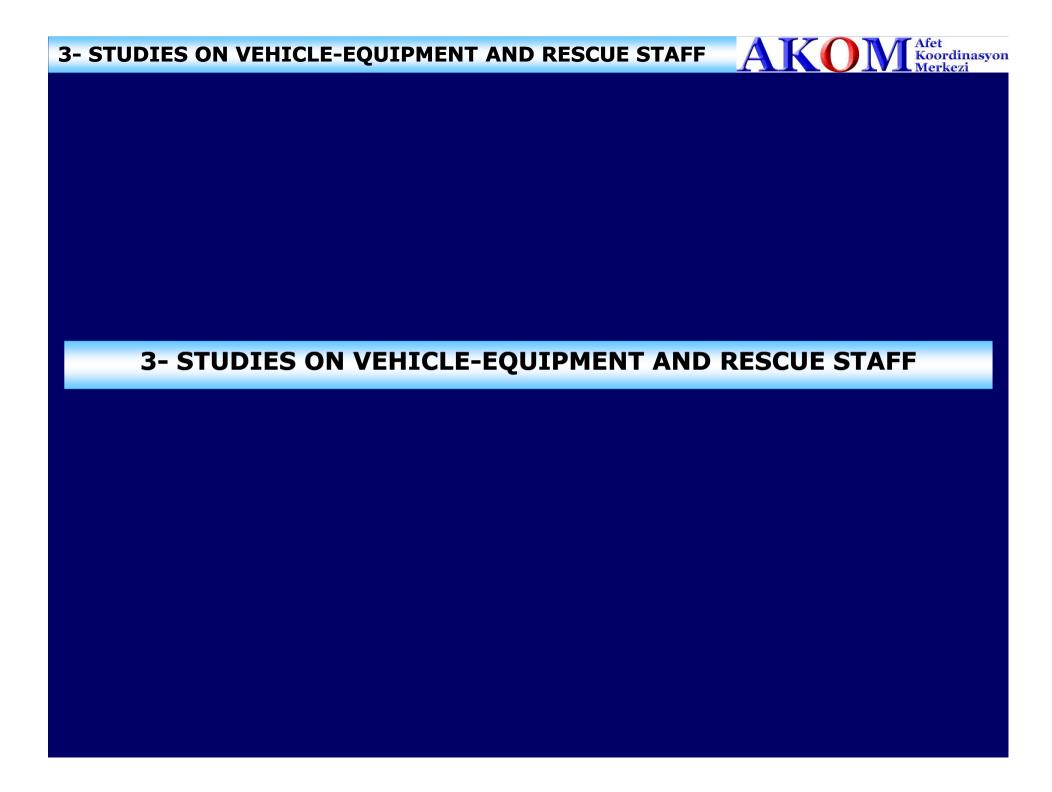
ADALAR

JICA-EMPI EVALUATION RESULTS

BUILDING RISK SURVEYS ARE STILL CONTINUING IN ISTANBUL

- * 16.030 building is evaluated in Zeytinburnu
- * Risk surveys of 38.580 building in Fatih, 60.938 building in Kücükcekmece is continuing.

Building survey will be completed with in 1,5 to 2 years.





DEPARTMENT OF FIRE BRIGADE

- 61 Fire Brigade Station
- 4.545 fireman
- 461 different types of vehicle
- 2 chartered fire craft
- 3 rapid response helicopter
- 72 type of rescue equipment in every station



Generator

Cable Reel

Projector







Hydraulic Cutter and Separator







DEPARTMENT OF FIRE BRIGADE

RESPONSE VEHICLE (No:3)

is a vehicle which has the following properties;

- Extinguishing,
- Cooling,
- Debris Removal,
- Evacuation,
- Ventilation,
- Demolition,
- •RC drilling
- Crane etc.





3- STUDIES ON VEHICLE-EQUIPMENT AND RESCUE STAFF



DEPARTMENT OF FIRE BRIGADE

Vehicles Planned for Factoring (in 2007)

1- 6x6x6 Rescue Vehicle for Disaster 45

2- 6x6x6 Fire Extinguisher 45

3- Disaster Response and Extinguishing Vehicle 10













DIRECTORATE OF EMERGENCY AND

- •17 emergency response station
- •101 doctor
- •125 nurse and emergency ambulance technician (ATT)
- •28 ambulance







DIRECTORATE OF EMERGENCY AND RESCUE SERVICES

ACTIVITIES

- Emergency Health Services
- Trainings on First Aid for Volunteers
- Public Health 'Attention' Seminars
- Studies on Disasters
- Relief for Freezing People
- Serves as Lifeguard at the Beaches of Istanbul









Municipality's Search & Rescue Team

- •49 search and rescue staff
- •6 rescue dog
- •5 4x4 Mercedes type rescue vehicle
- •8 different type of rescue vehicle
- •2 rescue boat
- •30 tent
- •Wireless phones, satellite phones





STANBUL BÜYÜK SEHİR BELEDİYESİ

SIVIL SAVUNMA KURTARMA ARACI



- •First Aid
- Search and Rescue
- Disaster Relief





DIRECTORATE OF ROAD REPAIRMENT AND MAINTANANCE

Works in 9 Different Regions

With 2.172 staff and 724 vehicle

AFET KOORDINASYON MERKEZI





DIRECTORATE OF ROAD REPAIRMENT AND MAINTANANCE

TYPE	OF '	VEHICLE	NO

➤ Snow Plow – Salt

Sprinkle : 216

➤ Vehicle with plow : 191

≻Loader : 34

➤ Boschung : 40

➤Truck : 63

➤ Pickup truck : 35

➤ Solution Tanker : 50

➤ Combined Vehicle : 26

➤ Crane : 69

Total: 724







IGDAS (Istanbul Gas Distribution Company)

- •632 staff
- •60 emergency response team and equipment
- •157 vehicle

8 automatic shut off valves are installed for earthquake.

93 valves were installed to the locations where the ground conditions are different.

Also regional regulators and service boxes has an automatic shut off system.











HAMIDIYE COMPANY

All the necessary studies are completed for supplying the drinking water and 400 of civic water tank owners are informed.

Water and sewage infrastructure installations are completed for the temporary settlement areas which are designated by Sub-district

Governors and District Municipalities





DIRECTORATE OF SOCIAL AND ADMINISTRATIVE AFFAIRS

Halkalı Logistical Support Center:

The center with an area of 12.000 m² serves for a capacity of 100,000 person/day. Center has kitchens, and storages.

The center is used to store the disaster relief materials for intenational and national aids. Center has storages in the Anatolian side as well.

Also "Mobile Kitchen" is on service for serving for 20.000 person/day with two types of meal..





PUBLIC BREAD COMPANY

Is in charge of covering the bread demand with capacity of 2 million per day, in any case of disaster.

Continues to produce bread in 3 big factories at Kartal, Edirnekapı and G.O.Paşa.

The organization plan for bread distribution is completed. And will be able to produce bread for 1 week with LPG.

Studies on long lasting bread production is completed. Studies on the storage, distribution and production of <u>5 million of bread</u> with high calorie and nutritional value is completed.









IETT (ISTANBUL BUS OPERATOR) AND OTHER COMPANIES





IDO (SEA BUSSES CORPORATION)



•25 sea bus,

•8 ferry-boat,

•32 ship for passenger,

•15 ship for vehicle,

•12 boat for passenger

•2 ship



Health equipments are installed to the sea busses.

Studies to increase the number of sea piers are continuing.



DIRECTORATE OF CEMETERIES

Works on studies for post-disaster funeral operations.

- 81 funeral car
- 18 intercity funeral car (air-conditioned) (Special condition capacity: 5)
- 5 unit of normal wc (Total cabin number: 22)
- 5 normal morgue (Total funeral capacity: 76)
- 9 mobile wc
- 6 mobile morgue (Total funeral capacity: 120)
- 66.000 body bag
- 6.600 concrete graves (Pendik) are done.

Also;

• 10.000 unit of concrete graves are planned to be built in İkitelli-Başakşehir.



4- STUDIES ON COMMUNICATION AND INFORMATION TECHNOLOGIES

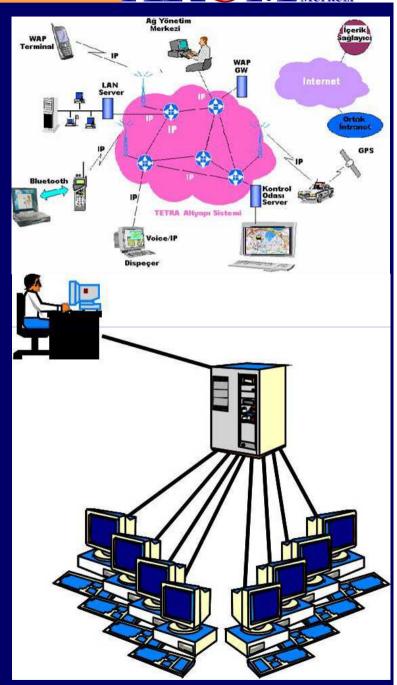


ISMEP PROJECT

In scope of ISMEP Project Components for Strengthening of Emergency Preparedness and Disaster Management are;

1..Improvement of EmergencyCommunication Systems2..Establishment of DisasterManagement Data System Studies

It is aimed to organize the communication infrastructure for metropolitan municipality and related agencies.





5- OTHER STUDIES



Directorate of Emergency and Rescue Services, has established two storages for to store the medical materials in use of a potential disaster. The locations of Emergency stations are in European side and in Anatolian side materials for use in a potential disaster.

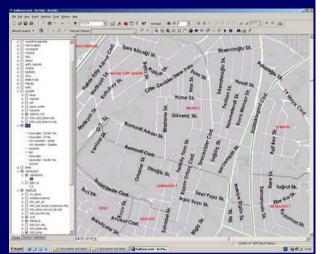


- ➤ 2500 unit of simple but effective Emergency Health Set has been prepared for to use at first stage of a crisis
- ➤ Health materials are placed to the sea buses that are related to Istanbul Sea Bus Company for the use of response to injured people.





- ➤ Disaster based GIS studies are almost completed. The road inventory is completed.
- ➤ Public bread buffets, I.E.T.T. Bus Stops, Neighborhood Governorates, Police Stations, Water distribution points etc. are already shown on GIS.
- **▶**410 portable toilets were bought for in use of emergency.
- ➤ 15 emergency response stations (formed of equipments and teams of Fire Brigade, İgdaş, İski, Emergency Aid and Road Maintenance) are planned to be established to the various locations in Istanbul.





AKOM Afet Koordinasyon Merkezi

- **▶4.450** hydrants are located to the important roads and streets of Istanbul. Studies are continuing to increase the number.
- Fire Risk Map is done for Istanbul.
- **▶**10 automatic meteorology stations are established for monitoring the weather situation more detailed.
- > "AKOM Emergency Relief Plan" is prepared, data inputs are still continuing.
- **►** "AKOMCELL" is implemented for alerting the public with messages of mobile phones for possible or on going events.
- Studies for constructing "Command Control Building" near AKOM Building is continuing.







INDONESIA RELIF ACTIVITIES

- Health Services,
- Public Bread Services,
- •Environment and Solid Waste Management,
- Road and Infrastructure Services,
- •ISKI- Water Purification Services





PAKISTAN RELIEF ACTIVITIES

Body Bag :10.000 unit

•Life Container : 500 unit •Long Lasting Bread :10.000 unit

 Food Packet : 5.000 unit

•Cake : 1.200 unit

Water : 1.000 package

•Flour 10 ton

•Milk powder 30 ton

Boot :30.000 unit

Sweater :30.000 unit

•Blanket :10.000 unit

•T-Shirt : 4.200 unit

: 4.200 unit •Hat

Bread Production Unit 1 unit

1 unit Generator

 Water Sanitation Unit : 3 unit





LEBANON RELIEF ACTIVITIES

2 million YTL aid was done to the region after the Lebanon war









RATHER THAN TO RESCUE PEOPLE FROM THE DEBRIS

OUR AIM

IS TO PREVENT PEOPLE FROM STAYING UNDER THE DEBRIS.

www.ibb.gov.tr/akom