

Safe City

Safe Life



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We Preserve
Our Cultural
Heritage

Cultural Heritage Special Edition



Mecidiye Kiosk



We Preserve Our Cultural Heritage

We have achieved a great progress in the Istanbul Seismic Risk Mitigation and Emergency Preparedness Project (ISMEP) which we commenced together in February of 2006. The results of the project which has been implemented for almost five years with the aim of reducing natural disaster risks for Istanbul, prioritizing earthquake risks, are today considered one of the best practices all over the world.

As you are well aware, the project comprises the basic elements of increasing emergency preparation capacity, retrofitting/reconstruction of high-priority public buildings, and implementation of building code enforcement activities.

The activities we have been carrying out under all components of the project are designed in line with modern principles of disaster management, by monitoring international developments closely, in a comprehensive structure where participation of all stakeholders and effective use of resources are ensured, and we are continuously extending the breadth of these activities with a community-based approach.

Until now, within the framework of the project that commenced with the motto "Safe City, Safe Life", nearly 350,000 residents of Istanbul were trained and nearly 5 million pieces of training materials were distributed.

By the end of 2011, the sum of the numbers of retrofitted and reconstructed schools reached 564. This translates to the figure that 1,000,000 students are studying in safer school buildings.

One of the significant sub-components of the project that aims to make Istanbul ready for all aspects of disasters is the review of cultural and historical heritage buildings in the city, considering seismic risks involved, and preparing retrofitting, restoration and restitution projects for model buildings.

In the "Cultural Heritage" special edition booklet, which we designed for you, we wrote about the activities in progress within the framework of the component of Inventorization and Multi-Hazard and Earthquake Performance Evaluation of the Cultural Heritage Buildings in Istanbul.

The background of the project is a scene of support by and efforts of numerous persons, agencies, institutions, and all the stakeholders. I would like to thank to all who share the excitement we feel for Istanbul, of which future we strengthen.

Wish you a pleasant reading.

K. Gökhan Elgin
Director of İPKB

Istanbul

Humanity has added new value to the places it has lived upon, and left behind masterpieces that carry its culture to ensuing generations.

Conservation areas of Istanbul inscribed on World Heritage List are formed by four main areas:



Topkapı Palace and
Sultanahmet Area
(The Archaeological Park)



Zeyrek
Conservation Area



Land Walls of Istanbul



Süleymaniye
Conservation Area

Cultural heritage is a key element of the history and identity of societies, contributing to their economy and well being. Disaster reduction, as a tool of sustainable development, concerns not only the prevention of loss of lives and property, but also the protection of cultural assets and the environment from natural or technological hazards.

International Disaster and Risk Conference (IDRC), Davos, 2008



We Preserve Our Cultural Heritage

"The god and human, nature and art are together in there, they have created such a perfect place that it is valuable to see." Lamartine's famous poetic line reveals his love for Istanbul, describing the embracing of two continents, with one arm reaching out to Asia and the other to Europe.

Istanbul, once known as the capital of capital cities, has many unique features. It is the only city in the world to straddle two continents, and the only one to have been a capital during two consecutive empires Christian and Islamic. Once was capital of the Ottoman Empire, Istanbul still remains the commercial, historical and cultural pulse of Turkey, and its beauty lies in its ability to embrace its contradictions. Ancient and modern, religious and secular, Asia and Europe, mystical and earthly all co-exist here.

It is evident that in the future, the majority of human habitats will be urban dwellings. Debates on what factors are important to ensure that cities offer the best possible quality of life to urbanites, and how such a quality of life can be put on offer are on rage.

Istanbul is home to the most important monuments of Roman, Byzantine, and Ottoman Empires, a fact attested by its historical sites listed in the World Cultural Heritage list since 1985.

High population density, traffic, excessive migration from rural areas, unemployment, health and accommodation problems, lack of infrastructure, and environmental pollution are among the most important problems faced by big cities.

On the other hand, the urban losses in the face of natural and man-made hazards are on the rise on a global scale. A new perspective is needed in making big cities well-prepared for various risks such as earthquakes, floods, technological accidents, and terrorism.

Today, one of the mega-cities of the world, Istanbul, faces risks of earthquake and other disasters.

300.000 B.C.

The first inhabitants of what is now Istanbul made their home in Yarımburgaz Cave

660 B.C.

The history of the city of Istanbul begins with the foundation by King Byzas of the first centre of habitation on the promontory now occupied by Topkapı Palace

512 B.C.

Ships were tied together to form a bridge that would allow to cross the Bosphorus by Persian King Darius during the Scythian expedition



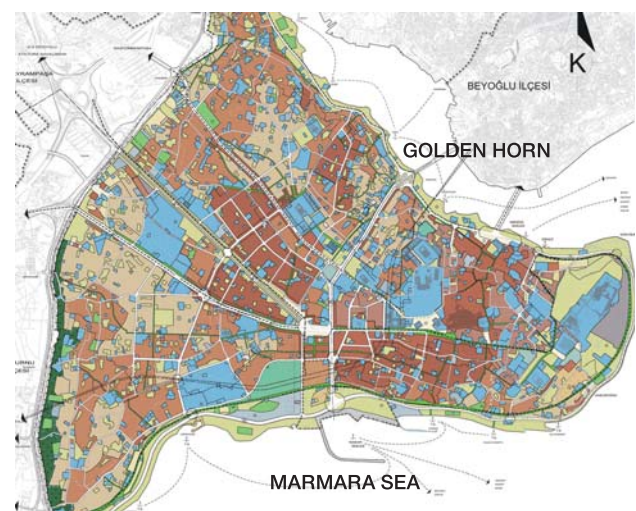
According to a study supported by the United Nations (UN) and carried out by GeoHazards International (GHI), Istanbul is one of the highest-risk cities in the world in terms of earthquake risks, like Tahrán and Katmandu.

Today, we have achieved much in the way of preparing Istanbul to a multitude of disasters, benefiting from the experience of recent earthquakes, and international developments. In this respect, activities to protect and preserve the historical and cultural heritage of Istanbul are also in progress. Istanbul is home to the most important monuments of Roman, Byzantine, and Ottoman Empires, a fact attested by its historical sites listed in the World Cultural Heritage list since 1985.

The disaster preparedness activities for historical and cultural buildings in Istanbul, under the protection of the Ministry of Culture and Tourism, are on track within the framework of Istanbul Seismic Risk Mitigation and Emergency Preparedness Project (ISMEP).

Among the works to increase the preparedness of Istanbul against a probable earthquake, Istanbul

Seismic Risk Mitigation and Emergency Preparedness Project, is the first risk mitigation project implemented by a local government in Turkey. ISMEP is considered as an example of success not only in Turkey, but also in the global scale, with respect to the work to prepare a city as well as its residents for all aspects of an earthquake and other secondary disasters to follow.



A GIS data showing Istanbul Historical Area

64 B.C.

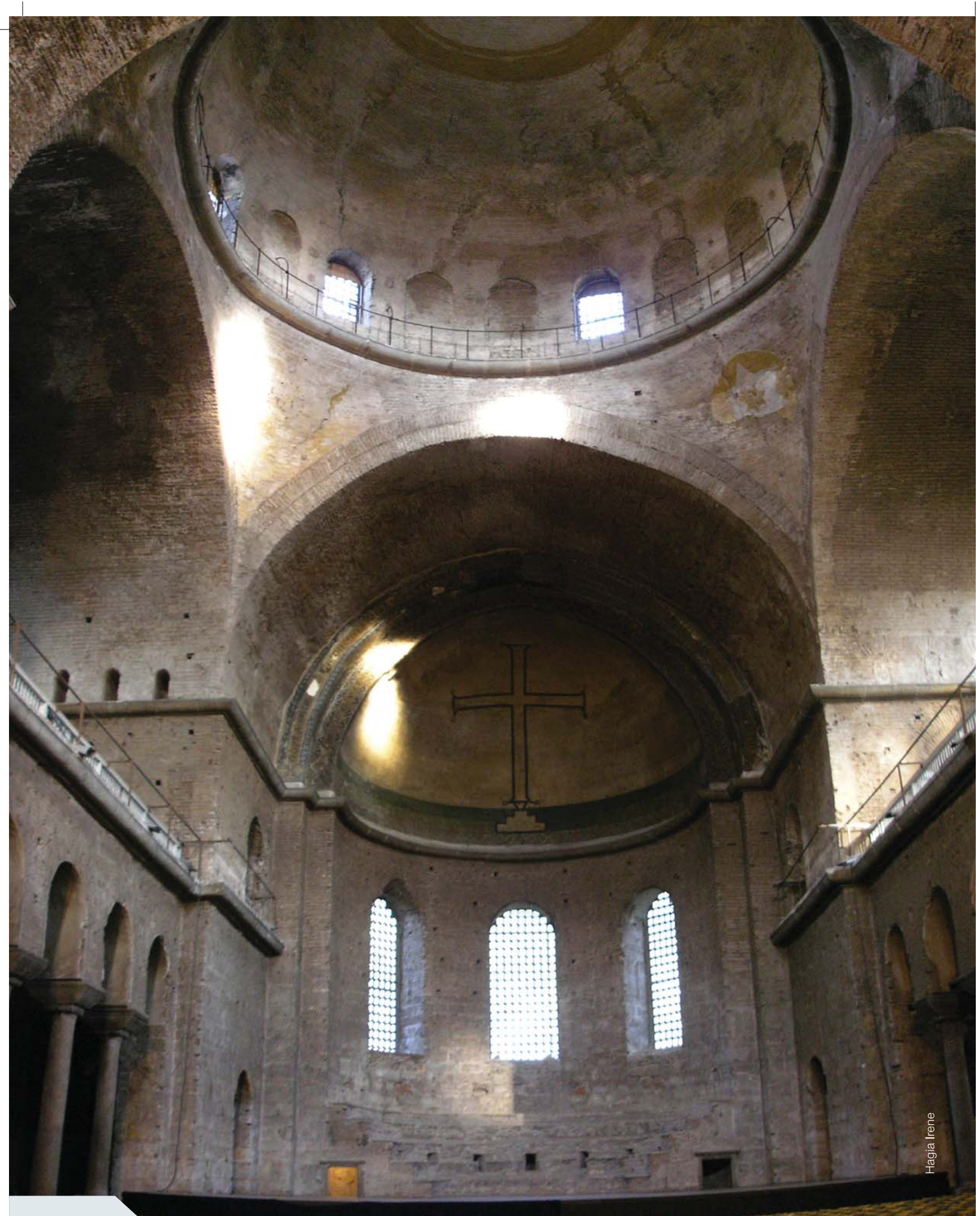
Byzantine has become a part of Roman Empire

196 A.D.

Emperor Septimus Severus, demolished the original ramparts of the city

212 A.D.

The first major earthquake was recorded



Hagia Irene

330

The city was sanctified as a new capital under the name of Constantinople

447

Earthquake caused considerable damage especially on the ramparts

532-537

Justinian compared Hagia Sophia with Temple of Solomon and stated at the completion of this edifice, "Solomon I have outdone thee"

Disaster Preparedness of Cultural Heritage in Istanbul, through ISMEP

Within the scope of the project, the inventory and seismic risk evaluations of all buildings, which are under the protection of the Ministry of Culture and Tourism in Istanbul, have been completed. 176 building units inside 26 historical complexes, including large complexes such as the Topkapı Palace and the Yıldız Palace, have been reviewed and transferred into a special database.

The database prepared in accordance with international inventory standards and formed in the format of geographical information system (GIS), is accessible through the web site of the Ministry of Culture. Thanks to this pioneering project for the protection and preservation of the cultural heritage, educational institutions such as universities and institutes, as well as other users have access to a wealth of information, including those obtained from Ottoman archives. The database also has a section which is accessible to the general public.

In the second phase of the project, Hagia Irene, the Museum of Archaeology, and Mecidiye Kiosk, which were chosen as models for the project, have been assessed with respect to their earthquake resistance, and alternative designs for retrofitting were put forward. The works carried out on these three buildings, all of which are of distinct structural typologies, are hoped to serve as models for wider applications to follow.



PROJECT INFO

Project Inventorization and Multi-Hazard and Earthquake Performance Evaluation of the Cultural Heritage Buildings in Istanbul

Client Republic of Turkey
Istanbul Special Provincial Administration
Istanbul Project Coordination Unit

Stakeholders Republic of Turkey
Ministry of Culture and Tourism
Istanbul Directorate of Surveying and Monuments

Funding World Bank

Main Objectives

- Mitigating the seismic risks associated with the cultural and historical property (heritage) in Istanbul
- Strengthen the capacity for pro-active measures in order to mitigate the damaging and devastating effects of future earthquakes on cultural and historical heritage buildings and other historical and cultural structures and assets in Turkey such as, museums and museum displays

Project Stages

1. Data Collection and Investigations
2. Survey Project
3. Restitution Project
4. Seismic Performance Assessment
5. Seismic Retrofit, Strengthening and Restoration Project

537

Justinian rebuilt Hagia Irene which was first built by Constantine I in 330 and was burned down during the Nike revolt in 532

1204

The city was roped during the 4th Crusades, governance passed to Latins

1261

Byzantines again became the dominant of the city

Project Stages at a Glance

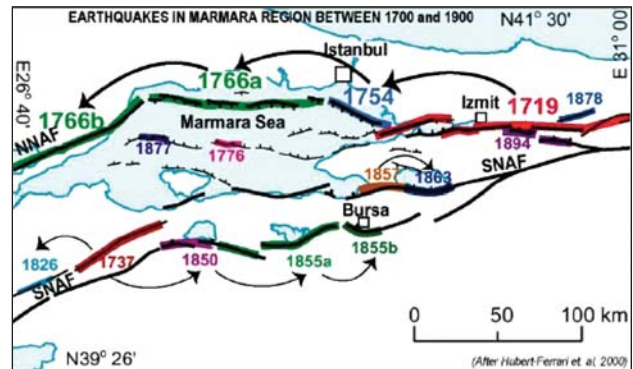
Literature Survey

The literature survey was designed to obtain information on the construction phases of the buildings and on earthquake damages during previous earthquakes and the repairs that have been carried out to rectify earthquake damages.

The sources:

- The official records of the Ottoman State and the Turkish Republic
- Published academic papers and theses
- The records of relevant Research Institutions in Istanbul

The survey involved architectural drawings, other visual materials, records of repairs and alterations and historical and architectural studies.



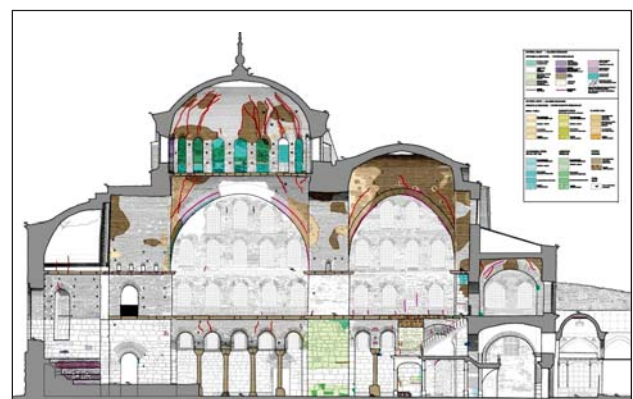
Earthquakes in Marmara Region, Turkey between 1700 and 1900



Anonymous woodcut depicting the Sea of Marmara earthquake of 1509, "The Lesser Judgement Day (The Little Apocalypse)". It registered about 7.2 and killed about 10,000 people, Great Historical Earthquake Images (1200s-1900s) in UC Berkeley's Kozak Collection

Field Surveys

To identify the characteristics of the buildings, such as structural typology, materials characteristics and decay, crack pattern, existing drawings and collected information on the following issues had updated by the Field Survey Team.



Hagia Irene Monument existing material decays, weak zones technical drawings

1390

The city was sieged by Ottomans for the first time during the reign of Sultan I. Beyazid

1396

Sultan I. Beyazid had built the Anadolu Fortress

1452

Fatih Sultan Mehmet had built the Rumeli Fortress

- Building material
- Construction techniques
- Additions and alterations
- Structural damages
- Material decays
- Weak zones

The data compiled were transcribed on a plan with legend for each building. This study, supported with photographs, was then exported into the database.

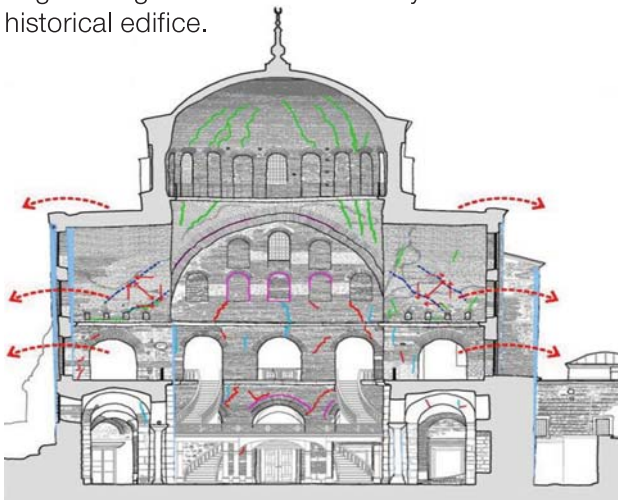


Hagia Irene Monument existing material decays, weak zones technical drawings

Vulnerability Assessment

A. SURVEY OF GEOLOGICAL LAYERS

Geological and geotechnical data from several sources were compiled and used to estimate sites geology and a representative soil profile down to the engineering bedrock in the vicinity of the listed historical edifice.



Disruption analysis, transversal section drawing of Hagia Irene

B. ASSESSMENT OF SITE-SPECIFIC EARTHQUAKE HAZARD

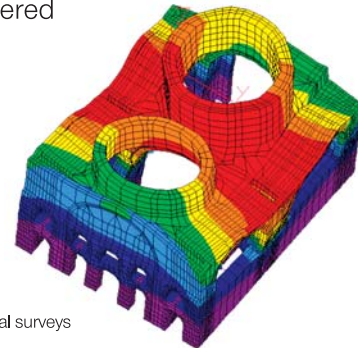
Assessment of site-specific earthquake hazard at reference ground conditions.

C. EARTHQUAKE HAZARD ASSESSMENT

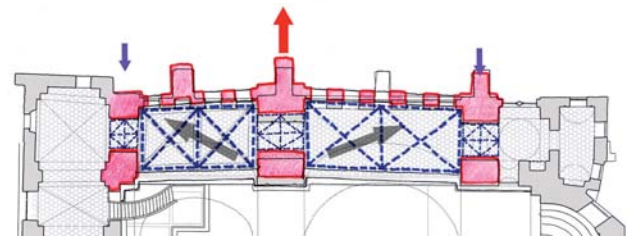
Earthquake hazard assessment will be done using probabilistic or deterministic approaches. The final goal is to define classes of vulnerability associated with coefficients of reliability.

Activities so far carried out include:

- Update and modification data collection forms for different procedures (FAMIVE, vulvault)
- Classification of the unit of assessment into separate buildings and into groups for which different assessment procedures can be considered



① Experimental surveys



② Shaking table studies



③ Computer modeling for building displacement

1453

Fatih Sultan Mehmet and his elite troops conquered Istanbul

1455

Yedikule Castle was built

1472-1478

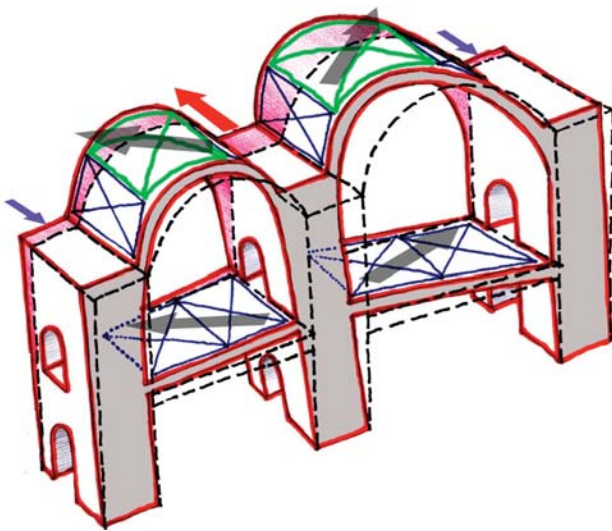
First courtyards of Topkapı Palace were built

GIS Database

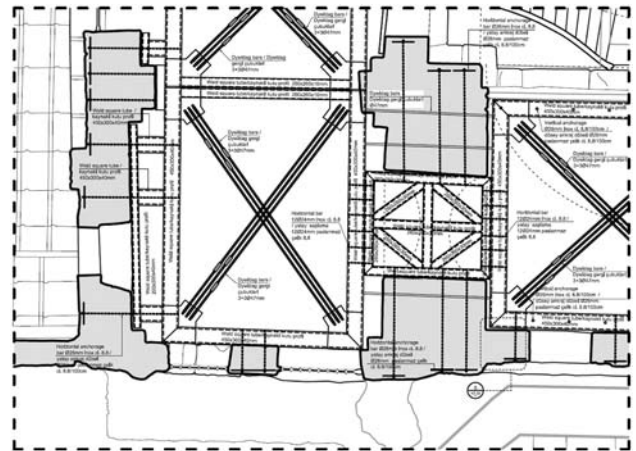
The inventory was carried out according to the international inventorization standards and was delivered Information System format standards, in a geographical format.

Final Risk Assessment and The Mitigation Measures

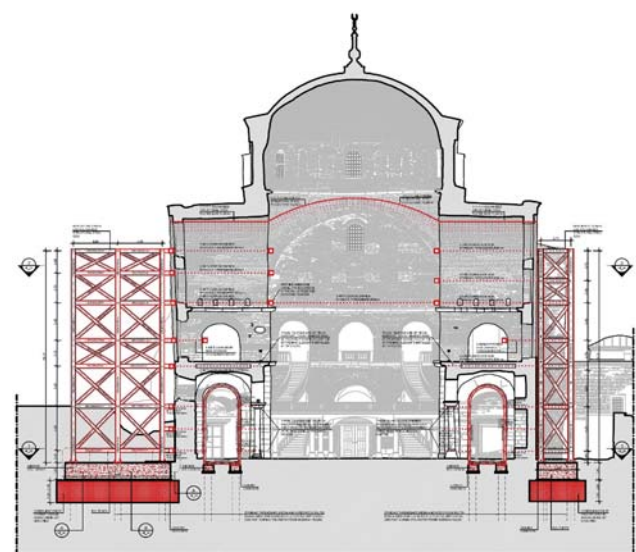
Earthquake performance assessment for the classical buildings of the Museum of Archaeology and the annexes, the Hagia Irene Monument, and Mecidiye Kiosk were completed, and retrofitting project proposals were prepared for each building.



① Reinforcement project a technical drawing for Hagia Irene



② Reinforcement project a technical drawing for Hagia Irene



③ Reinforcement project a technical drawing for Hagia Irene

1509

The Earthquake that is named as Little Apocalypse, also caused tsunami

1520

The golden age of Ottoman began under the Sultan Suleyman the Magnificent

1556

The May 10 1556 Istanbul earthquake

Some of the Buildings Included in the Project

Monumental Buildings

Anadolu Fortress
Rumeli Fortress
Yedikule Castle
İmrahor Monument
Saint Irene Monument

Museums

Archeological Museum Complex
Fethiye Museum
Kariye Museum
Palace Mosaics Museum
Hagia Sophia Museum

Palaces, Administrative Buildings and Hospitals

Darphane Building
İbrahim Paşa Palace
Topkapı Palace Complex
Alay Kiosk
Yıldız Palace Complex
Gülhane Teşvikiye Hospitals
Matbaa-i Amire
Gülhane Stable House

Libraries and Educational Buildings

Atıf Efendi Library
Beyazıt Orhan Kemal Provincial Public Library
Çinili Children Library
Fatih Millet Library
Heybeliada Public Library
Ragıp Paşa Library
Selim Ağa Manuscript Library
Selimiye Public Library
Süleymaniye Manuscript Library
Şemsi Paşa Library
Büyükkada Public Library
Beyazıt State Library and Imaret Building
Galata Dervish Lodge
Mihrimah Sultan Children's Library

Civil Architecture

Atlas Apartment
Seyran Apartment
Sümerbank Building
Selçuklu Traditional Wooden House
Recep Peker Traditional Wooden House
Şerifler Waterside Traditional House

1609-1616

Sultan Ahmet Mosque was built

1836

The first bridge was built in Golden Horn

1843

1856 Dolmabahçe Palace was ordered to be built to the family of Balyan by the Sultan Abdulmecid



Hagia Irene

1846

The first museum of Istanbul was formed by Ahmet Fethi Pasha during Abdulmecid's period

1891-1907

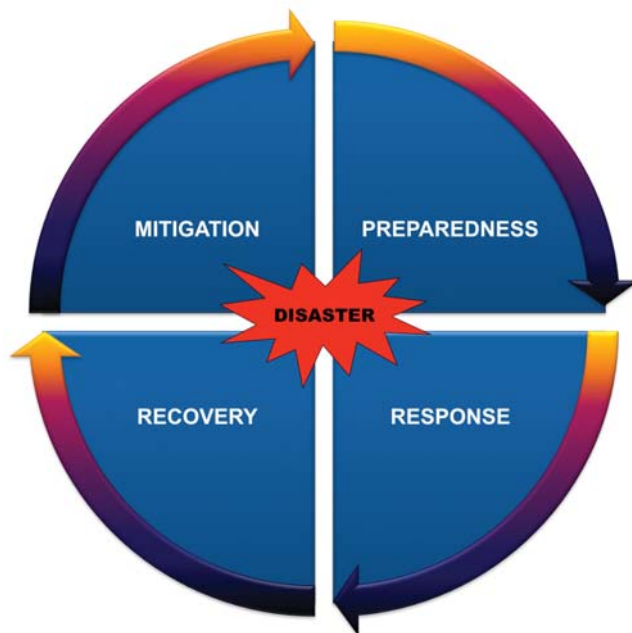
Istanbul Archaeology Museums, which were established as Muze-i Humayun (Empire Museum) by Osman Hamdi Bey

1850

The first ferry services were established to the Princes' Islands

Past, Present and Future of Istanbul with ISMEDP

Continuing its activities for the protection and preservation of the cultural heritage of Istanbul, by keeping a careful eye on international developments in this respect to extend its vision, ISMEDP also aims to maintain the comprehensive disaster management approach which had been adopted in other sub-projects.



Disaster Management is defined as being ready for preparedness, mitigation, response and recovery phases against all kinds of hazards in order to organize the current resources and the whole process of analysis, planning, decision making and assessment. Today, development of the policies and practices for risk reduction by determining the existing disaster risks to reduce the vulnerability of societies is considered as the most important component of disaster management.

Complementary activities the project aims to put into practice:

- To apply the international environment protection frameworks and procedures in retrofitting practices
- To increase the awareness of public on importance of historical buildings, maintenance, restitution and retrofitting practices for the vernacular buildings
- To train the architects, engineers, and technical personnel (civil technicians, conservation experts, artisans and artists engaged in traditional arts) on projects of historical buildings, and the maintenance and retrofitting works
- To prepare disaster and emergency plans for cultural heritage buildings, and to integrate these plans in disaster management planning and disaster information system of Istanbul
- To establish a sustainable substructure with participative methods and encouraging mechanisms in all activities carried out within the framework of cultural heritage
 - To involve the employees and other relevant groups in disaster and emergency planning activities
 - To prepare guides regarding the maintenance, repairs, and conservation of cultural heritage buildings after strengthening
- To develop the building codes so as to cover historical sites and buildings, and to support the establishment of national standards regarding the matter
- To develop the financial incentive programs for local preparedness and seismic strengthening works for historical and cultural sites



Artisanal hand drawing restoration studies in an Ottoman Style building

1894

The tsunami caused by the earthquake affected the western most part of the coast of the Sea of Marmara

1875

The Tunel, which is the second-oldest subway line in the world, was opened

1919-1923

Turkish Nation waged a War of Independence under the great leadership of Mustafa Kemal Atatürk

ISMEP

In order to prepare Istanbul for a probable earthquake the Republic of Turkey and the International Bank for Reconstruction and Development (World Bank) signed the Istanbul Seismic Risk Mitigation and Emergency Preparedness (ISMEP) Loan Agreement with an amount of 310 Million Euro on October 18, 2005. The loan agreement became effective as of February 3, 2006. Istanbul Project Coordination Unit was established within the Istanbul Special Provincial Administration for the implementation and supervision of the overall Project.

In implementation phase of the Project, Republic of Turkey and European Investment Bank (300 Million Euro) and Council of Europe Development Bank (250 Million Euro) signed a financing agreement for support the ISMEP activities. After additional financing agreements of World Bank in 2011 (110 Million Euro) and The Islamic Development Bank in 2012 (243 Million Euro), consequently the Project budget reached to 1.2 Billion Euro.

The project aims to enhance the institutional and technical capacity of the emergency management related institutions; raise public awareness in emergency preparedness and response, feasibility studies of the priority public buildings against seismic risks and as to assessment reports the retrofitting or reconstruction of these buildings; support to the national disaster activities; inventory of cultural heritage buildings, carry out seismic risk assessment of selected cultural heritage buildings, prepare retrofitting project designs; and to take supportive measures for effective building code enforcement to prepare Istanbul for a potential earthquake.

The Project consists of the following components:

Component A Enhancing Emergency Preparedness The component supports:

- Improvement of emergency communications system
- Establishment of an emergency management information system
- Strengthening the institutional capacity of the Provincial Directorate of Disaster and Emergency

- Upgrading the emergency response capacity of the first responding agencies (Istanbul Search and Rescue Unit, Provincial Directorate of Health, Provincial Directorate of Disaster and Emergency, Turkish Red Crescent) on the occurrence of a disaster
- Public Awareness and Training

Component B Seismic Risk Mitigation for Priority Public Facilities The component supports:

- Retrofitting or reconstruction of priority public facilities, including hospitals, clinics, schools, administrative buildings, student dormitories, social service facilities
- National Disaster Activities
- Development of an inventory of cultural heritage buildings under the jurisdiction of Ministry of Culture and Tourism and seismic risk assessment of these cultural heritage buildings; preparation of retrofitting designs of selected cultural heritage buildings
- Analyzing the current land management policies and instruments for identification of the different models and methods required for mitigating earthquake risks on public buildings with improved management and generation of new financial resources

Component C Enforcement of Building Code The Component Supports:

- Ongoing and additional studies and activities to enhance guidelines and regulations for better enforcement of building code and land use plans
- The voluntary training of engineering professionals
- The enhancement of the technical and institutional capacity of the pilot municipalities to streamline issuance of building permits and ensure transparency in enforcement of building code and land use plans

1923

The Republic of Turkey was founded

1936

Preparation of a master plan for Istanbul was given to the French urban designer Henri Prost

1993

Istanbul Archaeology Museum was awarded "Museum of The Year" by the European Council and UNESCO

We Are Strengthening Our Future



www.guvenliyasam.org/en

1999

Marmara and Düzce Earthquakes

2006

Istanbul Seismic Risk Mitigation and
Emergency Preparedness Project
has been launched

2010

Istanbul has become European Capital of Culture



This edition has been prepared by Beyaz Gemi Training Consultancy
www.beyazgemi.com.tr

