Disaster-Resilient Urban Planning and Structuring

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WALLS OF ISTANBUL

ISMEP
ISTANBUL
SEISMIC
Risk Mitigation
and Emergency
Preparedness
PROJECT

Disaster-Resilient Urban Planning and Structuring

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T.C. İstanbul Valiliği

AFAD

T.C. İSTANBUL VALİLİĞİ İl Afet ve Acil Durum Müdürlüğü

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Urban planning with a disaster-resilient understanding is only possible by making decisions directed towards the systematic functioning and space setup of the city, before disaster occurs.

While being used at the end of 1970s in understanding ecological change and balances, the notion of resilience started to be used in the mid-90s in the studies held for disaster risk reduction.

By the UN's definition in 2009, urban resilience against disasters has been explained as: "the ability of sensible settlements, societies and all systems to hold and effectively use the necessary resources for protecting themselves, securing the functioning of the system, reorganizing and adapting to the change in a short span of time, against all kinds of hazards/ threats".

As seen, urban resilience includes not only structural endurance and avoidance of damage, but also the taking of measures in direction with ensuring sustainability of settlements and adapting to global phenomena such as climate change.

Studies towards resilience enhancement in framework with the urban planning discipline, which is defined as "management of the future use of the space", requires the handling of settlement in integrity.

Urban planning with a disaster-resilient understanding is only possible by making decisions directed towards the systematic functioning and space setup of the city, before disaster occurs.

In case such decisions and measures directed towards urban risks are not taken before disasters, the disaster risks and vulnerability of buildings making up the settlements, common spaces such as green spaces, schools, hospitals, police stations, mosques and other working areas, natural gas lines, roads and similar structures increase.

One of the main factors which increase vulnerability is the irregular, unplanned and intense Structuring, especially on geologically inconvenient areas.

Therefore, it is of great importance to handle the strategies and policies regarding planning and Structuring within the context of "disaster-resilient Structuring and urban planning".

Implemented since 2006, the Istanbul Seismic Risk Mitigation and Emergency Preparedness Project, shortly ISMEP, has been preparing Istanbul for natural disasters, mainly earthquake, with a versatile and participative understanding.

Conducted by the Istanbul Project Coordination Unit within the body of Istanbul Governorship Special Provincial Administration, the project is implemented in framework with three main components. Implemented as the third component of ISMEP, the Effective Enforcement of the Building Code includes preparations in regard to disaster-resilient urban planning and Structuring.

The project covers awareness and training activities within the body of municipalities, directed towards local administrators, technical staff and community representatives, training of civil engineers and the improvement of reconstruction and building licence processes at municipalities.

The greatest obstacle of Istanbul in the pretension of being a world city is the need for the enhancement of its ability and capacity to cope with disasters.

This challenging ordeal may be passed only by the participation of all societal sectors, decision-makers being in the first place, and their sharing and disseminating the knowledge and experience.

I wish that this book, which is an assessment on how the disaster risks should be determined at planning stage and which measures should be taken for disaster mitigation, shall be beneficial to persons working in this field in our country and in the world, as well as to all those who are to make use of it.

Disaster-Resilient Urban Planning and Structuring

Of the disaster damages which occurred in our country during the last 65 years, 55% has arisen from earthquake, 21% from landslide, 8% from deluge, 7% from rock fall and 2% from snow slide.

Due to ample opportunities that they offer, cities are regarded as more attractive areas by the majority of the country population.

At the present time, the possibilities and opportunities which the cities offer prompt the people to live in cities rather than in rural areas; as a natural consequence, the hazards and risks of city life are being shared by more and more people every other day.

Since our country is located on such a geography that harbours natural hazards such as earthquake, flood, land slide etc., which might cause disasters, most of our cities carry risks at certain levels, which might arise from such hazards.

Of the disaster damages which occurred in our country during the last 65 years, 55% has arisen from earthquake, 21% from landslide, 8% from deluge, 7% from rock fall and 2% from snow slide.

The possibility of the reoccurrence of an earthquake similar to the 1999 Marmara Earthquake in the following 30 years around the same region is calculated as 62%.

A spatial planning approach which includes urban risk assessment studies directed towards the prior determination of risk-posing hazards and the evaluation of the vulnerability level is capable of reducing the unfavourable social and economic impacts of possible disasters.

Reduction of the unfavourable impacts of hazards and risks arising in our cities shall be possible through the careful application of risk management factors to the urban structuring.

At this very point, the importance of disaster-resilient planning approach is coming into the view.

Pin Map for Cities of Global Importance

Source: World Economic Forum and A.T. Kearney, Global Cities Index, 2012

Cities are places where civilization has born and flourished. History of cities makes up the history of civilization. From this point of view, history of the humanity may be considered equal to the history of urban life. City is of a structure which harbours more than one constituent.

In this respect, questioning the cities requires the questioning as well of societal structures which create the cities. Cities reflect the economic, political, social and cultural structures of the societies in which they come into being. There is an interaction between the city, a sub-system of the country to which it belongs, and the community.

Though there are various definitions of the city; the presence of non-agricultural production, job diversity and specialization, development of the management and organizational structure, the presence of spaces containing massiveness and integration, as well as the presence of control come into prominence in the definition of city.

As a conclusion, we can define the city as a permanent settlement which has a population of a certain largeness, a high population density, which has spread around a large area in relation to the village, and in which trade, finance and informatics activities are dominant, as sub-branches of the industry and service sector, and in big cities, of the service sector.

However, it must be remembered that the official definition of city varies from country to country, which raises question marks in respect to the reliability of statistical comparisons.

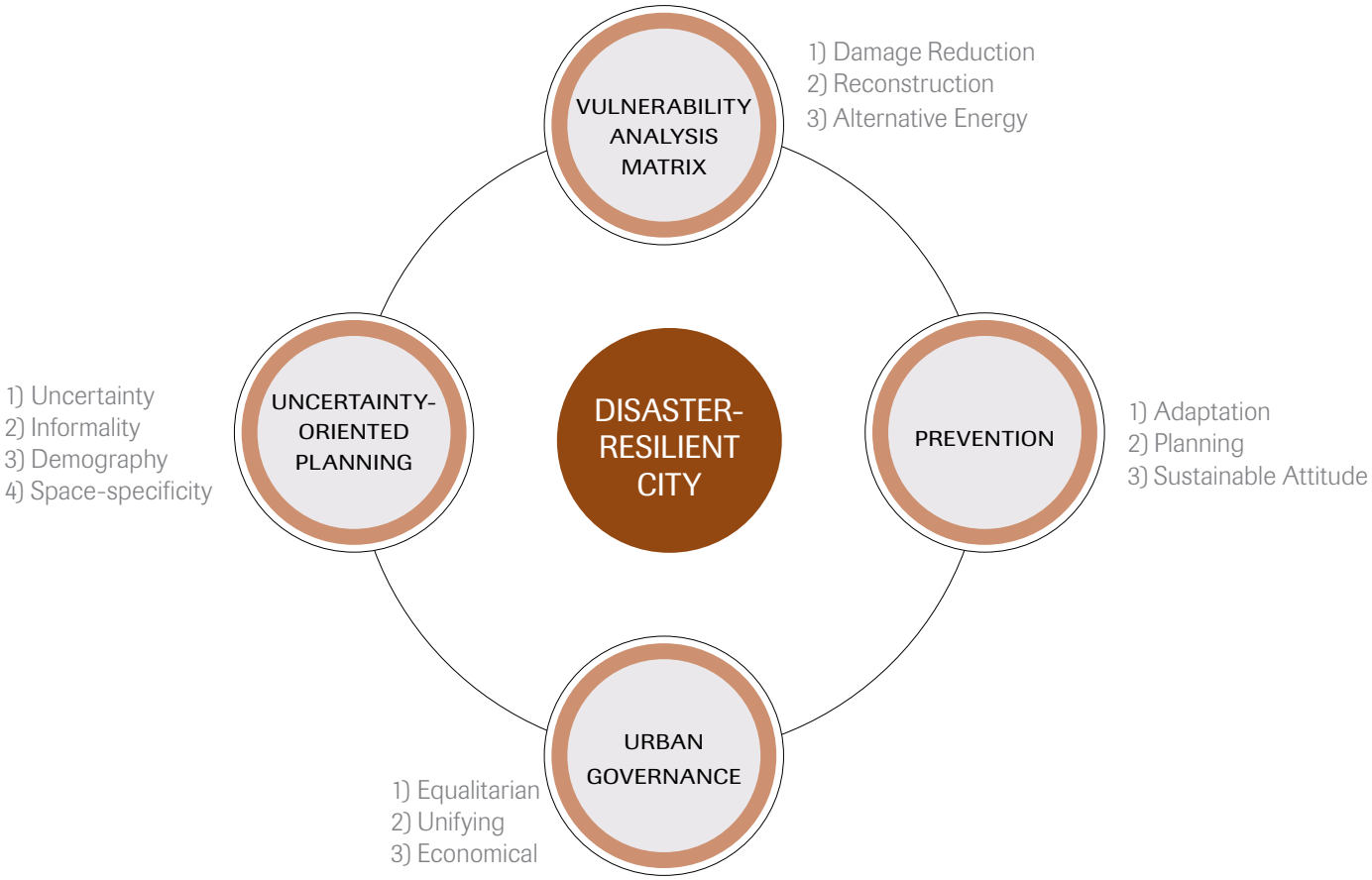
The words “city”, “citizen”, “citizenship” and “civilization” have derived from the Latin word “civitas”, which means “unity formed by citizens”. The unity of city and citizen is seen, when both the historical and etymological realities are considered.
Surplus value, marketplace, power elites (military) and religious aspect are the most important factors in the rise of the city.

A certain number of criteria have been developed for deciding whether or not a settlement can be characterized as a city.

The list of such criteria includes elements such as “the presence of full-time working specialists, presence of surplus production, hierarchizing of the community and a government organization”. In addition, the presence, absence or density of “agricultural production” and the “service sector” can be mentioned.

One criterion which serves to differentiate between what is and what is not city is population. The criterion here is the question with at least how much population a settlement can be accepted as a city. Nevertheless, it is not possible to ground this criterion, neither the above criteria, on a precise, objective and scientific basis.

Transforming to the Resilient City



Source: Anna Wikström, The Challenge of Change: Planning for social urban resilience, 2013

For instance, a certain level of agriculture may take place in a settlement which is clearly known to be a city, while a settlement which has a given population and is located in a developing country may differ greatly, in respect of urban characteristics and functions, from another settlement which has the same amount of population and is located in a developed country.

Urbanization means an increase in such portion of the population that lives in cities. While in 1950, 30% of the world population was living in cities, this figure has exceeded 50% in the year 2010 (3.3 billion people). Urban population is estimated to reach 60% in 2030, and 70% in 2050.

Thus, by the year 2030, more than 5 billion people will be living in cities.

As for metropolises, in the plainest definition, they are vast, overcrowded, gigantic cities. Merely the population criteria will no doubt suffice for defining a city as a metropolis. In order to call a city a metropolis, we shall need questions through which the multiplier effect of that city can be measured.

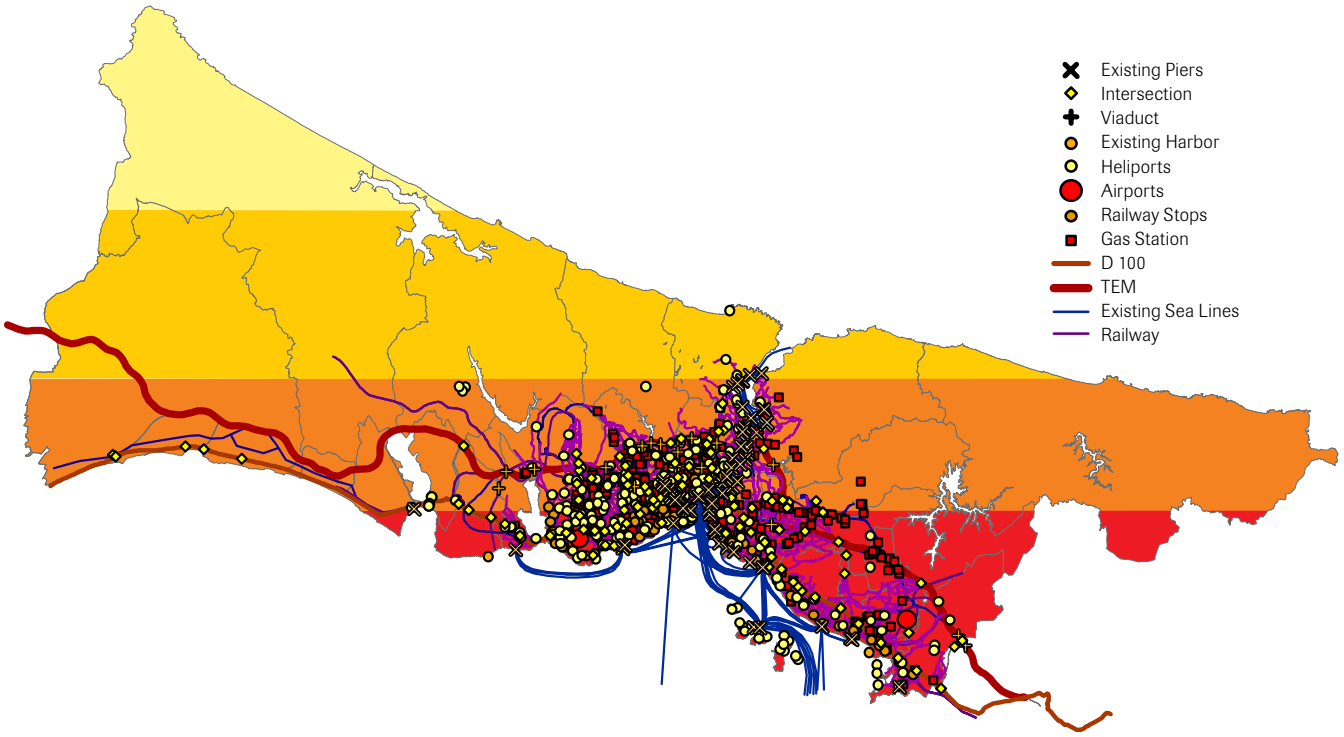
Consequently, emphasizing once again, it is not always easy to decide whether or not a settlement can be characterized as a "city", and a city as a "metropolis", by the aid of such criteria, particularly the population criterion.

What is a Disaster-Resilient City?

Resilience of a city against disasters relates to the abilities of the communities in that city to withstand and adapt to a crisis or natural or human-induced disasters, and to take actions readily.

This resilience comes into being by accurate urban planning and infrastructure, as well as the constitution of a local government which has undertaken the responsibilities necessary for a generally sustainable urban planning and for the common efforts of the community.

Distribution of Transportation Network in Istanbul Risk Areas



"Making Cities Resilient: My City is Getting Ready" campaign initiated in 2010 by the United Nations Office for Disaster Risk Reduction describes a disaster-resilient city as a city:

- Where people are empowered to participate, decide and plan their city together with local authorities and value local and indigenous knowledge, capacities and resources,

- Has an inclusive, competent and accountable local government that is concerned about sustainable urbanization,
- Where the population lives in homes and neighbourhoods with organized services and infrastructure,

- where disasters are minimised because the population lives in homes that adhere to sensible building codes; without informal settlements built on flood plains or steep

- where the local authorities and the population understand their risks and develop a shared, local information base on hazards and risks, including who is exposed and who is vulnerable,

- which has taken steps to anticipate the disaster and protect community assets,
- which is able to minimize physical and social losses arising from extreme weather events, earthquakes or other hazards,
- Which commits the necessary resources and organize itself before, during and after a natural disaster,

- Which is able to respond, implement immediate recovery strategies and quickly restore basic services to resume social, institutional and economic activity after such an event

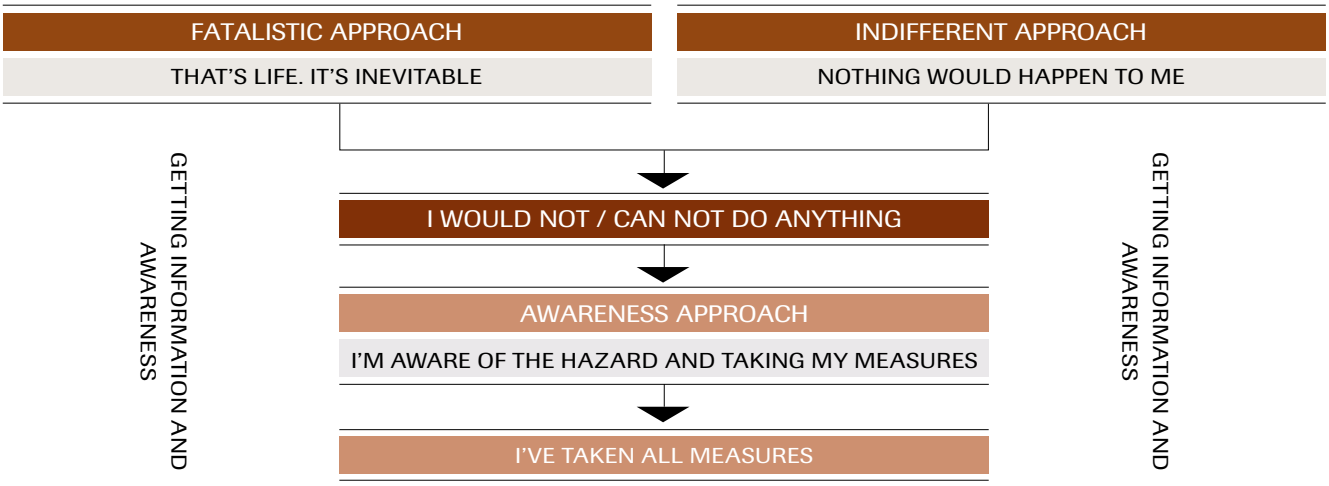
On the way to reach resilient cities, preparedness capacity at societal and individual level is also important in addition to the above factors.

There are a number of roles that the local authorities, citizens and the private sector can undertake for making their cities more resilient.

Natural hazards of different magnitudes and intensities have occurred throughout the history and will always occur.

However, they are not destined to turn into devastation. At this point, three varieties of the community's approach to disasters can be mentioned as follows:

Approaches of Societal Resilience in Disaster Preparedness



Source: S. Kundak; Şehirler, Afetler ve İnsanlar, 2012

Fatalistic Approach

It creates an anxiety atmosphere as a result of both correct and exaggerated information.

The hazard is major and the person is helpless. Person believes that he/she may get out of this duress situation only by the aid of others.

Person has no motive to change the future and he/she bows to fate.

Indifferent Approach

Person is not informed about the extent of the hazard. He/she has no worry in his/her daily life about this hazard; further, he/she construes the discussions on the matter as unnecessary waste of time and money.

Against concrete evidence about what might happen, the person develops a baseless defence as: "Nothing would happen to me".

Awareness Approach

Person is informed about the hazard sources and about what might happen.

He/she has worries, either individually or shared by a group. However, this worry triggers the motive of struggling and taking measures, rather than giving a feeling of submission. Person does not avoid of time or monetary investment, so as to protect his/her existence. He/she takes measures to the extent possible.

As seen in the "Societal Resilience Table" where the three approaches are given; as awareness and information increases, individuals become able to take measures and improve their capacities against hazards which might result from risks.

Importance of Urban Planning directed towards Disaster Preparedness

At the present day, more than half of the world population is living in cities.

However, the metropolitan areas of developing countries comprise of areas developing nested with the unplanned and unhealthy conditions where urban population lives.

Since the natural hazards occur in dense urban areas, loss of lives and properties happen in case of disaster. When density of unplanned areas is added, problems due to disasters increase.

All of such factors increase the vulnerability of cities and extend the coverage of natural disaster risks, which must already be coped with, by adding on them.

Urban Risk Management and Conservation Plan Relationship

RISK (RESULT)	HAZARD (EVENT)	VULNERABILITY (SOCIAL FACTORS)
• Life • Health • Retirement and Social Relief • Property • Environment • Inheritance • Work • Services • Development • ...	• Climate Change • Draught • Heat Waves • Thunderclap • Thunderbolt • Sea Level Rise • Storm • Flood • Fire • Health • Crime •	• Population Increase and Urbanization • Technology • Land Usage Applications • Environmental Impairment • Water Usage Trends Exposure + Sensitivity Potential Impact - Potential Impact Vulnerability

Source: Australian Government 2005.

Zoning plans and schedules prepared within urban planning discipline and with varying scales by municipalities meet the requirements of the elements that make up our living spaces, such as domicile, workplace, transportation, infrastructure etc., while protecting natural and cultural resources, with a view to build up a inhabitable environment.

Within this context, in order to mitigate possible disaster damages, it is important to constitute the decisions and application with regard to urban environment by pursuing the goal of being prepared before occurrence of disasters.

All events and facts with a potential to damage are defined as “hazard”. As for “risk”, it is the realization possibility of the damage which is in the hazard position. According to this definition, risk occurs depending on hazard.

Living and non-living things or assets must first of all be under threat, so as to be under risk. This interaction makes another question a current issue: Does the presence of hazard always result in the presence of risk? For answering this question, vulnerability and certain dependent notions must be defined as well.

Vulnerability is expressed as “a criterion of possible death, injury, damage, destruction and losses which the community might incur, in case of the occurrence of a potential event”. In other words, vulnerability is the reverse of the community’s capacity to cope.

Another important concept which shall provide the attainment of the complete and accurate result is the notion of “exposure” and “defencelessness”.

Within this context, the “exposure” concept expresses the “amount and number of people and assets which a given hazard might affect or has affected”. Hence, the presence of exposure is assessed by a hazard and by the presence of people and assets under the effect of such hazard.

As for defencelessness, in disaster management it is the answer to the questions: “Would it happen here? If happens, what would happen to us?”

It is the degree of the possible death, injury, damage etc. loss and harm that the community might incur in case a potential disaster occurs.

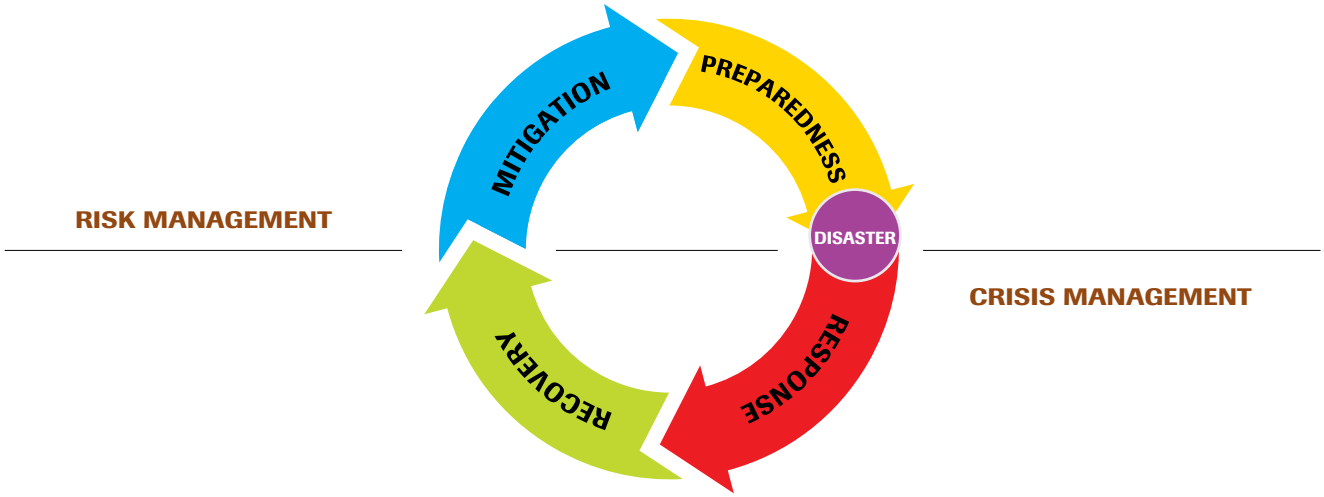
In light of these concepts, which are of critical importance in respect to disaster management, it appears that risk is the composition of the hazard, defencelessness and exposure notions.

Mathematically expressing the risk notion, as seen in the figure, shall make sure that the notion is better understood:

Vulnerability=
Exposure x Defencelessness

Risk=
(Hazard x Vulnerability) /
Manageability

Phases of Disaster Management



Of the disaster damages which occurred in our country during the last 65 years, 55% has arisen from earthquake, 21% from landslide, 8% from deluge, 7% from rock fall and 2% from snow slide.

Phases of Disaster Management

Occurrence of disaster in urban areas poses "risks", to the extent these areas are unplanned, for physical and social environment as well as the city economy. Nevertheless, it is possible to reduce and/or remove the risks which might arise depending on the natural hazards, within the context of mitigation studies included in the disaster management process.

Within this scope too, role of the means of urban planning is important. Organizing the available resources against all kinds of hazards, disaster management covers all of the analysis, planning, decision-making and assessment processes. Therefore, it must be handled with a holistic approach. Holistic disaster management system covers the four phases of emergencies (preparedness, mitigation, response and recovery) and has a cyclic nature. This requires a planning study through which the four phases of disaster management are handled by a holistic approach.

Four phases of disaster management can be explained as follows:

Preparedness

It covers the determination of authorities and responsibilities in case of emergency and the arrangement of supporting resources.

Mitigation

It means the efforts and precautions intended to mitigate or remove long-term hazardous circumstances and the losses of lives and properties resulting from them.

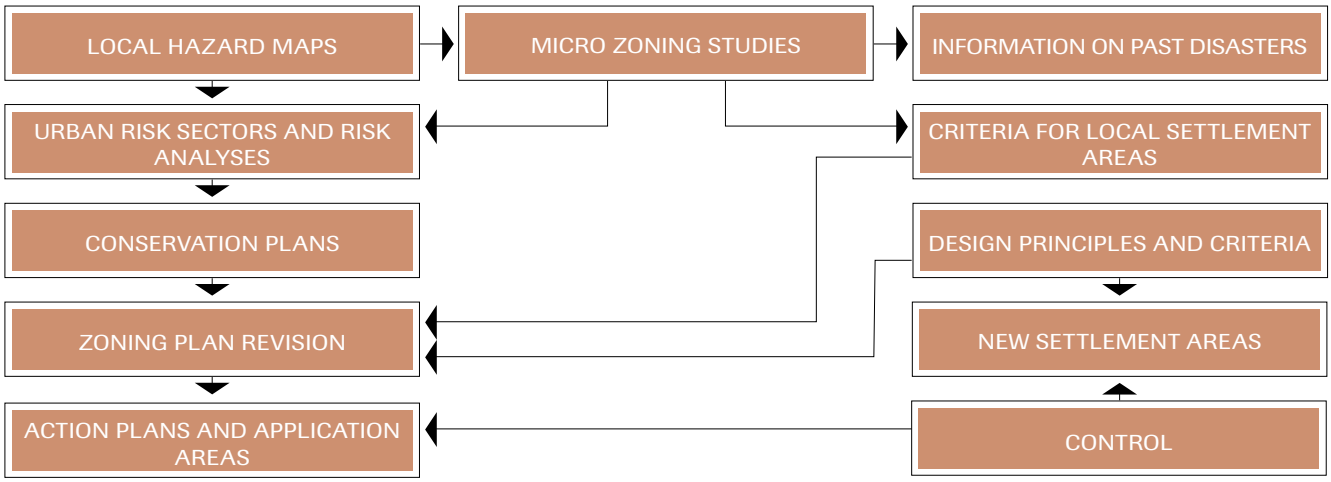
Response

It covers all efforts made for rescuing lives and properties once the disaster has happened.

Recovery

It covers all efforts made for removing the unfavourable circumstances of the infrastructure, physical environment and social environment and for putting social and economic lives back into circulation.

Urban Risk Management and Conservation Plan Relationship



Planning-Disaster Relationship and Disaster-Resilient Planning Approach

Mechanisms regulating the Structuring and urban development in cities are plans of various scales. For successful mitigation, disaster management processes must be conducted in coordination with the urban planning processes.

One of the main studies required before disaster for keeping disaster damages at an acceptable level and forecasting the damages that might arise in settlements must be to make physical plans into a structure which observes disaster priorities.

Interaction areas where certain cause and effect relations have been clustered and different parties with authorities and responsibilities have focused are defined as urban risk sectors independent from each other.

In all place selection decisions and prepared plans in the urban planning process, the disaster risks in the region must be taken into consideration.

Also, during the planning process, the risk factors indigenous to that region must be determined and the plan must include measures for removing such factors. In the construction of our cities, such risk management approach that reduces losses must be put into effect as part of the conservation planning.

As a consequence, conservation plans including urban hazard analyses, micro-zoning maps in which the earthquake hazard is mapped for the entire settlement, and urban transformation action plans in which high-risk areas are arranged physically on the whole must be implemented in the construction of cities.

Such studies shall accomplish in our country, to the extent that they are adapted to institutional, legal, financial and educational infrastructures in a way to focus on urban risks.

Especially, the preparation of conservation plans able to provide information at various scales to be developed through micro-zoning studies which include assessments according to diverse risk factors is an important tool used in Urban Risk Analysis studies.

First step of risk management is to review the review of current procedural rules and standards intended to reduce risks determined in every sector, and to test their adequacy against contemporary conditions and possibilities.

In some sectors it might suffice to upgrade a single standard, while in others entirely new policies and strategies, standards, roles and regulations are developed for enhancing the safety level.

Here, responsibilities of the relevant parties of each risk sector must be determined and accordingly, action coordination must be developed, also, control methods must be ascertained.

In the planning studies and process, such methods and tools that consider disaster hazards and risks and that aim at preventing or mitigating disasters must be adopted.

Planning must be used as a tool in disaster risk reduction.

Disaster-resilient planning aims at designing urban planning as a problem-solving, dynamic and flexible process, instead of the approach which reduces urban planning to a mere static environmental design and land usage decisions, with a view to build up a healthy, safe and inhabitable urban environment; and further aims at interiorizing risk-reducing measures and incorporating them into the planning process.

In other words, this approach must be a founding element of the planning understanding, rather than a factor to be added to the already developed plan.

Within this context, disaster-resilient planning is not a separate type of plan. It includes approaches which take into consideration disaster hazards and risks; aim at the prevention or mitigation of disasters and require the adoption of methods and tools in the planning studies and process.

Planning Process and Disaster Mitigation

Planning process is an application process which includes multidimensional specialization fields implemented through legal, institutional, control/approval and participation mechanisms, in compliance with the principles, norms, standards and technical rules.

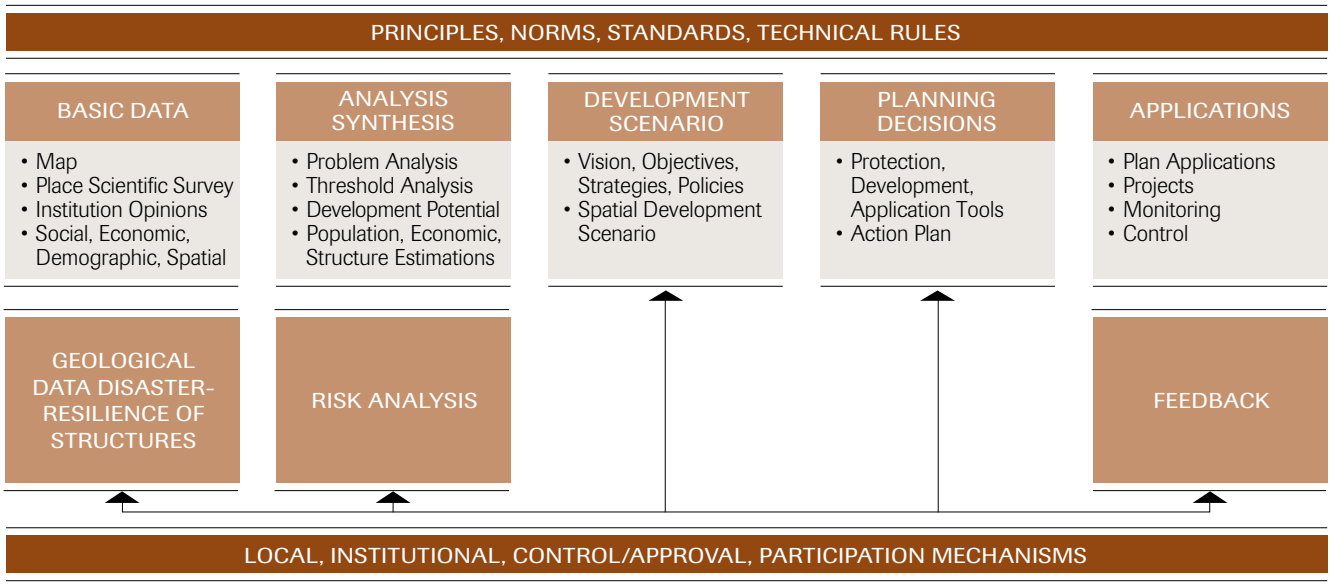
However, every community differs in its own dynamic and contextual characteristics, and the planning process must be in conformity with such characteristics.

Besides, it is possible to say that it comprises of 5 stages.

- Basic data
- Analysis / Synthesis
- Development Scenario
- Planning decisions
- Applications

The first one is the stage where the geological, institutional, socioeconomic-demographic data necessary for planning are collected and mapped.

Planning Process and Disaster Mitigation



At the second stage, the collected data are analysed and evaluated.

At the third stage, the city's future vision, primary goals, strategies and policies are constituted in the light of the assessments made, and the spatial development scenario is developed.

At the fourth stage, the protection, development and application tools are defined and action plans are produced.

At the fifth stage, plan applications are made, followed and controlled.

One of the most important analyses of the planning process is the Settlement Convenience Analysis. This method allows for evaluating the Structuring conditions of the planned areas according to the carriage capacity and properties of the ground. By this means, a number of variables are used, from the topographical characteristics of the region to the underground water level, from the geological structure to land slide areas.

According to such analyses, approval of the authorities is obtained and the following areas are determined.

Convenient Areas

Such areas are not problematic in respect to the carriage capacity. Special measures are not required for ground improvement during the Structuring process.

Areas requiring Measures

Unlike convenient areas, such areas require special studies for ground improvement before Structuring.

Areas requiring Detailed Survey

Such areas have been determined, during Settlement Convenience Analysis, to be areas which require more detailed survey; serious measures must be taken before and during construction.
Inconvenient Areas

Since they have low carriage capacity, such areas must not be opened for Structuring. Mostly, it is appropriate to use such areas as greenbelt.

The disaster sensitivity and disaster mitigation of the information produced for future during the planning process and the planning decisions based on such information must be shaped according to the measures to be taken in connection with the Risk Analysis, at each stage of the planning process.

Within this scope, geological data of the whole settlement as well as the earthquake- resistance data at structural scale must be collected during the data collection stage.

Accordingly, Urban Risk Analysis must be held during the data analysis stage and assessed together with the general analyses in scope of future planning.

This must be taken into account in a way that feedback shall be supplied at each stage of the planning process.

Risk Factors

LAND USAGE	TRANSPORTATION INFRASTRUCTURE	STRUCTURAL / BUILDING	SOCIETAL
• Presence of hazardous uses (LPG, Fuel Stations etc.) within domicile areas • Insufficiency of open areas, • Incorrect place selection and dense urban texture etc.	• Alleys and dead end streets, • Busy roads having no alternative, • Piping materials not suitable for the ground, • Failure in designing an infrastructure network suitable for the ground structure etc.	• Construction process incompatible with the ground structure, • Structural changes outside the project, • Support system changes, • Unlicensed storeys, • Beam and column discontinuity, • Soft storeys / short columns / cantilevers, • Etc.	• Insufficiency of disaster awareness, • Lack of disaster consciousness, • Etc.

The informative and training activities to be held must include the development of strategic fictions regarding the physical and societal planning components directed towards the urban and societal environment.

Strategy Development for Disaster-Resilient Cities

Local administrators, decision-makers, community representatives, opinion leaders and technicians must be informed and trained on the risk factors that they should take into account in the planning practice.

Such factors must include a comprehensive assessment in framework with urban land usage, infrastructure/transportation, structure and social issues.

The studies to be held must be arranged in a way to enable participants to assess and systematize the risk factors which need to be taken into account during planning process, and to enable them to focus on the matter.

The informative and training activities to be held must include the development of strategic fictions regarding the physical and societal planning components directed towards the urban and societal environment.

At this stage, a basis must be provided for the adoption and application of strategies which have been adopted, followed and/or which might be followed by participants at urban scale.

The activities in question must be developed through participated studies and dialogues; this shall allow for the definition of common strategies of first priority.

STRATEGIES

LAND USAGE	TRANSPORTATION / INFRASTRUCTURE	SOCIETAL
• Determining the hazards before disaster and determining the areas which might be affected; gradually moving risky areas to safe areas, • Directing new developing areas to areas far from hazards, • Providing sufficient open area reserves, • Not opening risky and coastal areas for Structuring, • Etc.	• Restricting road, sewage, electricity etc. services, thus not to encourage development in risky areas, • Carrying out stream remediation, reinforced infrastructure applications and land slide prevention embankments in areas where natural measures do not suffice, • Taking measures such as slope stabilization, semi-natural banks at rivers coasts, • Etc.	• Applying disaster-sensitive planning in neighbourhoods or regions where applicable, • Dissemination of disaster awareness, • Arranging training and awareness raising campaigns.

Scope of Disaster-Resilient Urban Planning

Urban planning towards disaster mitigation must take into account the settlement elements which are vital for societal and economical sustainability.

Settlement elements form an important part of most planning documents, and they are very comprehensive. Here, only those components which relate to disaster are discussed and the information necessary for defining the hazards are emphasized.

The reason is that the disasters' destructive impacts on human life show up in different ways.

Therefore, legal regulations, local administration structure, population structure, natural structure, cultural and historical values and urban environment must be examined for urban planning approaches directed towards disaster mitigation.

Legal regulations include the laws which a region, city or area is subject to.

Local administration structure includes the political authorities and possibilities of local administrations.
Population structure covers the demographical and socioeconomic characteristics of the community.

Cultural and historical values include the past experience and all of the concrete and abstract cultural values of the community.
As for urban environment, it is the totality of the human-made physical structure and infrastructure belonging to a community.

It is to:

- Improve and develop the city's physical structure,
- Observe public interest, to prevent any harm that may come to the interest of all citizens for the sake of interests of individuals or groups
- To facilitate the democratic determination and application of policies and recommendations regarding the city's physical development,
- To provide administrative, political and technical coordination in the development of the city,
- To enable that long-term objectives and opinions are taken into account in administrative decisions,
- To evaluate the resources by taking into consideration the need of the posterity,
- To prevent pollution and impairment to the extent possible, and to make planning for a purpose to recover impaired areas.

How can Urban Planning Contribute to Disaster Mitigation?

- By working with a number of partners in the planning process held for the determination of possible risks, needs and solutions and to actualize the community's potential in respect to participating in the risk reduction,
- By incorporating risk assessment into urban development, design and projects and by considering exposure, vulnerability and hazards as well as the development of urban settlements in the risk assessment,
- By making safe areas usable, by avoiding of Structuring in areas prone to disasters, by deserting buffer regions and by providing recreational areas,
- By providing public space for the streets, infrastructure and parks which are designated and taken under preservation,
- In regions with dense illegal Structuring, by improving the region being attentive to access roads, flood risk and other safety precautions,
- By establishing risk reducing infrastructure systems which include drainage and sewage systems,
- By evaluating in which way urban development could contribute to the improvement of living conditions of the poorest and most defenceless people in a city,
- By obtaining useful information regarding risk and by providing extensive communication of the risk information,
- By preserving the ecosystems which would allow for convenient rainwater drainage, prevent erosions and protect against storms and tidal waves,
- By developing post-disaster reconstruction plans which shall be used for future risk reduction. Participative Planning Approach

One of the common constituents of successful disaster mitigation planning applications is the incorporation of all actors into the planning process.

Participatory Planning Approach

One of the common constituents of successful disaster mitigation planning applications is the incorporation of all actors into the planning process.

Participation in local administration and planning emphasizes the partners' democratic participation in decision-making processes and proposes the constitution of common sense, and considers the participants' diversities as a potential for idea generation creativity. It enables both individual and societal learning, through generating ideas and taking actions collectively.

In participatory approaches, practical information must be produced. A participatory process which fails in taking actions is under danger of evanescence. Collective idea generation must transform into collective action taking.




Infrastructure Systems Studies

Compared to traditional approaches, participatory approach has important uses, such as effective decision-making, contribution to democratisation, commitment, support to personal and societal learning and the decisions' easier transformation into action.

Effective Decision-making

It proposes that such partners who lay claims to the settlement participate in the decision-making process, thus, any decision which could be to the detriment of any partner could be prevented in advance.

Contribution to Democratisation

It proposes that making decisions regarding settlements together with concerned partners democratizes the decision-making process.

Participative planning processes foresee the formation of open dialogue environments and everyone's taking the floor at an equal level in such environments.

Commitment

It is to incorporate the implementers into decision-making processes, thus making it easier to obtain their commitments in the application of decisions.

Support to Personal and Societal Learning

It is the fact that participative planning processes offer very strong learning environments.

It is based on the fact that persons of different interests, skills, levels of knowledge and diverse specialities come together, form a common opinion, engage in discussions and exchange of ideas.

Practicality

At the end of the decision-making stage which is realized with the collaboration of partners, action plans are produced.

Abstract concepts are destined to be lost and forgotten.

Transforming decisions into practical information allows for the actualization of the decisions made.

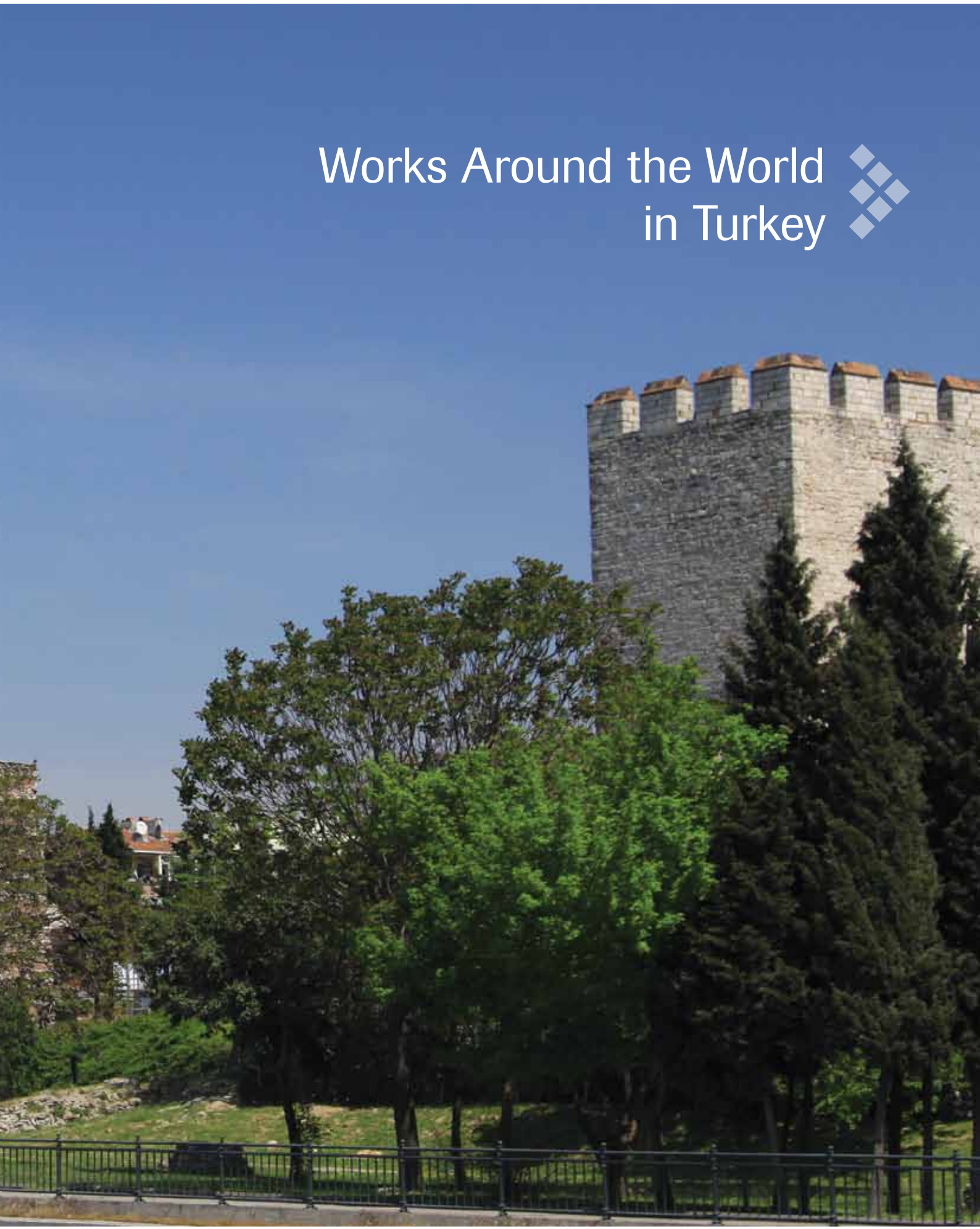
Action plans include action steps of concrete projects and information explaining which institutions and organizations shall put such steps into practise, through which mechanisms, and when and with which budget they shall actualize them.

It is important that decision-making processes include application, follow-up and assessment stages besides decision-making.

Within this context, it is conditional that decisions are transformed into practical information.

Topkapı

Works Around the World in Turkey



Disaster-Resilient Urban Planning and Structuring in the World

It is foreseen that about two third of the people on earth and the large part of wealth will concentrate in city centres by the year 2025.

At the present day, more than half of the world population is living in cities or city centres.

Cities are the economic locomotives of our societies and indicative of the wealth of most countries.

However, cities today accommodate inadequate, worn infrastructures and services, environmental urban corruption, increasing unrecorded settlements and about one billion of tenement inhabitants worldwide. This makes plenty of citizens more defenceless against natural disasters.

This reveals the importance of disaster-resilient urban planning and Structuring studies.

Populations of Cities are Increasing

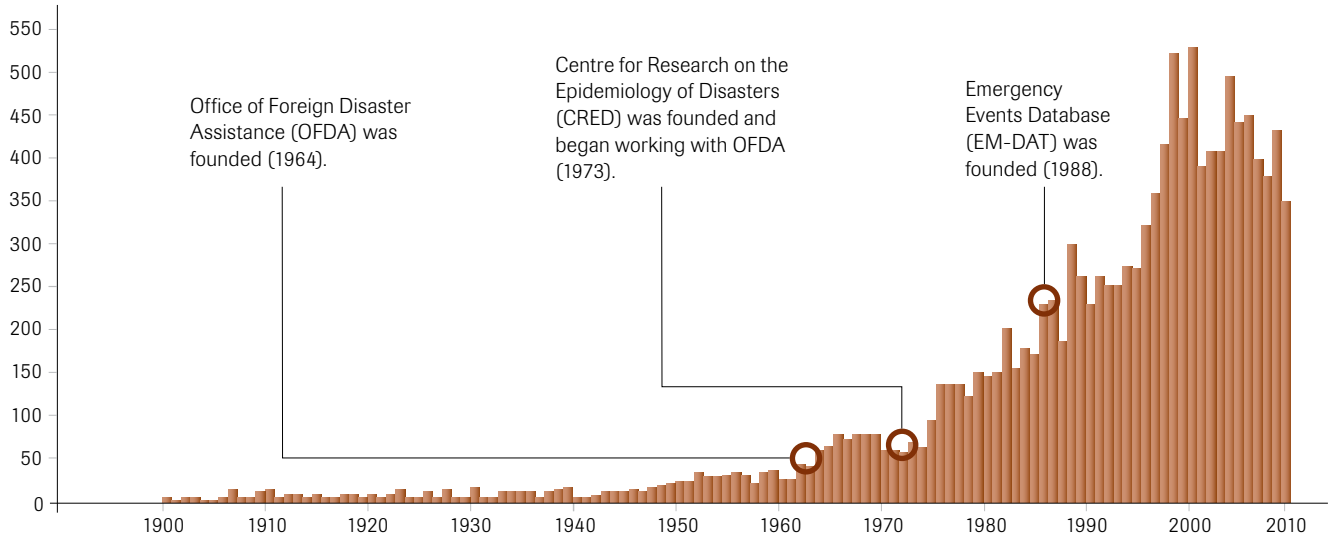
Today, more than half of the global population is living in cities. It is foreseen that about two third of the people on earth and the large part of wealth will concentrate in city centres by the year 2025.

Most of the big cities worldwide, characterized as megacity with populations over 10 million, are located in regions which are prone to major earthquakes and severe draught.

In addition, such cities are positioned along the flood-prone coastal lines affected by extreme climate conditions, where the seas level rises, and this might pose greater disaster risks.

In the 1800s, only 3% of the total world population was living in cities. This number increased up to 14% at the beginning of 1900s and to 30% as of 1950.

Number of Natural Disasters reported from 1900 to 2011



Source: EM–DAT: The OFDA/CRED International Disaster Database – www.emdat.be – Université Catholique de Louvain, Brussels – Belgium

And by the year 2008, populations of rural and urban areas have become equal, for the first time in history.

This number is anticipated to rise up to 70% by the year 2050. Moreover, the largest part of this urban growth shall take place in the underdeveloped countries.

Increase of the population in urban areas increases the vulnerability of wide masses. Today the world population has exceeded 7 billion, more than half of which is living in the cities.

Disasters and their Damages are Increasing Worldwide

When disasters which happened during the last 100 years are viewed, the increase in disasters worldwide and their damages can be seen clearly.

Besides the increase in the number of disasters, the destruction and losses of lives that such disasters have resulted in are quite high as well. Some factors which affect this include:

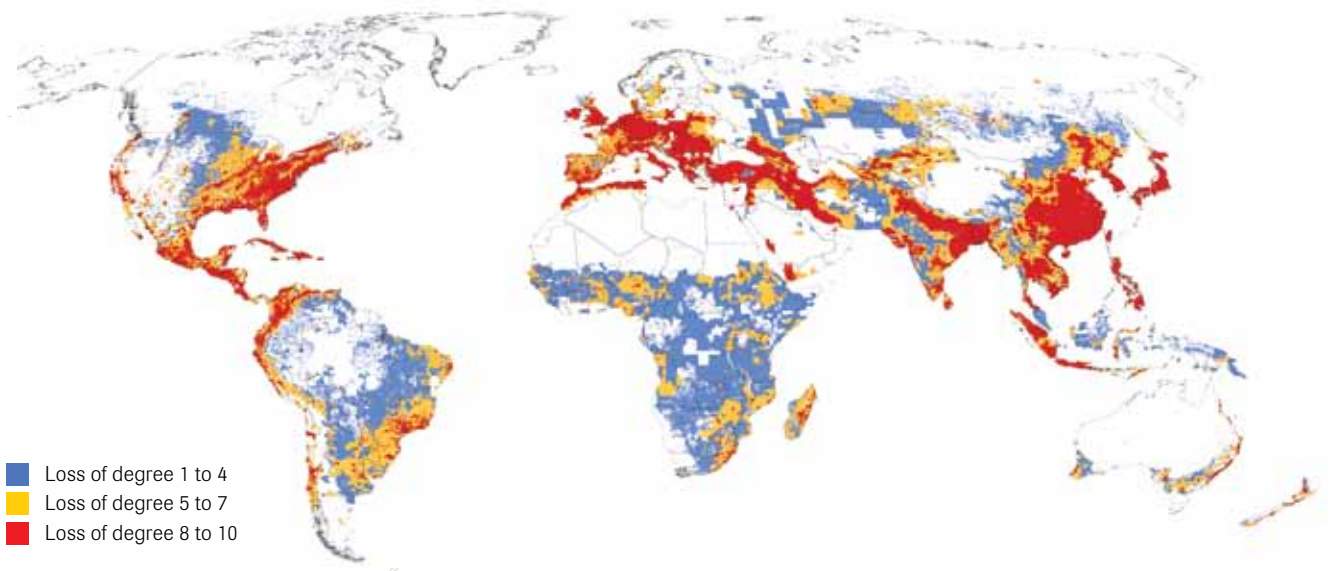
- The increase in the world population,
- Increase in the number of people living in cities,
- Increase in the building and human density of urban areas,
- Increase in the depth of the difference of poverty and wealth borders and the reflection of such deeper difference to space,
- Impacts of global warming,
- In regard to floods, coating of more and more areas with asphalt and hard flooring materials, which prevent the rainwater from penetrating to the underground.

It can be asserted that disaster damages have more permanent impacts in developing and underdeveloped countries and that they move the country economies back by years.

Preventing natural phenomena from turning into disasters shows the efficient and effective use of the country's resources.

Again, instant and long-term effects of disasters have negative impacts on the community also in social terms.

Map showing the Disasters and Global Economic Losses



Source: Dilley, Maxx, Robert S. Chen, Uwe Deichmann, Arthur L. Lerner-Lam, and Margaret Arnold. 2005. Natural Disaster Hotspots: A Global Risk Analysis. Washington, D.C.: World Bank

According to the Natural Disaster Risk Atlas, natural disasters have cost the global economy a loss of 380 billion dollars in the year 2011.

Countries' Economies are incurring Loss

Countries' economies are incurring loss on account for the impacts of disasters.

Research shows that the countries with fast growing economies are at the same time countries most open to natural disaster risks.

According to the Natural Disaster Risk Atlas of the risk analysis company Maplecroft, natural disasters have cost the global economy a loss of 380 billion dollars in the year 2011. Main reason for this increase is the earthquake and tsunami disaster that happened in Japan in March 2011. The disaster has cost the Japanese economy a loss of 210 billion dollars.

Researchers believe that the countries with fast growing economies are most open to natural disaster risks. These countries include Bangladesh, Philippines, the Dominican Republic, Myanmar, India, Vietnam, Honduras, Laos and Haiti.

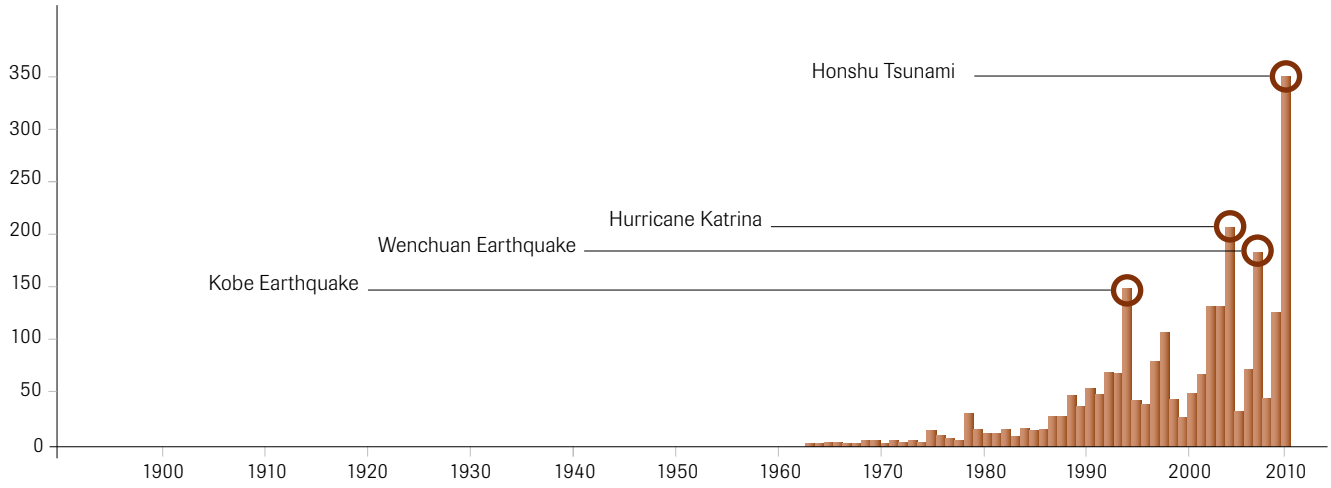
The ranking is based on the countries' possibilities of exposure to disasters such as flood, draught, earthquake and hurricane, and their economic activities.

Countries such as China, Mexico, India, Philippines, South Korea, Turkey, Bangladesh and Iran, which are of critical importance for the global economic growth, are also the countries with highest vulnerability against destructive disasters such as earthquake, flood and tropical storm. These countries need to take precautions for minimizing the damages which might be caused to their economies by possible disasters.

It is observed that societies which derive lessons from what they have experienced make efforts for risk reduction.

Such efforts bring about a reconstruction period during which it is seen what needs to be improved in regard to the next disaster and the most effective precautions are taken while anticipating the next disaster.

Estimated Damage caused by Natural Disasters reported from 1900 to 2011



Source: EM—DAT: The OFDA/CRED International Disaster Database — www.emdat.be — Université Catholique de Louvain, Brussels — Belgium

Countries which take disasters seriously and invest in this regard reap the benefits of their efforts by incurring less damage in next disasters.

As a matter of fact, the societies, cities and administrators who have derived the necessary lessons prepare their habitats against future natural or human-induced hazards, preventing such events from turning into disasters.

It is possible to see that government institutions

Are the Cities of the World Ready?

Consequences of natural disasters cause negative impacts on development. Consequences of disasters can be examined under three main topics, which are direct, indirect and secondary. Direct impacts include physical damages and damages to the infrastructure.

Indirect damages include, in general, unfavourable impacts on services and products. Large part of such damages arises in poor and developing countries.

85% of the population in developing countries live open to the impacts of disasters, primarily of earthquakes, flood and draught.

Monetary cost caused by the damages of disasters has increased up to trillions of dollars in the last ten years.

Disasters have negative impacts also on food safety in poor societies worldwide.

This way, there is no doubt that the consequences of natural and technological disasters pose a significant threat risk to the accomplishment of Millennium Development Goals.

Millennium Development Goals include removing poverty and hunger for human development, providing basic education for all individuals and gender equality in the community, mother health, strengthening woman's position, combating child death, combating HIV/AIDS, malaria and other epidemics, and global partnership for environmental sustainability and development.

Having assembled in the year 2000 under the umbrella of United Nations, countries have adopted the Millennium Development Goals.

The Millennium Development Goals is a significant document in that it has a very important and challenging goal as putting an end to extreme poverty and hunger in the 21st century.

All countries are expected to carry out the necessary studies under Millennium Development Goals indicators, by the year 2015, and to contribute to their own development processes as well as global development.

Studies before disaster, especially the risk reduction studies are among the most important components of modern disaster management, which aims at minimizing post-disaster losses.

Today, many countries are arranging their disaster management structure and with a risk-reduction focus and developing their strategies and planning accordingly.

At the international scale, the "International Decade of Disaster Mitigation" campaign which was initiated by the United Nations covering the years 1990 to 1999 has called the countries' attentions to risk reduction studies.

After this period, United Nations has, through a reconstruction within its body, established the Geneva centred United Nations Office for Disaster Risk Reduction in the year 2000, and together with its member states has prepared and put into effect a risk reduction strategy document which shall cover the years 2005 to 2015.

Hyogo Framework for Action is a guide document for the countries to develop their disaster management systems until 2015.

A document adopted by 168 member states of the United Nations in the international conference held in 2005 in Kobe city of Japan, the Hyogo Framework for Action comprises of 3 strategic goals and 5 top-priority action plans, as well as sub-actions.

Strategic Goals of Hyogo Framework for Action are:

- The more effective integration of disaster risk considerations into sustainable development policies and planning,
- The development of institutions, mechanisms and capacities that can contribute to raising awareness and sensitivity against disasters,
- Strengthening of the available capacities,
- The systematic incorporation of risk reduction approaches into the design and implementation of emergency preparedness, response and recovery programmes.

Risk which the development is under because of natural disasters has been defined in the fourth part entitled "Protecting our Common Future" of the Millennium Development Goals report.

5 Top-Priority Action Plans of HFA

1 TO MAKE RISK-REDUCTION A PRIORITY
To make disaster risk reduction a national and local priority and to form a strong institutional basis for its application

2 TO DEFINE THE RISKS
To define, assess, follow up disaster risks and to develop early warning systems

3 TO RAISE AWARENESS
To use education for creating a disaster-resilient and safe life culture at all levels

4 TO REDUCE RISKS
To reduce fundamental risk factors which constitute the risks

5 TO BE PREPARED FOR TAKING ACTION
To maximize disaster preparedness for effective response at all levels

Source: 5 Priorities of The Hyogo Framework for Action 2005-2015 (HFA)

In this part, the common objective is defined as "the concentration of collective efforts for reducing impacts and numbers of natural and human-induced disasters".

Objectives included in the development goals and the attainable goals aim at reducing people's disaster vulnerabilities.

Especially the first strategy and the first top-priority action plan emphasize the integration of disaster risks reduction into development plans.

One of the most important components of disaster risk reduction is effective education activities. Negative impacts of disasters cause interruption in education, unfavourably affecting development.

For instance, nearly 40,000 students, pupils and teachers have passed away as a result of the 2010 Haiti earthquake.

Failure in constructing education facilities in an earthquake-resistant way is also affecting development unfavourably.

Education is included in the second objective of Millennium Development Goals; constructing education buildings in an in an earthquake-resistant way, educating children on disaster risks and making disaster preparedness planning in schools are shown among factors which can contribute to attaining the development goals.

Individuals in the community are affected by disasters at quite different levels. Almost all researches show that women and children are affected more by disasters.

Therefore, enhancing women's role in the community and educating them as individuals with disaster awareness are very important in attaining the third objective of the Millennium Development Goals.

Disaster risk reduction is an important component for success in decreasing child deaths, improving mother health and combating many diseases.

Post-disaster epidemics, resources spent for combating such epidemics and losses of lives affect development adversely.

Also, the fact that critical health facilities are not constructed in an earthquake-resistant way unfortunately causes health services to cease, which leads to considerable development problems.

One of the most important objectives of Millennium Development Goals is to "Provide Environmental Sustainability".

Disaster risk reduction is one of the basic components of climate change adaptation.

Environmental impairment and climate change are among factors which increase draught.

Environmental impairment and climate change are among factors which increase draught. In particular, destruction of water resources is among factors which increase disaster risks considerably.

Prevention of the said destruction is also important for enhancing resilience against desertification and draught. Success in this is partly due to the encouragement of environmental management.

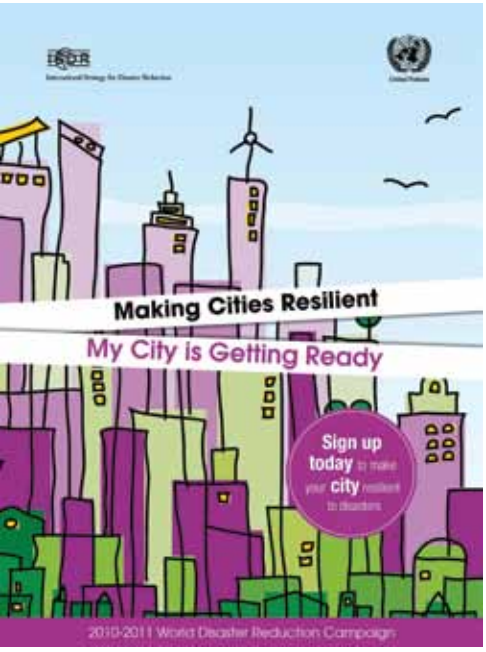
Draught sensitivity must be increased, disaster risk reduction must be integrated into urban development topics, and the water and watering infrastructures must be made sensitive to disaster.

United Nations Disaster Risk Reduction Campaign

At the present day, more than half of the world population is living in cities or city centres. Cities are the economic locomotives of our societies and indicative of the wealth of most countries.

However, inadequate infrastructures and services, environmental and urban corruption, increasing unrecorded settlements and about one billion of tenement inhabitants worldwide make plenty of citizens more defenceless against natural disasters.

Major disasters which occurred recently in Haiti, Chile and China have revealed how defenceless communities are, how limited we are in providing assistance and how complicated a job it is to get over such disasters.



World Disaster Reduction Campaign (UNISDR)

For the purpose to offer solutions for such emergency problems, the 2010-2011 World Disaster Risk Reduction Campaign has been initiated by the UNISDR.

In the year 2010, when natural disasters which caused ten thousands of people to pass away and cities to be destroyed, such as the Haiti earthquake and the flood disaster in Pakistan, the office focused on the "Disaster-Resilient Cities" motto, and wanted to use the campaign as an opportunity to alert countries against disasters, on the 20th anniversary of the "International Disaster Mitigation Day", which is celebrated regularly since the year 1990.

General objective of the campaign is to increase the number of local administrations taking actions for reducing disaster risks and to obtain resilience as well as sustainable urban communities.

The long-term target which shall follow this campaign is the establishment of strong national policies to enable investment in risk reduction at local level, as part of urban and regional development plans, and the strengthening of local administrations.

The campaign aims at strengthening and supporting the local administrations, community groups and leaders, technicians working in urban development planning and disaster risk management, mayors and national authorities responsible for reducing disaster risk.

The term "city" in "Making cities resilient: My city is getting ready" Campaign, expresses urban areas in general.

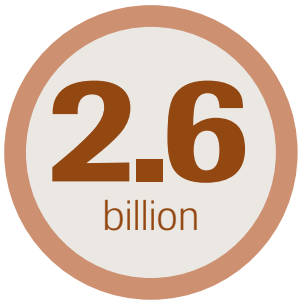
Likewise, the term "local administrations" covers all of the urban and rural communities at different scales (province, metropolis, city, town, municipality, district and villages).

The campaign lays particular stress, to the extent possible, on the need to reach the most defenceless urban communities, such as the urban poor and the groups with highest possibility of exposure to the adverse impacts of hazards.

The to do list consisting of ten items, which the campaign has presented as a guide to be undertaken by mayors, is as follows:

To Do List for Resilient Cities

- For the comprehension and reduction of disaster risk, activate an organization and coordination based upon the involvement of citizen groups and civil community. Establish local unions. Make sure that all departments have comprehended their roles in risk reduction and preparedness activities.
- Allocate a budget for the encouragement of investment for risk reduction and reduction of the risks which landlords, low-income families, communities, the business world and public institutions.
- Keep the data on hazards and security gaps up-to-date. Prepare risk assessment and use them as the basis for urban development plans and decisions. Make sure that the public has easy access to and has fully agreed with such information and plans about your city's resilience.
- Invest in and provide continuity of risk reducing critical infrastructure allocated for locations which need to cope with climate change.
- Review, and if necessary, improve the safety of all schools and health facilities.
- Put into effect and entail realistic, risk-compatible building regulations and land usage planning principles.
- Make sure that risk reduction training and education programs are applied in schools and on site in local communities.
- Make sure that risk reduction training and education programs are applied in schools and on site in local communities.
- Protect the ecosystems and natural buffers which mitigate the floods, flood tides and other hazards which might harm your city.
- Create early warning systems and emergency management capacities in your city and arrange regular preparedness exercises for the public.
- After any disaster, make sure that the needs of the survivors are positioned at the centre of the reconstruction. Support them and the community organizations that they belong to and provide them with design and assistance responses, including the reconstruction of their homes and means of living.



Number of people who affected by natural disaster in last decade (approximately)

of all losses have been occurred in developing countries.

World Bank's Call for Prevention

The report "Hazards of Nature, Risks to Development" stated by the World Bank Independent Evaluation Group (IEG) calls for the integration of foreseeable disaster risks into development programs. The new report requires change in the paradigms of disaster.

According to the conclusion drawn in the report, it is possible to estimate where most of the natural disasters shall strike, yet there are worries about the proper use of such important lifesaving estimations.

Only in the 90s, natural disasters have destroyed property of 652 billion dollars worldwide. Compared to the rates in 1950s, this number is 15 times more.

Compared to the 1,6 billion of the previous decade, 2,6 billion people have been affected by natural disasters in the last decade.

When it is taken into consideration that 95% of all losses occur in developing countries, it is clearly seen that they are the ones who bear the heaviest burden of such disasters.

IEG has made evaluations for the purpose of evaluating the development efforts of the World Bank and to make direct reporting to the executive board.

This study of the Bank is the first evaluation ever towards aid for natural disasters, and it is one of the most comprehensive disaster preparedness and response researches up to date.

This report has shown that the disaster projects of the World Bank have yielded more favourable results than the Bank portfolio in general.

When disasters stroke, the Bank has been flexible in the management of response to small and large scale disasters and has worked in coordination with other donators, with a view to provide rapid aid.

The reconstruction of damaged infrastructures and domiciles has been accomplished better than reducing vulnerability and handling its grounds.

Nevertheless, it has been observed that nearly half of the countries where the Bank has been called for financing the post-disaster reconstruction projects have not given room or roles for disaster prevention in their general development strategies.

Whereas, the report in question has from the very beginning called for the placement of disaster risks into development plans.

Exemplary Cities in Disaster Preparedness

After the Ise-Wan Typhoon in Japan, the precautions taken against disasters have turned from response-oriented approaches into preventive precautions; collective action and an understanding of embracing the whole community have replaced individualism.

Japan Model

Japan is an earthquake country. 10% of the total earthquake energy of the world is in and around Japan.

In Japan, exposed to countless earthquakes from the ancient times known, lessons derived after every earthquake have been reflected to disaster management system, with a view to make the system more effective.

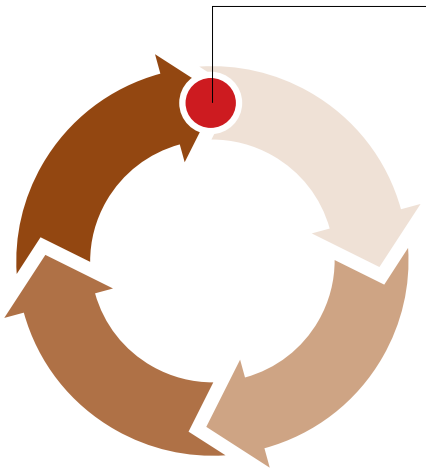
Happened in 1959 and caused the death of 5,868 people, the Ise-Wan Typhoon has been a milestone in this field. After this typhoon, the precautions taken against disasters have turned from response-oriented approaches into preventive precautions; collective action and an understanding of embracing the whole community have replaced individualism.

In general, the typhoon has led Japan to establish disaster countermeasures upon a certain system and has made the disaster management more comprehensive, more systematic and easier.

In this direction The Disaster Countermeasures Basic Act has taken effect in the year 1962. With this Act, which sets forth the basic principles of Japanese disaster management, much ground has been covered in:

- Clearly determining the responsibilities of the central and local administrations, private sector and individuals,
- Establishing a structure to provide coordination between national and local sectors,
- Each local administration's forming its own disaster prevention plan,
- Determining the activities to be carried out at each stage of the disaster management cycle,
- Issuing the Annual Disaster Report which includes the activities carried out during the year in regard to disasters and the measures planned for the next year.

Japan Disaster Management System Cycle



EMERGENCY MEASURES

- Fire brigades, flood-combat units, police etc. taking action.
- Damage Report.
- Evacuation of infrastructures.
- Establishment of warning areas.
- Staff management issue in regard to health, civil engineering and transportation.
- Activation of the traffic regulations.

RECOVERY AND RECONSTRUCTION

- Application of recovery programs
- Prompt (immediate) distribution of money, donations, etc.
- Providing financial assistance etc. for coping with a severe disaster

DISASTER PREVENTION

- Development / improvement of disaster management organizations (enhancement of their capacities)
- Disaster management trainings
- Stocking of products, materials, etc.

It is seen that every year since the 1960s Japan regularly allocates 5 to 8 % of the budget to risk reduction and prevention activities. The resource allocated from 1995 to 2004 is an average 4.5 trillion Yen, which corresponds to 5% of the total budget.

1.3% of this resource has been used in R&D, 23.6& in disaster preparedness, 48.7% in national land protection and 26.4% in post-disaster reconstruction/recovery activities.

Another important example in Japan is the Kobe Earthquake. Until the Kobe Earthquake (the Major Hanshin-Awaji Earthquake) in 1995, the disaster management system was thought to be functioning well; however, the fact that this earthquake has caused considerable loss of lives and property has led the Japanese Government to question the system.

The Japanese have bound up the wounds of this earthquake, which has gone down in their history as the "earthquake of the century", within 2 years and have restored the entire city. This restoration has cost 90 billion dollars.

The restoration story of Kobe serves as a model to the whole world for the question "How can be a city brought back to life?"

There are many similarities between the Izmit Earthquake and Kobe Earthquake. At that time, Kobe Earthquake has served as a model and hope for Izmit. For example, the press statements of Japanese rescue squads saying: "The scene that the earthquake caused is the same as in Kobe. It's just as if we are experiencing Kobe" have come to the forefront.

After the earthquake which caused death of 6424 people and injury of 34900 people, the Japanese started work by renewing the collapsed highway network, railways, infrastructure and the port. Municipality of Kobe has stated that billions of dollars has been spent for this work.

Having the greatest difficulty in first response because of lack of transportation, the municipality was blamed for not having turned an equal hand to the civilians who had to live on streets because their homes were wrecked; for, only prefabricated houses were built for the people on streets.

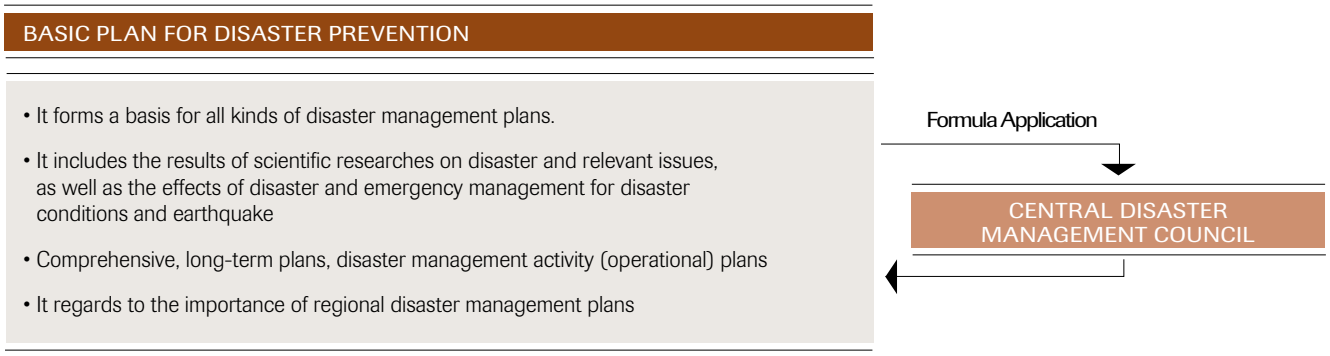
The majority of loss of lives in Kobe happened in wooden buildings, which were used often for reducing the damage of earthquake, during fires which lasted two weeks.

Therefore, wooden material has been used as few as possible in the houses built after the earthquake. Further, the Municipality of Kobe has established a large fire brigade unit having the technical knowledge for fighting fire during and after the earthquake.

Though the fact that the loss of lives and property which Kobe Earthquake caused was far more than anticipated has led to the review of disaster management system, the examination of the post-disaster reconstruction process is important in that it presents the strong aspects of Japanese disaster management.

Happened in 17th January 1995, the Kobe Earthquake has caused the death of 6401 people, injury of 40.092 people and destruction or heavy damage to 240,956 buildings which hosted 439,608 households.

Disaster Management Planning System (Japan)



Total direct loss that the Earthquake is estimated to have caused is 50 trillion Japanese Yen (about 500 billion USD).

For reconstruction and recovery works, totally 7 trillion 728 billion Japanese Yen (about 77 billion USD) has been spent, 5 trillion 20 billion of which having been spent by the government and 2 trillion 708 billion of which by the Kobe City.

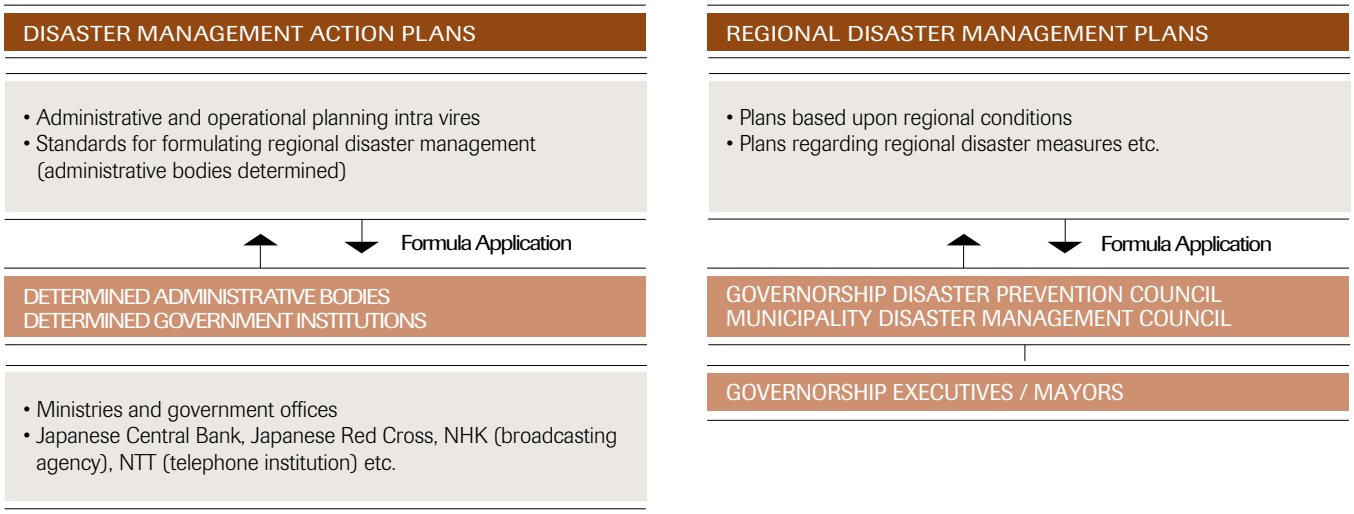
The post-disaster reconstruction works began on 26th January 1995, namely, 9 days after the disaster. The "Reconstruction and Recovery Committee" has held its first meeting on 7th February and the "Basic Principles of the Reconstruction and Recovery Plan" has been published on 27th March.

On 22nd April, the Planning meetings involving all relevant sectors have begun, and on 30th July 2007, the "Kobe Reconstruction and Construction Plan", which is foreseen to cover a decade, has been prepared.

Points to consider in this process, which lasted 6 months, are at the following:

- The plan foresees the completion of reconstruction and recovery works within ten years, and the work propounds the responsible—financial resource relationship.
- The plan does not only target at recovering physical infrastructure and superstructure, but also takes socioeconomic recovery into account.
- Bureaucrats, technicians and academicians as well as the public have been involved in the plan, both in determining the plan principles and in preparing the plan.
- During plan preparation process, the on-going city master plan revision studies have been handled too, and it has been ensured that spatial planning contributes to the creation of a safe city during restoration process.
- Urban risks have been reduced through urban transformation, urban rearrangement, construction of public Structuring, and renewal of Kobe port.
- Studies have been held towards informing the community on earthquake and tsunami hazards, with a view to emphasize the importance of risk reduction.
- Social groups formed during the plan application process have been supported, following completion of the plan, in being organized as non-governmental organizations to support risk reduction and preparedness studies.
- Commissions have been constituted for following up and evaluating the plan, which had set concrete goals; the progress has been followed up and reported regularly, and the necessary revisions in the plan have been allowed for.

Disaster Management Planning System (Japan)



Mexico City Model

As a result of the earthquake with a magnitude of 8,1, which happened in Mexico City in 1985, more than 30 thousand domicile units have collapsed completely, while more than 68 thousand buildings have been damaged and over 10 thousand people have lost their lives.

This major destruction has had instant and long-term impacts on many fields.

The most important decision made in regard to the reconstruction of the urban area is the urban transformation resolution, not only for the affected area, but for the whole city centre.

In Mexico City, plenty of low-income citizens who do not own domiciles became property owners at that time.

Urban transformation has strengthened the social structure and also provided the citizen, whose economic conditions changed, with a more secure life in this new urban area.

The reconstruction realized in Mexico City has undergone an important test in the 2011 earthquake of the magnitude 7.4.

Much smaller an earthquake compared to that in 1985, but a large earthquake in itself, this earthquake has caused only 3 injuries and no death, though damage to buildings.

Both of the earthquakes occurred far from the city centre. Consolidation of the building stock as a result of urban transformation has prepared the city for new earthquakes.

The earthquake that damaged Mexico City was transformed into an opportunity for not being harmed by later earthquakes.

From this aspect, the recovery and reconstruction works realized in Mexico City in scope of urban transformation has served as both a good model and hope for many urban areas and administrations, in terms of disaster risk reduction.

Another earthquake in 2011 is the Christchurch earthquake, which happened in February with a magnitude of 6.3, striking the biggest third city of New Zealand and causing death of 185 people.

After the earthquake, the local administration and government stated that they would take the Mexico City experience as an example.

Chile and Haiti Models

Chile is located in a region called "Pacific Ring of Fire". Earthquakes and volcanic eruptions happen frequently in this geographical region; also, 4 of the 12 largest earthquakes with magnitude over 8.6, recorded in the world history have occurred in this region.

The earthquake in 1960 with a magnitude of 9.5, the largest earthquake ever, is one of them. Despite the 8.8 earthquake that stroke Chile was 800-900 times larger than the 7.3 earthquake that stroke Haiti on 12th January, the number of people whose death it caused has been 370 times lower.

It is estimated that 270,000 thousand people died in Caribbean up to date, due to disasters, while this number is limited to 700 in Latin America countries.

Researchers think the most important reason is that the Chilean government and people are well prepared for disasters.

Constitution of the country contains radical laws defining the responsibilities of the central government for coping with events which might lead to disasters.

In 2002, this country has set forth a plan which defines the concrete measures that can be taken at each stage of coping with a disaster. Studies in the light of this plan have played an important role in the Chilean government's success in coping with earthquake.

The government has established an emergency rescue office, for the purpose of coordinating the rescue efforts in the regions struck by earthquake, ensuring continuity of assistance, and implementing reconstruction works.

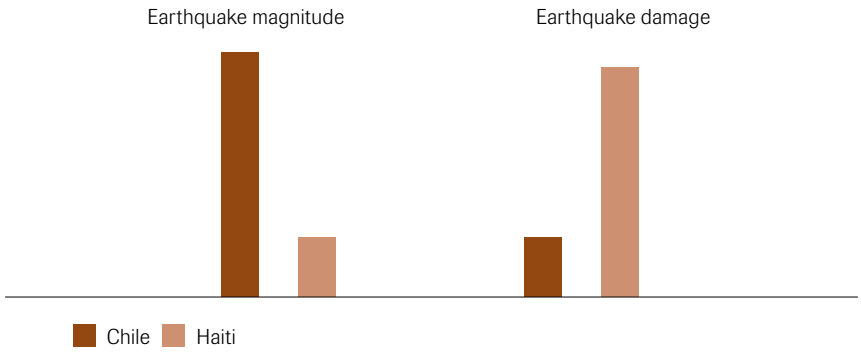
Central government rapidly responds the needs through this office, when encountered with various natural disasters including earthquakes, volcanic eruptions and tsunami.

It has been ensured that all buildings in the country are constructed in an earthquake-resistant way and in compliance with strict building regulations set by the government, and that the already present buildings are controlled.

All workplaces in the country are obliged to have an emergency plan. For the construction companies in the country, it has become a routine to work taking into consideration the possible earthquake effects. Also, earthquake exercises have been held throughout the country. Number of people who attended the meeting in 1995 has reached up to 350,000.

For the purpose of creating a disaster-resilient community, schoolchildren are given a training called "Operacion DEYSE", exercises of which are held three times in a year.

Magnitude - Damage Comparison of Chile and Haiti Earthquakes



Sources: CIA Factbook, International Finance Corporation, US Census Bureau, Wire services

In this nationwide campaign, it is targeted that every child knows how to take shelter under the nearest table or under the frame of the main gate of the house, and that every individual knows the structural walls of his/her house, in case the building collapses.

Compared to Chile, Haiti has an unsteady political landscape. No studies have yet been initiated for making the country more disaster-resilient. Accordingly, researchers report that the Caribbean region is not prepared for earthquake.

Details regarding the Chile earthquake reveal the clear differences between one of the richest countries of the south hemisphere and one of the poorest ones, Haiti.

Two earthquakes in question helps us understand the differences between two countries, beyond geology, in the country wealth, government effectiveness and media's point of view regarding presentation.

Comparison of Chile and Haiti Earthquakes

CHILE EARTHQUAKE (2010)	HAITI EARTHQUAKE (2010)
MAGNITUDE	
8.8 Büyüklüğünde	7.3 Büyüklüğünde
NUMBER OF DEATHS	
Over 795 people	Over 200,000 people
NUMBER OF BUILDINGS COLLAPSED, ACCORDING TO STATE FIGURES	
500,000 Buildings	280,000 Buildings
HOW MANY HOURS LATER HAS THE PRESIDENT MADE HIS/HER FIRST SPEECH AFTER THE EARTHQUAKE?	
2 hours	168 hours
NUMBER OF NEWS / ARTICLES BROADCASTED / PUBLİSHED WITHIN THE FIRST 48 HOURS	
400 articles / news	2598 articles / news
AVERAGE ANNUAL INCOME OF CITIZENS	
14,000 $	1,300$
POPULATION	
16 million	9 million
PERCENTAGE OF THE POPULATION BELOW THE POVERTY THRESHOLD	
18.2%	80%
RANKING IN THE WORLDWIDE CORRUPTION INDEX	
25th	168th

Disaster-Resilient Urban Planning and Structuring in Turkey

Our cities must be prepared for hazards more comprehensively and with an insight for disaster mitigation and a participative approach.

Urban planning directed towards disaster mitigation lays stress on the growth and development of cities without consuming their natural resources and the pursuing of people their lives in safer and more habitable settlements.

This is based, on one hand, upon the development and application of strategies and policies aiming at mitigating or removing in the long run the losses of lives and property which the hazards and their impacts might cause; and on the other hand, upon its integration with a participative approach which enables communal embracement.

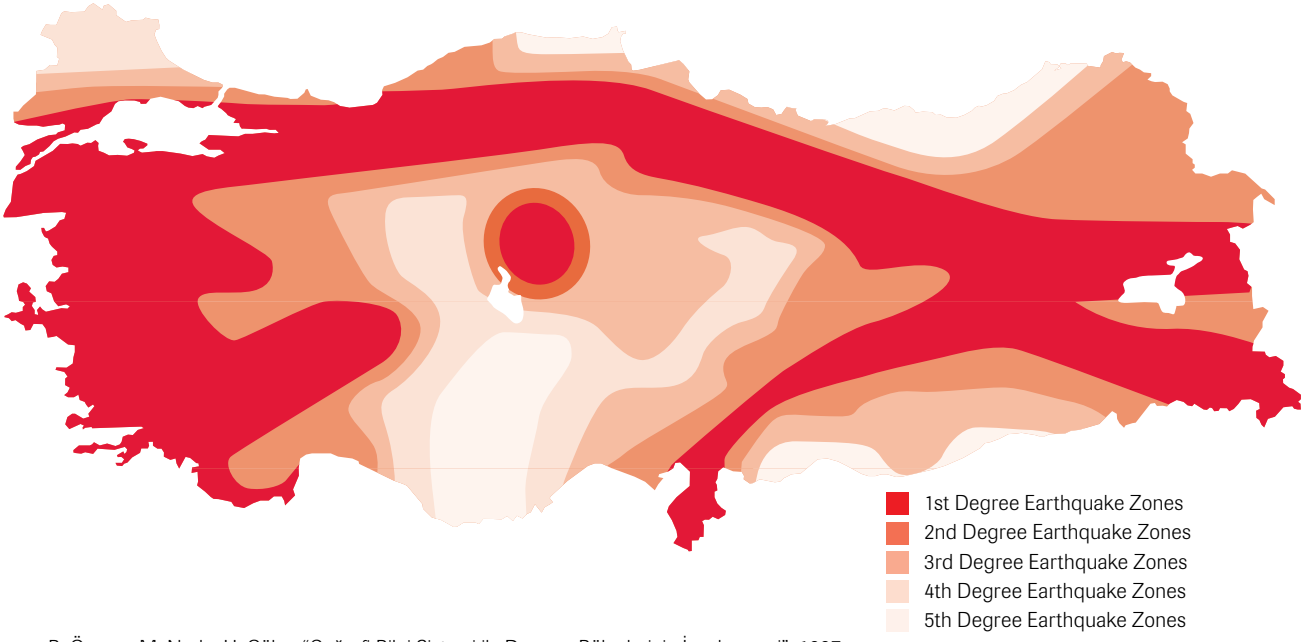
In urban planning directed towards disaster mitigation, various duties fall to different claimants in the settlement. These duties can be fulfilled in two ways: individually and communally. Thus, our cities can get the chances of being prepared for hazards more comprehensively and with an insight for disaster mitigation and a participative approach.

Unplanned and unhealthy settlements are becoming widespread due to rapid urbanization, and these settlements are centring on areas which are open to natural hazards. This makes it necessary to disseminate disaster-sensitive development programs in Turkey, from national to local levels.

In case the earthquake hazard map of Turkey is superposed with the settlements, nationwide development areas and infrastructures, it can easily be seen that we are face to face with considerable economic and social losses.

From the vulnerability and development map of the Turkish provinces, as issued by the State Planning Organization, it can be seen at the first glance that there are differences, as well as similarities, between the social and economic vulnerability and development concepts.

Map of Earthquake Zones in Turkey



Source: B. Özmen, M. Nurlu, H. Güler, "Coğrafi Bilgi Sistemi ile Deprem Bölgelerinin İncelenmesi", 1997

As for Istanbul, since its establishment it has always been one of the most important cities of the world.

This city is a vast metropolis today, as well. According to the Address-Based Population Registration System data pertaining to the year 2012, Istanbul, where 18.3% of the Turkey's population resides, is the city with the highest population, with 13,854,740 people.

Whereas, when the extra population that Istanbul has on account for its being an economic and political upper stage centre, comprising of one-day visitors, people going to and coming back from work in frontier regions and the tourist potential, this city is estimated to host nearly 17 million people.

Largest metropolis of Turkey, Istanbul is face to face with earthquake risk, as well as unfavourable urban pressures. The fact that Istanbul undertakes new roles at global level is increasing the risks it bears based on natural hazards.

Throughout Turkey, only Ankara has taken part in the category 1 under both scores, being the most developed city with the least social and economic vulnerability.

Ankara is followed by Izmir, Kocaeli, Bolu, Çanakkale, Edirne, Isparta, Kırklareli and Muğla, which cities have taken part under category 1 in one of the groups and under category 2 in the other.

Ranking 1st among Turkish cities in terms of development, Istanbul takes part under category 4, in terms of Social and Economic Vulnerability.

This shows that Istanbul is quite vulnerable in terms of social factors, though it is developed, and that measures need to be taken in this direction.

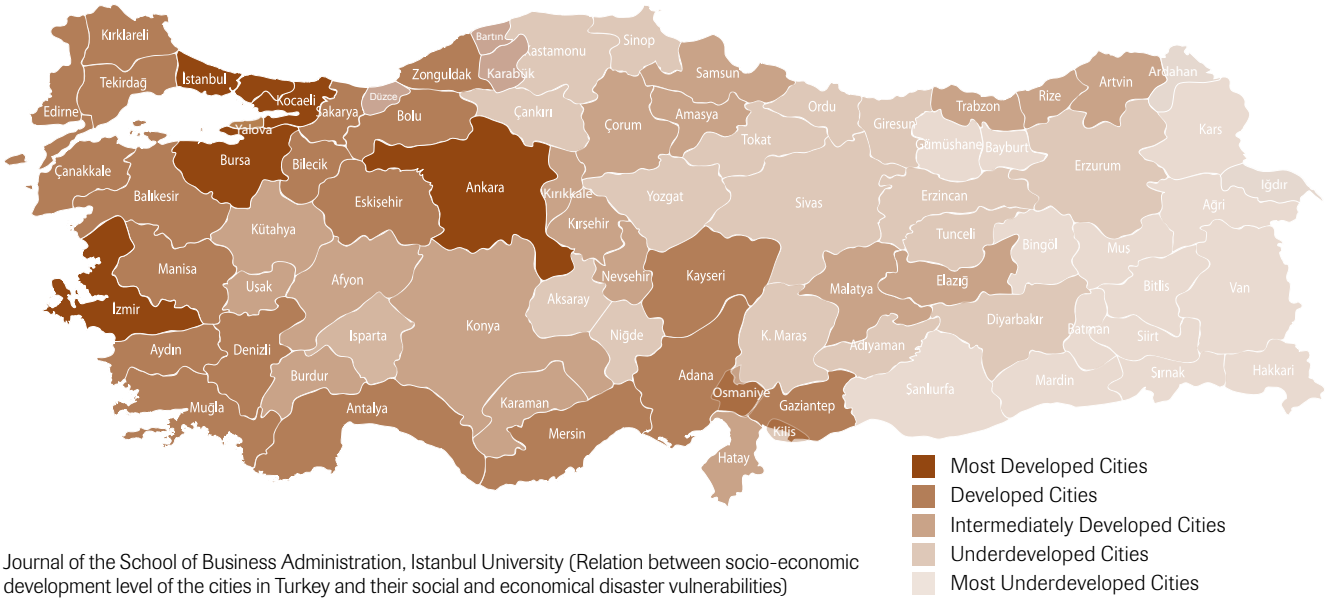
Urban Planning Hierarchy in Turkey

The plan types in Turkey are shown, in steps, as development plan, regional plan, environmental plan, land use master plan and zoning plan.

In terms of the areas they cover and their objectives, plans are separated to two groups, being Spatial Strategy Plans and Zoning Plans. Spatial Strategy Plans are: Country's Physical Plan, Regional Plan and Sub-Regional Plan. And the Zoning Plans are redefined as Land Use Master Plan and Tentative Plan. City plans are also prepared in this framework at different levels of abstractness.

Including the most abstract and most general information at the urban extent and prepared at 1/100,000 or 1/50,000 scales, the Strategy Plans rank first among them, while Tentative Plans at 1/1000 or 1/500 scales rank at the bottom.

Development Levels of the Cities



Journal of the School of Business Administration, Istanbul University (Relation between socio-economic development level of the cities in Turkey and their social and economical disaster vulnerabilities)

Source: D. Özceylan, E. Coşkun, The relationship between socio-economic development and social and economic vulnerability levels of cities in Turkey, 2012

Environmental Zoning Plans with 1/25,000 scale and Land Use Master Plan with 1/5,000 scale rank at intermediate steps.

High scale plans are documents with high abstraction level which give the master development decisions and land use ways of the city at a principle level in accordance with the basic goal, policy and principles developed.

Each lower scale is expected to include more information details than the upper one and to be an original plan which covers new information and data required by its scale, yet preserving the master decisions of the upper scale.

The differences which appear by each scale when new and more concrete decisions are added at the upper step—on condition that basic principles are preserved—must not be construed as inconsistency between the plans.

Scenarios on the city's population and settlement development taken into consideration, strategies and policies consistent with different risks at micro and macro levels must be developed and correlated, from the Environmental Plan to the strategic space plans at provincial and urban level and to master plans and zoning plans applied at city level.

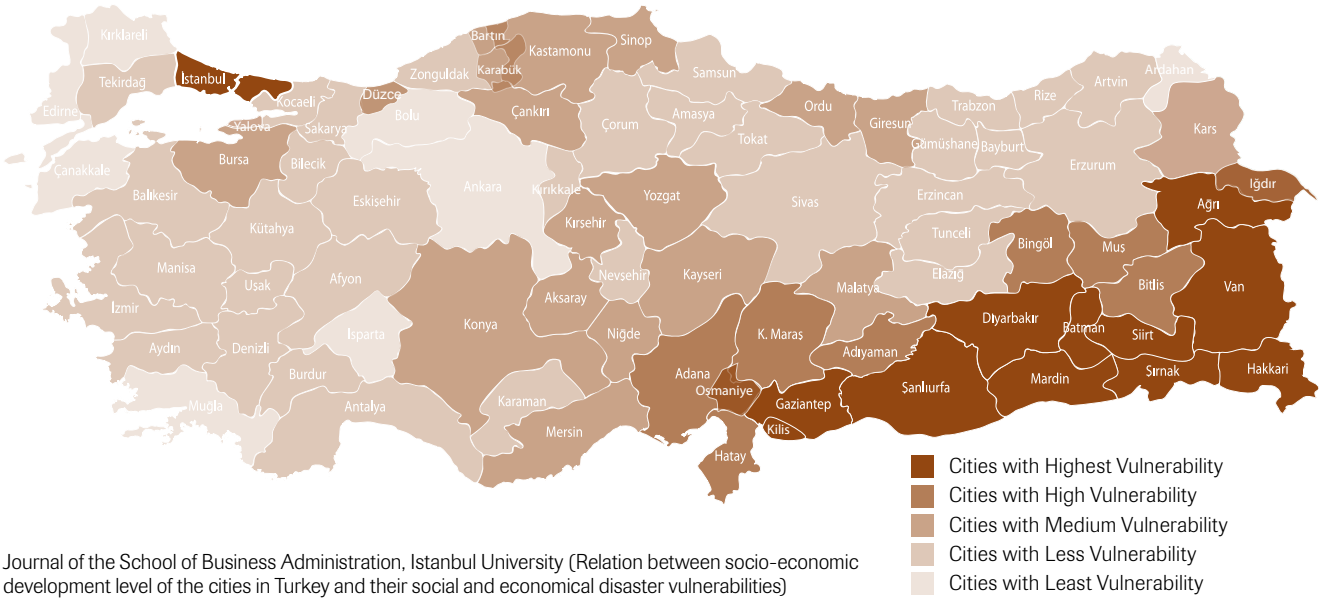
- Development plans must direct the country's physical planning,
- Place selection decisions must be directed in the light of data pertaining to natural hazards at country and region level,
- Plans at different scales must be consistent with each other,
- Policies which shall provide a balanced interaction between the environment and community must be produced.

Disaster Planning Regulations in Turkey

Since 1990, a number of international declarations have been released and agreements have been made in regard to Disaster Management. Studies such as "Disaster Preparation of Nations and Communities" have brought about a new understanding in respect to disaster management. According to this new understanding, the conclusion has been drawn that in disaster management, priority must be given to preventive measures and risk management as well as emergency management, that this is a prerequisite for sustainable development, and that a global program must be developed on this basis.

Developing at international level, this understanding has found its reflections in the last years in Turkey. Research reports prepared in relation to urban risks, particularly for a directive purpose in regard to earthquakes, have included risk reduction and pre-disaster measures at national, regional and local levels.

Map for Vulnerabilities of Provinces



Journal of the School of Business Administration, Istanbul University (Relation between socio-economic development level of the cities in Turkey and their social and economical disaster vulnerabilities)

Source: T.C. Başbakanlık Devlet Planlama Teşkilatı, İllerin ve Bölgelerin Sosyo-Ekonomik Gelişmişlik Sıralaması Araştırması, 2003

In the light of such studies, a number of important actions which can serve as model for disaster risk prevention and mitigation activities have been taken, such as the Istanbul Province Seismic Micro-Zoning Disaster Prevention / Mitigation Master Plan (JICA Report), Marmara Earthquake Emergency Reconstruction (MEER) Project, Risk Evaluation Tools for Examining Urban Areas against Seismic Disasters (RADIUS Project).

However, such studies could not be directed towards the development of plan application decisions, and could not be put into practice.

The reason for that is the failure in Turkey, located in a geography which is quite risky in terms of disaster hazards, in constituting a contemporary “disaster and risk management system” which gives priority to a “risk management” directed towards “disaster mitigation before disaster” beside “emergency management”, which include post-disaster works.

The 17th August Earthquake is one of the most important disasters experienced by our country. This disaster differs from others in many aspects.

Before all else, it has a structure which affected a very large area. It has occurred in a metropolis prevailing area, in the region with the highest density of population and industrial facilities.

Due to all of these reasons, our disaster management failed.

In the light of the lessons derived, major changes have been made in our disaster legislation, by decree laws.

With the application of these new laws, control of the buildings other than public buildings have been left to the private sector, pursuant to the Decree Law numbered 595 on Building Control and the Building Control Application Regulations based on said Decree Law.

This application has arisen from the need to fill the control gap of municipalities on buildings.

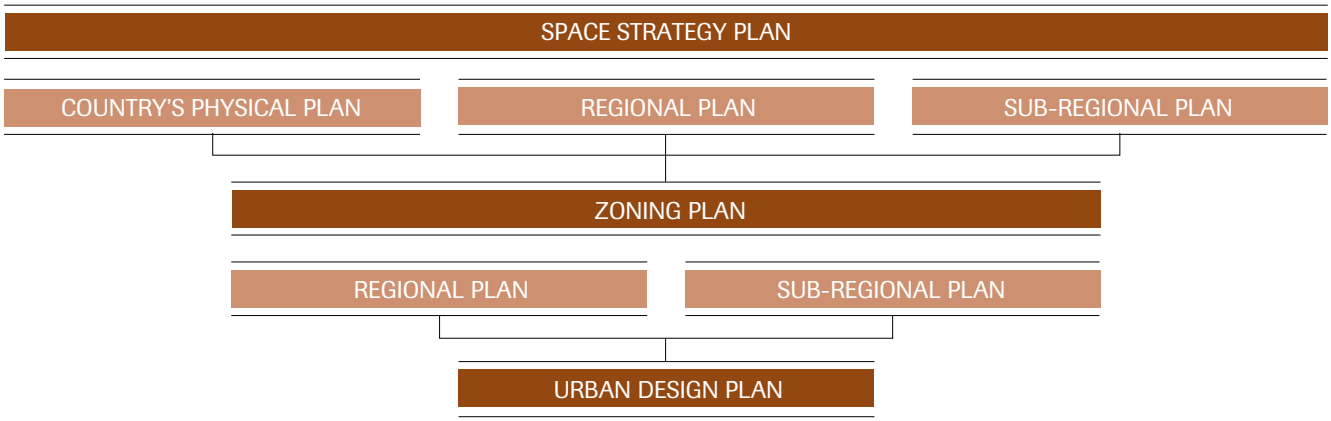
Incompetency of municipalities in respect to building control has been removed.

Thus, it has been obligated that all and any buildings are built under the control of building control foundations.

Such foundations have been authorized to inspect the construction activities and the conformity of materials with the standards, as well as to control the geotechnical reports and construction drawings.

With a view to compensate the damages to buildings after disaster independently form the State’s budget, the Natural Disaster Insurances Institutions (DASK), a legal entity, has been founded for the purpose of offering insurance coverage, pursuant to the Decree Law numbered 587 which was enacted in parallel with the practices in the world.

Urban Planning Hierarchy in Turkey



Large part of the building stock in our country is vulnerable to disaster risks. For improving this, "Law on the Transformation of Areas under Disaster Risk" has been enacted on 16th May 2012.

The Law numbered 6306 on the Transformation of Areas under Disaster Risk is an important step taken for protecting human life and for improving the habitats of developing and developed cities, in direction with their economic, societal and spatial needs.

Applications to be made in framework with the Law numbered 6306 is a reform which shall produce solutions for the squatting and unplanned urbanization, which has become a genetic disorder in our country, making the place a modern and brand city.

The Law numbered 6306 aims at creating resistant, healthy, safe, energy-saving, accessible cities in areas under disaster risk.

It is planned to reinforce and support those risky buildings which could be reinforced, to assess the buildings in risky areas under disaster measures and to form living spaces, to form quality living spaces in reserve areas and to renew inactive and nondurable buildings in a disaster-resilient way.

Urban risk sectors are found on urban uses such as infrastructure, Structuring, communication, transportation, which are the elements that build up our cities. Such risk sectors for Istanbul have been specified in the Istanbul Earthquake Master Plan which was published on 7th July 2003.

Objective of the Istanbul Earthquake Master Plan is to determine all and any measures which could be taken at beforehand in order to incur minimum loss in case of earthquake.

Therefore, mission of this study is to put forth how risk management shall be implemented throughout Istanbul.

Istanbul Earthquake Master Plan is a guide which aims at taking under coordination the versatile measures which need to be taken in Istanbul against earthquake.

It is a road map which endeavours, to the extent possible, to define long-term tasks, total action-taking procedures, physical and spatial decisions as independent sub-projects and to correlate them in a way to complement each other, constructing them under a main program.

Urban Risk Sectors in Istanbul Earthquake Master Plan

Production Loss	:(Industry / fixed and moving infrastructure / workforce) Building Stock and Urban Infrastructure Systems
Texture Risks	:(Structuring type / land / road/ parking lot / open area / density) Macro-form and Urban Growth Tendencies
Land Use Inconformity	:(Inconformity in land and building scales)
Special Areas	:(Valleys / coasts / river basins under dams)
Cultural Heritage Special Buildings	:(historical / monumental buildings and surroundings)
Hazardous Uses	:(explosive, combustible, contaminating, chemical etc. storage /cycle)
Emergency Officers	:(Hospital, fire brigade, school, communication etc)
Insufficiency of Open Areas	:(emergency escape, assistance, temporary shelter etc)
Administrative Competency	:(Specialized staff, exercises-training)
External Factors	:(Accident, sabotage, terrorism)
Social Passivity	:(Constraints on participation and local organization)

Through this road map, all measures necessary for incurring minimum loss during earthquake are determined.

This study describes all kinds of risks throughout Istanbul due to earthquake hazard, therefore defines the risk sectors where certain cause and effect relations are clustered.

This study has examined subjects such as what poses risk in this sector, what needs to be done for reducing or removing such risks and how or by whom they shall be realized.

Within this context, it is possible to say that the study has put forth how risk management shall be implemented in Istanbul.

Studies are being held in scope of Istanbul Seismic Risk Mitigation and Emergency Preparedness Project, with a view to make Istanbul a Disaster-Resilient city and to develop relevant strategies.

Such projects aim at making Istanbul prepared to a possible earthquake, by taking measures which support the more effective implementation of the Zoning and Building Legislation.

Land Walls Between Silivrikapı and Mevlanakapı

ISMEP's Studies

ISMEP's Studies

We must be prepared to disasters from the smallest to the biggest scale, namely at building, neighbourhood and city level.

Effective Implementation of the Zoning Legislation, called as Component C of Istanbul Seismic Risk Mitigation and Emergency Preparedness Project (ISMEP) basically includes the arrangement of various training activities for raising disaster preparedness awareness and strengthening the institutional and technical capacities of pilot municipalities in scope of more effective implementation of constriction license processes.

Said projects have been implemented in the year 2006 under protocols between Municipalities of Pendik and Bağcılar, which were chosen as pilot municipalities, and the Ministry of Environment and Urbanization and IPKB. Training activities on disaster resilient urban planning have been arranged in scope of Component C, and projects for enhancing technical competencies of municipalities have been realized.

Also, other training projects carried out in scope of this component aim at reducing the disaster risk of the community and enhancing the level of knowledge and awareness in regard to the measures which can be taken.

Criteria for Selection of Pilot Municipalities

For establishing the criteria of selection, an examination has been made on the general analyses and proofs, which are involved in Istanbul Earthquake Master Plan (İDMP), as prepared by the Istanbul Metropolitan Municipality in cooperation with various universities, and in JICA report, joint study by Japan International Cooperation Agency and Istanbul Metropolitan Municipality Earthquake Directorate.

Furthermore, a reference review has been carried out with regard to the district municipalities' general properties, physical development tendencies and vulnerability against disasters.

General Information on Pilot Municipalities

MUNICIPALITIES	AREA	NUMBER OF NEIGHBORHOOD	NUMBER OF HOUSES	POPULATION
BAĞCILAR	22 km²	22	156.000	746.650
PENDİK	203 km²	31	198.000	605.907

Within the frame of an integrated approach, the said project which intends to actuate the zoning and licence processes, includes in general the data management, process improvement, purchase of required hardware and software in relation thereto, consultancy services and development of technical capacity.

Basic components of the project are Reinforcement of the Municipality Data Processing Infrastructure; Arrangement, Collection, Digitalisation, Mapping and Matchup of Address-Based Data (either spatial or non-spatial), and Establishment of Digital Zoning Archive; Improvement of the Processes and Work Flows which are Related to the Zoning and Licence Works, and Their Transfer to the Document Management System (Electronic Document Management System), and Establishment of Call Center.

Project 1

Urban Planning and Structuring Trainings for Disaster Mitigation

Disaster resilient cities are possible only through a planning and Structuring directed towards the reduction of risks which might occur due to natural hazards.

It is not possible to reach an efficient result, unless these needs of cities for social and physical improvement are met with a collective and participative approach.

Since our country is located over a significant seismic belt, the necessity of Safe City Safe Life Trainings comes to the forefront in disaster-resilient urban planning.

We must be prepared to disasters from the smallest to the biggest scale, namely at building, neighbourhood and city level.

The fact that disaster-oriented urban planning approach is new concept in our country brings about the need for informing a number of institutions with the relevant methods and techniques.

Safe life trainings prepared in line with this purpose, were organized separately for three target groups as local administrators, technical staff and community representatives.

The roles and responsibilities that the groups have in regard to disaster resilient urban planning and Structuring has been determinant in the selection of these three target groups.

ISMEP Component C Projects

ARRANGEMENT OF TRAINING ACTIVITIES

PROJECT 1

Urban planning and Structuring trainings for municipalities, directed towards disaster mitigation

PROJECT 2

Trainings for Civil Engineers on the Earthquake Regulations (together with the Ministry of Environment and Urbanization)

ENHANCING TECHNICAL COMPETENCE IN MUNICIPALITIES

PROJECT 3

Making zoning and building license processes effective in pilot municipalities (15 sub-projects)

- Strengthening of the IT infrastructure
- Arrangement and integration of address-based data
- Establishment of document / archive management systems

By the "Safe City Safe Life" trainings put into practice under Component C of ISMEP, awareness of participants has been raised, through the trainings given in the two pilot Municipalities of Pendik and Bağcılar, in regard to disaster preparedness, structural and urban risks, the measures to be taken and duties falling to the municipalities and communities.

Prior to the dissemination trainings held at pilot municipalities, test applications were carried out in both municipalities with one group in each, in order to determine the possible issues in practice and to make the necessary corrections, and the training materials were revised.

As a result of dissemination trainings held with the revised training materials in both municipalities, it has been deemed necessary to share and discuss the regional risks and solution offers at a joint meeting.

Trainings have been arranged in three stages, being planning, application and dissemination.

Planning Stages
- Content analysis
- Need analysis
- Literature scanning
- Partner institutions map

Application Stages
- Negotiations with partner institutions
- Opinion and expectation analysis
- Development of strategy plan and module content
- Preparation of training programs
- Preparation of Training materials
- Training of trainers

Dissemination stages
- Pilot trainings of Municipalities of Bağcılar and Pendik
- Dissemination trainings
- Commonization meetings

Objectives of Trainings

The basic objective of the training program prepared for local administrators is to encourage the participative approach, while conveying disaster resilient urban planning and Structuring principles to participants.

District governors, mayors and vice mayors, directors and the executives of district directorates have participated in the trainings prepared for local administrators, which lasted 3 hours.

In the training program prepared for the technical stuff, the knowledge about nature-based hazards on the residential areas, measures to be taken and policies to be produced against disasters are given.

Trainings make sure that participants comprehend their roles and responsibilities.

The methods and techniques examined are solidified by means of model applications.

Urban Planning and Structuring Trainings directed towards Disaster Mitigation (Safe City Safe Life)

FOR LOCAL ADMINISTRATORS	FOR TECHNICIANS	FOR COMMUNITY REPRESENTATIVES
• Sustainable Development • Holistic Disaster Management • Strategy Consistency in Planning Hierarchy • Involvement in City Management and Planning • Collaboration of the Public, Private Sector and Community • Hazard and Risk Analysis • Risk Analysis Scale and Level • Land Use and Infrastructure • Building Risks and their Sorts • Repair and Reinforcement • Demolition and Reconstruction • Building Control • Residential Usage Licence • Mandatory Earthquake Insurance	• Sustainable Development • Holistic Disaster Management • Strategy Consistency in Planning Hierarchy • Involvement in City Management and Planning • Collaboration of the Public, Private Sector and Community • Risk Factors and Coping Strategies • Hazard and Risk Analysis • Risk Analysis Scale and Level • Land Use and Infrastructure • Building Risks and their Sorts • Repair and Reinforcement • Demolition and Reconstruction • Building Control • Residential Usage Licence • Mandatory Earthquake Insurance	• Natural Hazards and their Impacts on Settlements • Elements forming Cities • Risks in Settlement Areas due to Natural Hazard Sources • Holistic Disaster Management • Strategy Consistency in Planning Hierarchy • Involvement in City Management and Planning • Land Use and Infrastructure • Building Risks and their Sorts • Buildings Seismic Safety • Mandatory Earthquake Insurance

Architects, engineers and urban planners have participated in the trainings prepared for technicians, which lasted 8 hours.

The basic objective of the training program prepared for representative of the community is to raise awareness of participants about the risks of natural hazards to settlement areas and about disaster preparedness strategies.

Citizens, participants from education and health sectors, imams, village and neighbourhood headmen and non-governmental organizations have participated in the trainings prepared for community representatives, which lasted 4 hours.

Main Goals of Trainings

The main frame of the training goals is that local administrators, technicians and civil community representatives are getting informed on the roles that fall to them in disaster mitigation, on the difficulties they might encounter in practise, and the ways to manage such difficulties.

These targets are:

- **Comprehension of the role of urban planning in reduction of urban risks**

This training program focuses on how the urban and structural assessment and strategy development methods and techniques shall be applied in removing the risks that might occur in urban regions due to natural hazards.

Clarification of disaster and participative planning concepts in the Turkish legislation:

This training program shows how to apply urban planning in association with disaster mitigation principles and participation.

- **Formation of synergy among participants**

This training program aims at creating the environment to activate the target mass, with the “creating ideas together” approach.

- **Development of the skill of deciding collectively and applying the methods and techniques**

This training program targets that participants solidify the methods and techniques by model applications during the program, apply them in their daily lives and share them with the people around them.

Results of Communisation Studies for Pendik and Bağcılar Municipalities

- Open area planning/planning of open areas to be used in case of emergency
- Resolving usage incongruities
- Keeping hazardous material warehouses and industrial areas away
- Evacuating gullies, and constructing parking areas
- Emergency access planning
- Reinforcement of infrastructure against emergency cases
- Structural inspection
- Review of former structure inventory, and taking precautions
- Societal training and organization
- Cooperation between institutions and assignment of duties in case of emergency
- Local Action Plan

Basic Subjects of Trainings

In the content of the training program prepared for decision makers and technical personnel, the societal strategies directed towards the risk analysis, disaster mitigation strategies and instruments, usage of urban-scale land, transportation and infrastructure planning, structural-scale earthquake safety, structure inspection, residential occupancy permit, obligatory earthquake insurance and consciousness of safe life, have been addressed. Besides, İstanbul has been dealt with, as an example, in the training of technical personnel; and participant planning approach and the methods and techniques to be used have been examined.

In the training of community representatives, the activities pertaining to natural disasters and their impacts on settlements, disaster preparedness strategies, urban-scale and structural-scale risks in residential places, reduction of damages to occur have been addressed.

By this means, urban experiences of participants have been negotiated, and the methods and techniques encouraging participation have been used.

Training Methods

In the trainings, the training groups, comprised of 4 to 7 people, have been respectively included in the training program; all subject matters have been examined by open discussion and assessment.

Possible scenarios on already planned map sections of the districts have been prepared as sketches, and thus different scenarios have been compared with each other, and participants' physical-spatial abilities have been improved.

Upon observation and field studies (town watching) on the structure block selected for city, current problems have been found, and participants' capacity for resolving such problems has been increased.

Commonization Meetings

After the dissemination trainings carried out each of two pilot municipalities, a commonization meeting was held with representatives of each of 3 target groups for the purpose of sharing that risks and solutions obtained as outputs of training. It is aimed to support interaction and participatory decision-making process with the meeting. With the commonization meetings, the issues identified for regional risks of pilot municipalities were presented; the roles of the related parties and institutions in charge has been clarified.

Hence, it has been targeted that the training program which was carried out in different groups should allow the groups to take common actions by understanding each other's responsibilities and sharing experiences.




The trainings given under the scope of Component C

Knowledge and Skills Acquired with Trainings

In trainings, participants have been targeted to develop the assessment and planning principles directed towards disaster mitigation, to create strategies and policies, to query institutional infrastructure of the urban planning concept for disaster mitigation, to evaluate the risks to arise due to natural risks in the settlement places, to develop intervention techniques, to discuss on the structural-scale measurements and their responsibilities, to be familiar with attended methods and techniques and how to apply them.

Besides the contextual knowledge and skills, the participants shall be able to acquire decision-making skills through the studies based on discussion and negotiation, with open conversations. It shall also be in question to raise their level of awareness on the factors increasing the disaster risk for the structures and uses, which form the urban environment.

Project 2

The Regulations on the Structures to be Built in Earthquake Zones, and Trainings of Relevant Civil Engineers

ISMEP supports the similar national-scale studies, due to its leading position and capacity on the issue of risk reduction in Turkey.

The trainings held with cooperation of the Ministry of Environment and Urban Planning and ISMEP, with the participation of civil engineers from 81 provinces in total, come to the forefront among such studies.

Within the scope of protocol signed by the Ministry of Environment and Urban Planning, on the date 8 June 2007, it has been targeted to train the civil engineers in Turkey on “The Regulations on the Structures to be Built in Earthquake Zones”, as entered into force on the date 6 March 2007.

Since it is required to overcome the lack of knowledge related to the content and application of the said regulations, the training of civil engineers throughout Turkey has been carried out for meeting training requirement of civil engineers within the scope of ISMEP.

In this context, 3631 engineers in total have been trained between the years 2007 and 2012.

Participation of Engineers to Trainings

The Ministry of Environment and Urban Planning has notified the trainings to the metropolitan and district municipalities, provincial directorates of the ministry, and the branches of the chamber of civil engineers, where the training shall be held, through official letter or other communication means.

Basic Subjects of Trainings

- Basic concepts in Earthquake Engineering
- Calculation Basis for Buildings under the Influence of Earthquake
- Ferro-Concrete Buildings under the Influence of Earthquake
- Steel Buildings under the Influence of Earthquake
- Assessment and Reinforcement of Existing Buildings under the Influence of Earthquake
- Masonry Buildings under the Influence of Earthquake
- Examples Part
- Examples for Design of New Ferro-Concrete Buildings
- Examples for Design of New Steel Buildings
- Examples for Assessment and Reinforcement of Ferro-Concrete Buildings
- Examples for Assessment and Reinforcement of Masonry Buildings

Training Methods

Training of engineers consists of 3 phases:

Phase 1
Preparation of training programs and materials

Phase 2
Training of trainers

Phase 3
Country-wide implementation of training program for civil engineers

The trainings have been held uninterruptedly for 3 days, and totally 24-hour training has been provided.

The participants have been provided with all necessary documents which shall be helpful during and after the training, and also with training materials and lecture notes to be used in trainings.

In the applied trainings, participation and negotiation has been encouraged.

The engineers have been informed on the regulation, and their awareness and professional capacity on the disaster damages have been increased.

The training book related to "The Regulations on the Structures to be Built in Earthquake Zones", which has been prepared by the academicians who prepared the training, and which is the only relevant source in Turkey, has been provided to each participant.

On the other hand, the trainers, who shall provide trainings throughout Turkey for extending and maintaining the project, have also been trained.

At the end of 3-day training, the participants have been subjected to the assessment examination.

According to the examination results, the ministry has sent achievement or participation certificates to the participants.

Knowledge and Skills Acquired in Trainings

Increase of the awareness of the trained engineers on the earthquake-resilient life spaces has proved to be one of the main outputs of the training.

In the said trainings, the information on the design and reconstruction, in a way to be resistant to earthquake, of all buildings, public or private, which shall be built in earthquake zones, or demolished and reconstructed, or reinforced, have been conveyed.

Moreover, the rules and minimum conditions required for performance assessment and reinforcement of the buildings before and after earthquake, and the amendments and innovaytions under the new regulations have been forwarded by the competent academicians to the participants.

Stages of Project Conducted in Pilot Municipalities

1 SITUATION ANALYSIS AND EVALUATION (MARCH 2006-JANUARY 2007)	2 DETERMINATION OF PROJECT ACTIVITIES (JANUARY-MARCH 2007)	3 SIGNING PROTOCOLS (SEPTEMBER 2007)	4 IMPLEMENTATION OF THE PROJECT (SEPTEMBER 2007 –MAY 2012)
Zoning and licence processes have been analysed according to the quantity of requested documents, average time, approval number, work stage number, the statuses for compliance with regulations and traceability. Consequently, it has been found that the municipality units internally need to monitor and report the zoning, planning and licence activities and to shorten the long processes. These services have been provided to the citizens in a transparent and accountable manner.	The project activities carried out since 2006 have been determined with the municipalities. Project implementation and budget plan have been established.	The protocols including the project activities, implementation plan and conditions have been signed by and between the pilot municipalities and IPKB.	Technical specifications of the activities determined within the scope of implementation plan have been prepared together with the relevant units of the municipalities and the tender processes have been started.

Project 3

Enforcement of Building Licence Processes in Pilot Municipalities

With the studies carried out in pilot municipalities, the processes of zoning, building licence and occupancy permit has become more effective.

Project Implementation Process

For studies made in Bağcılar and Pendik pilot municipalities within the scope of reformation and actuation of the zoning and building licence processes, primarily the communication with municipalities has been provided and the study which is considered for the said subject has been submitted to the authorized persons.

Thereafter, the authorized persons have been requested to conduct an analysis for their municipalities and with the results of such analysis, both IPKP and municipalities have carried out required situation analysis and obtained data in relation thereto.

Such evaluation results obtained has enlightened the road map to be planned for required works to be done.

The researches made in municipalities, zoning and planning have been conducted with the president or a vice president who deals with technical works, and with data processing and strategy departments. Once the weaknesses of the municipalities have been determined under the guidance of a consultant who is experienced in this field, such weaknesses have been shared with the municipalities, and information has been provided as to which issues shall be given support within the scope of ISMEP.

Accordingly, one each team, comprised of 5 persons each, and another team formed within the body of IPKB , having signed a protocol, have taken the first step of the study to be made on the project for 6 months.

The studies made in the pilot municipalities have lasted for 6 years. Before and after the completion of the studies, survey studies with beneficiaries have been held by a consultancy firm.

In this way, the impacts of the project have been controlled, and such system applied to the pilot municipalities has been examined whether it has achieved success and provided capacity increase.

1-Reinforcement of Municipality Data Processing Infrastructure

both municipalities' existing information technologies infrastructure has been developed for allowing better management of building licence and zoning processes.

Furthermore, for the purpose of fulfilling the project objectives, the equipment required for installation of the software and establishment of the disaster-recovery systems, which are intended to develop IT infrastructure, have been provided.

The Studies Made in Pilot Municipalities within the Scope of the Project

1-Reinforcement of the Municipality Data Processing Infrastructure

2- Arrangement, Collection, Digitalisation, Mapping and Matchup of Address-Based Data (either spatial or non-spatial), and Establishment of Digital Zoning Archive

3-Improvement of the Processes and Work Flows which are Related to the Zoning and Licence Works Transfer of Them to the Document Management System (Electronic Document Management System) Establishment of Call Center

Within the frame of an integrated approach, the project includes in general the data management, process improvement, purchase of required hardware and software in relation thereto, consultancy services and development of technical capacity.

In both municipalities, the principles for back-up, storage and data safety have been determined and implemented.

With such back-up system which is located in a prefabricated structure outside the municipality building, it is expected to overcome any trouble in case of a disaster.

2-Arrangement, Collection, Digitalisation, Mapping and Matchup of Address-Based Data, and Establishment of Digital Zoning Archive

the arrangement, collection, and matchup of spatial and non-spatial address-based data have been implemented in both municipalities.

Enumeration map and address stocks, which are officially used by the municipality, have been made compliant with the National Address Database in central system and the new enumeration regulations.

For allowing quicker access to the archive data of structures, as required in licencing, the zoning/licence archive have been digitalised.

3-Improvement of the Processes and Work Flows of Zoning and Licence Works

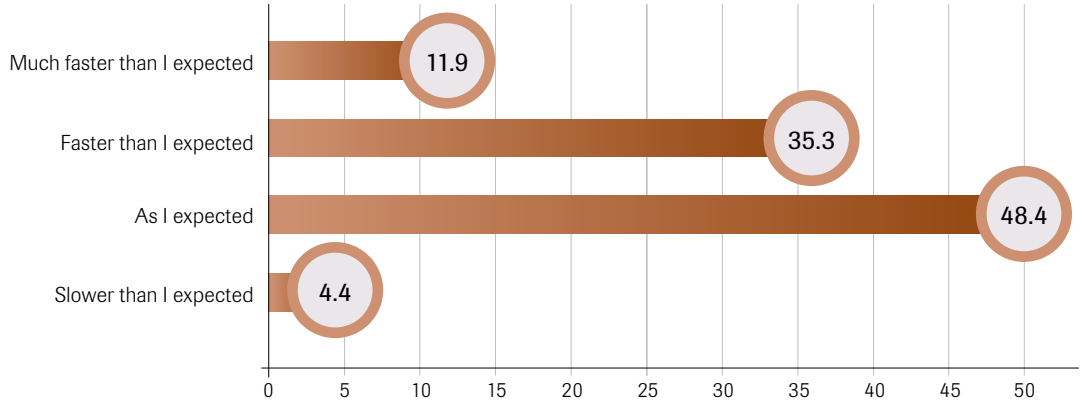
Electronic Document Management System was established which allows the monitoring, recording and reporting of zoning and building licence processes.

Moreover, a communication center and a call center, which are integrated with this system, have been set up for active monitoring of any kind of demand, complaint or application by the citizens.

Thus, the municipality shall be able to respond any kind of citizen complaint and application in a quick and effective manner.

Moreover, a communication center and a call center, which are integrated with this system, have been set up for active monitoring of any kind of demand, complaint or application by the citizens.

Assessment of Transaction Speed in the Web Site



The speed of the transactions made over the web site is above the expectation by 96%

Impact Assessment in the Municipalities

Once the project which intends to provide effective implementation of the structure licencing processes by pilot municipalities within the scope of ISMEP has been applied, some researches have been carried out in order to measure the satisfaction of citizens and to determine project outputs.

In the study in which quantitative research has been applied, face-to-face survey technique, subject to previously prepared question form, has been used as data collection method.

The researches made in order to measure citizen satisfaction and project gains have been reported.

For the report which was prepared for providing a reference point for assessment, 485 negotiations, 385 for Pendik Municipality and 100 for Bağcılar Municipality, have been made.

In the report prepared by participation of the citizens who submitted their complaints directed towards the zoning units, control units, with regard to the issues such as application and/or follow-up of construction/structure licence, obtaining zoning status certificate, application and/or follow-up of residential occupancy certificate, transactions related to the structural inspection, allowance certificate, level determination certificate, business commencement certificate, thermal insulation report etc., reliability level has been determined as 95%, and the tolerance as +/-4.5.

The method used in the survey is as follows:

For selection of 485 persons negotiated within the scope of project, the condition to come personally to the Zoning and Structure Inspection Units for making some transactions has been required.

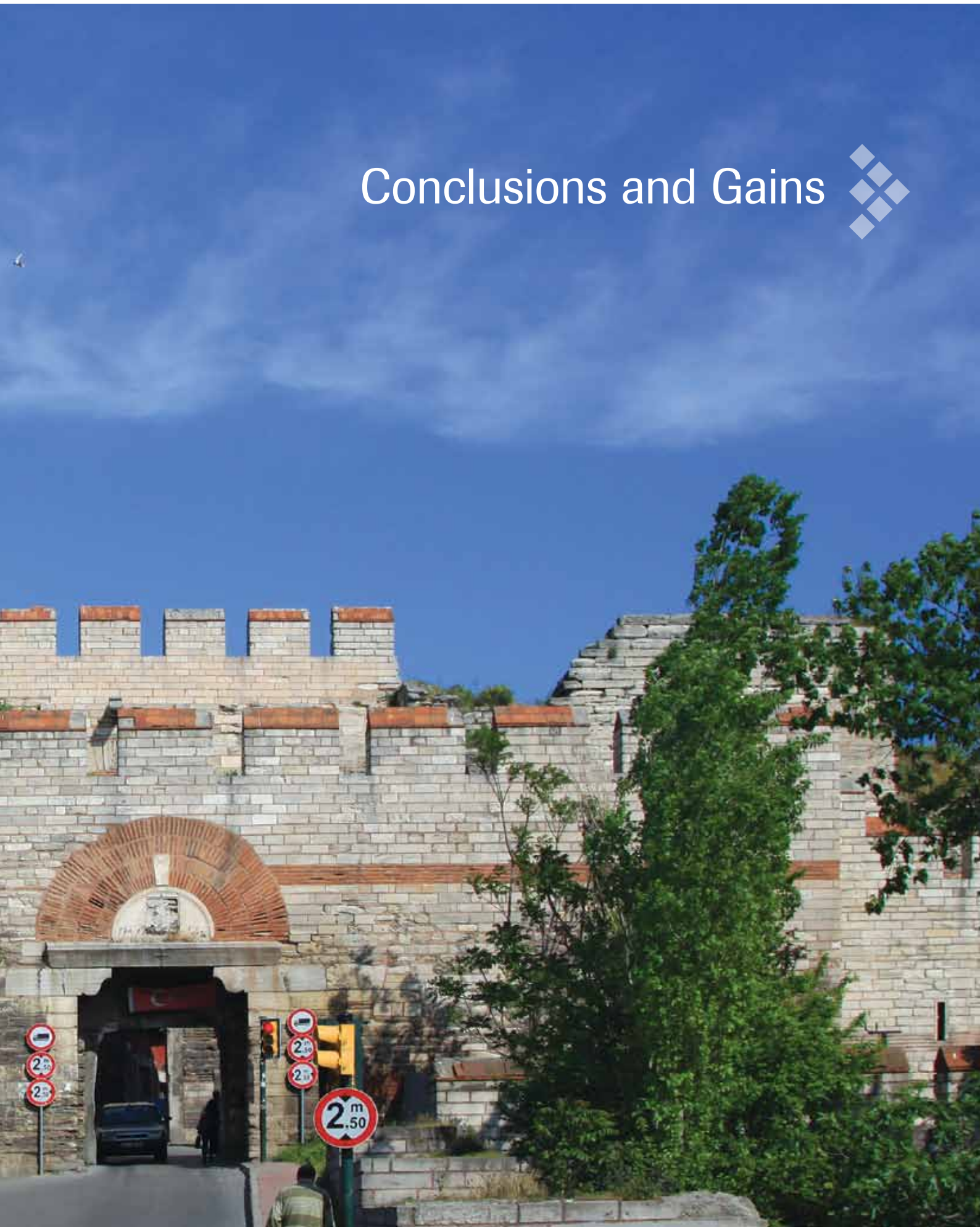
For negotiations, the Zoning and Structure Inspection Units and White Desk areas have been provided with comfortable tables.

The people who have participated in a similar survey within the last 6 months, or who work or whose first-degree relatives work in a survey company, or who have not made any Zoning and Structure Inspection transaction in the past have been excluded from the scope of survey.

Visual design and functionality design of the questionnaire forms which are data collection instruments have been made carrying out pilot studies. Accordingly, information capacity, fluency and comprehensibility of the data collection instruments have been tested.

Mevlanakapı

Conclusions and Gains



Conclusions and Gains

Studies have provided that the municipalities to work systematically, human factor to be excluded, and the public works to be carried out in a faster and more comfortable manner.

One of the major advantages of the project is that the new system enables the rules to be abided by.

The project activities which were initiated in both municipalities in 2006 have been completed on April 2012.

During the studies, the municipality personnel have gained experience on the issues such as regularisation of working processes, transparency, increase of their technical capacity, how to initiate tenders, how to conduct a project from beginning to end, and what project management means.

They have also acquired a holistic view, and begun to work with analytic working view on the basis of a standard, excluding unnecessary processes.

Furthermore, such studies have provided that the municipalities to work systematically, human factor to be excluded, and the public works to be carried out in a faster and more comfortable manner.

Within the scope of the project, it is now possible to share the zoning plans and licences through the internet.

Accordingly, all sub-processes for zoning and structure licence have been improved, and they have become traceable and reportable, and the relevant works and services have begun to be conducted in digital media.

Improvement of the processes and work flows which are related to the zoning and licence works, and transfer of them to the document management system, and establishment of call center

- It is considered that if the application processes and follow-up thereof are digitalised, the process shall be easily audited by citizens and municipality personnel.
- The biggest advantage of Call Center is fast transaction.
- The biggest advantage of the online tracking system is the opportunity to check the transactions made.
- The biggest advantage of the internet site is to make the transactions faster
- The rate of awareness of the online tracking system varies in two municipalities.

Impacts of the Enforcement of Building Licence Processes on Pilot Municipalities

Institutional Impacts

Its importance lies under the usage of many web-based programs within the body of municipality and the consequential security gaps of each gate opening towards internet by means of such programs.

Another measurement taken by the municipality for providing the safety of such data is the back-up system which is one of the conditions of obtaining ISO 27001 Data Safety Certificate.

In case of any disaster or long period power outage, it takes maximum 1 hour for municipality to continue to carry out its electronic transactions.

Before the project in line with the archive within the scope of the ISMEP component C, the technical personnel working with the zoning department used to wait for the delivery of documents by the archive for approximately two days.

After the archive studies, such transaction lasts just for a few minutes, since all documents are kept in digital media and document exchange between departments are easily achieved.

Printing the zoning and building plans to the blueprints at length of meters used to it difficult to store, archive and use them practically in case of need, and it was considerably slowing down the targeted dynamic system.

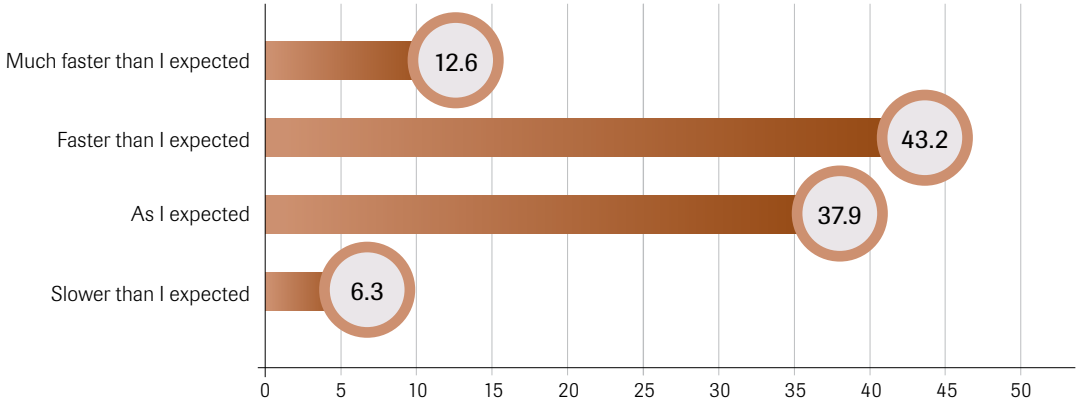
Within such framework, remarkable conveniences have been provided by digitalisation of nearly the whole archive of the municipality.

In consequence of such studies which provided speed and comfort for both municipality personnel and citizens, the people are able to make their transactions on the internet, without the need to go to the municipality building.

All citizens are able to make licence application, and obtain information as to what kind of construction that he/she is entitled to make for his/her own land, without going out of the house.

Program implemented in municipalities, has also succeeded transparency, and allowed the citizens to monitor, by means of a display at the entrance of the municipality building, the directorates' performances for the relevant works.

Assessment of Transaction Speed in the Online Tracking System



The speed of the transactions made via the Online Tracking System is above the expectation by 93.67%

Process analyses have been carried out for improvement of the licence processes, and the processes found unnecessary have been removed.

During the implementation stage of the improvement project, a program that will reporting and assessment/evaluation in municipalities was established.

Additionally, since it can be easily monitored that on which date, by whom, and how long the document has been handled, the circumstances such as slowing the work or the citizen's suffering injustice could be prevented.

As the zoning process accelerated, implementation of the performance measurements has also started.

By means of the new system, workload is distributed among the units and staff has been more productive; it is also provided to more rapid progression of works without control of single person.

The steps such as how long the document is kept for the first transaction, when it is delivered to the directorate, how long it takes for the registrar to debit the document and hand it over to his/her chief, how long it takes for the chief to sign and deliver it to the director, how long it takes for the director to check the document and submit it to the deputy mayor are monitorable stage by stage, and thus, it is possible to evaluate the performance of personnel.

Process analyses have been carried out for improvement of the licence processes, and the processes found unnecessary have been removed.

The new system has proved that some units within the Bağcılar Municipality must be excluded from the work process. Because the system has provided information as to where the works are blocked or slowed down, and such information revealed that some units are no longer required.

Zoning and Licence Processes

1	2	3	3
PREPARATION AND IMPLEMENTATION OF ZONING PLAN	BUILDING LICENCING	INSPECTION OF CONSTRUCTION AND BUILDING	OCCUPANCY PERMIT
Plan amendment File for Proposal to Commission	Zoning status Construction direction/grade section certificate	Building licence Allowance Work completion certificate	Residential usage licence

For example, Project Registration Office in the Directorate of Public Works and City Planning has been removed after digitalisation process.

When the work steps taken throughout the municipality in the old system were 614 in total, such steps were reduced by half to 300 through the new system. Additionally, one of the major advantages of the projects has become providing standardization.

When, in the old system, the name of the documents have been varying according to each directorate within the body of municipality, the new system has provided to gather them under a single name in the digital media.

When one directorate called one document as “receipt”, the other directorate called it as “payment document” or “extract”, but the new system has gathered all of them under a single title, and provided standardization.

Upon the system change, duty assignments in directorates have also been arranged, and the steps such as which work shall be carried out by who and which department’s personnel, who shall be responsible in the absence of those personnel, and who shall be deputy of the director, have been arranged one by one.

All of the employees, from architect, engineer, officer to technical personnel, now have TUBITAK approved digital signatures and they are able to participate in the studies wherever they are in the world.

On the other hand, one of the major advantages of the studies for licence processes has become the prevention of informality.

Impacts on Public and Municipality Personnel

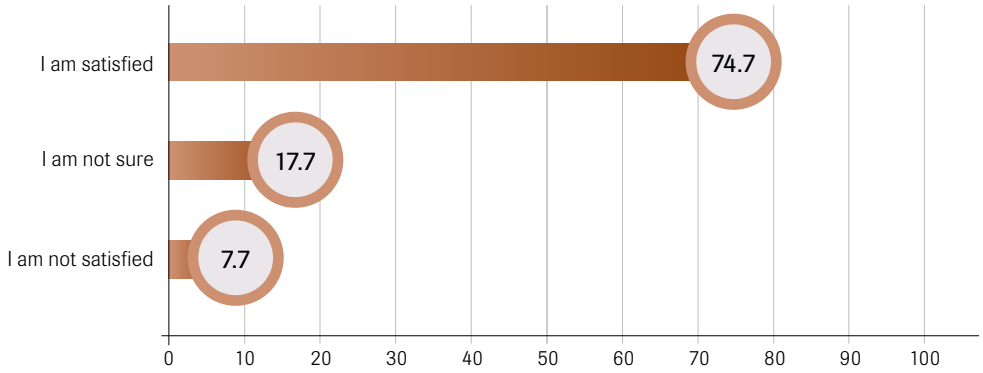
With this project, the load on the citizens, related to the zoning and licence issues, which is the first step for construction of earthquake resilient structures in İstanbul, has been reduced.

The people are no longer required to go the municipality for many transactions, and they are able to do many transactions on the internet, without exiting their houses or waiting in queues.

they can even see the status of their applications, where they are kept and which processes have been applied thereon.

Citizens’ checking the whole processes causes a positive pressure on the municipality personnel, and such pressure becomes effective in acceleration of the work.

Current Status for Satisfaction with the Municipality Services after the Study



In the new system which began to be applied in pilot municipalities within the scope of ISMEP, the information feedbacks to the applications on the licence processes, which are received via internet, are given to the citizens via e-mail address or by mobile phone.

In the past system, it used to take 10 month to receive the application of the citizen, examine the licence, determine the zoning status, complete the zoning status processes and issue the construction licences, but, thanks to the new system, such period reduced to 10 working days.

If all documents are ready, such period may decrease to 10 hours. Such shortened period is entirely the consequence of digital system.

It is possible to make all transactions via computers swiftly and easily, and once all applications have been made on the internet, all remaining processes are transferred to the units within municipality in digital media. Archive scanning is no longer required and the circumstances such as missing documents are not confronted with.

In the new system which began to be applied in pilot municipalities within the scope of ISMEP, the information feedbacks to the applications on the licence processes, which are received via internet, are given to the citizens via e-mail address or by mobile phone.

Such information feedback is besides the opportunity to follow the processes online on the web site of the municipality. Bağcılar Municipality personnel have been provided with, at first, theoretical, then applied training for enabling them to use the new system effectively.

A team organised in the municipalities, has actively worked in all directorates of the municipality, and informed personnel on how the system progresses, and how to use the system..

Positive Impacts of Arrangement, Collection, Digitalisation, Matchup of Address-Based Data And Establishment of Digital Zoning Archive

- Average service period has decreased.
- Whereas the number of problems confronted during services, problem solving rate has increased.
- Protection of and access to personal documents has become easy.
- Office order in the municipality has been remarkably regularized.
- Municipality personnel in charge have been given comprehensive trainings on digitalisation process, and their knowledge and experience level has increased.
- The level of awareness of the services provided through call center, service desk and municipality's web site has increased, so such services which affect the satisfaction levels positively have reached the large masses.

Research shows that the digitalisation of zoning licence processes have affected the service satisfaction positively.

Even though the personnel have learned how to use the system in general, the support team assigned for such duty keeps assisting the personnel on the details of the system.

Furthermore Bağcılar Municipality produces new projects each passing day, in order to enhance the present studies.

One of the targets of the municipality is also to extend the usage of mobile applications for allowing the units such as municipal police officers, and inspection teams, who work on the field, to work more actively.

Objective of such studies, for which a system which enables the team to check instantaneously if the structure controlled is illegal or not might be exemplified, is to reinforce the infrastructure by the aid of tablet PCs for providing the quick monitoring by the teams of such mobility in the region.

Considering the problems which might be encountered with due to digital archive's containing only new documents, the documents physically archived in the past have been integrated with the new system.

In consequence of the licence studies, the people have possessed the opportunity to construct earthquake resilient structures, and to have their certificates under such consciousness.

The municipality is able to follow up whether the licenced citizens have acted during construction in accordance with the principles specified in the licence, or breached the settlement and its plan. The system has a three staged control mechanism.

In controls, thermal insulation of the building and its compliance with the project and zoning plan are checked.

By means of the system, the municipality has much more time to deal with the inspection works, when compared to the past.

Another study made within the scope of the project has become the establishment of a call center.

The citizens who request to submit their complaints in any issue contact to the call center, not to a personnel within the institution, therefore such issues are forwarded to the attendant in the institution by the call center which is an objective and independent mechanism.

Positive or negative results of the assessment made are conveyed by the call center to the citizen who submitted the complaint.

Reinforcement studies for the data processing infrastructure of the municipalities

ASSESSMENT FOR CURRENT STATUS OF MUNICIPALITY DATA PROCESSING INFRASTRUCTURE

- General satisfaction increased by 8.0%.
- Dissatisfaction decreased by half.
- The number of people who have trouble decreased by 18.1%.
- The largest improvement happened in transaction speed.
- When 22.5% of the people encountered with unsolved problem in the first period, this rate now decreased to 7.1%.
- In Bağcılar Municipality, the number of people whose problems have not been solved was 27.5% in the first period, but such rate in the second period decreased to 14.0%.
  In Pendik Municipality, the number of people whose problems have not been solved was 17.6% in the first period, but such rate in the second period decreased to 7.2%
- When the rate of satisfaction with municipalities was on average 66.7% in 2010, it has increased to 74.7% in 2012.
- As the number of people who had trouble during the transaction was 28.8% in 2012, it has decreased to 13.0% in 2012. 2.3% of those who had trouble state that their problem was of digital system based.
- The rate of solving the problems occurred during transaction was 21.8% in 2010, and it has increased to 33.3% in 2012. As the troubles decrease, the rate of solving the problems also decreases.
- Whereas the transaction processes related to the Call Center are assessed, the rate of those who are satisfied with the transaction speed is 93.8%
- When the transaction processes related to the Online Tracking system are assessed, the rate of those who are satisfied with the transaction speed is 93.7%
- Whereas the transaction processes related to the internet site of municipality are assessed, the rate of those who are satisfied with the transaction speed is 95.6%
- In assessment of the criteria with regard to the municipalities, the satisfaction with all criteria has increased when compared to 2010, except the criterion “what was required for my transaction was clearly obvious”.
- Whereas the main dissatisfaction for municipalities was the obligation of citizens to go many units, the main satisfaction is the identity details’ being easily determined for transactions.
- The major expectation is transactions’ being made faster.

Dissemination and Continuity of Component C Studies

Suggestions for continuity of the studies has been formed by mutual interviews with the project stakeholders and by compiling the results of impact assessment studies with the beneficiaries (citizens, technical specialist).

Dissemination and continuity of the Safe City Safe Life Trainings held within the scope of Component C of ISMEP, not only in Istanbul, but throughout Turkey, shall be a major step to establish the view of disaster resilient urban planning and structuring nationally. For such an organization, formation of a unit in every city, which shall plan such trainings in accordance with the specific problems of that city and which shall create the content accordingly, shall provide considerable benefits.

Through trainings, all three groups have become aware of the fact that why the work they have done is required.

Integration of such trainings with the Safe Life Trainings involved in the A Component, through an adaptation study, shall help strengthening the subject's importance in people's mind.

Because, for all trained target groups, complying with the rules is only possible by believing in the necessity of such rules and abiding by them.

The training of civil engineers on the "Regulations on Buildings to be Constructed in the Earthquake Zones" of the Component C, has been found ultimately useful by both trainers and participant engineers.

It is important to dissemination and becoming continuous of the trainings throughout Turkey.

The condition to apply the new regulations has caused the structural inspection firms, which do not have sufficient knowledge on such issue, still demand the trainings.

Such trainings should definitely be provided to civil engineers, as well as executives.

Extension and continuity of the Safe City Safe Life Trainings held within the scope of Component C of ISMEP, not only in Istanbul, but throughout Turkey, shall be a major step to establish the view of disaster resilient urban planning and structuring nationally.

As a result of interviews with the municipalities, it is conveyed the demands from the other municipalities of Istanbul, for the execution of same projects which under the scope of Component C.

The awareness on the importance of this issue must be raised through the trainings in the form of conference, even if applied training is not made.

It is also essential for authorized persons in municipalities, who approve the plans related to the engineering, to be trained and thy must understand the importance of the subject matter.

Other municipalities of Istanbul also apply to IPKB for extending the studies made in Bağcılar and Pendik Pilot Municipalities, within the scope of ISMEP.

the pilot municipalities adapted to the web-based online system are able to handle only the works within their body, and when working together with other institutions, they become obliged to use the previous system.

In this matter, the regulations of Registered Electronic Mail (KEP), as conducted by the state, has been published, and it has been stated that the system should be commissioned in 2013 after it has reached a specific level.

Once this project has entered into force, it shall be possible to extend the system established in pilot municipalities to the all institutions of the country, after many infrastructural studies within the scope of ISMEP. Thus the institutions shall be able to carry out any transaction between each other, by means of an e-document to be sent via internet, instead of sending such documents by courier.

After the studies intended to extend this system, e-mail addresses shall be assigned for the institutions.

"Ceremony of Establishment of the Electronic Document Management System" in Pendik Municipality with the participation of Dear Minister of Industry Nihat Ergün

And such e-mail addresses shall be entered into the State Organization Database where the communication codes and contact details, which are determined according to the hierarchical structures of the institutions and organizations dealing with qualified correspondences, are kept.

In the case of private companies, an electronic-media communication infrastructure is being established through the MERSIS Project which is carried out within the body of the Ministry of Trade.

Given the communication speed and services provided by internet media under present conditions, such innovations draw the attention as necessary studies serving as an investment for the future generations.

Online exchange of official correspondences under a specific standard determined by the state means to get rid of many time-wasting applications and to cover a great distance in terms of transparency, as well as to create a common language between institutions.

Since the digital documents created by the municipality, that is to say the original documents cannot be converted to paper officially, this system keeps on operating in digital media as a system with its essential transparency, without being dependant to the individuals.

As a result of interviews with the municipalities, it is conveyed the demands from the other municipalities of Istanbul, for the execution of same projects which under the scope of Component C.

The extension studies for such project, which has achieved its target and become very successful, cannot be realized yet due to fact that the budget has not been determined.

Carrying out the project in other municipalities in the future shall be definitely useful, and Istanbul requires such project.

Because, in a city which shall consist of disaster resilient structures upoın extension of such studies, possible losses of life shall be prevented and economic loss shall be minimized in case of a disaster.

Furthermore, owing to digitalisation of all documents, illegal works shall be prevented, follow-up of property taxes shall be made regularly, record system shall be improved, and social benefits shall be made more regularly and equally.

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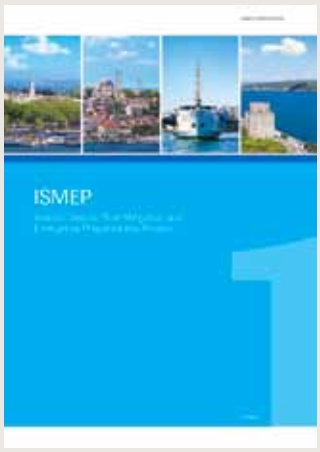

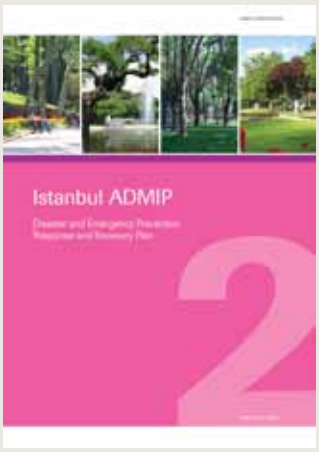

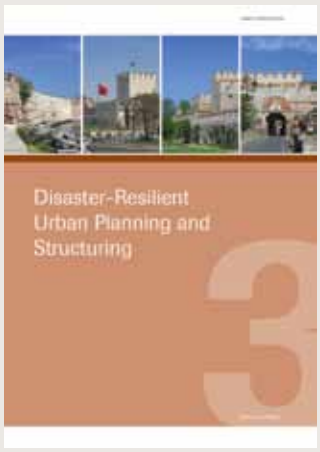

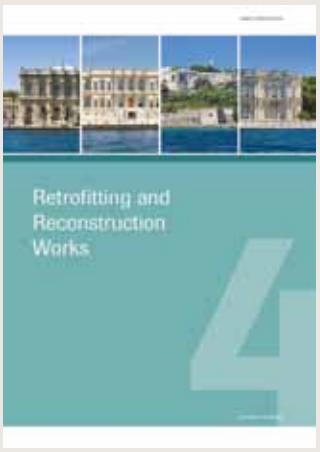

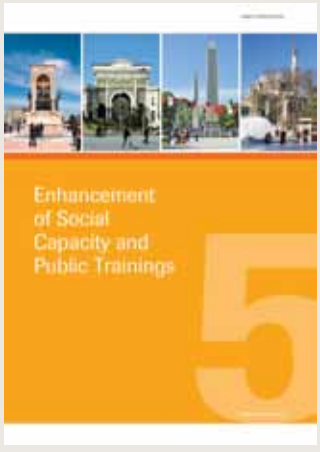

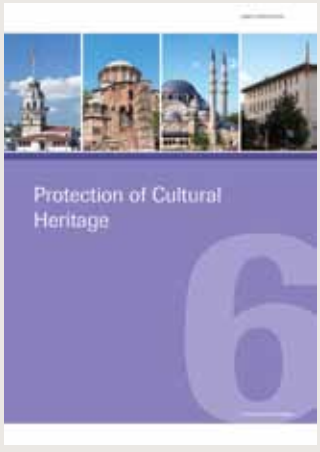

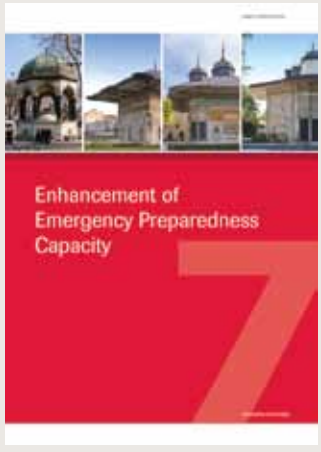

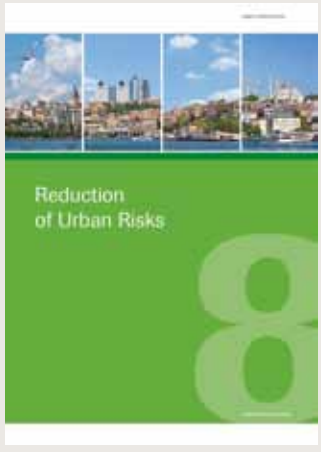

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