

# **Local Administration and Risk Management**

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## **New Approaches in Disaster Management**

The conventional view of disaster management depicts social action and organization as a set of cyclical activities with reference to the periodical occurrence of disasters. In its basic components, this cyclical model consists of 'mitigation, preparation, emergency, and recovery' activities. This model is based on the assumption that some 'empowered and capable agent' could conduct all such activities in sequential order.

Recently, an implicit opposition seems to have emerged concerning the latent assumptions of this conventional model. The conventional view does not only assume a singular and central authority, but also ignores the need to differentiate risk management from emergency management that has distinct technical and administrative tasks, variable in nature and emphasis, at different levels of administration. The alternative approach views disaster (or hazard) policy in terms of 'emergency management' or 'risk management' activities, and relates these two components to different levels of administration.

It is this latter approach that takes into consideration the functional differences of the various levels of administration: 'central, regional, local, and community;' their mode of interaction; and recognition that dealing with 'risk' demands a separate set of expertise, concepts and tools of action. This paper elaborates this new approach in detail, highlighting the characteristics that distinguish it from traditional emergency preparation and action.

## **Models of Disaster Management Structures**

International experience shows that the organization of disaster management systems exhibit a number of alternative principles:

- Depending on the structure of decision-making and the place where initiatives, and/or actions are legitimately taken, the organizational model can be either 'top-down' or 'bottom-up.' The 'top-down'

model, with formal channels of ‘command and control’, implies that the central administration exercises power. This is distinct from the ‘bottom-up’ organizational model in which priorities are identified and initiatives are taken by local communities, groups of individuals and NGOs. The relevance of the latter forms of decision-making have recently been more extensively recognized and expressed. The bottom-up strategy seems to provide more effective results both in mitigation and preparedness. The role of local administrations is of greater significance in this second type of model.

- Another organizational aspect of disaster management relates to the general attitude of administrations and to the focus of disaster-related activities. From this perspective, we can distinguish ‘reactive’ and ‘proactive’ *modus operandi*. The proactive mode relies heavily on local administrations. Mitigation efforts would be effective only if local hazard conditions are determined and measures taken accordingly. Responsibilities and capabilities for the proactive approach must reside within local administrations and communities. In other words, reactive or proactive attitudes have different priorities for different levels of administration.
- Based on the ways power, responsibility and liability are distributed among administrative levels, other models can be identified. In the first model, power and responsibility are concentrated at the center and diminish rapidly as one moves to the outer peripheries of administrative organization. The current structure of disaster management in Turkey is a classical example of this model since the declaration of a disaster concentrates all power and resources under the central government and municipalities are deprived of independent action. The second model, on the other hand, allows for a hierarchical and proportionate distribution of power and liability among different levels of administration. Thus, in the case of a small-scale emergency, only local administration is responsible for responding. If larger-scale disasters occur, the provincial, regional, and central administrations are obliged to take part *pro-rata*, according to the response plans. The same applies to recovery operations. Small-scale damage is to be met by local resources. If the scale of loss exceeds local resources, additional funds from the upper echelons of administration are provided. In this structure, each level has some threshold of power and liability. Mitigation activities could also be envisaged in terms of a cascading arrangement. Individuals will be expected to purchase insurance, and local administrations will be held responsible for mitigation-related public

investment on a smaller scale. The central government will be responsible for the safety measures of large-scale infrastructure systems. Thus, the whole administration is involved in the disaster preparedness and emergency response. The two models describing the above structures are the 'Central Provision for All' and the 'Cascading Thresholds' Model. New Zealand is a good example of the latter model, where administrative liabilities are hierarchically distributed.

- In relation to the distinction between 'central' and 'cascading' responsibilities for administration, the type of interaction between the levels of administration is described as 'coercive or cooperative.' Mandates of central authority in Turkey tend to be coercive since opinion or information from the lower echelons of administration is considered necessary. Cooperation, on the other hand, is a vital condition in disaster management both within the hierarchy and among peers. Administrative power in disaster management is also arranged according to emergency and risk management responsibilities. Authorities and administrations with responsibility for urgent action in the event of emergency are given binding and coercive prerogatives, whereas administrations held responsible for risk management are expected to cooperate with the lower and higher levels of administration as well as with their peers.
- Another concept of operational significance in the organization of disaster management is the standardization of actions and routines carried out by task forces and experts. This method of standardization of tasks, whether in emergency actions or mitigation efforts, allows not only their recognition by administrations and the public at large, and also generates a medium for 'inter-operability'. Inter-operability is crucial in emergencies and in conducting cooperative activities throughout the administrative system.

## **Local Governments and Risk Management in Turkey**

The dual organization of local administration in Turkey, with appointed governors and elected municipal officials, establishes the basis for their distinguished role in disaster management. Provincial governors are agents of the central authority, therefore they perform in-line, coercive functions when managing emergency situations province-wide. This is achieved through power provided in the 'Disasters Law' (7269). Accordingly, the governor assumes every conceivable prerogative to act in extraordinary

situations. The mayor and municipal bodies fall under the authority of the governor under these circumstances.

One would expect that reciprocal power could be assumed by municipalities as agents of city administrations in ordinary times. This is far from reality since risk considerations are not required in land-use planning and building construction according to Development Law (3194). Yet as experience has shown, negligence in development has resulted in massive losses in financial and human terms. A reassessment and reorganization of this system is an essential step for any improvement in risk management. Most requirements for risk management also point to the need to empower local administration.

### **The Development Law**

Changes in the Development Law, introduction of contemporary tools and the establishment of a perceptive functional administration remain central to efforts in mitigation and risk management. Concepts and measures of urban safety, as well as new and extended tools of land use and property management need to be incorporated into the law and entrusted to local administration. Essential changes for revitalized land-use planning are likely to cover the following issues:

- *Microzonation*: Obligation to carry out assessments and prepare microzonation documents, as a prerequisite for planning activities, must be stated in this law. Risk assessment, based on geo-surveys and seismic research, should constitute the basis for land-use allocation and city zoning.
- *Area Classification and Zoning* : The existing understanding of ‘zones’ in the conventional land-use system in Turkey rests on the distinction between ‘non-developable’ and ‘developable’ areas. Areas classified by microzonation studies, as well as land-use zones, have to be incorporated into urban development plans. Areas should be evaluated according to physical development, land use, construction, property rights, taxation and financial incentives.
- *Urban Risk Analysis and Contingency Plans*: Methods of urban risk analyses, distinct from geo-analytic and other natural hazard studies, comprise about 18 different risk sectors, described below. These may require individual and coordinated municipality, governorate private sector and NGO action. Parties involved in each risk sector will have to be encouraged to participate in long term risk management agreements (risk identification, risk reduction, risk sharing) and risk monitoring.

- *Participatory Local Governance:* If sufficiently informed, communities might choose to avoid living with risk. Earthquake and other risks could provide incentives to initiate cooperative modes of risk management. Therefore, it might be feasible to establish more permanent forms of local governance based on such tendencies. Municipal planning activities could receive more support finding solutions might be more innovative if local residents and communities are informed and participate in the physical planning process.
- *Surveys of Building Stock and Supervision of Planning and Construction:* Strict supervision of construction activities has been a priority issue of post-1999 regulations. Both the design and construction of buildings have been targets of special concern and the Governmental Decree of 595 (2000) instituted 'supervision committees' for this purpose. This was a joint task force in cities supporting the municipality and governorate cooperation. This step in the right direction was abandoned, however, with the adoption of Law No. 4708. The conditions and reliability of building stock is a fundamental area of concern for all decision makers. A special mapping of the existing stock, as a reference database, should become a basis for city management decisions such as building permits and taxation. Furthermore, since current supervision is limited to buildings, it should be extended to control planning and implementation as well. Improvements in supervision are necessary for physical development which should be incorporated in the main body of the Development Law as a local government obligation.
- *Action Plan Areas:* Existing residential areas in high-risk zones and areas identified for immediate and comprehensive mitigation in development plans demand special power, procedures and financial programs. Power, other than that provided in Article 18, is needed to accomplish immediate property redevelopment in such areas. Special tools for physical management and extended prerogatives, such as the successive use of Article 18 of the Development Law for property redevelopment, land subdivisions, and reallocation of ownership rights are also needed. Action planning should rely on participatory mechanisms and provide financial resources for social projects with integrated investment programs. Action planning requires direct contact with the subject area and people, and preferably, establishment of a local planning office during the process.

- *General Rehabilitation Areas:* Safer urban environments could be achieved through comprehensive physical rehabilitation and the upgrading of urban areas. Project-based cooperation and partnerships between municipal and private stakeholders could facilitate agreements with the majority of residents in the reallocation of property rights. Special provisions are necessary to enable comprehensive urban transformations where this is allowed or encouraged in development plans. This is particularly important for locations where intensive investment in public infrastructure and urban transportation occur.
- *Risk Assessment and Disclosure:* Existing buildings and property in high risk areas, identified in microzonation maps, should be registered as such in the cadastral records. This information should be disclosed in every transaction. Furthermore, the power and methods for compulsory surveys of buildings, conviction, and for issuing notice (as per Article 39) to demolish construction within a set period of time should be incorporated into the law.
- *Development Rights Exchange or Transfer:* This instrument could be of particular importance in improving safety if included in the Development Law. It allows the reallocation of usage and property rights from high risk areas to safer zones without the pecuniary compensation burden to public administration.
- *Obligations of Keeping City Databases:* Currently, the task of gathering and keeping information for city planning and management purposes remains unregulated. The obligations of creating and maintaining databases by municipalities need to be restated and updated. Data collection and updating should be detailed in law. The coverage, age, statistics, and storage of geographical information and retrieval standards of these databases need to be defined. Plans, as official documents in the GIS format, and responsibility for storing such digital documents should be regulated. The settlement-scale information-base for natural hazards and the spatial distribution of hazard probabilities represent the basic precondition for a risk management approach. This is needed in each city administration. Elected local administrations in particular, do not have explicitly regulated information management responsibility related to land use and settlement monitoring. The informatics of local administration and planning functions require a clearer framework that covers formal obligations, the adoption of new technologies, and rules for economic management. Publicly

owned inventories are not clearly detailed and neither is responsibility for updating and storing them. Retaining the reliability of such records through political changes in administration needs special regulatory provisions. Often the technical personnel of planning offices are employed on temporarily and at low salaries. Job security is also not guaranteed. This generates an indeterminate environment in the recordkeeping of land-use decisions and changes. Both the standards and rules of data storage and the job security of technical staff have to be regulated as a precondition for improvements in the system.

- *Other Required Regulations:* Many additional regulations are needed for risk management in land use and construction. These could comprise ‘Principles of Microzonation,’ ‘Urban Risk Analysis and Preparation of Contingency Plans,’ ‘Action Plans and Programs for High-Risk Areas,’ ‘Standards in Building Performance, Mechanical Equipment, and Furnishing,’ and ‘Safety in Urban Exteriors.’ They could be identified as regulations to be included in the Development Law.

This review of requirements is also an account of the risk management deficiencies within the Development Law. This is not, however, an exhaustive list but only indicative of coverage changes needed for improvement. Secondly, the introduction of risk management practices in local administration does not involve only the regulation of land use and building construction as described within the Development Law. Rather it is dependent upon regulating a broad range of areas, including property taxation and management, building insurance, establishment and operation of voluntary community organizations.

### **Local Administration and the Insurance System**

The current ‘Compulsory Earthquake Insurance’ system has removed the conventional obligation of the state to provide dwellings to every disaster victim. With this insurance system in effect (1999), only households who have insured dwellings are entitled to compensation. An insurance administration (DASK) is responsible for running the ‘Turkish Catastrophe Insurance Pool’ (TCIP). The system functions currently at a high cost since the probability of earthquakes is high, land use and location decisions do not take into account the findings of microzonation, and construction procedures are poorly supervised. All contribute to the intensification of risk.

The Compulsory Earthquake Insurance system is still operating under the Decree of 1999 and is awaiting approval by parliament as a separate piece of

law. The draft law, prepared by the previous government, does not include incentives for mitigation. For this the following provisions should be considered:

- The voluntary purchase of insurance by urban households, estimated at around 12 million, is likely to generate an immense pool that will be sufficient to fund mitigation investments, especially if no major disaster occurs in a decade, no expenditures for guarantee take place, and if the accumulation is revalued.
- Use some of the revenue for mitigation investments, rather than keep it in a reserve for compensation in the event of a disaster. This should better serve the ultimate goal of risk reduction. Insurance income should also stimulate local markets, allowing economies to grow. If 0.25 percent of the income, for instance, is allowed to be channeled into the construction sector in the form of credits for rehabilitation, retrofitting, and replacement operations, starting with the most vulnerable locations and usages, a major expansion in markets would take place. Schools and hospitals as well as infrastructure would probably receive top priority. A part of this special pool could be allocated to private buildings as credits or matching-funds for retrofitting. It would also serve as an incentive to move citizens towards a culture of mitigation.
- Municipalities should be allowed to play an active role in encouraging households to adopt insurance and apply to DASK for credits with specific projects in hand. Municipalities could be entitled to different levels of privilege based on size, ratio of insured dwellings under their jurisdiction, and the feasibility of projects submitted.
- The willingness of citizens to participate in the insurance system would expand provided that allocations by households produce direct benefits to them and society rather than drain to world markets through reinsurance. The overall multiplier effect of the insurance system for mitigation would be greater in economic and social terms. Safety of human life and resources could be obtained at a lower cost. The mechanisms triggered by this channeling of insurance resources to mitigation efforts could give rise to an over-accumulation of benefits in urban risk management in the long run.

### **Property Tax as an Instrument of Mitigation Policy**

Property taxation could provide a useful risk management tool in the encouragement or discouragement of development and land use. This could



be employed to enforce development plan decisions, levy penalties on unauthorized development, and allow exemptions for retrofitting and relocation. Some flexibility should be provided in the Property Taxation Law (1319) to use variable tax rates. Tax collection should be entrusted to municipal administrations. This is currently proposed in the draft Law of Local Administrations. Municipalities will have the authority for selective implementation (e.g. a small rate of variation of +/- 0.20) supported by a special regulation that refers to the microzonation maps.

### **The Law of Cadastral Records and Services (3402)**

Through formal recording of the approved findings of microzonation research, some local social and market effects could be maintained. Disclosure of microzonation maps and development plans, as well as registration of vulnerable zones in cadastral offices could result in a significant shift in property markets, indirectly enabling safer conduct in the long run.

### **Flat Ownership Law (634)**

The Flat Ownership Law, a unique regulation in Turkey, makes it difficult for citizens to manage local residential areas. The law provides a platform for joint intervention by owners and the arbitration of differences. It is also instrumental in responding to the findings of microzonation. According to the law, for interventions in residential areas and in buildings jointly owned and occupied, it is sufficient to reach a majority decision (by member and ratio of property). Substantial investment or revision would require unanimous agreement. Interventions in building structure belong to the latter category, therefore it becomes difficult to retrofit existing buildings, irrespective of implementation efficiency. Currently, the High Court of Appeals is about to decide either to rebuke or accept the existing constraint in the law, generating a rule of principle. It would be better however, to accommodate the provision in the law itself.

A second potential function of this law is the possible extension of its provisions from single buildings to neighborhood organizations and district communities. The capacity of local community organizations and their potential work with municipalities was reviewed within the 'Istanbul Earthquake Master Plan.' But other provisions are also necessary to achieve sustainability in support of local community organizations, their financing and methods of conduct. This is essential for 'grassroots' support of risk management activities as well as improved preparedness.

The range of provisions necessary for instituting risk management capacity in local administration are not confined to those described above, but involve

many other activities. These must be considered central issues in the current preparation of the law on local administration.

Distinct from the spatial distribution of the impact of natural hazards, urban risk needs to be mapped. Urban vulnerability depends not only on the safety conditions and robustness of buildings alone, but on a range of physical, environmental and social conditions. The process of urban risk mapping starts with identification of risks within different causal structures and related areas. This set of risk areas should be integrated into an overall Urban Contingency Plan. This plan should also indicate the responsibility of different agencies and authorities for specific tasks.

## **Risk Identification and Management in Urban Planning (Risk Sectors of Contingency Master Plans)**

### **Macro-Form Analysis and Management**

The following should be clearly detailed in development plans: identification of risks that depend on the absolute size of geographical components, density, and configuration of urban physical forms; assessment of macro-form congruence with microzonation and the structure of primary distributors; estimation of long term growth; and identification of physical development strategies in terms of 'areas to be avoided,' 'expansion areas,' 'intensive redevelopment areas,' and 'action plan areas.'

### **Urban Tissue Analysis and Formation**

Levels of risk relating to local road networks, plot sizes, building forms and ownership need to be assessed to determine patterns. Standards and priorities for vulnerable areas with respect to microzonation should also be identified and improved zoning and building code modifications should be proposed.

### **Land Use Conformity Analysis and Management**

Risk assessment of neighborhoods and buildings, with reference to microzonation findings, is another basic form of urban risk analysis. Building forms and activity patterns, density and land subdivisions, urban services and emergency facilities are further elements of conformity analysis. Improvements can be achieved by such regulations as the designation of transitional and buffer zones, delineation of mixed use zones, and the introduction of automatic control mechanisms.

### **Loss of Urban Productivity**

The seismic vulnerability of industrial enterprises has multiple effects upon post-earthquake performance. Industries will have to be identified not only in terms of locational vulnerabilities and building robustness, but also in

terms of interdependencies, export-import dependence, labor-intensiveness, the seismic vulnerability of technology, infrastructure and transportation dependence, energy-based industries, small and medium-sized industry vulnerabilities, recoverability and insurance. Mitigation methods could range from retrofitting to replacement, technology changes, creation of redundancies, installation of automatic early-warning systems and coordination of industrial units by location and sector.

### **Hazardous Units/ Usage and Reliability Supervision**

Building units and land used to store or process hazardous materials are sources of potential danger to humans and the environment since they can generate secondary disasters. Concentrations of combustibles, explosives, toxins, and radioactive materials should be registered and their likely impacts assessed. Standards for tolerable locations and intensities should also be identified, liabilities clarified and the terms of conduct and methods of supervision specified.

### **Special Areas and Specific Provisions**

Areas of particular hazards such as those in proximity to major faults, coastal strips subject to tsunami or landslide, areas subject to liquefaction and lower basins of dams should be declared high risk zones requiring precautions. Unauthorized construction, building and use must be removed; public infrastructure should be replaced, and the transfer of rights for previously permitted use might be initiated. Special zone designation and priority enforcement are necessary through participatory planning and local actions.

### **Infrastructure Systems and Rehabilitation**

The structure and geometry of networks, materials, construction deficiencies, service area capacities, leaks and service areas are factors that define risk levels. Such information should be evaluated on the basis of microzonation and faults. Long-term rehabilitation programs for each system should identify feasibility-based risk reduction measures such as route changes, retrofitting and technology updates.

### **Building Stock Assessments and Rehabilitation**

The spatial distribution of building stock in terms of age, structure, method of production, use, ownership, plot ratio and architectural qualifications are indicators of risk. Risk assessments are made through surveys. Priorities for comprehensive rehabilitation areas could be determined with reference to microzonation. Public buildings and those employed during emergency services require special attention and retrofitting. Municipal surveys and inspections could lead to public notice for retrofitting and tolerant

retrofitting permissions. Supervision of new construction should be strict and property should exhibit certificates of supervision. Special concessions and support could be provided for collective rehabilitation efforts.

### **Special Buildings/ Urban Environments and Expert Management Assignments**

Risk assessment of buildings and urban areas with historical, cultural, symbolic and aesthetic significance require special skills and attention. Authorities and owners of such buildings will be held responsible for the preparation of retrofitting projects and obtaining technical approval. These types of retrofitting and rehabilitation projects will be sponsored by national and international campaigns and carried out by expert teams with independent budgets. Periodical assessments and long-term supervision will be exercised by a coordinating committee of campaigns.

### **Availability and Provision of Open Spaces**

Constraints will be identified in the availability of undeveloped land and open spaces such as green areas and car parks that could be utilized for a multiplicity of emergency measures. Since deficiencies imply increased risk, constraints have to be removed in line with standards on densities and with reference to microzonation. Allocations will be made to achieve contiguous belts.

### **Emergency Facilities: Internal Safety and Inspection Routines**

Key emergency service units such as hospitals, fire stations and police stations and systems such as road and bridge networks, tunnels and power stations should be assessed for seismic safety and retrofitted. Not only will structural safety have to be maintained, but management standards and routines should be identified, liabilities clarified, and responsibility for periodic inspections assigned.

### **Emergency Facilities: Evaluation of Spatial Distribution and Coordination**

Urban risk is also found in deficiencies in the location and backup systems of emergency facilities. They should be assessed on the basis of microzonation. Deficiencies in service provision increase damage as the result of a disaster. Mitigation could include changes in capacity, improved roads and locational strategies. Coordination and supervision agencies should be identified.

## **Assessment of Urban Management Deficiencies and Training Programs**

Even if all buildings and infrastructure are perfectly located and built, vulnerabilities exist if city administration is not prepared. The correct structure of city administration, existence of risk management units, expert personnel, training programs, appropriate hardware and equipment are essential parts of management capability. Special inter-administrational boards could function as supervisory units.

## **External Factors and Counter-Measures**

Abatement of sabotage, terrorism and organized criminal acts are not only tasks of the security forces, but concerns to urban risk management. Urban systems, emergency facilities, and locations susceptible to such external factors should be warded by spatial design. Vulnerabilities should be reassessed. Joint working teams and cooperation with security surveillance systems should be maintained.

## **Diagnostic and Monitoring of Urban Growth/ Change**

Urban risk distribution varies with the incremental growth and change of cities. According to the occurrence estimates of earthquakes, the future state of urban areas must be predicted and necessary modifications in risk assessments undertaken. The likely benefits of mitigation practices should also be incorporated.

Determining the adequacy of urban systems could be based on earthquake scenarios, enabling a further set of analyses:

## **Simulation of Disaster Situation**

Scenario analyses cannot be confined to an estimation of asset and life losses. In the event of a disaster, there could be a multiplicity of systems failures. Failure of lifelines and access, communications, distribution, rescue and emergency medical aid, space deficiencies for storage and temporary shelter, and bottlenecks in post-disaster traffic could be determined by taking into account the dynamics of interactive city systems. Mitigation efforts should be based on simulations and include relocation, capacity improvements in lifelines, revisions in land use plans, and communications and temporary accommodation centers.

## **Adequacy of Emergency Services and Preparedness**

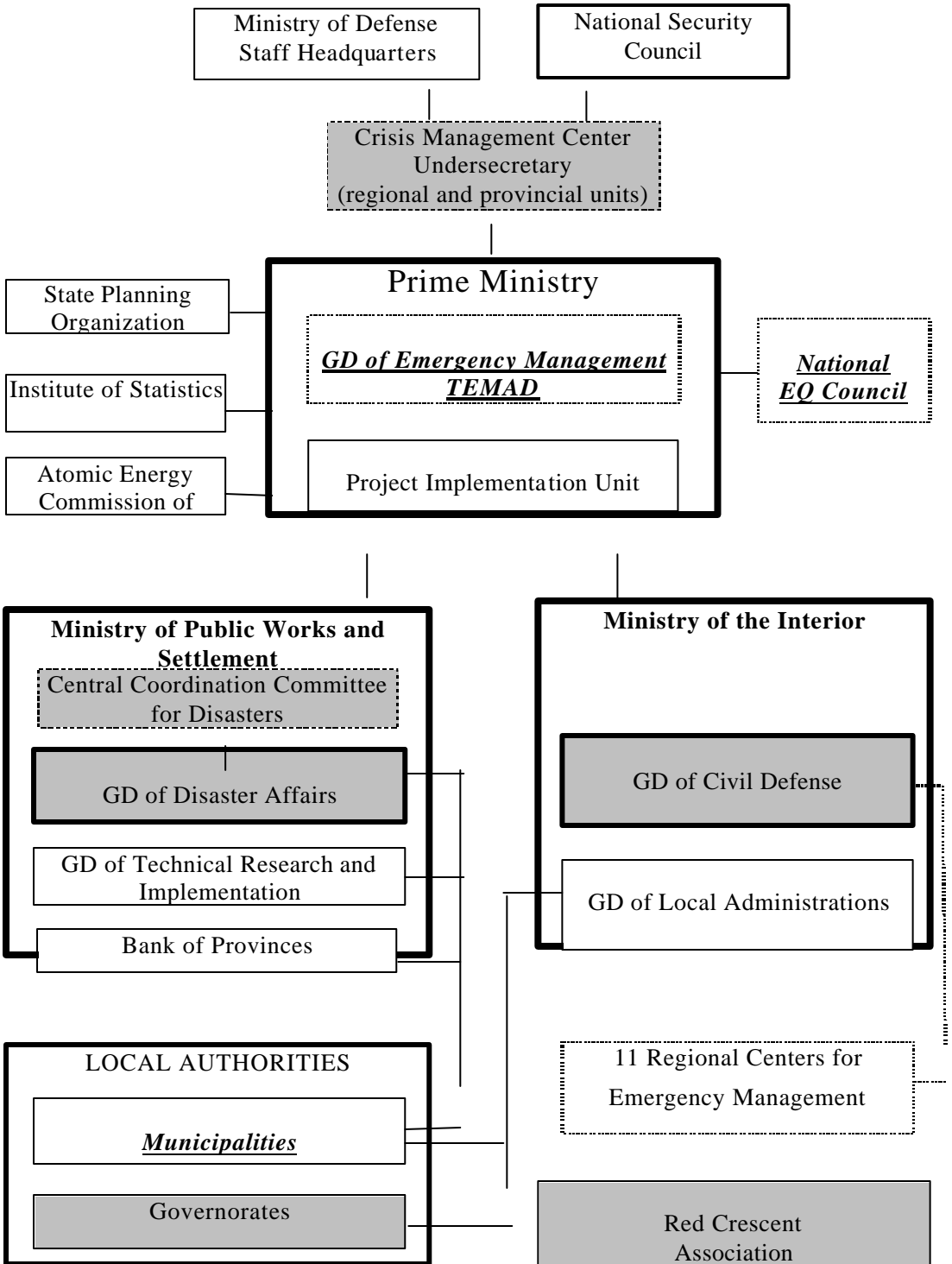
‘Designated’ and ‘voluntary emergency facilities’ (exempted from some city taxes and obligations) are determined with reference to service standards and microzonation findings. These facilities could be scenario-tested for location, access, catchment areas and interactive functioning for

complementary facilities. Priority facilities where excessive service demand is likely to emerge could then be determined as well as where capacity improvement might be needed.

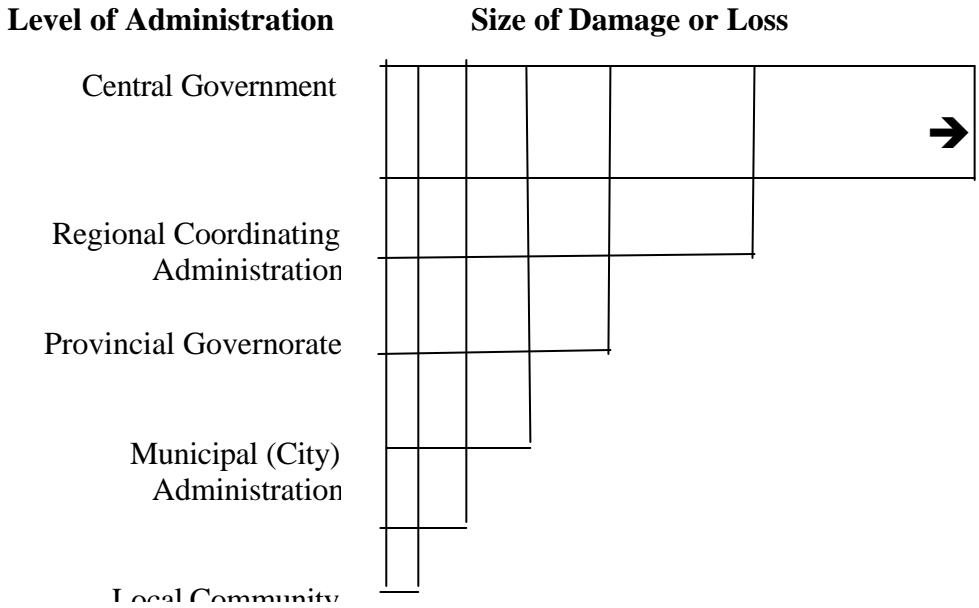
### **Assessment of Emergency Management Capacity and Structure**

Assessment of a city administration's experience in running an 'Emergency Operations Center', evaluating capacities for intervention, and mobilizing manpower and resources to activate emergency plans is another means of assessing vulnerability. The emergency management authority of a city must be capable of handling information, using reserves, coordinating NGOs, running time-sensitive operations and improving coordination for disaster response.

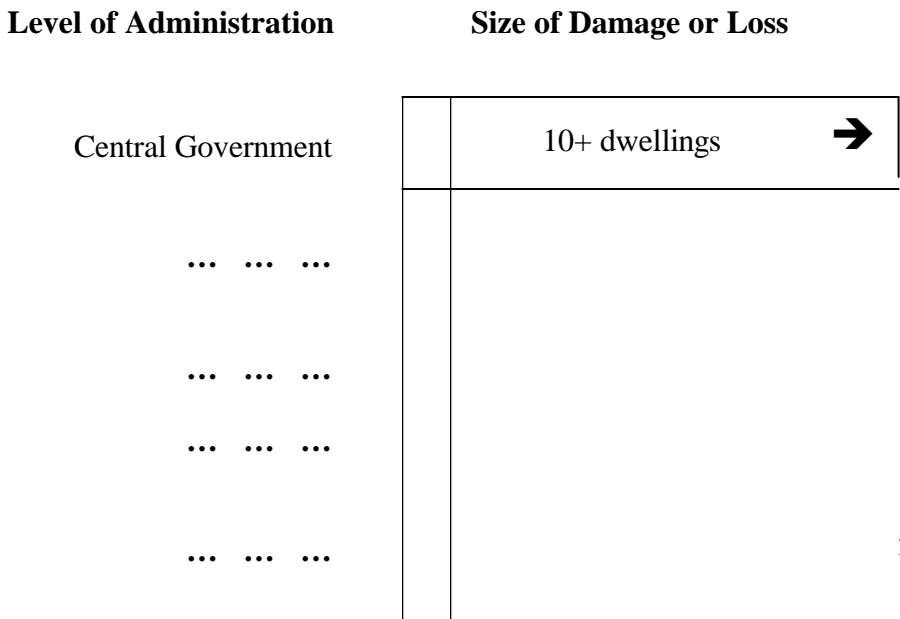
**BODIES INVOLVED IN HAZARDS POLICY**



**THE CASCADING RESPONSIBILITIES / THRESHOLDS MODEL**



**THE CONVENTIONAL MODEL IN TURKEY**





**The Conventional System and Current Legal Provisions in Disasters Policy**

**DISASTERS LAW**

7269  
(1959)  
**MPWS**

**DEVELOPMENT LAW**

3194  
(1985)  
**MPWS**

**ATTENDANT REGULATIONS**

- Emergency Relief Aid and Operations, and Preparation of Management Brief
- Principles in the Determination of Effects of Disasters on Social Life
- Determination of Rights of Victims of Disasters
- Discounts to be Made in the Payment Programs of the Disaster Victims for Buildings Constructed by Public Means
- Principles of Distribution of the Residual Buildings and Property
- Design Principles for Buildings

**ATTENDANT REGULATIONS**

- Uniform Development of Urban Areas
- Preparation, Enforcement and Revision of Development Plans
- Development in Areas where Plan-Making is not Obligatory
- Land Rearrangement Procedures under Article 18
- Authors Eligible to Prepare Urban Plans
- Authors Eligible to Prepare Topographical Maps
- Responsibilities and Liabilities of the Technical Personnel other than Urban Planners, Architects, and

**PROVISIONS AFTER THE 1999 EARTHQUAKES**

**Supervision of Construction Processes**  
(Decree 595;

**Compulsory Building Insurance**  
(Decree 587;

**Proficiency in Constructional Professions**  
(Decree 601; 28.6.2000)

**ENACTED LAW**

Law 4708  
**Building Supervision Law**  
(13. 07. 2001)

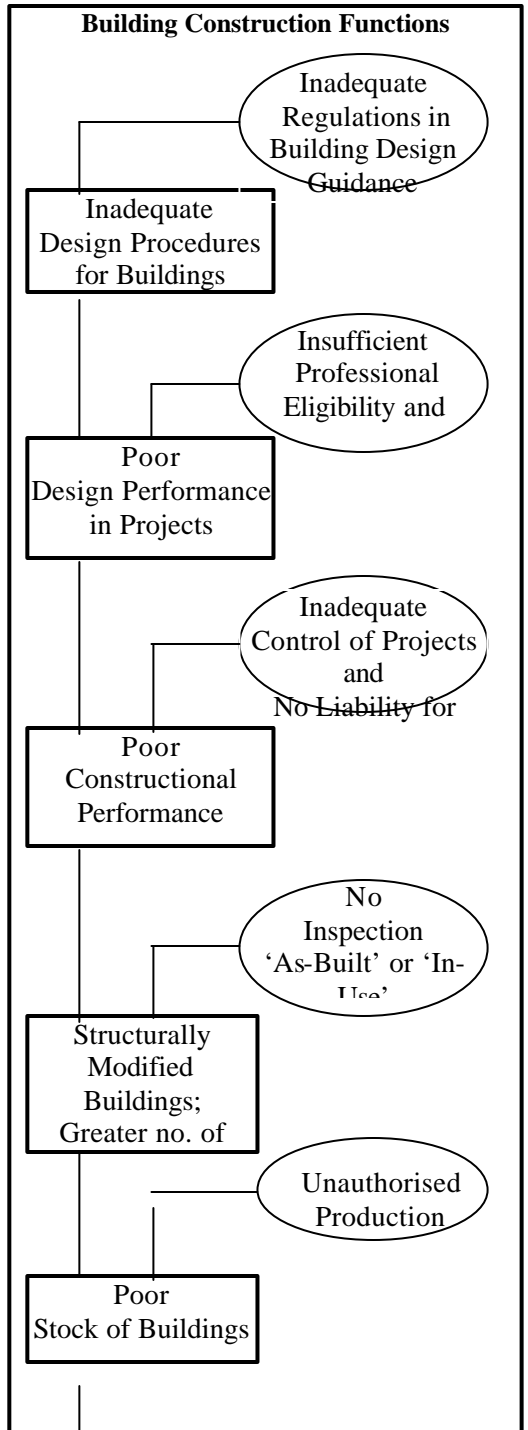
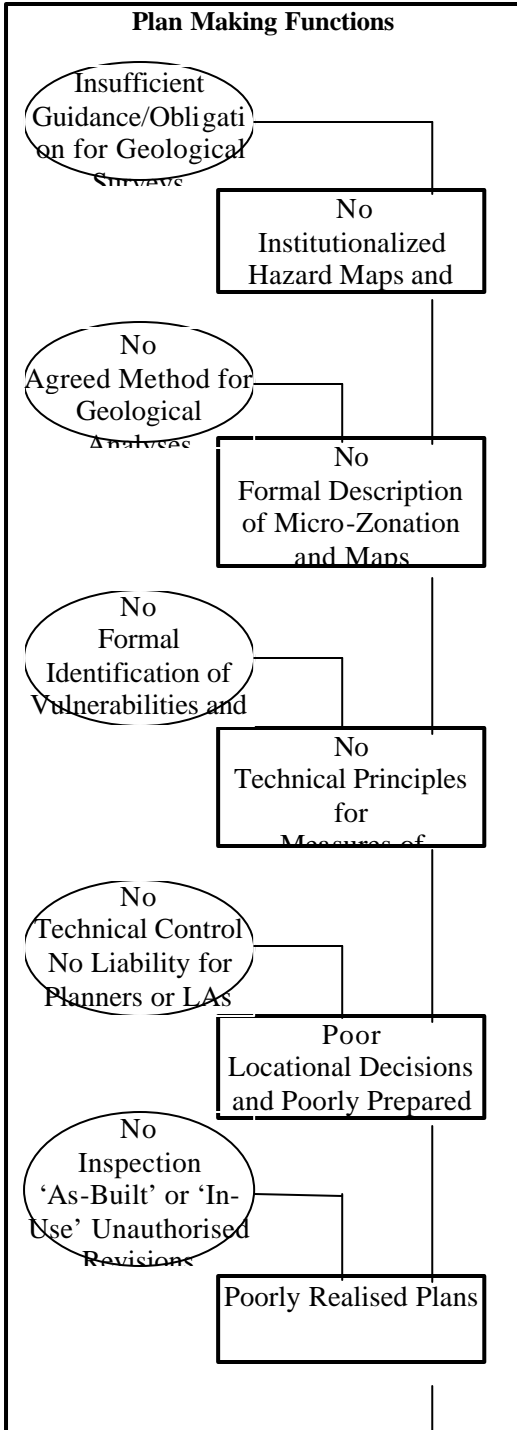
**DRAFT BILLS CURRENTLY IN PARLIAMENT**

**Disasters Draft Law**

**Compulsory Building Insurance Draft Law**

**Development and Urbanisation Draft Law**

**HOW TURKEY WASTED ITS RESOURCES IN THE 1999 EARTHQUAKES**



**18 000+ DEAD; 50 000 PERSONS INJURED and MAIMED;  
 330 000 DWELLINGS and 50 000 BUSINESS PREMISES DESTROYED;  
 13 000 000 000+ US\$ LOSS**

**Risk Management and Planning in Urban Areas**

**Integrated Hazard Maps**  
 natural hazards (ground, surface, hydro/atmospheric systems)  
 chemical, biological, radioactive, explosive, combustible

Information Related to Past Damages

**Microzoning**  
 faults/ seismicity/ accel./ landslides/ tsunami/liquafaction etc areas

- Urban Vulnerabilities Analyses**
- macro-form congruence
  - urban tissue (bldg pattern/density/road network)
  - sources of danger/peril
  - unsafe bldgs (in project/production)
  - infrastructure def. (networking/layout/ materials/ capacity/ production)
  - key elements and bottle-necks
  - open space scarcities
  - admin./management/supervision deficit (responsibilities/liabilities/penalti

**Determination of New Settlement Areas**  
 seismic safety/ accessibility/ size

- Design Standards and Principles**
- fragmented macro-form
  - multi-centered urban structure
  - land use coordination
  - land use - bldg compatability
  - disaster impact analyses
  - open and green areas system
  - accessibility options
  - infrastructure networks safety design

- Contingency Plan**
- Action Area Plan Imp. Zones
  - Special Project Areas

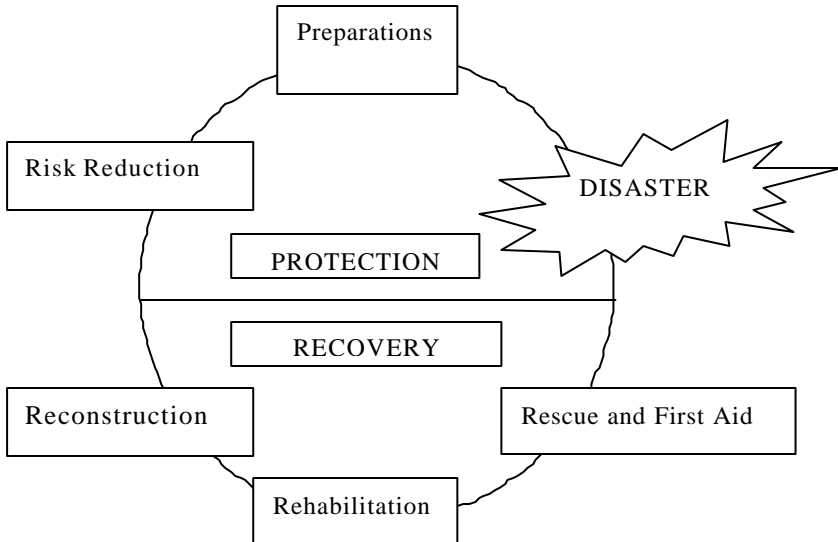
- New Settlement Areas**
- pop., investments, growth progam
  - sectors and labour distribution
  - land use/ transp/ infrastructure pl.
  - physical dev. decisions
  - coordination of public-priv

**Updating Urban Dev. Plan**

- Action Plan Areas**
- action area boundaries
  - participation, finances, enforcement
  - temp.- partial removals/ vacating
  - land use changes
  - lowering of densities
  - continuity in open areas
  - bldg demolition/ retrofitting
  - improving rd systems/caps/ parking
  - infrastruct retrofitting

- Supervision**  
 Local Supervision Comm., Plan and Building Supervision Firms
- design and implement. of plans
  - bldg project and process supervision

## THE CYCLIC MODEL



“Comprehensive Disaster Management” (Telford: 1995)