SEISMIC MITIGATION EFFORTS IN ISTANBUL:
ISMEP Projects Short of Mitigation Planning

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www.iiasa.ac.at/Research/RAV/conf/IDRiM06/

Abstract

Istanbul is but a large pool of urban risks in the face of the impending earthquake. The city provides a unique environment also for economic and sociological investigations in the responses and behavior at different levels of community, local and central administration, as well as interventions of international bodies, prior to this most probable disaster.

Current responses to this potential major hazard in Istanbul fall short of a coherent and logical mitigation method. They either seem to miss the 'loss minimization' objective totally, aiming only at post-disaster emergency management and reconstruction, or in the absence of a competent and capable authority to synchronize mitigation efforts, represent independent and partial projects often of incompatible and contradictory nature. In almost all approaches to mitigation, the fundamental issues of relating activities to a well-structured macro-plan to encompass both mitigation and emergency issues, the task of involving stake-holders and the incorporation of the general public in a mobilization process, and the objective of promotion of triggering self-initiated mitigation processes seem to be omitted.

Observations in Istanbul allow the identification of three distinct approaches: 'technical', 'market', and 'comprehensive planning', each of which does independently claim to provide a sufficient method for mitigation. Yet all seem to have specific drawbacks. The World Bank projects under the umbrella of ISMEP are no exception. The manner these projects are formulated and structured, and currently run reveal serious mistakes in understanding of risks at city level and represent ineffective methods of allocating public funds in implementation. ISMEP needs restructuring in content and in terms of mode of operations.

Intentions

This presentation intends to make an assessment of the Istanbul Seismic Mitigation and Emergency Preparedness (ISMEP) project, based on its declared aspirations, contents, manner of conduct, and likely outcomes. Despite little information disseminated, it is possible to exhibit its multiple shortcomings. This attempt of evaluation could be functional in several ways:

1. A model framework for the evaluation of large scale programs like ISMEP composed of multiple projects could be proposed;
2. Other authorities and modes of evaluation could be encouraged;
3. A better understanding of mitigation at city-level could be demonstrated;
4. Contents and manner of conduct of intended projects could be revised or improved, particularly by developing methods of stake-holder participation;
5. It may be clarified that ISMEP constitutes only of a minute part of mitigation activities necessary in Istanbul;
6. WB may note the circumstances, reconsider the running of ISMEP, and revise its approach in formulating further mitigation projects in Turkey or elsewhere.

The attempt here reviews first the international and local background conditions considered relevant in the evaluation of ISMEP. Secondly, an assessment of the task formulation procedures, structure of tasks, themes and subject matter included and omitted in the agenda, allocation of human and financial resources is reviewed as allowed with the available information. Thirdly, city level mitigation requirements indicated in Earthquake Master Plan of Istanbul (EMPI) are used as a benchmark to evaluate ISMEP projects. Implications of the decisions made in ISMEP are then assessed, focusing on mitigation impact and efficiency in the use of resources. In addition to the superficial nature of information made available, the diagnosis is that we have a project at hand with low effectiveness and level of reliability. This conclusion calls for a set of recommendations.

The Context

Any evaluation would need to view ISMEP within a related context. The relevant background activities and phenomena concurrent with ISMEP could be described as in the following four conditions:

- The global priority recently given to mitigation policies in the international agenda;
- The state of art in risk monitoring at different levels of administration, and city planning;
- The unique condition of Istanbul and approaches to risk determination and mitigation;
- The current efforts of 'strategic planning' in Istanbul.

1. Global Priority to Mitigation:
   Mitigation at all levels is the dominant paradigm today as promoted by international organizations and academic circles since 1990s, which changed the conventional mode of thinking focused on emergency and crisis management policies since 1940s. The scope of mitigation in the new approach is best expressed perhaps in questions directed during pre-Kobe Conference (2005) activities, to the national representatives:
   (a) *Political and Institutional Commitment*: as revealed by legislation addressing disaster risk reduction, incorporation of risk reduction concepts, annual budget allocated for disaster risk reduction, and encouragement and active participation in disaster risk reduction efforts by the private sector, civil society, NGOs, academia and media;
   (b) *Risk Identification Efforts*: as evident in hazard mapping, vulnerability and capacity assessments, mechanisms for risk monitoring and risk mapping, socio-economic and environmental impact analyses;
   (c) *Knowledge Management*: as practiced in risk information management systems, academic and research communities dealing with disaster reduction, educational programs related to disaster risk reduction, training programs, indigenous knowledge and wisdom, and public awareness programs;
   (d) *Risk Management Applications/Instruments*: as implemented through environmental management and risk reduction practices, financial instruments to reduce the impact of disasters, and technical measures or programs on disaster risk reduction.

   Although these questions refer to activities at a national level, similar issues could be rephrased at other (regional, city, local) levels as well. Anti-risk regulatory devices have been a priority issue for a considerable number of countries during the past few years either as new laws or amendments made to existing ones. Among these are USA (Mitigation Law, 2000), New Zealand (Civil Defense Law, 2002), South Africa (Disasters Law, 2002), Australia (COAG Report, 2002), UK (Civil Mitigation Law, 2004), Canada

(Risk Mitigation Projects Program, 2004), Greece (Civil Protection Law, 2003), and others, apart from Japan which had such regulation in effect since 1961.

Following the Kobe Conference, the Hyogo Framework for Action 2005-2015 was announced which gave greater emphasis on mitigation and also in section four of the declaration pointed to the need for 'mainstreaming disaster risk considerations into planning procedures', and 'develop(ing) … tools for the reduction of disaster risk in the context of land-use policy and planning … at the national and local levels' (http://www.unisdr.org/eng/hfa/docs).

Most relevant, but complicated and least studied among those is the city-level mitigation practices. Formal analyses of risks and action for mitigation in cities are the least mainstreamed of measures into the existing systems of city planning or disaster management. It was only recently that the Metropolitan Municipality of Istanbul requested the preparation of an 'Earthquake Master Plan of Istanbul' (EMPI, 2003) from our universities in this country that provided a framework for a comprehensive mitigation approach and gave partially detailed examples.

2. State of Art in City-Level Risk Mitigation:
A second basic condition is that concepts and methods of urban mitigation planning are entirely different from those of conventional building-level risk mitigation. Earthquake engineering has during the past 40 years developed an area of expertise that deals with the risk of building collapse due lateral foces. The city however is not just an aggregate of buildings, but a complex system comprising its own nested sets of 'risk sectors', as well as buildings of various categories to acquire different functions and priorities in the context of urban mitigation planning. Cities are vulnerable therefore in very many different ways, and manifest a multitude of risks.

On the other hand, mitigation is a most relevant and rewarding effort particularly at the level of settlements. Cities as distinct physical systems have their own complex functional integrity, and are subject to failure should any of the sub-components receive a natural or man-made hazard impact. Secondly, cities are usually managed in their totality by an authority explicitly responsible for its functioning and safety. Risk avoidance/ reduction/ sharing as part of such responsibilities is however, a recent awareness, and often an imposed obligation. These are some of the reasons why seismic risk mitigation should be streamlined into city planning functions and must have a formal basis.

Observing the need, Coburn (1992, 150) claims that: "Earthquake protection should be seen as an additional element of normal urban planning. It should not be a separate activity from other planning operations, but rather an integral part of the planning process…" Despite the statement, no specific method of mitigation planning in cities is offered by him in procedural or in content terms, apart from a general indication to a number of related issues like microzonation, building robustness, classification of uses at risk, etc. However, awareness of the immense potential urban planning has for the reduction of risks at city-level is expanding. More recently, Wamsler (2006) indicated that city-level impacts of natural hazards could be worse than in environments of other levels, and therefore urban planning with its existing and potential tools could be developed as a proactive and preventive institution. Yet there are external and internal impediments. Despite the recent international declarations and determination in the new policy of mitigation, many of the international organisations still employ and fund conventional wisdom, depriving mitigation planning from resources necessary for explorations in city-

level risks. Examining the 'perceptions and practices of the international aid organisations', Wamsler concludes that there exists a significant incompatibility between the various professional disciplines. This is largely due to distinct tradition, education, and experiences of these disciplines; different working priorities, different concepts and terminologies, as well as separate legal-institutional structures and financial resources they operate within. It is necessary to 'create new institutional and organisational structures at all levels, which favour integrated risk reduction in urban planning'.

City-level mitigation planning is therefore, universally at the stage of formulation and consolidation in its methods and tools. Experience and know-how related to seismic mitigation at city level is not widely recognized at the moment, nor mainstreamed into the professional modes of conduct and the legal system, despite a number of approaches in this area. Recent attempts to develop methods for city mitigation can be categorised into several groups:

(a) Urban planning services are usually demanded for the post-disaster reconstruction stages and rehabilitation works. Methodological know-how is available in this area, based on case experiences and theoretical discourse (Spangle Assoc., 1991, 1997; Schwab, 1998).
(b) Risk mitigation efforts on the other hand, usually focus at national level policies (Godschalk et. al., 1999). In general, most of pre-disaster management of seismic risks in settlements is either confined to engineering tactics at the individual building level, or to the simulation modeling efforts (as in the case of HAZUS) at system level (Coburn and Spence, 1992; Coburn, 1995). Both approaches represent expert decision-making and monitoring of city systems, rather than community action and local participatory processes.
(c) Another form of pre-disaster monitoring efforts can be identified to fall closer to land-use planning. Burby (1998, 1999) considers that land-use planning could provide sufficient means for mitigation in itself. An approach is to survey and register geological attributes of land and local geographical features to determine the appropriate zoning of uses and designation of types of buildings for safer city development and functioning (Brown and Kockelman, 1983; Spangle Assoc. and Mader, 1998). Thus high hazard zones are not allowed for residential purposes, but buildings for storage or animal husbandry could be permitted, and public buildings and emergency facilities must accordingly be allocated to less hazardous zones. Fault lines must have strips of zones for total building ban, restricted zones relaxed with distance, etc. This approach suffices with an interpretation of the geological attributes, and considers an acievement of seismic safety in terms land-use constraints.
(d) Cases that directly confront the problem of seismic mitigation, and intend to develop methods in comprehensive urban planning (rather than that of land-use planning alone) are very few and recent. Two exercises undertaken by the Columbia International Urban Planning Studio of the post-graduate program, in coordination with other research units, have been dedicated to the seismic problems of highly vulnerable cities of Caracas and Istanbul (Columbia University, 2001, 2002). This approach does not only consider the city systems in their entirety, but also develops a multi-disciplinary framework.

"Elements of a Disaster Preparedness Plan for Caracas Venezuela"
(Columbia University 2001, p. 87)

- Hazard Identification (microzonation)
- Assessment of Critical Assets, Fragilities and Activities at Risk (infrastructure and lifelines, critical facilities, industries)
- Loss Estimation (economic modeling)
- CBA for Optimal Mitigation Strategy
- Risk Reduction Methods (zoning, early hazard warning, improvement of codes, giving incentives, reduction of fragilities, increasing resilience)
- Training Response Teams
- Communication and Education
- Distribution of Risks by Insurance

The Columbia University program, following a research format developed in the case of Caracas city, studied the earthquake prone Istanbul in 2002 with the intention of exploring planning and mitigation processes. The time and data constraints have largely limited the Istanbul analyses, and reduced findings to a set of broad recommendations. Yet there are a number of significant elements within the scope of the study:
i. A post-event analysis focused on a prioritization of 'essential facilities':
- medical, water, transportation, shelter, communication
- fuel, fire, hazardous materials, electricity, food
- reserved space, sanitary facilities

and priority of systems were identified that have specific roles to play as: 'management', SAR, 'law enforcement/security'.
ii. Implications of various macro-urban configurations were explored; centralized metropolitan growth against satellite configuration, and conservation policies were evaluated as alternative strategies.
iii. A sample of local neighbourhoods were investigated with recommendations in infrastructure improvement, urban design, social policies, resistance action plan, regulation of building densities and restrictions, disaster response plans.

Even though the attempts are inconclusive in drawing a methodology for mitigation planning in Istanbul, the approach of the Columbia University is in the necessary direction in formulating seismic mitigation policies at the city-level. Above all, the approach does not fall into the trap of employing building-level risk concepts. Methods of mitigation are considered at city-level. The risk analyses and urban mitigation planning approach envisaged for the Earthquake Master Plan of Istanbul (EMPI, 2003) conveyed here is an alternative perhaps based on a methodology with wider implications (Balamir, 1999, 2001).

Three national reports have been prepared during the past few years in Turkey which contain recommendations and detailed directives for city scale mitigation planning. Together with the experience of EMPI, Turkey has generated considerable know-how in the area that could not be ignored. ISMEP however, seems to refuse this legacy, and avoid consultations with the National Earthquake Council and academia in different disciplines.

3. Approaches to Seismic Risk in Istanbul:

Istanbul is historically at a unique point expecting a scientifically determined major hazard. This provides an environment for social analysis seldom available for observing variable responses and motives of different parties to a potential disaster. Three major fronts seem to prevail in responding to seismic risks in the case of Istanbul: the 'technical', 'market', and 'planning' approaches:

(a) The 'technical' approach would be satisfied with retrofitting projects of individual buildings, singularly an engineering mission. A powerful lobby has maneuvered to attain most of the requirements for a medium congenial to such singular building operations in isolation. For the disclosure of a vast market for retrofitting operations a technical regulation is necessary. Secondly, the constraint in the 'Flat Ownership Law' which necessitates the consensus for major interventions in multi-storey blocks of flats has to be amended. Finally, attractive credits should be available to property owners so that a market for professional services for retrofitting matures. Engineering profession tend to consider city-level mitigation solely as a building-retrofitting task. Around 70% of the building stock in the metropolitan area is unauthorized however, with little evidence of the nature of structural qualifications of buildings, and where therefore retrofitting could hardly be a remedy. Engineering services in city-level mitigation can not be dispensed with. However, the retrofitting operations must be considered within the context of local planning requirements which should take place prior to building-level mitigation investments. In many cases there are economic, social, legal opportunities for urban regeneration processes, and Istanbul is ripe for such operations, promising high feasibilities **(1)**. Yet the alternative strategy of partial urban redevelopment has been explicitly discarded by ISMEP without clear justification.
(b) The technical view could also be accommodated in a wider context entitled as the market approach. This would claim that mitigation investments could only be a function of demand. Therefore introduction of mitigation products in the market like seismic isolators, steel bed frames, early warning systems, emergency devices, robust structures at safer locations, even insurance policies, and many others are essentially devices for the market to take promote mitigation.
(c) The planning approach considers the previous approaches as partial and defective in their contributions to mitigation. The wisdom of the market approach boils down to the protection of the wealthier or hazard-motivated groups only. Seismic mitigation planning at city level is a complex task which requires the analysis of the structure of urban risks to determine 'risk sectors'. As recommended in EMPI, stake-holders in each risk sector have to be identified and their collaboration maintained with protocols. These protocols are to describe the implementation methods of risk avoidance/ reduction/ sharing measures. Mitigation at city level is fundamentally a participatory activity, allowing stake-holders take decisions, rather than passive information receptors. Secondly, it is based on a structure of relations, rather than a compilation of arbitrarily distinct projects.

Any attempt for city-level mitigation has to take into consideration also the nation-wide activities and bodies concerned with seismic mitigation, rather than being confined to the specific circumstances observed in Istanbul. National reports prepared by various working groups, and activities of bodies like the National Earthquake Council, the Emergency Management Directory, the Civil Defense Directory of the Ministry of the Interior could not be overlooked.

4. Planning Activities in Istanbul:
   A fourth condition that we have to view ISMEP with reference to, is the current planning efforts spent in Istanbul. Historically again, the city is undergoing a comprehensive planning exercise run by a largest planning organization this country ever experienced. The Istanbul Metropolitan Planning Office (IMP) has now prepared the 'strategic plan' at 1/100 000 scale. It has formulated macro-level policies, as well as local development objectives. There may be several aspects that this spatial planning exercise has not necessarily fulfilled the procedures and results expected from it, especially in its deviation from EU standards of 'spatial strategy plans' and its confinement in a convential landuse policy approach, rather than structuring participatory processes as envisaged by the State Planning Organization. Still more apalling is the avoidance in its contents of the hazard the city faces, and the articulation of its implications for spatial planning.

   Reciprocally, ISMEP ignores IMP. ISMEP neither has any emphasis in spatial analysis of risks, a consideration of relative locations of emergency facilities, nor a recognition of place attributes. This is totally inconsistent with the intentions declared at the very beginning of the project that ISMEP "aims at transforming Istanbul in the next 10-20 years into a city resilient to major earthquake", and that seeks "improvements in compliance with building codes and land-use plans". Absence of dialogue between the two enterprises and their mutual denial of each others' existence is a historical mismanagement, and represents a golden opportunity missed. In collaboration, they could have generated a more realistic agenda, and provided more effective results with greater enforcement power.

   Viewing ISMEP in the perspective of background phenomena thus provides a sufficiently clear judgement as to its low context-awareness:

   - ISMEP has no references with the new international understanding of mitigation;
   - ISMEP is not familiar with the city-level mitigation approaches;
   - ISMEP is not impartial to the major approaches that takes place in Istanbul;
   - ISMEP has ignored the Istanbul Metropolitan Strategical Planning activities.

   Awareness and responsiveness to the context is a primary objective that any planning activity has to achieve for succesful implementation.

Formulation and Conduct of ISMEP Projects as Compared to EMPI

Although ISMEP claims to take EMPI (as prepared by four universities of Turkey and in interdisciplinary collaboration) into consideration, it is questionable to what extent the project formulation had inherited inputs from it, in the structuring of a family of projects into a comprehensive mitigation plan. In order to assess this feature, a review of EMPI and its approach to city-level risks is necessary:

EMPI was based on three fundamental principles:

- Plans and projects must not be imposed, but must be determined in a process to generate a medium for collective effort and a total mobilization throughout the city;
- Risk sectors must be determined as basic city-level clusters of interrelated risks; Specific projects within a sector are to be determined by the related 'stake-holders', based on an analysis of 'risk factors' in each sector;
- 'High-risk areas' must be identified for immediate special action planning and

investment programs.

Mitigation planning involves risk avoidance/reduction/sharing processes, as ‘risk-sectors’ at city-level are determined. Sectors of risk are distinctly manageable clusters of vulnerabilities at the city-level for which a coordinated action is necessary. Different levels of spatial units (national, regional, city, local) could have entirely different sets of vulnerability and risk definitions, definitely different from risks at the building level.

More than a dozen of city-level risk-sectors have been identified in Istanbul. In each of the sectors a break down of categories and analyses of risks could be carried out. As they are functionally grouped, it is possible to identify common factors that determine risk levels, and parties involved in the making of risks and those that are affected by them. Bringing such stake-holders together, measures for mitigation could be independently discussed and programs determined and implemented though protocols:

- Risks in Macro-Form and Growth Tendencies (settlement configuration alternatives)
- Urban Fabric Risks (building height/proximity, plots, density, roads, car-parks, etc.)
- Incompatible Land-Use Risks (buildings and districts)
- Risks of Productivity Loss (industrial plants, SMOs)
- Risks in the Building Stock, Infrastructure and Lifelines
- Risks in Emergency Facilities and Lifelines (hospitals, schools, etc.)
- Special Risk Areas/ Special Buildings (landslide/flooding, historic bldgs and environs)
- Risks in Hazardous Uses (LPG and petrol stations, chemicals, explosives, etc.)
- Open Space Deficiency Risks (emergency access and storage, temporary shelters)
- Administrative Incapacities (infrastructure/hardware, experts, training progs., etc.)
- External Vulnerabilities and Risks (accidents, terrorism, climatic extremes)

The reason for describing Istanbul by this set of risk-sectors is not necessarily due to some theoretical issue or scientific rule, but the planners’practical action oriented objectives. Not only distinct causality structures prevail in each sector with those parties causing risks and those suffering from them, but also distinct sets of responsible authorities exist in taking action in each sector. It is therefore the intuition to prescribe effective city-level action for mitigation that leads to the identification of these sectors. The purpose is not any different from describing an economy in terms of sectors, whereby webs of activities cluster. It is possible to determine the risk levels in each sector and costs of mitigation efforts so that policy options or priorities could be explicitly evaluated, or alternatively, a most effective line of action as a mix of investments in sectors or sub-sectors could be proposed with respect to a given budget, the latter being the circumstances of ISMEP.

It remains a mystery why in the first place we are given a specific set of projects by ISMEP rather than another; how they are interrelated; why these budgets are allocated; how these projects are to be run, what outputs envisaged, by what means the outputs will be assessed. At the stage of macro-structuring, ISMEP does not provide an optimization rationale of the kind described above, in the use of its budget. Rather, arbitrarily allocated funds seem to take place to various tasks by accidental or external decisions. The questions of ‘whose’ decisions and on ‘what basis’ leads to further questions and to delicate matters which is in contrast to the ‘fair and transparent procedures’ of the WB, and should not take place in spending public money of any order. No authority should be allowed to practice such translucent conduct, capitalizing on the respectablility and reputation of the WB. The project management teams recruited by the WB at local offices are not necessarily experts in risk management to undertake responsibilities concerning the contents of projects or prioritization decisions.

The phases of risk determination and assessment process in each sector in EMPI is envisaged as follows:

- Identify risk components/factors in the sector
- Determine gradations within risk factor and the combined effect of factors
- Identify alternatives and the effective method of mitigation
- Identify stake-holders, obtain protocols
- Integrate all risk sectors in a mitigation plan
- Declare road-map, project packages, and progress lines

To give an account of the method of risk determination and assessment procedures followed in EMPI, analyses in two sectors are demonstrated briefly here, exhibiting the differences of approach with ISMEP. Picking LPG-petrol stations as a subset of the hazardous uses risk-sector, the following steps could be followed: (The procedure is indicated at an aggregate level in **Chart-1;** (*Charts and Figures are given in the ppt file*).

(a) Locational distribution of these units and their impact areas are mapped in the GIS system covering other spatial information attributes. The impact area is determined (r=200m) relying on fatal experiences observed in various cities in this country, which could be calibrated according to the actual storage capacity of the stations **(Figure-1)**;
(b) Stations are then graded based on ground conditions of their sites, greater the risk with higher PGA, and in areas subject to liquefaction, landslides, or flooding;
(c) A second grading is obtained in terms of environmental impacts. This is primarily measured by the number of human lives affected in the neighboring property within the sphere of impact. Other assets like historic and cultural facilities, emergency facilities or lifelines are separately taken into consideration **(Figure-2)**;
(d) A third risk factor is the existence of neighboring hazardous uses which could vary in terms of kind and size, thereby providing another criterion for gradation **(Figure-3)**;
(e) Each gradation is calculated in terms of relative probabilities and estimated economic values (or in numbers as in the case of loss of life); gradations are then determined by the observed distributions rather than pre-conceived threshold values;
(f) This provides an assessment of which factor in a specific sector accommodates greater volumes of risk, and where therefore priorities should be given to; The same method of comparative assessments is available also for inter-sectoral comparisons;
(g) Values multiplied with probabilities provides the common measure to establish the final combined effects of risk-factors, in the case of hazardous LPG-petrol station units, four distinct categories were obtained, and therefore the necessity to respond with a four-fold set of policy preferences **(Figure-4, Chart-2)**.

Urban Planning Policy Options for Hazardous Units:

1. Facilities with Highest Level of Risk:

(a) imposing urgent facility shut down; (b) Enforcing to move to low-hazard areas; (c) Compulsory purchase;

2. Facilities with High Level of Risks:

(a) Incentives for moving to low-hazard areas; (b) Consistence supervision in terms of annual turn-over capacity, total volume and service standards imposed; (c) 300m restriction zone around schools, libraries, historic and cultural heritage, etc.; (d) Higher real estate taxes; (e) Compulsory insurance and contribution to the insurance expenses of all neighbouring vulnerable uses; (f) Regular inspection, shut-down for specific periods and heavy pecuniary penalties for violations;

3. Facilities with Moderate Level of Risks:

(a) Low-capacity storage, and limited transaction volume per month; (b) 150m restriction zone around schools, libraries etc.; (c) Higher real estate taxes; (d) Compulsory insurance; (e) Compulsory contribution to the insurance expenses of neighbouring residential uses; (f) Regular inspections and penalties for non-compliance;
4. Facilities with Risk:
(a) Standard capacity and volume regulations; (b) Declaration and Regular Reporting of Compliance by the Facility Owners; (c) Random inspection and pecuniary penalties for non-conforming management; (d) Consideration of complaints

Policy options could be calibrated again in the medium term, as for the optimal combination of measures. Simpler measures may be adopted if economics of administration and enforcement performance information obtained from implementation prove otherwise in due course. Size of stations is used as a proxy for the size of investment and active work-force representing human life vulnerabilities. Many of the factors could be determined at finer levels as data bases for risk management at city-level are improved and standards consolidated.

To provide yet another example of risk level determination and prioritization of facilities, distributions of hospitals as emergency facilities are given. Further to these however, it may be useful again to observe how inter-sectoral impacts need to be taken into consideration in city-level mitigation work. Schools for instance, in interaction with hazardous uses, or hospitals acquire entirely different sets of risks and opportunities within the emergency system as a whole, than assessed in themselves **(Figures-5 and 6)**. Schools next to hazardous uses will have to be specially taken care of, even if satisfactory levels of enforcement on hazardous uses are maintained. Otherwise, these schools need to take priority in full mitigation work, not confined to a simple retrofitting operation.

If any prioritization is necessary in the case of schools again, many factors have to be accounted for. The EMPI analyses covers:

- ground conditions and locational attributes (PGA, liquefaction, landslide, flooding, etc.) **(Figure-7)**;
- accessibility (lower the accessibility, greater the risk, therefore a priority given);
- size and intensity of use (number of students, hours of daily occupation) **(Figure-8)**;
- existence of neighboring open spaces (lower the availability, greater the vulnerability) **(Figure-9)**;
- neighboring industrial and other uses of nuisance (air and noise pollution apart from probability of hazards) **(Figure-10)**;
- neighboring hospitals or other emergency facilities (therefore a combined use to be considered in emergency)
- the role attributed to the school in the overall emergency plan

According to EMPI, each risk sector demands distinct socio-spatial analyses, and methods of mitigation. These imply the cooperation of different sets of authorities and stake-holders. The gradations explored in the analyses should be submitted to this audience, to obtain collective decisions. ISMEP on the other hand, in its determination of retrofitting the public buildings schools or hospitals, does not have any audience for evaluation, let alone a city-wide context for the purposes. Rather, in the allocation of ¾ its budget to retrofitting operations no specific argument is developed, apart from the implicit objective of pleasing the engineering community. The approach simply decides to retrofit existing buildings that are believed to be elements of the emergency facilities system.

ISMEP has multiple errors as observed in this procedure of structuring multiple projects, allocating the budget to various tasks, and identifying buildings for retrofitting:

- decision of allocating most of the budget for retrofitting individual public buildings has no scientific basis, but obviously subjective reasons;
- reason why only public buildings are considered is the next question; this indicates that the option of including private facilities that may contribute to emergency activities are omitted; the latter could have required only incentives for retrofitting rather than the burden of meeting the whole costs; this could have allowed greater number of buildings be prepared for the hazard with the same budget, and therefore a more efficient use of the funds;
- the actual problem behind these all is the ignorance ISMEP has in city-level mitigation; otherwise a more rigorous approach would not have been contended with the conventional obligations of emergency plan making of the governorate, as dictated by Law 7269, and demanded the procurement of a 'comprehensive emergency plan'. This would have identified the overall system of emergency, all of its elements and complementarity in their functioning, developed its infrastructure and operational capacities. The system could have encouraged private facilities to contribute and take part in the system as well (interesting that this form of privatization is not considered), with strict inspections in all facilities and capabilities, regular training and drills conducted. This is why the 'emergency facilities' system is considered by EMPI as a fundamental risk sector in itself, deficiencies in its functioning means loss of further lives and assets.
- emergency facilities to be retrofitted are arbitrarily determined, not as part of a system but as individual buildings; hospitals, schools and other public buildings are independently determined as if they do not make elements of an interdependent emergency system; examples given above indicate on the other hand, how EMPI had to assess these facilities in an interdependent manner, as in the case of schools and hospitals.
- the prioritization of buildings as exercised by ISMEP exhibits yet another area of misinterpretation. The need to prioritize probably emerged due to the insistence of several authorities demanding their facilities to be retrofitted rather than others. In order to provide an excuse to refuse some of these demands, ISMEP most probably devised this method. It is only possible to make an estimate of the circumstances as no information is made available concerning procedures and decisions; the criteria used for such procedures are highly subjective, and at times deceptive or irrelevant; it remains also unknown upon which expertize the criteria and procedures were adopted during the procedures and decisions taken.

EMPI tends to identify elements of the emergency system as a whole, and based on objective analyses. Picking hospitals as an example from the system, the method of determining vulnerabilities and risks in the system would follow these (simplified) steps (**Chart-3**, at the end of this text):

(a) identification of hospital capacities and spatial distribution **(Figure-11)**;
(b) 5 and 10 minute access catchment area of each hospital **(Figure-12)**
(c) assessment of heavy casualities in each zone
(d) comparisons made to number of beds available **(Figure-13)**

The method allows the identification of emergency service gaps or deficiency levels for the individual hospitals, which constitutes a reliable indicator in itself, as to where priorities

should be given and why existing structures should be promoted for retrofitting and concentratation for additional services demanded. Obviously this is only one of the criteria that we could rely on in determining risks in the emergency system in city-level mitigation. Further to this, decisions and strategies of employing all hospitals as elements of the total emergency system, with other capacities of infrastructural assets, personnel, management capacities, etc. need to be taken all together. In other words, Istanbul needs not only the retrofitting of a few of its hospitals, but an upgrading of its emergency network as a whole with its restructured organization of roles, infrastructural capacities, integrity, and preparedness. We need to determine a plan for this risk-sector itself, set it up, and make it operational.

A fundamental problem with ISMEP seems to lie in the absence of two primary conditions:

- ISMEP does not allow the collaboration of stake-holders;
- ISMEP does not make an integrated city-lvel mitigation planning system.

Despite the statement that ISMEP was inspired by EMPI, the conception and approach to mitigation of the former remains only superficial and is confined to a reproduction of some of the project titles in EMPI, as the program partially deals with only two of the above risk-sectors in the city. A foremost discrepancy between the two is that ISMEP proposes a hierarchy of independent projects, whereas EMPI, based on risk sectors, has an integrated network of risk management tasks. In this sense ISMEP has little contribution to make to urban mitigation planning. Indeed, if using contents of EMPI was a sincere attempt, project authorities could have formally approached to the planners in the EMPI group during the formulation stages of ISMEP. Indeed, the considerable experience and discourse on seismic mitigation of Turkey has been ignored by EMPI. No explanation can be made for avoiding the three National Reports (2002-2003) on seismic mitigation, each prepared with extensive participation. Needless to say, collaborations with the National Earthquake Council and the academia could have promoted a more comprehensive approach to urban mitigation.

A review of the contents and procedures followed in the determination and programming of ISMEP projects, as well as information gleaned from presentations in conferences (this one included), declarations of intention, decisions given on methods, the subject matter of projects tendered, the conduct of tendering processes, results of projects, etc. lead to a number of statements:

Diagnosis

1. Disregard for Tendencies and Concerns of the International Community:
Decisions and choices of ISMEP is not necessarily related to a macro-level discourse, taking into account the international policy priorities, recent preferences and applications in city-level mitigation planning, neither it contains an attempt to recognize the recent efforts of the international academic community in their development of methods for the determination and assessment of urban risks and risk reduction.

2. Short of an Urban Mitigation Plan:
Despite the declarations, ISMEP does not seem to have a vision of city-level mitigation and is not concerned with a methodology compatible with this objective. Mitigation has to rest on an understanding of city-level risks. Risks are spatially distributed and geographically determined realities. Selective attendance to risk-sectors in the city is a major deficiency that could prove self-defeating. To give further examples to those above:

- Most significant is the totally omitted risks in industry and business. It is widely recognized today that resilience of communities largely depends on robust production capacities and trade. Cities with least loss of productive capacity are the most efficiently recovering cities.
- Analyses reveal that secondary impacts of hazardous uses in the city necessitate differential spatial policies, and such uses could challenge many of the retrofitting decisions taken.
- Special risk areas subject to flooding, potential landslides, liquefaction, subsidence, etc. in Istanbul constitute a background to all locational decisions, and therefore of the public buildings' retrofitting as well.
- Istanbul is extremely short of an appropriate network of open-spaces. This is vital for the functioning of the city in case of emergencies and constitutes one of the basic risk-sectors in city-level mitigation planning.

3. Partial Emergency System:
ISMEP does not view emergency facilities as elements of a total and integral system, but aims to retrofit buildings independently. Ideally, the system of emergency management would identify all elements (hospitals, schools, fire stations, storehouses, etc) to cover both public and private facilities that are eligible, appoint them under ad hoc protocols, and regularly supervise them in their coordinated functioning. This coordination has to:

- verify the appropriate spatial distribution of facilities,
- ascribe complementing roles to each facility,
- establish standards in building and internal fittings,
- regulate and enforce facility management rules,
- encourage private facilities to join the system, to be exempted from financial burdens
- describe the functions of the facilities, in responding to various levels of emergency
- test the system and facilities in occasional drills

4. Confinement to Retrofitting:
Spending ¾ of the budget on retrofitting operations in public buildings arbitrarily selected and decisions taken by non-transparent procedures does not make a city-level risk mitigation policy, nor does it make "a new pro-active approach", as stated by one of the representatives of resident staff of the WB during the Conference. Rather, the procedures represent a very biased approach in terms of mitigation methodology, and discriminatory in terms of the uncalled for favoritism to a specific professional community. Direct retrofitting is a least productive investment in public buildings, burying capital in a least efficient mode. Alternative is to trigger self-upgrading processes, changes in uses, or as another contribution in the Conference suggested, the removal of some of the buildings centrally located and sell the highly valuable sites to generate resources for retrofitting others and construct new safe buildings, in the meantime maintaining a more effective total network of hospitals or emergency facilities for the whole city. It may be totally absurd to be occupied with details of prioritization, without evaluating the effectiveness of alternatives at the macro-level network in the first place.

5. Inappropriate Sampling and Case Selection Procedures:
ISMEP seems to have selected the type of facilities to be retrofitted based on an arbitration process between the institutions and bodies involved, rather than on a scientifically reliable method. The same is true for the prioritization of such facilities, based on arbitrary methods and criteria. Sampling rates seem to be inconsistently distributed among types of facilities, independent from the likely effects of the earthquake and geographical attributes. It must be made clear that the total number of public buildings are around 120 000 in Istanbul. The

selection represents therefore a minute part of the system. Yet it is debatable that the most strategic key facilities within the emergency system are selected for retrofitting implementation.

6. Unrelated Projects:
According to ISMEP, 'social research', 'regulatory provision designs', 'public information programs' are treated as extra or ancillary activities to retrofitting of buildings, rather than parts of a combined effort. The purpose, target and contents of social surveys conducted do not seem to be related to alternatives of action. The scope of regulatory devices required are either unclear or repetitions of research already carried out. Information programs envisaged for groups nominated are not part of an integral mitigation program, but incidental. These are likely to bring temporary impacts only. The sum of independent projects of ISMEP does not make a structured whole; projects are not parts of an overarching plan with a rigorous method and scope. ISMEP as a whole is an agglomerate of different views and ideas expressed by others at different occasions. ISMEP does not have a philosophy of its own.

7. Ethics of Conduct:
In the contemporary public administration and policy, a number of concepts and values are universally promoted by the international community. WB is a dedicated and respectable follower of these principles in its running of projects and spending of public funds. However, the case of ISMEP seems to have a number of flaws overlooked:

- *Professional Expertise*: Seismic mitigation in urban areas is fundamentally an activity that demands interdisciplinary collaboration. ISMEP reveals no indication for appropriate allocation of professionals, ignoring respective proficiencies and expertise. In the running of a city mitigation plan composed of a series of tasks of different nature, no planners are included in the staff. Orchestration of various activities particularly demands the expertise of planners' services. Such an exclusive attitude is alien to the nature of the task itself, and denotes professional trespassing. This is a mode of conduct in contrast with the principle of impartiality. Secondly, the 'Steering Committee' designated is not composed of experts in the area, but ordinary officers of the conventional bureaucracy. If this was unavoidable, at least an interdisciplinary consultant group could have been appointed to work with the steering committee. The staff of the WB local unit responsible for running ISMEP is only to function as officers to run the operation, rather give decisions in the contents of projects and prioritization matters. When ¾ of the budget is allocated to retrofitting, it is not surprising to observe that the engineering community is contended and in support of the project.

- *Transparency*: ISMEP requests from the municipalities to maintain "transparent processes for building codes enforcement" in their conduct, but does not in itself follow transparent procedures in the running and management of the project. We should not be in a position to employ clandestine information, for which we could not specify the sources. It is not possible to follow from the ISMEP web site the actual program, the intention documents, information concerning which projects are tendered to whom and which teams, at what budgets and other relevant information.

- *Governance*: ISMEP has a discourse in participatory processes. This remains a lip-service however, as we observe no real action for public participation, or efforts to structure partnerships with citizens and NGOs as stake-holders. Conveying solely selective information to the general public is not a form of participation, neither a commendable form of governance. The "proactive approach" claimed does not even consult to experts in decision-making, but imposes decisions taken by some unknown procedures.

- *Recognition of Local Know-How*: ISMEP has not developed an authentic relation with EMPI in the formulation of its projects neither established any formal cooperation with the academia responsible for EMPI, or the National Earthquake Council. The latter on the other hand, has worked on the subject of mitigation and prepared a publication entitled 'The National Earthquake Strategy', developed methods of urban mitigation, and addressed issues in the protection of Istanbul (2002). Two other local references were the Ministry of Public Works and Settlement national convention publications, and the report of the 'working group in earthquakes' of the Fourth Economy Congress of the Republic of Turkey (2004, 2005). ISMEP projects do not provide a medium whereby some high-tech or esoteric know-how is conveyed from abroad. In contrast, almost all work has to be accomplished based on local know-how.

- *Use and Mobilization of Resources*: ISMEP does not provide an indicator as to how it intends to measure its effectiveness in terms of its own budget, and in terms of the overall mitigation investments in the city. A mitigation plan ought to have further ambitions than these two, and provide an estimation of direct and indirect protection impact in human and material resources, and identify triggered investments in mitigation, in relation to the opportunity costs involved. How are these maintained in ISMEP?

- *Sustainable Impact*: If and when a selected number of buildings are properly retrofitted by ISMEP, it is claimed that some sustainable effect is likely. However this does not represent the notion of 'sustainability' as used in theory and practice, but only limited fixed investments in a minute part of the stock that probably needs structural upgrading. In the first place, some sustainable outcome will be maintained if retrofitted buildings are also efficiently used then after. Sustainable results accrue not by one-time investments only, but with mitigation investments generating self-motivated processes structured into the city system, and a culture of mitigation.

Conclusions

- ISMEP ignores the need clearly expressed by the Hyogo Framework for Action 2005-2015, to reduce risks in an integrated and comprehensive manner, and falls behind the scope and aspirations of the international community.
- Due to its limited scope and conduct, it is debatable that ISMEP uses public resources effectively and efficiently; Mistakes indicated above in the selection of cases, criteria for prioritization, etc. all serve for sub-optimal decisions and consequences.
- ISMEP does not generate a proactive environment because it omits the large interest groups;
- As a corollary, ISMEP seems to generate a pseudo-affect of contentment which is most devastating in social terms. Because it deceptively relieves many of the authorities/ bodies/ individuals who are eagerly willing to transfer the worry to someone else, happy that the problem is taken up by some respectable international body, and ready to forget about their own responsibilities for action.
- For many of us ISMEP, if not a potential disaster itself, could be the disappointment of the decade. In short, we need to 'retrofit' ISMEP.

Recommendations

To avoid or minimize deficiencies in ISMEP, a number of recommendations can be made. It may be timely and wise to:

- Set up a Consulting Committee of experts in mitigation planning; Interrelate and integrate projects under a single system; Consult planners; Discuss issues with academia and the National Earthquake Council; Procure new and complementary projects continuously as ISMEP unfolds;
- Change the translucent outlook of ISMEP; Benevolently provide information about past, current events, and indicate future intentions; Give details of projects so that 'what, when, who, why' should be easily explored; Allocate PR for building up a highly professional web-site for all such information, and provide discussion platforms to allow rigorous use of internet; Program regular public and press information meetings; Prepare information packages for different stake-holders; Turn specific mile-stones in the project into public issue and program events for such points;
- Allow interdisciplinary working habits to settle to interrelate and integrate many of the different projects separately tendered;
- Introduce third party evaluations with every step of the work accomplished; In all cases alternatives must be considered; Most of auditing must be made with peer-group reviews, public inspections, professional evaluation of external experts, etc.; Self-assessment alone should never be practiced; WB personnel, even if high ranking, are not necessarily experts in urban seismic mitigation.
- Encourage systemic and sustainable local authority-citizen partnerships in mitigation; encourage the generation of processes that could be self-repeated; Promote community management processes in local environment;
- Concentrate on encouragement of process-triggering interventions, and making investments wherever greater volume of investments with smaller opportunity costs could be followed.
- Take criticism and recommendations seriously, and respond to them.

Notes

1. The Governor of Istanbul declared on 17.8.2006 that all Istanbul needed to reduce seismic risks was "comprehensive reconstruction and rehabilitation processes". This is ever a first statement by a city authority, recognizing the validity of this alternative.

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Chart-3

DETERMINATION OF CITY-LEVEL RISKS IN THE EMERGENCY FACILITIES RISK SECTOR: THE SYSTEM OF HOSPITALS