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From Emergency Response to Recovery: *Multiple Impacts and Lessons Learned from 2011 Van Earthquakes*

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On 23 October 2011 and then on 9 November 2011, two earthquakes struck the province of Van in eastern Turkey. One month after the first earthquake, between 25 November and 27 November 2011, a reconnaissance team from the Middle East Technical University, Disaster Management Implementation and Research Center (METU DMC) visited the region. The team focused on disaster management activities such as emergency relief, damage assessment, psycho-social support and economic impacts. Field observations and personal interviews concluded that deficits in mitigation led to shortcomings in the response and rehabilitation operations in Van. Although search and rescue activities were evaluated as satisfactory, there were problems in the organization of support services, temporary accommodation, and delivery of basic needs. This paper presents a reconnaissance report outlining the observations of the interdisciplinary team in the field. It suggests some policies for improvement in the disaster management system in the future.

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INTRODUCTION

On 23 October 2011, an earthquake of magnitude 7.2 occurred in Van at 1:41 p.m. (local time). The epicenter was in the Tabanlı Village, which is located to the north of Van city center. The earthquake also affected neighboring provinces Bitlis, Batman, Ağrı, Diyarbakır and Hatay. Two weeks after the first earthquake, on 9 November 2011, a second earthquake of magnitude 5.6 hit the sub-province Edremit at 9:23 p.m. (local time). The first earthquake caused 604 fatalities and the second one ended in 40 fatalities. 222 people were rescued from the rubble after the first earthquake and 30 were rescued after the second. The total number of injured was 4,182, the number of collapsed buildings was 2,265, the number of moderate damaged houses was 10,000 and that of slight damage was 52,000 (AFAD 2012).

SEISMICITY OF VAN

The history of Van dates back to the 10th century (B.C.). It was the capital of the Urartu Kingdom (Gülkan et al. 1978). Assyrians, Cimmerians, Persians, Romans, Armenians, Arabs, Seljuks and Ottomans ruled the city in the past. The region is historically seismically active. Van province is categorized in earthquake risk zone 1 and 2 (Figure 1) according to the official earthquake hazard zone map of Turkey (AFAD 2012). The latest earthquakes that are the interest of the reconnaissance team in this study occurred close to the eastern side of the intersection of two main fault lines, named as the North Anatolian Fault and the East Anatolian Fault (Figure 2). Before the 2011 earthquakes, the last significant earthquake in the region occurred on 24 November 1976 in Muradiye-Van with a magnitude 7.5. There were 5,000 life losses. 9,300 buildings had severe damage. One-to-one comparison of 1976 and 2011 earthquakes cannot be made but it is important to understand and evaluate how the lessons learned from the past experiences in a highly seismic area, have contributed and transferred knowledge to the recent generations to use in disaster risk reduction activities in the region.

Figure 1. Earthquake Hazard Map of Van (Color red: the first degree, color lilac: the second degree). (Source: AFAD and http://www.yerbilimleri.com/wp-content/uploads/2011/11/van_deprem_haritasi.jpg, November 2011)

Figure 2. Maps of Van Earthquake (left) and active fault lines of Turkey (right) (Source: <http://www.britannica.com/EBchecked/media/162122/Map-depicting-the-intensity-of-shaking-caused-by-the-earthquake> ,General Directorate of Mineral Research and Exploration www.mta.gov.tr, April 2012)

A RECONNAISSANCE REPORT OF 2011 VAN EARTHQUAKES

Cuny (1983) states “A disaster should be defined on the basis of its human consequences, not on the phenomenon that caused it”. Disasters have a wide range of effects such as environmental, medical, economic, social, political, psychological, administrative and managerial (Cuny 1983). Each of these effects needs its own mitigation, preparedness, response and recovery planning, which are the phases of a disaster management cycle (Schramm 1991). Mitigation starts with the understanding and definition of existing and lurking hazards. There is a need for an effective planning at the initial stages of a disaster management cycle so that the later stages can be confronted quickly and easily. The combination of science and technology, coordination of all related institutions, and knowledge sharing of scientists and policymakers are crucial to be prepared and to mitigate against disasters (IPII 2009).

Comprehensive and integrated disaster management can be succeeded if risk reduction strategies are well-planned and applied in advance. Disaster management requires the collaboration of various stakeholders and disciplines. Therefore, the reconnaissance team was gathered to reflect the experience on psychology, sociology, statistics/economics and architecture. Field observations and interviews of the team are expressed as a reconnaissance report after reviewing similar literature (Tobriner 2006, Pender 1987). In our reconnaissance study, the preliminary evaluations on the emergency relief activities, damage assessment, psycho-social support, economic impacts and managerial aspects of the Van earthquakes are presented in the following sections. Findings of this study aim to provide broader perspective of disaster management and disaster risk reduction to researchers.

DISASTER MANAGEMENT IN TURKEY AND IN VAN

Natural events turn into disasters when they cause human, socio-economic, cultural, physical, environmental and political losses. If robust mitigation strategies are developed for existing hazards before the occurrence of an event, the impact will be less severe and the response and recovery periods will be smoother. Integrated disaster management involves actions of local, regional and national actors in each phase of disaster management cycle as

touched in various places in (Comfort 2006). The experience of the 1999 Marmara and Düzce earthquakes in Turkey has led to important changes in the Turkish disaster management system. Before then, the system was highly centralized and hierarchical (Gülkan and Karanci 2012). In order to improve coordination of all actors of disaster management and disaster risk reduction, the Prime Ministry Disaster and Emergency Management Authority (AFAD) was established in December, 2009 by Law No. 5902.

Almost after one month of the earthquakes, observation of our reconnaissance team was the deficiencies in collaboration and coordination of the main institutions and NGOs in the region. In Van, the Governor's Office, assigned by the national government and the municipality, elected by the community represent different political opinions. This resulted in deficiencies in the collaboration and communication of these actors. The provincial Directorate of AFAD is officially responsible of all coordination activities in a disaster region and operates under the Governorship by the Law. Since the Governor's Office did not have enough resources to reach out to the villages for help, volunteer municipalities from other provinces in Turkey, initiated the recovery and rehabilitation work in some of the villages. It was interesting to listen to a survivor in Erciş, who stated 'If the community would not be patient and calm, there would have been a social boom. Nobody wants to be rebellious against the government'. In Erciş, another citizen mentioned that after the first earthquake on 23 October, they thought 'there was no State in Erciş, it was only the Nation!' since they observed seventeen different plate numbers bringing aid from all around Turkey in the first week of the earthquake occurrence.

In Van, the second critical issue was the multi-headed approach to manage the disaster, which consumed time, energy and resources. Officially, the institutions responsible for the provision of basic needs and rehabilitation process in Van were:

- i. Van Governorate Crisis Management Centre: deputy governors,
- ii. Erciş District Governorate Crisis Management Centre: district governor and assigned public staff,
- iii. AFAD and AFAD Provincial Directorate (Van AFAD),
- iv. The Turkish Red Crescent Society's White Table: application point for the needs of the survivors, who did not reside in the tent camps,
- v. Temporary Settlement Coordinators: responsible in tent camps,

- vi. The Community Centre and the Ministry of Family and Social Policies: to coordinate activities for temporary relocation of survivors to other parts of the country,
- vii. The Psycho-social Services Association in Disasters (APHB): composed of volunteers to help to organize daily life activities in temporary shelters and to provide psychosocial support.

Most of the time, there was confusion with authorized duties of these institutions. In the Turkish disaster management system, it is stated by the Law No. 5902 that the main body responsible for the coordination of services at every stage of disaster management is AFAD. Van earthquakes became the first major earthquake to test the management capacity of AFAD since its establishment in December 2009. Lessons learned in Van experience triggered a calibration process in AFAD. It is obvious that if a disaster occurs, the provincial AFAD staff will be disaster survivors themselves. They will need time to recover and get back to operation as in normal routine. These staff will be pulled back from duty, and substituted immediately after a disaster by other AFAD experts at AFAD Ankara Headquarters. These experts will be transferred to the region and the provincial AFAD personnel will only support them when local information is needed. Also, trained and equipped staff of neighboring provinces will provide support to the disaster area.

As mentioned before, this reconnaissance report is based on field observations, personal interviews and existing reports in some sections. The following sections present the findings of the team in the headings with their areas of expertise in disaster management.

SEARCH AND RESCUE

The first 72 hours are highly important to reach out to the survivors after a disaster strike. Personal interviews stated that within the few hours of the first earthquake, Search and Rescue (SAR) teams of public national institutions and NGOs arrived to the disaster region. Most of these teams were directed to Erciş, since due to seismological factors, heavy devastation occurred there. 222 survivors were rescued from the rubble in Erciş. SAR operations already ended when the reconnaissance team conducted this study. Interviews with the community and local authorities indicated that Turkey gained a lot of experience and is far better in SAR operations since the 1999 Marmara earthquake. The number of well-equipped SAR teams has increased since then. Despite the minor problems such as two teams

digging the same rubble one after each other, local knowledge was used very efficiently to direct SAR teams to the event scene.

DAMAGE ASSESSMENT AND RUBBLE REMOVAL

Damage assessment and rubble removal are two complementary phases after an earthquake, where operational speed and manpower are needed. Damage assessment is conducted at two stages: the initial and the final assessment. Initial damage assessment aims to provide safety and security. Final damage assessment aims to finalize losses and to collect organized data about these losses. This data is necessary in the claim operations of the insurance sector and in the legal rights of the homeowners.

The interviews and observations on the initial damage assessment after the 23 October 2011 earthquake showed that the assessment seems to be inadequate. This might be the main reason why life losses occurred in the 9 November 2011 earthquake. The collapse of Bayram Hotel in Van city center is an outcome of the lack in initial damage assessment. Some homeowners were advised to return their homes without having time for accurate initial damage assessment due to the large need for tents and also severe weather conditions in the region.

In Turkey, AFAD and the Ministry of Environment and Urbanization are responsible institutions in damage assessment if an earthquake occurs. However, there was a shortage of well-trained technical personnel. This is one of the reasons deterring the speed and coverage of the initial damage assessment. There is an urgent need for these institutions to revise their training materials and to train their technical staff on how to conduct rapid initial damage assessment. Fast, accurate and credible information dissemination is very crucial after a disaster. This did not happen in Van. One month after the earthquakes, in the city center of Van and sub-province Erciř, some buildings were still not assessed for safety and level of damage. One alternative solution for this problem might be to use the expertise of the NGOs. However, in Van case, the decision to employ damage assessment experts from the Chamber of Civil Engineers, the Chamber of City Planners and the Chamber of Architects was made very late. This was an important step to take and subsequently the problems in damage assessment were criticized intensely.

The 23 October 2011 earthquake caused more than 90 buildings to collapse in Erciř. The rubble was labeled (Figure 3) and removal days were announced in the town hall (Figure 4).

Field observations and interviewers indicated that delayed decisions on the rubble removal of heavy damaged and collapsed buildings generated secondary risks for their surroundings. Moreover, some homeowners had to leave Van and could not be at the scene when the rubble of their home was removed. This caused dissatisfaction among survivors and loss of trust in the official announcements.

Figure 3. Labeling of the collapsed building in Erciş. (Source: Authors)

Figure 4. The list of the rubble removal dates in Erciş. (Source: Authors)

PROVISION OF BASIC NEEDS AND TEMPORARY SHELTERING

In eastern Turkey, traditionally families have at least 5-6 members. According to the 2010 census, total population of Van is 1,035,418 (TÜİK 2011). This figure roughly indicates that 170,000-200,000 families could have been affected by these two earthquakes. After an earthquake occurrence, first time in Turkey, a ‘Community Centre’ was initiated to provide quick access for the provision of basic needs. Due to severe weather conditions in the region, families were provided an option of temporary migration from Van to public guest houses in other provinces of Turkey. 150,000 individual applications were made for temporary transfer out of Van. 25,000 of these applicants were randomly moved to state guesthouses or empty hotels on the western and southern coastal cities of Turkey. High-income families left Van immediately after the earthquakes using their own resources. The rest were placed in tent camps, regardless of whether they owned a house or were tenants before the earthquakes.

The very initial need of the community within the early stages of disaster is to have temporary sheltering and to have access to basic needs such as food, toilets, showers, infrastructure, health checks and telecommunication. The Turkish Red Crescent (TRC) sent 75,000 tents to the area immediately and the “tent camps” were settled (Figure 5). Concerning the total tent stock of the TRC, which is 90,000, if another earthquake hit in some other part of the country, it would have been very difficult to response. The type of tents provided was not seemed to be sufficient to use in provinces such as Van because of the harsh winter conditions. Since it was too cold, people had to use electrical heaters, which caused secondary risks of fire, and inevitably many fires occurred.

The aftershocks continued for a while in Van. Therefore, people moved into tents and did not stay in the partially damaged houses, or buildings for which reliable damage assessment was not available. In these conditions, one tent had to be shared by more than one family. The survivors expressed their opinions on the shortage and unsystematic distribution of tents, which decreased the level of trust for state officials.

Additionally, some survivors did not want to move to ‘tent camps’ and preferred to set up tents next to their houses in order to guard and protect their belongings (Figure 6). This was a way to keep an eye on their properties against burglary risk. Also they entered their houses to cover daily needs being aware of the risk of collapse of damaged houses with an aftershock impact. Yet, the families, who chose to live near their homes for security reasons, could not access to free food delivery in the tent camps by the TRC (Figure 7).

At the early stages, 2,000 prefabricated ‘Mevlana houses’ were also constructed (Figure 8). Interviews mentioned that these houses were regarded as a better option compared to tents. However, these houses had isolation problems during cold and rainy days. In the light of these observations, it is clear that disaster and emergency plans should have effective strategies to set up adequate sheltering concerning the climate conditions of the disaster region.

Figure 5. The TRC tent camp (Source: Authors)

Figure 6. Individual tent (Source: Authors)

Figure 7. Food distribution in the TRC tent camp (Source: Authors)

Figure 8. Interior of Mevlana house (Source: Authors)

PSYCHO-SOCIAL SUPPORT

After a disaster occurrence, experts provide support for survivors on their psychological and social needs. They offer a sense of safety, support and knowledge. It is a preventive process for the long-term traumatic effects of disasters. The survivors should be convinced that their emotional reactions are normal and they should learn coping strategies (Karanci and Akşit 2000, Karanci 2009, Karanci 2005). According to the Mediterranean Major Hazards Agreement (EUR-OPA), which was created in 1987, all disaster survivors should receive free and easily accessible psycho-social support. It is important to organize social activities and

meetings for adults and children, where they can share their feelings of the disaster experience. If schools had to be closed after a disaster, there is a need for education centers for kids to continue their education. The main aim of all these activities is to normalize the post disaster environment and to provide avenues for sharing and empowerment.

It is also very crucial to provide psycho-social support to tent camp residents. In Van, interviews showed that the survivors had important problems in adaption to their new lives. They had to live next door to people they have never known before. There were arguments between families for reasons such as garbage collection, noise level and food distribution.

The Association of Psycho-Social Services in Disasters (APHB) is a group of NGOs including experts from the Turkish Red Crescent, the Turkish Psychological Association, Psychiatric Association of Turkey and other institutions. Field observations showed that the APHB teams were very efficient and active in Van following the earthquakes. The APHB volunteers worked for ten days shifts. At some institutions, rotation among staff was very hard to impose, which caused burnout ending in inefficient response to the needs of survivors. Unfortunately, the activities of the APHB were limited only in the tent camps. Psycho-social support was not provided systematically by any other institution than the APHB. As a result, survivors residing in own tents next to their homes and villagers could not be reached. The APHB worked with children of different age groups and female and male survivors with group activities. The APHB experts had very high motivation and were perceived as very helpful by the survivors. The reconnaissance team also observed that the Ministry of Family and Social Policies were conducting a needs assessment survey among the households. It might be an indication that this newly established ministry will have more organized outreach for survivors in future disasters.

VULNERABLE GROUPS

Comfort et.al (1999) suggests “Human vulnerability-those circumstances that place people at risk while reducing their means of response or denying them available protection-becomes an integral concern in the development and evaluation of disaster policies. We must change the policies of today that rely heavily on sending assistance only after tragedy has occurred.” as cited in Pelling (p.59, 2003). Enarson (2000) and Pelling (2003) list ‘Woman at risk’: Poor or low-income women; Refugee women and the homeless; Senior women; women with cognitive or physical disabilities; women heading households; widows and frail elderly women; indigenous women; recent migrants; women with language barriers; women in

subordinated cultural groups; socially isolated women; caregivers with numerous dependents; women in shelters; women subject to assault and abuse; women living alone; chronically ill women; malnourished women and girls; undocumented women. These specific groups were all observed in Van. They were vulnerable and in need for urgent help. The reconnaissance team noted that there were a lot of widows, elderly, youngsters and orphans left alone after the earthquakes. The way to help to these vulnerable groups should take place in preparedness/mitigation plans.

In Van, there are multinational immigrants from Azerbaijan, Iran, Tajikistan and other countries. The UN Refugee Agency defines the city as the meeting point. These immigrants also got severely affected from the earthquakes. The loss of their homes, jobs, properties, family members made their lives more difficult after the earthquakes. The deficit for a policy on how to respond to immigrant's needs was obviously there and needs to be solved for future disasters.

ECONOMIC IMPACT

There are 81 provinces in Turkey. In terms of development, Van is ranked 75th with 859 USD GDP per capita. There is a significant level of unemployment with 15.6% according to 2009 statistics by the TÜİK. The total economic damage of Van earthquakes are estimated as single digit billions USD by EQECAT (2011). This is almost 1/10 of the losses due to 1999 Marmara earthquake (total losses of \$16-20 billion). As a response to the direct impacts in the immediate aftermath of the disaster, the government implemented some incentives. For instance, after the earthquakes, it was announced that the merchants, who were affected, could withdraw one-year no payback, three-year no interest credit. The government spared a total sum of \$150 million for this loan. The electricity bill debts are called off for one year until the fall of 2012 for individuals. The electricity bills for the tent camps are covered in full by the AFAD.

At the end of the earthquakes, there were a total of 35 container towns having a total of 30,000 containers and 175,000 inhabitants. The government spent a total of \$240 million for the establishment of container towns, in which people were transferred from tents and other temporary emergency shelters. The electricity expenses had a total sum of \$78 million. The government supported the reconstruction of twenty five schools, twenty three shopping malls and twenty four mosques. In the city center and sub-provinces, government provided incentives for permanent houses. The replacement cost was \$62,000, where \$43,000 was

required from the house owner and rest would be covered by the government. The payment method is decided as twenty-year interest free pay back, with no payment in the first two years.

Concerning the insurance losses, the estimation by EQECAT is approximately \$100-\$200 million. After the 1999 Marmara earthquake, the institution of mandatory earthquake insurance scheme, requiring each urban homeowner to join the Turkish Catastrophe Insurance Pool (TCIP) was a major move for distributing risk sharing and increasing community awareness (Gülkan 2009). The Turkish Catastrophe Insurance Pool (TCIP) received 8,232 compulsory earthquake insurance claims as of 4 May 2012 due to the Van earthquakes. As a policy, it decided to continue offering compulsory earthquake insurance in Van and its subprovinces following the earthquake of 23 October 2011. When the November 9 earthquake occurred in downtown Van, most of the buildings with damage at various levels got affected. So, the TCIP started receiving frequent claims. The obstacle in the handling of claims was observed as the lack of information in the community about the legal issues of the compulsory earthquake insurance payments. At the Community Centre, where people would apply first, there was no representative of the TCIP to response to the questions of the policyholders.

Another economic aspect of disaster is to conclude 'Disaster brings opportunity'. The main question is 'Who benefits from this opportunity?' After the Van earthquakes, shopkeepers increased the prices of their standing goods. Institutions started employing temporary workers to distribute food and to help in the tent camps. In a disaster situation, it is important to identify who could get worst affected from the new economic conditions. It is highly suggested that the government should be in coordination with the private sector and NGOs to help the community to get back to their pre-disaster or even better economic conditions. If this is not succeeded, the existing poverty of Van will get much worse after the earthquake occurrence. If poverty continues, Van gets more vulnerable for future disasters and higher losses are inevitable.

Interviews also revealed that 'black market' started in Van following the earthquakes. Many outsiders moved to Van to take advantage of the aid distribution. Robberies occurred because of the lack in security. Homeowners waited on parole at nights and shot in the air to scare off the thieves themselves. One of the main reasons why there was not enough police or military forces to control the area after the earthquake occurrence is the political sensitivity

of the Van province. Various ethnic groups live in Van. As mentioned previously, the opposite political views of the Governor's Office and the Municipality caused non-collaboration. The situation was therefore sensitive in a way that a little spark could initiate clashes within the community.

CONCLUSION

Deficiencies in the management of disasters, which result in socio-economic, demographic, environmental, political and cultural losses, raise questions. Authorities, who cannot protect citizens' safety and security, become the target of legitimate criticism and are blamed for being irresponsible. This was observed after the Van earthquakes. There was an obvious decrease in trust and confidence in the government.

During the post-disaster period, safety and security problems occurred in Van and sub-provinces. In case of any future disaster, mitigation plans should include how safety and security issues are embedded in response and rehabilitation operations. As observed during the study, the secondary risks following earthquakes, such as fire and threats from rubble, should have also been prevented by taking necessary precautions.

Insufficient organization and scarcity of technical systems and professionals in rapid safety assessment caused failures and even more casualties during the second earthquake on November 9, 2011. This is a lesson learned and should be transferred into practice in terms of redevelopment and enhancement of post-disaster safety assessment systems. Structural safety is a key issue in Turkey. The Van earthquakes urged for the need of urban transformation to diminish highly vulnerable buildings. The Ministry of Environment and Urbanization is the key responsible ministry for collaboration with other institutions during the urban transformation. It might take some years to succeed; however, it is not impossible and can be accomplished with a strong political will.

Disaster management needs 'actors in action'. These actors are individuals, NGOs, scientific community, multilateral and bilateral institutions, private sector, local institutions (governors, mayors), and government and multi-actor initiatives (Pelling 2003). They need to work and act together for effective disaster management throughout mitigation, preparedness, response and recovery/rehabilitation stages. The lack of cooperation and coordination among institutions after the Van earthquakes was sad to observe but turned into another lesson not to repeat again in case of future disasters.

Disaster management is a multi-disciplinary and multi-component system. If one of the components of the system fails, all gets affected and the failure spreads over the system. The Van earthquakes revealed existing deficiencies in disaster management. Although it was historically well known that the region was seismically active and vulnerable to earthquakes, the failure of the physical environment could not be prevented. A recent study of Eastern Anatolia Development Agency Report (EADA 2011) indicates the seismicity and seismic risks of Van. This report could have been used as a guideline in development planning. Urbanization can cause socio-technological and man-made hazards. Therefore, risk reduction initiatives and activities should be based on mainstreaming disaster reduction for future development in Van.

In Turkey, the standard procedure in the post-disaster time is the development of resettlement and relocation projects. However, many times, these projects create other problems such as adaptation, economic and socio-cultural issues among the survivors. Therefore, community participation is vital during post-disaster rehabilitation and reconstruction projects to keep sustainability and resilience.

The survivors of the Van earthquakes would like to learn about their legal rights if they lose family members, salary and belongings. Interviews during the field visit revealed many questions in the community on legal issues. Yet, there was shortage of experts located in Van to answer these questions.

The Van experience should be used as an opportunity to examine the Turkish disaster management system. The strengths, the weaknesses, the opportunities and the threats should be driven out of this experience. Strong economy, efficient land planning and management, strong political will and political stability, preventing corruption in construction within contractors, strong legislation, trainings for individuals and policy makers, well-developed mitigation plans, risk reduction plans and response strategies (Pelling 2003) would help Turkey to have a safer future.

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