



# Provision for the aftermath: lessons learnt

By Andrew Fox

The devastating experience of the 1999 earthquake in the Marmara region of Turkey has again demonstrated the vulnerability of people to the elements. With the 'big one' still expected the lessons learnt from this experience have been considered for the future.

## A brief recollection of events

It's 3am in the morning in the middle of August 1999, suddenly you are awoken from your sleep. It is pitch black but you can feel the shaking, there is a deafening roar in your ears and the shaking quickly worsens. You know this is an earthquake and a big one. You scramble out of bed as quickly as you can but the shaking is so intense you can hardly stand. Somehow you make it to the doorway, your mind registers an important fact – it must have been 15 seconds since you woke up – the earthquake should be subsiding by now but there is no decrease in its intensity.

You stagger down the stairwell, but by now all the other residents in

your apartment block are falling out of their doorways and into the same stairway. People are screaming and it is dark. The violent noise and shaking make it almost impossible for everybody to get down the stairs.

After what seems an eternity you eventually make it to the exit. Curiously you notice that the tremors have only just subsided, the whole experience seems to have lasted hours but in reality it lasted only 45 seconds. Outside for an instant everything seems quiet – a deathly silence in the literal sense. You are numb from the shock of what you have just experienced and everything seems a little unreal as if

in a dream. Slowly you become aware of your surroundings.

First you notice the heavy air full of dust then you begin to hear the cries and screams of people all around you. You look around and you see that that your building seems fine, you are filled with a temporary sense of relief. You wander a little farther from the building entrance into the gloom and it is then that you begin to realize something terrible has just occurred – all around you lies the collapsed remains of what were until a few minutes earlier the homes shops and offices of your neighbours.

This brief description should give readers a slight understanding of the huge impact the earthquake of 17 August 1999 had on millions of people in the Marmara area of Turkey. Whilst the official death toll of 17,000 people still remains fixed, the unofficial death toll is double that figure. In all 15,000,000 people felt the earthquake and 800,000 were immediately made homeless. Several thousand more were too afraid to return to their homes and slept rough, in tents or cars for months after the earthquake.

The psychological impact of the earthquake was felt all over the country and indeed all over the world, where nations with similar experience of disasters on such a scale rushed in to help.

## The immediate aftermath

In the immediate aftermath of this devastat-

ing event our impressions are best considered from a number of viewpoints.

As a victim – your senses are numbed, you are disorientated and shock is beginning to set in. The wounded are largely helpless except for the efforts of family and neighbours. Trapped victims under the rubble have no immediate assistance and though their calls may be heard and answered very little can be done to reach them.

As a government official – this is the nightmare scenario you have always dreaded and prayed would never happen. You can react swiftly to get to the scene of devastation but you have no way of communicating to the outside world, many of your colleagues are victims themselves and worst of all your office building together with equipment and records are destroyed.

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The physical devastation of an earthquake can be immense - thousands were made homeless instantly

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Charity workers or volunteers some distance away from the main disaster begin to assemble. Offers of assistance come flooding to charity offices and telephone lines are totally clogged. Representatives are sent into the disaster zone but feedback takes hours. Nobody can find anybody in any position of authority - what to do, where to go, how to help - all these questions receive confusing and conflicting answers.

This was the reality of the aftermath and in fact because the disaster was on such a scale it took days before some kind of organization began to take shape.

## Water Supply

In the hot conditions of the earthquake zone, water supply quickly became an issue. In many of the worst affected areas damage to the water supply network was so extensive that very little or no water could be pumped into the area.

In the Sakarya province the city of Adapazari was one of the worst hit population centres. Eighty percent of the water supply network was entirely destroyed and the small proportion that was left intact was unusable due to the high level of cross contamination that was occurring from the damaged sewers feeding into the broken pipes.

One important factor that greatly assisted the Turkish people in dealing with this issue was a tradition for using bottled water for domestic consumption. As a result well-established supply sources and distribution networks were available to meet the needs of the region.

After the initial confusion in the aftermath of the earthquake, private individu-

als were the first to establish regular trips into the worst hit areas. Using cars and trucks they hauled bottled water into the devastated region and returned carrying empty bottles for refilling.

Government officials were next able to source water tankers to establish a better and more efficient means of supply. This system became the main means of fresh water supply for several months after the earthquake.

Crisis management officials at first tried to stop individuals and charity organization from assisting with the relief effort. This was due to the highly centralized system of control usually exercised by the State Government and the relative lack of officially recognized non-governmental or voluntary organization set up to assist in times of crisis.

This attitude quickly softened however as the scale of the operation facing the Government soon overwhelmed all existing state provisions and aid from individuals, companies, charitable and voluntary organizations poured into the region.

Logistical control of aid to victims was difficult and was never fully effective. The result was a mishmash of systems to deal with water supply issues. Some organizations funded the supply of water tankers, bulk storage units and even drilled wells to tap new sources of supply.

Other donations dealt with sterilization, filtration and testing of water for various uses. One particular service where this method proved very effective was in the medical sector. Central hospitals and field units all had a high demand for clean sterile water and small mobile systems for providing this were highly sought.

## Water Treatment

As with the water supply networks the sewerage networks were almost completely destroyed in the region of the earthquake. In Adapazari 85 percent of the network was destroyed and fears about the risk of disease were quick to be realized.

Thousands of rotting corpses trapped within the collapsed buildings and damaged sewer pipes disgoring themselves into streets were of great concern to public health officials. Industrial pollutants from the many hundreds of damaged and destroyed businesses added to the problem.

There was no quick fix solution to this matter so a campaign of public awareness

# Water and sanitation in emergencies



Andrew Fox

The distribution of aid starts as early as possible, yet with so many people and lack of facilities it is a difficult task

was launched, educating victims and workers about the risks they were facing and ways to avoid them. Regular sterilization of drainage channels and watercourses near to the temporary settlement camps was undertaken, primarily with the use of lime and other powdered chemicals to kill insects and bacteria.

Sanitation arrangements at first were rudimentary with open trench latrines being constructed in the worst affected areas. Next came portable style chemical toilets but these were quickly overwhelmed and fell into disrepair, as the arrangements for cleaning and maintenance were inadequate and too costly to operate.

The most widespread facilities installed were containerized toilet and

shower blocks complete with heating and electricity, connected to a water reservoir and cesspit. The drawback with these units was firstly the long time needed for delivery and secondly maintenance costs were high. Specification of fixtures and fittings was often inadequate for heavy usage and many units were rendered unusable due to the breakage of essential fittings.

By far the most effective and popular amongst those people that had access to them, were tented facilities supplied by the military. The structures were quick to erect, easy to heat and maintain and provided greater shelter and privacy than afforded by containerized units.

## Lessons for the future

The earthquakes of 1999 in the Marmara region of Turkey were disasters waiting to happen. A rapid rate of urbanization and industrialization in the region over recent decades had proceeded with little or no regard to the risks being faced by such developments. When the first earthquake occurred in August the cost of that lack of regard was presented in horrifying clarity.

A considerable amount of retrospection has taken place since then and a great deal has been achieved to prepare for the future:

- Every province, by law, now has to prepare an emergency management plan to deal with this kind of disaster in the future.
- Physical restructuring has been made to ensure that water demands can be



Mark Edwards/Still Pictures

Some homes are so badly damaged only the timber was of any use - water and sanitation facilities become non-existent in a matter of minutes.

## about the author

Andrew Fox is a Civil Engineer and came to Turkey in 1999 on an assignment through RedR to assist the relief efforts.

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Many victims of the earthquake were forced to take temporary tented accommodation. Providing adequate water and sanitation facilities to these people takes time.

- better addressed in future disasters with increased storage capacity being constructed and emergency stocks of materials and equipment being amassed.
- Non-Governmental Organizations (NGOs) have been strengthened and

- links with government bodies have improved and are being formalized.
- Programmes to improve public awareness and disaster preparedness at community level are being implemented with the aim of providing long-term benefits to those districts at risk from earthquakes.

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Istanbul with a population of 15million was fortunate on this occasion to suffer relatively little damage, but the 'big one' is statistically due at any time.

We know that we can never prevent these disasters occurring, we can only be better prepared to minimise the consequences and to deal with the aftermath. At least with this generation the cost of ignoring this risk will be well understood.

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