Turkey Grounded by Earthquake

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Ripping through towns and cities as people slept, the tremor was the worst to shake earthquake-prone Turkey in half a centry. Central on the drab industrial town of Izmit, which borders the Sea of Marmara, the quake measured 7.4 on the Richter scale. Trembling was felt as far as Ankara, the capital, 340 kilometers (210 miles) away. Up to 10,000 victims remained buried under the rubble of collapsed apartment blocks at Turkey's biggest naval base, Golcuk, two days after the quake occurred.

In the aftermath of the 45-second-long tremor, hundred of dazed residents in Izmit, many of them bleeding, wandered about the wreckage of row upon row of crumpled buildings, searching for signs of life. Pain among survivors began to turn to rage as help from the authorities failed to reach them. Using axes and picks, and their bare hands cursed the government as they sought to pull out their family and friends. Local hospitals were overwhelmed; the wonded lay lined up on the floor, holding up their own drips.

Nobody can be surprised that an earthquake of this magnitude-bigger than that which rocked Kobe in Japan in 1995, through nothing like as massive as the one in Mexico city then years earlier – struck Turkey. The entire country lies in a 'ring of fire", a band of fault-line where the earth's tectonic plates collide, which covers the pacific rim, and arches across Central Asia to the Mediterranean. Earthquakes have shaken Turkey periodically, the most devastating of all being in in 1939, when nearly 33,000 people died.

The question Turks are asking is why this week's tremor killed so many people. Part of the answer, according to the Turkish authorities, is that it occurred in the country's most densely populated region, whose industries draw thousands of migrants from the poorer central and eastern parts of Turkey every year. This was compounded by the time that the quake struck. Residents of many apartment buildings were asleep, and so were crushed by the weight of collapsing buildings and debris. Had it occurred in the day, they might well have been out on the streets and so safer.

Lessons from Turkey Earthquake

Reports of flattened buildings across the area, rippling of electric poles and leaning of power cables apart, toppling of minarets of dozens of mosques, breaking of huge fire at the Turkey's biggest refinery and blazing out of cartiot blocking of roads to the towns were some of the worst scenes, one can only imagine.

It was not the older buildings that collapsed this week. Indeed, many of the older mosques lost nothing more than the odd minaret. Rather, it appeared to be the newer buildings, made of flimsy materials and put up by cowboy builders, that gave in. In Istanbul, the country's biggest city, hundreds of apartment blocks wer literally pulverised by the impact of the tremor. It is thought that some of these blocks may have been built after contracts were handed out to cronies by corrupt municipal officials. Worst was, fact that rescue teams which flew from Swiss, U.S., Greece, Germany, struggled to reach residents buried under dozens of collapsed buildings. Frantic search for possible survivors was called off on Friday, the 27th August when rescue teams found no signs of life beneath the ruins of mountains of twisted concrete and steel. But the worst was that some cries were only unanswered because rescue teams struggled to reach residents buried under dozens of collapsed buildings. Witnesses said, "In one place the earth had shifted 5 meters to the West".

Frantic survivors tore at wrangled steel and concrete to free loved ones and officials sought international aid to send smuffer dogs and lifting equipments to help to rescue.

> One of the American Volunteers reports, 'I was just passing by and I heard. "I believe I heard with my ears, sort of a muffled moan and then with a stethoscope knocking on concrete... We asked the person to knock on concrete, if indeed there was a person. There, and I believe, I heard knocking," she said.

Teams of rescuers did use drills and other equipment to dig through the debris and tried to pop up whatever possible but such efforts resulted in some dashed hopes when no survivors were found and cries for help died away in 5 day operation.

Explanation of randomness of earthquakes trail of devastation has left no reasonable logical explanation. As there were no answers for one street unscattered and very next street massively affected, or one building having flattened into a pancake pile, its neighbour half-tilted like shuffled pack of cards and the very next building left upright as if scornful of nature's brutal force.

It was but the buildings which killed and not the earthquake, scientists admitted, they had learnt key lessons from the deadly quake in Turkey.

Images of destruction in Turkey confirmed what seismic engineers already knew, that a powerful eqrthquake has an ally in a weak building.

Most of the framed concrete buildings had walling of bricks and mortar which turned them into massive structures. Collapse of mass at that scale in the event of a quake would kill Another reason assigned was lack of uniformity of loading in the framed structure e.g. first floor had glass window front while lower level had brick walls. Also another very important factor was lower reinforcing steel with plain bars which which pulled out much more easily Torsteel would have had better grip in concrete. Lessons from California quake taught engineers to nave lignter weight steel frames which reduced weight of the buildings and had hinged short joints which kept buildings agile. Earthquakes have proved that rigid joints in buildings are weak points while it is desirable that structures be allowed to sway which render steel frames to be ideal.

Other areas which need to be looked into are the joints and bracing joints have to be carefully designed that the stresses are not transferred to lowest section of the frame Also bracings connect various floors and keeps them from moving relative to each other in an earthquake

It has been observed that Turkish engineers knew, how to build in seismic zones and even codal provisions are well laid out But that remained only on paper In a developing country like Turkey, where stringent building regulations exist but are seldom applied, and where governments have more pressing tasks than the organisation of earthquake drills, a natural disaster on this scale would have unfortunately almost always kill many people. But perhaps the main reason for the large number of deaths was the nature of the apartment buildings themselves The system failed to produce earthquake resistant buildings. There have been reports which said that "middle class dream neighbours" built by the building companies had mixed sea sand into the concrete, and this was admitted under a pretext that the builders did not know, it was wrong. Such building practices had been a cause of major collapses in Turkey.

"Tell me my children are alive," pleaded Muzaffar Yarla, grabbing the arm of a Reuters reporter. Minutes later a pair of bare feet, clearly lifeless, poked through the tangle of steel and crete and the search halted briefly before neighbour struck up a loud wail.

Financial analysis brought out estimates of rebuilding alone which amounted to around US$ 8 billion Turkey, an area, the size of Belgium and Holland combined was devastated Turkey has a 20 billion deficit with annual inflation of 50% Government was in the process of securing US$5 billion loan from IMF to be able to increase economic standing, to enable cut-deficit A burder of U 8 billion dollars due to present destruction would furth aggravate the economic crisis of Turkey

Concerns of the Future

While the scientist had imagined the impacts of earthquake of this magnitude, but having seen it meant lot more, Turkey quake of 7.4 magnitude was located on Anatolian fault which jumped over lakes and ignited other faults. The major concerns of the future are, the theory that quake's seismicity or the movement of its epicenter has been migrating westward towards Istanbul, a city 12 million.

Turkey's quake and the 800-kilometer (500-mile fault is important to seismologists and geologists who study the San Andreas, which is nearly identical in length and type Both run along two tectonic plates grinding against each other

In the earthquake, the Anatolian fault jumped over a 5-kilometer (3-mile) lake and skipped from one fault to another, activating the second.

The earthquake jumped Lake Sabanca and resumed on the other side. Dozens of waterfront homes fell into the lake. Scientists don't know why it leaped across the lake, located between Izmit and crushed city of Golcuk. Perhaps it released energy in spurts of the same intensity but in different direcitons, ."

Seismologists also worry about the western migration of quakes along the Anatolian fault, which began when a 1939 quake killed 33,000 people in eastern Turkey.

As it slowly moved west, 10 earthquakes of at least a 6 7 magnitude erupted between 1939 and 1992

"If the theory holds true, then the next should be, in the Sea of Marmara," which borders Turkey's biggest city. Most experts agree it could occur within a decade. "This is a wake up call for all of us, not just Istanbul," it is said. Lessons learned from Turkey need to be learnt and there is no option than to build seismically.safe buildings, no matter the cost.