

An Earthquake in Israel: A Danger to National Security and National Resilience

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A destructive earthquake in Israel is not a question of if it, but when. A reference scenario that was presented to the Foreign Affairs and Defense Committee in 2016 estimated that 7,000 people would be killed, tens of thousands injured, infrastructure damaged, hundreds of thousands of buildings damaged, and hundreds of thousands of people evacuated from their homes. In such a scenario, Israel would be thrust into a state of ongoing disaster, with the government systems hard pressed to contain and handle the event and its numerous serious ramifications. Moreover, state authorities are not sufficiently engaged in the necessary preparations for this acute threat. The ministerial committee responsible for the issue has not convened since 2014, funds for strengthening buildings are not allocated, and there is no overarching body in Israel with responsibility and authority in charge of managing overall state preparedness for mass disasters. Even though an earthquake is a likely and significant threat to Israel's national security and resilience, the resources and attention dedicated to preparedness for it are significantly less than those allocated to preparedness and confrontation with other threats, including the COVID-19 pandemic and the threat from Iran.

On August 14, 2021, a strong earthquake with a magnitude of 7.2 struck Haiti (magnitude is an absolute measure of the amount of energy that is released at the epicenter of the earthquake). So far there have been reports of 2,500 killed, thousands injured, and some 30,000 families who have lost their homes. In the powerful earthquake that took place in Haiti in 2010, about 250,000 people were killed. Earthquakes like the one that Haiti recently experienced, and many others in recent years around the world (for example in Turkey, Italy, and Japan) compel Israel too to address several questions, including: why and where do earthquakes occur? Is Israel also susceptible to such a calamity? What can be done before this kind of event takes place in order to reduce the damage? How

should we prepare for the period after the earthquake? Can we expect international aid? And what might be the level of harm to Israel's national resilience following this kind of serious event?

There is enough geological information to determine with certainty that a large-scale, destructive earthquake will also occur in Israel. The damage could be considerable, in both lives and property, and the harm to national resilience could be severe. However, scientists do not have enough knowledge to determine when it will happen.

Earthquakes occur mainly in the border regions between tectonic plates moving over the earth. The friction that results from the motion and contact between the plates is what causes earthquakes. The number of earthquakes in the world each day is quite large, although most are weak and not even felt. Only earthquakes with a magnitude of over 5.5-6 and that are close to settled areas cause damage. Earthquakes can also cause secondary damage, i.e., environmental damage, and if they take place in the sea, they can cause a tsunami.

Israel is affected by the collisions of the African plate with the European plate, and mainly by the friction stemming from the motion between the Arabian plate east of Israel and the African plate, which includes Israel. Many earthquakes occur along this border between the plates, which stretches from the Red Sea and the Gulf of Eilat in the south, through the Jordan Valley, and until Turkey in the north.

The amount of damage resulting from an earthquake depends on four factors: the magnitude of the earthquake, the distance between the epicenter and the affected area, the type of ground infrastructure on which structures are built, and the kind and quality of construction of the existing buildings. Due to cost, even new edifices are not built according to a standard that would ensure survival in earthquakes. It is difficult to influence these factors. Yet there is another critical factor that is in our hands: the level of prior preparedness for earthquakes. In other words, the stronger the earthquake, the closer we are to the epicenter, the

weaker the infrastructure, the less suitable the structure is for coping with an earthquake, and the less prepared we are, the greater the damage will be.

In the past few centuries several strong earthquakes occurred in our region, including in 1759, 1837, and 1927. Each of them caused the deaths of dozens if not hundreds of people and considerable damage, even given the relatively small number of residents and structures in the country. For example, in the 1927 earthquake, Jerusalem, Jericho, Ramle, Tiberias, and Nablus were seriously damaged, and at least 500 people were killed. In Jerusalem alone 130 people were killed, 450 were injured, and 300 buildings collapsed or were seriously damaged. Had Israel been as heavily populated then as it is today, the number of casualties would have been far higher.

Estimating the damage from earthquakes is based mainly on reference scenarios, which posit the location of the epicenter of an earthquake and its magnitude; the subsequent amount of damage is estimated accordingly. Thus, the expected damage varies in respective reference scenarios. A scenario that was presented to the Foreign Affairs and Defense Committee in 2016 estimated that about 7,000 people would be killed, 8,600 seriously injured, 37,000 lightly injured, 28,600 buildings destroyed, 290,000 buildings with light damage, and 170,000 people evacuated from their homes for the long term.

In such a scenario, Israel would have a high likelihood of entering a state of ongoing disaster. Buildings would collapse in dozens of communities, and the various rescue units, even if many and well-trained, would not succeed in treating the majority of those injured. Essential infrastructure (roads, electricity, water, communication) would suffer heavy damage, and hospitals, if they do not collapse themselves, would not succeed in properly treating the many injured people. Governmental systems would not be able to contain the range of serious events, and the treatment and control of injured people and damage would be insufficient to nonexistent.

Such an event would significantly challenge the national resilience of the State of Israel, in the sense of maintaining functional continuity following the event and the ability to recover quickly thereafter. This is a natural threat, with much potential for damage and death, much greater than that attributed to other threats that Israel has experienced or is likely to experience, including the COVID-19 pandemic or a military conflagration with Iran. While an earthquake, which is expected with certainty, cannot be prevented or delayed, it is possible and necessary to prepare for it, such that the damage is significantly reduced. Despite this certainty, the State of Israel is not sufficiently engaged in the necessary preparations for this acute threat. The state and its systems are not working adequately to mitigate damage, for example by strengthening buildings, or preparing the various bodies, institutions, and citizens themselves, to respond properly in the event of an earthquake and afterwards (see, for example, the State Comptroller's Report on Israel's earthquake preparedness, 2018).

A few examples illustrate Israel's bleak situation in this vital area:

1. The formal body responsible for handling and preparing for earthquakes in Israel is the ministerial committee on the issue. The defense minister heads the committee. The last time the committee convened was in 2014 (Report in State Oversight Committee, August 2020).
2. The State of Israel has a monumental defense system, full of budgets and agencies. In contrast, the state only has two employees in charge of earthquake preparedness – the director of Israel's earthquake preparedness steering committee and his assistant. The members of the committee are representatives of government ministries and research bodies that participate in the committee in addition to their primary jobs. There are additional bodies involved in the field, including research institutes (the Geological Survey of Israel), universities, the Home Front Command, and NEMA, but these focus on diverse fields and do not have overall responsibility for earthquake preparedness.

3. Many old buildings in Israel do not meet the earthquake construction standard (Israeli Standard 413) that first entered into force in 1980 and has been updated several times since. Some of these buildings are dilapidated, evidenced recently, for example, when a residential building in Holon collapsed even without the ground shaking. In the past, the Israeli government decided to allocate 5 billion shekels to strengthen buildings for earthquakes. In August 2020 the Ministry of Construction reported to the Knesset's State Oversight Committee that in actuality only 7 million (!) shekels were transferred. Also, in the current budget proposal for 2021-2022, including the Arrangements Law, there is no special reference to earthquakes.
4. Above all, in Israel there is no overarching body in charge of managing the state's overall preparations for mass disasters, including earthquakes, with specific responsibility and enforcement powers over state institutions, the economy, and citizens.

In tandem, a few positive points deserve mention, including the Home Front Command's search and rescue units, national and local exercises that take place occasionally (one such exercise is planned for 2022), and especially the establishment of the TRUA'A system by the Geological Survey of Israel, which in the event of an earthquake will provide a warning to population centers of up to tens of seconds. This system, intended to be active and operational in the near future, will enable fast response and has great potential to reduce the damage resulting from earthquakes.

In conclusion, a destructive earthquake in Israel is not a question of if, but a question of when. With the threat to national resilience as great as, and even greater than, security threats, Israel can and should prepare for a strong earthquake and reduce the damage it would cause. This requires the state to dedicate the proper budgets and attention to the issue.

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