DOI: 10.4408/IJEGE.2020-02.O-ED

EDITORIALE

LEADER

by
prof. Gabriele Scarascia Mugnozza

Scientific Editor-in-Chief

40 YEARS AFTER THE IRPINIA-LUCANIA EARTHQUAKE: LESSONS LEARNED AND NEW FUTURE CHALLENGES

23 November 2020 marked the 40th anniversary of the catastrophic earthquake that devastated the regions of Campania and Basilicata, in southern Italy (hereafter the Irpinia–Lucania earthquake). At 7:34 p.m. on 23 November 1980, an earthquake of magnitude 6.9, having its epicentre between the municipalities of Teora and Conza della Campania, claimed the lives of nearly 3000 people, injuring about 9000, and leaving 280,000 homeless over a very wide area.

The Irpinia-Lucania earthquake, the most violent in Italy from the post-war period to date, revealed a number of issues, including: enormous delays in relief operations and the urgency of creating a modern civil protection institution; poor knowledge of seismic hazards in the country; and, finally, the vulnerability and state of disrepair of many buildings and structures, especially in the internal areas of the Apennines.

Soon after the Friuli earthquake in 1976 (northern Italy), a project to establish a nationwide institution that would be responsible for coordinating civil protection activities was conceived. However, the project did not materialise, for various reasons. It was following the Irpinia-Lucania earthquake that the Italian civil protection institution finally came into being, thanks to the initiative of Giuseppe Zamberletti, a forward-looking politician appointed by the Government as High Commissioner in charge of Civil Protection Coordination. This initiative gave rise to the Italian civil protection system and to what would later become the National Civil Protection Department.

The earthquake marked a significant advance in scientific knowledge. As an example, for the first time, geoscientists identified in detail the faults that generated the earthquake. Another new development was the beginning of seismic microzonation studies in the municipalities hit by the earthquake. Although attempts at carrying out such studies had been made in Friuli after 1976, actual seismic microzonation began in Italy only after 1980. Moreover, the widespread occurrence of earthquake-induced phenomena (landsliding, liquefaction, surface faulting) all over the country prompted systematic field studies. The Italian national research council (*Consiglio Nazionale delle Ricerche*) supported these studies as part of its geodynamics-targeted project (*Progetto Finalizzato Geodinamica*), promoting the countrywide coordination of the investigations carried out by the numerous researchers involved. In this regard, it is worth pointing out that, in 1985, based on the existing Italian structural model, a seismotectonic model, placing the Italian seismic activity within a consistent and unitary framework, was built. At a later stage, use was made of this scientific work to create a model of seismogenic zones. Subsequent versions of this model improved it, and it has now become an established tool for processing seismic hazard assessment data.

As regards the vulnerability of the national historical-architectural and built heritage, it should be stressed that the financial costs of reconstruction efforts after the earthquakes that have hit Italy in the past 40 years, including the one of 1980, exceed € 250 billion.

If these resources had been used since then for risk mitigation and, above all, structural reinforcement of buildings for seismic prevention, they would have avoided or reduced the heavy death toll, the severe damage to structures and buildings, and the long-term social disruptions (that often receive poor attention and are difficult to remediate) caused by the earthquakes.

Today, we can state that progress in technical-scientific knowledge has led to an approach that is more suited to the actual seismic vulnerability of our country and of its built heritage. Nevertheless, there is still a lot to be done in order to implement procedures for mapping seismic hazards and basic geological data, and to carry out seismic upgrades of structures and buildings. This is why we should, on the one hand, keep the memory of this disaster alive and, on the other hand, identify concrete actions so that the skills of technical practitioners and scientific advances can result into effective seismic risk prevention policies.

Hence, we should put in place an integrated strategy to improve social resilience. This strategy should be founded not only on improved earthquake resistance of structures, buildings,

infrastructure, and the historical-architectural heritage, but also on the pillars of education, training, awareness, and information dissemination.

To conclude these reflections, especially on the topic of social resilience, it is inevitable to refer to what is occurring in the world in these difficult months, the Covid-19 pandemic, during which we have become aware of the crucial role of knowledge and science. Public health prevention and protection rest on the same paradigms as the conservation and protection of land, natural or built environment, and historical-architectural heritage.

We ought to invest in science and knowledge, education and training of future generations, and the development of basic and focused research projects, as well as in the activities of universities and institutions that carry out research applied to risk prevention.

The programs based on the Next Generation EU, now ranking number 1 on the agenda of the European Commission and of the Italian Government, will not make an effective impact and yield long-term benefits if the reorganisation of health care services is not associated with disaster risk prevention and mitigation efforts to improve the safety of our land, environment, homes, infrastructure, production sites, and cultural heritage.