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Lessons on COVID-19 pandemic and Earthquake Response: What we have learned from the October 30, 2020, Mw 6.9 Samos (Eastern Aegean, Greece) earthquake

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On October 30, 2020, an Mw=6.9 earthquake struck the eastern Aegean Sea. It was the largest earthquake in Europe and the deadliest worldwide in 2020, as it resulted in 119 fatalities (117 in Turkey, 2 in Greece) from partial or total building collapse. Moreover, it generated environmental effects and damage to the built environment in both countries. The primary earthquake environmental effects included permanent surface deformation and coseismic surface ruptures, while the secondary effects comprised tsunami, slope failures, liquefaction phenomena, hydrological anomalies and ground cracks.

Every time a strong earthquake strikes, disaster management plans for emergency response tested in drills are applied under real conditions and on large scale. Immediately after the 2020 Samos earthquake, Greek authorities launched the largest mobilization of resources for assisting the affected population since the initiation of the COVID-19 pandemic in Greece.

Public authorities from all administration levels, civil protection agencies as well as security and armed forces were mobilized. All emergency plans for protection of life, health and property of the affected population were applied according to the existing legislation framework. The immediate response comprised search and rescue operations, first-aid treatment and medical care, provision of emergency supplies, establishment of emergency shelters, building inspections and assessment of damage extent. Moreover, the Greek government announced immediate relief measures and financial assistance for reconstruction and repairs.

The local population and responders were exposed to geohazards including the earthquake, the subsequent tsunami and aftershocks among other effects and to the evolving COVID-19 pandemic. The situation was more serious as there were many contradicting issues in the emergency response phase. Actions usually applied in the pre-pandemic period are in contradiction with the main measures for preventing SARS-CoV-2 transmission. The novel coronavirus adds extra risk to these life-saving activities. Thus, these actions had to adapt to the newly introduced conditions and adopt provisional measures for mitigation and elimination of

COVID-19 consequences.

This study focuses on the emergency response actions taken shortly after the earthquake amid the COVID-19 pandemic. They comprised establishment of the operational centres and emergency shelters in outdoor places, mandatory mask wearing indoors and outdoors at all times by all responders, immediate housing of homeless in hotels and touristic facilities in order to maintain social distancing, provision of protective equipment against COVID-19 transmission in responders and the affected population among others.

Based on the officially reported laboratory-confirmed daily COVID-19 cases in the earthquake-affected area during the pre- and post- disaster period, it is concluded that the impact of the natural hazards on the evolution of the pandemic in the affected area was negligible. The viral load was low and no increase of the infection rate was recorded.

From the aforementioned, it is concluded that the disaster management policy amid pandemic in Greece proved to be more efficient than thought with a well-planned and well-structured procedure for dealing not only with earthquakes amid pandemic, but also with other types of disasters induced by natural hazards. This approach could be used as a guide for similar compound emergencies worldwide.