



Damage and Loss Estimation for Natural Gas Networks: The Case of Istanbul

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Natural gas networks are one of the major lifeline systems to support human, urban and industrial activities. The continuity of gas supply is critical for almost all functions of modern life. Under natural phenomena such as earthquakes and landslides the damages to the system elements may lead to explosions and fires compromising human life and damaging physical environment. Furthermore, the disruption in the gas supply puts human activities at risk and also results in economical losses. This study is concerned with the performance of one of the largest natural gas distribution systems in the world. Physical damages to Istanbul's natural gas network are estimated under the most recent probabilistic earthquake hazard models available, as well as under simulated ground motions from physics based models. Several vulnerability functions are used in modelling damages to system elements. A first-order assessment of monetary losses to Istanbul's natural gas distribution network is also attempted.