

## **The European Seismic Hazard Model 2018: The next generation probabilistic seismic hazard model for Europe**

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Probabilistic seismic hazard assessment (PSHA) is a critical step for establishing priorities for intervention, for risk-cost-benefit analysis of earthquake mitigation measures and for ensuring equal level of safety against earthquakes across regions. A PSHA combines all available information on earthquake processes (source, path and site) into a complete model, considering also the uncertainty in knowledge and the variability of data and processes. A PSHA model is a vital ingredient for defining standards for the design of buildings and other civil engineering structures; it is also a synopsis of the contemporary understanding of earthquake processes.

The 2013 European Seismic Hazard Model (ESHM13) resulted from a community-based probabilistic seismic hazard assessment supported by the EU-FP7 project “Seismic Hazard Harmonization in Europe” (SHARE, 2009–2013; [www.share-eu.org](http://www.share-eu.org)) and is available through the European Facilities for Earthquake Hazard and Risk (EFEHR, [www.efehr.org](http://www.efehr.org)), a core EPOS service. However, since the model was constructed, there have been a number of advances in the available data and in our understanding of ground motions caused by large earthquakes. There also are a number of additional needs of the communities that use the ESHM13 model that have emerged, such as making the model more useful for assessing the challenges posed by anthropogenic earthquakes. Updating ESHM in 2018 is thus a high priority of both the seismology and earthquake engineering community.

This presentation will outline the ongoing updating activities funded in the context of EPOS. ESHM 2018 is ensuring that the second generation of the Eurocode 8, targeted for the year 2020, will be based on the most-up to date and harmonised European PSHA available, and maintaining a direct link to normative and regulatory applications. The update will also address inconsistencies of the ESHM 13 with some national hazard models. The ESHM 2018 will specifically:

- Update the seismogenic source part (catalogues, faults, zonations) of ESHM13.
- Revise the ESHM13 Ground Motion Prediction Equation (GMPE) logic tree by integrate the European GMPE integrated service build within EPOS as a sustainable resource.
- Extend the ESHM13 source model to smaller magnitudes, such that it also serves as a reference background model for anthropogenic hazard.
- Extend the ESHM13 output to serve additional engineering requirements as part of EC8.
- Improve the usefulness of the ESHM for site-specific hazard assessment by improving the definition of host-rock conditions.
- Provide a consistent reference for a risk modeling framework for Europe.