

**'INFRARISK. Novel Indicators for identifying critical INFRAstructure at RISK from natural hazards'**

The INFRARISK project (Novel Indicators for identifying critical INFRAstructure at RISK from natural hazards) aims to develop reliable stress tests for European Critical Infrastructure subjected to low-frequency high-impact events, in order to aid decision-making in the long term regarding robust infrastructure development and protection of existing infrastructure.

A method for the risk analysis of road and rail transportation networks exposed to various hazard types (i.e. earthquakes, ground failures and floods) is being developed and applied to portions of the European TEN-T Core network, such as the A1 highway crossing Northern Italy. The developed framework will start from the definition of the source event(s) for a given return period and will lead to the estimation of the direct and indirect consequences of the network disruption. Potential cascading events are taken into account both at hazard and fragility levels, thanks to:

- A probabilistic hazard framework that can generate scenarios containing triggering and induced hazard events;
- A component-based fragility approach that individually assesses the vulnerability of each component within a structural system (e.g. bridge system), thus providing a modular approach to account for cumulative damage (i.e. multi-risk fragility).

Finally, the use of component-based fragility curves enables to directly associate each component damage with a given level of functionality loss and restoration time: as opposed to global damage states, this level of refinement should provide an accurate estimation of the functionality of the network and the corresponding restoration strategy.