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More and more, society requires knowledge of the risk which people, property and the environment are exposed to. The role of the geotechnical engineering profession should increasingly be reducing exposure to threats, reducing risk and protecting people.

The objective of the Evans Lecture is to demonstrate that one can implement, with benefit, concepts of hazard, risk and reliability to assist you in design, decision-making and engineering recommendations. After an overview of the basic concepts, the lecture discusses the advances of hazard, risk and reliability in geotechnical engineering, and explains several "real life" case studies. In these examples, specific engineering questions had to be answered, and risk and reliability applications provided insight for informed decision-making. The factor of safety remains the main indicator of safety in practice, and its significance and that of key parameters used for design, e.g. the characteristic strength, are discussed. The examples presented are taken from a wide realm of geotechnical problems, including the selection of soil properties, the mapping of hazard and risk, as well as hazard and risk assessment associated with slope stability, dams, offshore installations and code calibration. The contributions of risk assessment and management to geotechnical engineering, the strengths and drawbacks of the approach and issues such as tolerable and acceptable risk, perception of risk and multi-risks hazards are discussed. The lecture shows how interaction with other disciplines is part of providing a soundly engineered solution.

The geotechnical engineer's role is not solely to provide judgment on selection of parameters, methods of calculations and resulting safety, but also to take an active part in the evaluation of hazard, vulnerability and risk.