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Prof. Alessandro Dazio, 4.9.2006, Geneva

## Structural measures to reduce seismic risk

Well-targeted structural measures are the only effective way to reduce the risk arising from earthquakes. This necessitates substantial support for experimental and theoretical research at universities, improved training and further education of architects and structural engineers, and political action to put new findings into construction practice. A speedy and efficient solution requires a new article in the Swiss Federal Constitution.

The following equation applies to the earthquake risk affecting new and existing building structures:

**Risk = Value x Hazard x Vulnerability**

The value of buildings and installations together with their contents is a given quantity, as is the hazard in terms of the severity and frequency of earthquakes. On the other hand the vulnerability of building structures, i.e. their susceptibility to suffer damage and collapse as a result of earthquakes, can be reduced drastically by a few well-targeted structural measures. To make this happen, there is a need to promote research, training and further education, and to take political action.

The funding available for research into earthquake-proof construction has been completely inadequate up to now. New processes, products and materials that are appropriate to the conditions in Switzerland must be developed through experimental and theoretical research at universities. This will enable the efficiency of the structural measures to be improved considerably and their costs to be reduced. This is vitally important to the national economy. Funding for research into earthquake-proof construction must be increased significantly.

Training and further education of architects and structural engineers in earthquake-proof construction are essential for the implementation of the findings into construction practice. The efforts of ETH Zurich and EPF Lausanne, together

with universities of applied sciences, must be promoted decisively. This requires external funding.

Political action to enforce earthquake-proof construction is still largely absent. This is why the SIA's earthquake standards are often ignored or not fully adhered to. More buildings that are dangerous in the event of an earthquake are being added continually to the many already in this category. This is why the risk from earthquake in Switzerland is increasing day by day, mainly through new private buildings. Binding conditions and checks are still largely missing. The Confederation and the cantons should become more active and should enforce the earthquake standards on private new buildings as well, and should also order the re-examination of selected existing private buildings. A new article in the Swiss Federal Constitution is needed for a speedy and efficient solution.

**Further information:**

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