



**PART  
IV**

**IDENTIFYING STRATEGIES AND PROGRAMMES  
FOR IMPROVING SCHOOL SEISMIC SAFETY**



## Introduction

The practical obstacles to promoting school seismic safety concepts and principles are numerous, and the stories recounted in this report demonstrate that in many cases there are more impediments than incentives to achieving a culture of safety. In developing countries, implementing a strategic programme is further complicated by such factors as lack of local expertise, shortage of finances, disagreement between external experts and scarcity of materials. In a European context, while the material, financial and human resources exist to establish a number of programmes for screening, evaluating and strengthening existing buildings in earthquake-prone countries, much greater regulatory effort is required in all countries to significantly reduce the highest risks to public buildings.

In this section, the experts were invited to describe the application of known seismic safety concepts and principles to existing strategies and programmes for school safety, and to consider the most effective ways to encourage, facilitate and assess progress made towards seismic safety goals. The experts were also asked how best to make countries and political leaders recognise that it is in their interest to establish programmes that build seismically-resistant schools. Awareness-raising through the dissemination of knowledge and data regarding school seismic safety using both formal and informal channels plays an important role in empowering and motivating individuals for change. Examples given here of formal channels include a National Programme on Earthquake Engineering Education in India (see Jain) and establishing criteria and procedures to compare the vulnerability national building typologies in Italy (see Cosentino). Informal channels include delivering lectures to school communities on seismic resistance improvements to school buildings and simply distributing leaflets on better construction practices to workers at construction sites.

## Seismic strengthening

In some cases, improving the earthquake resistance of a school, particularly a new school, can be a simple and inexpensive procedure. For many existing schools, however, the financial and technical implications of seismic strengthening – by retrofitting or other means – are considerable and can require a long-term commitment. In all programmes, decisions must be made concerning the most appropriate and effective strengthening action. In order to consider all factors, Smyth *et al.* applied a cost-benefit analysis to a hypothetical school structure, taking into consideration the costs of retrofitting for each damage state, building replacement cost and the cost of loss of human lives. Similarly, Spence estimated the costs of strengthening the entire school building stock in six European Union countries with a significant seismic risk. Both studies illustrate that earthquake strengthening of school building stock in many countries is technically and financially feasible, and that concerted efforts are required on the part of decision-makers to ensure that the necessary measures are carried out.