

Review of the paper entitled: Towards a risk governance framework for reducing the seismic vulnerability of existing buildings: a comparative analysis of national strategies with implications for Algeria

Reference paper: egusphere-2026-3476

I. General comments:

The article is both relevant and practical. Rather than confining itself to a theoretical analysis, it offers Algeria a concrete and structured framework for addressing its seismic vulnerability. The article's strength lies in shifting the debate from the traditional "we must build better" to the far more complex and politically sensitive issue of "what should be done about existing buildings?" The introduction draws on the 2003 Boumerdès earthquake to establish a framework that is both emotionally compelling and scientifically rigorous.

The international comparison of Japan, New Zealand, California, Turkey, Italy, and Greece is relevant in two respects. First, it covers a variety of governance models, including coercive, incentive-based, and mixed. Second, it covers contrasting geopolitical contexts ranging from developed to developing countries that face challenges similar to those in Algeria. Identifying specific lessons, such as the warning against "sophisticated regulation without the means to enforce it" (Turkey), constitutes a valuable scientific contribution.

The proposed framework, based on five pillars: regulatory, technical, financial, institutional, and cultural, is an excellent analytical tool for improving seismic risk management. It encompasses all relevant dimensions and highlights their interactions.

II. Specific Comments and Criticisms

II.1. Regarding the five-pillar model:

- 1. The regulatory pillar:** The article mentions the need for a legal framework for existing buildings. It would have been beneficial to discuss the legal and land-related challenges specific to Algeria in greater detail. The status of "habous" (religious property), complex co-ownership arrangements in large housing estates, and the regularization of informal land tenure are major obstacles to implementing binding regulations and deserve much more substantial discussion;

2. **The technical pillar:** The proposal is to reinforce existing structures using fiber-reinforced polymer (FRP), fiber-reinforced cement mortar (FRCM), and steel exoskeleton techniques instead of traditional methods. But who will install them? Where can they be purchased? Do local companies have the necessary expertise? An analysis of the supply chain would be helpful;
3. **The financial pillar:** A tax credit is beneficial when people pay taxes. However, a significant proportion of the population evades taxes, and much of the housing stock is informal. Proposing an "Algerian Seismic Bonus" without considering this reality, risks creating a program that only applies to a minority of property owners. Yet, the article does not quantify the cost of this program to the state. A tax credit represents a loss of tax revenue. Can Algeria, with an economy dependent on hydrocarbons, afford such a measure?;
4. **The institutional pillar:** The article correctly suggests strengthening the CTC's mandate and creating inter-ministerial coordination between the ministries of Housing, Finance, Home Affairs, and Education. However, it downplays the significant role of local authorities, who make decisions regarding building and renovation permits at the local level. Unfortunately, local authorities lack the necessary engineering expertise and resources. Therefore, a transfer of skills and resources to local level is absolutely essential. Furthermore, the article does not address corruption directly, even though it is a prerequisite for any effective policy. The Turkish example demonstrates that the best building codes fail when rules are not followed. Yet, the article proposes no concrete mechanisms to combat corruption, which undermines the credibility of centralized governance;
5. **The Cultural Pillar:** The article acknowledges that the other pillars are ineffective without a "culture of risk." The references to Japan's school curricula and California's ShakeOut are relevant. However, the proposal to "launch an awareness campaign" is somewhat simplistic. A culture of risk cannot be imposed by decree. It is a long-term process that involves non-traditional channels of communication, such as the role of imams in mosques, neighbourhood associations, and local media. However, the article does not specify how these communication strategies should be adapted to Algerian sociocultural realities.

II.2 Regarding Methodology and Reliability:

The comparative approach is appropriate. The literature review is sound and draws on recent and varied sources. However, the lack of original empirical data, such as interviews with Algerian stakeholders and field surveys, is a limitation. The analysis is based on a literature review and international data. Consulting with national experts, such as engineers, CTC officials, and decision-makers, would have strengthened the recommendations' local relevance. The inclusion of figures and tables is effective and informative. Table 1, which compares countries based on their regulatory frameworks, and Figures 4, a cost-benefit analysis, and 9, a roadmap, are powerful communication tools that facilitate understanding for policymakers.

II. Key Unresolved Issues Raised by the Article:

1. Who will pay for the national inventory? The inventory is a preliminary step, but it is costly and time-consuming;
2. Will the “Sismabonus” simply benefit the wealthy? Low-income households who own older, vulnerable properties often don't pay taxes. How would this scheme help them? In addition to the tax credit, a direct subsidy mechanism would be needed;
3. What is the most realistic governance model for Algeria? The article seems to favour an "Italian-style" model. However, Italy has a strong civil society, qualified experts, and a tradition of transparency. Algeria, however, has a more centralized state and a less flexible administration. Thus, the model would need to be adapted to a stronger "command and control" culture while introducing market-based elements, such as the Sismabonus.

IV. Technical Corrections:

- 1. Tables and Figures:** Some cross-references are unclear. For instance, Figure 9 is referenced, yet I could not find an explicit reference to it in the main text. Ensure that all figures and tables are correctly cited;
- 2. Formatting of tables and figures:** Some tables have layout issues, such as unwanted line breaks and text overflow. It would be desirable to standardize their presentation. Furthermore, several figures have captions that are too small or difficult to read. The authors are asked to revise them to improve readability;
- 3. References:** The abbreviations used for journal names are inconsistent. While this is not a major issue, standardizing them would make the work appear more professional.

V. General Conclusion:

The work presented is of a very high standard. It is clearly written and well-researched, and it is of vital importance for public safety in Algeria. Remarkably, it is both a sound scientific contribution and a genuine policy guidance document. It provides an excellent overview of the current state of the art and proposes a solution well-suited to the Algerian context. The key issues raised above do not detract from the quality of the work. They should be regarded as potential areas for further exploration, particularly if the text is submitted to decision-making bodies. However, it is not essential to incorporate them into the final version. **Consequently, I recommend publishing the article, subject to minor corrections.**