Earthquake Resilient Schools (EReS) Project Summary

1. Context and Overall Objectives

The **Earthquake Resilient Schools** [EReS] project brought together experts from Greece and Türkiye to tackle a shared challenge - **earthquakes in one of the most seismically active regions of Europe**.
The project focused on the **Greece-Türkiye cross-border area**, where frequent and sometimes devastating earthquakes threaten lives, property, and vital public infrastructure.

School buildings were at the heart of this initiative. Protecting them means protecting children, teachers, and communities. EReS aimed to:

- **Harmonise** how seismic hazard and risk are assessed across the border.

- **Share knowledge and data** between Greek and Turkish teams.

- **Develop practical tools** to strengthen earthquake preparedness, especially for schools.

By creating **common frameworks, advanced risk models, and real-time monitoring systems**, while providing earthquake related education to the school community, the project has been laying the groundwork for coordinated, science-based decision-making while improving earthquake awareness.

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2. Work Performed and Main Achievements

Understanding the Hazard

EReS scientists created a **harmonised seismic hazard framework**. This task included:

- **Logic Tree methodology** to combine different earthquake source models and ground motion predictions.

- **Four pilot study areas** — Alexandroupoli, Vathy (Samos), İzmir, and Çanakkale — chosen for their seismic risk profile.

- **Detailed seismic hazard maps** showing expected shaking for various earthquake scenarios and time intervals.

Assessing School Building Safety

The team built a **joint database** of school buildings in the pilot areas, documenting their location, design, materials, and construction date:

- In **Greece**, most are low-rise, reinforced concrete or masonry buildings.

- In **Türkiye**, more mid-rise (4–5 storey) schools are found. This database was paired with **structural vulnerability models** to estimate how buildings might perform in future earthquakes.

Advanced Risk Modelling

Using both probabilistic and deterministic approaches, EReS estimated the **likely damage** to schools under different earthquake scenarios.

- Real events, like the **M7.0 Samos earthquake (2020)**, were used to validate models.
- The **REDA platform**, from a previous EU-financed project, was enhanced for near real-time damage estimates.

Real-Time Monitoring

The project installed **low-cost accelerometers** (seismic imposed ground motion measuring devices) in selected schools to record shaking during earthquakes.

- In Greece, a custom-built device — **SeismoBug© v3.0** — has been deployed.
- In Türkiye, commercial **SH-HPAS sensors** were deployed.

These devices track building movement and help assess structural health immediately after an event.

Engaging Communities

EReS delivered training sessions in schools, workshops for local authorities, and awareness-raising campaigns through social media and public events. Teachers, students, emergency managers, and decision-makers all took part in **earthquake preparedness activities**.

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3. Results and Impacts

The EReS project has achieved **lasting results**:

- **Unified scientific methods** for assessing earthquake hazards in the Greece–Türkiye cross-border area.
- **Comprehensive school safety data** to guide retrofitting and resource allocation.
- **Operational real-time monitoring systems** in schools, improving emergency response.
- **Increased awareness and preparedness** among students, teachers, and local authorities.

Impact on Policy & Practice

Authorities now have **shared tools and knowledge** to make informed decisions about protecting educational infrastructure. The harmonised approach means risk assessments are consistent across borders, enabling **joint emergency planning**.

Long-Term Benefits

By focusing on **prevention, preparedness, and real-time information**, EReS strengthens community resilience. The methodologies developed can be expanded to other public buildings and regions, ensuring safer environments for future generations.

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4. Concluding remarks

EReS is more than a research project - it **is a cross-border partnership** dedicated to **making communities stronger**. By sharing knowledge, technology, and training, Greece and Türkiye are working together to protect one of the most important and vulnerable groups in society: the school community.

In essence, the EReS Project is a concrete step toward safer schools, deeper cross-border cooperation, and more resilient communities in one of the world's most earthquake-prone regions.

Future work should continue integrating real-time monitoring systems and refining risk assessment models to further support state authorities in earthquake preparedness and mitigation efforts.

A one sentence caption

"Cross Border Cooperation for Earthquake Resilience"

From classroom awareness sessions to real-time building monitoring, the EReS project combines science, technology and training, to make schools more resilient and communities safer.