INTEGRATING JAPAN'S EXPERIENCE INTO THE GLOBAL PROGRAM FOR SAFER SCHOOLS

Making Schools Resilient at Scale:
The Case of Japan.

At the geography class in Ashimov school of Tuyp region. Photo: Aigul Eshtaeva / World Bank

AT A GLANCE

Region: Global

Risks:
Earthquakes, tropical cyclones

JAPANESE EXPERIENCE STRENGTHENING THE RESILIENCE OF SCHOOLS INSPIRES TWO GLOBAL FLAGSHIP TOOLS TO BOOST ACTION ON NEW AND EXISTING SCHOOL INFRASTRUCTURE.

Every year, the impacts of natural hazards and climate change around the world affect children's education. Damage to school infrastructure directly harms students, teachers, and the school community. Further harm comes in their aftermath when the community is exposed to physical and mental stress that interferes with school operations, teaching, and learning. Efforts to bring children back to school and achieve the full recovery of education services are prolonged, often by lengthy processes for emergency response, recovery, and reconstruction. In the face of these challenges, resilient school infrastructure is vital to ensuring the quality of learning environments. Applying Japan's experience of systematizing and strengthening the resilience of schools, the **Japan-World Bank Program for Mainstreaming Disaster Risk Management (DRM) in Developing Countries** (hereinafter referred to as the Japan Program) has supported the development of the World Bank's thematic area for Safer Schools.

Few countries have made substantial strides in mainstreaming DRM into national development planning and investments for school safety as Japan. Accordingly, a starting point for the World Bank team was to systematically gather knowledge from Japan's decades-long effort toward making schools more resilient to disasters. By reviewing Japan's national school retrofitting program, the Program for Earthquake-Resistant School Buildings, World Bank technical teams were able to build a foundation of knowledge applicable to developing countries such as learning how and why Japan's Ministry of Finance and Ministry of Education (MEXT) allocated resources to the national retrofitting program for Japan's schools. Japan's implementation of this program has increased the seismic safety of Japanese schools, and hence increased the safety of Japanese school children, teachers, and communities. Since 2003, when the program accelerated, the share of earthquake-resistant public elementary and junior high schools has increased, from under half of schools in 2002 to over 95 percent as of April 2015.

With support from the Japan Program, Japan's experiences and lessons learned from the

El Salvador. Photo: GPSS / World Bank

Program for Earthquake Resistant School Buildings are compiled in the publication "Making Schools Resilient at Scale: the Case of Japan". The key knowledge and experience captured from this Japanese program lays out a framework detailing the comprehensive and programmatic strategy to design, plan and implement efficient disaster risk reduction programs at scale.

Applying this integrated Japanese framework laid out in the aforementioned publication coupled with lessons learned during in-country safer schools engagements worldwide, the Global Program for Safer Schools (GPSS) was able to create two flagship tools to guide and inform developing countries' actions on new and existing school infrastructure: (i) the Roadmap for Safer and Resilient Schools (RSRS) and; (ii) the Global Library of School Infrastructure (GLOSI).

The RSRS provides a methodological framework through which stakeholders can achieve consensus around the roots of the problem and design large-scale investments on school safety and resilience. Building on best practices in Japan, the planning at scale approach was adopted in the development of the RSRS. This approach focuses on large-scale intervention strategies and investment plans to make schools safer and resilient, including guidance for recovery and reconstruction of school facilities affected by disasters.

The GLOSI is a global repository of evidence-based knowledge about the performance

of school building types when affected by natural hazard events. It includes a global catalog of school building types, their vulnerability, and potential scalable engineering solutions to reduce these vulnerabilities. GLOSI also serves as a one-stop shop for global knowledge on school infrastructure performance, including engineering advances. Furthermore, GLOSI strives to create a systematic building classification system and consistent vulnerability information, helping decision-makers determine the scale of infrastructure issues while also providing a tool to mainstream quantitative risk assessment in investment planning. This tool also helps in defining priorities and designing intervention strategies for different building types and geographic areas where risk is concentrated.

The RSRS and GLOSI form an integrated operational tool aimed at supporting governments by informing decision-making and facilitating the design of large-scale investments in school infrastructure.

Mainstreaming DRM into National Development Planning and Investments for School Safety

Since its inception in 2013, The Global Program for Safer Schools has supported operational grants in 25 countries including Angola, Nepal, Uzbekistan, Jamaica, Samoa, Mozambique, Peru among many others.

In the Kyrgyz Republic with support from the Japan Program, officials sought to improve the safety and functional conditions of schools in areas of the country with the highest seismic risk by developing an analytical framework used to inform investment decisions aimed at maximizing safety. This risk-based prioritization framework with applications across Central Asia was published under the report "Safety Prioritization of School Buildings for Seismic Retrofit Using Performance-Based Risk Assessment in the Kyrgyz Republic." Multiple workshops were held with stakeholders from government ministries, the local engineering community and academia to share the results of this analytical work. Using these results, government decision makers had the evidence they needed to design an intervention strategy and identify priority schools to be targeted under the World Bank-financed project, Enhancing Resilience in Kyrgystan Project (ERIK). Using the risk-informed prioritization process, investments were planned to improve the safety of dozens of schools around the Kyrgyz Republic. The government is also developing a national school infrastructure plan grounded in the analytical work carried out under the grant.

In addition, a Japanese firm was engaged to inform the project on possible solutions to enable more efficient data collection. When developing a reliable school infrastructure baseline at scale, the Japanese firm recommended using advanced technologies including 3D scanning of buildings and

satellite image analysis instead of time-consuming and costly field inspections. Moreover, to better communicate seismic risks and solutions, VR videos were used to simulate real-life experiences thereby allowing a more intuitive understanding of the risks, issues, and solutions.

Most recently in Central America, the GPSS, with support from the Japan Program, has been engaged in the planning and implementation of school infrastructure investments with the governments of Nicaragua and El Salvador. The governments of Nicaragua and El Salvador are striving to improve the technical basis for resilient school infrastructure, particularly in the field of investment planning, pre-investment studies and climate resilient school designs. Like other GPSS projects, an integrated approach is used to address school infrastructure resilience with the objective of improving learning outcomes. However, this engagement goes one step further and links improved learning outcomes to other objectives related to sustainability and inclusion.

The government of El Salvador, with support from GPSS experts, formulated the country's first national seismic risk mitigation plan for public school infrastructure. Activities supporting this plan include application of the GLOSI methodology to analyze structural data for load-bearing masonry and reinforced

concrete school buildings, as well as the development of a web-based platform to collect data for a school infrastructure baseline and a seismic risk assessment of school facilities nationwide.

To further support this plan, on May 19, 2022, a virtual knowledge exchange was held, facilitated by the Tokyo DRM Hub, where a Japanese engineering firm met with El Salvador's Ministry of Education (MoE) and the GPSS team to share recommendations on strengthening the resilience of school infrastructure. These recommendations came from lessons learned on a Japan International Cooperation Agency (JICA) project where the firm collaborated with El Salvador's Ministry of Public Works, Transportation, Housing and Urban Development (MOPTVDU) and the Department of Climate Change Adaption and Strategic Risk Management (DACGER) to integrate and promote risk prevention and mitigation for public infrastructure. The Government of Japan and JICA have been supporting the disaster risk management sector in El Salvador as one of the priority areas of cooperation. During the virtual exchange, MoE, MOPTVDU, and DACGER were able to exchange views and agreed to strengthen collaboration to adapt schools to climate change and natural disaster risks.

In addition, there are three technical notes under development that can provide the

analytical basis for the design of school infrastructure strategies, policies, and investments across Central America. These technical notes have been heavily informed by the Japanese experience. For example, both the "Quality Investment Infrastructure Framework" supported by the Government of Japan as well as the "Design Principles" lecture given by Architect Tezuka at the Understanding Risk 2020 Forum have been instrumental in the development of the technical notes.

RESULTS HIGHLIGHTS

- 25 countries have drawn on Japanese expertise and experience to make their schools more resilient to natural hazards.
- Grounded in the Japanese experience, GPSS has leveraged over US$ 1.8 billion in additional World Bank investments in school resilience across the developing world.

GRANT-SUPPORTED KNOWLEDGE PRODUCTS

- Making Schools Resilient at Scale the Case of Japan
- Safety Prioritization of School Buildings for Seismic Retrofit Using Performance-Based Risk Assessment in the Kyrgyz Republic
- Roadmap for Safer and Resilient Schools
- Global Library of School Infrastructure
- Seismic Risk Reduction Strategy for Public School Buildings in Peru
- Estrategia de Reducción del Riesgo Sísmico de Edificaciones Escolares Públicas del Perú
- Use of AI Technology to Support Data Collection for Project Preparation and Implementation: A 'Learning-by-doing' Process