Lessons Learnt from Many Destructive Earthquakes in Taiwan, Turkiye and Japan

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In the last few decades, huge earthquake disasters have occurred frequently in Taiwan, Japan, and Türkiye etc. Especially, in land earthquakes generated destructive damages such as building collapse, liquefaction, road blockage, landslide, fire, and Tsunami etc. These damages have had a major impact on local communities, including human casualties, isolation, and delays in recovery and reconstruction.

Therefore, we must progress these damage mitigation and regional continuity recovery based on lessons from past major earthquake disasters.

In Taiwan, **1999** Chi-Chi earthquake and **2024** Hualien earthquake etc. generated huge disasters. In Turkiye, **1999** Izmit and 2023 Kahramanmaras earthquake caused severe damages also.

Furthermore, in Japan **1995** Kobe Earthquake, **2016** Kumamoto Earthquake and **2024** Noto peninsula Earthquake as the inland earthquake generated critical destructive damages too. After the Great Earthquake, lots of advances were progressed, including revisions to earthquake resistance standards, improvements to disaster victim care systems, evacuation drills, more accurate hazard maps, the development of earthquake early warning systems, and the development of disaster mitigation science and technology.

Although the development of disaster prevention science and technology has produced many results in reducing damage during disasters, there is still not enough to raise awareness of disaster preparedness, awareness, and prompt evacuation. Human behavior varies depending on the content of information given, information disseminated , and one's own consciousness.

So, we would like to propose ‘Resilience Science/ Disaster mitigation Science’ including Science, Engineering/Technology and Social Science (Fig.1).

We are living in a society with IT / AI, globalization, and visualization technologies. In addition, remote monitoring technologies such as drones and advanced simulation/ monitoring system for Earthquake/Tsunami are also widespread. So, the utilization of these technologies is indispensable in modern society. And before/after the huge earthquake disaster, sometime storm or flood damage have occurred, it extended damage more, so we must consider these damages as the compound disaster.

On the other hand, it is particularly important that research of human behavior and cultivation for disaster mitigation.

We would like to explain advanced science and technology as disaster mitigation science.

Resilience Science

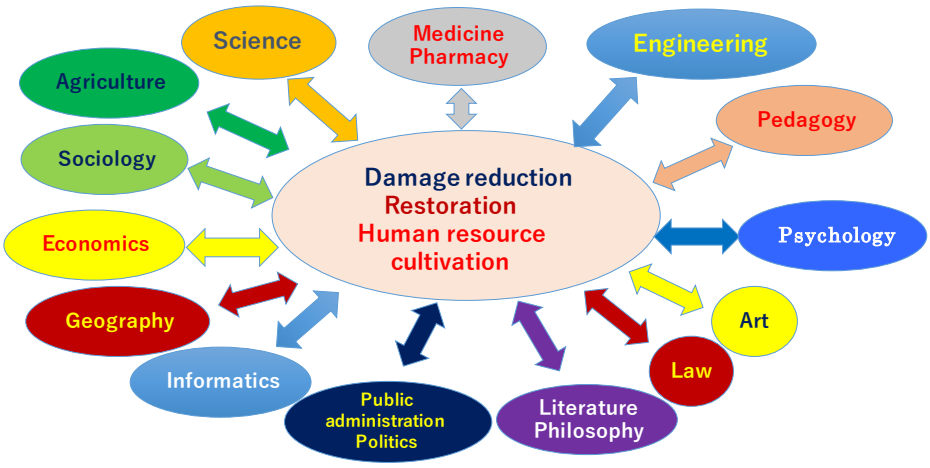

Figure 1. Resilience Science/ Disaster Mitigation Science including Social Science.