



## **High-resolution reflection seismic survey at a CCS site, Taiwan**

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To control the effect of greenhouse gas on global warming, the reduction of carbon dioxide emission has become a significant international issue in recent years. The capture of carbon dioxide during its manufacturing and storing in adjacent areas are the most economical way. This research uses high-resolution seismic reflection survey to investigate the region around the world's largest coal-fired power plant at Taichung Port, Taiwan. We aim to detect proper geological structures and to evaluate the possible way to store carbon dioxide.

This research uses reflection seismic survey with two mini-vibrators and 240 channels to investigate detailed underground structures. The total length of seismic lines is more than 20 kilometers. By aligning sequential seismic lines, we are able to correlate stratigraphic layers over a wide area. Two adjacent wells along the seismic line are used to identified possible formations. The TaiChung Power Plant (TCPP) at Taichung Port is our target which has more cross-tied seismic lines and a seismic line even extending into the sea water. We analyze these seismic profiles to establish the geological model for carbon dioxide storage and evaluate the possibility of storage systems. Furthermore, this research may prepare some baseline data for the future carbon dioxide injection monitoring.

The result shows that the geological structures striking 8 degrees east of north and dipping 2.8 degrees to the east. This means that carbon dioxide will migrate toward the sea direction after injection. The structural layers are relatively flat without any sign of faults. Three carbon dioxide storage systems : Mushan Wuchihshan—Paling(bottom), Peiliao—Talu(middle) and Kueichulin—Chinshui(upper) system are identified. All has the proper reservoir with high porosity and capable caprocks more than 100 meters thick. The geological storage of carbon dioxide injected into TCPP site is a feasible, commercial and safe way to reduce the emission of carbon dioxide from TCPP.