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### **Tectonic Evolution and Its Control on Hydrocarbon Generation and Migration, Northern Taiwan Thrust Belt**

Located at the collision boundary between the continental Eurasian plate and the oceanic Philippine Sea plate, Taiwan went through an intensive compressional deformation since Pliocene that formed high mountains and the gas-producing anticlines. Close examination of the stratigraphy and structural style in Northern Taiwan, however, strongly suggests that the region was at an extensional setting similar to other Tertiary basins in Southeast Asia prior to the latest orogeny. About 8,000 meters of apparently graben-fill Paleogene were measured at the inverted Hsuehshan Range and 5,000 meters of the subsequent post-rift Neogene were penetrated by wells along the foothills. The deeply buried Late Oligocene to Early Miocene coal-bearing source rocks became mature during Late Miocene and generated oil and gas out of the depocenter. The relatively undeformed basin framework allowed updip migration of hydrocarbons inside the widespread Early Miocene Mushan-Wuchihshan basal sand into some far-away early closures.

The severe structural deformation after Pliocene reshaped the entire petroleum system. The source rocks generated only gas in isolated foredeep pockets under active subsidence while froze up in other uplifted areas. At the same time, young folding had segmented the broad basin into a maze of faulted highs and lows, having facilitated vertical hydrocarbon migration into shallower reservoirs but restricted lateral migration to only a few selective pathways. Understanding the structural and timing control on hydrocarbon generation and migration provides the key to a successful exploration program.