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Structural control on facies distribution and economic deposits in the Ombilin Basin, West Sumatra, Indonesia.

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The Ombilin Basin is a Tertiary intramontane basin located within the Barisan Mountains, West Sumatra, Indonesia. It is filled with up to 4600 m (Koning & Aulia, 1985) of terrestrial and marine sediments ranging in age from the Lower Eocene to Early Miocene. The earliest part of the sedimentary succession consists of marginal fan-deltas which pass laterally into organic-rich lacustrine sediments. These sediments were deformed by an event at the end of the Eocene prior to deposition of economically significant coals with meandering river deposits that grade up into braided river deposits of Oligocene age in the northwest part of the basin. Localised uplift and erosion are reported (Koesoemadinata & Matasak, 1981) at the end of the Oligocene before deposition of marine sandstones, siltstones and isolated reefs in an outer neritic to bathyal environment during the Miocene (Koesoemadinata & Matasak, 1981).

During the earliest phase of sedimentation (Paleocene/ Eocene), lateral input of sediment from the basin margins was dominant. A clear proximal to distal transition is seen from sub-aerial fan-top deposits through massive bedded debris-flow conglomerates to turbidites and lacustrine shales showing abundant soft sediment deformation and slump structures. The deformation at the end of lacustrine sedimentation (end Eocene/ beginning Oligocene) was accompanied by a change to a dominantly axial drainage system and deposition of sediment by meandering and braided rivers.

Syn-sedimentary tectonics has controlled the distribution of facies and associated economic deposits and together with the change from lateral to axial drainage, has implications for oil and coal exploration. Similar intramontane basins occur throughout Southeast Asia.

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