

**FEASIBILITY STUDY FOR AN INTEGRATED ENERGY SYSTEM  
(WAVE AND UNDERWATER CURRENT ENERGY)**

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## **ABSTRACT**

A recent government study concludes that Renewable Energy resources in Malaysia will amount to more than RM500 billion between year of 2000 and 2020. This underscores the vast untapped potential for industries and businesses to benefit from developing new methods and markets, while creating economic growth for the nation.

At current consumption rates, fossil fuel reserves will be depleted in just a few decades, so the country must strive to advance other energy resources.

This paper describes the feasibility study for an integrated renewable energy system at the east coast, of Peninsular Malaysia and to make a conceptual design with estimating an economic analysis.

Malaysia is located in a tropical zone and experiences low prevailing wind speed, consisting of Southwest and North- east Monsoons each year. From the Meteorological and Oceanography Department, the highest wave and wind speed occurrence is located at East Coast region (Latitude  $5.5^{\circ}$  N and  $105^{\circ}$  E) at approximately 286.98 Km from Kuala Terengganu.

The Northeast monsoon brings rain and cloud to the east coast region from November to March; making the wind, wave and underwater current producing the maximum energy available while the solar energy will be its lowest contribution.

While when Southwest monsoon (dry season) from April to October, the climate is hot and sunny, with intermittent breaks of clouds formation due to convection current. At this time, solar energy will give it's a maximum contribution in available energy compared with others energy.

Wind energy shall form the base and primary system for this integrated design with underwater current and wave energy as secondary consideration while solar energy as a backup system.

The present study is based on theoretical analysis of existing data and I hope this study of integrated renewable energy system will be a starting point for further research.

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