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我國發展離岸風場經濟分析與融資架構之研究
Economic Analysis and Financing Structure of Developing Offshore Wind Farms in Taiwan

許中駿[1]、黃家思[1*]、張嘉麟[1]、左峻德[1]
[1]財團法人台灣經濟研究院
Chung-Chun Hsu[1], Chia-Szu Huang[1*], Chia-Lin Chang[1], Chun-To Tso[1]
[1]Taiwan Institute of Economic Research
d32807@tier.org.tw

摘要

全球為因應氣候暖化所帶來的影響，逐漸開始發展再生能源，而風能為其中選項之一，台灣擁有優越的風能條件，根據國內外研究資料，台灣海峽蘊藏全球最佳的風力資源，由於海域面積遼闊且風況較陸地為佳，因此在風力資源的開發具有相當大的潛力，目前政府已擴大離岸風電目標量於 2030 年由 3GW 提高至 4GW，並公告 36 個潛力區塊場址，以全力推動風力資源的利用。

離岸風場的開發需龐大資金挹注與面臨極大風險，目前國內銀行並無相關貸款經驗，對於再生能源產業認識不足的情況下，對專案融資與擔保更加趨於保守。為降低離岸風場開發建置風險及解決所需資金的融資瓶頸，本研究探討我國發展離岸風場之經濟分析與融資架構，藉由估算均化發電成本、躉購費率以及內部報酬率等，以建置本土化離開風場財務分析模型。此外，並完成離岸風場可行融資模式建置，並研提發展離岸風場相關政策配套予政府及相關業者參考，藉此以達成我國離岸風電開發目標。

關鍵詞：離岸風場、經濟分析、專案融資、融資架構。

Abstract

In response to global warming, many countries around the world have gradually begun to develop renewable energy sources, including wind energy. Taiwan has excellent wind resource. The domestic and abroad researches show that Taiwan has the best offshore wind power of the world in the Taiwan Strait. While offshore areas are relatively abundant and generally could generate stronger wind energy compare to on land, and have the tremendous potential for developing the wind energy. Currently the government has raised the installation capacity goal of offshore wind power in 2030 from 3GW to 4GW, and announced 36 potential districts for offshore wind farm development in order to fully promote the utilization of the wind resources.

Due to the development of offshore wind farms requires tremendous investment and is subject to high risk, domestic banks have taken a conservative approach to project financing especially because they lack related financing experiences and sufficient understanding of renewable energy industries. To reduce the risk of offshore wind farms installation and break through the financing bottleneck, this study analyzes the economic benefit and financing structure of developing offshore wind farms in Taiwan. The research approach is to calculate the levelized cost of energy (LCOE), feed-in tariff (FIT) and the internal rate of return (IRR) for each project, and set up the finance analysis model of domestic offshore wind farms. Furthermore, the study develops a workable system for financing, as well as provides a complete proposal for offshore wind farm development related policies and supporting measures as a reference for our government policy makers and investors to successfully achieve the development goals for Taiwan's offshore wind power.

Keywords: Offshore Wind Farms, Economic Analysis, Project Finance, Financing Structure.