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Integrated framework to enhance the deployment of wind energy in Libya

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The recent civil war in Libya has dramatically affected the oil production and led to a severe shortage and instability in electricity supply in Libya. The geographical location of Libya has encouraged the Libyan Government to seek for an alternative source of energy that is sustainable. The preliminary study showed that wind energy is the most appropriate source of energy in Libya. The objective of this paper is to enhance the deployment of wind energy in Libya through developing a framework to help energy policymakers to select the appropriate policy for the wind energy deployment in Libya and provide mechanisms to bridge the gap of the country's excessive dependence on the single source of energy. Data was collected using semi-structured interviews with energy experts in Libya and the questionnaires. The result indicated that there are four main barriers, namely political, economic, technical, and social that inhibits the deployment of wind energy in Libya. The political barrier is the most critical barrier that influences the deployment of wind energy in Libya. Three managerial concepts, force field analysis, value-added engineering and continuous improvement were combined to develop and integrated time-dependent framework to enhance the deployment of wind energy in Libya. The developed integrated time-dependent framework started with ranking the strategic objectives (political, economic, technical and social) according to their importance. In this framework, the importance of each objective changes with time (from phase to phase) and each phase focuses mainly on improving one object and at the same time sending feedbacks to the other objectives. The feedback mechanisms are available between the processes to ensure continuous improvement.

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