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CO₂ Emissions from Wind Turbine in Kuwait

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The source of renewable energy of wind energy in the Middle East and particularly in GCC countries showing some recommendation as the feasibility of wind energy technology use in Kuwait. The aim of this paper is to review the life cycle assessment in Kuwait and its four stages including goal and scope of the analysis, inventory analysis, impact assessment and interpretation of results. This study shows the inventory of carbon and energy data of the material that assemble Gamesa 90-2MW as well as CO₂ emissions for different type of transportation, it also calculate a number of relevant parameters related to the energy consumption, such as CO₂ emissions and energy payback time of wind turbine. These results are compared with other sources of energy based on fossil fuels to assess the potential of wind plants; due to lack of information data from Brazil which is similar to Kuwait environmental conditions has been used. The results showed that CO₂-eq per generated power are different according to the difference in turbine model and also showed total carbon dioxide for turbine with steel pile foundation is greater than emission from turbine with concrete foundation of about 18 percent. It revealed that the total annual energy generated for both turbines is the same because they have the same Gamesa 90-2MW wind turbine is used.

Biography

Badriya Almutairi is a PhD student at the school of architecture, building and civil engineering, at Loughborough University. She received a B.S. degree and then M.S. in civil engineering from the College of Engineering and Petroleum at Kuwait University. She has been a structural engineer at the Public Authority for Housing Welfare in Kuwait for over 10 years. Her current research is in the area of renewable energy, soil-structure interaction, and finite element modeling, with an emphasis on wind energy systems.

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