

PHD RESEARCH PROPOSAL

PHD RESEARCH TITLE : Sustainable Energy Analysis Study for Qatar

Qatar, despite being a leading exporter of natural gas, faces growing pressure to transition to sustainable energy due to its high per capita carbon emissions and environmental commitments under the Qatar National Vision 2030. Although solar projects and initial policy frameworks have been introduced, the country still lacks a comprehensive, systems-based strategy for long-term sustainable energy planning.

This research aims to analyze Qatar's current energy mix and evaluate the technical and economic feasibility of renewable energy options such as solar PV, CSP, wind, and green hydrogen. The study will use modeling tools like LEAP or HOMER to simulate transition scenarios and apply sustainability assessment methods including Multi-Criteria Decision Analysis (MCDA) and Life Cycle Assessment (LCA). In parallel, a policy review and stakeholder analysis will identify key institutional challenges and opportunities for implementing these solutions.

The expected outcome is a data-driven framework that provides strategic guidance for a low-carbon energy transition in Qatar. This will support policymakers with actionable insights to shape future energy policy and investment, contributing to national sustainability goals and setting an example for other Gulf nations with similar energy profiles.