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## SCIENTIFIC & RESEARCH PROJECTS

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# Long Run Energy Demand in Iran: Efficiency and Renewable Energy Scenarios

**Abstract:**

Iran as an energy-rich country faces many challenges in optimal utilization of its vast resources. High population and economic growth, generous subsidies program, and poor resource management have contributed to rapidly growing energy consumption and high energy intensity for the past decades. The continuing trend of energy consumption will bring about new challenges as it will shrink oil exports revenues restraining economic activities and lowering standard of living. This study intends to tackle some of the important challenges in the energy sector and to explore alternative scenarios for utilization of energy resources in Iran for the period 2005- 2030. We use techno-economic or end-use approach along with econometric methods to model energy demand in Iran for different types (fuel, natural gas, electricity, and renewable energy) in all sectors of the economy (household, industry, transport, power plants, and others) and forecast it under three scenarios: Business As Usual (BAU), Efficiency, and Renewable Energy.

This study is the first comprehensive study that models the Iranian energy demand using the data at different aggregation levels and a combination of methods to illuminate the future of energy demand under alternative scenarios. The results of the study have great policy implications as they indicate a huge potential for energy conservation and therefore additional revenues and emission reduction under the efficiency scenario compared with the base scenario. Specifically, the total final energy demand under the BAU scenario will grow on average by 2.6 percent per year reaching twice the level as that in 2005. In contrast, the total final energy demand in the Efficiency scenario will only grow by 0.4 percent on average per year. The average growth of energy demand under the combined Efficiency and Renewable Energy scenarios will be 0.2 percent per year. In the BAU scenario, energy intensity will be reduced by about 30 percent by 2030 but will still be above today's world average. In the Efficiency scenario, however, energy intensity will decline by about 60 percent by 2030 to a level lower than the world average today. The energy savings under the Efficiency and Renewable scenarios will generate significant additional revenues and will lead to 45 percent reduction in CO2-emmissions by 2030 as compared to the BAU trends.