RENEWABLES OPPORTUNITIES AND CHALLENGES

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Overview

The world is rapidly shifting to renewable energy sources. There's unprecedented momentum for reducing dependence on fossil-based energy. Nevertheless, climate change, oil and gas price volatility, geopolitics, and emissions make the oil and gas industry uncertain. In response to this uncertainty, governments across the globe have shifted their policies, financial plans, and priorities to favour renewable energy.

The Kingdom of Saudi Arabia is a fertile environment for renewables investment; renewables investment is a key factor in economic growth and aligns with Vision 2030.

Apart from the available assets and capacities, Saudi Arabia has a significant advantage in achieving a high level of renewables production compared to others.

For example, the perfect georgical location that connects three big markets (Asia, Africa, Europe) and the massive natural gas production in Saudi Arabia have resulted in blue hydrogen gaining an advantage. By keeping natural gas at its current low price of $1.25/MMBtu, the cost of producing blue hydrogen could fall from $1.34/kg to $1.13/kg by 2030. Whereas In Saudi Arabia, the cost of producing green hydrogen could fall to $1/kg by 2050.

Methods

Identify and evaluate some of the global and local renewable energy opportunities and challenges. Based on the results of the analysis, recommendations were made.

Results

Challenge (1) Raw minerals such as Silicon, silver, steel, aluminium, uranium, Lithium, nickel, cobalt, cooper, and other rare earths are significant elements in many technologies required in energy transitions. The transition to a clean energy system increases the demand for these minerals dramatically. However, for most minerals, available quantities represent only a small portion of total demand. Opportunity: Limiting the use of rare earths. Considering the circular economy to create sustainable solutions.

Challenge (2) Given the limitations of the countries where these raw materials can be found, a monopolized market has formed. China, for example, has 97% of the total available rare earths. Opportunity: global policymakers need to secure the supply chains, improve the market transparency, develop response capabilities to potential supply disruptions and contingency plans for possible geopolitical conflicts. Strengthen international collaboration between producer countries and consumer counties.

Challenge (3) Lack of financial plans and investment strategies, which causes energy transitions to be delayed. Opportunity: enhance the investment by creating conditions conducive to diversified investment in the mineral supply chain.

Challenge (4) Environmental harm. Wind energy can harm birds through direct collisions with turbines and other structures. Mining is an invasive process that cause serious damage to the landscape, release of greenhouse gasses, mining can lead to the loss of plants and animals, affecting ecosystem, soil toxicity and habitat loss. Opportunity: control the unregulated mining operations, improve the legislation and regulations, improve environmental performance, create solutions for the toxic mining waste and reusable waste.

Conclusions

Although, many industrialized economies are working aggressively to develop alternative non-oil-based energy sources, their emerging counterparts continue to rely on relatively cheaper hydrocarbon-based energy sources to increase their productive capacities, at least for the foreseeable future. The feasibility of a complete transition to unconventional energy sources is far from reality because renewable energy development and investment face numerous technical, economic, and geopolitical challenges, technically, economically, and geopolitically.
Synergizing the traditional energy source and the renewables, can be the key to maximizing the energy industry efficiency, fulfill the demand and reduce carbon footprint. It builds a more resilient core business.
Explore the possible hydrogen investment opportunities through the production of natural gas which eventually helps in achieving a cleaner, more affordable, and secured energy.
Generate thermal energy from burning excess natural gas on oil rigs can be an added benefit.

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