

СЕКЦИЯ 1. ЭЛЕКТРОТЕХНИЧЕСКИЕ СИСТЕМЫ И КОМПЛЕКСЫ

ADVANCING RENEWABLE ENERGY SOLUTIONS FOR SUSTAINABLE DEVELOPMENT: A CASE STUDY OF YEMEN

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Abstract: In this study report, Yemen is a country with a rich renewable energy potential, but it is also one of the most energy-poor countries in the world. The ongoing civil war has further exacerbated the energy crisis, leaving millions of people without access to reliable electricity. This paper explores the potential of renewable energy to address the energy crisis in Yemen and contribute to sustainable development. It begins by providing an overview of the country's energy situation, including the current state of renewable energy development. The paper then discusses the challenges and opportunities for advancing renewable energy in Yemen, and it concludes with recommendations for policymakers and stakeholders.

Key words: Renewable energy, sustainable development, Yemen, energy crisis, civil war, solar energy, wind energy, hydropower, geothermal energy.

Introduction

Yemen, situated in the southwestern corner of the Arabian Peninsula, faces a critical energy situation due to its limited fossil fuel resources and heavy dependence on imports. The ongoing civil war has worsened the energy crisis, leaving a significant portion of the population without reliable electricity. To address this crisis and promote sustainable development, Yemen has untapped renewable energy potential in solar, wind, hydropower, and geothermal sources.

The current state of renewable energy development in Yemen is still in its early stages, but progress has been made with the adoption of a National Renewable Energy Strategy in 2015, aiming for 20% renewable energy by 2030. Several projects, such as solar power plants, wind farms, and hydropower initiatives, are underway. Notably, the completion of the 50 MW Marib Solar Power Plant in 2019 represents a significant milestone.

Advancing renewable energy in Yemen faces various challenges, including the ongoing civil war, limited financial resources, lack of technical expertise, and inadequate infrastructure. However, there are also opportunities to overcome these challenges, such as leveraging the country's abundant renewable energy potential, meeting the growing energy demand, and benefiting from the government's commitment to renewable energy, as well as support from the international community.

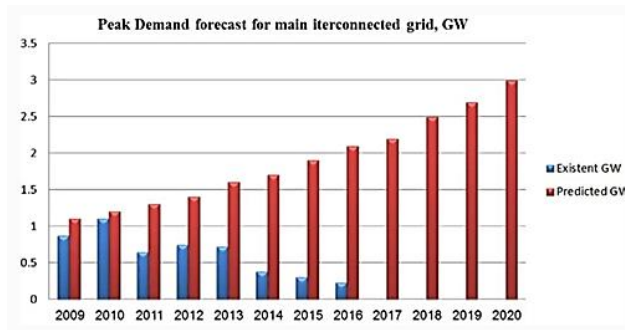
Results and discussion

To advance renewable energy in Yemen, the following recommendations are proposed:

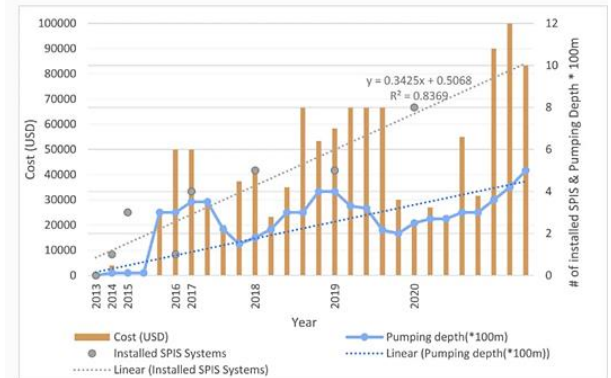
- a. The Yemeni government should continue investing in renewable energy projects.
- b. The international community should offer financial and technical assistance to support Yemen's renewable energy development.
- c. Encourage private sector involvement and investment in renewable energy projects within Yemen.
- The cost of installing a solar irrigation system varies depending on the depth of the groundwater wells, ranging from US\$4,000 for shallow wells to up to US\$100,000 for deep wells (Figure 1.b). As depth increases, so does the cost of installation. However, the relationship between cost and depth is not fixed, and it can change over time. The quality and size of the solar irrigation system, including the brand, country of origin, and number of solar panels, are also significant factors affecting the system's price. Water depth, sunlight exposure, system efficiency, and capacity are the primary factors determining

the pumping capacity of the system.

- Farmers have reported different outcomes with solar irrigation systems. Some farmers have experienced water quantities equivalent to those obtained with other pumps, while others have obtained even greater amounts of water. One farmer mentioned that operating the solar irrigation system for nine hours is comparable to using a diesel pump from six in the morning until midnight.



a



b

a- Solar irrigation in Yemen: opportunities, challenges, and policies, b- of installing a solar irrigation system

fig.1- A graph illustrating Yemen's percentage of solar irrigation use between 2009 and 2020 [3]

Conclusion

Water scarcity in Mokha Port requires innovative and sustainable solutions. By harnessing nuclear energy for water desalination, the region can secure a reliable and abundant water supply. Nuclear-powered desalination plants offer several advantages, including high energy density, stable power generation, and reduced greenhouse gas emissions. Successful examples of nuclear desalination worldwide demonstrate its feasibility and effectiveness.

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REVOLUTIONIZING WATER DESALINATION IN MOKHA PORT: HARNESSING NUCLEAR ENERGY FOR SUSTAINABLE SOLUTIONS

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Abstract: Water scarcity is a pressing global issue, particularly in arid regions like Mokha Port. In the quest for sustainable solutions, harnessing nuclear energy for water desalination has emerged as a promising approach. This report explores the potential of nuclear-powered desalination plants to revolutionize water production in Mokha Port. It discusses the advantages of nuclear energy, highlights successful examples of nuclear desalination worldwide, and addresses safety and environmental concerns. By utilizing nuclear energy for desalination, Mokha Port can secure a reliable and sustainable water supply, supporting economic growth, social well-being, and environmental conservation.

Key words: Water desalination, Mokha Port, nuclear energy, sustainable solutions, nuclear desalination, water scarcity, economic growth, environmental conservation.