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The Private Sector and Renewable Energy in Yemen: Status Quo and Partnership Requirements

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Introduction

Yemen has persistently ranked among the countries with the most limited access to basic electricity services in the Middle East and North Africa (MENA) region. In 2014, the per capita electricity generation and consumption in Yemen amounted to approximately 217 kilowatt/hour[1], which is substantially lower than the MENA annual average of 2,900 kilowatt/hour[2]. Additionally, only 60.7% of the Yemeni population had access to the national electricity grid, with this percentage declining to 49% in rural areas compared to 93% in urban areas[3].. This disparity reflects the country's limited electricity capacity produced, which did not exceed 1,519 megawatts in 2014.

The period from 2015 to 2023 saw protracted conflict and war in Yemen, leading to the damage of approximately 49% of the national energy sector's assets, with 5% being completely destroyed. This, coupled with a lack of fuel, scarce financial resources, and improper operation and maintenance, resulted in the complete absence of public electricity supply across the country. Consequently, the proportion of the population benefiting from the public electricity grid plummeted to merely 10% by 2021[4].

In response, the majority of Yemenis have turned to alternative energy sources, primarily small-scale solar energy systems, which have become the primary household energy source for over 70% of the population[5].. Additionally, private generators and purchases from the private energy sector have become widespread[6].

The precarious status of Yemen's electricity and energy sector has posed significant challenges for all economic and social sectors, including businesses and investors. The Doing Business 2020 report ranked Yemen 187th out of 190 countries in the "access to electricity[7]" index, underscoring the additional costs incurred by investors and entrepreneurs to secure electrical energy for their various businesses and the consequent impact on the pricing of goods and services.

This study aims to highlight the role of the private sector in providing renewable energy in Yemen, analyze the challenges facing the private sector in this domain, and forecast the future of solar energy in the country. In addition to providing

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[1] -World Bank. (2020). Continuous Needs Assessment in Yemen (DNA): Phase 3 . https://www.albankaldawli.org/ar/country/yemen/publication/yemen-dynamic-needs-assessment-phase-3

[2] World Bank. Electric power consumption (KWh per capita). World Bank Database. https://data.worldbank.org/indicator/EG.USE

[3] -International Policy Center for Inclusive Growth, UNICEF, & Ministry of Planning. (2013). National Survey for Monitoring Social Protection in Yemen 2013.

[4] -Akram Almohamadi ، Improving electricity services in Yemen، International Growth Centre, November 2021

[5] Aqlan, M., & Lackner, H. (2021, April). Solar-powered irrigation in Yemen: Opportunities, challenges, and policies. Rethinking the Yemeni Economy, 22. https://sanaacenter.org/ar/publications-all/main-publications-ar/13879 .

[6] -Akram Almohamadi ، Improving electricity services in Yemen، International Growth Centre, November 2021https://carpo-bonn.org/wp-content/uploads/2021/11/RYE_brief_24_ar.pdf

[7] -World Bank Group. (2020). Doing Business Report 2020.https:// arabic.doingbusiness.org/ar/ran

recommendations to enhance the private sector engagement in the provision of renewable energy.

The methodology employed in this study combines a desk review of studies, reports, and statistics related to the role of the private sector in providing renewable energy in Yemen, as well as a participatory approach involving a focused group discussion session with members of the Renewable Energy Committee in the Federation of Yemen Chambers of Commerce and Industry. For further feedback, the draft paper has also been circulated to all Yemeni Chambers of Commerce and Industry and their specialized committees.

1. The Role of the Private Sector in Providing Renewable Energy:

The Yemeni private sector's investment in the electricity industry started officially in 2006, where the private sector contributed to providing electricity supply through the public grid via private power plants (purchased energy), which amounted to about 439 MW, representing 28.5% of the total installed generation capacity in 2013[8]. However, with the subsequent absence of public electricity supply, coupled with a severe scarcity of oil derivatives in the early years of the war, and the increasing need for electricity

among the population and various economic and social institutions, the private sector has taken the initiative to invest in the field of solar energy domain, focusing in the first phase on importing small-scale solar home systems and solar water heaters, rendering solar energy the most popular and appropriate option to secure people's basic needs of electricity. It is estimated that the total installed capacity of solar energy systems and solar water heaters reached about 300 megawatts during the years 2015-2016[9].

By the end of 2017, demand for small solar systems in the residential sector had witnessed a significant decline, attributed to market saturation across various

[8] Public Electricity Corporation. 2013 data.

[9] Al-Saqaf, O. H. (December 2017). Uses of solar energy in Yemen. Economic Studies and Media Center https://economicmedia.net/wp-content/uploads/2017/12/the-Uses-of-Solar-enrengy-In-Yemen.pdf

governorates, which motivated the private sector to shift its focus towards importing higher-quality solar energy components and installing larger-scale solar energy systems, particularly in the agricultural sector, to replace diesel-powered water pumping systems. This transition resulted in the agricultural sector's solar energy generation capacity reaching approximately 1,500 megawatts by the end of 2022[10], signifying a substantial and rapid increase in the annual solar energy capacity generation.

The considerable success of large-scale solar energy systems in the agricultural sector, as well as in other sectors such as health and education, coupled with customs and tax exemptions aimed at encouraging the use of renewable energy, prompted many industrial facilities to take the initiative during 2023-2024 to install relatively large solar energy systems exceeding 100 kilowatts. Consequently, the solar energy generation capacity utilized by the industrial sector had reached about 400 megawatts by mid-2024[11].

In recent years, the private sector has also initiated the establishment of large-scale solar power plants in many Yemeni governorates, most notably the Hodeidah Solar Power Plant, which is funded by the Hodeidah Governorate Support and Development Fund, with a generating capacity of up to 40 megawatts. This project is based on a hybrid system that integrates solar energy production with the national electricity grid's central transformer stations, providing electricity to nearly 50,000 homes and contributing to a reduction in the fuel consumption required for electricity generation.

The private sector is currently implementing a large-scale solar power plant project in Aden governorate, with a generation capacity of up to 120 megawatts. This plant is the largest strategic project in Yemen that aims to generate electricity through clean and renewable energy, thereby reducing the costs of electricity generation, minimizing the need for fossil fuels in power stations, and supporting Yemen's plans to preserve the environment by reducing carbon emissions. Additionally, several small-scale photovoltaic plants have been established and are operational in a number of small cities, with generation capacities up to 15 MW. Preparations are also underway to establish and operate multiple solar energy plants with varying generation capacities in other Yemeni governorates, such as Taiz, Hadramawt, and others.

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[10] According to the estimates of the participants in the discussion session of the Renewable Energy Committee, which was organized by the General Federation of Chambers of Commerce on May 26, 2024.

11Immediately preceding source.

Concurrently, with the aim of raising awareness about the importance of renewable energy among official and public spheres, the private sector, in partnership with the relevant authorities, has organized several national conferences and exhibitions to promote renewable energy products in Yemen over the past years. The latest of these events was the Third Renewable Energy Conference and Exhibition, held in October 2023, which sought to create a joint work environment to stimulate investment in renewable energy and electrical industries in general.

To further strengthen the institutional capacity-building of the renewable energy sector in Yemen, the Federation of Yemeni Chambers of Commerce and Industry initiated the establishment of the Renewable Energy Committee at the end of 2023. This committee's role is to provide studies, consultations, training, and awareness-raising initiatives to the private sector and relevant government agencies regarding renewable energy and in a way that contributes to the overall development of the renewable energy sector in Yemen. Additionally, the committee is responsible for organizing exhibitions, seminars, and conferences related to renewable energy fields, as well as coordinating with local, regional, and international organizations active in this domain.

2. Factors Contributing to The Growth of The Renewable Energy Market:

The growth of the renewable energy market in Yemen can be attributed to various local and international factors and variables that have collectively enhanced the role of the private sector in increasing economic flexibility across different sectors through the provision of essential electrical energy. The most important factors can be outlined as follows:

1. The protracted conflict and war over the past years have led to a decline in the ability of government institutions to provide basic public services required by the population and various economic sectors, which created more investment opportunities for the private sector to contribute to meeting the basic infrastructure needs, particularly in the electricity domain.
2. The escalating cost of fuel (oil derivatives) in Yemen due to the imposed blockade has prompted many economic sectors, such as water, agriculture, industry, and housing, to transition towards solar energy. For instance, studies[12] indicate that over 31% of farmers and water producers in the Sana'a Basin have shifted from diesel-powered pumps to solar-based irrigation systems. Yemen is projected to witness a complete transition to solar-powered irrigation system by 2028.
3. The decline in international costs of solar energy technologies, systems, and components have resulted in obtaining low-cost and sustainable energy for many years, as well as a limited need for spare parts and continuous maintenance.
4. The growing local expertise in solar energy systems, particularly in the agricultural sector, and the relatively lower technical challenges associated with these systems compared to fossil fuel-based systems, have contributed to their widespread adoption.

[12] Aqlan, M., & Lackner, H. (2021, April). Solar-powered irrigation in Yemen: Opportunities, challenges, and policies. Rethinking the Yemeni Economy, 22.

5. Several international donor organizations, including the World Bank (Emergency Electricity Supply Project in Yemen), and the Food and Agriculture Organization (Enhancing Rural Resilience in Yemen (ERRY) project), have encouraged the use of solar energy technologies through the implementation of various projects. These initiatives have helped increase the utilization of solar water pumping systems in multiple Yemeni governorates, as they save fuel and electricity, reduce carbon dioxide emissions, and offer additional health benefits.
6. Many local financial institutions, including commercial and Islamic banks, and microfinance institutions, work to provide financing to different economic sectors to obtain solar energy systems in Yemen.

Emergency Electricity Supply Project in Yemen: (Key outcomes)

- The project has provided 91,715 rural households with subsidized, independent mobile solar energy systems for rural electrification.
- The project has facilitated the acquisition of solar energy systems for 517 vital infrastructure facilities, including 234 schools, 220 health centers, 23 COVID-19 isolation units, and 40 water wells.
- The total installed solar power capacity has reached 6.45 MW at peak hours.
- More than 3.2 million people have gained access to essential services, such as water, education, and healthcare, provided by the vital facilities equipped by the solar energy systems.
- The supply, installation, and contracting companies have acquired invaluable knowledge and expertise regarding the features of high-quality solar products, as well as the design, implementation, and maintenance of these systems, which resulted in improved system performance and enhanced long-term sustainability.

Source: :https://www.albankaldawli.org/ar/news/press-release/2018/04/12/new-solar-project-to-restore-electricity-to-over-one-million-yemenis

3. Challenges Limiting the Expansion of Renewable Energy in Yemen

Like other economic sectors in Yemen, the renewable energy sector faces numerous challenges and obstacles that have hindered its growth and expansion, despite the availability of growth potential and enabling factors. The key current challenges confronting the sector can be categorized as follows:

3-1 Funding Challenges:

- Limited financing institutions and sources in the economy, with over 60% of private enterprises relying on self-financing[13].
- Continued withholding of private sector's financial deposits and dues by the financial sector prior to 2015, under the pretext of lack of cash, restricting the private sector's ability to expand.
- High profit margins and commissions imposed by local financial institutions, such as banks, leading to reduced demand for financing services and solar energy products, especially those with advanced technology and higher costs.
- Difficulty in retrieving financial guarantees deposited by the private sector in local banks upon project completion, due to government manipulations, weakening the private sector desire for partnerships and new projects.
- Increased informal financial burdens paid by the private sector in general and companies operating in the renewable energy sector in particular, despite the existence of tax and fee exemptions for renewable energy products. These burdens are concentrated in institutions responsible for tax and zakat collection, as well as fees for obtaining various licenses.

Solar Energy Financing Programs
The primary objective is to increase the utilization of clean energy-based technologies by providing sufficient technical support and financing, and making full use of international funds supporting this sector These projects seek to introduce accessible solar energy technology to rural areas, replace diesel and other harmful traditional fuels with solar based technology, and expand its scope among small and medium enterprises.

3-2. Fragile Supportive Institutions and Infrastructure

- Absence of government policies and strategies dedicated to the renewable energy sector, with a continued focus on traditional energy sources, whether in terms of objectives or the necessary institutional structures concerned with supporting the sector and achieving competitiveness in the local market.

[13] International Labor Organization. (2022). Productivity growth, diversification, and structural change in Arab countries (1st ed.).

- Lack of policies supporting[14] the growth and expansion of solar energy systems, including preferential policies and net metering mechanisms to incentivize the integration of solar energy systems with the national grid in Yemen.
- Complicated and time-consuming routine procedures in most government institutions related to private sector activities, requiring more time, effort, and additional informal payments to obtain necessary licenses and permits for commercial and industrial operations.
- Inadequate legislation and institutional structures, particularly those related to investment, commerce, and the implementation of infrastructure projects, such as the Public-Private Partnership Law, which reduced the incentive for a conducive local investment environment.
- Weak tools and mechanisms to control the quality and appropriateness of imported solar systems, leading to an influx of counterfeit and inferior products that burdened the citizens, damaged the reputation of the organized private sector, and discouraged the expansion of solar energy use.
- Yemen's poor infrastructure to transport and store renewable energy, due to the outdated and war-damaged public electricity grid.
- Shortage of technical expertise and knowledge necessary for the development and operation of renewable energy projects, owing to the limited human capabilities at the sector and the inadequate training and consulting services for engineers and technicians in this field, in addition to insufficient advanced qualifications of university graduates specializing in renewable energy equipment and technologies.

3-3. Market Challenges and Competition

- Limited awareness among official, popular, and civil society institutions in Yemen regarding the significance of the renewable energy sector for the national economy. This includes an inadequate understanding of the role of the renewable energy sector in promoting macroeconomic growth, employment, and the SDGs achievement.
- Smuggling of counterfeit, substandard, and poor-quality solar products and applications has led to unfair competition with legitimate companies. This has also negatively affected the reputation and quality of many high-quality solar products and applications.
- The low-income levels of a significant proportion of the Yemeni population, the deterioration of the currency, and the high inflation rates limit the ability of citizens to expand the use of renewable energy applications. Additionally, the faltering performance of certain sectors, especially agriculture, has resulted in

[14] Regional Center for Renewable Energy and Energy Efficiency. (2017, May). Assessment of the solar energy situation in Yemen.https://selah-ye.org/wp-content/uploads/2020/10/%D8%AF%D8%B1%D8%A7%D8%B3%D8%A9-%D8%A7%D9%81%D8%B6%D9%84-%D8%A7%D9%84%D9%85%D9%85%D8%A7%D8%B1%D8%B3%D8%A7%D8%AA-%D9%81%D9%8A-%D8%AA%D9%86%D9%81%D9%8A%D8%B0-%D9%85%D8%B4%D8%B1%D9%88%D8%B9-%D8%AA%D8%B1%D9%83%D9%8A%D8%A8-%D9%85%D9%86%D8%B8%D9%88%D9%85%D8%A7%D8%AA-%D8%A7%D9%84%D8%B7%D8%A7%D9%82%D8%A9-%D8%A7%D9%84%D8%B4%D9%85%D8%B3%D9%8A%D8%A9-%D9%84%D8%A7%D8%A8%D8%A7%D8%B1-%D9%85%D9%8A%D8%A7%D9%87-%D8%A7%D9%84%D8%B4%D8%B1%D8%A8-.pdf

many solar energy system users failing to pay their debts to solar energy companies.

4. The Future of Solar Energy in Yemen:

Yemen's exceptional geographic location endows it with vast renewable energy resources, including solar, wind, and geothermal energy. Regarding solar energy, Yemen experiences consistently high levels of sunlight throughout the year, making it an ideal environment for solar energy generation. Studies[15] indicate that the average annual sun exposure in Yemen ranges between 5.2-6.8 kilowatt/hour / m2 / day, which further highlights the country's suitability for harvesting and harnessing solar energy for development purposes. The solar energy potential in Yemen is estimated at 400 gigawatts, which is enough to meet the country's energy needs several times. Leveraging this immense potential can play a pivotal role in addressing Yemen's acute electricity crisis, creating new job opportunities across various sectors, improving the performance indicators of the economy by reducing dependence on fossil fuel imports, protecting the environment through the reduction of greenhouse gas emissions, and contributing to the global fight against climate change.

In addition to Yemen's considerable solar energy resources, several key factors can play a crucial role in the expansion and growth of the solar energy sector in the coming years, most notably:

4-1. The Declining Costs of Renewable Energy Technologies:

The solar energy sector has undergone a remarkable transformation driven by rapid technological advancements, resulting in a substantial reduction in the costs of renewable energy technologies. International reports[16] indicate that the cost of photovoltaic electricity decreased by 85% between 2010 and 2020, and further cost declines are projected in the coming years as technological developments and innovations continue to improve the competitiveness and efficiency of renewable energy and accelerate the transition towards a sustainable world with safe and clean energy for all.

4-2.Domestic Demand for Solar Energy:

Alongside the rapid technological advancements driving down the costs of solar energy globally, Yemen's growing population and the government's limited capacity to meet the rising energy need are anticipated to significantly increase the domestic demand for renewable energy sources as a clean and sustainable solution, which generates investment opportunities for the private sector.

According to private sector forecasts, the local demand for renewable energy in Yemen is projected to reach about 10 gigawatts by 2030, distributed across various sectors,

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[15] Akram Almohamadi ، Improving electricity services in Yemen، International Growth Centre, November 2021

[16] International Renewable Energy Agency (IRENA). (2021). Annual Report World Enregy Outlook 2021 chrome- ،The World Bank , 2021. https://www.iea.org/reports/renewables-2021 extension://efaidnbmnnnibpcajpcglclefindmkaj/https://iea.blob.core.windows.net/assets/5ffcc847-42ab-4378-af66-0aaac552327d/WEO21_ES_Arabic.pdf

with 4.5 gigawatts for the commercial sector, 2.5 gigawatts for the agricultural sector[17], and 3 gigawatts for the residential and other sectors.

4-3.Supportive Governmental Policies:

Government policies play a crucial role in encouraging and facilitating the adoption of renewable energy technologies. Actions such as investments, incentive programs, and tax and customs exemptions can have significant impacts on the deployment of solar energy systems.

In this regard, studies[18] have shown that the issuance of a law on exempting renewable energy requirements from customs duties has contributed to increasing the application of solar energy systems, bringing the annual increase in solar energy generation capacity to 350 megawatts, compared to about 250 megawatts before the law enactment.

4-4.Access to Financing:

The capital required for initial investment in renewable energy projects in Yemen remains relatively high. Therefore, ensuring access to adequate and affordable financing for private companies operating in this sector is crucial to sustaining the growth momentum of the renewable energy industry in the country.

The Yemeni economy, across all its sectors, faces significant challenges related to financing, stemming from the limited capacity of the commercial banking sector and the weak financing awareness among private sector actors[19].

5. Public-Private Partnership in Renewable Energy Domain:

The concept of Public-private partnership (PPP) refers to a collaborative framework for the involvement of both government and private sector entities in the decision-making and implementation processes of projects, which entails a kind of binding agreements that outline an efficient distribution of roles between these entities and ensure the employment of all available local resources.

The PPP is defined as the private sector's entry into long-term cooperation agreements with the government to implement various public services projects and infrastructure projects. This approach has gained prominence as one of the options adopted by many countries emerging from conflicts and wars for reconstruction and peace, as it enables

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17 According to the estimates of the participants in the discussion session of the Renewable Energy Committee, which was organized by the General Federation of Chambers of Commerce on May 26, 2024.

18 Sibel Rakel et al., Sustainable Transformation of Yemen's Energy System, Friedrich Ebert, May 2022.

19 Federation of Chambers of Commerce. (2022). Private Business Environment in Yemen 2022. .https://fycci-ye.org/?id=285&name=%D8%A8%D9%8A%D8%A6%D8%A9-%D8%A7%D9%84%D8%A3%D8%B9%D9%85%D8%A7%D9%84-%D8%A7%D9%84%D8%AE%D8%A7%D8%B5%D8%A9-%D9%81%D9%8A-%D8%A7%D9%84%D9%8A%D9%85%D9%86 -

the private sector to provide capital, technical expertise, and administrative capabilities to restart and develop essential infrastructure and services [20].

The PPP gains significance from a set of economic, social, and financial considerations, most importantly:

- The overall view of development and the government's limited ability to address developmental challenges and meet the growing public needs, allowing the government to implement infrastructure projects through PPPs without burdening the national budget or resorting to external debt, while also encouraging economic growth and enhancing access to basic services.
- Providing competent technical and human resources required by economic development projects through the private sector.
- Displacing the risks of projects to the private-sector partner, which is often better equipped to manage them.
- Increasing effectiveness and efficiency of service delivery, as the private sector is generally more adept than the public sector at investing capital, utilizing available resources, and managing businesses.

In this regard, the renewable energy sector represents a promising area for PPP-driven investments, which offer opportunities in the production of energy from renewable sources, including solar and wind energy, in addition to improving energy efficiency through innovative and energy-saving technologies, and the development of various renewable energy applications.

Public-private partnership (PPP) in the renewable energy sector can contribute directly to economic growth by providing the energy needed to power various economic activities, such as industry, transportation, and agriculture. Indirectly, this partnership can also lead to job creation, increase productivity, and other economic benefits.
To ensure the success of PPP in renewable energy and other economic or social domains, this partnership should be based on several key governing principles, most notably:

1. Ensuring political, security, economic, and social stability to maintain societal cohesion.
2. Securing an enabling environment for economic and social development that allows partners to contribute effectively.
3. Developing a clear government vision for strengthening partnerships with development partners.
4. Formulating a legal and legislative framework regulating private sector participation in economic and developmental processes.
5. Setting up appropriate mechanisms for dispute resolution and property rights protection.
6. Providing a robust regulatory and institutional framework to support and strengthen the partnership process.
7. Building adequate infrastructure to meet the needs of development partners and enhance their participation.

[20] Economic Reforms Team - Economic Studies and Media Center. (2019). Policy paper: Mitigating the humanitarian crisis in Yemen through the implementation of public-private partnership projects . https://economicmedia.net/?p=2067

Potential areas for public-private partnership in the renewable energy sector and others, include:

1. Collaborative development of policies and legislation regulating economic activities and sharing the roles between the two sectors.
2. The investment partnership for the establishment of renewable energy projects involves a variety of partnership models and systems between the parties, including operation and management models, build-operate-transfer (BOT) models, leasing models, concession models, and others.
3. Establishment of joint financing mechanisms involving the government, private sector, and donors to fund large, medium, and small-scale renewable energy projects.
4. Training and development of the workforce, particularly those employed in the solar energy sector and graduates from relevant technical institutes and universities, can contribute to enhancing the technical and human resource capabilities of companies operating in the renewable energy field. This can help supply the labor market with highly skilled professionals with the scientific and practical competencies required for the installation and maintenance of renewable energy projects. Moreover, ensuring the effectiveness and sustainability of the renewable energy workforce across Yemen's governorates will, in turn, facilitate the expansion of investment in renewable energy networks to generate the necessary electricity.

6. Recommendations:

1. Government authorities and donor organizations are encouraged to forge partnerships with the private sector to establish a renewable energy bank in Yemen. This bank would serve as a crucial financing and investment tool to bolster the renewable energy sector and help overcome the financial challenges faced by renewable energy companies and private enterprises, thereby contributing to the expansion of clean energy utilization.
2. Governmental authorities should collaborate with the private sector and international donor organizations to establish a renewable energy academy in Yemen. This institution would be responsible for providing the technical and vocational training necessary for equipping the renewable energy sector with the required technical expertise and specialized capabilities.
3. Government authorities are urged to streamline the procedures and requirements in their dealings with the private sector, particularly those operating in the renewable energy sector. Most importantly, the authorities should ensure the efficient and consistent implementation of all exemptions and privileges granted to the renewable energy sector under the applicable laws and policy framework.
4. The government authorities are strongly urged to expedite the completion and approval of the Public-Private Partnership (PPP) law. Furthermore, they have to establish the necessary institutional structures and mechanisms to effectively accommodate and leverage the capacities of the private sector within this strategic domain.
5. The private sector is encouraged to significantly increase investment in the renewable energy sector by establishing publicly-traded shareholding

companies capable of attracting substantial local and foreign funding. This approach would optimally contribute to the holistic development and advancement of the renewable energy industry.

6. International donor organizations should be asked to contribute to funding supportive programs and projects that encourage expanding the utilization of solar energy technologies across various economic sectors, including agriculture and industry.
7. International donor organizations should be called upon to forge partnerships with the private sector, with the aim of building a robust market for renewable energy solutions in Yemen. This objective can be achieved by employing the donor organizations' resources and expertise to raise public and official awareness regarding the importance and proven economic, social, and environmental benefits of renewable energy, as well as its role in achieving the Sustainable Development Goals. The private sector should also be encouraged to organize scientific exhibitions and conferences related to renewable energy to further these objectives.

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5. International Renewable Energy Agency (IRENA). (2021). Annual Report 2021. https://www.iea.org/reports/renewables-2021
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15. Economic Reforms Team - Economic Studies and Media Center. (2019). Policy paper: Mitigating the humanitarian crisis in Yemen through the implementation of public-private partnership projects.
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