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**The Gradual Sustainable Energy Transition in Palestine:
An Enabling Environment to Attract Local
and International Investment**

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Foreword

Traditionally, the work of the Palestine Economic Policy Research Institute (MAS) focused on macroeconomic and social affairs. However, in recent years, the Institute has paid more attention to examining issues related to economic infrastructure, including the periodic coverage of these issues in the Quarterly Economic Monitor. MAS is aware of the importance of finding sustainable, national solutions to almost complete dependence on importing electrical energy from Israel, given that the issue of renewable energy has become a priority for government, for the Palestinian Energy Authority, and for other concerned parties. This comprehensive study discusses ways of gradual transition towards renewable energy in Palestine. It seeks to identify and analyze the elements required to reach an environment conducive to encouraging and stimulating local (and international) investment in renewable energy projects in Palestine. This requires developing an analytical framework for the emergence of such an enabling environment, allowing for investment in renewable energy and compatible with the different phases of investments in this sector. The study also presents a set of policies, interventions and business models that enable the renewable energy sector and reduce dependence on Israel in the field of electrical energy.

The study concluded that the components of the investment environment in the Palestinian energy sector are incomplete. There are numerous geopolitical and internal factors that distance investors and independent energy producers from engaging in this sector, despite their willingness and financial capabilities. The priority of government and its institutions remains focused on the traditional energy sector, and the government's measures are still unable to reduce risks associated with investments in renewable energy projects. For example, sovereign guarantees are not issued for renewable energy generation plants. Both centralized and decentralized efforts should act as transitional pathways towards sustainability, in parallel with each other. Centralized efforts should focus on long-term energy security, while decentralized efforts focus on rapid gains in implementing renewable energy, through covering growing demand at affordable prices. As is the case with MAS research, the subject of this study was selected in response to the interests and needs of the Palestinian Energy Authority, and in recognition of the importance of providing public policies and programs with information, accurate scientific analysis and expert consultation.

Last but not least, MAS would like to thank Dr. Yasser Khaldi and researchers Habib Hinn and Rand Tawil for their efforts in preparing this study, and to the Palestinian Energy and Natural Resource Authority (PENRA), the Palestinian Electricity Regulatory Council (PERC) and the Investment Promotion and Industrial Estates Agency (PIPA) for their cooperation with the research team and providing all the necessary information for the study. We also extend our thanks to the Arab Fund for Economic and Social Development for financing

this study, and for their continuous support to MAS, and its efforts to develop and advance the Palestinian economy.

Raja Khalidi
Director General

Executive Summary

Palestine depends almost entirely on electricity imported from the Israel Electric Corporation (accounting for more than 90% of imported electric energy). This reinforces economic dependency on the Occupation, while exhausting the Palestinian Treasury. The Corporation also controls the supply of electricity to Palestinians; however, this supply does not correspond to local demand. The per capita share of electricity in Palestine is low when compared with average electricity consumption across the globe (about 1,100 kWh per capita per year), while the price of electricity is high when compared to neighboring countries. To reduce these structural distortions resulting from the colonial legacy, the Palestinian National Authority worked, in cooperation with international development institutions and agencies, to develop and update the regulatory and legislative framework for the energy sector. It adopted numerous plans and strategies to advance this pivotal sector, the latest of which was the adoption of a vision to diversify sources of electricity, resulting in a 50% reduction in electricity imports by 2030. Undoubtedly, achieving this goal requires overcoming the restrictions and obstacles imposed by the Occupation, as well as radical institutional, political and organizational changes that support localized electricity generation from renewable energy sources, and environmentally-friendly sources such as natural gas.

In response to this need, during the past few years, Palestine witnessed a remarkable development in laws and instructions regulating the energy sector, and a significant increase in investment in projects that generate electricity from renewable energy sources, especially in light of the global trend to adopt clean energy. The development of photovoltaic technology boosts economic feasibility, allowing for the generation of electricity at competitive prices.

Renewable energy, especially solar, constitutes an appropriate option to reduce dependence on imported electricity, given the geographical nature of Palestine, and the fact that it does not depend on imported fuel, nor does it require large, direct investment by the Palestinian government. However, there are challenges that have weakened the diffusion of this type of investment. Perhaps the most important challenge is the weak capacity of the electricity grid and its limited interconnectivity. Moreover, few areas of land are suitable for such investments, given the Occupation's control of lands in Area C, in addition to high levels of risk from the perspective of investors. This is particularly true in light of poor collection rates by distribution agencies, and their inability to pay dues on time.

From this point of view, the study aims to identify and analyze the elements required to reach an enabling environment, capable of encouraging and stimulating local and international investment in renewable energy in Palestine. To achieve this goal, an analytical framework for creating an enabling

environment for investment in renewable energy has been developed, as shown in Figure 1-1. in the body of the study (page 10). This framework corresponds to various stages that investors go through prior to investing in this sector, with a focus on ways to reduce technical, financial and procedural risks, through investment incentives and interventions that are most appropriate to the Palestinian context. The study adopted a phased approach to achieving its objectives, including survey research covering an intentional sample of 28 investors and developers, to understand their perceptions of an enabling environment for investment in solar energy in Palestine. In-depth, personal interviews were held with an intentional sample of 17 decision-makers from government, local authorities, distribution companies, civil-society institutions and representatives from the private sector.

The analytical framework for an enabling environment for investment in renewable energy covers three main levels. The first level focuses on ways to reduce technical and financial risks, in order to create strong foundations for investment in this sector, including infrastructural risks that need to be improved and developed to absorb produced energy, and the risks of default (uncertainty regarding future cash flows), which are exacerbated by the absence of sovereign guarantees. The second level deals with the risks of developing and implementing renewable energy projects, which are represented in procedural aspects, such as determining suitable land for investment, implementing network and economic feasibility studies, determining investment models and optimal institutional arrangements, in addition to the phasing of project design and implementation. Concerning the second level, the study provides an in-depth description and working mechanism of different business models, especially given that solar energy projects require large initial investments, with a lifespan of up to 25 years. As for the third level, it focuses on effective policies, regulations and institutional frameworks, discussing economic incentives specifically designed to attract investments to the renewable energy sector.

The study concluded that all components of the investment environment in the Palestinian energy sector are incomplete, and that there are numerous internal factors that repel investors and independent energy producers from investing in this sector, despite their willingness and financial capabilities. When analyzing the data collected from the questionnaire, interviews, literature reviews and official documents, we conclude that the reason for the slow progression of investment in this field is that the priority of the government and its institutions remains focused on the traditional energy sector. In addition to geopolitical challenges, there are several government practices that do not reduce the risks of investing in renewable energy projects, such as not providing sovereign guarantees for renewable energy plants. The study also concludes that both centralized and decentralized efforts towards sustainability - as transitional paths - must work in parallel with each other; since centralized efforts focus on long-term energy security, while decentralized efforts focus on rapid gains in implementing renewable energy, by covering growing demand at

affordable prices. The study analysis shows that achieving an enabling environment that reduces the risks of investing in renewable energy is related to the concept of accepting multiple, parallel, transition paths that are complementary to each other. Technical, financial and regulatory challenges can be resolved once renewable energy is recognized as a priority and formal pathway, with viable policies to enable investments in renewable energy.

The study also presented a set of recommendations for creating an enabling environment for the renewable energy sector:

- Strengthening and developing the electricity grid. The weakness of the grid, and the lack of sufficient information about it, constitute a major challenge for investors, weakening the planning process, especially in terms of determining locations for connecting solar systems with distribution grids. Therefore, it is necessary to modernize and develop the current grid, while planning for solar connectivity stations, through the preparation of studies on grids. There is a need to monitor control systems that allow for the operation of solar energy systems in a flexible manner, capable of adapting to patterns of demand for electricity.
- Establishing a fund to support infrastructure in the electricity sector, while providing grants to finance projects that improve electricity grids, as well as building transmission lines between generation stations and distribution networks. This enables renewable energy projects to discharge their production safely and efficiently.
- In the short term, instead of increasing the burden on public finances through incentives, guarantees and public investments, in light of the current budget deficit, the government can develop policies to direct grants and international support to providing competitive facilities for renewable energy projects. This includes green projects with financing programs and mechanisms, as well as grants to invest in improving the infrastructure needed to connect renewable energy systems.
- Reactivating long-term sovereign guarantees, while searching for alternative mechanisms in the transition phase, such as the World Bank's initiative to enhance the creditworthiness of the Palestinian Electricity Transmission Company (PETL).
- Implementing renewable energy strategies and policies adopted at the national level. There is a need to renew government support for renewable energy, and to promote and accelerate the achievement of the national target of 500 MW of renewable energy by 2030. The Palestinian government should also reconsider policies, tools and plans that can be adopted to stimulate investment in the renewable energy sector.
- Adopting unified technical and commercial standards for quality assurance in the renewable energy sector, with vigorous follow-up at the national level, in order to ensure compliance with these standards. This is especially valid in light of the fact that many developers are currently establishing solar

systems without planning at the national level, and without adhering to clear standards. This hinders the network, causing negative effects. Moreover, all renewable energy developers need to follow unified technical and commercial standards, to ensure safety in feeding electricity into the grid.

- There is a need for more cooperation from electricity distribution companies and local authorities. This requires the drafting of legislation - or instructions - requiring distribution agencies to indicate consumption patterns during the day at connection points across the company's network, in addition to sharing technical information with developers on the distribution network, available connection points for high-capacity solar systems, and possibilities for preparing comprehensive standards for connecting solar systems if necessary. It is also possible to cooperate with electricity distribution agencies through commercial contracts, such as distribution agencies benefiting from additional technical support services from developers, and renting solar energy systems from solar energy providers. This may contribute to reducing the purchase price of electricity.
- Determining and allocating lands near connection points for the purpose of constructing solar power plants. There is a need to direct relevant ministries and authorities towards cooperating with developers of solar energy projects, in order to allocate part of the country's land for the purposes of investing in renewable energy infrastructure at connection points.
- Unifying and adhering to the principles of commercial agreements between the public and private sectors, such as power purchase agreements. Distributing responsibilities and duties fairly among parties to the agreement, with guarantees for the following points. (1) Bearing legal and financial consequences, in the event of continued failure in the achievement of performance indicators and obligations under the agreement. (2) Legal and financial consequences for not receiving electricity produced from the plant without justification. (3) Protecting the agreement from changes in renewable energy laws in Palestine that may negatively affect the interests of parties to the agreement. (4) Agreement on sovereign guarantees from a government agency in accordance with Cabinet Resolution No. 11/2015.
- Establishing a committee to follow-up on the gradual transition to renewable energy, with the participation of concerned institutions from the private, public and civil sectors, in addition to donor countries and international development institutions. The goal is to agree on plausible paths for the transition to sustainable energy, to overcome the lack of communication and institutional trust, and to address common problems and ways to solve them, in addition to finding common ground between concerned institutions to exchange experience and further develop local knowledge.
- Establishing a strategic unit for renewable energy at the project level, to serve as a neutral unit to organize, monitor and accelerate public-private partnerships, especially in the stages of negotiation, contracting and implementation of renewable energy projects. A timetable must also be

approved for compliance with legislation by distributors and other concerned institutions. Periodic meetings should be held to follow-up on performance in the transition to renewable energy sources, in addition to forming a team that resolves disputes such that they are quickly overcome.

- Developing business models and mechanisms for the renewable energy sector while building on successful investor experiences. Three business models were identified through interviews:
 - Reduced Price: The investor is fully responsible for the financing, development and implementation of the renewable energy plant. Long-term power purchase agreements are reached with electricity distributors, at prices lower than the average, national price, by about 15%-40%.
 - Build-Operate-Transfer: Large initial investments constitute one of the most important obstacles to the development of solar power plants. The build-operate-transfer system is the most appropriate alternative to financing these projects. This business model involves an agreement in which the investor is responsible for financing the entire power plant, including design, procurement and construction. The renewable energy plant is owned and operated by the investor until the payback period is complete, and the agreed profit margin is realized (usually 5-8 years). Subsequently, ownership of the plant will pass to the ultimate owner (a company or distribution agency) under pre-agreed arrangements.
 - Partnerships: Public-private partnerships have recently gained more attention in Palestine, due to their effectiveness in integrating the political and organizational forces of the public sector, and the financial and technical strength of the private sector. A public-private partnership involves joint ownership of the design and construction of renewable energy plants. For example, electricity distributors (e.g. local authorities) can invest and own 25% of the plant, while the investor receives 75% of ownership.