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# JORDAN'S ENERGY TRANSITION: BALANCING SUPPLY SECURITY AND JUSTICE

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### Arab Reform Initiative

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# Table of Contents

|                                                                                          |    |
|------------------------------------------------------------------------------------------|----|
| Introduction                                                                             | 7  |
| Defining the Concept of a Just Energy Transition                                         | 8  |
| History of the Energy Transition in Jordan                                               | 8  |
| The Early Years (1970–2003)                                                              | 9  |
| Policies of Restructuring, Privatization, and Market Liberalization in the Energy Sector | 9  |
| Jordan’s Energy Transition (2007–2025): Responding to Calls for Energy Security          | 11 |
| Alternative / Nuclear Energy Uses                                                        | 13 |
| Diversification of Natural Gas Supplies                                                  | 17 |
| The Transition to Renewable Energy                                                       | 19 |
| Energy Efficiency                                                                        | 24 |
| Green Hydrogen Program                                                                   | 30 |
| Active Civil Society Organizations in Energy Transition in Jordan                        | 38 |
| Challenges Facing Civil Society Organizations                                            | 38 |
| Just Energy Transition Scope in Jordan                                                   | 39 |
| The Importance of Awareness of Energy Transition History                                 | 40 |
| The Role of the Political Process in a Just Transition                                   | 43 |
| The Role of Knowledge and Knowledge Production Methodologies                             | 44 |
| Just Transition: Vision, Goals, and Strategies                                           | 45 |
| Recommendations                                                                          | 48 |
| Appendix: Active Civil Society Organizations in Jordan’s Energy Transition               | 50 |





# Introduction

This paper aims to explore the energy strategies adopted by the Jordanian government over the past five decades to achieve energy security in a sector plagued by ongoing geopolitical volatility and instability. In the face of these challenges, the government has adopted the diversification of energy supplies and increased reliance on domestic energy sources as two key pillars at the core of the desired transition. This vision required the development of strategic plans, the enactment of legislation, and the establishment of new government institutions. In this context, the study examines decision-making structures and the role of geopolitical forces to deepen our understanding of the transition policy-making process. The paper investigates the distribution of the transition's benefits across different segments of society, highlighting both the beneficiaries and the disadvantaged groups. It includes a survey of active civil society organizations (CSOs) in the field of the energy transition, an analysis of the challenges they face, and the approaches to change they adopt. It also uses this analysis to assess aspects of justice and injustice in the energy transition.

First, we describe the decisions taken by the Jordanian government from the 1970s through the end of the 20th century to secure energy supplies at preferential prices amid volatile geopolitical conditions. We then explain the changes that occurred within the sector's institutions as a result of restructuring and privatization programs, and how these institutional changes impacted the sector's performance over the following three decades. We then examine how the Jordanian government responded to calls for energy security, review the options put forward that led to the issuance of the sector's first national strategy for the period 2007–2020, and assess the government's efforts to implement the provisions of the strategy. We then provide an analysis of the role of CSOs in influencing energy transition policies. We then review Jordan's current efforts to position the country as a regional hub for the production and export of green hydrogen. In conclusion, we employ a conceptual framework to examine the dynamics of energy transition policy-making in Jordan and present a set of recommendations aimed at preparing the

sector for a just transition that serves all segments of society equitably.

The methodology for preparing this paper relied on the collection and analysis of qualitative information from primary and secondary sources. To answer the research questions we posed regarding the drivers, challenges, and equity of the energy transition in Jordan, we drew on desk research, interviews with energy experts, and participation in relevant workshops and conferences. The desk research focused on reviewing a range of literature, including government documents (strategies and legislation), research reports, media articles, and papers published in peer-reviewed and non-peer-reviewed journals. The interviews were conducted in person and digitally between April and November 2025, with the participation of 14 experts, researchers, and former government officials.

The history of the energy transition in Jordan illustrates how social justice and autonomy over sectoral decisions have become hostage to energy security policies. The policy-making processes, along with their objectives and content, demonstrate that the energy transition does not occur in a political or economic vacuum, but rather reflects a struggle among competing actors seeking to influence policy content and impose their own agendas. After the government issued the sector's first strategy in 2007, rivalries emerged between domestic and regional political and economic interests vying for control over the energy sector's future. The paper reveals how these rivalries and unequal power dynamics within Jordanian society have shaped decisions regarding the exploitation of the country's natural energy resources, leading to an uneasy coexistence among six energy sources.<sup>1</sup> Amid global interest in the supply of green hydrogen, the paper examines the position and role of regional geopolitical powers in supporting green hydrogen industries that possess massive land and water footprints, without regard for the local social and ecological context. Jordan's energy transition

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1 These sources include imported natural gas, domestic natural gas, shale gas, renewable energy sources (solar and wind), nuclear energy, and energy efficiency.

efforts over more than five decades demonstrate that governance structures that do not grant civil society space as a legitimate political actor typically lead to the repeated reproduction of hasty and misguided policies and decisions, with dire consequences for justice.

## Defining the Concept of a Just Energy Transition

The term “just energy transition” has emerged to address the social and economic challenges associated with phasing out fossil fuels, and it entails two requirements: first, that the transition be accompanied by a substantial, if not complete, phase-out of fossil fuel use; and second, that it strive to achieve justice.<sup>2</sup> In our analysis of Jordan's energy transition landscape, we use this framework to assess the extent to which changes in this sector comply with the requirements of a “just transition,” highlighting events, drivers, and outcomes. To clarify, the call to phase out fossil fuels does not imply an immediate cessation of their use, but rather the formulation of a realistic vision supported by a well-thought-out transition plan to end reliance on fossil fuels in the long term and gradually replace them with renewable energy sources. Regarding the substance of a just transition, the matter becomes more complex and, in Jordan's case, calls for an examination of planning strategies, decision-making structures, the role of political and economic institutions, environmental sustainability measures, energy sovereignty, and strategies for managing the distribution of transition risks and benefits

Regarding distributive justice, researcher Ibrahim Gharaibeh, in his book *The Possible Jordan*, elaborates on the fair distribution of benefits and burdens, which he considers one of the foundations for measuring progress, calling for the need to define the benefits that will result from legislation or economic projects. He states: “Attracting capital is not an indicator of the success of institutions, programs, and projects; rather, benefits and gains

must be distributed fairly among citizens and on a broad scale that is not limited to project owners. A project that generates profits is of no importance or value if those profits and benefits accrue to only a limited minority of people.”<sup>3</sup> In line with this concept, this paper aims to understand the impacts of the transition decisions made in Jordan, identify the beneficiaries of energy transition policies, and highlight the groups negatively affected by these changes, in an effort to identify aspects of justice and injustice.

## History of the Energy Transition in Jordan

At a seminar held by the Jordanian business EDAMA Association for Energy, Water and Environment (EDAMA)<sup>4</sup> on 23 December 2024 in Amman, His Excellency the Minister of Energy and Mineral Resources noted the government's aim to increase the share of renewable energy in electricity generation to 31% and then to 50% in the near future. He emphasized that Jordan “began its energy transition early and is considered one of the leading countries in the region.”<sup>5</sup> This statement suggests that the government's definition of the energy transition concept is limited to the shift toward renewable energy sources, without questioning the equitable distribution of benefits, the means of making transition decisions, or the achievement of energy sovereignty. It was intended to reassure the seminar's attendees and organizers that the ministry is committed to the “energy transition.” The seminar took place at a time when the energy sector is witnessing the passage of legislation and legal amendments expected to leave a clear and

2 J. Mijin Cha, *A Just Transition For All: Workers and Communities for a Carbon-free Future*, MIT Press, 2024, p. 3.

3 Ibrahim Gharaibeh, *The Possible Jordan: What We Want to Be and What We Must Do to Become What We Want*, Ministry of Culture, 2020, p. 204, para. 2, available at <https://alkutba.gov.jo/readPdf.php?url=f202032.pdf> (Ibrahim Gharaibeh, *The Possible Jordan*)

4 The EDAMA Association is a Jordanian business association dedicated to developing and fostering mature sectors in the fields of energy, water, and the environment, with the aim of promoting Jordan's transition to a green economy.

5 EDAMA Association for Energy, Water, and Environment, “Renewable Energy and New Electricity Laws and Their Alignment with the Economic Modernization Vision”, December 2024, available at <https://edama.jo/ar/!-إفطار-الطاقة-تحت-عنوان-قوانين/>



profound mark on the sector's transition trajectory in the coming decades. Before delving into the essence of these transformations, it is useful to first review the historical developments<sup>6</sup> in Jordan's energy sector landscape since the 1970s, to understand the domestic and external factors that influenced the discussions at the time regarding the sector's strategy.

## The Early Years (1970–2003)

In the decades leading up to the start of the new millennium, Jordan's strategy for meeting most of its energy needs relied on importing fossil fuels from neighboring countries under special bilateral agreements at preferential prices.<sup>7</sup> During the 1970s, Jordan gained strategic importance in the region due to its role in supplying skilled labor to neighboring countries, prompting Saudi Arabia and Kuwait to provide development support, which included supplying the country with oil and petroleum products at preferential prices.<sup>8</sup> By the early 1980s, Gulf states' oil revenues had plummeted due to the collapse of global oil prices, negatively impacting the volume of their financial aid to Jordan and the subsidized oil supplies it received from these countries. This coincided with the beginning of political rapprochement between Jordan and Iraq, which gradually strengthened during the 1990s and continued until just before 2003, enabling Jordan in the 1980s to replace its oil imports from Gulf states with Iraqi oil at preferential prices, and later through "oil-for-goods" barter agreements during the 1990s, which significantly reduced the cost of importing oil and its derivatives.<sup>9</sup> Following the US

invasion of Iraq in 2003 and the cessation of Iraqi oil supplies, Jordan resumed importing oil from Saudi Arabia and Kuwait, this time at global market prices.<sup>10</sup> In the same year, it also signed a 15-year agreement with Egypt to import natural gas via the Arab Gas Pipeline (AGP) at low prices.<sup>11</sup> Since 2003, Egyptian gas imports have covered 80% of electricity production,<sup>12</sup> underscoring their strategic value to Jordan. Meanwhile, since the late 1990s, Jordan began implementing an energy sector restructuring program as part of its economic reform agenda.

## Policies of Restructuring, Privatization, and Market Liberalization in the Energy Sector

Under the guidance of the International Monetary Fund (IMF) and with support from the World Bank (WB), Jordan began implementing an economic reform program in 1989, amid a severe economic crisis that led to a ballooning budget deficit, negatively impacted the country's international reserves, and nearly prevented it from meeting its external obligations. Through the program, Jordan secured numerous loans, which required meeting conditions aimed at achieving economic stability by stabilizing public finances and reducing the deficit. Among the reform program's measures were enhancing the investment climate and encouraging the private sector through trade liberalization, lifting legislative restrictions, restructuring certain sectors,

6 What we seek in this historical introduction is to present events and document ideas whose details are largely unknown today, despite their role in shaping the energy sector as it exists today. We also aim to understand the political and economic context that has influenced the approaches of political and economic elites. It is essential to strengthen our awareness of the history of transition policies as a means of avoiding past mistakes and improving decision-making capacity.

7 Basma Al-Shatti, "National Energy Strategies in Jordan: Between the Past, Present, and Future of Sustainability", Solarabic, 2 March 2025, available at <https://solarabic.com/learn/pro/2025/03/-استراتيجيات-الطاقة-الوطنية-في-الأردن/>

8 Allan Martinez Venegas, "Jordan's Energy Security: Impact of Dependency on Unstable Foreign Sources on Social Stability and Policy Alternatives", Independent Study Project (ISP) Collection, no. 1634 (Spring 2013), available at [https://digitalcollections.sit.edu/isp\\_collection/1634](https://digitalcollections.sit.edu/isp_collection/1634) (Venegas, "Jordan's Energy Security")

9 Venegas, "Jordan's Energy Security".

10 Benjamin Schuetze and Hussam Hussein, "The geopolitical economy of an undermined energy transition: The case of Jordan", *Energy Policy* 180 (September 2023), available at <https://doi.org/10.1016/j.enpol.2023.113655> (Benjamin Schuetze, "The geopolitical economy of an undermined energy transition")

11 Asmaa Muhammad Amin, "The Energy Sector in Jordan: Policies That Produced Crises", in Hamza Hamushan and Katie Sandwell, eds., *Challenging Green Capitalism: Climate Justice and Just Transition in the Arab Region*, Dar Safsafa for Publishing, Distribution, and Studies, 2024, p. 232 (Asma Amin, "The Energy Sector in Jordan")

12 Ministry of Energy and Mineral Resources, *Annual Report 2008*, 2009, available at [https://www.memr.gov.jo/ebv4.0/root\\_storage/ar/eb\\_list\\_page/2008\\_التقرير\\_السنوي\\_لعام\\_2008.pdf](https://www.memr.gov.jo/ebv4.0/root_storage/ar/eb_list_page/2008_التقرير_السنوي_لعام_2008.pdf) (Ministry of Energy and Mineral Resources, *Annual Report 2008*)

and selling state-owned enterprises (SOEs).<sup>13</sup>

The restructuring of Jordan's electricity sector began with the transformation of the Jordan Electricity Authority (JEA)—which had been responsible for managing all activities in the sector—into a public shareholding company wholly owned by the Jordanian government, named the National Electric Power Company (NEPCO), in accordance with the Electricity Law No. 10 of 1996.<sup>14</sup> The aim of the restructuring was to establish a regulatory and institutional framework that would pave the way for the upcoming privatization process.<sup>15</sup> The restructuring process advanced with the enactment of the amended Electricity Law No. 13 of 1999, under which NEPCO, the parent company, was divided into three government-owned companies, each with administrative and financial autonomy. These companies are NEPCO, the Central Electricity Generation Company (CEGCO), and the Electricity Distribution Company (EDCO). Under this structure, the government retained ownership of NEPCO, while CEGCO assumed responsibility for electricity generation, and EDCO undertook retail electricity supply in its concession areas, which included the southern governorates (Aqaba, Ma'an, Tafila, Karak), the Jordan Valley, and the Eastern Region. As for the other concession areas,<sup>16</sup> the Irbid District Electricity Company (IDECO), a private company in which the government owns 55.4% of the shares, was granted the distribution concession for the governorates located in northern Jordan (Irbid, Mafraq, Ajloun, Jerash, and parts of Balqa), while the Jordan Electric Power Company (JEPCO), a private company established in 1938, is responsible for electricity distribution in the central region of the Kingdom. In 2001, the Electricity Regulatory Commission (ERC) was established to assume regulatory and supervisory functions for the sector.

Following the restructuring, the government began privatizing power generation and distribution companies. In 2007, it sold 51% of the shares in the

Central Electricity Generation Company (CEGCO) to Dubai International Capital (DIC), the international investment arm of Dubai Holding, while retaining a 40% stake after the Social Security Corporation (SSC) purchased 9% of the government's share.<sup>17</sup> In 2008, a multinational investment consortium<sup>18</sup> purchased the government's entire 100% stake in EDCO and its entire 55.4% stake in IDECO.<sup>19</sup> This was followed in 2009 by the consortium's sale of its entire stake in IDECO to EDCO.<sup>20</sup>

It is noteworthy that, by a decision of the Cabinet, the Samra Electric Power Company (SEPCO) was established as a government-owned company in 2004,<sup>21, 22</sup> at the same time that the government was preparing its plans to privatize electricity generation and distribution companies. The reason was the sharp rise in electricity demand expected at the time and the government's need to expedite the construction of a power generation facility to meet this demand without entering into lengthy negotiations with independent power producers.<sup>23</sup> Between 2009 and 2015, the Jordanian government granted licenses to several international consortia of independent power producers to build, own, and operate thermal power plants to meet the growing demand for electricity. These plants rely on burning natural gas to generate electricity, with the option to use heavy fuel oil or diesel if gas is unavailable.

The restructuring of the electricity sector, followed by privatization and acquisitions, has given rise to a new landscape that can be described as hybrid. While responsibility for electricity distribution has been fully transferred to the private sector, the generation sector combines both state-owned and private companies. Meanwhile, the government

13 Jane Harrigan et al., "The IMF and the World Bank (WB) in Jordan: A Case of Over-Optimism and Elusive Growth", *Review of International Organizations* 1 (2006), pp. 263–292, available at <https://doi.org/10.1007/s11558-006-9490-8>

14 Jordan Electricity Company, *Annual Report 2020*, 2021, available at [https://www.nepco.com.jo/store/DOCS/web/2020\\_EN.pdf](https://www.nepco.com.jo/store/DOCS/web/2020_EN.pdf)

15 Asma Amin, "The Energy Sector in Jordan", p. 228.

16 Central Electricity Generation Company, "Historical Overview", available at <https://www.cegco.com.jo/لمحة-تاريخية>, accessed 15 July 2025 (Central Electricity Generation Company, "Historical Overview")

17 Central Electricity Generation Company, "Historical Overview"

18 This consortium is the Kingdom Electricity Company for Energy Investments, owned by Dubai Capital, Privatization Holding Company, and United Arab Investors.

19 Amin, "The Energy Sector in Jordan", p. 228

20 Irbid District Electricity Company, "Company Profile", available at <https://www.ideco.com.jo/portal/WebForms/StartOfCompany.aspx?MenuId=1>, accessed 16 July 2025

21 Samra Electric Power Company, "About Us", available at <https://sepcocom.jo/ar/about-us>, accessed 16 July 2025 (Samra Electric Power Company, "About Us")

22 The Samra Power Plant currently has a generating capacity of 1,571 megawatts and accounts for the largest share of electricity production in Jordan, generating more than 30% of the country's electricity.

23 In-person interview with a former government official in the energy sector, 22 October 2025.

retains ownership of NEPCO, which is tasked with operating the electricity transmission grid and managing interconnection projects with neighboring countries, as well as purchasing electricity from generation companies and selling it to distribution companies. Furthermore, the authority to purchase fuel (gas and petroleum products) from global markets and supply it to generation companies remains exclusively with NEPCO due to its historical ability to secure preferential prices.<sup>24</sup>

The Electricity Law exclusively authorizes NEPCO to purchase electricity from generation companies in accordance with long-term bilateral purchase agreements that take into account NEPCO's supply of generation fuel to electricity producers. The prices at which electricity is sold to NEPCO and the quantities it is obligated to purchase are determined under these agreements concluded with each generation company individually. The Electricity Regulatory Commission (ERC), renamed the Energy and Minerals Regulatory Commission (EMRC) in 2014, sets the price at which NEPCO sells electricity to distribution companies using a "cost-plus" mechanism, as well as the tariff for electricity sold to end consumers based on a pricing formula determined by the Commission.

Researcher Asma Amin raised doubts about the feasibility of restructuring the sector, noting in a research paper that the sector's structural problems worsened after the completion of privatization and that the financial burden on the government increased as a result of the long-term contracts the government entered into with fuel companies and private power generation companies.<sup>25</sup> This is because the contracting and pricing mechanisms resulting from the sector's restructuring have placed the financial and operational risks in the sector on NEPCO, whether those associated with fluctuations in global fuel prices or those linked to production costs, especially given the legal contracts that obligate it to purchase predetermined quantities of electricity from specific generation companies regardless of demand levels, while these arrangements granted generation and distribution companies protection from these risks and guarantees of profitable

returns.<sup>26</sup> The government justified the new sector structure on the grounds that it would ensure the reliability of electricity supplies.<sup>27</sup> Consequently, the new sector structure lacked market incentives, which typically drive companies to compete with one another to provide the most efficient services, control costs, and raise productivity levels, raising questions about the feasibility of privatization in the energy sector.<sup>28, 29, 30</sup> This was the conclusion reached by the government's privatization evaluation committee report issued in 2014, which found that "the government's experience in selling part of its holdings in electricity generation and distribution does not show that these operations achieved their intended economic objectives, whether in maximizing strategic investment, protecting the treasury from the consequences of rising fuel costs, increasing the sector's efficiency, or diversifying the energy sector."<sup>31, 32</sup>

## Jordan's Energy Transition (2007–2025): Responding to Calls for Energy Security

It can be said that energy security began to occupy a significant place in the thinking and attention of Jordanian policymakers following the disruption of oil supplies from Iraq in 2003, in light of forecasts of rising energy demand and the need to reduce reliance on a single external source. This prompted the Jordanian government to formulate a national energy sector strategy for the first time, with the

24 In-person interview with a former government official in the energy sector, 22 October 2025.

25 Amin, "The Energy Sector in Jordan", pp. 228–229.

26 Prime Minister's Office – Hashemite Kingdom of Jordan, *The Privatization Experience in Jordan: Assessing the Past for the Future*, March 2014, available at <https://www.pm.gov.jo/AR/Pages/تقرير.aspx> (Prime Minister's Office, *The Privatization Experience in Jordan*)

27 In-person interview with a former government official in the energy sector, 22 October 2025.

28 Prime Ministry, *The Experience of Privatization in Jordan*

29 Amin, "The Energy Sector in Jordan", pp. 228–229.

30 Benjamin Schuetze, "The geopolitical economy of an undermined energy transition".

31 Prime Minister's Office, *The Privatization Experience in Jordan*.

32 Amin, "The Energy Sector in Jordan", pp. 228–229.

aim of increasing the contribution of domestic energy sources. The first attempt was the Cabinet's approval at the end of 2004 of the National Energy Sector Strategy for the period 2005–2020, which was updated and relaunched in 2007 to become the Updated Master Energy Sector Strategy for the period 2007–2020. The update was prompted by the sharp rise in global oil prices during the period 2003–2008,<sup>33</sup> which led to an increase in government subsidies for petroleum products to 500,000–700,000 dinars (around US\$705,219–US\$987,306)<sup>34</sup> Decision-makers therefore decided to increase reliance on domestic energy sources by raising the share of renewable energy in the overall energy mix in the updated strategy and introducing the option of nuclear energy, which had not been included in the strategy prior to its update.<sup>35</sup>

The Updated Master Energy Sector Strategy for 2007–2020 aimed to increase the share of domestic content in the overall energy mix from 4% to 39% by 2020 through investment of 10–13 billion dinars (around US\$14.1–18.3 billion) during the implementation period.<sup>36</sup> The strategy included a package of legislative, administrative, and financial tools to expand gas and oil infrastructure projects, as well as a set of measures to begin exploiting oil shale, solar, wind, and nuclear energy, and energy efficiency technologies across all sectors.<sup>37</sup> Notably, the strategy relied primarily on Egyptian gas imports and even included projections to increase these imports; it also assumed the successful development of the local Al-Risha field and an increase in gas production from 100 to 340 million cubic feet per day (MMcf/d) by 2015.<sup>38</sup> The strategy called for seeking alternative gas sources from other countries, such as Saudi Arabia and Iraq, to meet

long-term demand, but no budget was allocated for this option, nor was it included among the potential energy sources.

The Ministry of Energy and Mineral Resources (MEMR) began drafting the necessary legislation immediately after the strategy was launched to implement the measures outlined therein. Because the legislative process takes a long time, the Ministry sought approval from the Prime Minister's Office to expedite the implementation of certain projects. In 2007, the Nuclear Energy Law No. 42 of 2007, as amended, and the Radiation Protection and Nuclear Safety Law No. 43 of 2007, as amended, were enacted, pursuant to which JAEC and the Jordan Nuclear Regulatory Commission (JNRC) were established the following year.<sup>39</sup> In 2008, the Cabinet approved a memorandum of understanding (MoU) with the Estonian company Eesti Energia AS, to build a power plant using direct oil shale combustion by 2015.<sup>40</sup> Since 2008, MEMR has been issuing tenders for pilot projects to generate electricity using solar and wind energy, according to the Ministry's annual reports. In 2008, the Cabinet issued a decision exempting energy-saving devices and renewable energy equipment from customs duties and sales tax to encourage citizens and institutions to acquire such equipment.<sup>41</sup> In 2009, MEMR began developing a draft law on renewable energy and energy efficiency to encourage private sector investment in renewable energy projects.<sup>42</sup> In 2012, the Renewable Energy and Energy Efficiency Law No. 13 of 2012 was enacted, following its issuance as a provisional law in 2010.<sup>43</sup> In implementation of the plan to increase domestic gas production, Jordan's National Petroleum Company (NPC) signed an agreement in 2009 with BP, under which the company carries out exploration, appraisal, development, and production activities.<sup>44</sup>

But how has the entry of new economic interests

33 Bassam Fattouh, *Oil Market Dynamics through the Lens of the 2002–2009 Price Cycle*, January 2010, available at <https://www.oxfordenergy.org/wpcms/wp-content/uploads/2010/11/WPM39-OilMarketDynamicsThroughTheLensofthe2002-2009PriceCycle-BassamFattouh-2010.pdf>

34 In-person interview with a former government official in the energy sector, 22 October 2025.

35 In-person interview with a former government official in the energy sector, 22 October 2025.

36 Hashemite Kingdom of Jordan, *Updated Master Strategy of Energy Sector in Jordan for the period 2007–2020*, December 2007, available at [https://www.memr.gov.jo/EBV4.0/Root\\_Storage/EN/EB\\_Info\\_Page/energystategy.pdf](https://www.memr.gov.jo/EBV4.0/Root_Storage/EN/EB_Info_Page/energystategy.pdf) (Hashemite Kingdom of Jordan, *Energy Sector Strategy 2007–2020*).

37 Hashemite Kingdom of Jordan, *Energy Sector Strategy 2007–2020*.

38 Hashemite Kingdom of Jordan, *Energy Sector Strategy 2007–2020*.

39 Ministry of Energy and Mineral Resources, *Annual Report 2008*.

40 Ministry of Energy and Mineral Resources, *Annual Report 2008*.

41 Ministry of Energy and Mineral Resources, *Annual Report 2008*.

42 Ministry of Energy and Mineral Resources, *Annual Report 2009*, 2010, available at [https://www.memr.gov.jo/ebv4.0/root\\_storage/ar/eb\\_list\\_page/2009\\_التقرير\\_السنوي\\_لعام.pdf](https://www.memr.gov.jo/ebv4.0/root_storage/ar/eb_list_page/2009_التقرير_السنوي_لعام.pdf) (Ministry of Energy and Mineral Resources, *Annual Report 2009*).

43 Ministry of Energy and Mineral Resources, *Annual Report 2012*, 2013, available at [https://www.memr.gov.jo/ebv4.0/root\\_storage/ar/eb\\_list\\_page/2012\\_التقرير\\_السنوي\\_لعام.pdf](https://www.memr.gov.jo/ebv4.0/root_storage/ar/eb_list_page/2012_التقرير_السنوي_لعام.pdf) (Ministry of Energy and Mineral Resources, *Annual Report 2012*).

44 Ministry of Energy and Mineral Resources, *Annual Report 2009*.



into the sector affected the process of energy diversification and the nature of relations among the various actors? With the rise of multiple groups with differing priorities, some energy options may have encountered resistance from these actors. In fact, while Jordan's political and economic elites shared a belief in the necessity of diversifying energy sources, whether imported or domestic, they differed on the specific options available. The divergence of views regarding the future of the energy sector in the years following the strategy's release can be inferred by examining the orientations and positions of these elites, as illustrated in Figure 1. The quotations reveal that various actors and institutions reflect divergent orientations, in accordance with their interests and perceptions. We also note that different actors have put forward their own interpretations of the concept of energy security and advanced their arguments, favoring their preferred options as the most appropriate from a technical, economic, or security perspective.

While His Majesty King Abdullah II's statement supported the principle of integration in energy and water policies, in a manner that ensures sound management, increases supply, and diversifies energy sources, the statements of decision-makers and private-sector executives were characterized by a preference for specific options, in line with the orientations, positions, or interests of these actors, whether political or economic. The statement by the head of the Jordan Atomic Energy Commission (JAEC) reflects an attempt to convince political and economic elites of the superiority of nuclear energy as a "well-proven technology," compared to oil shale, which is "under development." Regardless of the validity of this claim, it is clear that the discourse was not directed at the Jordanian public, which had raised concerns about the program; rather, the technical comparison served merely as a means to secure government political support for new actors and interests in the energy landscape linked to the nuclear industry.

The same pattern is observed in the mobilization of political support for emerging renewable energy sources, which generated doubt and hesitation

regarding their adoption among elites even in the years preceding the release of the sector's strategy for the period 2007–2020. This was because the prevailing belief was that the high investment costs of renewable energy systems at the time, compared to traditional energy systems, constituted an obstacle.<sup>45</sup> Therefore, a common theme in the discourse of renewable energy advocates was the emphasis on the economic gains associated with investment in an emerging sector, as they recognized that what captures the interest of political and economic elites is economic revitalization, job creation, and the promotion of exports.

In what follows, we present a detailed description and analysis of the efforts to diversify electricity generation sources advocated by the Energy Strategy for the period 2007–2020, to reveal the political, economic, and social drivers that have influenced the energy transition.

## Alternative / Nuclear Energy Uses

The sector's strategy for the period 2007–2020 recommended integrating electricity generated by nuclear power plants into the overall energy mix at a rate of 6% by 2020, as part of efforts to increase the share of domestic energy sources.<sup>46</sup> To achieve this goal, the government established JAEC in 2008 to oversee the development and implementation of Jordan's nuclear program. From the outset, JAEC attached great importance to uranium exploration and mining. This significant interest was driven by an optimistic vision of using uranium, after processing it as reactor fuel, exporting quantities exceeding Jordan's needs, and using the export revenues to finance the construction of a nuclear power plant.<sup>47</sup> Exploration and mining operations began in 2009 after the Commission brought in international companies to explore for uranium in the north, center, and south of the Kingdom.<sup>48</sup> Since then, JAEC has repeatedly announced the existence of rich uranium deposits and its intention to begin developing the mines; however, the companies

45 Hashemite Kingdom of Jordan, *Energy Sector Strategy 2007–2020*.

46 Hashemite Kingdom of Jordan, *Energy Sector Strategy 2007–2020*.

47 Aaron Magid, "Time to Reconsider Jordan's Nuclear Program", Middle East Institute, 20 June 2016, available at <https://www.mei.edu/publications/time-reconsider-jordans-nuclear-program> (Aaron Magid, "Jordan's Nuclear Program").

48 World Nuclear Association, "Nuclear Power in Jordan", 28 March 2024, available at <https://world-nuclear.org/information-library/country-profiles/countries-g-n/jordan> (World Nuclear Association, "Nuclear Power in Jordan")



## Figure 1: Quotations on the future of the energy sector in Jordan (2006–2010)

At the same time, we are taking proactive measures to overcome the limitations of our natural resources. By improving water resource management, increasing water supply through desalination, and providing new sources of solar, wind, and nuclear energy, Jordan will ensure its future development.

**His Majesty King Abdullah II, Jordan Investment Forum, 2007**

The Sun Belt and the Technology Belt can become extremely powerful when they begin to see themselves as a community: a community of energy, water, and climate security; a community for their shared future.

**His Royal Highness Prince El Hassan bin Talal, Global Energy Dialogue, Hannover Fair, April 2006**

The solution to all these crises lies in the transition to renewable energy, a green culture, and green economies. The time for this change has come.

**His Royal Highness Prince Asim bin Nayef, Green Technologies Forum and Exhibition, 2010**

Even if we had the best uranium reserves in the world, we would still need to continue extracting oil shale and other energy sources. However, I believe that the technology required to extract oil from oil shale is still under development, whereas nuclear energy is a well-proven technology.

**His Excellency Dr. Khaled Toukan, President of the Jordan Atomic Energy Commission (JAEC)**

We believe that renewable energy will create more than 3,000 jobs over the next few years, and Gross Domestic Product (GDP) will increase by 2.5% to 4% as a result of investment in renewable energy. It will also attract foreign direct investment, as well as new technologies.

**His Excellency Engineer Khaled Irani, Former Minister of Energy and Mineral Resources (MEMR), 5 November 2010**

Energy efficiency is a fundamental feature of energy policies in all countries, whether they are energy importers or exporters. Any discussion of energy policies addresses three issues: energy security, economic development, and environmental protection. As a three-pronged solution, energy efficiency can contribute to achieving all these objectives.

**His Excellency Engineer Khaldoun Qtaishat, Former Minister of Energy and Mineral Resources (MEMR), 9 November 2009**

Jordan has observed the global shift toward renewable resources, a direction even oil-rich countries have chosen to pursue, given its importance from environmental, economic, strategic, and security perspectives. Jordan was among the first countries to sign the Desertec Initiative, launched as part of the Club of Rome. Jordan has been at the forefront of countries leading in the field of renewable or alternative energy supplies. We have adopted a national energy strategy that will propel Jordan to become a net energy exporter by 2030.

**Muayad Awad, General Manager of Clean Energy Concepts, 7 November 2010**

I am very proud of Jordan, as it is seeking energy solutions and has a portfolio that brings together various options to meet its future needs. Naturally, the prospects for success vary, but there is no single, simple, and comprehensive solution; rather, options must be diversified. What we are currently working on is identifying the pathways for the success of the project to produce energy from Jordanian oil shale using in-situ conversion technology.

**Intisar Al-Kindi, Exploration Director at the Jordanian Oil Shale Company (JOSCO), 8 November 2010**

SOURCE: Quotations drawn from Friedrich-Ebert-Stiftung (FES) and Royal Scientific Society (RSS), Sustainable Energy Mix and Policy Framework for Jordan, 2011, p. 5, available at <https://library.fes.de/pdf-files/bueros/amman/08883.pdf>

conducting the exploration announced their withdrawal one after another in 2011 and 2012, citing the lack of commercially viable concentrations of the mineral, according to their statements.<sup>49, 50, 51</sup>

In the same year it began uranium exploration, JAEC initiated studies to identify a suitable site for a nuclear reactor. In 2009, JAEC initially examined the feasibility of building the reactor near Aqaba and the Red Sea to facilitate access to cooling water. However, at the end of 2010, JAEC announced that the Qasr Amra area, a desert region located 85km east of the capital, Amman,<sup>52</sup> had been selected as the site for the nuclear reactor, and that treated wastewater would be piped from the Samra Wastewater Treatment Plant for use in cooling the reactor.

Since 2011, popular and political opposition has emerged in Jordan toward the uranium mining and nuclear power generation program for several reasons, the core of which stems from a lack of transparency in the Commission's management of the nuclear program.<sup>53, 54</sup> Opponents organized numerous sit-ins and protests against the program, the intensity of which increased after the announcement that the Qasr Amra area had been selected as the site for the nuclear reactor and following the Fukushima disaster. The opposition movement consisted of a mix of political and environmental activists, members of the Lower House of Parliament, experts in energy and nuclear physics, and citizens from local communities.<sup>55</sup> The sit-ins and other activities of the movement were organized by the National Campaign Against the Nuclear Project in Jordan, led by activists from the Bani Sakhr tribe, whose lands and surroundings lie

near the reactor construction site in Qasr Amra.<sup>56</sup>

In 2012, the Lower House of Parliament voted 36 to 27 in favor of the parliamentary Energy and Mineral Resources Committee's recommendation to suspend the country's nuclear program.<sup>57</sup> However, this popular and parliamentary opposition did not prevent government officials from proceeding with the nuclear reactor construction program, as the government, represented by JAEC, selected a Russian company in 2013 to implement the Jordanian nuclear power plant project and signed an agreement in 2014 with the company as a strategic partner, investor, and operator.<sup>58</sup> In fact, the "second" National Energy Strategy for the period 2015–2025 envisaged that nuclear energy would provide 47% of electricity generation by 2025.<sup>59</sup> In 2015, the governments of Jordan and Russia signed an agreement worth US\$10 billion to build two nuclear reactors with a capacity of 1,000 megawatts (MW) each, but negotiations stalled over financing, prompting the government to announce the cancellation of the agreement in 2018.<sup>60</sup> Since then, JAEC has been studying the applications of small modular reactors (SMRs) for electricity generation and seawater desalination in Jordan and assessing their feasibility.<sup>61</sup> Jordan's "third" Energy Sector Strategy for 2020–2030 did not include any contribution from nuclear energy in the energy mix,<sup>62</sup> but the strategy's executive action plan included conducting feasibility studies on electricity generation from nuclear energy beyond the strategy period.<sup>63</sup>

49 World Nuclear Association, "Nuclear Power in Jordan".

50 Hussein Omar Tawqa, "Uranium Between the Russians, the French, and Khaled Toukan", All Jordan News, 15 April 2014, available at <https://www.allofjo.net/index.php?page=article&id=67693>

51 Bater Wardam, "Five Reasons for the Inevitable Failure of the Jordanian Nuclear Program", 7iber, 11 January 2014, available at <https://www.7iber.com/jo-nuclear-program/> (Bater Wardam, "Five Reasons for the Inevitable Failure of the Jordanian Nuclear Program").

52 World Nuclear Association, "Nuclear Power in Jordan".

53 Bater Wardam, "Five Reasons for the Inevitable Failure of the Jordanian Nuclear Program".

54 Friedrich-Ebert-Stiftung and Royal Scientific Society, *Sustainable Energy Mix and Policy Framework for Jordan*, 2011, available at <https://library.fes.de/pdf-files/bueros/amman/O8883.pdf>

55 Bater Wardam, "Five Reasons for the Inevitable Failure of the Jordanian Nuclear Program".

56 All Jordan News, "Sit-in in Al-Mawqar Against 'Nuclear' Crosses Red Lines", 22 December 2013, available at <https://www.allofjo.net/index.php?page=article&id=60257>

57 World Nuclear Association, "Nuclear Power in Jordan".

58 World Nuclear Association, "Nuclear Power in Jordan".

59 Serena Sandri, "Sustainability of the Energy Sector in Jordan".

60 World Nuclear Association, "Nuclear Power in Jordan".

61 Ministry of Energy and Mineral Resources, "Specialized Lecture on Nuclear Power Reactors and Their Contribution to Reducing Energy and Water Costs in Jordan", 16 July 2024, available at [https://www.memr.gov.jo/Ar/NewsDetails/محاضرة\\_متخصصة\\_عن\\_مفاعلات\\_الطاقة\\_والمياه\\_في\\_الأردن\\_النووية\\_ومساهمتها\\_في\\_خفض\\_تكاليف\\_الطاقة\\_والمياه\\_في\\_الأردن](https://www.memr.gov.jo/Ar/NewsDetails/محاضرة_متخصصة_عن_مفاعلات_الطاقة_والمياه_في_الأردن_النووية_ومساهمتها_في_خفض_تكاليف_الطاقة_والمياه_في_الأردن)

62 Ministry of Energy and Mineral Resources, *Comprehensive Energy Sector Strategy 2007–2020*, 2020, available at [https://www.memr.gov.jo/EBV4.0/Root\\_Storage/AR/EB\\_Info\\_Page/Strategy2020.pdf](https://www.memr.gov.jo/EBV4.0/Root_Storage/AR/EB_Info_Page/Strategy2020.pdf) (Ministry of Energy and Mineral Resources, *Comprehensive Energy Sector Strategy 2007–2020*)

63 Ministry of Energy and Mineral Resources, *Comprehensive Energy Sector Strategy 2007–2020*, 2020, available at [https://www.memr.gov.jo/EBV4.0/Root\\_Storage/AR/EB\\_Info\\_Page/Strategy2020.pdf](https://www.memr.gov.jo/EBV4.0/Root_Storage/AR/EB_Info_Page/Strategy2020.pdf) (Ministry of Energy and Mineral Resources, *Comprehensive Energy Sector Strategy 2007–2020*)

The rapid and widespread rise of Jordan's nuclear energy program since 2008, followed by its unexpected decline after 2018, prompts an examination of the power structures and decision-making processes surrounding this issue. What draws attention in the program's management is "hasty and arbitrary decisions"<sup>64</sup> that are difficult to justify, such as the decision to select a desert site in the Qasr Amra area for the construction of the nuclear reactor, which forced the operator to use treated wastewater to supply the reactor with cooling water, even though the vast majority of nuclear facilities are built near major water sources. The arbitrariness of this decision lies in the fact that "the water discharged from the Samra Wastewater Treatment Plant is intended for agricultural use in the Jordan Valley, and it is very difficult to forgo 100 million cubic meters (MMcm)".<sup>65</sup> This also disregards for the impact of changes in treated water use on meeting farmers' needs and sustaining their livelihoods. Gradually, the rush to make decisions and the failure to consult local communities led to a loss of trust in JAEC, which intensified opposition to the program.

Despite the security, technical, financial, and social challenges facing the nuclear program, it is clear that the succession of governments during that period did not allow this program to assume a meaningful role in national strategic thinking. From the outset, the government placed its trust in JAEC as the technical body with the expertise and capacity to assess the risks and concerns raised by various segments of civil society, despite policy reversals, setbacks, and the state of uncertainty regarding the feasibility of uranium reserves, the availability of cooling water, and the capacity to manage nuclear waste and security risks.<sup>66</sup> This reflects a failure on the part of both the Commission and the government to recognize that the nuclear program was not subject to public democratic accountability, and that JAEC effectively monopolized the decision-making process based on its conviction that the highly scientific and technical nature of the program qualified it to do so. This represents a simplistic

and narrow view of a complex and evolving socio-technical, political, and environmental landscape. The Commission's scientific and intellectual capacities thus became a tool for defending the nuclear program and maintaining its influence and interests in the face of opposition from across the public sphere. The government should instead have regarded public acceptance of the nuclear energy program as a political issue requiring a consultative process with society. Ultimately, the lack of participation led to social discontent and dissatisfaction.

The lack of deliberation in decision-making regarding the nuclear program may be attributed to JAEC's sense of competition with institutions supporting renewable energy projects and the oil shale project for electricity generation, as well as its desire for the nuclear program to be the preferred option among the country's political and economic elites. Between 2010 and 2018, Jordan achieved legislative and institutional milestones that contributed to integrating renewable energy sources and oil shale into the electricity generation mix, alongside government efforts to diversify sources of natural gas imports. The rise of new, competing economic actors may explain JAEC's insistence on continuing to allocate resources to the nuclear program despite internal opposition and warnings from independent experts—both local and international—about the difficulty of overcoming the challenges. This may also explain the promises made by the Commission's representatives regarding the provision of "cheap energy" and the achievement of "energy independence," as well as their assertions that "nuclear energy is the best way forward" and that it will enhance "Jordanian technological and scientific capabilities for future generations,"<sup>67</sup> despite the fact that some of these claims are unfounded.

On the other hand, there is no doubt that the sector's crises at the time—resulting from the interruption of Egyptian gas supplies, the debts of NEPCO,<sup>68</sup> and uncertainty regarding investments in renewable energy and oil shale—prompted the government to rely on nuclear energy as a main pillar for increasing the contribution of domestic energy sources, without attempting to diversify its options in a

64 Bater Wardam, "Five Reasons for the Inevitable Failure of the Jordanian Nuclear Program".

65 Friedrich-Ebert-Stiftung, *From Energy Mess to Energy Management: Jordan as a Case Study (2007–2020)*, January 2015, available at <https://library.fes.de/pdf-files/bueros/ammann/11188.pdf>

66 Bater Wardam, "Five Reasons for the Inevitable Failure of the Jordanian Nuclear Program".

67 Aaron Magid, "Jordan's Nuclear Program".

68 We discuss the interruption of Egyptian gas supplies and the National Electric Power Company's debts in detail in the following section.

balanced manner in addressing the imperative of achieving energy security. Decision-makers argued that the nuclear energy option had been included in the first energy sector strategy for the period 2007–2020 and in the second sector strategy for the period 2015–2025, and therefore should be upheld as a political commitment.<sup>69</sup> However, this approach overlooks the fact that policymakers can reassess the strategy and its underlying assumptions in light of new developments—whether technical, economic, or political—in order to adapt and recalibrate its course.

## Diversification of Natural Gas Supplies

As mentioned above, Jordan began sourcing most of its natural gas needs from Egypt in 2003 via the Arab Gas Pipeline (AGP), which came to cover 80% of its electricity needs. In 2008, Jordan's supplies of Egyptian gas began to experience partial disruptions, which worsened starting in 2011 when the AGP was subjected to a series of repeated bombings amid the instability that prevailed in Egypt during the Arab Spring, leading to a complete halt in supplies by 2013.<sup>70</sup> Despite warnings of a repeat of the Iraqi oil supply crisis and the First Energy Strategy's call for seeking alternative gas sources from other countries, the government did not allocate a budget for such alternatives nor did it establish any contingency plan to guard against supply disruptions. It is evident that the relatively low prices of Egyptian gas at the time, geographical proximity, and the availability of a gas transport infrastructure led decision-makers to become complacent regarding the need to reduce dependence on a single external source.

To make matters worse, the government's "optimistic" aspirations in the strategy to increase gas production at the Al-Risha field were not realized, as BP withdrew from completing the exploration and development work in early 2013.

To avoid disruptions in electricity generation, the Jordanian government was forced to resort to importing petroleum products to compensate for the loss of Egyptian gas at a time when oil prices reached their highest level in two years, exceeding US\$100 per barrel in the summer of 2013,<sup>71</sup> which sharply increased the costs of domestic electricity production. Imports of heavy fuel oil and expensive diesel accounted for the largest share of electricity generation between 2011 and 2015.<sup>72</sup> At the time, the government chose not to raise electricity tariffs for consumers<sup>73</sup> and instead preferred to have NEPCO bear the burden of the additional costs, resulting in a cumulative deficit of 4.6 billion dinars (around US\$6.5 billion) by 2014.<sup>74</sup>

As part of a shift in priorities, diversifying natural gas imports became a government priority, and efforts began to develop the infrastructure needed to import liquefied natural gas from global markets via the Port of Aqaba. The first measures taken by Jordan were the construction of a Liquefied Natural Gas (LNG) terminal at the Port of Aqaba and the leasing of a floating storage and regasification unit (FSRU). NEPCO began receiving LNG shipments in place of petroleum fuel in 2015 under three purchase agreements with Shell, to supply Jordan with LNG at a rate of 150 MMcf/d per agreement,<sup>75</sup> in addition to meeting its natural gas needs from the spot market.<sup>76</sup> However, NEPCO resumed natural gas imports from Egypt starting in September 2018.<sup>77</sup> This immediately led to a reduction in

69 In-person interview with a former government official in the energy sector, 22 October 2025.

70 Jordan Strategy Forum, *The Economic and Financial Burden of the Electricity Sector: The Snowball Effect*, June 2025, available at <https://jsf.org/uploads/%20سياسات%20-%20العبء%20الاقتصادي%20ورقة%20المالي%20القطاع%20الكهرباء%20كرة%20النلج%20المتدرجة.pdf> (Jordan Strategy Forum, *The Economic and Financial Burden of the Electricity Sector*)

71 Wikipedia, "2011–2013 World Oil Market Chronology", November 2024, available at [https://en.wikipedia.org/wiki/2011–2013\\_world\\_oil\\_market\\_chronology](https://en.wikipedia.org/wiki/2011–2013_world_oil_market_chronology)

72 National Electric Power Company, *Annual Report 2016*, 2017, available at [https://nepco.com.jo/store/docs/web/2016\\_ar.pdf](https://nepco.com.jo/store/docs/web/2016_ar.pdf)

73 According to the Jordan Strategy Forum, the cost price during the 2011–2014 period was approximately 143 fils (about 20 US cents) per kilowatt-hour, compared to 66.9 fils (about 9 US cents) for the selling price.

74 Jordan Strategy Forum, *The Economic and Financial Burden of the Electricity Sector*.

75 Ministry of Energy and Mineral Resources, 2018, *التقرير السنوي 2017*, available at [https://www.memr.gov.jo/ebv4.0/root\\_storage/ar/eb\\_list\\_page/41cb4434-ce69-4eec-822d-df2802eed6bc.pdf](https://www.memr.gov.jo/ebv4.0/root_storage/ar/eb_list_page/41cb4434-ce69-4eec-822d-df2802eed6bc.pdf) (Ministry of Energy and Mineral Resources, 2017 *التقرير السنوي*)

76 See Ministry of Energy and Mineral Resources, *Annual Report 2015*, 2016, available at [https://www.memr.gov.jo/ebv4.0/root\\_storage/ar/eb\\_list\\_page/2015\\_عام\\_التقرير\\_السنوي.pdf](https://www.memr.gov.jo/ebv4.0/root_storage/ar/eb_list_page/2015_عام_التقرير_السنوي.pdf)

77 Ministry of Energy and Mineral Resources, *Annual Report 2018*, 2019, available at [https://www.memr.gov.jo/ebv4.0/root\\_storage/ar/eb\\_list\\_page/56dcb683-2146-4dfd-8a15-b0ce6904f501.pdf](https://www.memr.gov.jo/ebv4.0/root_storage/ar/eb_list_page/56dcb683-2146-4dfd-8a15-b0ce6904f501.pdf)



the fuel import bill due to its relatively lower cost and helped “the government contain a significant portion of the annual financial deficit in NEPCO’s budget for the years 2015–2019, while the deficit accumulated during the years 2011–2014 remained on the company’s financial statements.”<sup>78</sup>

The government’s suspension of its nuclear program in 2018 prompted the Ministry of Energy and Mineral Resources (MEMR) to reassess the sector’s strategy in order to increase the share of other fuel types in electricity generation. In 2020, MEMR launched the Third Master Energy Sector Strategy for 2020–2030, which aimed to generate 53% of electricity from natural gas, 31% from renewable energy sources, 15% from oil shale, and 1% from petroleum derivatives by 2030.<sup>79</sup> To complement efforts to diversify natural gas supply sources, the second step was the signing by Jordan, represented by NEPCO in 2014, of a letter of intent to purchase natural gas from “Israel,” which led in 2016 to the signing of a purchase agreement between NEPCO and a consortium of American and Israeli oil companies to supply the Kingdom with natural gas for a period of 15 years from the expected start of commercial supply in 2020.<sup>80</sup> Under the agreement, Jordan will purchase a total of 45 billion cubic meters (Bcm) of gas from the offshore “Leviathan field” for a total value of US\$10 billion.<sup>81</sup> With the start of gas pumping from the Leviathan field in early 2020 via the so-called Northern Gas Pipeline, Jordan’s natural gas supplies for electricity generation came to include imports of liquefied natural gas from global markets, Egyptian gas imports via the AGP, and “Israeli” gas imports via the Northern Gas Pipeline, in addition to the modest domestic production of natural gas from the Al-Risha field, which accounted for 2.1% in 2020. By 2024,<sup>82</sup> annual Israeli gas imports, amounting to 2.65 million tons of oil equivalent, accounted for 85.5% of the total

annual natural gas import rate, which stood at 3.1 million tons of oil equivalent.<sup>83</sup>

There is no doubt that strengthening energy independence by increasing the contribution of domestic energy sources and reducing reliance on energy imports remains a national priority,<sup>84</sup> prompting the MEMR to task Jordan’s National Petroleum Company (NPC) in 2022 with relaunching oil and gas exploration programs. In a statement in 2024, the company announced the discovery of promising natural gas reserves in the Al-Risha field, estimated at a minimum of 9.4 trillion cubic feet (Tcf) and a maximum of 14.6 Tcf.<sup>85</sup> To capitalize on these reserves, NPC is currently developing the field by drilling additional wells to increase its daily production capacity. The company has increased the field’s daily natural gas production from 14.7 MMcf in 2022 to 32 MMcf in 2023, and then to 50 MMcf in 2024, and aims to raise daily production to 75 MMcf by the end of 2025.<sup>86</sup> In 2025, the Minister of Energy and Mineral Resources announced plans to expand production capacity at the Al-Risha gas field to 418 MMcf/d by 2030,<sup>87</sup> and a document issued by the ministry projected that production

78 Jordan Strategy Forum, The Economic and Financial Burden of the Electricity Sector.

79 Ministry of Energy and Mineral Resources, Comprehensive Energy Sector Strategy for 2020–2030.

80 Ministry of Energy and Mineral Resources, Annual Report 2017.

81 The Times of Israel, “Israel consortium signs ‘historic’ 15-year, \$10b gas deal with Jordan”, 26 September 2016, available at <https://www.timesofisrael.com/israel-consortium-signs-15-year-10b-gas-deal-with-jordan/>

82 Ministry of Energy and Mineral Resources, 2021, التقرير السنوي 2020, available at [https://www.memr.gov.jo/ebv4.0/root\\_storage/ar/eb\\_list\\_page/annual\\_report\\_2020.pdf](https://www.memr.gov.jo/ebv4.0/root_storage/ar/eb_list_page/annual_report_2020.pdf) (Ministry of Energy and Mineral Resources, 2020 التقرير السنوي)

83 Jordan Strategy Forum, فرصة استراتيجية لإعادة توجيه حفل غاز الريشة: المسار الاقتصادي, June 2025, available at <https://jsf.org/uploads/%20حفلغاز%20الريشة%20فرصة%20استراتيجية%20إعادة%20توجيه%20المسار%20الاقتصادي.pdf> (Jordan Strategy Forum, حفل غاز الريشة)

84 Ministry of Energy and Mineral Resources, إنجازات الطاقة والتعدين للعرض, بمناسبة “عيد الاستقلال 79”, 2025, available at [https://www.memr.gov.jo/EBV4.0/Root\\_Storage/AR/EB\\_News/Energy2025.pdf](https://www.memr.gov.jo/EBV4.0/Root_Storage/AR/EB_News/Energy2025.pdf) (Ministry of Energy and Mineral Resources, إنجازات الطاقة والتعدين)

85 National Petroleum Company, “Minister of Energy: Natural Gas Quantities in Al-Risha Are Encouraging but Must Be Assessed in Light of Their Economic Feasibility”, 2024, available at [https://npc.com.jo/Ar/NewsDetails/وزير\\_الطاقة\\_كميات\\_الغاز\\_الطبيعي\\_في\\_الريشة\\_تدعو\\_للتفاؤل\\_لكنها\\_تُقرأ\\_مع\\_جدواها\\_الاقتصادية](https://npc.com.jo/Ar/NewsDetails/وزير_الطاقة_كميات_الغاز_الطبيعي_في_الريشة_تدعو_للتفاؤل_لكنها_تُقرأ_مع_جدواها_الاقتصادية)

86 Reham Zidan, “Raising gas production to 75 million cubic feet per day”, Al-Ghad, 8 July 2025, available at <https://alghad.com/Section-181/-اقتصاد/رفع-إنتاج-الغاز-ل-75-مليون-قدم-مكعب-يوميا-2036562>

87 Ministry of Energy and Mineral Resources, “Kharabsheh sponsors the signing of the agreement establishing the ‘Advanced National Natural Gas Company – Watani’ to enhance energy sustainability in Jordan”, April 2025, available at <https://www.memr.gov.jo/Ar/NewsDetails/202504241> (Ministry of Energy and Mineral Resources, “Establishment of the Advanced National Natural Gas Company – Watani”)



would reach 500 MMcf/d by 2035.<sup>88</sup> One expert expressed reservations about these projections, which he considered overly optimistic based on a detailed analysis, stating that production at the Al-Risha field would not exceed 250 MMcf/d by 2030.<sup>89</sup> By comparison, in 2024, the daily gas requirements of power generation facilities reached 327 MMcf, while the daily consumption of industrial facilities reached 27.6 MMcf.<sup>90</sup>

The MEMR has begun planning how to utilize the natural gas expected to be produced from the Al-Risha field in industrial cities, urban areas, and the transportation sector. In line with the trend toward expanding the use of natural gas in new sectors and markets, private-sector companies have been established to invest in the purchase, processing, transportation, and supply of compressed natural gas (CNG) to serve the industrial sector, the transportation sector, and refueling stations for buses and large trucks operating on CNG.<sup>91</sup> In preparation for integrating natural gas use in the residential sector, the Multi-Donor Trust Fund in Jordan, in collaboration with the World Bank (WB), supported the preparation of the document “Strategic Options for Gas Distribution Systems in Jordanian Cities”<sup>92</sup> to study the feasibility and requirements for establishing natural gas distribution networks in the cities of Amman and Zarqa, to supply gas to residential, commercial, and service buildings and other facilities. Industrial applications of natural gas have also attracted the

interest of the private sector in Jordan, as a group of entrepreneurs established an industrial company to utilize natural gas as a feedstock in the production of (grey) hydrogen, which will be used as an input in the manufacture of ammonia, a key input in the fertilizer industry.<sup>93</sup>

## The Transition to Renewable Energy

The beginning of the shift toward renewable energy sources in electricity generation can be traced back to the sector’s strategic document for the period 2007–2020, which identified the introduction of renewable energy into the overall energy mix as one option, among several, to boost domestic production, diversify sources, and ensure energy security. It recommended that the share of renewable energy reach 10% of the total energy mix by 2020, despite what the strategy described at the time as financial and legislative obstacles.<sup>94</sup> To attract investment in renewable energy and energy efficiency projects, the strategy recommended enacting new legislation to regulate the renewable energy sector and establish a financial support fund.<sup>95</sup>

In 2012, the Renewable Energy and Energy Efficiency Law No. 13 of 2012<sup>96</sup> was enacted to stimulate growth in the renewable energy sector. The new law, and its subsequent 2014 amendment, included investment incentives that exempted all devices, equipment, and production inputs for renewable energy and energy efficiency systems from customs duties and sales tax.<sup>97, 98</sup> NEPCO also committed to purchasing the full volume of electricity generated by renewable energy facilities, primarily from centralized sources, and to exempting investors from the cost of connecting renewable energy projects

88 Ministry of Energy and Mineral Resources, *Request for Submission of Expression of Interest (REOI) for Al Risha-Khansaei Gas Pipeline*, Hashemite Kingdom of Jordan, November 2025, available at [https://www.memr.gov.jo/EBV4.0/Root\\_Storage/AR/EB\\_Tenders/EOI\\_Risha\\_Gas\\_Pipeline-2-10-2025.pdf](https://www.memr.gov.jo/EBV4.0/Root_Storage/AR/EB_Tenders/EOI_Risha_Gas_Pipeline-2-10-2025.pdf) (Ministry of Energy and Mineral Resources, *REOI for Al Risha Gas Pipeline*)

89 Abdullah Al-Zoubi, “By 2030... production of 418 million cubic feet of gas per day”, *Al-Ghad*, 3 May 2025, available at <https://alghad.com/Section-145/-إنتاج-418-مليون-قدم-مكعب-بحلول-2030-تحليل-اقتصادي/بحلول-2030-إنتاج-418-مليون-قدم-مكعب-تحليل-اقتصادي-من-الغاز-يوميا-2001583>

90 Ministry of Energy and Mineral Resources, 2025, *التقرير السنوي 2024*, available at [https://www.memr.gov.jo/ebv4.0/root\\_storage/ar/eb\\_list\\_page/annualreport2024.pdf](https://www.memr.gov.jo/ebv4.0/root_storage/ar/eb_list_page/annualreport2024.pdf) (Ministry of Energy and Mineral Resources, *2024 التقرير السنوي*)

91 Ministry of Energy and Mineral Resources, “Establishment of the Advanced National Natural Gas Company – Watani”.

92 Ministry of Energy and Mineral Resources and the World Bank (WB), *Strategic Options for City Gas Distribution Networks in Jordan*, available at [https://www.memr.gov.jo/ebv4.0/root\\_storage/ar/eb\\_list\\_page/sofcgdni.pdf](https://www.memr.gov.jo/ebv4.0/root_storage/ar/eb_list_page/sofcgdni.pdf), accessed September 2025 (Ministry of Energy and Mineral Resources, *Strategic Gas Distribution Networks*)

93 Hala News, “Launch of Jordan Industrial Hydrogen Company as a prelude to establishing the first hydrogen production plant in Jordan”, 18 May 2025, available at <https://www.hala.jo/2025/05/18/-إطلاق-شركة-هيدروجين-الأردن-الصناعية/>

94 Hashemite Kingdom of Jordan, *Energy Sector Strategy 2007–2020*.

95 Hashemite Kingdom of Jordan, *Energy Sector Strategy 2007–2020*.

96 Ministry of Energy and Mineral Resources, *Annual Report 2012*.

97 Official Gazette, Issue No. 5153, *Renewable Energy and Energy Efficiency Law No. 13 of 2012*, April 2012, available at <https://www.pm.gov.jo/Ar/Pages/NewsPaperDetails/5153>

98 Official Gazette, Issue No. 5311, *Amended Renewable Energy and Energy Efficiency Law No. 33 of 2014*, November 2014, available at <https://www.pm.gov.jo/Ar/Pages/NewsPaperDetails/5311>

to the power grid.<sup>99</sup> The comprehensive regulatory framework for the emerging sector was completed in the years following the law's enactment through the adoption of a set of legal regulations, bylaws, and accompanying directives.

This legislative framework enabled the government to regulate the development and implementation of renewable energy projects through direct offers, competitive tenders, turnkey contracts,<sup>100</sup> and self-generation.<sup>101</sup> Regarding direct offers, the MEMR launched three rounds to solicit proposals in 2011, 2013, and 2016. The first and second rounds resulted in the signing of power purchase agreements with the winning developers for a period of 20–25 years, during which the government committed to purchasing the entire amount of electricity generated at the fixed price specified in the agreement. The self-generation pathway allows energy consumers to acquire their own decentralized solar energy systems and connect them to the transmission or distribution grid through net metering or wheeling mechanisms,<sup>102</sup> and to sell any surplus electricity produced, if available, at fixed prices in accordance with the instructions of the Energy and Minerals Regulatory Commission (EMRC). The subscriber's bill is calculated based on the difference between the amount of electricity drawn from the distribution grid and the amount of surplus, if any.

Government policies have been highly successful in attracting regional and international investment, and the sector has seen remarkable growth since 2013 in the development of centralized and decentralized solar photovoltaic systems, as well as some wind projects. Consequently, the legislation and the incentives it provided led to a significant increase in the contribution of renewable energy to electricity generation, as intended by Jordanian lawmakers. The share of renewable energy in electricity

production grew from 0.5% in 2014 to 20% in 2020<sup>103</sup> and reached 26.9% in 2024.<sup>104</sup> According to the MEMR, investments in the renewable energy sector (solar and wind) reached 2.15 billion dinars (around US\$3 billion) by 2024.<sup>105</sup> This rapid growth led to Jordan being ranked in 2018 as one of the top three emerging markets globally for renewable energy investment, according to a report by Bloomberg.<sup>106</sup> These developments in Jordan's energy landscape have led observers to see the expansion of solar and wind energy in the country as a promising opportunity to achieve energy security, create jobs, and mitigate geopolitical dependencies.<sup>107, 108, 109, 110</sup>

However, this success carried unintended consequences. Government officials failed to take into account that the difference between the cost of electricity generated by net metering and wheeling systems and the average cost of electricity purchased from the grid does not reflect the cost of capacity, storage, and reliability services provided by the power system, resulting in financial losses for NEPCO.<sup>111</sup> In a study, researcher Asma Amin noted that this difference prompted large electricity consumers—both individuals and institutions—to turn to self-generation systems, which led to a reduction in electricity purchases subject to the highest consumption tier rates.<sup>112, 113</sup> Consequently,

99 Ministry of Energy and Mineral Resources, *Annual Report 2012*.

100 The turnkey model is an engineering, procurement, and construction contract issued by the Ministry for public projects financed through external grants or concessional loans.

101 ESCWA, *Case Study on Policy Reforms*.

102 Net metering is applied when photovoltaic energy is generated at the same location where it is consumed. Wheeling allows subscribers to install photovoltaic systems at locations geographically distant from the point of consumption.

103 Ministry of Energy and Mineral Resources, *Annual Report 2020*.

104 Ministry of Energy and Mineral Resources, *Energy and Minerals Achievements*.

105 Ministry of Energy and Mineral Resources, *Energy and Minerals Achievements*.

106 The Jordan Times, "Jordan 3rd in renewable energy growth globally, 1st in region", 12 February 2018, available at <https://jordantimes.com/news/local/jordan-3rd-renewable-energy-growth-globally-1st-region>

107 Benjamin Schuetze, "The geopolitical economy of an undermined energy transition".

108 Institute for Advanced Sustainability Studies, *Accelerating the Jordanian Energy Transition*, December 2022, available at [https://publications.rifs-potsdam.de/rest/items/item\\_6002583\\_2/component/file\\_6002584/content](https://publications.rifs-potsdam.de/rest/items/item_6002583_2/component/file_6002584/content) (IASS, *Accelerating the Jordanian Energy Transition*)

109 Serena Sandri, "Sustainability of the Energy Sector in Jordan".

110 EDAMA, *Renewable Energy Sector Development in Jordan*, February 2019, available at <https://edama.jo/wp-content/uploads/2024/07/Renewable-Energy-Sector-Development-in-Jordan.pdf> (EDAMA, *Renewable Energy in Jordan*).

111 Amin, "The Energy Sector in Jordan", p. 248.

112 Amin, "The Energy Sector in Jordan", p. 249.

113 Jordan Strategy Forum, *The Economic and Financial Burden of the Electricity Sector*.

electricity sales to these consumers fell from US\$222 million in 2015 to US\$66 million in 2018.<sup>114</sup> Thus, large residential consumers and major subscribers from mining, telecommunications, banking, hotel, hospital, and other sectors became the groups that most frequently used self-generation mechanisms and consequently benefited the most, while the high costs of photovoltaic systems prevented those with limited incomes from acquiring them.

By 2018, the promising progress toward transitioning to renewable energy sources began to face uncertainty following a series of government decisions that hindered further advancement. In September of that year, the government announced a reduction in the total capacity to be allocated for the third round of tenders, and a month later decided to postpone the announcement of the winners of the solar power project auctions, even though the electricity purchase price in the third-round auction reached 2.5 cents per kilowatt-hour, the lowest bid.<sup>115, 116</sup> In early 2019, the MEMR temporarily suspended the issuance of tenders and direct project proposals, and halted the issuance of licenses for renewable energy projects using wheeling or net metering mechanisms with a capacity exceeding 1 MW. The government justified this measure by citing the need to assess the capacity of the electricity grid.<sup>117</sup> In mid-2020, MEMR canceled its plan to build a renewable energy<sup>118</sup> storage facility after announcing in 2017 that it would solicit direct proposals under a build-own-operate mechanism for electricity storage with a capacity of 30 MW for two hours.<sup>119</sup> Later that same year, the third round of wind power auctions was canceled, while the solar power auction remained postponed.<sup>120</sup>

During that period, the MEMR also imposed various new fees and surcharges, introduced administrative hurdles for issuing licenses, set capacity limits, and implemented new tariffs for

renewable electricity “to achieve financial balance for electricity companies and ensure security of supply.”<sup>121</sup> Subsequently, changes to electricity tariff structures in 2022, including taxes on renewable energy, limited consumer uptake of residential solar systems. In 2022, the government announced the lifting of the suspension on permits for renewable energy projects exceeding 1 MW, provided they comply with a number of regulations, including a 50% local content requirement and a minimum of 70% local employment.<sup>122</sup> Figure 2 shows a timeline of government decisions related to the renewable energy sector for the years 2011–2023.

114 Amin, “The Energy Sector in Jordan”, p. 249.

115 IASS, *Accelerating the Jordanian Energy Transition*.

116 Amin, “The Energy Sector in Jordan”, p. 244.

117 Ministry of Energy and Mineral Resources, “Suspension of electricity generation projects temporarily for regulatory reasons”, January 2019, available at [https://memr.gov.jo/Ar/NewsDetails/وقف\\_مشاريع\\_توليد\\_الكهرباء\\_لفترة\\_مؤقتة\\_ولأسباب\\_تنظي](https://memr.gov.jo/Ar/NewsDetails/وقف_مشاريع_توليد_الكهرباء_لفترة_مؤقتة_ولأسباب_تنظي) (Ministry of Energy and Mineral Resources, “Suspension of electricity generation projects”)

118 EDAMA, *Renewable Energy in Jordan*.

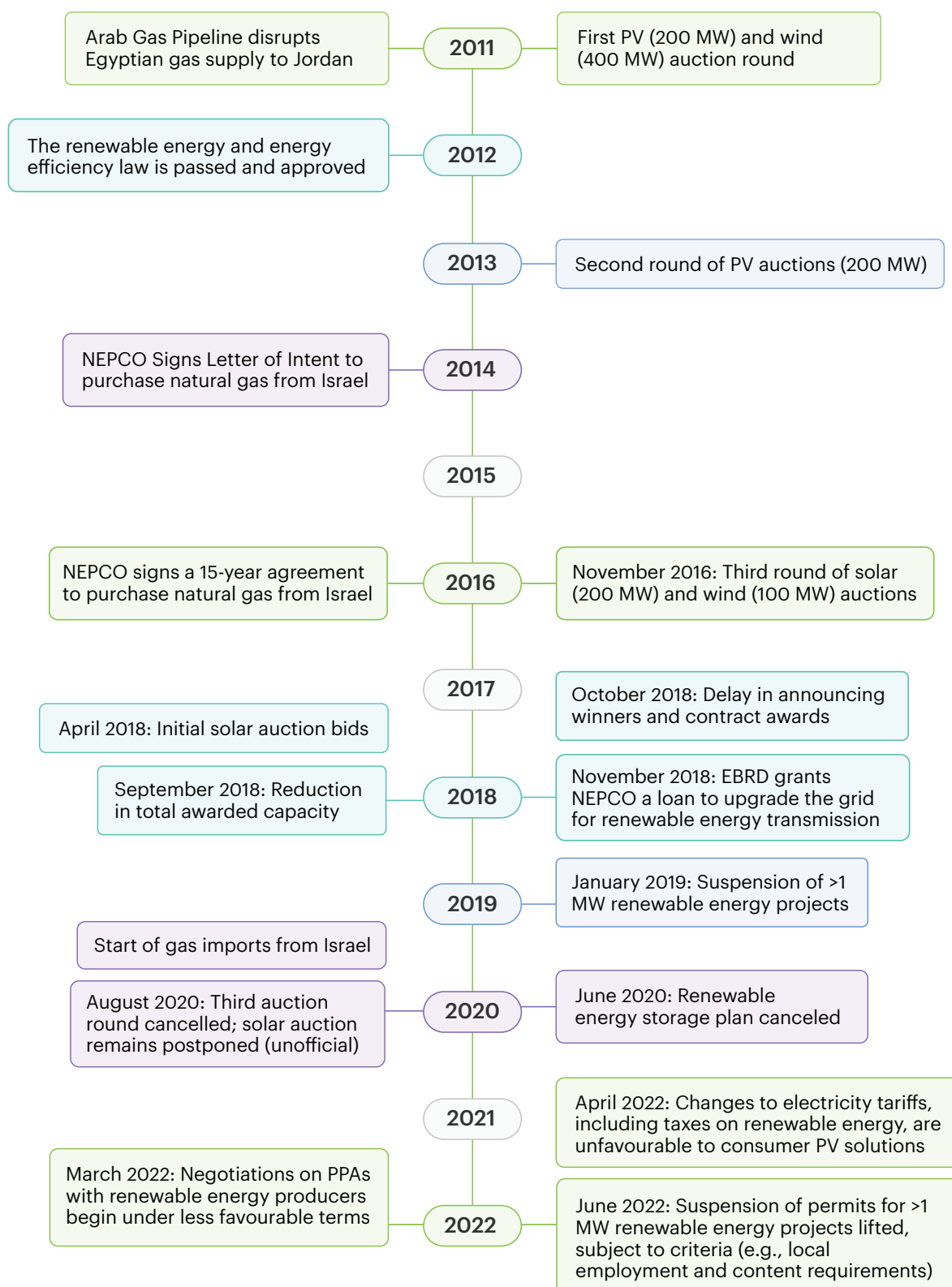
119 EDAMA, *Renewable Energy in Jordan*.

120 IASS, *Accelerating the Jordanian Energy Transition*.

121 Reham Zidan, “Increasing fees on renewable energy... Do they serve national strategy goals?”, *Al-Ghad*, 22 July 2025, available at <https://alghad.com/Section-181/-الطاقة/-اقتصاد/الرسوم-المتزايدة-على-الطاقة> (Reham Zidan, “Increasing fees on renewable energy”)

122 Ministry of Energy and Mineral Resources, 2022, *التقرير السنوي 2022*, available at [https://www.memr.gov.jo/ebv4.0/root\\_storage/ar/eb\\_list\\_page/fmannualre2022.pdf](https://www.memr.gov.jo/ebv4.0/root_storage/ar/eb_list_page/fmannualre2022.pdf) (Ministry of Energy and Mineral Resources, *التقرير السنوي 2022*)

**Figure 2: Government decisions related to the renewable energy sector for 2011–2023**



Sources: IASS, Accelerating the Jordanian Energy Transition, Author



Recently, the government decided to update the laws and regulations related to the renewable energy and energy efficiency sectors to address unintended consequences that had resulted in financial losses. It issued an amendment to the Renewable Energy and Energy Efficiency Law No. 12 of 2024, reversing its previous decision to exempt all equipment, systems, and devices related to renewable energy and energy efficiency, as well as their production inputs, from customs duties and sales tax.<sup>123</sup> The Prime Minister's Office then approved Regulation No. 58 of 2024 to redefine the size, nature, prices, and procedures for connecting small renewable energy facilities to the electricity grid for self-generation purposes by replacing the net metering mechanism<sup>124</sup> in effect since 2014 with a net billing mechanism. Experts' opinions differed regarding the impact of these new regulations on individuals and institutions acquiring small-scale energy systems based on the net billing mechanism, despite a consensus on the need to update relevant laws and regulations to correct regulatory imbalances associated with the net metering and wheeling mechanisms, which had favored large consumers. Some experts believe that regulatory bodies have gone too far in these corrections and that the legislation favors NEPCO, as the payback period has been extended to at least six years, significantly reducing the economic viability of investing in decentralized renewable energy systems in most sectors and cases.<sup>125</sup> According to other experts in the sector, the amendments were appropriate and fair to all parties.<sup>126</sup> However, overall, these factors are expected to slow the growth of the renewable energy sector. Some researchers have pointed out that, given the substantial increase in renewable energy's contribution to electricity generation—from less than 1% in 2014 to 26.9% in 2024—reaching 31% by 2030, as outlined in the National Energy Sector

Strategy 2020–2030, does not appear ambitious.<sup>127 128</sup> This modest target “reflects a lack of genuine will to expand and justifies the continuation of regulatory and financial barriers”<sup>129</sup> to increasing the share of renewable energy in electricity generation.

Many researchers and observers have examined the reasons that led the government to impose obstacles since 2018 on the expansion of renewable energy projects, resulting in a significant decline in investment, despite the fact that the cost of generating electricity from solar and wind sources has become lower than that of natural gas or oil shale. The primary reason lies in the electricity grid's inability to accommodate additional capacity from solar and wind generation, which are inherently intermittent. This prompted the MEMR in 2019 to temporarily suspend the issuance of licenses for renewable energy projects, as noted above. The ministry stated its intention to address this grid capacity shortfall by “focusing at this stage on energy storage projects, strengthening the electricity grid and interconnections, and reducing losses and improving energy efficiency.”<sup>130</sup> However, slow progress in interconnection negotiations, shifting storage technology options, and a lack of financial resources for grid modernization projects have hindered progress. Ultimately, efforts to upgrade the electricity grid have not succeeded in integrating renewable energy on a large scale.<sup>131</sup>

However, technical constraints within the grid alone do not explain the government's decisions that hindered the expansion of renewable energy projects. At a time when solar and wind power generation projects were experiencing rapid growth, the government was making significant efforts to diversify sources of natural gas imports and develop the necessary infrastructure to transport it to Jordan, in addition to negotiating the construction of a 470 MW power plant using direct oil shale combustion.<sup>132</sup>

123 Official Gazette, Issue No. 5925, *Amended Renewable Energy and Energy Efficiency Law No. 12 of 2024*, 1 May 2024, available at <https://www.pm.gov.jo/Ar/Pages/NewsPaperDetails/5925>

124 Official Gazette, Issue No. 5948, *Regulation on Connecting Renewable Energy Installations to the Electrical System and Exempting Renewable Energy Systems and Energy Efficiency No. 58 of 2024*, 2 September 2024, available at <https://www.pm.gov.jo/Ar/Pages/NewsPaperDetails/5948>

125 In-person interviews with experts in the energy sector in Jordan, 30 October 2025, 1 November 2025, 6 November 2025.

126 In-person interview with expert (1) in the energy sector in Jordan, 6 November 2025.

127 Benjamin Schuetze, “The geopolitical economy of an undermined energy transition”.

128 Reham Zidan, “Increasing fees on renewable energy”.

129 Reham Zidan, “Increasing fees on renewable energy”.

130 Ministry of Energy and Mineral Resources, “Suspension of electricity generation projects”.

131 Benjamin Schuetze, “The geopolitical economy of an undermined energy transition”.

132 Ministry of Energy and Mineral Resources, *Energy and Minerals Achievements*.

As mentioned earlier, NEPCO resorted to signing long-term, binding contracts to purchase natural gas, driven by the need to enhance energy supply security. These long-term contractual commitments, along with the associated infrastructure investments, reflect a fundamental shift toward reliance on natural gas imports for electricity generation. This reality has made Jordan “carbon-locked” and has hindered the expansion of solar and wind power generation projects, as the contracted gas volumes nearly cover the country’s electricity generation needs, thereby reducing the need for new renewable energy projects.

While Jordan has managed to achieve energy security through gas contracts and investment in local energy sources, this has come at the cost of NEPCO incurring heavy financial losses. This is due to what the Jordan Strategy Forum has termed the “widening price gap” between the average cost of purchasing electricity and the average tariff.<sup>133</sup> The first problem was that the quantities of electricity contracted with independent power producers exceeded demand.<sup>134, 135, 136</sup> Because supply has exceeded consumption needs since 2019, NEPCO was forced to pay so-called “capacity fees” for electricity that is neither produced nor generates revenue from its sale, thereby increasing the average cost per kilowatt-hour. The second issue arose from the departure of many large consumers from the grid or a decline in their consumption, as mentioned above, and consequently the loss of the financial support they provided, which lowered the average tariff.<sup>137</sup>

Faced with financial losses resulting from the price gap, NEPCO covered its financial shortfall through borrowing, accumulating additional debt on top of that incurred between 2011 and 2014. The company’s accumulated losses reached 6.2 billion dinars (around US\$8.7 billion) by the end of 2024.<sup>138</sup> According to the 2025 draft general budget, the

company’s financial deficit is expected to increase by 1.6 billion dinars (around US\$2.3 billion)<sup>139</sup> during the period 2025–2027. This accumulation of debt increases the financial burden on public finances and the economy and weakens NEPCO’s ability to invest or borrow to modernize the electricity system.<sup>140,141</sup>

## Energy Efficiency

One of the recommendations of the Energy Strategy for the period 2007–2020 was to establish a clear and binding mechanism to implement energy efficiency measures across all sectors,<sup>142</sup> including raising public awareness, offering financial incentives, and enforcing energy-efficient building codes, with the aim of reducing consumption by 20% by 2020.<sup>143</sup> To achieve the strategy’s objectives, the MEMR launched the First National Energy Efficiency Action Plan for the period 2012–2014, followed by the second National Energy Efficiency Action Plan for the period 2018–2020.

Compared to the average electricity consumption for the period 2006–2010, the First National Energy Efficiency Action Plan achieved 40.2% of the targeted reduction in electricity consumption, focusing primarily on the residential and industrial sectors. Meanwhile, the Second National Energy Efficiency Action Plan achieved 46.3% of the targeted reduction through a broader range of measures, with the residential sector accounting for more than half of this.<sup>144</sup> The evaluation report attributed the

133 Jordan Strategy Forum, The Economic and Financial Burden of the Electricity Sector.

134 Jordan Strategy Forum, The Economic and Financial Burden of the Electricity Sector.

135 Benjamin Schuetze, “The geopolitical economy of an undermined energy transition”.

136 IASS, *Accelerating the Jordanian Energy Transition*.

137 For further details on the “price gap”, see Jordan Strategy Forum, *The Economic and Financial Burden of the Electricity Sector: The Snowball Effect*.

138 National Electric Power Company, *Annual Report 2024*.

139 General Budget Department, *Draft General Budget Law for Fiscal Year 2025*, November 2024, available at <https://www.gbd.gov.jo/uploads/files/gbd/draft-min/2025/ar/8155.pdf?v=4d825ed3-8df7-44c8-8266-b4e2581860ad>

140 Reham Zidan, “Escalating debt of the National Electric Power Company requires exceptional measures”, *Al-Ghad*, 17 August 2024, available at <https://alghad.com/Section-181/-اقتصاد/تفاقم-مديونية-الكهرباء-الوطنية-إجراءات-استثنائية-1789024>

141 Reham Zidan, “Accumulated debt of the National Electric Power Company is among the most prominent challenges to economic stability”, *Al-Ghad*, 24 June 2025, available at <https://alghad.com/Section-181/-اقتصاد/المديونية-المتراكمة-ل-الكهرباء-الوطنية-أحد-أبرز-التحديات-أمام-الاستقرار-الاقتصادي-2034826>

142 The sectors covered under the strategy are: buildings, industrial, commercial, transport, services, and water.

143 Hashemite Kingdom of Jordan, *Energy Sector Strategy 2007–2020*.

144 Jordan Renewable Energy and Energy Efficiency Fund, *Executive Summary: National Energy Efficiency Action Plan 2018–2020*, available at [https://www.memr.gov.jo/EBV4.0/Root\\_Storage/AR/EB\\_Info\\_Page/2nd\\_NEEAP\\_Summary\\_2.pdf](https://www.memr.gov.jo/EBV4.0/Root_Storage/AR/EB_Info_Page/2nd_NEEAP_Summary_2.pdf), accessed 30 October 2025

modest achievement to obstacles in implementing efficiency measures in the industrial sector, due to a lack of financial resources and the immaturity of the energy efficiency market.<sup>145</sup> The first and second action plans saved 1,238 GWh of energy by 2020, equivalent to 55% of the savings targeted by the Energy Strategy for the period 2007–2020.

To complement these efforts, in 2024 the Ministry launched the Third National Energy Efficiency Action Plan for the period 2024–2026, with the aim of reducing total electricity consumption by 6.02% and final energy consumption by 4.46% compared to 2018 as the baseline.<sup>146</sup> The plan targeted the transportation sector, as well as the residential, industrial, and commercial and service sectors, street lighting, and water pumping operations. The targeted savings in the transportation sector amounted to 2,455.2 gigawatt-hours (GWh), compared to 190.8 GWh in the residential sector. Overall, the transportation sector accounted for 70% of the total savings in the action plan, while the residential sector's share of savings was 5.4%.

Key measures in the transportation sector include promoting the transition to electric mobility powered by renewable energy for private vehicles through the strategic expansion of charging infrastructure. This measure accounted for 64.2% of total savings in the sector and 44.9% of total savings in the action plan. In the residential sector, the focus was on providing information to a segment of households to enable them to implement immediate, simple, and low-cost measures to improve building efficiency, as well as offering a 30% incentive for the installation of solar water heaters.

From the perspective of achieving a balanced distribution of savings across different sectors as outlined in the action plan, it was not appropriate for the transportation sector to account for 70% of total savings, nor for the expansion of charging infrastructure to account for 44.9% of total savings in final energy consumption. Attributing this choice to the transport sector's large share of final energy consumption, compared to other sectors, contradicts

data showing that buildings—across all categories, including residential, commercial, government, and service—consumed more than 60% of total final energy and more than 40% of electricity in 2024.<sup>147, 148</sup>

According to an energy sector expert, the very low share of the buildings sector in the plan's savings represents a “missed opportunity” that could have been used to target the sector with a higher level of savings commensurate with its contribution to electricity consumption.<sup>149</sup>

Another contradiction worth noting is that the expansion of charging infrastructure has not been accompanied by incentive measures to encourage the purchase of electric vehicles among low-income groups. In fact, a year after the launch of the third action plan, doubts began to arise regarding the feasibility of achieving transportation savings, after the Ministry of Finance and the Jordan Standards and Metrology Organization (JSMO) issued, starting in September 2024, a series of decisions that dampened demand for electric vehicles.<sup>150</sup> To understand why these decisions were issued, some context is useful. From 2022 to the third quarter of 2024, Jordan witnessed unprecedented demand for electric vehicles, with these cars accounting for 45% of total car sales in 2023<sup>151</sup> and rising to 66.5% by the first quarter of 2024.<sup>152</sup> High fuel prices, tax incentives, and the implementation of time-based electricity tariffs for vehicle charging, along

145 Ministry of Energy and Mineral Resources, *Third National Energy Efficiency Action Plan 2024–2026*, 2024, available at [https://www.memr.gov.jo/EBV4.0/Root\\_Storage/AR/EB\\_Info\\_Page/3NEEAP2024-2026Final.pdf](https://www.memr.gov.jo/EBV4.0/Root_Storage/AR/EB_Info_Page/3NEEAP2024-2026Final.pdf) (Ministry of Energy and Mineral Resources, *Third Energy Efficiency Plan*)

146 Ministry of Energy and Mineral Resources, *Third Energy Efficiency Plan*.

147 Ministry of Energy and Mineral Resources, “Al-Azzam: The climate action roadmap for the buildings and construction sector is a pivotal step toward carbon neutrality in Jordan”, October 2025, available at <https://www.memr.gov.jo/Ar/NewsDetails/202510221> (Ministry of Energy and Mineral Resources, “Climate action roadmap project”)

148 According to the 2024 energy balance data issued by the Ministry of Energy and Mineral Resources, final energy consumption in the residential, government, and commercial buildings sectors reached 3,075 thousand tonnes of oil equivalent, while final energy consumption in the transport sector reached 2,820 thousand tonnes of oil equivalent. For more information, see [https://www.memr.gov.jo/ebv4.0/root\\_storage/ar/eb\\_list\\_page/memr\\_facts\\_&\\_numbers\\_2024\\_-\\_14.8.2025.pdf](https://www.memr.gov.jo/ebv4.0/root_storage/ar/eb_list_page/memr_facts_&_numbers_2024_-_14.8.2025.pdf)

149 In-person interview with expert (3) in the energy sector in Jordan, 19 October 2025.

150 Hussam J. Khasawneh and Hussam Hussein, “Jordan’s electric vehicle growth drives trade-offs”, *Science* 387, no. 6735 (2025), p. 726, available at <https://www.science.org/doi/10.1126/science.adu1313> (Hussam J. Khasawneh, “Jordan’s electric vehicle growth”)

151 Hussam J. Khasawneh, “Jordan’s electric vehicle growth”.

152 Samer Zawaydeh, “From Vision to Reality: Jordan’s EV Surge and the Road to Sustainability”, *EcoMENA*, 17 August 2024, available at <https://www.ecomena.org/jordan-ev-surge/> (Samer Zawaydeh, “Jordan’s EV Surge”).

with the relatively low prices of Chinese electric vehicles, contributed to this demand.<sup>153, 154</sup> The rapid proliferation of electric vehicles has led to a decline in the sales of gasoline-powered vehicles and, in turn, gasoline fuel. Consequently, government tax revenues collected from fuel sales—a major source of treasury revenue—have seen a significant reduction.<sup>155</sup>

To address this situation, the Ministry of Finance raised taxes on all types of electric vehicles and lowered taxes on gasoline-powered vehicles with the aim of curbing the growth in electric vehicle sales. Within ten months, the government passed three amendments to vehicle taxes,<sup>156</sup> the latest of which raised the tax from 10–15% (depending on the tax year) to 27% on electric vehicles<sup>157</sup> valued at less than 10,000 dinars (around US\$14,100), which reflects a clear inequity, as this category is the most in demand among households with moderate or limited incomes. More recently, the Jordan Standards and Metrology Organization (JSMO) issued guidelines<sup>158</sup> requiring all imported electric passenger vehicles to comply with European, American, or Gulf technical specifications, effective 1 November 2025, which halted the import of affordable Chinese electric vehicles through the free zone.<sup>159</sup>

These decisions, aimed at increasing government revenue, reveal a disconnect between tax policies and sectoral development policies, with short-term fiscal considerations taking precedence over a shared development vision within the government. This contradiction raises questions about the existence of a government-wide political consensus on the transition to renewable energy-based electric mobility, as well as the nature of consultations conducted within executive institutions regarding the measures of the Third Energy Efficiency Action Plan to avoid policy inconsistencies. The drafters of the action plan should now revisit it and assess whether the level of demand for electric vehicles justifies allocating the majority of the plan's resources and objectives to expanding charging infrastructure. Although the Third Action Plan is not expected to undergo amendments, decision-makers' confidence in achieving the targeted savings has undoubtedly been shaken, according to an energy sector expert.<sup>160</sup>

From the perspective of effectiveness in improving efficiency, public transportation measures should have played a greater role in the Third Energy Efficiency Action Plan than the electrification of transport. Measures associated with public transportation are more equitable not only because of their reasonable cost, but also because they contribute to achieving multiple development benefits, including facilitating women's access to workplaces, reducing Jordan's chronic traffic congestion, and preventing loss of life and injuries resulting from road accidents.

The modest results of the first and second energy efficiency action plans, along with the structure of the third action plan, indicate that national efforts in energy efficiency have generally stalled, despite their importance. Since the launch of the National Energy Sector Strategy 2007–2020, the MEMR has placed greater emphasis on managing energy supply. This is reflected in the establishment of directorates within the Ministry for oil and natural gas, petroleum and oil shale, and renewable energy over the past two to three decades, while the Directorate of Energy Efficiency and Climate Change was only established more recently in 2025. According to an expert in Jordan's energy sector, the rationale cited by policymakers for not

153 Hussam J. Khasawneh, "Jordan's electric vehicle growth".

154 Samer Zawaydeh, “Jordan’s EV Surge”.

155 Salama Al-Dar'awi, "A late decision", *Al-Ghad*, 14 September 2024, available at <https://alghad.com/Section-114/-مقالات-اليوم/قرار-متأخر-1809953>

156 The first amendment was approved in September 2024, when the government raised taxes on all types of electric vehicles by rates ranging between 10% and 55% depending on the vehicle price bracket, while reducing taxes on fuel-powered vehicles. At the beginning of 2025, the government approved a new tax mechanism under which taxes would gradually increase over three years at varying rates depending on the price category of the electric vehicle, while taxes on fuel vehicles were reduced from 86% to 71% and hybrid vehicle taxes were set at 60%. In June 2025, the total tax on fuel vehicles was reduced from 71% to 51%, and on hybrid vehicles from 60% to 39%, while all categories of electric vehicles became subject to a fixed special tax of 27%, provided they are not older than three years.

157 Ammon News Agency, “Details of vehicle tax reduction”, 28 June 2025,  
available at <https://www.ammonnews.net/article/931701>

158 Official Gazette, Issue No. 6012, *Conformity Assessment Procedures*  
*Instructions No. 5 of 2025*, 1 October 2025, available at [https://www.  
pm.gov.io/Ar/Pages/NewsPaperDetails/6012](https://www.pm.gov.io/Ar/Pages/NewsPaperDetails/6012)

159 Jordan Strategy Forum, *Electric Vehicles in Jordan: Where Is the Direction Heading?*, September 2024, available at <https://jsf.org/uploads/%20أين%20إلى%20الأردن%20في%20الكهربائية%20المركبات%20التموجه%202025.pdf>

160 In-person interview with expert (2) in the energy sector in Jordan, 6  
November 2025.



targeting efficiency improvements in the buildings sector in the third action plan was that government officials lacked the administrative and financial tools necessary to implement residential building retrofit measures. Such measures require engaging with property owners or occupants and securing their commitment to cooperate, which introduces a level of uncertainty that government officials were unwilling to navigate.<sup>161</sup>

However, this justification overlooks the accumulated experience of the Jordan Renewable Energy and Energy Efficiency Fund (JREEEF),<sup>162</sup> as the executive arm of the MEMR, and its achievements in designing programs and projects, developing their financing mechanisms, and overseeing their implementation, development, and impact assessment across all sectors. According to the JREEEF, the annual reduction in final energy consumption resulting from its energy efficiency projects reached 75.3 GWh during the period 2015–2023, with total expected annual savings of 16.8 million dinars (around US\$23.7 million).<sup>163</sup> The Fund's pioneering role deserves recognition, as it has provided a successful model and practical guide for implementing energy efficiency projects.<sup>164</sup> The urgent need to expand the Fund's programs becomes evident when comparing these annual financial savings with the government's annual electricity subsidy, which amounts to 400 million dinars (around US\$564 million).<sup>165</sup>

The MEMR could also have drawn on the successful models of energy efficiency projects implemented by CSOs. The Sustainable Energy and Economic Development Project has played an effective role in implementing energy efficiency solutions in the residential and government sectors since 2016 and has had a tangible impact on promoting local community development through training youth

groups and members of CSOs and supporting entrepreneurial initiatives.<sup>166</sup> Another noteworthy pioneering project is the Affordable Green Housing Project, developed and implemented by the Jordan Green Building Council (Jordan GBC) to rehabilitate existing homes and construct new ones that adhere to well-established principles for reducing energy and water consumption and providing a healthy indoor environment for residents.<sup>167</sup> The success achieved by these pilot models necessitates that MEMR demonstrate openness to such approaches and take the initiative to open a dialogue with CSOs on how to expand, finance, and integrate them into the Ministry's action plans and strategies. This dialogue could lead to innovative financing solutions. It is possible to reallocate part of the government subsidies currently directed toward electricity consumers and channel them toward funding ambitious programs to improve energy efficiency in buildings. This can be achieved by modifying the subsidy calculation mechanism so that it is based on household income rather than the amount of electricity consumed. Such an adjustment would ensure a more equitable distribution of government support, as it would target low-income households whose current consumption may not meet their basic electricity needs.

Furthermore, the Energy Strategy for the period 2007–2020 recommended establishing an implementation mechanism to enforce national building codes related to thermal insulation and included a set of measures such as developing specific codes for energy-efficient buildings, updating thermal insulation codes, and amending Jordan's National Building Code.<sup>168</sup> However, regardless of which of these measures have been implemented, government officials and independent experts in Jordan agree that oversight mechanisms are weak and that there is a lack of capacity or political will to enforce compliance with building codes. These justifications are not acceptable, as they undermine the ability of government institutions to use public policy to serve development goals and reflect

161 In-person interview with expert (2) in the energy sector in Jordan, 6 November 2025.

162 The fund was established pursuant to Regulation No. 49 of 2015, issued under Renewable Energy and Energy Efficiency Law No. 13 of 2012.

163 Ministry of Energy and Mineral Resources and the Jordan Renewable Energy and Energy Efficiency Fund, *Achievements of the Jordan Renewable Energy and Energy Efficiency Fund (2015–2023)*, available at [https://www.memr.gov.jo/EBV4.0/Root\\_Storage/AR/Projects/JREEEF-2015-2023-Ar.pdf](https://www.memr.gov.jo/EBV4.0/Root_Storage/AR/Projects/JREEEF-2015-2023-Ar.pdf), accessed 8 November 2025

164 In-person interview with expert (1) in the energy sector in Jordan, 6 November 2025.

165 Amin, "The Energy Sector in Jordan", p. 252

166 Sustainable Economic Development and Energy Project, "About the Project", available at <https://cowaterjo.com/عن-المشروع/>, accessed 11 November 2025

167 Jordan Green Building Council, "Affordable Green Housing", available at [https://drive.google.com/drive/folders/1LoD00tvMVuKOx\\_20dvBdoH6yASVBvi6G](https://drive.google.com/drive/folders/1LoD00tvMVuKOx_20dvBdoH6yASVBvi6G), accessed 8 November 2025

168 Hashemite Kingdom of Jordan, *Energy Sector Strategy 2007–2020*.



an evasion of the legal obligations that require the government to enforce the regulations and directives it enacts. energy technologies.

Recognizing the significant contribution of the transportation sector to final energy consumption, it was crucial for the contribution of electricity efficiency in the buildings sector within the Third Energy Efficiency Action Plan to be more ambitious,<sup>169</sup> for several reasons, including the vast stock of existing buildings, users' need to reduce consumption costs, and the necessity of ensuring thermal comfort. A senior official at the MEMR stated, "More than 70% of buildings in Jordan were constructed before the adoption of energy efficiency codes, which leaves ample room for improvement through retrofitting, the application of thermal insulation technologies, the modernization of HVAC and lighting systems, and the use of renewable energy."<sup>170</sup> Approximately 2.4 million residential buildings exist in Jordan, while the number of government, commercial, and service buildings stands at 400,000.<sup>171</sup> This means that launching a national program to rehabilitate this vast building stock, or even part of it, would yield numerous societal benefits, foremost among them the creation of tens of thousands of permanent jobs across the Kingdom.

Efforts to improve energy efficiency in buildings embody the principle of integration in achieving development and sectoral policy objectives par excellence, as shown in Table 1. It can be argued that energy demand management is one of the most equitable energy transition measures from a distributional, reformist, and procedural standpoint, due to its decentralized nature and because its economic, social, environmental, health, and political benefits extend to all members of society and serve the public good. In contrast, political and economic elites often favor large-scale centralized projects backed by capital investors seeking to generate profits centrally and encourage consumption. Therefore, from the perspective of sound and equitable policy-making, priority should be given to implementing energy demand management concepts and providing government support for them before investing in renewable

169 In-person interview with expert (3) in the energy sector in Jordan, 19 October 2025.

170 Ministry of Energy and Mineral Resources, "Climate Action Roadmap Project".

171 In-person interview with expert (3) in the energy sector in Jordan, 19 October 2025.

**Table 1: Benefits of energy efficiency improvement programs in existing buildings**

| Focus                | Benefits                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                       |
|----------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Economic</b>      | <ul style="list-style-type: none"> <li>• Reduced energy imports and the trade deficit<br/>Strengthening financial stability in the economy</li> <li>• Reducing capital expenditure on new electricity generation capacity</li> <li>• Reducing operating costs</li> <li>• Revitalizing the industrial and service sectors and supply chains for insulation materials, equipment, and energy efficiency materials</li> <li>• Training a skilled local workforce with practical experience and technical and managerial skills attractive to employers</li> </ul> |
| <b>Social</b>        | <ul style="list-style-type: none"> <li>• Creating a large number of job opportunities in all cities and villages across the Kingdom</li> <li>• Reducing consumers' electricity bills</li> <li>• Reducing the share of electricity expenses in household income</li> <li>• Increasing spending in the economy, revitalizing markets, and consequently boosting government revenues</li> </ul>                                                                                                                                                                   |
| <b>Operational</b>   | <ul style="list-style-type: none"> <li>• Providing electricity savings during peak periods or crises such as heat waves</li> <li>• Enhancing the resilience and stability of the electricity grid</li> <li>• Enhancing reliability, as building energy efficiency solutions encompass a wide range of commercially available, operationally reliable, and rapidly scalable technologies</li> <li>• Strengthening the adaptability of the electricity system</li> </ul>                                                                                         |
| <b>Environmental</b> | <ul style="list-style-type: none"> <li>• Reducing greenhouse gas emissions</li> <li>• Reducing air pollutants in both ambient air and indoor environments</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                           |
| <b>Health</b>        | <ul style="list-style-type: none"> <li>• Improving indoor air quality</li> <li>• Improving outdoor air quality</li> <li>• Achieving thermal comfort in buildings</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                    |
| <b>Political</b>     | <ul style="list-style-type: none"> <li>• Achieving energy sovereignty</li> </ul>                                                                                                                                                                                                                                                                                                                                                                                                                                                                               |

Source: Author

## Green Hydrogen Program

On July 18, 2022, the Jordan–Germany Energy Partnership hosted a workshop on developing a “Green Hydrogen Roadmap for Jordan,” which brought together a wide range of stakeholders to explore the potential and requirements for investing in green hydrogen production.<sup>172</sup> Thus, Jordan took its first practical steps toward entering the hydrogen economy, aiming to become “a key player in the region for green hydrogen production.”<sup>173</sup> The development of the roadmap was followed by the preparation of the National Green Hydrogen Strategy in 2023, with support from the U.S. Agency for International Development (USAID). The strategy detailed the potential for green hydrogen production in Jordan and its possible applications across various sectors. It outlined five priorities: promoting investment, stimulating demand in the local market, establishing regulatory frameworks for land and water use, and providing government incentives.

Jordan's National Green Hydrogen Strategy includes plans to produce 0.6 million tons of hydrogen annually by 2030, with production rising to 1.5 million tons by 2040 and 3.4 million tons by 2050. The strategy's authors note that “while green hydrogen can play an important role in Jordan's overall ambitions to reduce carbon emissions by 2050, the primary drivers for green hydrogen development in the country will center on more competitive export opportunities.”<sup>174</sup> Therefore, the strategy aims to set ambitious targets for introducing Jordan's green hydrogen production, in the form of ammonia, to key demand markets in Europe and Asia. According to the strategy, exports are expected to account for 83% of total production in 2030 and around two-

thirds of total production in 2040 and 2050.<sup>175</sup>

Table 2 outlines the timeline of Jordan's Green Hydrogen Program and the international institutions supporting it, as the program's key components took shape over a relatively short period from July 2022 to February 2025. From the outset, international development and financial institutions played a prominent role in laying the groundwork for the green hydrogen industry in Jordan by providing technical and financial support to the MEMR and collaborating with it to attract developers, create an enabling legislative environment, and establish a regulatory and supervisory framework for this emerging sector.<sup>176, 177</sup> These efforts resulted in the preparation of new regulatory frameworks, including the issuance of the amended Electricity Law No. 10 of 2025, the Gas Law of 2025, and the Regulation on Procedures for Establishing an Independent Power Transmission System and Connected Self-Generation and Storage Stations of 2025. For the first time, these frameworks allow developers to establish, own, and operate an integrated system of transmission, distribution, storage, export, and import facilities for either self-use or shared use of energy.<sup>178, 179</sup> As of the end of 2024, 14 local and international companies are preparing economic feasibility studies for green hydrogen projects they intend to develop, in accordance with memoranda of understanding signed with MEMR.<sup>180</sup>

Table 2 highlights the European Union's particular interest in developing a Green Hydrogen Program in Jordan, reflecting its policy of building a regional partnership to revive the Desertec 3.0 initiative, which aims to develop the green hydrogen industry

172 Sara Aoun Qtaishat, “Report: A comprehensive overview of green hydrogen in Jordan”, Solarabic, 26 April 2023, available at <https://solarabic.com/learn/analytical/2023/04/-فرص-إنتاج-الهيدروجين-/-الأخضر-في-الأردن>

173 Ministry of Energy and Mineral Resources, “Energy Ministry signs four memoranda of understanding to produce green hydrogen”, 13 November 2023, available at <https://www.memr.gov.jo/AR//NewsDetails/الطاقة-توقع-أربع-مذكرات-تفاهم-لإنتاج-الهيدروجين-الأخضر>

174 Ministry of Energy and Mineral Resources, *Draft National Green Hydrogen Strategy for Jordan*, October 2024, available at [https://www.memr.gov.jo/EBV4.0/Root\\_Storage/AR/EB\\_Info\\_Page/GH2\\_Strategy.pdf](https://www.memr.gov.jo/EBV4.0/Root_Storage/AR/EB_Info_Page/GH2_Strategy.pdf) (Ministry of Energy and Mineral Resources, *National Green Hydrogen Strategy*)

175 Ministry of Energy and Mineral Resources, *National Green Hydrogen Strategy*.

176 Al-Ghad, “Government: Jordan is moving steadily toward a green hydrogen economy”, 19 February 2024, available at <https://alghad.com/Section-210/-اقتصاد-المحلي/-الحكومة-الأردن-يتجه-نحو-اقتصاد-الهيدروجين-الأخضر-بخطوات-ثابتة-1623713>

177 Ministry of Energy and Mineral Resources, “During his patronage of the workshop on the legal and regulatory frameworks for the production, use, and export of hydrogen”, 1 August 2024, available at <https://memr.gov.jo/Ar/NewsDetails/-إنتاج-واستخدام-وتصدير-الهيدروجين-خلال-رعايته-ورشة-الأطر-القانونية-والتنظيمية>

178 Al-Ghad, “Cabinet approves draft Gas Law for 2025”, 10 August 2025, available at <https://alghad.com/Section-199/-الغد-الأردني/-مجلس-الوزراء-يقر-مشروع-قانون-الغاز-لسنة-2025-2040961>

179 Ministry of Energy and Mineral Resources, *Energy and Minerals Achievements*.

180 Ministry of Energy and Mineral Resources, *Annual Report 2024*.

in the Middle East and North Africa (MENA) for export to Europe and global markets.<sup>181</sup> Europe's strategic interest in supporting the hydrogen economy in West Asia and North Africa (WANA) stems from the fact that countries in these regions possess

commercially attractive competitive potential to harness solar and wind energy for electricity generation, which accounts for roughly half the cost of producing green hydrogen.<sup>182</sup>

**Table 2: Main activities of the Green Hydrogen Program in Jordan**

| Date          | Organizer                                                                                                    | Activity                                                                                                                                                  |
|---------------|--------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------|
| November 2020 | Friedrich Ebert Foundation (FES)                                                                             | Publication of a paper titled "Green Hydrogen Production and Export from the Middle East and North Africa (MENA) to Europe: Opportunities and Challenges" |
| November 2021 | Fortescue Future Industries (FFI)                                                                            | Signing of a framework agreement to build a pilot facility for green ammonia production in the Aqaba Special Economic Zone (ASEZ) <sup>184,183</sup>      |
| January 2022  | Friedrich Ebert Foundation (FES)                                                                             | Publication of a paper titled "Road-to-X: Opportunities for Green Hydrogen Use in Jordan"                                                                 |
| June 2022     | German Agency for International Cooperation (GIZ)                                                            | Holding of the Middle East and North Africa (MENA)–Europe Future Energy Dialogue (MEFED) conference at the Dead Sea, Jordan <sup>185</sup>                |
| July 2022     | Jordan-Germany Energy Partnership Program                                                                    | Workshop on developing a green hydrogen roadmap in Jordan                                                                                                 |
| November 2022 | Energies (journal)                                                                                           | Publication of a paper titled "The Potential for Green Hydrogen Production in Jordan"                                                                     |
| 2023          | Ministry of Energy and Mineral Resources (MEMR)                                                              | Formation of the National Green Hydrogen Committee                                                                                                        |
| July 2023     | Ministry of Energy and Mineral Resources (MEMR)                                                              | Visit by a delegation from the Moroccan Ministry of Energy Transition and Sustainable Development                                                         |
| August 2023   | World Bank (WB) / Ministry of Energy and Mineral Resources (MEMR)                                            | Workshop on Legal and regulatory framework options for the production, use, and export of green hydrogen in Jordan                                        |
| October 2023  | United States Agency for International Development (USAID) / Ministry of Energy and Mineral Resources (MEMR) | Preparation of the National Green Hydrogen Strategy                                                                                                       |

181 Friedrich-Ebert-Stiftung, 2020, إنتاج الهيدروجين الأخضر وتصديره من منطقة الشرق الأوسط وشمال أفريقيا إلى أوروبا: الفرص والتحديات, available at <https://library.fes.de/pdf-files/bueros/amman/17608.pdf> (Friedrich-Ebert-Stiftung, إنتاج الهيدروجين الأخضر وتصديره)

182 Friedrich-Ebert-Stiftung, إنتاج الهيدروجين الأخضر وتصديره.

183 Under this agreement, the company was granted several land plots: the first covering 450 km<sup>2</sup> for solar power generation, the second covering 1,000 km<sup>2</sup> for wind power generation, and a third covering 1.5 km<sup>2</sup> within an industrial zone for the establishment of green ammonia production facilities.

184 Solarabic, "Green hydrogen in Jordan".

185 GIZ, "MENA Europe Future Energy Dialogue – Conference Agenda", The Federal Government and the Ministry of Energy and Mineral Resources – Jordan, 2022.



|               |                                                                                                           |                                                                                                                                       |
|---------------|-----------------------------------------------------------------------------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------|
| February 2024 | World Bank (WB)/Ministry of Energy and Mineral Resources (MEMR)                                           | Workshop on reviewing legislation governing green hydrogen in Jordan                                                                  |
| February 2024 | European Bank for Reconstruction and Development (EBRD) / Ministry of Energy and Mineral Resources (MEMR) | First roundtable meeting                                                                                                              |
| February 2025 | European Bank for Reconstruction and Development (EBRD) / Ministry of Energy and Mineral Resources (MEMR) | Fourth roundtable meeting                                                                                                             |
| April 2025    | Ministry of Energy and Mineral Resources (MEMR)                                                           | Extension of the framework agreement with Fortescue Future Industries (FFI) <sup>186</sup>                                            |
| August 2025   | World Bank (WB) / Ministry of Energy and Mineral Resources (MEMR)                                         | Workshop on Jordan's Green Hydrogen Certification System to establish a national framework for certification and guarantees of origin |

Sources: Ministry of Energy and Mineral Resources (MEMR) – Media Center (2025), Author (2025)

According to the National Green Hydrogen Strategy, by 2030, 448 km<sup>2</sup> of land is to be allocated for the installation of 8 gigawatts (GW) of solar and wind power to supply 5 GW of electrolyzers with the energy needed to produce 0.6 million tons of hydrogen annually from water, with an annual water consumption of 5.3 MMcm.<sup>187</sup> Capital investments required to achieve the production target by 2030 are expected to reach US\$28 billion. By comparison, Jordan's total investments in the energy sector over the past 25 years (1999–2023) amounted to US\$10 billion.<sup>188</sup> Jordan's Green Hydrogen Program will not stop at this stage; the strategy sets more ambitious targets for production over the next two decades to meet the anticipated increase in demand. As Table 3 shows, by 2050, US\$175 billion is projected to be invested in installing 47 GW of solar and wind power

and 29 GW of electrolyzers to produce 3.4 million tons of hydrogen annually, with annual water consumption reaching 31 MMcm.<sup>189</sup> For comparison, the National Carrier project aims to desalinate 300 MMcm of seawater annually.<sup>190</sup>

186 Ministry of Energy and Mineral Resources, "Government extends green hydrogen agreement with 'Fortescue' until 2026", 9 April 2025, available at <https://www.memr.gov.jo/Ar/NewsDetails/202504091>

187 Ministry of Energy and Mineral Resources, *National Green Hydrogen Strategy*.

188 Ministry of Energy and Mineral Resources, *Energy and Minerals Achievements*.

189 Ministry of Energy and Mineral Resources, *National Green Hydrogen Strategy*.

190 Ministry of Water and Irrigation, "Ministry of Water and Irrigation signs early works agreement with the National Carrier Project company", 19 March 2025, available at <https://www.mwi.gov.jo/Ar/NewsDetails/المياه-والري-توقع-مع-شركة-مشروع-الناقل-الوطني-اتفاقية-الاعمال-المبكرة>

**Table 3: Green hydrogen potential in Jordan: Requirements and benefits (2030–2050)**

| Item            | Investment                                                          | Area            | Electrolyser Capacity | Solar and Wind Generation Capacity | Water Consumption      | Export Volume | Number of Expected Jobs | Reduction in Greenhouse Gas Emissions |
|-----------------|---------------------------------------------------------------------|-----------------|-----------------------|------------------------------------|------------------------|---------------|-------------------------|---------------------------------------|
| Unit of Measure | billion USD                                                         | km <sup>2</sup> | GW                    | GW                                 | million m <sup>3</sup> | million t     | thousand                | million t CO <sub>2</sub> e           |
| 2030            | By 2030, producing 0.6 million tons of green hydrogen will require: |                 |                       |                                    |                        |               |                         |                                       |
|                 | 28                                                                  | 448             | 5                     | 8                                  | 5.3                    | 0.5           | 11                      | 4.2                                   |
| 2040            | By 2040, producing 1.5 million tons of green hydrogen will require: |                 |                       |                                    |                        |               |                         |                                       |
|                 | 78                                                                  | 1,204           | 13                    | 22                                 | 14                     | 1             | 30                      | 6.1                                   |
| 2050            | By 2050, producing 3.4 million tons of green hydrogen will require: |                 |                       |                                    |                        |               |                         |                                       |
|                 | 175                                                                 | 2,614           | 29                    | 47                                 | 31                     | 2.3           | 65                      | 8.2                                   |

Source: MEMR, NGHS

The rapid pace of this program, its broad scope, the scale of the announced financial flows, and the knowledge resources mobilized in its development call for scrutiny of its potential consequences for local communities, as well as the economic and political repercussions it may entail. In light of the well-documented strong interest shown by European countries, it is our duty to examine which groups stand to benefit.

Amid the rush to prepare technical plans, legislative frameworks, government incentives, and infrastructure requirements for the program, as shown in Table 2, the MEMR has refrained from conducting community dialogues with CSOs to discuss the program's objectives and implications. Granting CSOs membership in the National Green Hydrogen Committee—established to strengthen governmental institutional coordination on the implementation of the strategy—could have provided a valuable opportunity to enhance their political representation, rather than limiting membership to government entities. CSOs did not participate in the workshop to develop the program's roadmap, nor were they present at roundtable meetings or in discussions on the development of

regulatory frameworks.<sup>191, 192</sup>

It is notable that comments by independent experts, as reported in the media, have tended to reinforce the narrative of public-private partnership,<sup>193</sup> while overlooking the role of CSOs in shaping the direction and priorities of the National Green Hydrogen Program. While we acknowledge the participation of academic, professional, and advisory non-governmental institutions, as well as private-sector representatives, this openness remains confined to technical, scientific, and commercial considerations, and does not substitute for the necessary inclusion of local community and environmental organizations in the deliberative process. These are the only actors capable of raising

<sup>191</sup> Solarabic, "Green hydrogen in Jordan".

<sup>192</sup> The workshop was attended by the Ministry of Energy and Mineral Resources, the Ministry of Planning and International Cooperation, the Energy and Minerals Regulatory Commission, Al Hussein Technical University, the Jordan Engineers Association, the Jordan Chamber of Commerce, the Royal Scientific Society, the EDAMA Association for Energy, Water, and the Environment, Friedrich-Ebert-Stiftung, and the Federal Ministry for Economic Affairs and Climate Action – Germany.

<sup>193</sup> Reham Zidan, "Public-private partnership is key to advancing the green hydrogen industry", *Al-Ghad*, 13 August 2023, available at <https://alghad.com/Section-210/-مفتاح-القطاع-بين-الشراكة-بين-الاقتصاد-المحلي/الوصول-لصناعة-الهيدروجين-الأخضر-1358366>

the political, social, and environmental implications of the Green Hydrogen Program for discussion and holding decision-makers accountable.

One of the implications that should be brought into the discussion is the shift in land, water, and energy use resulting from allocating large quantities of these resources to green hydrogen production. As shown in Table 3, by 2030, an area of 448 km<sup>2</sup>—equivalent to 0.5% of Jordan's total land area—will need to be allocated to produce 0.6 million tons of hydrogen, while 2.9% of the Kingdom's land area will be required to produce 3.4 million tons annually by 2050. In addition to the quantitative land requirements, geography plays a significant role in site selection. Accordingly, the National Green Hydrogen Strategy calls for targeting land rich in renewable energy resources (solar and wind) and located near the Aqaba port area to serve as a hub for green hydrogen production and export, while also considering the allocation of additional land parcels to accelerate the program's growth.<sup>194</sup>

It is clear that the urgency in advancing the Green Hydrogen Program has precluded the government from adequately assessing the impact of this large land footprint on local communities and ecosystems. In this regard, researcher Wafa Hadiwi notes in one of her papers that “the land footprint of this technology is significant and affects communities whose livelihoods, history, and identity are tied to the land”, and she raises questions about how the government will engage with local communities that use these lands for agriculture, grazing, or ecotourism.<sup>195</sup> We must also consider the implications of utilizing vast areas for solar panels and wind turbines on biodiversity, bird migration, ecosystems, and archaeological sites, as well as the nature of the governance frameworks that would enable affected local communities to participate in decision-making and policy formulation related to the Green Hydrogen Program.

What is particularly concerning is the reference in a report addressed to the German political foundation Friedrich Ebert Stiftung to the “vast

uninhabited deserts”<sup>196</sup> in the Middle East and North Africa (MENA) as a way to justify overlooking the environmental and social challenges associated with land use. This geographical and demographic framing seeks to construct a simplified narrative that dismisses constraints on land availability and diverts attention from social and political limitations, thereby paving the way for exploring how land, water, and energy resources can be exploited and how capital can be attracted. Such discourse typically overlooks existing imbalances in political and social power and results in the exclusion of the voices of local communities that inhabit these areas and depend on their resources for their livelihoods. This discourse is neither unique nor new. Researcher Timothy Mitchell reminds us that this seemingly neutral narrative, grounded in the framing of natural factors such as geography and demography, is misleading and is often produced by institutions such as the World Bank (WB) and the U.S. Agency for International Development (USAID) to shape the types of solutions proposed, which are typically administrative in nature and biased toward the introduction of new technologies and the activation of market forces. In reality, the core issue lies in social deficits and inequalities,<sup>197</sup> which call for social and political solutions grounded in justice, environmental sustainability, and local participation in decision-making.

A number of researchers and activists<sup>198, 199</sup> draw our attention to the fact that this type of “partnership between Europe and the MENA region” reflects a colonial stance in green guise, through which low-cost energy is supplied to sustain high consumption patterns in the Global North, while supplier countries in the Global South bear the political, social, and environmental costs. In this regard, we must question the logic that permits the use of 2.9% of Jordan’s land—its most resource-rich in terms of solar and wind potential—to produce green hydrogen at commercially attractive prices, with two-thirds exported to supply the economies of the North and East Asia, while consumers in Jordan are

194 Ministry of Energy and Mineral Resources, *National Green Hydrogen Strategy*.

195 Wafa Hadiwi, “A greenwashed transition: The illusion of climate solutions”, Arab NGO Network for Development, 8 October 2024, available at <https://annd.org/ar/publications/details/-تحول-مطلي-#بالأخضر-وهم-الحلول-المناخية-وفاء-حديوي> (Wafa Hadiwi, “A greenwashed transition”).

196 Friedrich-Ebert-Stiftung, Producing and Exporting Green Hydrogen.

197 Timothy Mitchell, *Rule of Experts: Egypt, Techno-Politics, Modernity*, University of California Press, 2002.

198 Arab Reform Initiative, *النضال البيئي في الشرق الأوسط وشمال أفريقيا*, أجنحة بحثية, May 2025, available at <https://s3.eu-central-1.amazonaws.com/storage.arab-reform.net/ari/2025/05/16152131/ARABIC-Environmental-Struggle-in-the-Middle-East-and-North-Africa.pdf>

199 Wafa Hadiwi, "A greenwashed transition".

left to meet their electricity and fuel needs at high prices from predominantly imported, polluting fossil fuels. This situation embodies the concept of “carbon colonialism,” which enables European Union (EU) countries—seeking to achieve climate neutrality by 2050 in line with the European Climate Law—to leverage their soft power and technological advantage to extract renewable energy resources from the MENA, under the banner of supporting local industries and economic development, and in doing so, to shape a global green hydrogen economy under their influence.<sup>200</sup>

It does not appear that the government will permit any portion of the renewable electricity—intended to power the electrolyzers required for hydrogen production—to be fed into the transmission grid owned by NEPCO. According to the Ministry of Energy and Mineral Resources, the regulatory framework for green hydrogen development in Jordan will allow investors to “establish private transmission lines to connect renewable energy directly to the hydrogen industry, thereby avoiding any constraints on the grid.”<sup>201</sup> This suggests that the government is set to channel large volumes of domestically generated electricity from solar and wind sources to global markets in the form of green ammonia, while Jordanian public and private sector institutions are imposing “regulatory and financial” barriers<sup>202</sup> on local consumers seeking to install photovoltaic systems to meet their electricity needs. By comparison, the solar and wind generation capacity allocated for the first phase of green hydrogen projects is expected to reach 8 GW by 2030, compared to 3.2 GW of renewable capacity projected to be connected to the national transmission grid by the same year.<sup>203</sup> This gap, which is likely to widen as production scales up, raises concerns about the equitable use of Jordan's national resources, particularly in light of the marketing plan outlined in the National Green Hydrogen Strategy, which stipulates that 83% of

total production will be exported to global markets in Europe and East Asia during the first decade of operation, and two-thirds of production thereafter, following the completion of the second and third phases.

Given the limited availability of land within the Aqaba Special Economic Zone Authority (ASEZA) to accommodate green hydrogen production facilities—despite its investment advantages—the government is likely to designate sites for the program outside the zone due to the large land requirements. Accordingly, on 2 July 2025, the Prime Minister's Office in Jordan tasked the MEMR, the Ministry of Investment (MoInv), and the Ministry of Finance (MoF) with examining the adoption of incentive-based investment concessions for components of green hydrogen projects located outside ASEZA, similar to those granted within it. In August 2025, just one month after this directive, the Cabinet approved the decision of the Incentives and Exemptions Committee at the Ministry of Investment to adopt a set of investment incentives for green hydrogen projects located outside ASEZA.<sup>204</sup> Table 4 presents the incentives and exemptions granted to these projects.

This raises questions about the criteria and principles used to determine the scope and magnitude of the incentives granted to investors. It also raises the questions of whether government officials have ensured that Jordan secures a fair share of the revenue generated from granting rights to exploit its natural resources for green hydrogen production. This concern is driven by knowledge asymmetries surrounding the emerging green hydrogen industry, as Jordanian government institutions lack independent, specialized technical capacity in the technologies and economics of green hydrogen production, creating a significant imbalance of power and information in negotiations with multinational corporations, whose advanced expertise and ability to mobilize capital tend to tip the balance of negotiating power in their favor.

This weakness in negotiating capacity is further compounded by the Jordanian government's reliance—when preparing the green hydrogen roadmap, the National Green Hydrogen Strategy,

200 Ankit Kumar et al., “Urgency vs justice: A politics of energy transitions in the age of the Anthropocene”, in Ankit Kumar et al., eds., *Dilemmas of Energy Transitions in the Global South: Balancing Urgency and Justice*, Routledge, 2021, pp. 1–17.

201 Ministry of Energy and Mineral Resources, “Kharabsheh: We aspire for Jordan to become a regional hub for green hydrogen”, 26 February 2025, available at <https://memr.gov.jo/AR//NewsDetails/202502262>

202 Reham Zidan, “Increasing fees on renewable energy”.

203 Ministry of Energy and Mineral Resources, Comprehensive Energy Sector Strategy for 2020–2030.

204 Prime Minister's Office, “Cabinet decisions, Wednesday 13 August 2025”, 13 August 2025, available at <https://www.pm.gov.jo/Ar/NewsDetails/am0417> (Prime Minister's Office, “Cabinet decisions 13 August 2025”).

and the legal and regulatory frameworks governing its production, use, and export—on technical and financial support from European and international institutions such as the European Bank for Reconstruction and Development (EBRD), the World Bank (WB), the German Agency for International Cooperation (GIZ), and the United States Agency

for International Development (USAID), as shown in Table 2. These concerns are further heightened by the involvement of the same European financial, development, and governmental institutions in green hydrogen projects across much of the region, increasing the risk of information asymmetries and potential price-setting advantages.

**Table 4: Investment incentives granted to green hydrogen projects located outside the Aqaba Special Economic Zone (ASEZ)**

| Type of Incentive                       | Description                                                                                                                                                                                                                                                                                                                             |
|-----------------------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| Tax Reduction                           | Reduction of income tax to 5%, plus 1% as a national contribution                                                                                                                                                                                                                                                                       |
| Customs Duty Exemption                  | Exemption of all project equipment and fixed assets, including those imported by the project owner, main contractor, or subcontractors, from customs duties, import fees, and other applicable taxes<br><br>Exemption of spare parts required for the project from customs duties and other applicable taxes                            |
| Exemption from Stamp Duties             | Exemption of project companies from stamp duties and other fees on project agreements, financing agreements, engineering, procurement, and construction (EPC) contracts, and all contracts related to the supply, installation, operation, and maintenance of equipment, as well as any agreements necessary for project implementation |
| Exemption from Sales Tax                | Exemption of projects, companies, and their main and subcontractors from general sales tax and any other applicable taxes, covering both local and international services, as well as goods and materials required for the project                                                                                                      |
| Grace Period                            | Granting a grace period for the commencement of rent payments on treasury-owned land until the project begins operations, for a maximum period of five years                                                                                                                                                                            |
| Future Tax Exemptions                   | Eligibility to benefit from any additional exemptions from fees and taxes that may be granted to industrial projects in the future                                                                                                                                                                                                      |
| Exemption from Withholding Tax          | Exemption from withholding tax on imported services                                                                                                                                                                                                                                                                                     |
| Tax Exemption for Non-Resident Entities | Exemption of non-resident financiers from all forms of taxation in Jordan—such as withholding, assessment, or retention—on income derived from interest, fees, and other payments arising from loans extended to the project company for project purposes                                                                               |

Source: Prime Minister's Office, Cabinet Decisions.

Another issue that must be raised for discussion is whether investments by regional countries such as Saudi Arabia, Egypt, Oman, the United Arab Emirates, Morocco, and Algeria in the green hydrogen industry have led to intense competition to attract investors, and consequently to a “race to the bottom” in

which countries expand the provision of unjustified incentives, concessions, and tax exemptions. In fact, the Cabinet decision dated August 13, 2025, stated that “the green hydrogen sector is witnessing intense competition in the region, as many countries are offering significant incentives



and exemptions to attract investment, and granting green hydrogen projects outside the Aqaba Special Economic Zone (ASEZ) a comprehensive package of incentives and exemptions would help create an attractive investment environment and stimulate the implementation of strategic projects in the clean energy sector.”<sup>205</sup> This official acknowledgment of “intense” regional competition to attract investment appears somewhat overstated, as “Jordan’s substantial potential for low-cost renewable energy makes it an attractive location for green hydrogen production” without the need for broad concessions in tax rates, fees, and charges.

According to a World Bank (WB) report, Jordan ranks third globally—after Namibia and Chile—in average daily solar energy production, placing it among the lowest-cost countries for solar-based hydrogen production and enhancing its export competitiveness.<sup>206</sup> Therefore, the financial incentive package should remain within limits that ensure Jordan secures a share commensurate with the competitive and financial advantages<sup>207, 208</sup> accruing to developer companies. This would help prevent depriving Jordanian taxpayers of revenues that could otherwise be directed toward other vital development priorities.

Although the primary driver for developing Jordan’s green hydrogen industry is centered on export opportunities, the strategy identifies supply chains across several domestic sectors that could be targeted to replace current fuels or gray hydrogen with green hydrogen. These sectors include oil refining, heavy transport, ammonia production as an input for fertilizer manufacturing, electricity generation, building heating, and the cement and steel industries. The key issue that must be addressed is achieving

a more realistic understanding of the drivers of domestic demand for green hydrogen. The strategy anticipates that “local use will begin when the cost of green hydrogen reaches a level comparable to the price of the current fuel or raw material it will replace.”<sup>209</sup> The technological and economic requirements for substitution in each sector must also be considered, along with the feasibility and costs of retrofitting or upgrading equipment.<sup>210</sup> The MEMR has not issued any statements regarding plans to prepare economic feasibility studies<sup>211</sup> to assess the potential uses of green hydrogen and the requirements for its integration into the local economy, indicating that investment incentives in this emerging industry are primarily linked to export prospects. Undoubtedly, the hesitation in preparing such studies also stems from the fact that the emergence of the green hydrogen industry coincides with an influx of investments in the use of gas from the Al-Risha field in sectors such as heavy transport, construction, electricity, and ammonia manufacturing—sectors that overlap with potential green hydrogen applications. It is not reasonable for Jordan to promote the parallel expansion of natural gas and green hydrogen applications in the same sectors and allow them to compete. Available evidence points to the emergence of two parallel economies: a “brown” natural gas economy serving domestic needs, and a green hydrogen economy oriented toward export. This dynamic will ultimately determine who is credited with reducing greenhouse gas emissions.

It is important to clarify that we are not calling for the cancellation of the Green Hydrogen Program; on the contrary, this program will provide Jordan with an opportunity to generate revenue through concession fees, land rents, income taxes, and other fees, and to allocate these revenues to economic and social development and/or to reduce the budget deficit and/or cover debt service payments. However, the program’s regulatory, commercial, and financial framework is purely extractive, as it compels Jordan to allocate its natural resources for export at “attractive” prices by artificially creating competition and depriving it of the ability to benefit

205 Prime Minister’s Office, “Cabinet decisions 13 August 2025”.

206 World Bank (WB), *Global Photovoltaic Power Potential by Country*, June 2020, available at <https://documents1.worldbank.org/curated/en/466331592817725242/pdf/Global-Photovoltaic-Power-Potential-by-Country.pdf>

207 Ministry of Energy and Mineral Resources, *National Green Hydrogen Strategy*.

208 For solar-powered hydrogen production systems, the cost of half of Jordan’s production potential does not exceed five US dollars per kilogram of hydrogen. When solar and wind energy systems are combined, the cost of hydrogen production in Jordan falls to below four US dollars per kilogram, placing it within the cost range of production in other countries in the Middle East and North Africa, according to the National Green Hydrogen Strategy.

209 Ministry of Energy and Mineral Resources, *National Green Hydrogen Strategy*.

210 These include hydrogen transport pipelines, compressors, storage tanks, and furnaces.

211 In-person interview with expert (1) in the energy sector in Jordan, 6 November 2025.

from these resources within its own economy. In the spirit of correction, we propose that Jordan secure a fair share of renewable electricity to feed the national grid, and that the government require developers to invest a portion of their revenues or profits in local green hydrogen applications in exchange for the incentive package prepared by the government. This proposal is fully aligned with the Ministry of Energy and Mineral Resources' management of the National Mining Program, as legislation prohibits mining companies from exporting strategic minerals (such as copper or gold) in their raw or unprocessed form.<sup>212</sup> Furthermore, the government provides incentives for economic activities that add value to local supply chains.<sup>213</sup>

## Active Civil Society Organizations in Energy Transition in Jordan

This paper seeks to understand and analyze the role of CSOs and social movements in influencing the energy transition in Jordan, whether through their engagement with government institutions or with local communities. Data collection was based on interviews with six representatives of NGOs, in addition to a desk review of relevant literature. The main finding indicates the existence of multiple categories of CSOs that differ in their mandates, visions, and activities. The interviews revealed organizations with direct engagement with the general public and community groups, as well as others focused on mobilizing the “green” business community. The study also identified a group of leading research centers engaged in producing and publishing studies on the energy transition, alongside providing consulting and training services. In addition, it identified institutions that

rely on governments or international organizations for guidance in implementing their activities and fulfilling their mandates. The appendix provides a detailed description of these organizations' programs, their demands, and the challenges they face.

Essentially, all CSOs under study agree on supporting the energy transition, but they differ in their programs and methods for achieving this. To varying degrees, these organizations employ seminars, training workshops, educational initiatives, political dialogue, advocacy campaigns, and the development of studies and field projects to support energy efficiency programs, renewable energy applications, green building practices, and electric transportation. While CSOs primarily target students, youth, families, and local communities through awareness-raising, training, and guidance workshops on energy efficiency, renewable energy sources, environmentally sustainable building system designs, and all matters related to energy conservation and environmental protection, organizations affiliated with the green private sector primarily aim to strengthen their dialogue with government institutions in order to influence policy-making and the formulation of strategies related to the energy transition.

## Challenges Facing Civil Society Organizations

NGOs lack formal legal and institutional mechanisms that would enable them to participate directly in the development of energy transition legislation and strategies. The available administrative mechanism is limited to periodic dialogues between the minister and his administrative and technical staff at the Ministry of Energy and Mineral Resources, and the private sector through the so-called Partnership Council, to discuss draft legislation, policies, and sector developments. The Partnership Council provides an opportunity for private sector representatives—such as chambers of industry and commerce and organizations representing the private sector, including the Jordan Strategy Forum (JSF) and EDAMA Association for Energy, Water and Environment (EDAMA)—to comment on these drafts and submit alternative proposals. In our view, limiting this “dialogue” to reviewing what the Ministry prepares and presenting it to stakeholders for discussion falls short of genuine partnership, which requires meaningful participation in shaping

212 Official Gazette, Issue No. 5968, *Amended Regulation on Petroleum, Oil Shale, Coal, and Strategic Minerals Exploitation Projects No. 109 of 2024*, 16 December 2024, available at <https://pm.gov.jo/Ar/Pages/NewsPaperDetails/5968>

213 Official Gazette, Issue No. 5849, *Instructions for Regulating and Licensing the Practice of Economic Activities and Their Oversight in Development Zones and Free Zones No. 7 of 2023*, 2 April 2023, available at <https://www.pm.gov.jo/Ar/Pages/NewsPaperDetails/5849>

strategies and policies during their development.

Limited ability to attract funding constitutes another major challenge, with the least able group being those organizations that derive their legitimacy from civil society and environmental movements concerned with the energy transition. These organizations lack the human and organizational capacities required to prepare and submit grant applications, and do not possess the strong presence or networks of relationships considered essential for engaging with donor institutions. As a result, some CSOs supporting the energy transition have been forced to suspend their activities due to their inability to cover operational and programmatic costs.<sup>214</sup> Consequently, there is currently no civil society organization in Jordan engaged in institutional work on a just energy transition.

## Effectiveness of Influence

Non-governmental actors involved in the energy transition in Jordan lack the political clout necessary to exert meaningful pressure and influence. The limited number of these organizations deprives them of the political weight that could emerge from a large, cohesive, effective, and sustained coalition. The most significant channels of influence are manifested through the Partnership Council, as noted above, where dialogue is direct and access to decision-making centers to discuss draft legislation and civil society's proposed amendments is largely available, although this does not necessarily lead to a government response. Despite the absence of a legal framework guaranteeing CSOs' participation in the formulation of legislation and policies, representatives of NGOs described their ability to influence decision-makers as "moderate; there are some successes and some failures."<sup>215</sup>

214 In-person interview with the head of an environmental NGO in Jordan, 19 April 2025.

215 In-person interview with the head of an environmental NGO in Jordan, 19 April 2025; in-person interviews with energy sector experts and representatives of several NGOs, 2025.

## Just Energy Transition Scope in Jordan

In this paper, we examine the key challenges facing Jordan's just energy transition efforts. Since 2007, these efforts have led to the integration of renewable energy sources into the energy mix; however, large individual and institutional consumers have captured the largest share of this energy, and electricity tariffs have not declined from their current levels. While Egyptian gas imports covered 80% of Jordan's electricity production since 2003, gas from the Leviathan field now meets 85.5% of the country's natural gas needs (as of 2025). The outcomes of energy efficiency action plans have been modest, while the measures in the current plan are marked by fundamental contradictions in government policies. Jordan aspires to become a regional hub for green hydrogen, leaving behind a substantial land, water, and energy footprint.

Although the contribution of gas from the Al-Risha field to electricity generation remains negligible today, the promising reserves suggest that Jordan could rely on domestic gas sources to meet a significant share of its energy needs. In light of projections that renewable energy will account for 40–50% of electricity generation by 2033–2035,<sup>216</sup> and the rapid expansion in the use of domestically sourced natural gas, Jordan is likely to move increasingly over the next 15 years toward meeting most of its energy needs from natural gas and renewable energy.

As demonstrated in this paper, Jordan's energy transition efforts have been marked by multiple forms of injustice. Without a clear and satisfactory explanation of how these injustices have evolved, our understanding of the causes of societal hardship and how to correct the course remains incomplete. To better understand the driving forces behind this unjust transition, we present a framework that highlights the following:

- The importance of awareness of energy transition history
- The role of the political process in a just

216 Ministry of Energy and Mineral Resources, الاستراتيجية الوطنية الشاملة، لقطاع الطاقة للفترة 2035–2025، unpublished at the time of writing.

transition

- The role of knowledge and knowledge production methodologies
- Just transition: vision, goals, and strategies

Table 5 shows the interrogative questions that we suggest to guide the discussion.

**Table 5: A probing framework for understanding aspects of justice in Jordan’s energy transition**

| Framework Themes                                             | Guiding Questions                                                                                                                                                                                                                                                                                                                                                                                                                                                                                                |
|--------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| The Importance of Awareness of Energy Transition History     | <ul style="list-style-type: none"><li>• What is the historical context of previous energy transition efforts in Jordan?</li><li>• How does our awareness of this context influence current policy efforts? What lessons have been learned?</li><li>• Is the “just transition” a process or a project?</li></ul>                                                                                                                                                                                                  |
| The Role of the Political Process in a Just Transition       | <ul style="list-style-type: none"><li>• What do Jordan’s energy transition decision-making structures look like?</li><li>• Who should be involved in shaping just transition policies in Jordan, and how?</li><li>• How do political and institutional processes in Jordan determine who makes and implements decisions, and who is subject to them?</li></ul>                                                                                                                                                   |
| The Role of Knowledge and Knowledge Production Methodologies | <ul style="list-style-type: none"><li>• What is the role of knowledge—local, tacit, scientific, economic, and technical—in managing a just transition?</li><li>• How are “local” and “scientific” knowledge applied? Who embodies each type of knowledge? Whose interests does each serve?</li><li>• What is the impact of imposing external development programs without taking the local context into account?</li><li>• How is scientific knowledge used to defend certain positions and interests?</li></ul> |
| Just Transition: Vision, Goals, and Strategies               | <ul style="list-style-type: none"><li>• What are Jordan’s goals for a just transition, what should they be, and what are its strategies for achieving them?</li><li>• How do we formulate goals and strategies for a just transition in Jordan amid conflicting interests and a lack of understanding?</li></ul>                                                                                                                                                                                                 |

## The Importance of Awareness of Energy Transition History

The first dimension of the framework focuses on raising awareness among government officials and consultants of the historical context of energy transitions and how this context shapes current transition efforts. Tracing the development of

transition policies and strategies reveals a recurring pattern of poor planning and shortcomings in sound decision-making. The disruption of Iraqi oil supplies in 2003 did not prompt the government to alter its planning approach at the time; instead, the National Energy Sector Strategy 2007–2020 relied on continued Egyptian gas supplies as the least-cost option. Jordan paid a heavy price when Egyptian gas supplies were cut off in 2013. The strategy also relied on unrealistic expectations regarding Jordan’s ability at the time to increase



natural gas production from the Al-Risha field by 1 Bcm annually, a target that was never achieved. In light of current government projections to increase gas production from the Al-Risha field to 500 MMcf/d by 2035,<sup>217</sup> and in contrast to expert assessments suggesting that production is unlikely to exceed 250 MMcf/d, decision-makers must draw lessons from this experience to avoid repetition and to prepare contingency alternatives when making projections.

Another cause for concern in the history of the energy transition is the repeated tendency toward rushed decision-making. According to a government report, hasty decisions regarding the privatization of electricity distribution companies led to non-compliance with standards and best practices, attracting financial investors focused on short-term gains at the expense of the sector's long-term development.<sup>218</sup> The same pattern was repeated in the nuclear energy program, where rushed decisions resulted in withdrawals from certain contracts and strategic partnerships, as well as in arbitrary decisions that are difficult to justify and were made without assessing their impacts on local communities. The government's rush to attract foreign investment to develop the renewable energy sector also led to the premature implementation of unfair pricing regulations, causing financial losses for NEPCO. These examples are cited because they must be revisited to understand how government decisions produced unjust outcomes—outcomes that should not be repeated, especially as decision-makers are currently shaping the sector's future strategy and making critical decisions regarding the Green Hydrogen Program and the use of gas from the Al-Risha field.

This leads us to question the urgency surrounding the Green Hydrogen Program and the absence of public debate on its benefits and impacts on changes in land, water, and energy use, as well as the implications for directly affected local communities. Based on our observations, international development and financial institutions have played a prominent and active role in accelerating the implementation of the Green Hydrogen Program; their role has not been limited to funding feasibility studies, but has extended to maintaining the program's momentum through coordination, monitoring the completion of studies, facilitating discussions, and reaching

agreements between government agencies and investors. Undoubtedly, these institutions have conveyed to Jordanian government entities the importance of advancing the Green Hydrogen Program according to an approach that ensures its rapid progression.

The lack of consensus regarding the technologies and economics of green hydrogen could have prompted the government to undertake a careful assessment of appropriate levels and durations of exemptions before introducing a package of generous incentives. In the same vein, the government should have conducted a thorough and deliberate examination of the drivers of domestic demand for green hydrogen in the sectors identified in the strategy, particularly given the shift toward using gas from the Al-Risha field in some of these same sectors. In our view, failure to address these issues early and with due diligence will result in ill-considered decisions with unintended consequences, in a pattern that reproduces a history of injustice. An energy expert<sup>219</sup> expressed concern that the government, in its “hasty” management of the Green Hydrogen Program, may replicate decisions that lack fairness and sound judgment, echoing the rapid expansion of renewable energy projects during the 2012–2018 period, which did not adequately account for fair pricing or equitable allocation of renewable energy shares.

The repetition of past mistakes can be attributed to a lack of creativity, the absence of a culture of accountability within state institutions, the dominance of powerful institutions over the policy agenda, and the limited ability of stakeholders to influence outcomes. While each of these factors contributes to the recurrence of past mistakes, the influence of powerful institutions remains the dominant driver. This influence is not confined to actors within Jordan; regional and global powers have also played a prominent role in shaping government decisions.

In analyzing the factors that have led Jordan to increase its reliance on fossil fuels, researchers Benjamin Schweitzer and Husam Hussein argue, in their work on the political economy of Jordan's energy transition, that these drivers are of a “deep geopolitical” nature, highlighting the role of “political and economic elites both within and

217 Ministry of Energy and Mineral Resources, *REOI for Al Risha Gas Pipeline*.

218 Amin, “The Energy Sector in Jordan”, p. 229

219 In-person interview with expert (1) in the energy sector in Jordan, 6 November 2025.



outside Jordan—including transnational companies such as Abu Dhabi Future Energy Company (Masdar) and Israeli energy firms, as well as government officials—in blocking attempts to transition to renewable energy sources,” thereby contributing to “the persistence of existing political and economic dependencies” and “undermining the political and economic opportunities associated with the emergence of a domestic renewable energy sector and a potential shift toward greater energy independence.”<sup>220</sup>

The influence of geopolitical factors was evident when eight Mediterranean countries<sup>221</sup> met in Cairo in 2019 to sign the founding Charter of the Eastern Mediterranean Gas Forum, a regional intergovernmental organization aimed at establishing a market for countries in the region involved in the production, consumption, and transportation of natural gas.<sup>222</sup> The forum was established with the support of the United States,<sup>223</sup> which, along with the EU and the World Bank (WB) holds observer status. One of the forum’s early outcomes came when Egypt, Israel, and the EU signed a memorandum of understanding (MoU) on June 15, 2022, to export large quantities of Israeli gas to Europe by transporting natural gas from the Leviathan field via pipelines to Egypt, where it would be liquefied and re-exported to Europe.<sup>224</sup> To operationalize the MoU, Egypt and Israel concluded a landmark \$35 billion agreement in August 2025 to supply 130 Bcm of natural gas from the Leviathan field to Egypt through 2040, or until all contracted

volumes are delivered.<sup>225</sup>

At first glance, the establishment of the Eastern Mediterranean Gas Forum may appear aimed at facilitating and deepening trade among regional countries in the production, transportation, and export of natural gas. However, the exclusion of other regional actors such as Algeria, Qatar, and Turkey suggests the presence of broader geopolitical considerations that go beyond consultations and agreements on a regional gas market.<sup>226</sup> The MoU between the EU, Egypt, and Israel was part of the EU’s efforts to reduce its dependence on Russian gas and diversify its import sources, while both Egypt and Jordan have increasingly relied on Israeli gas imports, which currently account for 15–20% of Egypt’s consumption<sup>227</sup> and 85.5% of Jordan’s annual gas imports,<sup>228</sup> a development that is likely to undermine their energy sovereignty. Academic researcher Takadum Al-Khatib notes that, for the United States, the Eastern Mediterranean Gas Forum represents “a tool for reshaping the energy map of the Eastern Mediterranean, consolidating Israel’s position as a key actor in the regional system, and depriving its rivals of influence in energy markets.”<sup>229</sup>

In fact, it is necessary to deconstruct the assumption that long-term contracts are synonymous with energy security. The risks associated with Jordan’s reliance on natural gas imports from the Leviathan field became clearly evident following the temporary suspension of operations at the field in June 2025, which forced NEPCO to switch to heavy fuel oil and diesel in thermal power plants and to halt gas supplies to factories connected to the main gas network. This event demonstrates that long-term, legally binding contracts do not guarantee energy security in the short term, contrary to what many had assumed.

220 Benjamin Schuetze, “The geopolitical economy of an undermined energy transition”.

221 The founding member states are Egypt, Israel, Greece, Cyprus, Italy, France, Jordan, and Palestine.

222 East Mediterranean Gas Forum, “Overview”, available at <https://emgf.org/pages/about/overview.aspx>, accessed 28 October 2025.

223 Takadum Al-Khatib, “How Egypt’s reliance on Israeli gas could blow up in its face”, Middle East Eye, 20 August 2025, available at [https://www.middleeasteye.net/opinion/how-egypt-reliance-israel-gas-could-blow-up-face?fbclid=IwY2xjawMWZsJleHRuA2FlbQlXMQABHrOVlp-wXnysn1u-faIEPQDh9tHgAbkt\\_aQZw5x6wzAs\\_idJSZ48VH7DK\\_eam\\_cvIOIBYPG7vDoMNCkIKeCA](https://www.middleeasteye.net/opinion/how-egypt-reliance-israel-gas-could-blow-up-face?fbclid=IwY2xjawMWZsJleHRuA2FlbQlXMQABHrOVlp-wXnysn1u-faIEPQDh9tHgAbkt_aQZw5x6wzAs_idJSZ48VH7DK_eam_cvIOIBYPG7vDoMNCkIKeCA) (Takadum Al-Khatib, “Egypt’s reliance on Israeli gas”).

224 Sarah El Safty and Ari Rabinovitch, “EU, Israel and Egypt sign deal to boost East Med gas exports to Europe”, Reuters, 15 June 2022, available at <https://www.reuters.com/business/energy/eu-israel-egypt-sign-deal-boost-east-med-gas-exports-europe-2022-06-15/>

225 Marwa Rashad et al., “Israel’s Leviathan signs \$35 billion natural gas supply deal with Egypt”, Reuters, 7 August 2025, available at <https://www.reuters.com/business/energy/israels-leviathan-signs-35-billion-natural-gas-supply-deal-with-egypt-2025-08-07/> (Reuters, “Israel’s Leviathan signs natural gas supply deal”).

226 Takadum Al-Khatib, “Egypt’s reliance on Israeli gas”.

227 Reuters, “Israel’s Leviathan signs natural gas supply deal”.

228 Jordan Strategy Forum, Al-Risha Gas Field.

229 Takadum Al-Khatib, “Egypt’s reliance on Israeli gas”.

## The Role of the Political Process in a Just Transition

The second dimension of the framework emphasizes analyzing the role of multiple stakeholders and the extent to which less influential groups in society can shape the parameters of a just energy transition. Decision-making on energy issues in Jordan rests with the MEMR, which is responsible for planning, policy-making, and strategy, while the Energy and Minerals Regulatory Commission (EMRC) performs regulatory and supervisory functions. A “top-down” approach to managing the sector has been evident since the Ministry and the Commission began developing the recommendations incorporated into the 2007–2020 Energy Strategy. This approach lacks legal and institutional mechanisms to enable the participation of non-governmental stakeholders in policy-making. On the one hand, it reflects a broader feature of Jordan’s governance structure, which relies on centralized decision-making. On the other hand, government ministries view the National Assembly—comprising the House of Representatives and the Senate—as the formal arena for oversight and political participation through representation.

Here, we focus on scrutinizing the process through which transition policies and strategies are developed, particularly the extent of civil society participation in decision-making. Without exception, the government has replicated its past practices: energy transition efforts—from the restructuring and privatization of the sector, through the development of the nuclear energy program and the Green Hydrogen Program, and the Third Action Plan for Energy Efficiency, to the preparation of the latest energy strategy for the period 2025–2035—have all been devoid of public participation. Even when opportunities arose for popular and parliamentary movements opposing the nuclear program and the gas supply agreement with Israel to express their views, the government made no effort to engage in dialogue or political consultation.

As an alternative to participatory decision-making, the MEMR—like other government agencies—adopted a framework based on ongoing dialogue between the Ministry and both the public and private sectors through the so-called “Partnership Council,” which meets periodically under the

Ministry’s chairmanship to discuss sector legislation and policies and exchange views on developments of mutual interest.<sup>230</sup> The Partnership Council was established by an administrative decision issued by the Prime Minister’s Office and circulated to all government institutions and agencies. However, the administrative implementation of this framework did not adequately account for the representation of CSOs representing local communities, as well as environmental, research, and human rights organizations and relevant labor unions. The Council’s membership includes, from the public sector, NEPCO and the Energy and Minerals Regulatory Commission (EMRC), and from the private sector, electricity distribution companies and business associations such as the chambers of industry and commerce, the Jordan Strategy Forum (JSF), and organizations engaged in mobilizing the green business community, such as the EDAMA, and the Renewable Energy Establishments Society (REES).<sup>231</sup> While organizations representing the private sector have succeeded in accessing decision-makers, their role is limited to reviewing draft legislation, strategies, and proposed policies after they are issued, in order to provide comments and suggest amendments; it does not extend to participating in their formulation, monitoring, or evaluation. This approach reduces essential governance frameworks to consultative sessions in which the Ministry retains the final decision-making authority.

We conclude from the above that the nature of the political and institutional process—in this case, the Partnership Council—largely determines who participates in shaping energy transition policies and how. While the participation of private-sector companies operating in the energy sector is partly based on their status as stakeholders affected by sector policies and legislation, it is only equitable that participation extends to all affected groups. Choices regarding how society accesses and uses energy are decisive factors in determining the quality, costs, allocation, and environmental impacts of basic energy services. These factors directly and indirectly affect the standard of living of all members

230 Ministry of Energy and Mineral Resources, “Partnership Council meeting”, October 2017, available at [https://www.memr.gov.jo/Ar/NewsDetails/اجتماع\\_مجلس\\_الشراكة](https://www.memr.gov.jo/Ar/NewsDetails/اجتماع_مجلس_الشراكة)

231 Ministry of Energy and Mineral Resources, “Minister of Energy chairs partnership meeting for the energy sector”, September 2025, available at <https://www.memr.gov.jo/Ar/NewsDetails/20259151>

of society. Therefore, the exclusion of CSOs and affected communities from governance frameworks remains one of the most evident injustices in energy transition efforts. In his book *The Possible Jordan*, researcher Ibrahim Gharaibeh highlights the changes that have occurred in the relationships between the government, corporations, and communities following the privatization of many public services, resulting in “a weakening of communities and their ability to make their voices heard and influence public decisions related to their lives and broader political participation, along with a significant decline in living standards and income,” and asks: “How can communities become equal partners with governments and companies, forming an economic, political, and social force that influences policies and decisions, and in defining, diversifying, and expanding their options?”<sup>232</sup> The call for the involvement of CSOs rests on three main justifications. Expanding the participation of diverse community, intellectual, and research institutions in policy development ensures a plurality of ideas, perspectives, and solutions brought forward for discussion—ideas that may not emerge in closed deliberations limited to government bodies and their immediate priorities. This renewal, plurality, and diversity of perspectives will help decision-makers develop a broader and deeper understanding of policy options and their potential consequences. It will also enhance their ability to address pressing challenges, curb hasty decisions, and build new strategies without reproducing past mistakes.

The second justification for expanding the involvement of non-governmental stakeholders stems from the widespread misconception that experts and government officials are best suited to oversee planning and decision-making processes related to the energy transition—a process often viewed as one that should not be subject to public participation or accountability. While technical and scientific input from experts is undoubtedly essential for explaining concepts, presenting evidence, and clarifying trade-offs among options when presented to decision-makers, and thus constitutes a key component of the decision-making process, it must be emphasized that scientific approaches do not account for the distribution of benefits and burdens arising from proposed policies, nor do they adequately consider the role of domestic or external political forces in shaping policy-making and

defending entrenched interests. The implications of decisions on the distribution of gains and the interests of stakeholders—across economic, social, and political dimensions—lie at the core of political and institutional governance processes, which should be inclusive rather than exclusionary.

The third rationale for enhancing stakeholder engagement stems from the urgent need for the MEMR, along with the sector's executive and regulatory bodies, to encourage public compliance with their guidelines through cooperation, thereby ensuring grid stability through efficiency and changes in consumption patterns, particularly during peak hours.<sup>233</sup> The Ministry has announced a community action plan to raise awareness of electricity loads and mechanisms for managing them, following the Kingdom's recording of the highest electricity loads in its history, with peak demand reaching 4,800 MW on August 13, 2025, during a heatwave.<sup>234</sup> Official expectations that communities will respond to energy efficiency guidelines and adjust consumption patterns must be accompanied by measures to incorporate the voices and priorities of those affected into the policy-making process; otherwise, the likelihood of effective compliance will diminish.

## The Role of Knowledge and Knowledge Production Methodologies

Projects implementing energy efficiency solutions have produced a range of publications on building retrofitting, aimed at raising awareness of these measures and providing community members with guidance that translates generated knowledge into broader practical application. For example, the “Affordable Green Housing” project produced a guide to green building in Jordan, a booklet on developing an energy consumption standard for residential apartments in Amman, as well as a guide to building retrofitting that enhances energy

233 Energy and Minerals Regulatory Commission, “Rationalizing electricity consumption... a national step to enhance grid stability during peak loads”, August 2025, available at <https://emrc.gov.jo/AR//NewsDetails/ترشيح استهلاك الكهرباء... خطوة وطنية تعزز استقرار الشبكة في ذروة الأحمال القياسية>

234 EDAMA Association for Energy, Water, and the Environment, “The Kingdom records record electricity peak loads”, August 2025, available at <https://edama.jo/ar/المملكة-تسجل-أرقامًا قياسية في الأحمال>

232 Ibrahim Gharaibeh, *The Possible Jordan*, pp. 320–321.

efficiency and thermal comfort, among other guidance materials.<sup>235</sup> We consider the capacity to generate knowledge tailored to the local context and apply it in energy efficiency programs to be a key element of a just transition, as such knowledge is practical, reliable, and accessible to all members of society.

This stands in contrast to the knowledge imported from abroad to implement the Green Hydrogen Program, where international development and financial institutions have effectively monopolized the knowledge-generation process by funding studies conducted by global consulting firms. These studies went beyond technology transfer to include the preparation of the national strategy, the review of legal and legislative frameworks, the identification of government incentives, and the definition of infrastructure requirements. A close reading of the strategy and the technical and economic knowledge underpinning it shows that it does not adequately consider the ecological, water, or socio-organizational contexts of rural communities seeking to manage their natural and cultural resources. Instead, it prioritizes attracting foreign investment to exploit renewable energy resources for the production and export of green hydrogen. As a result, this knowledge has been primarily deployed to serve the interests of developers under the banner of “green development.” This calls for a critical examination of the language and terminology used to justify these trends. What does “green development” mean in a context where fossil fuels<sup>236</sup> are used for seawater desalination, not to mention the impact of highly saline discharge on the marine environment in a semi-enclosed bay?

## Just Transition: Vision, Goals, and Strategies

A just energy transition in Jordan requires the MEMR to transparently articulate its vision for the sector by 2050 or 2060. The government’s long-term vision for the sector remains vague and unclear. In this context, it is essential to distinguish between means and ends. The National Energy Sector Strategy, issued by the Ministry every ten years and

updated every five years, serves as an action plan for interim objectives and their implementation, but it does not provide a comprehensive picture of the sector’s long-term future. What is needed is the formulation of a relatively stable vision, less susceptible to fundamental change, that clearly outlines the long-term future of energy use across the building, transportation, and industrial sectors. This need is becoming increasingly urgent in light of rapid technological advancements, shifts in energy production, transmission, distribution, storage, and consumption technologies, and evolving conditions in energy-consuming sectors.

Regarding passenger cars, does the long-term vision entail electric mobility powered by renewable energy, as outlined in the Energy Efficiency Action Plan, or a shift toward the use of compressed natural gas (CNG),<sup>237</sup> which has begun to be discussed within the Ministry in light of new gas discoveries? Regarding heavy-duty vehicles, is the future moving toward the use of CNG, which the Ministry has already begun implementing, or toward fuel cell technology as outlined in the Green Hydrogen Strategy? Regarding heating and cooling in buildings, will the future rely on natural gas, electric heat pumps, or green hydrogen? And will the manufacturing sector rely on gray ammonia or green ammonia in the future?

The gas resources in the newly discovered Al-Risha field offer the government an opportunity to reassess the possibilities and constraints in the sector. These discoveries could enable Jordan to meet part or all of its natural gas needs from domestic sources, provided that government estimates regarding reserve size and projected production volumes are confirmed. However, is the goal of achieving energy security from domestic sources now within reach? And how will these promising reserves influence the trajectory of a just energy transition in Jordan? The answers to these questions depend on several factors, including the strategy the government adopts for exploiting these resources over the coming decades. To date, the government has not developed a dedicated roadmap or strategy for these discoveries; however, the Cabinet has recently approved an agreement to supply gas from the Al-Risha field to the state-owned Samra Electric

235 Publications available at [https://drive.google.com/drive/folders/1LoD00tvMVuKOx\\_20dvBdoH6yASVBvi6G](https://drive.google.com/drive/folders/1LoD00tvMVuKOx_20dvBdoH6yASVBvi6G)

236 In-person interview with an expert in the private energy sector in Jordan, 2 November 2025.

237 In-person interview with expert (1) in the energy sector in Jordan, 6 November 2025.



Power Company (SEPCO).<sup>238</sup> The MEMR has also issued a tender to construct a pipeline to transport gas from the Al-Risha field to the AGP.<sup>239</sup> There is a clear government push to expand the use of natural gas into new sectors and markets, as private-sector companies have been established to invest in the purchase, processing, transportation, and supply of CNG for use in the industrial and transportation sectors. The government has also prepared a strategy to build a natural gas distribution network for residential buildings and small businesses in the cities of Amman and Zarqa.<sup>240</sup> However, as discussed above, geopolitical factors may constrain Jordan's ability to meet all of its gas needs domestically after the gas supply contract from the Leviathan field expires by the end of 2034.

The key question that must be raised is whether dependence will persist until the end of the Leviathan field's operational life or only until the expiration of the supply contract. One of the companies that owns and operates the field has stated that the expansion of production and transportation infrastructure "will enable production and supply to Israel and its neighbors until 2064."<sup>241</sup> This statement coincided with Jordan's announcement of its forthcoming plans to expand production capacity at the Al-Risha gas field over the next ten years,<sup>242, 243</sup> as noted above, to levels that may exceed Jordan's daily natural gas demand, which reached 354.6 MMcf in 2024, according to the annual report of the MEMR.<sup>244</sup>

Recent statements by government officials regarding the possibility of exporting surplus gas from the Al-Risha field, along with the expressed intent to "continue meeting the Kingdom's natural gas needs from currently available sources, which cover demand until 2035, while developing the Al-Risha gas field and maintaining the option of importing

liquefied natural gas through the Sheikh Sabah Al-Ahmad LNG Terminal in Aqaba to ensure energy security,"<sup>245</sup> suggest that the Jordanian government is inclined to reconsider the continuation of supplies from the Northern Gas Pipeline after the Israeli gas supply agreement expires by 2035. This inference is supported by statements from a group of public- and private-sector officials in a press release, which repeatedly emphasized "the Jordanian state's strategic directions in achieving energy security and enhancing independence through the development and utilization of national resources," with a focus on "diversifying energy sources, increasing reliance on local sources, and leveraging national resources to serve the Jordanian economy."<sup>246</sup> If Jordan seeks to pursue energy sovereignty and assert independence in its energy sector decision-making, it must be able to withstand the geopolitical pressures that are likely to be exerted through the Gas Forum to renew the gas supply agreement from the Leviathan field.

With regard to the strategy for exploiting gas from the Al-Risha field, although increasing reliance on fossil fuels alongside the growth of renewable energy sources may conflict with the concept of a just transition, Jordan's move toward exploiting its domestic natural gas resources and reducing its reliance on gas imports could strengthen its independence in managing the energy sector and end the dependency imposed by geopolitical powers. We therefore reformulate the question as follows: How should Jordan utilize the gas reserves of the Al-Risha field to achieve a just transition in the energy sector by 2050? The Jordan Strategy Forum was among the first entities to issue a policy paper addressing the strategic potential of the Al-Risha field and reviewing lessons learned from international experiences. It called for the phased export of gas to generate short-term revenue, while the government moves, in the medium and long term, toward establishing local industries that use gas as a feedstock in the manufacture of petrochemicals, polymers, fertilizers, methanol, and other high-value-added industries. The paper also referred indirectly to the possibility of using it

238 Reham Zidan, "Al-Risha gas... Jordan's winning card toward energy security", *Al-Ghad*, 3 November 2025, available at <https://alghad.com/Section-181/-/اقتصاد/غاز-الريشة-ورقة-الأردن-الرابحة-نحو-أمن-الطاقة2053193>

239 Ministry of Energy and Mineral Resources, *REOI for Al Risha Gas Pipeline*.

240 Ministry of Energy and Mineral Resources, *Strategic gas distribution networks*.

241 Reuters, "Israel's Leviathan signs natural gas supply deal".

242 Ministry of Energy and Mineral Resources, "Establishment of the Advanced National Natural Gas Company – Watani".

243 Ministry of Energy and Mineral Resources, *REOI for Al Risha Gas Pipeline*.

244 Ministry of Energy and Mineral Resources, Annual Report 2024.

245 Ministry of Energy and Mineral Resources, "Al-Azzam reviews achievements and plans for gas and hydrogen development in Jordan", April 2025, available at <https://www.memr.gov.jo/Ar/NewsDetails/202504172#:~:text=%20موقع%20وأكدت%20أن%20الاردن%20الجغرافي,للغاز%20في%20المملكة%20لأول%20مرة>

246 Ministry of Energy and Mineral Resources, "Establishment of the Advanced National Natural Gas Company – Watani".



for electricity generation.<sup>247</sup>

The first problem with this argument lies in the Forum's approach, which places "the primary responsibility for determining how to utilize this natural resource and maximize its returns on the Jordanian government, in partnership with the private sector, to ensure the greatest possible economic and developmental benefit from this resource,"<sup>248</sup> without granting civil society a role as a legitimate political actor. The second issue concerns the risks associated with relying on petrochemicals, polymers, and ethanol, as these products are no longer classified as high-value-added or highly competitive; rather, they are considered primary commodities whose profitability depends on global oil and gas prices, as well as on production volumes and costs. Consequently, such investments would return Jordan to a cycle of dependence on price fluctuations in global oil markets, which should be avoided. The third issue lies in the urgent need to build an economy that limits the production of plastics and the toxic additives used in them, which increasingly accumulate in food chains and pollute air, freshwater, groundwater, and soil at various stages of their life cycle, to the extent that "they have become a global threat to human rights."<sup>249</sup> Moreover, the petrochemical industry is a major source of air pollutants and greenhouse gas emissions. The fourth issue concerns the risks of continuing to rely on natural gas imports from the Leviathan field for electricity generation if domestic gas reserves are allocated to petrochemical manufacturing and to meet the needs of other sectors and markets—a policy that the government has already begun to implement. Such trends would deepen existing imbalances and reproduce past patterns.

In our view, the top priority at this stage is to end dependence on gas imports from any external source by utilizing domestic gas reserves to fully meet the energy needs of the power generation and industrial sectors. This would contribute to lowering electricity tariffs for consumers. Once the current phase is completed, the requirements of

the transition phase will necessitate channeling revenues from natural gas sales—whether in domestic or export markets—into energy efficiency programs, upgrading the electricity grid, developing public transportation, electrifying economic sectors, investing in storage solutions, and strengthening electricity interconnections.

The central question is not how to utilize gas from the Al-Risha field in one sector or another, but rather the extent to which decision-makers are prepared to adopt the concept of a just transition outlined at the beginning of this paper—a concept grounded in re-examining the equitable distribution of benefits and burdens, strengthening effective mechanisms for community participation in planning, monitoring, and evaluation, and embedding environmental sustainability and energy sovereignty within the context of a gradual phase-out of fossil fuels. If Jordan is committed to following "a sustainable path that maintains momentum toward carbon neutrality" by 2050,<sup>250</sup> as stated in the National Climate Change Policy 2022–2050, it must first strategically improve energy efficiency, second, gradually increase the contribution of renewable energy to electricity generation through both centralized facilities and decentralized systems, and third, move toward the electrification of the transportation, buildings, and heating sectors while securing the required generation capacity from renewable energy sources. This implies a gradual reduction in the share of natural gas in electricity generation, while maintaining thermal uses that are difficult to replace or convert. Some government perspectives oppose this approach, arguing that Jordan has the right to invest its natural gas resources to meet development needs, and that reducing greenhouse gas emissions should not constrain or hinder economic growth, particularly given Jordan's minimal contribution<sup>251, 252</sup> to climate change.

From our perspective, we acknowledge that the legal

247 Jordan Strategy Forum, Al-Risha Gas Field.

248 Jordan Strategy Forum, Al-Risha Gas Field.

249 United Nations General Assembly, *Implications for human rights of the environmentally sound management and disposal of hazardous substances and wastes*, July 2021, available at <https://docs.un.org/ar/A/76/207>

250 Ministry of Environment and United Nations Development Programme, *National Climate Change Policy of the Hashemite Kingdom of Jordan 2022–2050*, September 2022, available at [https://www.moenv.gov.jo/ebv4.0/root\\_storage/ar/eb\\_list\\_page/\\_السياسة\\_الوطنية\\_للتنمية\\_المناخية\\_للأعوام\\_٢٠٢٢-٢٠٥٠](https://www.moenv.gov.jo/ebv4.0/root_storage/ar/eb_list_page/_السياسة_الوطنية_للتنمية_المناخية_للأعوام_٢٠٢٢-٢٠٥٠) (Ministry of Environment, *National Climate Change Policy*).

251 Ministry of Environment, *National Climate Change Policy*.

252 Jordan's contribution to global greenhouse gas emissions is 0.06%, according to the National Climate Change Policy of the Hashemite Kingdom of Jordan 2022–2050.

and moral responsibility for reducing greenhouse gas emissions lies with industrialized nations, which bear the highest cumulative historical emissions. However, the approach we propose is driven primarily by economic and security considerations, and secondarily by environmental and climate concerns. If Jordan has the right to rely on natural gas for its economic development, as many argue, then all segments of society have the right to achieve energy sovereignty, access electricity at the lowest possible cost, breathe cleaner air, and benefit from the employment opportunities generated by the sector. This can only be realized by integrating solar and wind energy resources into the local economy. By contrast, reliance on natural gas reinforces ongoing political and economic dependency and is associated with rising electricity tariffs and increased healthcare costs resulting from air pollution. At the same time, Jordan's renewable solar and wind resources are being directed toward the production of green hydrogen for export to industrialized nations, in a scenario that reproduces patterns of colonialism. The paradox lies in the fact that Jordanians rely domestically on natural gas to meet a significant share of their energy needs, while industrialized countries benefit from Jordan's low-cost, environmentally sustainable renewable resources.

## Recommendations

In this paper, we have presented an analysis of Jordan's energy transition efforts and examined the challenges that have hindered the achievement of a just transition. In this section, we aim to provide policymakers and stakeholders seeking to address these challenges with a set of policy recommendations that can serve as effective tools to support a just energy transition that is both credible and legitimate in the eyes of society. It is of limited value to highlight the inequalities in the transition process without clearly defining the substance of the concept of justice we seek to advance. Based on our analysis of energy transition efforts in this paper, we present the following set of recommendations:

**Engaging civil society in decision-making processes.** We recommend that the Ministry of Energy and Mineral Resources activate the political participation of civil society groups in the Partnership Council by establishing a legal framework that lays

the institutional foundations and restructures the Council. This entails reorganizing the interaction between the public, private, and civil society sectors to ensure equal powers for all Council members in developing, monitoring, and evaluating strategies, legislation, and policies related to the energy transition.

**Developing a long-term vision and strategy for the energy sector.** We recommend that the MEMR formulate a forward-looking vision capable of guiding strategic decisions in the sector toward a just transition, in which benefits and burdens are distributed equitably across all segments of society. This vision should be accompanied by a strategic plan with a holistic perspective and a time horizon extending to 2050, in which the Ministry transparently outlines how it will manage the transition phase on a fair basis.

**Strategically maximizing energy demand management efforts.** We recommend that the MEMR strengthen energy demand management efforts by making them the cornerstone of the just energy transition strategy, as they provide the foundation upon which other transition measures are built. This entails giving strategic priority to increasing the level of ambition in electricity efficiency efforts in buildings.

**Strategically scaling up public transportation efforts.** We recommend that the transition in the transportation sector aim to raise the level of ambition in delivering public transportation services that meet safety standards and are affordable, reliable, punctual, and low in air pollutant emissions. Jordan should advance the development of a national rail network for passenger and freight transport and ensure that it is powered by electricity generated from renewable energy sources.

**Developing adaptation measures in the energy sector.** We recommend that the MEMR, in coordination with the Ministry of Environment, develop and integrate adaptation measures for the energy sector into the National Adaptation Plan, given the increasing likelihood that electricity generation, transmission, distribution, conversion, and storage systems will be affected by climate change risks, particularly heatwaves.

**Integrating knowledge into policy-making.** We recommend that the MEMR establish an advisory council composed of experts, academics, and independent researchers, whose role is to provide

the scientific and knowledge-based input needed by decision-makers in developing public policies. The council should not have a role in determining policies, legislation, or strategies, nor in influencing decision-making; rather, its function should be limited to supplying policymakers with relevant scientific knowledge on sectoral issues, broadening the range of options and solutions available, and clarifying trade-offs to support informed policy formulation.

**Addressing transition risks.** We recommend that the MEMR, the Ministry of Labor (MoL), and the Ministry of Finance (MoF) assess the unintended risks associated with the energy transition, including declining tax revenues and labor market disruptions, and take compensatory and remedial measures to mitigate the impact of these risks on affected groups, while ensuring the equitable distribution of the burdens and benefits resulting from the energy transition.

## Appendix: Active Civil Society Organizations in Jordan's Energy Transition

At a seminar held by the EDAMA Association for Energy, Water, and Environment on December 23, 2024, in Amman, His Excellency the Minister of Energy and Mineral Resources affirmed that Jordan “began its energy transition early and is considered one of the leading countries in the region.”<sup>253</sup> This seminar took place at a time when the Kingdom was witnessing the issuance of new legislation and amendments to legal frameworks related to the production, transmission, distribution, consumption, and storage of electricity. These included amendments to the Renewable Energy and Energy Efficiency Law, revisions to the regulation governing the connection of renewable energy facilities to electricity transmission and distribution grids, and the enactment of the Electricity Law, which addresses regulatory provisions related to energy storage, green hydrogen projects, self-supply of electricity, and the authorities of distribution companies.<sup>254</sup> A new guide to time-of-use electricity tariffs<sup>255, 256</sup> has also been issued, along with amendments to the specifications for

electric vehicles permitted for import through the free zone. In addition to preparing the National Green Hydrogen Strategy in 2023, the MEMR began consultations last year on the development of the National Energy Sector Strategy for 2025–2035. These regulations and the resulting strategies will have significant implications for Jordan's energy transition in the coming decades.

### Active Civil Society Organizations in the Field of Energy Transition in Jordan

It is difficult to identify CSOs or groups in Jordan that are engaged in institutional work related to the green energy transition. What is evident in the public sphere is the presence of a number of NGOs active in advocating for policies or transformations in the energy sector to achieve specific economic, social, or environmental objectives shaped by the nature of each organization. While most of these organizations share independence from the government, they differ in their mandates, which is reflected in the diversity of their activities, objectives, and the methods they employ in their programs. Although their efforts may contribute directly or indirectly to supporting a just energy transition, they do not typically use this term to describe their work. In fact, some of these organizations were established before the concept of energy transition became widely used in the political sphere.

To gain an analytical understanding of the roles of NGOs in Jordan within the context of the institutional energy transition, it is first necessary to clarify the frameworks that underpin their activities. Interviews with NGO representatives revealed a diversity of these frameworks, which is reflected in their performance and their ability to influence the energy transition landscape. These organizations can be categorized according to the following frameworks, while acknowledging that there are no strict boundaries between them:

**Civil society:** The Green Generation Foundation and the Energy Efficiency and Environmental Sustainability Society are considered the closest to the concept of civil society compared to their counterparts among the other NGOs listed here. However, they differ in terms of their resources, activities, and advocacy approaches. While the Green Generation Foundation is regarded as a

253 EDAMA Association for Energy, Water, and the Environment, “Energy breakfast event titled ‘Renewable energy and new electricity laws and their alignment with the Economic Modernization Vision’”, December 2024, available at <https://edama.jo/ar/-/فعالية-إفطار-الطاقة-تحت-عنوان-قوانين->

254 Ministry of Energy and Mineral Resources, “Kharabsheh: It is important to adopt the General Electricity Law for 2024 as a permanent law instead of a temporary one”, November 2025, available at <https://memr.gov.jo/Ar/NewsDetails/لخرايشة-من-المهم-وجود-مشروع-قانون-الكهرباء-العام-لسنة-2024-كقانون-دائم-بدلاً-عن-القانون-المؤقت>

255 Jordan News Agency, “Kharabsheh: Time-of-use tariff supports the industrial sector and does not raise electricity prices”, 27 June 2025, available at [https://www.petra.gov.jo/Include/InnerPage.jsp?ID=284426&lang=ar&name=news&fbclid=IwZXh0bgNhZW0CMTEAAR1uiLjjpIAL4hQrseKdw3HGxhRNe9628FJ3v4rzp0n782d\\_z-U8sd1-ZP8\\_aem\\_2ZBNKBf9r4tc5Teixk5urA](https://www.petra.gov.jo/Include/InnerPage.jsp?ID=284426&lang=ar&name=news&fbclid=IwZXh0bgNhZW0CMTEAAR1uiLjjpIAL4hQrseKdw3HGxhRNe9628FJ3v4rzp0n782d_z-U8sd1-ZP8_aem_2ZBNKBf9r4tc5Teixk5urA)

256 Energy and Minerals Regulatory Commission, available at [https://www.emrc.gov.jo/ebv4.0/root\\_storage/ar/eb\\_list\\_page/\\_دليل-2025-0-التعرفة.pdf](https://www.emrc.gov.jo/ebv4.0/root_storage/ar/eb_list_page/_دليل-2025-0-التعرفة.pdf)

pioneer in engaging young people of both genders, building their capacities, and mobilizing them to contribute to addressing environmental and climate challenges, it has not directly focused on energy transition issues since its establishment in 2014, with the exception of publishing a policy position paper on energy transition in Jordan in 2018. This paper was prepared by a group of active young members of the Foundation, with support from international organizations and under the supervision of international and local experts. The authors used climate change as an entry point to propose a policy vision for a just and democratic transition in the energy sector.<sup>257</sup> The Foundation's lack of a systematic focus on just energy transition issues stems from "limited human resources and funding, and a lack of technical expertise"<sup>258</sup> necessary to launch advocacy campaigns in this field. The Foundation has also chosen not to direct its resources toward influencing energy policies, as it considers civil society interventions in a highly politicized sector—linked to national security considerations and large-scale investments—to be largely ineffective.<sup>259</sup>

By contrast, the Energy Efficiency and Environmental Sustainability Society was founded in 2004 by experts and activists to address the noticeable decline in public awareness of methods of energy production, consumption, and management at the individual, household, and community levels. The society's educational campaigns extend beyond traditional and social media to include the organization of educational, training, and advisory activities aimed at empowering community members to make informed decisions and take appropriate actions regarding eco-design practices for buildings and their rehabilitation, as well as energy efficiency methods, building materials, and renewable energy resources. Its work in research and studies has helped consolidate its position in authorship and publishing, making guidance materials and information accessible to the public. It has also organized research seminars, cultural forums, workshops, and purpose-driven competitions

targeting student and professional groups. In addition to its efforts to deepen community awareness, the association has engaged with public and private sector institutions to contribute to the development of laws, regulations, and guidelines related to the energy sector. Regardless of its actual ability to influence policy-making, its technical and research expertise has positioned it as a recognized voice in policy circles. Its ability to reach diverse segments of society through volunteer activities, and its success in delivering educational and technical programs that affect individuals and communities, have made it an important and relatively rare model worthy of study and analysis, particularly for NGOs seeking to build social credibility. In recent years, however, the society has faced a severe funding shortage, forcing it to suspend its programs.<sup>260</sup>

**Private sector:** The rapid political, economic, and social developments Jordan experienced during the first decade of this century, coupled with global shifts leading up to the Great Recession of 2008, contributed to mounting domestic pressures. This led to the emergence of a group of sector-specific NGOs that recognized the need to respond by "exploring ways to pool efforts and resources to create a unified voice."<sup>261</sup> This context paved the way for the establishment of the EDAMA and the Jordan Green Building Council (Jordan GBC), both in 2009, marking the beginning of non-profit, non-governmental institutional efforts aimed at mobilizing private-sector potential and stimulating the transition to a green economy. These two institutions rely on a model of institutional and individual membership for governance, management, and funding, with members predominantly drawn from private-sector companies whose activities center on green economy transition projects in the energy, water, agriculture, waste management, and built environment sectors. Accordingly, this institutional model derives its mandate from its mission to represent its members, enhance their opportunities for participation in the green economy, and provide a platform for dialogue with government executive and regulatory bodies. Companies operating in renewable energy industries constitute the majority of the memberships in EDAMA, while the Jordan Green Building Council's membership is

257 Friedrich-Ebert-Stiftung, Energy in Jordan from a Youth Perspective, October 2018, available at <https://library.fes.de/pdf-files/bueros/amman/14800.pdf>

258 In-person interview with the head of a youth environmental NGO in Jordan, 6 April 2025.

259 In-person interview with the head of a youth environmental NGO in Jordan, 6 April 2025.

260 In-person interview with the head of an environmental NGO in Jordan, 19 April 2025.

261 In-person interview with an expert in the private energy sector in Jordan, 28 April 2025.



concentrated among companies working in urban environmental sustainability, particularly in the building sector. The participation of private-sector companies in these organizations does not preclude their classification as part of civil society. One of the key strengths of business community organizations lies in their ability to leverage human resources and technical expertise to generate and disseminate knowledge on the energy transition, as well as their role as a platform for dialogue with the public sector on relevant legislation and policies.

What distinguishes organizations that derive their legitimacy from private-sector membership, compared to other CSOs, is the overlap between their activities in advocating for the sector's transition to renewable energy and the pursuit of their members' commercial interests. Given the economic weight of their members, their vital role in implementing energy projects, forming investment consortiums with global companies, and attracting financing, these organizations have a greater capacity than their civil society counterparts to access decision-makers and engage in direct dialogue with them. This enables them to present alternative perspectives and proposals regarding laws, regulations, and policies related to the energy transition, although without necessarily exerting significant influence over decision-making processes.<sup>262</sup>

**Research centers:** Civil society research organizations play a vital role in preparing and publishing in-depth studies on the energy transition in Jordan. Among the most prominent of these institutions are the Phenix Center for Economic and Informatics Studies, the Institute for West Asia and North Africa (WANA), the National Energy Research Center at the Royal Scientific Society, and the Politics and Society Institute. In addition to publishing studies and research papers, these institutions host conferences, seminars, and lectures to promote their research output and facilitate dialogue between researchers and policymakers. The importance of these studies goes beyond the development of ideas and concepts; they also help shed light—supported by evidence—on the relationship between a just energy transition and the ability to address poverty, unemployment, gender inequality, and fiscal deficits. There is no

doubt that strategists and policymakers urgently need to draw on such studies, given the lack of human and financial resources within government institutions to produce them. However, it remains difficult to assess the extent to which these research outputs influence government energy transition policies.

**International organizations:** The programs implemented by the German political foundation Friedrich-Ebert-Stiftung (FES) in Jordan and the Canadian government-supported organization Cowater International, as part of efforts to support the energy transition in Jordan, can be considered of particularly high quality. While FES-Jordan focuses on developing and supporting research on a just energy transition and building the capacity of civil society—such as youth groups and labor unions—to actively participate in shaping solutions, Cowater International adopts a different approach that goes beyond awareness-raising to include the implementation of energy efficiency and renewable energy solutions benefiting households and local public facilities, such as schools, municipalities, and health centers. The activities of the Sustainable Energy and Economic Development Project, which Cowater has been implementing since 2016, contribute to strengthening local community development by training youth and members of CSOs, fostering professional networking, and supporting entrepreneurial initiatives in the sustainable energy sector through agreements with the Jordan Renewable Energy and Energy Efficiency Fund under the MEMR. The project's success and sustainability can be attributed to its partnership with the Government of Canada. Moreover, access to external funding enables organizations affiliated with international entities to effectively mobilize their resources to fulfill their missions.

However, the sphere in which these organizations operate, according to the classification proposed above, cannot be considered to have rigid boundaries, as these are often crossed. For instance, the Energy Efficiency and Environmental Sustainability Society, which derives its legitimacy from civil society, conducts research and studies and uses its publications in the training, awareness-raising, and advocacy activities it implements. Its ability to produce studies stems from its effective use of its human and technical resources, making it a reliable source in this field. Furthermore, some organizations that include private-sector members, such as EDAMA and the Jordan Green Building Council

<sup>262</sup> In-person interviews with energy sector experts and representatives of several NGOs, 2025.

(EGB Jordan), do not limit themselves to engaging with the public sector to influence policy-making; they also seek to establish direct partnerships with local CSOs to implement development and training projects targeting the communities hosting these initiatives. As for international organizations, despite their links to global entities, their programs focus on local communities and CSOs, including the funding of studies and policy briefs related to the energy transition.

## Civil Society Organizations' Demands Regarding the Energy Transition

Essentially, all CSOs listed in this paper agree on supporting the energy transition, but they differ in their programs and methods for achieving this fundamental goal. These organizations work to advocate for policies that promote energy efficiency, expand the use of renewable energy sources, and support green building practices and the electrification of the transportation sector. Organizations whose mandate is rooted in civil society tend to primarily target students, youth, households, and local communities by organizing awareness-raising and training workshops on energy efficiency, renewable energy sources, and environmentally sustainable building design, alongside broader topics related to energy efficiency and environmental protection. Organizations with ties to the private sector, on the other hand, primarily seek to strengthen their dialogue with government institutions in order to influence the development of policies that support the energy transition, in line with their professional mandates and the interests of their member companies. For this reason, the EDAMA Association, for example, demonstrates a clear orientation toward promoting accelerated investment in renewable energy sources, green hydrogen, and information technologies, as opposed to fossil fuels.

The demands of research-based NGOs are no less important than those of their civil society counterparts. These organizations produce studies demonstrating how a just energy transition can help address the development challenges facing Jordan. Through these in-depth analyses, they provide evidence of the role of the energy transition in stimulating local development, creating employment opportunities, advancing gender

equality,<sup>263</sup> empowering marginalized groups such as displaced populations and refugee-hosting communities,<sup>264</sup> and supporting micro, small, and medium-sized enterprises.<sup>265</sup>

## Challenges Facing Civil Society Organizations' Efforts on a Just Energy Transition in Jordan

Civil society's lack of organized political momentum and leverage. NGOs involved in Jordan's energy transition do not possess sufficient political clout to exert pressure and influence. The limited number of these organizations constrains their ability to generate the kind of political weight that could emerge from broad, sustained coalitions. Moreover, none of the currently active organizations derive their legitimacy from grassroots civil society or environmental activism. An analysis of the space in which CSOs concerned with the energy transition operate reveals the difficulty of generalizing about this field or drawing definitive conclusions regarding their performance, methods, and capacity to influence. This is due to their limited number relative to the diversity of their institutional frameworks. As a result, each organization has developed its own operational model, establishing distinct channels for action and influence, funding sources, and areas of expertise. In our view, this specialization has reinforced a tendency toward fragmentation and insularity, rather than fostering coordinated collective efforts aimed at developing and implementing a long-term strategy for political advocacy.

263 West Asia-North Africa Institute (WANA Institute), *Gender, Climate, and Interdependence: Mapping the Links Between Climate Change, Human Security, and Gender in Jordan*, December 2023, available at <https://wanainstitute.org/ar/publication/gender-climate-and-cohesion-uncovering-linkages-between-climate-change-human-security>

264 West Asia-North Africa Institute (WANA Institute), *Scaling up sustainable energy in Jordan's public buildings: The case for greening schools and hospitals in refugee-hosting countries*, April 2023, available at <https://wanainstitute.org/ar/publication/scaling-sustainable-energy-jordan's-public-buildings-case-greening-schools-and-hospitals>

265 Economic Research Forum, *Empowering Micro, Small, and Medium Enterprises in Jordan: Driving Sustainable Economic Growth Through the Transition to Renewable Energy*, October 2024, available at <https://erf.org.eg/publications/تمكين-المشروعات-متناهية-الصغر-والصغير>

**Lack of governance frameworks.** The MEMR, like other ministries, lacks legally-binding institutional mechanisms to enable stakeholder participation in the formulation of sectoral policies, including those related to the energy transition. This can be attributed, on the one hand, to the broader structure of governance in Jordan, and on the other hand, to the view held by the executive branch that the National Assembly—comprising the House of Representatives and the Senate—constitutes the official platform for facilitating citizens' political participation. As a result, some CSOs seek to engage with the energy committees in both chambers as an entry point to influence legislative and policy-making processes.<sup>266</sup> Conversely, rather than fostering substantive participation, the Ministry's direct engagement with these organizations remains limited to consultations on draft laws, regulations, and directives after they have been prepared and issued, rather than during their development. This restricts the ability of CSOs to contribute to deliberations, propose new ideas, or present alternative approaches during the formulation stages of these laws or strategies. Consequently, their role is largely confined to reviewing draft laws, regulations, and proposed policies after their issuance in order to provide feedback to government entities. This approach reduces participatory governance frameworks to voluntary discussions in which the Ministry retains the final decision-making authority.

We also observe a tendency on the part of the MEMR to expand its engagement with the private sector and related institutions through "Partnerships Council" intended to facilitate consultation and dialogue. These councils cannot be considered the outcome of a permanent institutional legislative process, as they were established administratively by a decision of the Prime Minister's Office and circulated to all government institutions and agencies. The Ministry recently organized a national workshop to update the energy sector strategy for the years 2025–2035, during which it was emphasized that all stakeholders "from the public and private sectors, as well as financial institutions, have been involved in drafting a comprehensive strategy that reflects the aspirations of the various parties."<sup>267</sup> The EDAMA

Association for Energy, Water, and Environment, which represents the "green" business community, was the only civil society organization invited to this event. This is attributable to the association's efforts to promote the opening of consultation channels on energy transition legislation between the public and private sectors, as well as to the fact that its member companies are among those most affected by such legislation and play a central role in implementing renewable energy projects, as noted earlier.

**The government's limited follow-through on its commitments to political participation.** Although Jordan's government climate action strategies emphasize the importance of concepts such as "human rights-based climate planning,"<sup>268</sup> "the inclusion of vulnerable groups in mitigation and adaptation projects,"<sup>269</sup> and the need for "active and continuous participation of a diverse range of stakeholders, including local actors, civil society, the private sector, and international academic, research, and development partner institutions,"<sup>270</sup> as well as taking into account "the challenges faced by individuals and communities in accessing resources and rights to improve livelihoods,"<sup>271</sup> it remains difficult to identify institutional government efforts that effectively translate these commitments into practice. While these references appear in climate change strategies issued by the Ministry of Environment, other ministries—particularly the MEMR, which is responsible for the bulk of mitigation measures—are equally bound by these commitments. Some researchers have argued that the government's objective may not necessarily be to convert climate change discourse into tangible outcomes, but rather to attract the attention of international donors—who have a vested interest in maintaining Jordan's stability—in order to secure financial support to strengthen the country's response to climate change.<sup>272</sup>

266 In-person interview with the head of an environmental NGO in Jordan, 19 April 2025.

267 Ministry of Energy and Mineral Resources, "Launch of the workshop to update Jordan's energy strategy for the period 2025–2035", May 2025, available at <https://www.memr.gov.jo/Ar/NewsDetails/202505073>

268 Ministry of Environment, *Updated Submission of Jordan's 1st Nationally Determined Contribution (NDC)*, October 2021, available at [https://rws-ccaf.com/sites/default/files/2024-11/29\\_0.pdf](https://rws-ccaf.com/sites/default/files/2024-11/29_0.pdf) (Ministry of Environment, *Jordan's 1st Updated NDC*)

269 Ministry of Environment, *Jordan's 1st Updated NDC*.

270 Ministry of Environment, National Climate Change Adaptation Plan in Jordan 2022, 2022, available at [https://www.moenv.gov.jo/ebv4.0/root\\_storage/ar/eb\\_list\\_page/الخطط\\_الوطنية\\_للتكيف.pdf](https://www.moenv.gov.jo/ebv4.0/root_storage/ar/eb_list_page/الخطط_الوطنية_للتكيف.pdf)

271 Ministry of Environment, *Jordan's 1st Updated NDC*.

272 Marianna Poberezhskaya and Imad El-Anis, "Constructing climate change rentierism in Jordan", *Environmental Politics*, 2024, available at <https://www.tandfonline.com/doi/epdf/10.1080/09644016.2024.2427527?needAccess=true>

**Weak capacity to attract funding.** The energy transition NGOs examined in this paper vary in their ability to secure funding. Organizations rooted in civil society lack the human and organizational capacities required to prepare and submit grant applications. They also lack the strong presence and networks necessary to engage effectively with donors, making them the least capable of attracting funding. As a result, it is currently difficult to identify any civil society organization in Jordan engaged in institutional work on a just energy transition. Organizations affiliated with the private sector, by contrast, benefit from membership fees that provide a stable source of revenue to cover basic expenses. They also leverage their local and international networks to attract funding and achieve a level of financial sustainability that enables long-term planning and ensures the continuity of their programs and their presence in the public sphere. It is also important to note the extensive experience of those leading these organizations, many of whom come from business backgrounds. Meanwhile, external funding allows organizations affiliated with international entities to dedicate their human, technical, and organizational resources to implementing their programs without needing to divert efforts toward fundraising. As for research-oriented CSOs, they generally do not face significant funding challenges, as their strong local, regional, and international networks enable them to meet demand for income-generating research, studies, and consultancy services.

**Legislative challenges to civil society work.** The laws governing CSOs generally constrain their ability to fulfill their mandates and impose restrictions that hinder partnership-building and access to resources.<sup>273</sup> A study on the state of civil society in Jordan identified legislative challenges related to “restrictions on the registration of associations, excessive oversight of their financial and administrative activities, as well as complex requirements for obtaining domestic and foreign funding.” The study warned that difficulties in securing funding could deprive “organizations of operational continuity and the human resources necessary for long-term planning.”<sup>274</sup> As a result, some organizations supporting the energy transition have been forced to suspend their activities due

to their inability to finance their operational and programmatic costs.<sup>275</sup>

## Effectiveness in Influencing Energy Transition Policies

When it comes to influencing decision-makers, CSOs lack a political entity capable of mobilizing efforts and exerting effective pressure. Despite the absence of a legal framework guaranteeing their participation in legislative and policy-making processes, representatives of these organizations indicated that access to decision-making centers to discuss draft legislation and propose amendments is largely available. There was a consensus that their ability to influence decision-makers is “moderate, with some successes offset by other failures.”<sup>276</sup> This may be explained by their ability to reach decision-makers and articulate their demands, without this necessarily translating into tangible policy responses.

Organizations that derive their authority from the private sector are generally better positioned to engage with decision-makers at the MEMR and other relevant government bodies. Due to their limited political leverage, CSOs have effectively relied on their technical expertise as a means of influencing policy. In some cases, government agencies draw on this expertise by inviting such organizations to participate in technical committees tasked with reviewing specifications or standards related to the green transition, including those concerning the energy transition.<sup>277</sup> While consultations through technical working groups can foster greater interaction between CSOs and government institutions and help build mutual trust, this form of engagement remains ad hoc and selectively applied. It is also subject to the agendas, priorities, and timelines of government bodies, and therefore falls short of institutionalized political participation grounded in legal frameworks that ensure meaningful democratic engagement and deliberation in the formulation of legislation and policies.

273 In-person interview with the head of a non-governmental research organization, 21 April 2025.

274 Phenix Center for Economic and Informatics Studies, *حالة المجتمع المدني في الأردن لعام 2024: نظرة إلى المستقبل* / ورقة-سياسات-حالة-المجتمع-المدني-في-الأردن, January 2025, available at <https://phenixcenter.net/الأردن-سياسات-حالة-المجتمع-المدني-في-الأردن>

275 In-person interview with the head of an environmental NGO in Jordan, 19 April 2025.

276 In-person interview with the head of an environmental NGO in Jordan, 19 April 2025; in-person interviews with energy sector experts and representatives of several NGOs, 2025.

277 In-person interview with the head of a non-governmental association in Jordan, 28 April 2025.



**Table 6: Active CSOs in the field of energy transition**

| References                  | Examples                                                                                 | Main Activity                                                                                                |
|-----------------------------|------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------|
| Civil Society               | Energy Efficiency and Environmental Sustainability Society                               | Organizing educational, training, and outreach activities                                                    |
|                             | Green Generation Foundation                                                              | Community awareness                                                                                          |
|                             | Union of Environmental Associations                                                      | Preparing and publishing research studies                                                                    |
|                             |                                                                                          | Organizing research seminars and cultural forums                                                             |
| Private Sector              |                                                                                          | Contributing to the development of strategies, laws, and policies                                            |
|                             | EDAMA Association for Energy, Water, and the Environment (EDAMA)                         | Engaging in dialogue with decision-makers to contribute to the development of strategies, laws, and policies |
|                             | Jordan Green Building Council (Jordan GBC)                                               | Conducting research and publishing studies                                                                   |
|                             | Jordan Strategy Forum (JSF)                                                              | Organizing training workshops                                                                                |
| Research and Studies Sector | Renewable Energy Establishment Society and Energy Management (REES)                      |                                                                                                              |
|                             | Phenix Center for Economic and Informatics Studies                                       | Research preparation and publication of studies                                                              |
|                             | West Asia-North Africa Institute (WANA Institute)                                        | Hosting conferences, seminars, and lectures                                                                  |
|                             | National Energy Research Center at the Royal Scientific Society (NERC)                   | Organizing training workshops                                                                                |
| International Organizations | Politics and Society Institute                                                           |                                                                                                              |
|                             | Friedrich-Ebert-Stiftung (FES) – Jordan                                                  | Supporting the preparation of studies on just energy transition                                              |
|                             |                                                                                          | Capacity building for civil society (youth groups and labor unions)                                          |
|                             | Cowater International Jordan / Sustainable Energy and Economic Development Program, SEED | Implementing energy efficiency and renewable energy solutions in local communities                           |
|                             |                                                                                          | Training youth groups and members of CSOs                                                                    |
|                             |                                                                                          | Supporting entrepreneurial projects in the energy sector                                                     |









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### About the Arab Reform Initiative

The Arab Reform Initiative is an independent Arab think tank working with expert partners in the Middle East and North Africa and beyond to articulate a home-grown agenda for democratic change and social justice. It conducts research and policy analysis and provides a platform for inspirational voices based on the principles of diversity, impartiality, and gender equality.

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