Enhancing Energy Sustainability: Saudi-Japan Vision 2030 and Its Strategic Renewable Energy Cooperation Between Japan and Saudi Arabia

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Abstract. Bilateral relations between Saudi Arabia and Japan have been strengthened since 1955, with a focus on strategic cooperation in the hydrocarbon sector. Saudi Arabia has been the primary exporter of petroleum to Japan, while Japan is a major importer of hydrocarbons from Saudi Arabia. Approximately 95% of Japan's petroleum imports come from Saudi Arabia, making it one of Japan's largest importing sectors. The introduction of the Saudi-Japan Vision 2030 framework expanded cooperation between the two countries, particularly in the energy sector. This framework facilitated cooperation in the renewable energy sector. The renewable energy sector holds great potential for collaboration between Saudi Arabia and Japan. This article explores two key aspects: (1) Saudi-Japan Vision 2030 as an energy cooperation framework and (2) cooperation in the renewable energy sector between Saudi Arabia and Japan. The article employs a bilateral cooperation and national interest approach, utilizing qualitative research methods with a case study to delve into the subject matter. The findings of the study indicate that the Saudi-Japan Vision 2030 represents a new era of cooperation between Saudi Arabia and Japan, particularly in the energy sector. This framework has successfully facilitated renewable energy cooperation between the two countries. By developing strategic initiatives in renewable energy resources, both countries aim to reach energy security and meet their objectives for alternative resources. This collaboration not only strengthens Saudi-Japan bilateral relation but also positions Japan and Saudi Arabia as key players in a sustainable energy future, aligning with their national interests and sustain-ability ambitions.

Keywords: Bilateral, Japan, Renewable Energy, Saudi Arabia.

1 Introduction

Since 1955, Japan and Saudi Arabia have cultivated strong bilateral ties. Notably, Saudi Arabia becomes Japan's main oil supplier. Given Japan's substantial oil demand and limited hydrocarbon resources, the country heavily relies on the Middle East for approximately 95% of its oil imports, with Saudi Arabia accounting for about one-third of this total. In turn, Japan also becomes a significant oil customer

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for Saudi Arabia. Saudi Arabia is renowned for its substantial global influence in the energy sector, primarily due to its vast oil reserves.

This energy product significantly impacts the close partnership between Saudi Arabia and Japan in the energy sector. Moreover, the two countries also have cultivated strong cooperation and partnership through trade, the exchange of high-quality products, technologies, finance, manufacturing, and various other projects. Saudi Arabia and Japan are also developing a close relationship in non-hydrocarbon sectors, indicating that both countries have the potential to strengthen their bilateral relations in various areas. Recently, following the launch of Vision 2030, Saudi Arabia and Japan have further strengthened their bilateral relations through diverse sectors, particularly in renewable energy resources (RE). Saudi Arabia and also Japan has begun to shift the focus of its energy sector. Saudi Arabia and Japan aim to replace its hydrocarbon energy with alternative energy sources by developing renewable energy resources. By doing this, Saudi Arabia and Japan are making specific framework, termed Saudi-Japan Vision 2030. The Saudi-Japan Vision 2030 is a strategic framework that fosters bilateral relations in various sectors between Saudi Arabia and Japan. Its primary objective is to achieve the national socio-economic visions of both countries.

Additionally, the framework emphasizes the importance of building a sustainable environment by encouraging renewable energy resource (RE) cooperation and partnership. Hypothetically, the Saudi-Japan Vision 2030 represents a new era in Saudi-Japan partnership and expanding various new bilateral cooperation sectors between those two countries. The Saudi-Japan Vision 2030 promotes a solid partnership, particularly in the energy sector, which is crucial to both countries' bilateral relations. The vision encourages both countries to diversify and expand their energy sector into a new form of cooperation, namely renewable energy cooperation. Renewable energy resources have positioned Saudi Arabia and Japan in a strategic, mutual benefit relationship. Saudi Arabia can leverage Japan's technological advancements to develop its green energy sector, while Japan can increase its technological exports to boost its revenues. Saudi Arabia plans to invest significantly in Japan's green technology, which could positively impact Japan's national income per capita. Additionally, RE cooperation would likely lead Saudi Arabia to pursue energy sustainability and reduce its reliance on hydrocarbon sectors, thereby diversifying its energy sector. Moreover, RE could emerge as the new energy sector that significantly contributes to Saudi Arabia's economic growth and development, particularly in terms of creating new employment opportunities domestically (Saudi Vision 2030, 2023). The renewable energy resources cooperation between Saudi Arabia and Japan stands out as one of the most promising collaborations in the energy sector. This article will delve into the topic in-depth, exploring (1) Saudi Japan Vision 2030 as a novel framework for energy bilateral cooperation between Japan and Saudi Arabia; and (2) the RE bilateral cooperation between Japan and Saudi Arabia within the context of Saudi Japan Vision 2030. Employing a

qualitative method with a case-studies approach, this article aims to provide a comprehensive exploration of the RE bilateral cooperation between Saudi Arabia and Japan, resulting in in-depth research findings.

2 Frameworks

The initial theoretical frameworks explored in this article are bilateral relations and national interest. Bilateral relations, an International Studies theoretical concept, refer to the establishment of permanent diplomatic ties between two states based on mutual consent and respect. The Vienna Convention on Diplomatic Relations mentions the basic aspects of bilateral relations, including procedures for official representation, protection of interests, and diplomatic privileges. These relations serve as the cornerstone of International Relations studies and have become the primary framework of diplomacy. However, in the contemporary international system, bilateral relations are once again gaining prominence. Despite this, they are still defined as an international relationship between two countries operating under the influence of multilateralism. Since their emergence in the 17th century, bilateral relations have become increasingly complex and diverse, encompassing a wide range of actors and issues that have gained prominence. These relations are not limited to central governments and embassies; they are also initiated by parliaments, political parties, companies, and civil societies. (Pannier, 2020).

Many experts and practitioners are conceptualizing bilateral relations, ranging from antagonistic traits to friendly ones, and from limited diplomatic contact to more extensive ones. Bilateral relations also encompass various dynamics that show both conflictual and cooperative traits. These relationships are dynamic and changeable, characterized by collaborative efforts aimed at implementing global diplomacy, contributing to global peace and harmony, and fostering a developed economy and enhanced security. As coordinative efforts, bilateral relations refer to a developed relationship between two countries that can potentially help them achieve their objectives, overcome obstacles between the two countries, and maximize their benefits for the people of those two countries. (Pannier, 2020).The second main theory is the theory of 'national interest'. The concept of "national interest" emerged with the rise of nation-states on the world during modern times. National interest refers to what the states pursue to secure or accomplish in their own interest. Consequently, it has a very subtantial relation with foreign policy in order to realize its goals. The main objectives of foreign policy is to regulate foreign relations to defend national interests and promote them to the best possible advantage. As national interests evolve, so do the foreign policies of nations. To attain their national interests, nations utilize various instruments, including diplomacy, propaganda, imperialism, economic tools, alliances, and war. The nation forms its foreign policy under its national interests and utilises its instruments accordingly (Rusdiyanta, 2022).

These two theories will serve as the main analytical tools for exploring the Saudi-Japan Vision 2030 and its strategic bilateral relations in renewable energy. The first

and foremost theory, bilateral relations, will analyze the dynamics of bilateral relations between the two countries in Saudi-Japan Vision 2030 by exploring in-depth the main forms of bilateral relations. The concept of bilateral relations also examining the patterns and significant effects of bilateral relations on those two countries in the context of strategic renewable energy cooperation. Whereas the second one, the national interest, elaborate national interest between the two countries that involve in this bilateral relationship. This nation-interest concept can analyse and elaborate on the interests between the two nations in Saudi-Japan Vision 2030 and its strategic bilateral relation in renewable energy sector.

The nation interest, which complements the first bilateral relations theory, can also actually analyze the foreign policy dynamics of both countries that encourage the establishment of Saudi-Japan Vision 2030 and its strategic renewable energy cooperations. The changing of two countries foreign policy actually impact the bilateral relation's dynamics between Japan and Saudi Arabia. The nation interest theory will also investigate in-depth into two nations foreign policy, especially in terms of the framework 'Saudi-Japan Vision 2030' and its strategic renewable energy cooperation between the two nations.The Saudi-Japan Vision 2030 and its bilateral relations in the renewable energy sector exist due to the national interests that these two countries seek to fulfil and achieve. In line with this, The Saudi-Japan Vision 2030 and its bilateral relations in the RE sector serve as the primary instrument for these two states to defend their national interests and achieve their nations' goals, promoting them to the best possible advantage each other. In this matter, the Saudi-Japan Vision 2030 and its bilateral relations in the RE sector can also be seen as an effort to fulfil their economic interests and increase their economic benefits.

3 Literature Review

There are limited previous studies that can comprehensively explain The Saudi-Japan Vision and its RE bilateral cooperation. Other previous studies had only focused on the traditional energy cooperation sector, which predominantly involves collaboration on hydrocarbons (oil and natural gas). A thorough examination of Saudi-Japan Vision 2030 and its RE partnerships is important especially in order to gain a deeper understanding of the most recent energy cooperation. However, the author has found research that can be a basis for this study. In the journal article entitled "Not Just Hydrocarbons: Japan's Multifaceted Foreign Policy Approaches Towards The GCC States", this article explore Japan's multi-sector foreign policy toward GCC states.

This multi-sectoral analysis has explored that, despite the dominant belief that the hydrocarbon trade mainly drives the relations between Japan and the GCC states, these are determined by a more complex set of factors. These include not only Japan's energy security but also its non-energy economic interests. The multi-sectoral dimensions in these strategic bilateral relations are influenced by the changing priorities of Gulf-Japan relations. Engagement in the non-oil and diversified energy

sector is increasing due to the post-oil era that encourage economic diversification and the shift towards tech-based environment. In the case of Saudi Arabia, the bilateral comprehensive partnership, known as the "Saudi-Japan Vision 2030," was launched in 2017 by Prime Minister Abe and King Salman bin Abdulaziz as a "compass of new partnership". The motive for launching such a joint vision was to connect Saudi Arabia's "Saudi Vision 2030," the kingdom's policy blueprint for innovative social and economic reforms, with Japan's national growth strategy.

Besides its focus on industry development, infrastructural improvements, the entertainment industry, medicines, food and agriculture, investment and finance, capacity-building for small and medium-sized enterprises, culture, sports, and education, Japan and Saudi Arabia have focus targeted the renewable energy sector to achieve energy sustainability and security. This study has also already highlighted important MoUs between Japan and Saudi Arabia in renewable energy projects, such as the partnership accords between those two countries in the solar energy sector. However, this study lacks a comprehensive portrayal of the renewable energy partnerships and cooperation between Japan and Saudi Arabia. The study is not focused on more detailed Japan-Saudi renewable energy cooperation. The study also fails to thoroughly discuss the renewable energy cooperation between Japan and Saudi Arabia from the perspective of national interests. The author has also found that the study focuses solely on Japan's broader and multidimensional foreign policy toward GCC states, rather than merely examining Japan's renewable energy partnerships with Saudi Arabia. Therefore, further comprehensive explanation is required regarding the renewable energy cooperation between Japan and Saudi Arabia.

Another study conducted by Fateh Belaid and Aisha Al Sarihi entitled “Energy Transition in Saudi Arabia: Key Initiatives and Challenge” explore the energy transition in Saudi Arabia. This paper offers a brief overview of the ongoing energy transition process in Saudi Arabia. It begins by examining the energy transition landscape and the key challenges associated with it, particularly in addressing climate change. Next, it reviews the various energy transition initiatives underway in Saudi Arabia, aiming to identify the most successful ones dedicated to decarbonizing the energy mix. From a policy perspective, this analysis can help decision-makers enhance the effectiveness of their energy policy choices. The analysis reveals that Saudi Arabia possesses the necessary institutional, human, and financial capacities to navigate the ongoing energy transition. Notably, its adoption of the Comprehensive Clean Energy (CCE) framework presents an opportunity to facilitate the Kingdom’s energy transition with a holistic approach that harmonizes national energy policy and avoids duplication of efforts or energy policy fragmentation. CCE ensures that leadership remains central to steering the energy transition while fostering cross-sectoral collaboration among stakeholders, including academics, government, and industry(Belaid & Sarihi, 2022).

However, this study fails in providing a comprehensive overview of the Saudi-Japan Vision 2030's initiatives and its renewable energy partnerships and cooperations. Furthermore, it fails to delve into the details of Japan-Saudi bilateral relations within the energy transition sector. The study also fails to comprehensively examine the Saudi-Japan Vision 2030 and its renewable energy cooperation between Japan and Saudi Arabia from the perspective of national interests. In reality, Saudi-Japan Vision 2030 and its strategic renewable energy sector cooperations are the most significant and important energy transition agendas which initiated by the two countries. These energy transition agendas are strategically impact the changing of energy sector orientation of Saudi Arabia, along with Japan and as key intitatives that encourage Saudi Arabia's energy transition in domestic level.

Following this, this study will delve comprehensively into the Saudi-Japan Vision 2030 and its strategic renewable energy partnership that considerably crucial for those nations. The Saudi-Japan Vision 2030 and its renewable energy partnerships signify a shift in energy cooperation between the two nations, replacing the traditional energy collaborations (oil and natural gas) with alternative energy partnerships. This research will also conduct an in-depth examination of the primary forms and national interests of the Saudi-Japan Vision 2030 and its RE collaboration. This research will also serve as a pioneering contribution to the field of research on the bilateral relations between Japan and Saudi Arabia, ultimately establishing itself as a foundational study that future researchers can build upon.

3 Research Method

Qualitative research is often referred to as a "post-positivist method" and typically employs an inductive approach, deriving meaning from data gathered in the field. This type of research begins by developing assumptions (hypotheses) and subsequently uses a theoretical framework to investigate the topic at hand (Creswell, 2023). The qualitative method aims to acquire in-depth data by prioritising meaning over generalisations (Adlini et al., 2022). Meaning represents the actual data, a definitive aspect that is essential in this research methodology, rather than merely observable data (Sugiyono, 2021). To explain the strategic renewable energy cooperation between Japan and Saudi Arabia from two main perspectives — bilateral relations and national interest — the author will employ a qualitative method with a case study approach. Case studies are among the most commonly used qualitative research methods, providing a practical approach for conducting social research.

Within qualitative methods, case studies offer a design in which the researcher investigates a program, event, activity, process, or one or more individuals in detail. Specific time frames and activities define the case(s), and researchers collect a wealth of information through various data collection techniques over an extended period (Priya, 2020). In this study, the method will examine and explore Saudi-Japan Vision 2030 and its RE bilateral cooperation in-depth, as the two countries join RE bilateral cooperation, marking a pivotal energy cooperation between Japan

and Saudi Arabia, especially in the green energy sector. The method will delve deeply into the Saudi-Japan Vision and its RE collaboration, examining the bilateral cooperation between Saudi Arabia and Japan, as well as the national interests of both countries. This method will enable this study to provide a more comprehensive explanation of the latest framework 'Saudi-Japan Vision 2030 and its new forms of energy cooperation between Japan and Saudi Arabia, which will significantly contribute to the research field of Japan-Saudi Arabia bilateral relations.

3 Result and Analysis

1.1 'Saudi-Japan Vision 2030' As New Framework of Japan and Saudi Arabia Bilateral Cooperations

As we know, Japan and Saudi Arabia have been developing a strong bilateral relationship since 1955. The two countries have gained mutual benefits, as Saudi Arabia has been the largest and most stable oil supplier to Japan, and Japan has been one of the largest customers for Saudi Arabia(Suzuki, 2024). However, both countries have also built strong mutual ties through other sectors, such as trade and the transfer of high-quality products, technologies, food and many sectors. These strong and strategic bilateral relationships enable both countries to deepen and broaden existing bilateral relations and establish solid strategic partnerships by creating a strategic framework, known as the Saudi-JapanVision 2030 (SJV 2030). On September 1, 2016, HRH Deputy Crown Prince Mohammed bin Salman (MBS) and Prime Minister Shinzo Abe announced the Saudi-Japan Vision 2030 as their main joint agreement, marking a new era of partnership between the two countries (Ministry of Foreign Affairs of Japan, 2017).

Besides becoming the symbol of the new era of partnership between the two countries, Saudi-Japan Vision 2030 is also aimed at achieving the national socio-economic visions of both countries by capitalising on commonalities, activating complementarities, and maximising synergies. There are at least three pillars in the Saudi-Japan Vision 2030 program: Diversity, which emphasises achieving sustainable growth by establishing a broad industry; Innovation, which emphasises enhancing the competitiveness of the economic sectors by capitalising on technology and innovation; Soft Values through cultural revitalisation, and social development by establishing a solid basis for cooperation. In the Saudi-Japan Vision 2030 program, nine themes will be the focus, namely, industrial competitiveness, energy, entertainment and media, health, infrastructure, agriculture and food security, SMEs, culture, sports and education, as well as investment and finance (Riansyah & Juned, 2024).

Of course, the existence of the Saudi Japan Vision 2030 agenda cannot be separated from the dynamics and changes in foreign policy between Saudi Arabia and Japan. This shift in foreign policy orientation undoubtedly impacts the shift in national interests between the two countries. National interests and foreign policy have a nature that influences and impacts each other, making them two inseparable elements. Of

course, Saudi-Japan Vision 2030 is also part of the change in foreign policy and national interests between Saudi Arabia and Japan. During the implementation of Vision 2030, Saudi Arabia has shifted its foreign policy orientation, particularly in terms of bilateral relations and international cooperation (Naaz, 2024).

Previously, Saudi Arabia relied solely on bilateral cooperation in the petroleum sector, specifically in oil and gas, to meet its economic interests. Now, Saudi Arabia has adopted a bilateral relationship that focuses on cooperation in diversified industrial sectors. This cooperation is undertaken by Saudi Arabia to fulfil the Vision 2030 reform agenda, as part of the implementation of Saudi Arabia's national interests. Vision 2030 serves as the starting point for changes in Saudi Arabia's foreign policy, particularly in its bilateral cooperation with surrounding countries. This change focuses on increasing multi-sector cooperation and collaboration. Japan, in this case, is also making changes to its foreign policy (Ministry of Foreign Affairs of Japan, 2017).

This collaboration is related to the central economic policies implemented by the Japanese government. This policy is called the Japanese Growth Strategy. Japan's Growth Strategy is a policy implemented in early 2013 as part of the economic reform policy known as "Abenomics". This policy has three main objectives, namely strategic expansion into additional "promising markets", boosting employee productivity to overcome supply regulations and workforce shortage resulting from a decrease in population, and enhancing the capabilities of individuals to facilitate a transformation of the industrial structure. This economic reform policy influences the development of foreign policy, which focuses on promoting economic progress and development. The Saudi-Japan Vision 2030 cooperation would help the Japanese economy identify and develop opportunities to further scale up Japanese investments in Saudi Arabia, thereby enabling an accelerated spin-off of the positive economic cycle in Japan (Ministry of Foreign Affairs of Japan, 2017).

Japan's foreign policy changes, especially concerning Middle Eastern countries such as Saudi Arabia, were not only triggered by the ongoing economic reforms in Japan but also by the country growing influence in the region. Another major factor is the shift in priorities in bilateral cooperation relations between Japan and other countries. Japan observed that these changes were influenced by development initiatives undertaken by Middle Eastern countries, particularly Saudi Arabia, which focused on economic diversification and technology-based business development. As a consequence, this significantly affects Japan's interests in the Middle East region, especially in the context of bilateral cooperation with Saudi Arabia (Matsuda & Kozhanov, 2023).

Japan's national interests in the Middle East, particularly with Saudi Arabia, initially focused solely on cooperation in the petroleum sector. However, Japan is now shifting its orientation to develop bilateral cooperation across multiple sectors. The shift

in Japan's interests in the Middle East certainly also affects the orientation and direction of bilateral cooperation between Saudi Arabia and Japan, which at this time is focused on diversification, increasing multi-sector cooperation between the two countries (Matsuda & Kozhanov, 2023). The multi-sectoral bilateral cooperation carried out by the two countries has led to the creation of a cooperation framework called Saudi-Japan Vision 2030.

Saudi Japan Vision 2030 represent a breakthrough in bilateral cooperation between Saudi Arabia and Japan. In this case, Saudi-Japan Vision 2030 is a means for both countries to intensify and diversify bilateral cooperation in various fields. Saudi-Japan Vision 2030 is a policy that focuses on developing intense and diversified multi-sectoral bilateral cooperation between Saudi Arabia and Japan. Efforts to diversify and intensify multi-sectoral bilateral cooperation aim to meet the national interests of both countries, focusing on intensifying economic growth across multiple sectors. Saudi-Japan Vision 2030 can serve as a means of revitalising, making breakthroughs, and redefining bilateral relations between Saudi Arabia and Japan. This vision marks a significant turning point in the orientation and direction of bilateral relations between Saudi Arabia and Japan, which have so far primarily emphasised the hydrocarbon sector, including oil and gas. This change in the direction and orientation of bilateral cooperation relations emphasises bilateral cooperation efforts in diversified and adaptive industrial sectors, allowing both countries to expand their bilateral cooperation sectors and generate economic growth. Potentially, Saudi Arabia's Vision 2030 can also serve as a reference point for developing prospective bilateral cooperation relations between Saudi Arabia and Japan. In the future, this bilateral relationship can serve as a foundation for fostering a progressive partnership between Saudi Arabia and Japan.

Saudi-Japan Vision 2030 aims to foster energy cooperation between the two nations. Energy sector emerges as a pivotal key initiative within the framework of this vision. In pursuit of this objective, both Japan and Saudi Arabia will continue to gain mutual benefits through close collaboration in the energy sector. Saudi-Japan Vision 2030 encourage energy diversification's collaboration and partnership, resulting in diversified energy sector which can positively impact in Japan and Saudi's energy bilateral relations. In this framework, Japan and Saudi Arabia remains rely on traditional energy sector collaboration, cause by Japan's 90% dependence on oil sector. But, at the same time, these two countries diversify its energy sector partnership, by encouraging renewable energy cooperation, particularly in the green technology and production. Recognizing the importance of continuing their largest cooperation in the energy sector, particularly in renewable energy resources, to achieve energy sustainability, the two nations strategically utilize this framework to further develop renewable and alternative energies. The bilateral cooperation between Japan and Saudi Arabia in the renewable energy sector, as outlined in Saudi-Japan Vision 2030, is encouraged by their shared foreign policy commitment to energy sustainability (Turkistani, 2023).

The Japanese government, for instance, has adopted energy policies aimed at achieving carbon neutrality, or net-zero greenhouse gas (GHG) emissions, by 2050. These policies involve reducing emissions in the electric power, industrial, and transportation sectors. In the electric power sector, government policies set 2030 targets that include accelerated investment in renewable capacity, increased use of nuclear generation, and reduced use of fossil fuels for electricity generation. Japan's government has described this package of energy policies and their targets as "ambitious." Energy security considerations may influence the progress and pace of decarbonization in the electric power sector (Zaretskaya et al., 2024).

This plan, which is to promote renewable energy to its fullest extent and minimize the use of fossil fuels is known as the Japan 6th Energy Plan and the GX (Green Transformation) Decarbonization Power. The main targets of these two frameworks is increasing the non-hydrocarbon generation sources to 59% of the generation mix by 2030, including solar, wind, hydropower, geothermal, and biomass from 26% in 2022 to 36%-38% by 2030 and the increase of the use of nuclear generation from 5% in 2022 to 20%-22% by 2030. Energy consumption by fossil fuel (natural gas, coal, and petroleum) is set to decline from 69% in 2022 to 41% by 2030, making the reduction of energy consumption from hydrocarbon reduce by 28% (Zaretskaya et al., 2024).

In this energy transition plan, Japan also encourages strengthening international cooperation on energy security. By doing so, Japan intensifies bilateral relations with many countries, especially Saudi Arabia and ratified the Saudi-Japan Vision 2030 to implement the renewable energy sector and achieve carbon neutrality. Beside Japan's aim to achieve carbon neutrality at the domestic level, these ambitious goals are also Japan's way to make Japan the global center for renewable energy technology and as a leading green and alternatives energy production. As Saudi Arabia really depend on Japan's green technology to also successfully implement renewable energy sector, Japan is also a strategic partner for Saudi Arabia to implement its energy transition agenda in Saudi Vision 2030. Saudi Arabia, in addition to its conventional energy policy, has also adopted a renewable energy foreign policy to align its energy agenda.

The Saudi Green Initiative (SGI) and Vision 2030 are the driving forces behind renewable energy policy. The goal is to achieve 50% renewable electricity generation by 2030, with a specific focus on solar power. To achieve this, the policy involves substantial investment, estimated to reach around $101 billion by 2030. This investment will be distributed across various public and private sector initiatives. Furthermore, the policy aims to develop green hydrogen projects to diversify the energy mix away from liquid fuels(Alfehaid & Young, 2024). By 2060, the goal is to achieve a net-zero emissions goal, targeting 50% renewable energy and reducing 278 million tonnes of CO2. In this term, Saudi Arabia has focuses on economic diversification, global engagement, and enhanced quality of life. The electricity sector, with a 90 GW installed capacity as of 2020, is crucial to decarbonization, aiming for

a 55% reduction in emissions by 2030. This plan aims to reduce power intensity by 30% by 2030, while the NEOM project showcases a 4 GW green hydrogen facility, reflecting the country's main interests in renewable energy resources (Md Tasbirul & Amjad, 2024).

Both Japan's sixth Energy Plan and Saudi Arabia's Sustainable Growth Initiative (SGI) in the renewable energy sector reflect the shared national interest of these two countries in this field. Both nations are eager to achieve energy sustainability and security through renewable energy cooperation. These foreign policies have led to cooperation and partnership in the renewable energy sector, resulting in the ratification of Saudi-Japan Vision 2030, which primarily focuses on the energy sector. Furthermore, these policies have shifted the orientation of energy bilateral relations between Saudi Arabia and Japan. In contrast to their traditional focus on traditional energy sector partnerships, both countries have now shifted their focus to diversified energy sectors, particularly renewable energy cooperation.

The two countries begin a gradual shift from relying solely on oil sector cooperation to establishing a partnership for energy diversification. This new energy orientation partnership make both nations gain certain interests. For Saudi Arabia, it will impact the implementation of its economic diversification strategy and the goals of Saudi Vision 2030. This partnership is likely to lead to increased investments from the private sector and a diversified national income and revenue stream. Renewable energy will become a crucial sector for Saudi Arabia, particularly in fulfilling its national interest of creating new job and employment opportunities. In advance, Japan can become a strategic partner for Saudi Arabia, especially in providing expertise and investment in green technology, as Japan is renowned for its advanced green technology.

For Japan, this partnership will lead to an increased use and export of its advanced green technology. It will also contribute to the development of new renewable energy supply chains to ensure the availability of renewable energy resources, ultimately replacing the reliance on fossil fuels. As mentioned earlier, Japan can implement its green energy strategic plan to achieve net zero carbon emissions and energy sustainability, leading to the implementation of clean energy. Additionally, Saudi Arabia can become Japan's strategic partner, particularly in selling advanced green technology, green and clean energy investments, and contributing to established international supply chains to ensure the stable supply of renewable energy resources. The implementation of energy diversification under the Saudi-Japan Vision 2030 will enable both countries to achieve energy stability and security amidst the challenges of unsustainable fossil fuel availability and capacity at the international level. Furthermore, the energy diversified sector cooperation will increase the share of energy reserves for both countries.

1.2 The Renewable Energy Bilateral Cooperation Between Japan and Saudi Arabia in Saudi Japan Vision 2030

The Saudi-Japan Vision 2030 acts as the blueprint for a strategic partnership between Saudi Arabia and Japan. This framework marks the beginning of a new era in the bilateral relationship between the two nations. The Saudi-Japan Vision 2030 has profoundly impacted the dynamics of the long-standing bilateral relationship between Japan and Saudi Arabia, which has been built over 70 years on a solid foundation of cooperation. The petroleum sector is not the sole determinant of bilateral cooperation between these two nations within this framework. Despite holding a strategic and dominant position in the petroleum sector for decades, this sector is no longer the primary area of focus for bilateral cooperation between the two countries. This framework has redirected the focus of Japan and Saudi Arabia's bilateral cooperation, thereby enhancing the prospects of their involvement in a broad variety of sector relationships (Ministry of Foreign Affairs of Japan, 2017).

The Saudi-Japan Vision 2030 aims to foster cooperation between the two countries across a broader range of industries, with a particular emphasis on the renewable energy sector. Over the decades, energy has become a pivotal sector in Japan-Saudi Arabia partnerships. For several decades, Japan-Saudi Arabia's energy partnerships have been the most significant collaborations. Saudi Arabia has been Japan's primary oil supplier, particularly following China's shift from being Japan's leading supplier of oil. Meanwhile, Japan has also become Saudi Arabia's primary and most important oil customer. That is until Saudi Japan Vision 2030, when Japan and Saudi Arabia diversify their energy sector cooperation in order to strengthen both countries' energy security and to fulfil their alternative resources agenda. While diversify their energy cooperation, the renewable energy resources has places Saudi Arabia-Japan in a strategic relations and mutual benefits relationship (Ministry of Foreign Affairs of Japan, 2017).

1.2.1 Manar Initiative

The joint agreement known as “Manar” will oversee the implementation of promoting clean energy of both countries, Japan and Saudi Arabia. The Manar initiative align with Japan and Saudi Arabia’s national interests in clean energy with the development of sustainable advanced materials and the assurance of flexible and secure supply chains. This initiative exemplifies both Japan and Saudi Arabia’s foreign policies in the clean energy sector. Saudi Arabia, with its strategic location on global energy routes, aspires to reduce carbon emissions and achieve zero neutrality. These aspirations align with Saudi Arabia’s main renewable energy policy which want to achieve 50% renewable electricity generation and reducing 278 million tonnes of CO2 by 2060, align with SGI (Saudi Green Initiative). This initiative also seeks to strengthen Saudi Arabia’s position as a hub for clean energy, mineral resources, and energy component supply chains. On the other hand, Saudi Arabia also use renewable energy sector as its way to achieve

economic diversification, marking as Saudi Arabia's main goals in its largest and ambitious framework, Saudi Vision 2030. In line with that, Japan also views these initiatives as a means to become a global leader in clean energy technology solutions, ultimately becoming a powerhouse of green technology worldwide. (Ministry of Foreign Affairs of Kingdom of Saudi Arabia, 2023). On the other side, Japan is also striving to achieve zero neutrality, as Japan has adopted energy policies aimed at achieving carbon neutrality, or net-zero greenhouse gas (GHG) emissions, by 2050, align with Japan 6th Strategy Plan and GX Transformation, two main Japan's renewable energy policy. The Manar initiatives are particularly crucial for Saudi Arabia and Japan, as both countries desire to develop components within the energy supply chain, including those for renewable energy. This initiative aligns with their foreign policies and supports the realization of energy projects that reflect their shared goals. Given their shared commitment to implementing clean energy, Japan and Saudi Arabia will enhance their cooperation in this sector (Al Arabiya, 2023).

The Manar initiative aims to drive the transition to clean energy through various projects. These projects focus on areas such as hydrogen and ammonia technologies, synthetic fuels, a circular carbon economy, carbon recycling, direct air carbon (DAC) capture, and critical minerals essential for resilience. To ensure the smooth functioning of this cooperation, experts from companies and governments between the two countries will be involved in developing the market for clean energy and striving to make clean energy more affordable. (Ministry of Foreign Affairs of Kingdom of Saudi Arabia, 2023)The Manar initiative also connects the King Abdullah Petroleum Studies and Research Center (KAPSARC), a research institute specializing in economics, climate issues, and energy under the Government of Saudi Arabia, with the Institute of Energy Economics, Japan (IEEJ), a research institute that is similar to KAPSARC. Through shared activities such as joint workshops, international conferences, researcher exchanges, and joint evaluations of research activities and publications, the two institutions exchange knowledge and collaborate on research and other applied sciences. (Al Sharq Al Awsat, 2023)The research conducted under the Manar initiative emphasizes research on hydrogen, ammonia, synthetic fuel (methane), energy storage technology, carbon recycling, and nuclear issues. (Ministry of Foreign Affairs of Kingdom of Saudi Arabia, 2023).

1.2.2 Lighthouse Initiatives

Under Manar's Initiatives, a sub-initiative called the Saudi-Japan Light House Initiative was also created. This initiative was launched and agreed on July 16, 2023, in Jeddah by Crown Prince Mohammed bin Salman and Prime Minister Fumio Kishida through a bilateral meeting. Recognising net-zero and clean energy ambitions, both countries decided to establish these initiatives. The initiative will serve as a means for both countries to develop their strategies and roadmaps toward their Net Zero ambitions. Through this sub-initiative, Saudi Arabia aims to become a pioneer in the development of clean energy in the Arabian Peninsula, serving as a beacon of light for Arab countries seeking

to reduce their carbon emissions. Furthermore, the Kingdom's foreign policy aims to decarbonise and reach net-zero emissions by 2060 or sooner, benefiting from its globally low cost of renewable and clean hydrogen, as well as its strategic location on trade routes for energy products to the world. While Japan is also ambitiously aiming to reach that level by 2050 and become the leading global green-tech technological solutions in the world (Ministry of Economy, Trade and Industry of Japan, 2023).

Just like the Manar initiative, the Lighthouse Initiative also focuses on areas of cooperation related to hydrogen and ammonia, e-fuels, carbon recycling, the circular carbon economy, Direct Air Capture, cooperation in the critical minerals sector, supply chain resilience, sustainable advanced materials, and the exchange of research and knowledge results. Under this project, Saudi Arabia plans to increase gas production capacity and LPG exports, which are needed for the Japanese economy. Moreover, Saudi Arabia also plans to develop blue and green hydrogen as part of its agenda. Japan assisted in the execution of this project. The Lighthouse Initiative will create business opportunities for both countries and accelerate the development of clean energy technology. The collaboration focuses on the aforementioned areas, including research collaboration on hydrogen, ammonia, synthetic fuel (methane), energy storage technology, carbon recycling, and nuclear issues (Ministry of Economy, Trade and Industry of Japan, 2023).

The lighthouse initiative will also foster economic relations between Japan and Saudi Arabia. Moreover, Saito and Bandar AlKhorayef, Saudi Arabia's minister of industry and mineral resources, signed a memorandum of cooperation in the field of mining and mineral resources. The Kingdom opens its doors to Japanese investors and invites them to capitalise on the investment opportunities that have developed in accordance with industrial and mining strategy. Because the lighthouse will also focus on mining and mineral resources cooperation. To enable the Lighthouse Initiative, both countries affirmed their collaboration in clean energy and mineral resource supply chains by combining the advantages, ambitions, and leading companies and institutions of both countries. The collaboration between both sides leading companies has also be done between KAPSARC from Saudi Arabia and IEEJ from Japan(وكالة الأنباء السعودية, 2023).

In Lighthouse Initiative, both leading companies encompase energy policy, climate, and sustainability, and also enablers such as technology and finance to ensure a just and inclusive energy transition, as Saudi Arabia and Japan’s goal, to successfully implement energy sustainability and to produce clean energy, as both countries want to achieve net-zero carbon emission and become leading country in energy transition. This collaboration also as Saudi Arabia and Japan’s goals to contribute to the expansion of the clean energy market, lower the cost of this energy, and make supply chains more resilient. Going forward, both sides will facilitate the joint development of the initiative's work plan, identify a detailed list of additional participants, and reach out to global and regional partners to join the initiative (Ministry of Economy, Trade and Industry of Japan, 2023).

1.2.3 Hybrid Renewable Energy Supply Infrastructure

Bilateral cooperation between Saudi Arabia and Japan also focuses on cooperation in the field of renewable energy infrastructure or what is called Hybrid Renewable Energy Supply Infrastructure. This collaboration was carried out by involving SEC (Saudi Electricity Company) owned by Saudi Arabia and METI (Ministry of Economy, Trade, and Industry) Japan. This cooperation is also carried out with the construction of a special infrastructure for renewable energy suppliers. This cooperation is carried out in order to ensure the transmission and supply of renewable energy between Saudi Arabia and Japan. This renewable energy infrastructure development cooperation also involves a company from Japan, namely the New Energy and Industrial Technology Development Organization (NEDO). In the Saudi Arabia-Japan cooperation project in the field of renewable energy infrastructure, this project also integrates PV solar panels, energy storage system and an energy management system (EMS) into the infrastructure. This project cooperation aims to build a wind energy site known as Huraymila. Huraymila is the most important bilateral cooperation project of Saudi Arabia-Japan, using the newest renewable technology, namely IoT or Internet of Things(Riansyah & Juned, 2024).

The existence of this project package will be a historical milestone for Japanese companies wishing to do business in Saudi Arabia in the future. Apart from that, this project will undoubtedly make a significant contribution to Saudi Arabia and Japan's existing energy policy, where the latest plans and cutting-edge technologies will be introduced. It will contribute to implementing the Saudi-Japan Vision 2030 and help Saudi Arabia achieve the Saudi Vision 2030 (Ministry of Economy, 2020). All cooperation carried out in various fields, whether through capacity-building programs, seminars, workshops, information exchange, technology transfer, expert exchange, and research results exchange, has demonstrated that the form of bilateral cooperation has been adapted to the needs and capabilities of each actor. Furthermore, this bilateral cooperation is not limited only to government entities. As mentioned, many other nongovernmental actors help, including research institutions between the two countries, academics, and the private sector(Riansyah & Juned, 2024).

Bilateral cooperation between Saudi Arabia-Japan in the field of renewable energy infrastructure is an important cooperation in fulfilling the national interests of both countries in the energy sector. Both countries want to implement green energy in order to maintain the safety and stability of energy supply and create environmentally friendly energy. In addition, both countries also want to achieve their respective targets for the use of green energy. Saudi Arabia for example, which is diversifying in order to succeed in Saudi Vision 2030, sees the field of green and renewable energy as strategic sector. Green and renewable energy is one of Saudi Arabia's main areas that aims to reduce Saudi Arabia's dependence on generating state revenue and income in traditional energy sectors, such as petroleum and gas. Saudi Arabia's ambitious green and renewable en-

ergy target aims to achieve a remarkable milestone by 2030. By then, the country aspires to generate 50% of its electricity from renewable energy sources. This significant goal is a key component of the National Renewable Energy Program (NREP) and the broader Saudi Green Initiative (SGI). The NREP and SGI collectively work towards diversifying Saudi Arabia's energy mix away from oil and effectively achieving its climate objectives. A substantial portion of this renewable energy capacity will be generated through substantial solar and wind contributions(Saudi Green Initiative, 2024).

By then, this project called Hybrid Renewable Energy Supply Infrastructure are important to meet Saudi Arabia's renewable energy target, especially in terms of wind energy site that build by respectively collaborate with Japan. Saudi Arabia has its development target of renewable energy projects by 40 GW of wind capacity by 2030(Alsulami et al., 2024). By this, Saudi Arabia can actually achieve its renewable energy target and implement net zero carbon emission and 50% less harmful energy to absolutely achieve its energy transition(Md Tasbirul & Amjad, 2024). Meanwhile, Japan is also has its interest on achieving green and renewable energy target by taking this project. Over the last several years, Japan energy policies aimed to achieve carbon neutrality by 2050. According to Japan's 6th Strategic Energy Plan, the targeted for wind capacity has increased from 0.14 GW in 2022 to 10 GW by 2030 (U.S. Energy Information Administration, 2024). In other words, Japan is also eager to increase its wind energy capacity to grow up its share of renewable energy resources generation(International Energy Agency, 2025).

By collaborate with Saudi, as nation that naturally produce wind energy, and build wind energy site called Huraymila, Japan can also grow its renewable energy resources and make a stable supply of wind energy resources. On the other hand, Japan is also benefiting from its technological advancements in green technology by exporting its technology to Saudi Arabia to build Hybrid Renewable Energy Infrastructure(Riansyah & Juned, 2024). Japan has willing to deepen cooperation with Saudi Arabia in terms of sensitive technology and clean energy technology in order to successfully implement energy transition in Saudi Arabia, especially regards to the renewable energy infrastructure. It also enable Japan to provide energy efficiency technology and materials, fostering integration between the two countries in this field. By involving Japan's technology, Japan can also gain its national income per capita and reputation as a leading green technology in the international realm.

1.2.4. Joint Project for Hydrogen and Solar Power Production

The bilateral cooperation between Saudi Arabia and Japan in the field of renewable energy also includes cooperation in hydrogen production. This collaboration is carried out by Showa Shell Sekiyu and Solar Frontier companies owned by Japan and Saudi Aramco, one of the largest multinational energy companies in Saudi Arabia(Reuters,

2009). The hydrogen production cooperation between Saudi Arabia and Japan was carried out in an agreement called "Joint Technical Corporation Project for Hydrogen Production by Splitting Hydrogen Sulfide with Sunlight". This collaboration is also supported by research and education institutions from both countries, namely KAUST (King Abdullah University of Science and Technology) and JCCP (Japan Cooperation Center Petroleum). The cooperation agreement in the field of hydrogen production was ratified on June 21, 2017 for a three-year period starting in April 2017 (Gupta, 2017). The bilateral cooperation between Saudi Arabia and Japan in the field of hydrogen production aims to develop technology that electrochemically decomposes hydrogen sulfide for detoxification and hydrogen extraction. CIS thin film panels will be used to generate power for the decomposition process, thus contributing to promoting the use of renewable energy. Through this joint project, Saudi Arabia and Japan can strengthen cooperation in the field of renewable energy(Gupta, 2017).

After the ratification of Saudi-Japan Vision 2030, both countries have an interest in the field of energy cooperation which is quite intensive and involves the use of renewable energy. Both countries have stenked up policies in realizing renewable energy. Saudi Arabia, for example, by implementing SGI and NREP in realizing 50% renewable energy use and Japan in Japan's 6th strategy plan that wants to achieve carbon neutrality by 2050 and reduce the use of greenhouse gas by 46% by 2030. Specifically, in hydrogen market field, Saudi Arabia aims to achieve its ambition of becoming a leading renewable energy resource and position itself as a hydrogen powerhouse to attain net-zero emissions by 2060, becoming its main national interests in renewable energy field. Saudi Arabia is actively investigating the potential of hydrogen in various fields. The country is particularly interested in its applications in industrial processes, power generation, and transportation. Additionally, Saudi Arabia is exploring the use of hydrogen as a fuel for fuel cell-powered vehicles(Alsulami et al., 2024). Saudi Arabia want to positioning itself as a leader in the hydrogen economy, with significant investments in both green and blue versions of the fuel with the aim to generate half of the Kingdom’s electricity from renewable sources by 2030(Ghulam & Al Kinani, 2025). Meanwhile, Japan, taking advantage of this opportunity, aims to become a global leader in green technology.

In addition to this ambition, Japan also strategically seeks to achieve carbon neutrality by 2050 by producing hydrogen resources. Hydrogen, along with ammonia, has been identified as one of the priority areas in Japan’s main green policy, the Green Growth Strategy. Japan prioritizes hydrogen to ensure a stable energy supply, achieve self-sufficiency, decarbonize its industries, and foster economic growth. Japan aims to significantly expand its hydrogen market by relying on the sourcing of blue and green hydrogen to maximize the utilization of renewable energy at the domestic level (Calabrese, 2024). Hydrogen is expected to play a pivotal role in Japan’s clean energy transition, making it a strategic commodity for the country. By ratifying the agreement, Japan can

expand its hydrogen sources and establish international supply chains through collaboration with Saudi Arabia, a promising producer and exporter of green hydrogen for Japan (Aramco, 2025).

Japan and Saudi Arabia are collaborating on a joint project to develop solar power production, in addition to their hydrogen joint venture. This collaboration is driven by Showa Shell, a Japanese refinery firm that owns 15% of Solar Frontier, a Saudi Arabian company. Together, they aim to establish a solar photovoltaic (PV) panel manufacturing plant in Saudi Arabia. The plant is expected to have an annual nameplate capacity of 570 megawatts. Saudi Arabia's interest in these partnerships is aligned with its focus on the National Transformation Project (NTP) under Saudi Vision 2030. The NTP aims to increase renewable energy production by 4% of the total power consumption by 2020, with a 35% contribution from local content(Aramco, 2016). On the other hand, Japan's interest in this project is also being fueled by its technological advancements in green technology, which it is utilizing to construct a solar power plant in collaboration with Saudi Arabia. By joining this partnership in the field of solar power, Japan can enhance its reputation as a leading green technology, particularly in solar power technology. By incorporating Japan's technology, the country can also secure its venture and increase its national income per capita. Saudi Aramco and Showa Shell have agreed to study the production of solar modules in Saudi Arabia. This project builds upon Saudi Aramco's Al-Midra Tower 10.5 megawatt solar car park project in Dhahran, which was implemented in 2012 and is currently the largest solar power project in Saudi Arabia(Yamada, 2016).

Japan and Saudi Arabia, in collaboration with Japan's largest telecom company, SoftBank, are embarking on another solar power project. This partnership aims to expand their renewable energy resources and has resulted in the development of the world's largest solar power generation project. The project, estimated to cost $200 billion over the next decade, will involve constructing 200 gigawatts of solar capacity across Saudi Arabia. The initial two solar parks will have the capacity to generate 7.2 gigawatts of power and begin generating electricity in 2019. By this project opportunity, both countries want to successfully implement their strategic foreign policy in renewable energy sector. Both countries have their same renewable energy orientation; to achieve carbon neutrality and net zero emission by encourage the use of renewable energy and making international collaboration with many countries in energy transition(Aramco, 2016).

Saudi Arabia, for example, beside its ambition to become the powerhouse of renewable energy resources and as a global hub of renewable energy transmission, this country wants to maximalize their solar resources. Saudi Arabia, renowned for its unparalleled sunlight exposure, boasts substantial solar energy potential. It receives an astonishing 2400 kWh/m² annually and enjoys an impressive 80-90% of clear sky days (Almasoud & Gandayh, 2015). Consequently, it stands as a strategically positioned "sun belt" nation, brimming with abundant renewable solar resources (Aksakal & Rehman, 1999). Saudi Arabia use its highest amount of sunlight exposure to create renewable energy resources, especially in solar power generation sector(Khalil et al., 2021). Saudi Arabia

is clearly preparing for a post-fossil fuel policy which make Saudi Arabia become less dependence on oil and gas sector and achieve 50% electricity, transportation, power generation, driven from alternative resources. Saudi Arabia has prioritized renewable energy to ensure energy stability and security, which is crucial for maintaining its energy consumption and export activities. In addition, the solar power generation is also encouraging its economic diversification that align with the goals of Vision 2030.

In terms of energy security, Saudi Arabia use its solar power to contributes to a resilent and diversified energy resources, aligned with the Saudi Vision 2030 goals diversification agendas. By diversified its energy resources, Saudi Arabia use this opportunity to build the solid solar industry. The growth of the solar industry is expected to create 100.000 jobs to increase the employment in the diversified sectors. The solar resources also Saudi Arabia's way to increase its gross domestic product that will expect $12 billion. In line with that, Saudi Arabia can gain national income per capita from diversified sector and become less dependence on oil sector revenue(DiChristopher, 2018). Meanwhile, Japan perceives this as an opportunity to invest in technology for solar power projects in Saudi Arabia. By leveraging its advancements in green technology, Japan seeks to boost its national income and establish itself as a global leader in green technology.

1.2.5 Strategic Ammonia Partnership and Collaboration

Bilateral cooperation between Saudi Arabia and Japan also involves cooperation on low-carbon ammonia production. This cooperation is a strategic cooperation in the field of renewable energy between Saudi Arabia and Japan. This cooperation is a strategic step for the two countries in an effort to decarbonize their economies. Saudi Arabia and Japan are collaborating on a project to construct a blue ammonia plant. This plant will capture and store carbon dioxide (CO2) emitted during the production process. Saudi Aramco, Saudi Arabia's state-run oil giant, aims to complete the construction of the plant by 2030, with an annual production capacity of 11 million tons. Japan will provide technical support to the project, and trading houses Mitsubishi and Mitsui will also be involved(Senega ESG, 2023).

For Japan, ammonia projects collaborate with Saudi Arabia aim to decarbonize its energy sector by incorporating ammonia into its fuel mix. This strategy seeks to extend the lifespan of Japan's coal-fired power plants. The Ministry of Economy, Trade, and Industry (METI) estimates that Japan will using ammonia for 20% of the fuel requirements of domestic coal-fired power plants could lead to a 10% reduction in carbon dioxide emissions from the industry. By cooperate with Saudi Arabia in ammonia projects, Japan can secure its stable supply of ammonia, continuing it plans to establish ammonia supply chains with various countries, particularly with Saudi Arabia. By making a stable supply chains in ammonia sector with Saudi Arabia, Japan seen it as a way to increase its fuel ammonia consumption to 3 million tons annually by 2030, based on its energy policy. Furthermore, Japan can also reduce its greenhouse gas emissions by 26% by 2030, compared to 2013 levels. Japan also ambitiously wants to lead the world

in utilizing hydrogen, which is contained in ammonia, for clean energy production. Japan recognizes the significance of blue ammonia in achieving its zero carbon emission policy, as it can help maintain a balance between the environment and the economy. Approximately 10% of Japan's power generation can be attributed to the 30 million tons of blue ammonia.

Meanwhile, for Saudi Arabia, ammonia projects hold immense strategic and importance, particularly in light of its ambitious agenda to diversify its energy mix and establish itself as a global leader in clean power. These projects are particularly significant for Saudi Arabia as they serve as a testament to its growing emphasis on sustainable energy, offering a solution to the challenges posed by the current unsustainable energy model. Saudi Arabia has identified energy transitions, which involve a gradual shift from hydrocarbon resources to hydrogen-based, low-carbon energy sources, as its primary strategy for diversifying its energy production and achieving energy sustainability. This aligns seamlessly with Saudi Arabia's overarching framework, known as Saudi Vision 2030, which emphasizes energy diversification and security. By reducing its dependence on the oil sector, Saudi Arabia aims to transition to renewable energy resources as its new economic sector, not only to diversify its energy mix but also to boost national income per capita, replacing the 50% oil sector's in national revenue.

3 Conclusion

The Saudi-Japan Vision 2030 has emerged as a symbol of the new era of partnership between Japan and Saudi Arabia, particularly in the energy sector. The energy sector holds immense significance in Japan-Saudi Arabia's bilateral relations, and the Saudi-Japanese Vision 2030 serves as a pivotal component within this framework. To strengthen their bilateral energy security and align with their alternative energy agendas, Japan and Saudi Arabia are expanding their energy relations by developing strategic partnerships in the renewable energy sector. This partnership has positioned Japan and Saudi Arabia in a mutually beneficial relationship within the renewable energy resources sector. By collaborating on various initiatives in this sector, both countries can fulfill their national interests and maximize their energy security and sustainability ambitions.

References

1. Adlini, M. N., Dinda, A. H., Yulinda, S., Chotimah, O., & Merliyana, S. J. (2022). Metode Penelitian Kualitatif Studi Pustaka. Jurnal Pendidikan Edumaspul, 6, 974–980.
2. Aksakal, A., & Rehman, S. (1999). Global solar radiation in Northeastern Saudi Arabia. *Renewable Energy*, *17*(4). https://doi.org/10.1016/S0960-1481(98)00769-1
3. Al Arabiya. (2023). *Saudi Arabia and Japan launch 'Manar' initiative to advance clean energy*. https://english.alarabiya.net/News/saudi-arabia/2023/07/17/Saudi-Arabia-and-Japan-launch-Manar-initiative-to-advance-clean-energy

4. Alfehaid, R. M., & Young, K. E. (2024). *Saudi Arabia's Renewable Energy Initiatives and Their Geopolitical Implications*. (Md Tasbirul & Amjad, 2024)
5. Almasoud, A. H., & Gandayh, H. M. (2015). Future of solar energy in Saudi Arabia. *Journal of King Saud University - Engineering Sciences*, *27*(2), 153–157. https://doi.org/10.1016/j.jksues.2014.03.007
6. Al Sharq Al Awsat. (2023). *Saudi Arabia, Japan, Launch Initiative to Cooperate in Clean Energy*. https://english.aawsat.com/business/4439231-saudi-arabia-japan-launch-initiative-cooperate-clean-energy
7. Alsulami, A., Fairbrass, J., Botelho, T., & Assadinia, S. (2024). Renewable Energy and Innovation in Saudi Arabia: An Exploration of Factors Affecting Consumers' Intention to Adopt Solar PV. *Technological Forecasting and Social Change*, *204*. https://doi.org/10.1016/j.techfore.2024.123430
8. Aramco. (2016). *A solid foundation in Japan for strengthening friendships*. https://www.aramco.com/en/news-media/news/2016/a-solid-foundation-in-japan-for-strengthening-friendships
9. Aramco. (2025). *Blue hydrogen and blue ammonia: Pioneering the use of hydrogen as energy* [Company]. https://www.aramco.com/en/what-we-do/energy-innovation/advancing-energy-solutions/blue-hydrogen-and-blue-ammonia
10. Belaid, F., & Sarihi, A. A. (2022). Energy Transition in Saudi Arabia: Key Initiatives and Challenges.
11. DiChristopher, T. (2018). *SoftBank and Saudi Arabia are creating world's biggest solar power generation project*. https://www.cnbc.com/2018/03/27/softbank-and-saudi-arabia-announce-new-solar-power-generation-project.html
12. Creswell, J. (2023). Penelitian Kualitataif dan Desain Riset: Memilih Di Antara Lima Pendekatan (1st ed.). Pustaka Pelajar.
13. Gupta, A. (2017). Showa Shell Sekiyu and Solar Frontier to Participate in Saudi Arabian Collaboration, the "Joint Technical Corporation Project for Hydrogen Production by Splitting Hydrogen Sulfide with Sunlight." *Eqmagpro*. https://www.eqmagpro.com/showa-shell-sekiyu-and-solar-frontier-to-participate-in-saudi-arabian-collaboration-the-joint-technical-corporation-project-for-hydrogen-production-by-splitting-hydrogen-sulfide-with-sunligh/
14. Ghulam, Y., & Al Kinani, M. (2025). Saudi Arabia on track to lead global hydrogen market. *Arab News*. https://www.arabnews.com/node/2599446/business-economy
15. International Energy Agency. (2025). *Sixth Strategic Energy Plan—2050 Carbon neutral*. https://www.iea.org/policies/14391-sixth-strategic-energy-plan-2050-carbon-neutral
16. Khalil, S. A., Rahoma, U. A., Hassan, A. H., & Greeb, R. M. (2021). Assessment of UVB solar radiation in four different selected climate locations in Saudi Arabia. *NRIAG Journal of Astronomy and Geophysics*, *10*(1), 125–137. https://doi.org/10.1080/20909977.2021.1898142
17. Matsuda, K., & Kozhanov, N. (2023). Not Just hydrocarbons: Japan's multifaceted foreign policy approaches towards the GCC states. International Politics, 60(6), 1248–1269. https://doi.org/10.1057/s41311-023-00498-w
18. Md Tasbirul, I., & Amjad, A. (2024). Sustainable green energy transition in Saudi Arabia: Characterizing policy framework, interrelations and future research directions. *Next Energy*, *5*. https://www.sciencedirect.com/science/article/pii/S2949821X24000668
19. Ministry of Economy, Trade and Industry of Japan. (2023). Joint Statement on KSA-Japan Lighthouse Initiative for Clean Energy Cooperation (Energy and Environment Policy). METI Japan. https://www.meti.go.jp/english/press/2023/0717_001.html

20. Ministry of Foreign Affairs of Japan. (2017). Saudi Japan Vision 2030: Compass of New Partnership. Ministry of Foreign Affairs of Japan. https://www.mofa.go.jp/files/000237093.pdf
21. Ministry of Foreign Affairs of Kingdom of Saudi Arabia. (2023, July 16). *إطلاق مبادرة "منار للتعاون في مجال الطاقة النظيفة" بين المملكة واليابان* [Government]. https://www.mofa.gov.sa/ar/ministry/statements/Pages/إطلاق-مبادرة-منار-للتعاون-في-مجال-الطاقة-النظيفة-بين-المملكة-واليابان.aspx
22. Naaz, F. (2024). Role of National Interest. International Politics: Concepts, Theories and Issues. https://doi.org/10.4135/9788132113997.n2
23. Pannier, A. (2020). Bilateral Relations. In T. Balzacq, F. Charillon, & F. Ramel (Eds.), Global Diplomacy: An Introduction to Theory and Practice (pp. 19–33). Springer International Publishing. https://doi.org/10.1007/978-3-030-28786-3_2
24. Priya, A. (2020). Case Study Methodology of Qualitative Research: Key Attributes and Navigating the Conundrums in Its Application. Sage Journal, 70(1). https://doi.org/10.1177/0038022920970318
25. Reuters. (2009). Showa Shell, Saudi Aramco plan solar power project. *Reuters*. https://www.reuters.com/article/world/showa-shell-saudi-aramco-plan-solar-power-project-idUSTRE55M71I/
26. Riansyah, R. B. A., & Juned, M. (2024). Analysing Arabia and Japan's Energy Security Activities within Saudi-Japan 2030 vision. Law and Humanities Quarterly Reviews, 3(1). https://doi.org/10.31014/aior.1996.03.01.108
27. Rusdiyanta, R. (2022). Pengantar Ilmu Hubungan Internasional (Cetakan ke-1). PT. Rajagrafindo Persada.
28. Saudi Green Initiative. (2024). *SGI: steering Saudi Arabia towards a green future*. https://www.sgi.gov.sa/about-sgi/
29. Saudi Vision 2030. (2023). Kingdom of Saudi Arabia. https://www.vision2030.gov.sa/media/rc0b5oy1/saudi_vision203.pdf
30. Senega ESG. (2023). *Japan, Saudi Arabia Team Up for Joint Ammonia Production*. https://senecaesg.com/insights/japan-saudi-arabia-team-up-for-joint-ammonia-production/#:~:text=Japan%20and%20Saudi%20Arabia%20will%20establish%20a,plant%20in%20Saudi%20Arabia%2C%20which%20will%20capture
31. Sugiyono. (2021). Metode Penelitian Kualilatif, Kuantitatif, dan R&D. Alfabeta.
32. Suzuki, N. (2024). Scope and Facets of Japan-Saudi Arabia Relations [Research]. *Commentary and Analysis*. https://www.grc.net/single-commentary/165
33. Turkistani, S. (2023). *Energy Outlook in Japan and Implications for Saudi Arabia* [Research]. https://www.grc.net/single-commentary/77
34. U.S. Energy Information Administration. (2024). *Japan's energy policies aim for increased zero-carbon electricity generation* [Government]. Today in Energy. https://www.eia.gov/todayinenergy/detail.php?id=61944
35. Yamada, M. (2016). *Vision 2030 and the Birth of Saudi Solar Energy*. Middle East Institute. https://www.mei.edu/sites/default/files/publications/PF15_Yamada_Saudisolar_web.pdf
36. وكالة الأنباء السعودية. (2023). Joint Statement on KSA-Japan Lighthouse Initiative for Clean Energy Cooperation [Press Agency]. https://www.spa.gov.sa/w1936970
37. Carla, C. (2021). Blue ammonia's role in the energy transition of Saudi Arabia and Japan. *Arab News*. https://arab.news/m4jmj