International Geopolitical relations on Sri Lanka's Power and Energy Sector: Opportunities and Challenges for a Sustainable Transition

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***Abstract*—The energy crisis in Sri Lanka presents significant challenges for the country's transition towards sustainable energy, given the outdated energy grid, lack of infrastructure, and heavy reliance on fossil fuels. The paper examines the short and long-term plans for generation expansion, as well as the new reforms set to be implemented in 2023. It analyzes the geopolitical relations between Sri Lanka and major international players in the energy sector, such as Japan, China, and India, and their respective energy sector reforms, including China's Belt and Road Initiative and India's Bay of Bengal Initiative. Through this analysis, the paper highlights the opportunities and challenges that exist for Sri Lanka in achieving a sustainable energy transition. It emphasizes the importance of leveraging geopolitical relations to shape the energy sector of a country and achieve sustainable energy goals. To this end, the paper provides recommendations, such as seeking partnerships and investments in renewable energy sources, promoting energy efficiency measures, and fostering international collaborations in research and development. This study provides valuable insights into the challenges and opportunities that exist for Sri Lanka in achieving a sustainable energy transition. It highlights the importance of taking a comprehensive approach that considers geopolitical relations and collaboration with international players to achieve sustainable energy goals.**

***Index Terms*—Geopolitical interferences, Sustainability, Energy Crisis**

I. Introduction

The need to address climate change has led to a growing interest in utilizing renewable energy sources, which offer advantages over non-renewable energy sources in terms of international security and peace [1]. The transition to renewable energy can not only alleviate the resource curse in energy-producing countries and enable them to diversify their economies, but also reduce geopolitical competition over non-renewable energy markets, promote geopolitical stability, and reduce reliance on oil and gas exports, which can lead to economic instability and corruption. [2]. This shift towards sustainable energy sources requires the transformation of actors, markets, regulations, and policies [3[, [4].

The power and energy sector in Sri Lanka is heavily dependent on imported fossil fuels, which leaves the country vulnerable to geopolitical risks. As such, international parties play a crucial role in supporting the country's transition towards sustainable energy sources. Collaboration between Sri Lanka and international partners can help increase the flow of investments, technology transfers, and capacity building initiatives. Moreover, international cooperation can also mitigate potential geopolitical tensions arising from the competition for non-renewable energy resources. The presence of international actors in Sri Lanka's energy sector can also help promote transparency, accountability, and sustainability in energy projects. Therefore, establishing strong international partnerships is essential for Sri Lanka to achieve its energy transition goals and ensure energy security while minimizing geopolitical risks.

In Sri Lanka, the transition to sustainable energy sources is gaining momentum as the country has set a goal of generating 70% of its energy from renewable sources by 2030 [4]. While the country has substantial renewable energy potential, it still heavily relies on imported fossil fuels to meet its energy needs, leaving it vulnerable to geopolitical risks. Therefore, developing renewable energy sources is essential for ensuring energy security and reducing geopolitical risks in Sri Lanka.

Sri Lanka's energy transition faces obstacles due to geopolitical competition over development aid, loans, and other forms of assistance [2]. Although the country has set carbon neutral goals, its energy policy still incorporates coal, which conflicts with its climate commitments and increases environmental degradation and electricity costs. Therefore, the pursuit of coal as a critical component raises questions about the country's energy choices [4].

This paper examines the politics and dynamics surrounding Sri Lanka's energy transitions, specifically the interactions between internal and external actors that shape the country's energy future. The study focuses on the state's role in the socio-political construction of energy as a geopolitical battleground. The research employs a theoretical model that incorporates a new energy transition pattern and a geopolitical risk index in energy transition modeling. The paper aims to shed light on the factors influencing Sri Lanka's adoption of renewable energy sources and contributes to the literature on energy transitions and geopolitical risk.

The following research paper will cover the Sri Lankan energy crisis and its current state, including the economic and policy issues related to energy generation and the role of renewable energy. The paper will also discuss the short and long-term plans for expanding energy generation capacity in Sri Lanka. Additionally, the paper will examine the new reforms for 2023 in the energy sector, with a focus on the involvement of international parties in section 2. Specifically, the paper will examine the successful and unsuccessful turnarounds and proposals of various international parties, including Japan, China and the Belt and Road Initiative, and India and the Bay of Bengal Initiative in section 3.

II. Geopolitics of Energy Transitions: Pros and Cons of External Involvement

The geopolitics of energy transitions is a complex and rapidly evolving topic that has far-reaching implications for global politics, economics, and the environment. As countries around the world seek to transition away from fossil fuels and towards cleaner, more sustainable sources of energy, a number of external parties are involved in shaping the direction and pace of this transition.

One of the key pros of external involvement in energy transitions is the potential for increased collaboration and coordination among countries [1], [5]. The external parties can accelerate the transition to a low-carbon economy and mitigate the risks of climate change by coordinating policy, sharing resources, and developing and deploying new technologies through cooperation.

However, there are also a number of cons associated with external involvement in energy transitions. For example, some countries may seek to use their energy resources as a tool of political influence, using their control over oil, gas, or other resources to exert pressure on other nations. This can lead to geopolitical tensions and conflicts and may make it more difficult to achieve a coordinated global response to climate change.

Additionally, external parties may have different priorities and agendas when it comes to energy transitions. For example, some countries may be more focused on maintaining their existing energy infrastructure and protecting the interests of their domestic energy industries, while others may prioritize investments in new renewable technologies. These differing priorities can lead to conflicts and disagreements over the direction and pace of the energy transition, and may make it more difficult to achieve a coordinated global response.

Global climate change has complicated traditional geopolitical considerations as the use of fossil fuels leads to greenhouse gas emissions that cause a range of environmental disasters. These disasters can impact food production, public health, and lead to countless deaths, particularly in developing countries [6]. The politics of energy have shifted to focus on how countries can compete for resources while also conserving energy and reducing their carbon footprint. The debate around the cost and distribution of new technologies, compensation for those affected by climate change, and the use of alternative sources of energy has emerged as a focal point in the geopolitics of energy.

Effective policies and regulations are crucial for driving the transition to sustainable energy. Governments should encourage the adoption of renewable energy sources and promote energy efficiency measures. Energy transition modeling, which considers geopolitical risks, can help policymakers make informed decisions. It is also important to invest in research and development to advance new and innovative energy technologies. Moreover, addressing the social, economic, and environmental consequences of energy transitions is critical to ensure an equitable transition for all stakeholders. The geopolitics of energy transitions is a complex issue, and a comprehensive and collaborative approach is needed to achieve a sustainable and low-carbon future [7],[8].

III. The Current Energy Crisis in Sri Lanka: Challenges and way forward

Sri Lanka has been facing repeated electricity crises over the years due to its heavy reliance on fossil fuel-based energy generation, mainly coal and oil. This dependence has resulted in an insufficient supply of electricity, causing power cuts that have severely impacted the country's economic development and poverty reduction efforts. Sri Lanka's GDP growth rate shows a direct correlation with its electricity demand growth rate, making the current power outages likely to cause a decline in GDP, exacerbating poverty in the country [9].

Maneka Jayasinghe's study [10] addresses the issue of multidimensional energy poverty in Sri Lanka, with a focus on analyzing the Multidimensional Energy Poverty Index (MEPI), its determinants, and inequality. Lack of access to modern cooking fuel was identified as the primary contributor to energy poverty in Sri Lanka, and the study revealed significant disparities in energy poverty based on sub-national location and income group. To address this issue, the study suggests the national energy policy needs to promote the transition towards clean energy sources, such as solar energy, while reducing disparities in energy poverty and supporting vulnerable segments of society. The study calls for affordable pricing mechanisms and enhanced support to facilitate the transition towards clean energy and reduce disparities in energy poverty in Sri Lanka.

To tackle this problem, Sri Lanka needs to diversify its energy mix by exploring alternative energy sources such as solar, wind, and hydroelectric power [11]. Diversifying

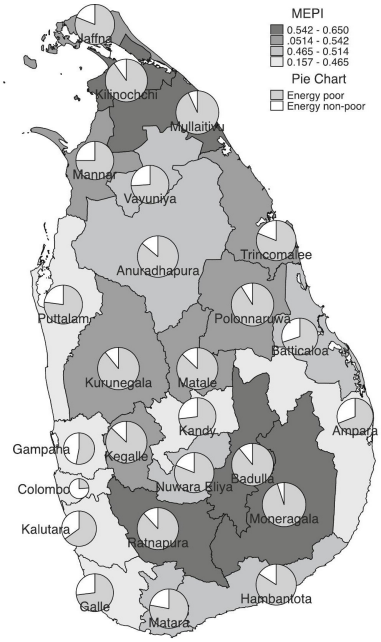

Fig. 1. Multidimensional Energy Poverty Index variation in Sri Lanka over the districts [10]

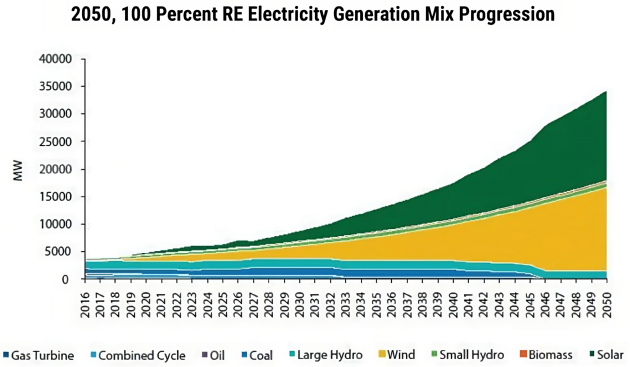

Fig. 2. Percentage prospective Energy source landscape in sri Lanka [13]

the energy mix can reduce the country's dependence on fossil fuels, improving the stability and sustainability of its electricity supply. Investing in renewable energy sources can also create job opportunities and contribute to the country's economic growth.

Additionally, the government must address the financial constraints faced by the electricity sector, which has been grappling with a financial crisis for decades. The sector's inability to invest in new infrastructure and technology has been severely limited. Therefore, the government should prioritize the financial stability of the electricity sector by implementing reforms that can improve its financial performance. These reforms could include improving the collection of electricity bills, reducing losses from electricity theft, and improving the governance and management of the sector [11], [12].

This repeated electricity crises in Sri Lanka underscore the need to diversify the country's energy mix, invest in modern infrastructure and technology, and prioritize the financial stability of the electricity sector. These measures can enhance the stability and sustainability of the country's electricity supply, spurring economic growth and reducing poverty.

IV. Sri Lanka's energy landscape and potential transition to renewable energy

A. Challenges of Sri Lanka's energy landscape

Sri Lanka's heavy reliance on imported fossil fuels has been a significant challenge for the country's energy sector. As a result of this dependence, Sri Lanka is highly vulnerable to fluctuations in global oil prices[14]. Whenever the price of oil increases, it leads to higher import bills, which in turn leads to price volatility and economic instability. This situation has been a significant concern for policymakers, as it undermines the country's economic growth and development. Therefore, to mitigate this challenge, Sri Lanka has set a target to generate 70% of its electricity from renewable energy sources, which will reduce the country's dependence on imported fossil fuels and make it less vulnerable to fluctuations in global oil prices.[13]

B. Transitioning to renewable energy

Sri Lanka's ambitious target of generating 70% of its electricity from renewable sources is a crucial step towards reducing its heavy reliance on imported fossil fuels [13]. The country has significant potential for renewable energy resources, estimated at 133 GW, which presents an opportunity to diversify the electricity generation mix and decrease vulnerability to fluctuations in rainfall, import bills, and global oil prices. However, achieving this target requires sustainable financing mechanisms and conducive policies for renewable energy integration. The UNDP SDG Investor map is an excellent example of a sustainable financing mechanism that highlights investment potential for renewable energy in Sri Lanka[13]. Additionally, incentivizing private sector investment in renewable energy, establishing energy storage facilities, and promoting energy efficiency and conservation among consumers are necessary steps to achieve the target.

In the international context, Sri Lanka's geopolitical relations play a crucial role in shaping the country's energy landscape. Partnering with other countries can help reduce Sri Lanka's reliance on imported fossil fuels, explore joint energy ventures, and share technical expertise and investment required for transitioning to a sustainable energy future. Countries that have already made significant progress in the renewable energy sector, such as Germany, Denmark, and China, can offer valuable insights into policy formulation, technology transfer, and project implementation. Furthermore, international geopolitical relations can play a role in addressing environmental concerns related to Sri Lanka's energy sector. By participating in global climate initiatives, such as the Paris Agreement, Sri Lanka can access funding for climate mitigation and

adaptation projects and contribute to global efforts to address climate change [15].

To achieve its 70% renewable energy target, Sri Lanka must establish conducive policies for renewable energy integration. Implementing a feed-in tariff policy can incentivize private sector investment in renewable energy, while establishing energy storage facilities is crucial to ensuring uninterrupted electricity supply. Strengthening institutional capacity for project implementation can ensure effective planning, execution, and management of renewable energy projects. Finally, creating awareness programs to promote energy efficiency and conservation among consumers can lead to a reduction in energy demand, making it easier to achieve the 70% renewable energy target [13].

C. International geopolitical relations and their role in Sri Lanka's energy transition

In the Sri Lankan context, the country can leverage its international relationships to access new and diverse sources of energy. Sri Lanka has already established relationships with countries such as India, China, and Japan for energy-related projects. These countries can provide Sri Lanka with access to new and diverse sources of energy, such as solar, wind, and hydropower, that can help the country achieve its renewable energy targets[13]. Furthermore, partnerships with other countries can help reduce Sri Lanka's reliance on imported fossil fuels by exploring joint energy ventures and sharing technical expertise and investment required for transitioning to a sustainable energy future.

In the international context, countries that have already made significant progress in the renewable energy sector, such as Germany, Denmark, and China, can offer valuable insights into policy formulation, technology transfer, and project implementation. These countries have already undergone the process of transitioning to renewable energy and can provide Sri Lanka with valuable lessons learned[15]. Furthermore, international partnerships can facilitate the transfer of knowledge and expertise, which can help accelerate Sri Lanka's transition to renewable energy.

Another key aspect of leveraging international relationships is addressing environmental concerns related to Sri Lanka's energy sector. Climate change is a global challenge that requires a coordinated effort from all countries to address it effectively. Sri Lanka can leverage its international relationships to participate in global climate initiatives, such as the Paris Agreement, and access funding for climate mitigation and adaptation projects. International partnerships can provide access to funding and technical assistance to implement sustainable energy projects that can help mitigate the environmental impact of Sri Lanka's energy sector[15].

Finally, reducing reliance on imported fossil fuels through partnerships with other countries is critical to achieving energy security and a sustainable energy future. Sri Lanka's heavy reliance on imported fossil fuels has resulted in price volatility and economic instability, which can be addressed by diversifying the electricity generation mix[14]. Partnerships with other countries can help reduce Sri Lanka's dependence on imported fossil fuels by exploring joint ventures and sharing technical expertise and investment required for transitioning to a sustainable energy future.

In conclusion, leveraging international relationships is essential for Sri Lanka to access new and diverse sources of energy, reduce reliance on imported fossil fuels, share technical expertise, and address environmental concerns related to the energy sector. International partnerships can facilitate the transfer of knowledge and expertise, provide access to funding, and accelerate Sri Lanka's transition to renewable energy [13]. By doing so, Sri Lanka can achieve energy security, reduce its reliance on imported fossil fuels, and pave the way for a sustainable energy future.

V. Geopolitics of Energy Transitions: International competitors

A. Japan-Sri Lanka Partnership and the Promotion of Coal as a Central Part of Sri Lanka's Energy Policy.

According to Ratnayake [16], The relationship between Sri Lanka and Japan has been close since the end of World War II, with development cooperation and Buddhism playing key roles. Japan has been a major aid donor to Sri Lanka and has supported the country's electricity sector through the Japan International Cooperation Agency (JICA). While Japan's initial plan to build a coal power plant in Sri Lanka did not come to fruition, JICA's support for a comprehensive electricity sector master plan in 2006 and its revised version in 2016 made coal a central part of Sri Lanka's energy policy, along with promoting renewable energy and private sector participation. Despite some resistance from the Ceylon Electricity Board (CEB) engineers who favored hydro and mini-hydropower generation, JICA's promotion of "clean coal" technology eventually convinced many that coal was a viable option. However, some experts dispute the viability of clean coal technology and have raised concerns about the use of coal as a fuel source in the 21st century.[18].

JICA's promotion of "clean coal" technology convinced many CEB engineers that coal was a viable option, despite their initial resistance which is disputed by some experts Guan [19] Yoshida [20]. Japan's involvement in policy framing successfully promoted its clean coal technology and asserted its influence, particularly in developing countries like Sri Lanka, where it provides funding for new coal-fired power plants. The CEB justified the building of coal plants based on cost-effectiveness and environmental sustainability, despite concerns raised by some experts about the use of coal as a fuel source in the 21st century[20].

B. China's Belt and Road Initiative (BRI) and its impact on Sri Lanka's economy and power sector.

Sri Lanka and China have maintained a strong relationship since the 1950s, with Sri Lanka supporting China's admission to the UN and World Trade Organization. China has since increased its influence in Sri Lanka through various development projects, including those under the Belt and Road

Initiative (BRI). Sri Lanka's participation in the BRI is partly due to its strategic location [22], [23], as the initiative aims to enhance economic activity among European, African, Asian, and Middle Eastern countries through two approaches: the overland silk road economic belt and the maritime silk road, which passes through Sri Lanka's maritime borders, having a significant impact on its economy.

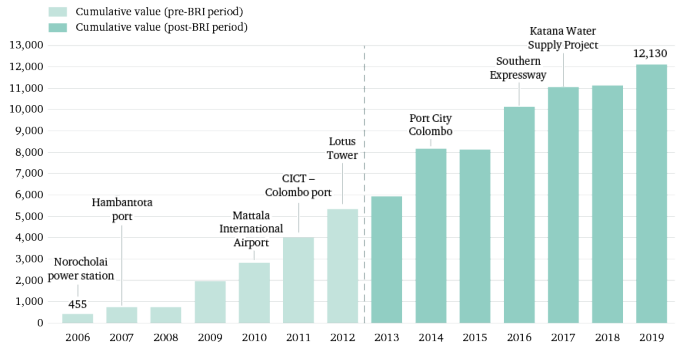

Fig. 3. Value of Chinese development finance to Sri Lanka ($ million) [23]

China has invested heavily in Sri Lanka's infrastructure through the Belt and Road Initiative (BRI), with projects such as the Hambantota Port and Colombo Port City. The Hambantota Port includes an LNG terminal and the Norochcholai coal power plant was built with Chinese funding and technology. However, some BRI projects, like the Hambantota Port, have been criticized for their financial unsustainability and potential to put Sri Lanka in debt to China, while the Colombo Port City project has faced opposition from environmentalists.

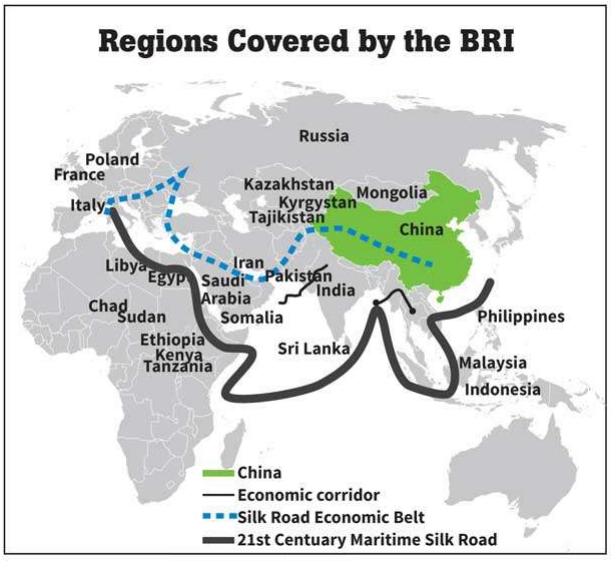

Fig. 4. China's Belt and Road initiative and countries covered [22]

China has offered help to Sri Lanka without political conditionalities, which has helped to establish robust trade and political relations between the two countries. However, the impact of the BRI on the Sri Lankan economy has been mixed. The BRI has the potential to bring investment in renewable energy projects in Sri Lanka, as China has been investing heavily in renewable energy. Sri Lanka could benefit from the BRI's focus on promoting clean energy and reducing carbon emissions, as the country has significant potential for solar, wind, and hydropower generation. The LNG terminal at the Hambantota Port is the first step towards making Sri Lanka an LNG hub for South Asia [24], [25], [26]. The impact of the BRI on the Sri Lankan economy and power sector depends on how the projects are implemented and managed. If done well, BRI projects could bring significant economic benefits to Sri Lanka, particularly in the power sector. The focus on clean energy could help Sri Lanka to meet its energy needs in a sustainable way. However, if the projects are not managed properly, they could lead to financial and environmental problems. It is important for Sri Lanka to carefully assess the costs and benefits of each project and ensure that they are sustainable in the long term. In conclusion, Sri Lanka and China's relationship has been strengthened by the BRI, and China has become an important player in Sri Lanka's development. The impact of the BRI on the Sri Lankan economy and power sector is significant, and it is important for Sri Lanka to manage the projects well to ensure that they are sustainable in the long term. Sri Lanka's potential for renewable energy generation and its geostrategic location make it an important partner for China under the BRI, and there is potential for further collaboration in the future.

C. Opportunities for cross-border energy trade and cooperation in the energy sector between India and Sri Lanka.

There is a possibility for increased cross-border energy trade (CBET) between India and Sri Lanka due to recent developments in the region. India is projected to have surplus power in most regions by the mid-2020s, while Sri Lanka's power system planners are looking for new sources of supply to meet the rising demand. The growth in renewable energy investments and national energy policies in the region can facilitate renewable energy integration through coordinated regional trade.[29].

India aims to achieve 175 GW of renewable energy by 2022, with 100 GW of solar and 60 GW of wind, and projects a peak demand of 230 GW by the same year. In contrast, Sri Lanka relies heavily on hydropower and has a smaller power system. The possibility of linking the two countries with a high-voltage direct current transmission link has been studied for many years, and the benefits are believed to outweigh the costs.

In 2021, Adani Group was awarded the deal to generate 500 MW of power using wind mills in Sri Lanka's northern coast [28]. However, the project faced resistance from some trade unions and activist groups. Sri Lanka's economic crisis has prompted the government to reach out for foreign investment, making it an attractive opportunity for India to express interest in Sri Lanka's renewable energy industry and cooperation in the energy sector.

The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) has supported Sri Lanka's energy sector through the promotion of economic

growth, trade, and investment, including renewable energy projects such as wind farms, solar power plants, and transmission lines. Despite challenges such as dependence on fossil fuels and underdeveloped infrastructure, an integrated electricity market is important for South Asia's energy security, with India having a stake in Sri Lanka's energy sector and a strategic interest in Trincomalee. Critics warn of potential national security threats from Indian investments in strategic locations, but increased cooperation and CBET could lead to benefits for both countries in terms of energy security and economic growth.

The potential for increased CBET and cooperation in the energy sector between India and Sri Lanka is an opportunity that should not be overlooked. The growth of renewable energy investments in the region, falling technology costs, and national energy policies all provide incentives for coordinated regional trade. The Bay of Bengal Initiative for Multi-Sectoral Technical and Economic Cooperation (BIMSTEC) has already had a significant impact on Sri Lanka's energy sector, supporting renewable energy projects and improving energy infrastructure [30], [31]. While challenges remain, the potential benefits of increased energy security and economic growth for both countries make it an opportunity worth pursuing.

D. The impact of US investment on Sri Lanka's energy sector and the potential for further development of renewable energy projects.

Sri Lanka has made significant progress in its energy sector with the support of the United States. The US has invested billions of dollars in Sri Lanka's energy infrastructure, which has led to an increase in energy production and improvement of the country's energy infrastructure. However, the rise in oil prices caused by the US sanctions on Iran and Venezuela has had a negative impact on Sri Lanka's economy. To attract more US investment in the energy sector, Sri Lanka can focus on developing renewable energy projects that are of interest to the US.

USA has encouraged Sri Lanka to develop renewable energy projects such as solar and wind farms. The Renewable Energy Development Project is aimed at increasing the use of renewable energy in Sri Lanka, including solar, wind, and hydropower. The United States Agency for International Development (USAID) has funded several energy projects in Sri Lanka, including a 100-megawatt solar power plant and a 50-megawatt wind power plant. According to [33], [34] the USAID project is a five-year project with a $19 million budget to increase renewable energy generation in Sri Lanka by 2030. To reduce its reliance on imported energy, Sri Lanka can work with the US to develop a regional energy market. This would not only help Sri Lanka to become more self-sufficient but also benefit the wider region. The development of a regional energy market could lead to increased energy security and lower energy costs for consumers [35], [36].

The US investment in Sri Lanka's energy sector has not only improved the country's energy infrastructure but has also created job opportunities in the sector. The development of renewable energy projects has led to the creation of new jobs in the renewable energy industry. This has provided a boost to Sri Lanka's economy and helped to reduce unemployment in the country.

US investment in Sri Lanka's energy sector has had a significant impact on the country's energy infrastructure and energy production. To attract more US investment, Sri Lanka can focus on developing renewable energy projects that are of interest to the US. Additionally, Sri Lanka can work with the US to develop a regional energy market to reduce its reliance on imported energy. The development of renewable energy projects has also created job opportunities in the sector, providing a boost to Sri Lanka's economy.

SUMMARY

The energy sector plays a crucial role in the geopolitical landscape, as evidenced by the increasing competition among international actors for involvement, investment, and innovation in Sri Lanka's energy sector. However, the slow diffusion of renewable energy technologies and increased reliance on coal in Sri Lanka have highlighted the need for greater innovation. While energy transitions offer an opportunity for various actors to assert their influence and engage using a range of tools, the complex interplay of actors, interests, and strategies in the energy sector has significant geopolitical implications that must be considered.

The Sri Lankan government has recognized the contested nature of the energy sector and has engaged with multiple international actors to develop its energy infrastructure.The pursuit of energy infrastructure projects in Sri Lanka is motivated by not just economic development but also political power and heightened naval competition. External support has facilitated infrastructure construction but has also created new forms of dependence. Therefore, it is imperative to carefully consider the long-term implications of these partnerships, as energy transitions may create new path dependencies related to technology and finance.

While reducing oil dependence is an essential aspect of energy transitions, it is equally important to recognize that energy transitions may also create new forms of dependence. As such, the Sri Lankan government and its international partners must be mindful of these dependencies and carefully consider the political and economic implications of their actions. Furthermore, innovation must be a top priority for all actors involved in the energy sector, as it is a key driver of renewable energy diffusion.

In conclusion, the energy sector's geopolitical significance cannot be overstated, as evidenced by various nations seeking to improve electricity infrastructure in Sri Lanka. The slow diffusion of renewable energy technologies and increased dependence on coal highlight the need for greater innovation. While energy transitions offer an opportunity for various actors to assert their influence and engage using a range of tools, the complex interplay of actors, interests, and strategies in the energy sector has significant geopolitical implications that must be carefully considered. Therefore, policymakers must

be mindful of the long-term implications of their actions and prioritize innovation to drive renewable energy diffusion.

Conclusion

Energy is playing a crucial role in redefining global and regional relationships as new power centers emerge and contested zones arise. The case of Sri Lanka demonstrates how various foreign players have used different tactics for engagement, investment, and innovation in the country's energy sector. However, despite the importance of innovation in facilitating energy transitions, it has been a weak link in the triple I framework, resulting in delayed adoption of renewable energy and an increased reliance on coal.

The political influence, economic progress, and naval competition are driving the competition for energy infrastructure projects in Sri Lanka. The relationships of China, India, and Japan with Sri Lanka have led to the politicization of energy and its use as a key foreign policy tool. As a result, energy transitions are being used by geopolitical actors for territorial control, hegemony, and influence in the region.

Developing countries must establish sustainable and consistent energy policies to create their energy capacities and understand their resources to avoid reliance on external actors. Sri Lanka recognizes the challenges in the energy sector and has engaged with various international actors to achieve a multi-layered regionalism in Asia. However, dependence on external support highlights the need for a balanced approach to energy transitions that considers geopolitical implications.

As a conclusion for the study, we can clearly see the complex interplay of actors, interests, and strategies in the energy sector has significant geopolitical implications that must be considered. Developing countries like Sri Lanka need to adopt a comprehensive energy transition policy that prioritizes innovation, builds indigenous capacities, and balances external support with national interests. By doing so, they can avoid falling into path dependencies related to technology and finance and ensure that energy transitions are a source of sustainable development, rather than a tool for geopolitical competition.

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