Proceedings of the 3rd International Conference on International Law and Legal Policy
DOI: 10.54254/2753-7048/57/20240117

The Impact of Renewable Energy Industry Amidst the Tense Relationship Between America and China

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Abstract: The challenges and risks exist in every industry under the context of China-US competition. Although both countries use different approaches, significant potential for collaboration and challenges to effective cooperation still exist. By delving into the differences in policy, cooperation initiatives, and competitive dynamics, they have highlighted the interdependence of China and the US in the global renewable industry overall. It is essential to understand the evolving relationship between these two nations in the renewable energy sector, in the context of escalating geopolitical tensions and the requirements of sustainable development. The study concludes that while competition can reduce costs and spur technological advancement in renewable energy, cooperation through leveraging each country's strengths can significantly contribute to global climate change efforts. Despite the tense relationship, fostering constructive engagement and finding common ground in the renewable energy sector can benefit both economies and promote global sustainable development.

Keywords: reduce cost, technological advancement, promote cooperation.

1. Introduction

The study primarily explores the policy approaches, cooperation initiatives, and competitive dynamics of China and the US in the renewable energy sector, showcasing opportunities and challenges in different aspects. It also considers various cooperation mechanisms from bilateral agreements to multilateral initiatives, emphasizing the potential for collaboration in advanced renewable technology and addressing the challenges posed by the tense relationship between the two countries. Additionally, it explores the competition between the two countries, particularly in technological innovation, where trade disputes and tariffs may make cooperation harder but also potentially lead to cost reductions in the renewable industry, benefiting global sustainability efforts.

The study analyzes policy approaches, cooperation initiatives, and competitive dynamics to reveal opportunities and challenges in various aspects. It also examines the mechanisms of cooperation between China and the US, from bilateral agreements to multilateral initiatives, highlighting the potential for advanced renewable technology collaboration and the challenges arising from geopolitical tensions.

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The challenges and risks exist in every industry under the context of China and the US competition. Although both countries use different approaches, significant potential for collaboration and challenges to effective cooperation still exist. By delving into the differences in policy, cooperation initiatives, and competitive dynamics they have highlighted the interdependence of China and the US global renewable industry overall. It is essential to understand the evolving relationship between these two nations in the renewable energy sector, in the context of escalating geopolitical tensions and requirements of sustainable development. Depending on the analysis of policy approaches, cooperation initiatives, and competitive dynamics the study will show the opportunities and challenges in different aspects. Beyond this the study also condor the various cooperation mechanisms used by China and the US from bilateral agreements to multilateral initiatives, emphasizing the potential of coloration of advanced renewable technology and addressing the challenge, but the tension between the two countries' relationship is making the situation more complex. Finally, the essay also explores the competition between two countries especially in the area of technological innovation. While trade disputes and tariffs may make the cooperation harder, the completion may also lead to a reduction of cost in the renewable industry benefiting global efforts towards sustainability [1]. Furthermore, the studies show that fostering constructive engagement and finding common ground on renewable energy can not only benefit both nations' economies but also contribute to global efforts of renewable energy to combat climate change and promote sustainable development.

2. Policy Differences

The policy differences both countries publish in renewable energy area are some kind of complementary factors that promote cooperation between the two countries in the renewable energy sector. A conducive environment for the rapid development of renewable energy infrastructure is offered by China's highly centralized with heavy government intervention. In the year of 2005, the Chinese government published "The Renewable Energy Law of the People's Republic of China" to promote the use of renewable energy resources to enhance energy security, mitigate environmental pollution, and address climate change impacts [2]. The law introduces Feed-in Tariffs, Under a feed-in tariff system, renewable energy producers are guaranteed a fixed price for the electricity they generate and supply to the grid. Usually, the fixed price is a little above the market price of electricity and is guaranteed for a certain period, often ranging from 10 to 20 years. With the Feed-in tariffs the investors were provided certain profits, and with the certain profits, they are more likely to invest again in renewable energy areas [3]. Beyond guarantee, the priority access the government provides is essential for renewable energy companies, this term refers to gas, coal, and oil these kinds of traditional energy, renewable energy projects have precedence in terms of connecting to the grid and delivering electricity. By giving renewable energy priority access to the grid the stability of the grid was improved and minimizing the reliance on fossil fuel-based generation. This policy plays an important role in the transmission process from traditional energy to renewed energy and creates more sustainable and low-carbon energy system. Differing from China, the US has a separate way instead of a centralized way. The decentralized way encourages entrepreneurship, under the decentralized controls the local business can capitalize on regional incentives to develop and deploy innovative renewable energy solutions. Overall the US renewable law allows a more active and diverse system different states use different approaches depending on the state's internal factors to reach the goal of transition to a clean energy future [4,5]. By taking advantage of China's rapidly developing renewable energy infrastructure and the US's innovation and technological expertise. Both countries can collaborate to address impending issues [6]. Many think that the US and China's completion will deteriorate the renewable energy industry, but the reality is reversed in some aspects.

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3. Competition and Cooperation

The increase in dispute are lower the renewable energy cost overall, by completely high renewable energy technology with others can inspire technological advancements leading to rapid of innovation, and lower the overall cost. For example, China advanced new technology to reduce the panel cost and its dominance in solar panel manufacturers globally led to a scale economic and made the panel's price decline globally. Innovation in the production of renewable energy facilities is increased and energy is produced more effectively. By the market complete, the prices are being pressured. The completion will cause a between China and the US price war leading to a reduction of the cost. Companies and manufacturers offer competitive prices to secure market share and attract customers it also provides users more options to choose from. A multi-companies industry in that companies have to compete for business, create a dynamic industry, and lead to a more possible future. These market factors under the context of the US and China completion create a suitable atmosphere for more business-related innovation and collectively contribute to the growth of the renewable energy industry in a shorter period. Beyond the dispute, cooperation still exists by hard-working from Both countries.

Cooperation between China and the US in the renewable energy industry has the potential to make significant progress for the world by leveraging each country's strengths and communicating with others truly. Even though China and the US have a tense situation the Clean Energy Research Centers established by the two countries represent a significant area of cooperation and hope to refine the two countries' relationship [7]. The CERC focuses on promoting research collaboration on key renewable energy technology including areas such as clean coal, energy-efficient buildings, clean vehicles, and advanced grid integration [8]. CERC brings chances for scientists from two countries to work together with no political factors, addressing common challenges and developing innovative solutions. With the uncertainty in politics the CERC is having a hard to operating well, the tension between China and the US is changing over time, impacting bilateral relations and international collaboration in various sectors, including clean energy. The attitude toward China from the US is changing by the different presidents and with the uncertainty of the attitude, the CERC is being troubled, and unable to operate long-term projects. Furthermore, as we all know China and US have been in a trade war with regulatory and export controls. These kinds of policies affect the CERC by making seamless research hard to realize. The export controls on high-technology equipment and sensitive materials may restrict the development of renewable energy progress. The political factors appeared in the CERC and made their research ineffective, and highlighted the difficulty of maintaining an international research collaboration, especially in a context of evolving geopolitical dynamics and policy environments. Besides the CERC, China's Belt and Road Initiative seems to present a bigger chance for collaboration with less political influence. The BRI promotes investing in infrastructure including renewable energy development along the Belt and Road routes including Europe, Asia, and Africa [9]. The renewable energy plan on the BRI focuses on developing solar, wind, hydroelectric, and other renewable energy resources to meet growing energy demand sustainably. The collaboration opportunities are given by letting US companies directly attend to the developing process and providing technology, expertise, and financing support with less government involvement [10]. Effective collaboration under the BRI framework requires open speaking and common agreement on the same goal.

China and the US tension brings development to the world but also with significant barriers in further development. Firstly, The US-China trade tensions have significantly affected global supply chains for renewable energy technologies, particularly solar panels. According to a report, tariffs imposed by the US on solar panels imported from China led companies to shift the supply chain, and make the manufacturers transfer their facilities to Southeast Asia to avoid the tariffs. This disruption

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caused price fluctuations and supply chain adjustments globally, impacting the cost and availability of solar panels in various markets [11]. Furthermore, a study from the journal Energy Economics found that US tariffs on solar panels and Chinese retaliatory tariffs reduced US imports of solar panels from China by 48%, and the US increased their import of solar panels from Malaysia, Vietnam, etc [12]. The change from import highlighted how trade tensions between the US and China directly influence the structure of global supply chains in the renewable energy sector [13]. Additionally, the tension relationship influences the investment of the global renewable energy sector. The uncertainty caused by trade dispute tensions can lead to unconference for investors and affect project financing. According to Bloomberg NEF (BNEF), global investment in renewable energy capacity hit the highest record in 2021, reaching $755 billion. But recently the investment has decreased because the global political is becoming more complex with higher uncertainty [14]. The US-China trade tensions and broader geopolitical uncertainties are creating challenges for international investors and impacting the flow of capital into renewable energy projects. Investors may adopt a more cautious approach or shift their focus to less geopolitically tense markets, influencing the growth of renewable energy markets globally. The tension relationship directly influences the renewable sector with negative effects. Geopolitical uncertainties and trade disputes can create challenges for industry stakeholders and policymakers aiming to accelerate the adoption of renewable energy on a global scale.

4. Conclusion

Although the international relationship is dynamic, with lots of issues, there is still strong potential to collaborate for the two nations to collaborate in the renewable energy industry. First, both nations have a common goal of realizing sustainable development. China and the US share common interests in addressing climate change, reducing carbon emissions, and promoting clean energy solutions. In the renewable energy market, a collaboration of the two biggest nations in the world can promote market integration, trade relations, and investment opportunities, which will benefit the whole global energy market. Furthermore, a collaboration between the two nations may mitigate the tension in their relationship by taking constructive dialogue between Chinese and US officials and stakeholders. Promoting a more sustainable future is the responsibility of humans, it is essential for realizing the transformative potential of US-China collaboration in advancing renewable energy technologies. By promoting inclusive partnerships both countries can play a pivotal role in shaping the future to a sustainability environment on a global scale.

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