Study on China’s Position on Its Strategic Location, Planning, and Future Outline

Zerun Ai*

Faculty of Liberal Arts and Professional Studies, York University, Keele Street 4700, Toronto, Ontario, Canada

Abstract. This comprehensive analysis highlights the potential of China, the world’s largest energy producer. The research paper provides direction to China in the energy sector. Although currently relying on coal for power generation, in the long term, the country will become the largest exporter of electricity. The transition to sustainable energy production is critical, considering global commitments to reduce greenhouse gas emissions under the Paris Agreement. China’s ability to shift to clean energy is strengthened by its vast labor force, financial strength, and the Chinese government’s commitment to national rejuvenation. By establishing an “Electro-Yuan” system for trading electricity, China could challenge the global dominance of the US dollar. The One Belt, One Road (OBOR) initiative further facilitates a clean electricity trade network with strategic partners worldwide. However, a successful transition hinges on shifting from coal to renewable energy sources, enhancing existing grid infrastructure for cross-border transmission, and effectively implementing the Electro-Yuan system.

1 Introduction

China’s electric power industry is in a unique and critical position. Right now, China is not only the largest consumer of energy in the world but is also the largest producer that has already surpassed the United States as some in Fig. 1.

Fig. 1. Leading countries in electricity generation worldwide in 2021 (in terawatt-hours)
(Source: https://www.statista.com/statistics/1263669/electricity-generation-worldwide-country/)

The economic powerhouse produces more than eight terawatt hours of electricity on an annual basis. On the other hand, the United States, in second place, produces over four terawatts hours on a yearly basis. However,

* Corresponding author: aizerun@my.york.ca
different from many developed nations, China’s main source of electric generation still relies on coal. The most traditional form of fossil fuels contributes to around 65 percent of China’s total electricity power production [1]. At the same time, the rest was done by other energy sources, including hydro, nuclear, and natural gas. Due to the heavy reliance on coal as the power resource for electricity generation, China not only conducts mining domestically but imports coal from other countries. Even facing the impact and economic downturn caused by COVID-19, the growth rate of raw coal output was still positive. In 2022, around 4.5 billion tons of raw coal were mined and exacted in mainland China while another 290 million tons were imported overseas [2] as shown in Fig. 2 and Fig. 3.

![Growth Rate of Industrial Raw Coal Output above Designated Size](http://www.stats.gov.cn/english/PressRelease/202301/t20230118_1892302.html)

**Fig. 2.** Growth rate of industrial raw coal output above designated size

![Coal imports](http://www.stats.gov.cn/english/PressRelease/202301/t20230118_1892302.html)

**Fig. 3.** Coal imports

Although there are many challenges, China has the potential to become the largest electricity exporter in the long term. By focusing on and transitioning into alternative, sustainable, and new energy production, China has the capacity to become the largest clean energy producer. With the China’s massive One Belt and One Road (OBOR) initiative, the clean electricity produced can be stored and exported to other strategic alliances and partners across the world.

2 The power of currency

People are used to the fact that many commodities are traded in the currency of the United States Dollar (USD). It is a normalized and commonly accepted practice in international trading. However, the USD system is not natural but established by the power, influence, and dominance of the U.S. government. The trading system that uses USD as the predominant currency has historical roots due to the dominant position of the U.S. after World War II. The U.S. dollar was established as the world's reserve currency, backed by gold reserves. This meant that the U.S. dollar was used as the standard currency for international trade because of its stability and economic strength of the United States [3]. It was the foundation of the petrodollar system that made oil trade in USD. By the mid-1970s, all of the OPEC members (Organization of the Petroleum Exporting Countries) had signed an agreement for trading oil and consented to oil exports in USD, which contributed to and promoted the hegemonic and world dominance of the U.S. currency as shown in Fig. 4 [4].

![Fig. 4. Most foreign exchange reserves are in U.S. dollars](https://www.cfr.org/backgrounder/dollar-worlds-currency)

There have been various advantages for the US for the petrodollar system. Since oil is one of the most important commodities and the fuel for any modern economy, countries around the world needed to hold significant reserves of USD dollars for them to be able to buy oil on the international market. The common and significant demand for the currency further solidified the dollar's role as the global reserve currency and reinforced its dominance. Compared to other countries, the US has been in an advantageous position since it has asymmetric information and control over the currency that universally holds and demands. Moreover, there is less currency risk as there is no need for the US government to conduct foreign exchange. The petrodollar system also helps the US to lower the cost of borrowing money and manage the balance of payment.

However, such hegemony is not as strong and unshakeable as before. Oil even is still the most important energy resource and commodity, is gradually losing its significance. Due to concern for climate change, many countries are moving away from fossil fuel usages, like petroleum and crude oil. The rising of Tesla and alternative energy proves the trend.

3 A sustainable future

See, more severe weather and rising temperatures have become an imminent and global level risk; countries around the world have come together and signed the Paris Agreement in December 2015. The initiative was adopted by 196 countries around the world and came into effect in the following, binding an international treaty on climate change [5]. Countries established quotas on greenhouse gas (GHG) emissions and limited global warming to 1.5 degrees Celsius in increase. Countries were advised to focus on reducing carbon footprint and achieving NetZero on carbon emission. Better and cleaner forms of energy are needed than fossil fuels, which cause GHG and carbon emissions.

4 New opportunities

China, the largest energy producer and second largest economy in the world plays a critical role on the world stage. Facing these risks and changing trends, there are many opportunities. Suppose China manages well in the transition into a new and alternative form of energy and plays a more important role on the world stage. In that case, China will eventually take over the world leadership role that the United States has been having for almost a century. It is the time for the Chinese dream versus the American Dream.

If China plays the cards right, the largest energy producer in the world can transform into the largest energy exporter. Even though the country depends on coal-sourced energy production methods for electricity generation, it, at the same time, proves there is a lot of room for China to shift to alternative energies. China can shift coal dependence to nuclear and solar energy projects. One advantage China has is its capability and experience in building larger projects. With plenty of affordable, skillful, and experienced workers, plenty of financial resources, and the determination of the Chinese dream of the great rejuvenation of the Chinese nation,
China is capable of all of the aspects of shifting into a major clean electricity producer in the world.

5 Capabilities

As mentioned, there are three unique capabilities that make China able to transition and monopolize electricity export on the world stage. China can be the dominant figure in sustainable electricity generators due to its labor resources.

The first advantage is its human resource. People, as known as human capital, are one of the most important resources in the modern world. China is blessed with a large population. Although being undertaken by India to become the second most populous country in the world, China still has a significant population of 1.4 billion. The massive Chinese population means China has a diverse and plentiful labor force. For the transition into sustainable energy providers, many large projects needed to be commissioned, which demands huge labor input. China does not lack skilled and experienced engineers, technicians, and laborers. In fact, according to a study, China has the largest construction market in the world. China has been maintaining momentum in building new public infrastructure projects in water systems, energy, new urbanization, and transportation. To be more specific, for China's 14th Five-Year Plan, there is a total of over 350 million square meters of buildings and other net zero consumption buildings have been commissioned [6]. All these projects use a great amount of human capital. The expected outcome is that many projects also help to train construction laborers, engineers, and technicians. They become veterans from participating in all these construction projects. The valuable human capital is available to China, which facilitates the transition process for China to become a sustainable electrical energy exporter.

The second advantage lies in China's financial strength. As the world's second-largest economy, China has the financial resources necessary to invest in renewable energy infrastructure on a grand scale. China has had an astonishing GDP growth rate ever since Reform and Opening. The country has demonstrated an economic miracle to the world and has accumulated tremendous wealth for it to commission major infrastructure projects. Although it has been impacted by the COVID-19 global pandemic, China is recovering fast financially. In the first quarter of 2023, the Chinese economy has grown 4.5 percent, which is the fastest growth rate in a year [7]. The rate was higher than the projected 4.0 percent growth rate and was significantly higher than the 2.2 percent over the previous quarter as shown in Fig. 5.

![Fig. 5](https://www.cnbc.com/2023/04/18/china-economy-q1-gdp-2023.html)

The financial strength allows China to carry over large and expensive projects and shift to sustainable ways of producing electricity, like using solar and nuclear resources. The financial resources help to commission solar energy generation sites and nuclear power plants in the country.

Lastly, the Chinese government is committed to the Chinese dream. The great rejuvenation of the Chinese nation has always been a priority for the Chinese government, especially President Xi Jinping. Xi has publicly mentioned the Chinese dream on various public occasions, and it has been the major political agenda for China for the past few years. The government is eager to
acquire a more dominating position in the world, and controlling the world's electricity power market helps the Chinese dream to come true since electricity is the energy every country in the world needs today. The Chinese government has shown its commitment to this cause by providing generous subsidies and incentives for renewable energy projects. This financial support has played a crucial role in driving the growth of the country's renewable energy sector.

5.1 Trading electricity in CNY

Although being the second-largest market in the world and has a booming economy, China has not yet established much dominance in its currency. Many countries in the world have positive attitudes and opinions towards the Chinese Yuan (CNY), but there have not yet been any commodities being traded in the Chinese currency. The USD hegemony and petrodollar system have been normalized and are well being used today.

It is the time to challenge the old reign. If China can monopolize the world electricity market, trading in CNY can yield many benefits to the nation. The petrodollar system has provided the US with decreased cost, reduced risks, increased political power and influence in the world, and many more. An electro-yuan system will help to rival the petrodollar system and let the world see that the construction of US hegemony is not unshakable. Countries around the world will realize that CNY can be as strong, reliable, and convenient as USD. If provided with the right incentive and the use of CNY as a membership to the world electricity trading market, an electro-yuan system can be established as a rival to the petrodollar system. It is hard to say CNY will replace USD to establish another round of currency hegemony. However, it is always good for countries to have an alternative.

Instead of having a unilateral currency market with USD hegemony, a multi-lateral currency market is on the rise. Trading electricity in CNY is vital to China as it is important for the great rejuvenation of the Chinese nation. Once the strongest nation in the world, China has the ambition to be the greatest again. With the Chinese dream in mind, the Chinese government understands that CNY must be a commonly accepted and traded currency in the world. Although an electro-yuan system is only a small step, it is also a necessary and critical one which is the first step for CNY to become the trade currency in the world system. With the government initiatives, many countries, like Argentina, Russia, and Brazil, are starting to use CNY more often. The Chinese government is also in talks with the Middle East to settle oil trades in yuan [8].

5.2 One belt one road initiative for the electricity trading network

In 2013, the Chinese government, under the leadership of President Xi Jinping, the OBOR initiative was launched. The projects involve collaboration, cooperation, aid, and incentives with 65 countries in Asia, Europe, and Africa. A study analyzes 458 power plant development projects in over 15 countries in the OBOR initiative across the three continents to study the carbon emission implications [9]. The study reveals the high involvement of Chinese contractors in the construction of power plants "….Chinese construction contractors were involved in 81% of the 59 power plant projects financed by CDB and CHEXIM in these 15 countries since the year 2000, as tracked by the China Global Energy Finance database. Similarly, Chinese contractors were involved in 18 of the 27 newly-built power plants with different degrees of Chinese ownership in these 15 countries...” [9]. The high involvement of Chinese contractors and Chinese ownership demonstrates China has long-planned cooperation with the member countries in the OBOR initiative in electricity trading. Thus, a cross-continent network of power generation, storage, and transmission network has been constructed. Moreover, the study also reveals the power plant projects also taken into the 1.5-degree carbon goal into consideration. However, there is still around 25 percent of the prospective power plants are running based on coal, which leaves China a great opportunity to provide electricity generated by greener means.

Another study focuses on the other side of the BORO initiative [10]. China has energy collaboration with the Association of Southeast Asian Nations (ASEAN) and regards the region as strategic for the success and continuation of OBOR. The countries see ASEAN as the first station of the "Maritime Silk Road" as shown in Fig. 6.
China has been building power grids, smart grids, cooperation projects, energy projects, and smart grids. A keen focus in the region is on clean energy, and the cooperation of China-ASEAN sets clean energy as the theme [10]. The potential and existing grid connectivity between China and ASEAN members can facilitate the transmission of clean electricity from China, thus promoting the use of renewable energy and reducing carbon emissions in the region. It is also a strong indication that China is already considering the possibility of becoming a major exporter of clean energy.

6 Strategic planning and future outline

The potential for China to become the world's largest electricity exporter hinges on several factors. Firstly, the country needs to successfully transition its energy mix from one dominated by coal to one that is primarily based on renewable energy sources. The government's strategic planning and investment in renewable energy technologies are key to this transition. Even though there are various new energy and power plants being built, many of them shown by studies, are still being powered by coal. It is essential for China to shift the focus to sustainable and green energy like solar energy. The government of China can provide subsidies for solar energy-related projects and research and development in the area. Incentives can also be provided for building and switching to the use of solar energy. Although there has no country has been mainly dependent on solar energy, China can be the leader in changing the source of power generation.

Secondly, China needs to build on its existing grid infrastructure to facilitate the transmission of electricity across national borders. The OBOR initiative and the existing grid connectivity with ASEAN members provide a strong foundation for this. Although the Western end of the OBOR initiative is being hindered by the ongoing war better Russia and Ukraine, China can increase investment and cooperation with the countries in the Middle East and cooperate with OPEC nations. The countries can share knowledge and experience in energy production and formulate energy-oil trade that settles in CNY rather than USD. The new currency settlement method allows China to have various benefits, as mentioned in previous paragraphs and also provides currency risk mitigation to OPEC member countries.

Thirdly, the establishment of an electro-yuan system for trading electricity would enhance China's financial power and influence. This would not only challenge the existing dominance of the USD but also provide a new source of demand for the Chinese currency. Trading electricity using the Chinese Yuan (CNY) would be a significant step towards internationalizing the Chinese currency and giving it a larger role in global finance. If electricity trading is conducted in the Chinese currency, this would naturally increase the global demand for the CNY. Countries and businesses participating in the electricity market would need to maintain reserves of CNY in order to conduct transactions, thus leading to an increase in the global demand for the Chinese currency. This would further strengthen the CNY's position in the global market. Currently, global commodities like oil are predominantly traded in USD. This puts countries at the mercy of the US Federal Reserve's monetary policy. If electricity becomes a major commodity traded in CNY, this will allow China to exert greater control over its own monetary policy and reduce its dependence on USD.

7 Conclusion
In conclusion, China’s strategic location, planning, and future outline position it as a potential future superpower in clean energy. The country’s transition to renewable energy, combined with its substantial human resources, financial strength, and strategic planning, provides a strong foundation for this. However, this transition will not be without challenges, and China will need to navigate these carefully to realize its potential.

References

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