



India and China as Emerging Energy Powers: Energy Security, Geopolitical Competition, and Renewable Energy Transition

¹Wahengbam Sanjit Singh, ²Dr. Ngangom Jasantakumar Singh

¹Ph.D. Research Scholar, ²Assistant Professor

¹Department of Political Science

¹ARUNODAYA UNIVERSITY, ITANAGAR, INDIA

ABSTRACT

The rise of India and China to energy greatness has changed the world energy landscape and the geopolitical make-up of the 21st century. The energy needs of both countries have significantly increased due to rapid economic growth, industrialization, urbanization, technological development and population growth, which has made them some of the largest consumers and importers of oil, natural gas and electricity in the world. The purpose of the study is to explore the factors behind the emergence of India and China as energy powers, focusing on energy security, foreign investments in energy, maritime strategic interests, transition to renewable energy and geopolitical implications at regional and global levels. It examines the different approaches both countries have taken to ensure uninterrupted energy supplies via energy diplomacy, investments in foreign oil and gas resources, strategic partnerships and infrastructure developments in Africa, Central Asia, the Middle East and Southeast Asia. The study also delves into the energy resource and maritime route competition between India and China and their areas of cooperation in multilateral cooperation bodies like BRICS and the Shanghai Cooperation Organisation. Moreover, it talks about the rising significance of renewable energy in alleviating fossil fuel reliance and promoting sustainable development. With this in mind, the research uses the theories of realism and liberalism to explain the co-existence of competition and cooperation in the energy policies of both countries. It finds that together, the energy policies of India and China will continue to influence and drive international energy governance, regional security, international trade, climate policy and the future transition to cleaner energy systems, and that they are crucial players in the changing international political and economic order.

Keywords: India, China, Energy Security, Geopolitics, Renewable Energy

INTRODUCTION

In the 21st century, energy has emerged as one of the most important factors influencing economic growth, national security and international power. With the growth of economies industrialisation, urbanisation, technological developments and population growth, demand for reliable and affordable energy is rising. India and China are in the midst of a fantastic economic transformation in the last few decades, leading to unprecedented growth in energy use in the emerging economies. They now have two of the largest domestic energy consumption and importations of any countries in the world due to their emerging industrialization and transportation networks, as well as their improved standards of living.

India and China also have become more dependent on imported oil and natural gas and thus have given energy security prominence in their national and foreign policy agendas. Both countries have sought to diversify their energy supplies by investing in energy security in the overseas oil and gas field development projects, developing diplomatic relations with the energy producing countries, and bolstering maritime security and protecting the shipping lanes, including the Strait of Malacca and the Indian Ocean Region. Their growing presence in Africa, Central Asia, the Middle East and South East Asia has changed the geopolitics of the world's energy resources and the competition for them.

Meanwhile, India and China have become major players in the field of renewable energy development. The investments in solar, wind, hydropower, electric mobility and clean energy technologies are substantial proof of their resolve to achieve sustainable economic growth while combating climate change and eliminating reliance on fossil fuels. Yet, in another aspect, both have joined hands in areas of international organisations like BRICS and the Shanghai Cooperation Organisation for the development of energy governance and sustainable development, despite the strategy rivalry.

This research investigates the energy transition from fossil fuels to renewables, as well as how India and China became energy powers by looking at the correlation between economic growth, energy security, geopolitical competition, foreign energy politics, and the transition to renewable energy. Based on the theoretical frameworks of realism and liberalism, the work examines the dynamics of competition and cooperation in the development of energy policies of these two Asian giants and their emerging role in global energy governance.

INDIA AND CHINA AS EMERGING ENERGY POWERS

India and China have emerged as major economies of the world and their impact on the domestic and international political and economic landscape in the twenty first century have changed. The economy, industrialization, urbanization and technological advance have experienced tremendous growth in both countries during the last few decades, which has led to high energy consumption. India and China are currently consuming and importing huge amounts of energy resources and as India's energy demand continues to grow, it has had an impact on the world energy market, international trade, geopolitics and other energy industries (Daojiong, 2016).

The emergence of India and China as emerging energy powers goes hand in hand with their economic changes. Starting in 1978, Deng Xiaoping began to implement economic reform in China, which resulted in the rapid industrialization, manufacturing for export and the construction of infrastructure. Similarly, India started liberalizing its economy on globalization, foreign investment and market reforms in 1991. During this period of economic transition, industrial production, transport, construction, and urban infrastructure development all saw unprecedented growth leading to a large increase in the consumption of energy resources (Lind & Press, 2018).

China's industrialization was a new day for the nation—it is the second largest economy of the world and the biggest manufacturing base in the world. This economic development had a tremendous impact on oil, natural gas, coal and electricity consumption in China. China is the world's largest energy major as well as a huge importer of crude oil. This has not been able to meet the rising demand for energy, although it has begun to rely on hydrocarbons for energy imports (Meidan, 2023). Clean and uninterrupted energy supply

is essential for the economic development of China in terms of industrial production, technological innovation, transportation system and urban development.

India has also become one of the fastest growing economies of the world. India has experienced high population growth rate, industrialisation and urbanisation, which has resulted in significant increase in energy use in India with the growing standard of living of the people. India is now poised to become the third largest consumer of oil and energy resources in the world, after China and U.S. (Daojiong, 2016). The vast quantity of energy resources required to support economic growth, social welfare to address the country's developmental goals, growth of the middle class, infrastructure development and transportation requirements.

Energy security has become an integral part of the Indian and Chinese national policy as the energy demand is continuously increasing. Energy security means availability of energy at affordable price in an economically and strategically viable environment (Pant, 2007). The two nations understand the need for energy supplies continuity and uninterrupted flow for the continuity of their countries' economic growth, industrial productivity, political stability and national security. Consequently, they have been able to draw up complete energy plans for them in order to ensure their energy supply is secure and diverse.

One of the major characteristics of the rising energy powers of India and China is that they are becoming more and more dependent on imported oil and natural gas. Both countries have energy resources like coal but production has not been sufficient to satisfy the increased demands for energy. India is a huge importer of crude oil from the Gulf region and other global markets; and China has a high percentage of its crude oil imports from the Middle East, Africa and Central Asia. Due to this increased reliance on imported hydrocarbon supplies, both countries are vulnerable to disruptions, geopolitical unrest, to price volatility, as well as to sea security problems (Raphael & Stokes, 2010).

India and China have been keen on investing in other countries and in energy diplomacy to reduce such risks. They have invested in their national oil companies' oil and gas exploration projects in energy-rich countries all over the world. In Africa, Latin America, Central Asia and the Middle East, Chinese companies have bought huge shares of oil fields and pipeline projects – including the China National Petroleum Corporation (CNPC), China Petroleum and Chemical Corporation (SINOPEC) and China National Offshore Oil Corporation (CNOOC) (Paik et al., 2007). Similarly, Indian companies such as ONGC Videsh Limited (OVL), Indian Oil Corporation (IOC) and Oil India Limited have invested in overseas energy projects in order to secure energy supplies in the long-term. The Indian and Chinese energy companies have gone global in their operations and both the countries are playing a significant role in the global energy geopolitics. They have become more active in Africa, Central Asia, and the Middle East, adding complexity to these energy access and energy strategic dynamics. In a number of instances, Indian companies have found themselves outbid by Chinese companies in the deal for foreign oil assets, thus leaving Indian diplomacy and strategy to ponder (Paik et al., 2007). Other countries are competing for the oil, but China has been able to secure significant investments in oil fields of other nations such as Angola, Kazakhstan, Sudan and Ecuador. This has aided in creating competition between India and China for energy resources and strategic presence.

The transport of energy by sea has also become a global phenomenon and has helped India and China to become energy powers. The straits of Malacca, of Hormuz and the South China Sea are the gateway to many of the oil and natural gas trades of the world. China is also more reliant on the Strait of Malacca for its energy supply, and the 'Malacca Dilemma' (Pourzitakis, 2017) is becoming more frequent with regard to Chinese 'strategic concerns'. China's leaders worry that if a geopolitical foe gets into a conflict or crisis, it could cut off China's energy supplies. Thus, China has been trying to seek out alternative modes of transportation that include pipelines, railways and port facilities under the Belt and Road Initiative (BRI). Likewise, India is aware of the importance of IOR in terms of energy security. Safety of the sea is an essential part of India's foreign policy as the majority of oil imports are made via the Indian Ocean. Indian Navy has thus been enhanced, Indo Pacific relations strengthened and regional relations consolidated. This

competition over influence in the Indian Ocean Region and its maritime neighbourhood has now emerged as a major component of the Indo-China geopolitical competition (Singh, 2005).

China's rise to an energy power is closely linked to its greater geopolitical ambitions. Belt & Road Initiative (BRI) is China's grand infrastructure and economic project for building economic corridors and infrastructure and geopolitical influence across Asia, Africa and Europe. Energy projects are an important component of the BRI and include pipelines, ports, power plants and transportation routes. These investments are part of China's strategy to ensure energy security, diversify supply lines, and gain greater strategic influence in vital areas (Meidan, 2023).

To neutralise China's growing presence in the region, India has enhanced its strategic and energy diplomacy. India's "Act East Policy", regional connectivity programmes and strategic ties with countries such as Japan, USA, Vietnam and Australia are proof of India's attempt to check the growing influence of China in the region. India has also enhanced its cooperation with the energy producing countries and diversification of energy sources for strategic autonomy and energy security (Chaudhury, 2018).

Even in the energy sector, India, China have shown some area of cooperation, though it may be hampered by strategic competition. There have been some joint ventures between both countries for oil and gas prospection in some countries such as Sudan, Iran, Syria and Colombia in the past (Kumaraswamy, 2007). Cooperation has also been seen in multilateral organisations such as BRICS and the Shanghai Cooperation Organisation (SCO), where both countries are collaborating in the areas of economic development, energy governance and regional stability. It demonstrates that there can be too many energy market competitors, which can lead to high acquisition costs and market volatility.

India and China have become energy powers with the advent of Renewable Energy. Both countries are among the global primary producers and users of renewable energy technologies like hydroelectric power, electric mobility systems, solar and wind energy. China is the biggest producer of solar panels and renewable energy equipments in the world and India has started ambitious programs to promote renewable energy like The National Solar Mission. Renewable energy is increasingly considered to be a key solution to increase the resilience of the energy sector to the dependence on fossil fuels, achieve environmental sustainability and ensure long-term energy security (Tabash et al., 2024).

Energy policies of India and China have also been affected by climate change and environmental issues. Important effects of the fast industrialisation and fossil fuel use have been carbon emissions and degradation. For this reason, both countries have been conducting sustainable development discussions as well as research and development on clean energy technologies on a global scale. While the overall competition between India and China exists, there is an area of cooperation in the renewable energy technology and climate governance.

To explain the emergence of India and China as new energy powers, theoretical frameworks of realism and liberalism are helpful. Realist scholars make a number of assumptions: States seek to gain power in an anarchic international system, to make themselves more secure, and to gain strategic advantage. Thus, the competition for energy between India and China becomes an integral part of a larger geopolitical and power game (Scott, 2008). They are viewed as trying to build up their nation's power and to survive through gaining access to foreign energy sources, ensuring safe sea lanes and creating strategic influence.

The liberals have focused, instead, on economic interdependence, globalization and international cooperation. Liberals argue that mutual interests and complicity in energy markets make a cooperative rather than a conflictual relationship between states desirable (Pant, 2007). Here, India and China are keen on co-operation in renewable energy, establishing joint ventures and via multilateral institutions, to guarantee uninterrupted supply of energy and sustainable development.

The implications of India and China becoming key players in the energy space in terms of energy governance and international politics are far reaching. As their consumption increases they can impact the world price of oil, international trade, investment and world climate negotiations.

There are policies in both countries with a large impact on the global sustainable energy transition and environmental protection. Moreover, the strategic relationships they have established shape the geopolitical dynamics of Asia and international order.

GROWTH OF ENERGY DEMAND IN ASIA

Considering energy consumption, the global energy demand has been significantly increased in the twenty first century due to the industrialization, urbanization, population growth and development of technology. India and China have emerged as significant consumers of energy in the world and their economic development targets have risen. So, energy now has a strong link with the economic development, the productivity of industry and the national security. Both countries play an important role in the energy geopolitics today. Rapid growth of energy demand in China during 2000-2024 was caused by the growth of industry and economy. During the same timeframe, China's energy consumption almost quadrupled and coal, oil and electricity continued to be the primary sources of energy in the country's energy mix (Meidan, 2025). The use of electricity was considerable and dependence on imported energy resources increased greatly with the development of industrialization, urbanization and infrastructure. Likewise, the economic liberalization, industrialization, transportation development and urbanization in India greatly increased the demand for crude oil, natural gas and electricity. India and China account for considerable portion of the global energy demand growth making Asia one of the significant energy politics epicenters. These countries grew more competitive with foreign oil and gas supplies, sea lanes and geopolitical power, as their energy needs increased. Both India and China had an interest in assuring energy supplies for continued economic development (Paik et al., 2007). As more and more oil and gas came into their hands, they became more and more reliant on imported fuel, making energy security an important strategic issue, while promoting foreign investment in resource-rich areas like Africa, Central Asia, Latin America and the Middle East.

CHINA'S EMERGENCE AS A GLOBAL ENERGY POWER

The development of China as an energy power is closely linked to the rapid industrialization and economic modernisation. China's energy production was not able to meet the growing industrial demand, thus imported energy resources became a crucial need. In 2004, China became the world's second largest consumer of oil after the USA, and imported oil was used for almost 46% of total consumption (Paik et al. 2007). The Chinese government promoted foreign investments by the National Oil Companies (NOCs) like CNPC, Sinopec and CNOOC to boost energy security. These firms were highly involved in oil and gas initiatives in Africa, Central Asia and the Middle East. From 1995 to 2006, Chinese NOCs spent billions of dollars on foreign projects in the upstream sector. (Paik et al., 2007) China also incorporated energy security into its foreign policy by building infrastructure, engaging in diplomatic relations and entering into longer-term contracts. The increasing reliance on imported oil led to concerns about the Strait of Malacca and the South China Sea. The fact that China had become more reliant on oil supplies from the Middle East and Africa led to worries about the vulnerability of its transportation system and the security of its sea-lanes (Paik et al., 2007). This concern was later to be called the "Malacca Dilemma." Meanwhile, China became a world leader in renewable energy and electrification. By early 2025, renewable energy capacity surpassed thermal coal and gas capacity by almost 50 per cent, with China accounting for almost half of global wind and solar capacity additions (Meidan, 2025). China emerged as a strong player in global energy markets due to its quick electrification pace, investment in EVs and renewable energy technologies. Alves (2011) also pointed out that economic diplomacy and investment strategies were key instruments deployed by China to gain access to energy resources in countries like Angola and Brazil, with the aim of ensuring long-term energy supply.

COMPETITION AND COOPERATION BETWEEN INDIA AND CHINA

Urbanisation and population growth in India, and rapid economic growth and industrialisation have also played a pivotal part in making India an important energy power. With the growth of industries and infrastructural development, the demand of energy has risen in the transport, production and urban sectors. Domestic energy resources, however, failed to meet the growing demand and the consequence is the need for imports of crude oil and natural gas. Indian National Oil Companies (INOCs) such as ONGC Videsh

Limited, Oil India Limited made more investments overseas to acquire energy assets. Indian NOCs got involved in different energy projects in other countries situated at the upstream phase (Paik et al., 2007). Competition also had a role to play in India's energy policy as the nation sought to gain control of strategic energy resources in other nations like Africa, Central Asia and Middle East, which China was also operating in. India also enhanced energy diplomacy policies and practices with strategic partnerships with the nations in the Gulf countries, Africa, the Central Asian countries and Southeast Asian countries. The involvement of renewable energy in India's energy policy also came into focus. Additional solar and wind electricity was added to decrease the need for imported fossil fuels and promote sustainable growth. The strategic importance of maritime security also gained significance in India due to its geographical position in the Indian Ocean Region where a major share of Indian energy imports transits through the Indian Ocean. The nation with the most people has the biggest population. The bigger the population, the bigger the nation. With the rise of India and China as significant energy players, competition for the supply of oil and gas resources overseas increased. Both were competing to gain control of strategic oil fields, pipeline construction and exploration rights. In big oil-producing regions where valuable oil resources may be available for foreign investment, Asian National Oil Companies are increasingly competing (Paik et al., 2007). Because of the financial backing of the state, Chinese companies often were able to gain the edge. It was a competition that was also strategic in the marine regions such as Indian Ocean & South China Sea. The role of pipeline projects and investment in Myanmar infrastructure in the strategic development in the region due to India and China's energy needs was discussed by Dimitri (2011). At times, even cooperation emerged in the arena of competition. Indian and Chinese companies have been involved in energy projects overseas, such as Sudan, Colombia and Syria (Paik et al., 2007). Energy security and sustainable development, among other themes, were discussed during the forums held under the auspices of the Shanghai Cooperation Organisation (SCO) and BRICS, which deepened cooperation. The two countries had the opportunity to discuss and collaborate in the field of renewable energy and climate change. The energy transition is gradually changing geopolitics around the globe, and is affecting the strategic relations between emerging powers, with India increasingly investing in clean energy, and China's huge push into renewable energy (Meidan, 2025).

CONCLUSION

The rise of the energy powers, India and China, is one of the most important developments in the twenty-first century global political economy. Both countries have become major consumers and importers of energy resources, due to rapid growth, industrialization, urbanization, technological advancement and increasing living standards. Consequently, policy makers have made energy security a key component of their national development and foreign policies. Both countries have embarked on comprehensive strategies, such as overseas investments in oil and gas, strategic energy diplomacy, diversifying supplies and safeguarding vital maritime trade routes for uninterrupted access to energy resources.

The study highlights that, while both countries are vying for access to energy resources, foreign investments and strategic influence in resource-rich areas like Africa, Central Asia, the Middle East and the Indo-Pacific, they are both looking at the need for cooperation to deal with challenges they face. They are also active at multilateral platforms like BRICS and the Shanghai Cooperation Organisation, which demonstrates the possibility of competition and cooperation contributing to regional stability, sustainable development and global governance of energy. Realism and liberalism provide useful theoretical frameworks to account for this duality in their energy policies, with strategic rivalry and economic interdependency and mutual interests.

Moreover, the increasing focus on renewable energy has added a new layer of energy strategy for both countries. Their investments in solar, wind, hydropower, electric mobility, and other renewable energy sources are a testament to their dedication to decarbonizing the global economy and taking measures to address climate change and secure long-term energy supply. India and China's policies and strategic decisions will increasingly have a pivotal role in defining future international energy markets, climate

governance, and geopolitical stability as the world's energy systems move towards sustainability. Therefore, they will continue to play an important role in the future of global energy security and sustainable development, not only for their economic development, but also for their continued evolution as energy powers.

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