ENERGY SECURITY IN INDO-US RELATIONS

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ABSTRACT

The growing economies of the globe strive for improved infrastructure and higher standards of living, and economic progress is also sustainable. Sustainable economic progress enables the market to increase its industrial production, job prospects, the income of the people, and the consumption of goods and services. Since the last two decades, the economy of India has seen a cheerful and very high GDP growth rate. However, developing further rapidly will require future investments in infrastructure and other sectors of the economy that are considerably larger. These demand an abundant energy supply. Unfortunately, India has an insufficient supply of energy assets. Imports from foreign countries meet more than 60 percent of the nation's energy needs. As challenges to the economy, the rising energy demand has many repercussions, including an increase in the import bill, a rise in the current account deficit, and a devaluation of the currency, among others.

Consequently, a country like India must create and support deliberate partnerships with energy-surplus economies, such as the USA and other nations. In exchange for the most important energy markets, energy-rich economies will be granted access. India and the US strive to enhance their bilateral trade and relations, focusing on energy cooperation. The current situation appears positive. This study attempts to comprehend the mutual trade and connection between India and the US, particularly emphasizing the energy industry. The focus of this paper is on how the US and India may build long-term synergy in the energy sector, given that India is a massive market with spectacular potential and the US has enormous resources in terms of energy and thus helpful in leading technology for solar energy, nuclear, and natural gas.

Keywords: *Indo-US Relations, Energy Collaboration, Energy Security, Clean Energy, LNG, Nuclear Power*

INTRODUCTION

India and United States have a long-standing and productive energy industry association. The two countries' technical, financial, and mutual energy collaboration grows stronger. The US includes India in the worldwide Clean Energy Ministerial platform. Since the earliest days of India-U.S. relations, energy diplomacy has been one of the relationship's most productive and enduring aspects. It began with nuclear energy cooperation and has since expanded to include renewable and non-renewable energy sources. In recent years, the India-US energy collaboration has garnered greater attention due to the US's efforts to position itself as a net energy supplier, particularly concerning oil of shale and additional non-renewable resources.

Following the Sino-Indian war of 1962, India's relationship with China is also strained. China adopted an expansionist strategy to strengthen its hegemony in the Indo-Pacific area, which posed a danger to the US and India. Moreover, being the transit point for India's and America's energy commerce, the region is vital for these countries. This became their mutual interest, uniting these two nations. However, they have always viewed India's energy security as a bright spot in their relationship and a catalyst for their Indo-Pacific interest. The 2018 joint statement on their energy relationship was a significant bilateral milestone under the Trump administration. This is because, unlike previous arrangements and dual statements, this covers a broader part of India-US energy collaboration, including renewable and non-renewable energy sources. The President Trump's recent trip to our country, the two leaders issued a joint statement confirming the continuation of the relationship. A suggestion for strong and extensive energy cooperation between both parties shortly was one of the primary features of the statement. As a result of India's temporary restriction on an unpolished oil contract with Iran, the US segment of global crude supply has climbed significantly from 1.9 million tonnes in 2017 to 5.1 million tonnes in 2019-2020.

It helps to strengthen mutual investments. The US has become India's primary supplier in terms of oil and gas. In the past four years, a total of USD 20 billion has been traded in energy. Our partnership is gaining a "fresh vision" concerning renewable and nuclear energy. Private parties play a vital role in India-U.S. energy relations. For instance, the choice of the Indian energy giant Petro net LNG to participate in the US company Tellurian INC's Gulf coast project has engendered high expectations for the relationship. Similarly, the recent agreements between ExxonMobil and US LNG corporations will enhance the collaboration between the two nations in the trade of LNG and other non-renewables.

India and the US are essential to establishing members of the Asia-Pacific Partnership on Clean Development and Climate (APPCDC), together with Japan, South Korea, China, and Australia. The current stay has had a significant influence on the APPCDC. They initiated to change the climate and clean advancement projects. These Asia-Pacific nations established the APPCDC in 2005. The initiatives are comprised of eight task groups, of which collaboration on renewable energy between these big Asian emitters is crucial. In subsequent years, APPCDC could not continue to play a significant role in achieving its objective.

Nonetheless, these actors' recent bilateral and international investments in renewable energy programs can significantly impact the Indo-Pacific area. In times such as these, the present visit of US President Trump to India is of greater significance. Energy cooperation is a potential avenue for India and the US to align their interests in the Indo-Pacific region, given India's enlarged focus on the section in recent years.

The US and India take a comprehensive strategy for energy security and admittance and their four key axes of collaboration:

1. Power and Energy Efficiency
2. Oil and Gas
3. Renewable Energy and
4. Sustainable Growth

STRENGTHENING ENERGY SAFETY

Memorandum of Understanding (MOU) to commence association to the process and conservation of Strategic Petroleum Reserves, including information and best performs exchange engaged these parties. They also addressed the potential for India to store lubricants in the US. Strategic Energy Reserve to upsurge their nation's oil reserves.

LEVERAGING REVOLUTION

The parties established a public-private Hydrogen Task Force to support in order to enhance the skills to manufacture hydrogen from renewable energy and fossil fuel sources and reduce deployment costs for greater energy security and resilience. A memorandum of understanding was also inked to cooperate on India's Solar Decathlon India in 2021, founding an academic race to teach an upcoming group of construction specialists to plan and construct high- efficiency buildings powered by renewables. Promoting bilateral investments in the private sector is yet another potential collaboration area. The parties will also study the possibility of working together to capitalize on the economic benefit of biowaste conversion to biogas.

MODERNIZING THE ELECTRICITY SYSTEM

Efforts are also being made to improve the operational flexibility of coal-fired power plants, which is necessary to accommodate the growing penetration of renewable energy sources and the fluctuating power demand while minimizing operating costs and failure risks.

INCREASING ENERGY PROFICIENCY AND SAVINGS

US and India have collaborated to improve the structure and utilization competence through improved building codes, the plan and procedure of intelligent structures of the forthcoming, smart meters and demand side comeback, and the retrofitting of constructions to develop building presentation, encourage energy preservation, and enhance the eminence of indoor air. Additionally, the parties have collaborated on developing a behavioral energy competence program and mechanical help for a strategy for disseminated energy assets.

INCREASING ENERGY INVESTMENT AND TRADE

The parties acknowledged the tremendous upsurge in mutual hydrocarbon trade since the founding of the SEP, with mutual hydrocarbon commerce reaching US$ 9.2 billion in 2019- 20, a 93% increase from 2017-18. They reaffirmed their commitment to pursue more bilateral hydrocarbon trade.

ADVANCING COMPREHENSIVE AND SUSTAINABLE ECONOMIC DEVELOPMENT

By implementing the best performance and methodology in energy statistics organization, dimensions constructed in energy modeling, and preferment of low carbon technology, the parties aim to improve long-term energy expansion and plans and strategies. Indian think tanks, policy scholars, non-governmental organizations, and government agencies would collaborate with DOE National Labs and corresponding US laboratories. The Government and corporate sector will facilitate the endeavor, as mentioned earlier. The India Energy Modelling Forum was developed jointly by USAID and NITI Aayog to establish a network of modeling professionals and their connection to the Government for systematic work and strategy formulation.

INCREASING WOMEN'S PARTICIPATION IN THE ENERGY INDUSTRY

Soon, the Strategic Energy Partnership teams will reconvene to establish action strategies for the various pillars of collaboration. The upcoming Ministerial conference will take place in 2021. India and the US are the most populous nations on the planet. However, India's economic condition differs from the other two nations. China and the US currently contribute approximately 12% and 8% to international commerce, respectively, while India needs to reach 2%.

There is a power shortage across all industries, which hinders the expansion of the industrial, infrastructure, and agriculture industries because of a deficiency of energy supplies. The Indian Government has recently prioritized strengthening regional ties with neighboring nations and other nations through various events and initiatives.

METHODOLOGY

This article examines the most recent energy security between India and the US. Energy-related discussions necessitate substantial inquiry as part of secondary data examination. Given their significance, the ministry of external affairs has documented energy sector trade relations, the ministry of commerce and finance, consulting firms, and federal banks.

Reports, research papers, working papers, news stories issued in significant publications, and Government and private organizations' websites have been used for reference purposes in this secondary research paper. The article analyses Indo-American ties, commerce, investment, and energy cooperation developments.

HISTORIC INDO-AMERICAN RELATIONS ADVANCEMENT AND COMMONALITY PROGRESSION AND CONSENSUS

India and the US share numerous similarities. Both countries are thriving democracies, defined by a federal system of governance and wide geographical variety. Both nations value advanced teaching and procedural expertise in their workforces. Each sees the other as an essential trading partner with a rising presence in the other's market. Over 1.6 million Indians reside in the US, making up the third-largest migrant population. US-based firms have produced innovative employment in India over the past period, while Indian firms have created over 60,000 new employments in the US over the past five years through $ 26.5 million in investment and acquisition deals (Scherr et al., 2011).

A PARADIGM SHIFT IN US-INDIA BILATERAL TRADE AND INVESTMENT

The Open Skies aviation agreement in 2005 increased the number of direct flights between US and Indian cities, facilitating trade and tourism between the two nations. Along with the strengthening of corporate relationships, political ties have also grown. (Weinberger, 2006) They declared their ability to produce and use such weapons. Inadvertently, this presented a chance to enhance US-India relations (Weinberger, 2006). Since 2003-04, India's exports and imports have shifted southwards, according to EXIM Bank. In 2003-04, the majority of India's imports (US $ 78 billion) came from Asia (34.8 percent), whereas in 2013-14, the majority of India's imports (US $ 450.1 billion) came from Asia (60.9 percent) (EXIM BANK, 2014). They perceived dropping real exports and imports, real exchange devaluation in these nations, decreasing real income in the US and decreasing actual salary throughout the current worldwide financial crisis and global depression (Hsing, 2010).

Thus, it is clear that commerce between India and the US continues to increase. Given all the facts and data, it is undeniable that Indo-American

ties will continue to have enormous potential in the following years.

ENERGY SECURITY AND INTERNATIONAL DIRECT INVESTMENT

India has the fourth position in energy consumption, following China, the US, and Russian Federation. 39% of India's primary energy consumption is accounted for by oil and gas. (Pillai, 2017). India and the US have signed an MOU to Enhance Energy Security, Energy Effectiveness, Clean Energy, and Climate Change as part of their collaboration in clean energy and climate change (Singh and Khanna, 2012). Initiating an energy-related strategic conversation between India and the US has paved the way for a tight working relationship. As there is a progressive shift from coal or crude oil to renewable energy, nuclear energy, and natural gas, this cooperation assists the Indian economy and Government in overcoming energy security concerns without significantly harming the environment.

ENERGY DISCUSSION: PAST COOPERATION AND NEW OPPORTUNITIES

The US and India have been involved in a discourse at the highest level to encourage amplified employment and investment in the energy industry since 2005. Discussion includes five working groups: oil & gas, coal, energy & energy proficiency, new machinery & renewable energy, and civil nuclear collaboration. A new sustainability-focused working group has been recognized since its inception.

LNG

India will request a special exemption to import LNG from the US. However, it is unclear why the Indian Government believes there are significant impediments to buying LNG at this time other than a laborious regulatory process. These terminals' completion and export readiness is anticipated by late 2016 or early 2017. Despite the openness of the market, there is a belief that the US has an overly onerous licensing process and that India would profit from increased US export capacities since they would be less expensive than imports from other countries. The exact opposite is true. Only market forces will dictate the flow of LNG.

SOLAR ENERGY

It indicates that thermal power accounts for 68.07 percent of the total, while nuclear power accounts for 2.10 percent, hydropower accounts for 17.43 percent, and renewable energy sources account for the remaining 12.40 percent (Acharjee, 2013). India's solar energy potential is tremendous. The majority of India's landmass receives between 4 and 7 kWh per square meter daily and receives almost 5,000 trillion kWh of solar energy annually. (Pillai, 2017). In the coming years, these grants will encourage the implementation of solar energy projects. Europe accounted for 67 percent of global solar power usage, shadowed by Asia (23.9%) and North America (2%). Solar energy accounted for 0.5 percent of world electricity production (Mohan, 2014). According to a Bloomberg New Energy Finance survey, China has invested the most in renewable energy and low-carbon technology, with USD 613 billion. This is contrasted to the US, with USD 49.1 billion, and India, with USD 7.4 billion (Luthra, 2014). The declining cost of solar photovoltaic (PV) panels from the US has overlapped with the rising price of grid electricity in India. The acceptance of solar energy consumption is aided by government backing and abundant solar resources, and things may improve soon. Taking into account the solar energy vision, solar energy in India has a tremendous amount of potential. The US may assist India in the solar energy arena through the transfer of technology, the export of equipment at competitive costs, and cooperation in exchanging knowledge with Indian businesses.

STRATEGIC RESERVES

India has considered establishing strategic reserves for some time now. The caverns have been excavated, but they still need to be filled. With oil prices projected to fall more soon, now is the moment for Delhi to expedite accumulating assets. The US has many years of experience maintaining strategic crude oil reserves, and India may find this experience helpful. However, membership would require India to replenish its reserves and theoretically share them with other IEA nations in the event of a supply shortage.

NUCLEAR POWER

India now operates 20 nuclear reactors in six nuclear power facilities, and the building of other apparatuses is underway, which may result in roughly 6000 MW of energy soon. Since the early 1990s, India's close ally Russia has been supplying Uranium, and in recent years, India has also secured Uranium supply agreements with Mongolia, Argentina, Kazakhstan, and Namibia. India has inked trade agreements for civil nuclear technology with several nations, including France, South Korea, the US, the United Kingdom, and Canada, to become more stable in the nuclear energy sector.

Numerous policy and industrial leaders have noted India's climate and environmental issues, as it is the third-largest carbon dioxide emitter in the entire globe (NBR, 2014). The Indo-US nuclear pact, also referred to as the 123 deal, was signed on October 11, 2008. Under the terms of this agreement, India and the US will collaborate in the "use of nuclear energy for peaceful purposes" (Bhaskar, 2013). In addition to this encouraging the Nuclear Suppliers Group (NSG) countries to make Uranium accessible to India, the US pledged under the 123 Agreement to aid India in satisfying its uranium needs for peaceful purposes (Bhaskar, 2013).

The US and India have announced a new extensive off-grid clean energy program to supply clean energy to India and assist it in deploying "advanced space cooling technology." The project is a component of the Obama administration's endeavor to involve major economies in weather variation discussions. The partnership with India aims to provide clean energy to individuals underserved by the power network and assist India in deploying innovative space cooling technology (Kapoor et al., 2014).

CARBON CAPTURE, UTILIZATION, AND SEQUESTRATION (CCUS)

India and US are interested in advancing CCUS technology to combat the air quality issues caused by the widespread use of fossil fuels. Even though natural gas has become a more cost- effective fuel for generating power in the US in recent years, coal will likely remain the dominating fuel through 2035. Coal usage will continue to increase in India since it is readily available locally (though India also imports coal), is an inexpensive resource, and a large portion of India's existing electrical cohort capacity is dependent on coal. In light of these facts, both nations must speed up research and development (R&D) into CCUS technology to demonstrate its technological and commercial viability and prevent further air quality degradation.

CLEAN ENERGY

The initiative's expansion could benefit both countries, as India's Green Energy Mission has prioritized solar and wind energy development. The problem will be choosing the right technology and clearly defining the degree of support that the Government should provide, as well as the incentives that may be put in place to expand the Government's engagement. The US has vast experience in the financing of projects in green energy, which it might share with the Indian Government and Indian companies. In addition, it is crucial to determine the multiple incentives that may be required to achieve the stated goals of the overall Green Energy Mission, such as the level of investment in new engines, intelligent and efficient infrastructure, battery storage, and the development of innovative supporting schemes.

NATURAL GAS

Shale gas is natural gas surrounded by shale strata. It consists of fine-grained sedimentary rocks and a significant oil and natural gas source. Over the previous era, the grouping of parallel drilling and hydraulic fracturing has enabled the extraction of hitherto uneconomical volumes of shale gas. Extracting natural gas from shale formations has strengthened US natural gas

industry (US Energy Information Administration, 2012). In addition, the US has a plethora of regulatory knowledge at the state level that may be shared with India (Yaliwal et al., 2014). As the leading natural gas producer, the US imports very little. The availability of substantial volumes of shale gas significantly increased the US' domestic production, which it can then export to India.

The private sector giant Reliance spent $7.36 billion on three shale gas projects in the US in 2010. Two of these properties are located in the Eastern US in the Marcellus Shale formation, while the third is in Texas in the Eagle Ford formation. Also, in Eagle Ford, the public sector giant GAIL (India) Limited invested $95 million on a smaller project (Eurasia Overview, 2014). Qatar is India's foremost supplier of liquefied natural gas (LNG), followed by Australia, Trinidad and Tobago, and Russia. As usual, India pays as much as $19/MMBtu for imported LNG, which varies from $15 to $17/MMBtu (Singh and Khanna, 2012). As the share of Liquefied Natural Gas (LNG) in India's overall energy mix rises, prices can cause a significant spike in the cost of power and fuel inflation across the economy (Singh and Khanna, 2012).

The US can progress the association by repaying to prior open policies towards Indian services trade and labor mobility. At the same time, India may reduce some trade and regulatory barriers to US agricultural and pharmaceuticals. In exchange for India liberalizing its chicken imports, it would be a significant first step for the US to relax its shale gas exports so that India can contest pretty to be a receiver (Joshi et al., 2013).

UPCOMING RESEARCH PROSPECTS

Global trade and relationships are unique areas of study that will continue for years to come. This study attempts to comprehend the relationship between India and the US in terms of cooperation, focusing on energy assistance. These novel findings can be investigated by relating these two nations to third or fourth nations, such as Japan and China. India, the US, and China can be discussed in the first triangle, whereas India, the US, and Japan can be addressed in the second triangle.

The US and China are vying for access to the Indian economy, and Japan is the top buyer of natural gas. In other words, if the US wishes to increase solar and nuclear technology shipments to India, trade relations between India and China may also suffer. If the US exports more natural gas to Japan, India may need to obtain an adequate quantity of natural gas as predicted. Therefore, Indo-American relations are contingent upon both U.S.-Japan and India-China relations. Consequently, a study has enough chance to investigate the trade links between all five nations, including India, the US, China, and Japan.

CONCLUSION

At this point, the India-US relationship is of the utmost importance, particularly for India. The US, the most industrialized economy in the world, seeks a market. In contrast, India seeks a strategic partnership with a nation that can assist it in achieving long-term energy independence. India can assist the US as a prospective marketplace, and the US can assist India by outspreading the number of energy resources; this is a win-win situation for both nations.

Multiple rounds of the India-U.S. energy discussion have created significant prospects for trade and investment. GAIL, an Indian business, has been approved to export LNG from the Sabine Pass terminal in the US to India; the exports are expected to begin in 2015. The conversations have also

addressed the influence of US LNG imports on India's near-term economic growth prospects. The trade potential between them will increase dramatically in the coming years. Regardless of geopolitical conflicts and difficulties, it is crucial to retain the friendship.

The US and India should enable each other's participation in regional trade talks. In light of the recent improvement in bilateral ties between India and the US, the entire conversation on Indo-American relations has been fascinating. The recently concluded strategic energy conversation between India and the US in August 2014 in New Delhi demonstrated their determination to advance energy cooperation to new heights. As researchers, we predict that the trade between India and the US will increase significantly in the following years. It is essential to sustain the friendship regardless of geopolitical crises and difficulties. The energy collaboration between the US and India will cut greenhouse gas emissions by shifting India's Reliance from conventional to unconventional energy sources. In exchange, the US can export abundant energy-related apparatus and know-how to India to expand its market share.

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