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Self-Reliant India through Energy Diplomacy

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Received-16.09.2023, Revised-23.09.2023, Accepted-29.09.2023 E-mail: shwetaat2910@gmail.com

Abstract: *Emerging India is still heavily dependent on foreign energy resources to meet out its requirement. That is why it has to spend too much on energy related imports. To meet this challenge and redress the internal needs, India's foreign policy gives focus on making good relationship and entering into bilateral and multilateral agreements with the countries having ample energy resources. India has to move forward for carbon-free growth and diversify its energy resources for sustainable development. In this regard the use of renewable energy is essential and at the same time India has to develop its capacities in the concerned field. The relationship between India's economic success and its reliable energy resources is correctly highlighted by the Integrated Energy Policy. Energy security is the need of the day. It is relevant in supporting Indian national interests. Energy diplomacy has become an important aspect of India's global policy. In this paper, we explore India's energy diplomacy in terms of the utilisation and availability of alternate renewable energy resources.*

Key Words: heavily dependent, foreign energy, requirement, internal needs, relationship, bilateral, multilateral.

Energy is at forefront of all international business operation and geopolitical discussions. The concept of "energy security" evolved in the 1970s. It is defined as, "Uninterrupted access to energy at an affordable price". The connotation of energy security has widened beyond oil with changes in the world's energy structure and emerging concerns about energy security. Energy security is one among the main issues that Indian economy and the global economy are currently confronting due to a number of variables. To meet the requirement of population, India is giving focus on economic development which can be sustained by energy reserves. The primary aspect of India's energy diplomacy is reaching out to its immediate neighbours through bilateral and regional mechanisms. "SAARC energy agreement on electricity corporations" has paved the way in this regard. SAARC countries could have fruitful dialogue through this forum for their energy stock. The second aspect is renewing older relationships. India is strengthening its relationship with countries like France, Canada and Central Asian countries so as to enrich our energy resources. For nuclear energy India has got assurance and assistance from Canada and France for the supply of Uranium and construction of nuclear reactors respectively. Alternative sources of energy like Solar energy and the like are being considered necessary for energy self-reliance and development. In this regard India and France are cooperating at large scale. The third aspect is to develop new relationships with willing partners. In addition to expanding and diversifying India's energy base, this strategy will help it grow economically.

Earlier India heavily relied on Gulf countries for crude oil. Because of turmoil in that region in 1990, India decided to seek and aspire for other alternatives so as to protect its energy requirements. India has started taking some important initiatives through diplomatic channels to safeguard the concerned interest. Though India has taken so many steps to boost its energy resources, still India has to go a long way to meet the challenges ahead.

- India's import bill for fossil fuels has to be contained and a regular feature to decrease it, is essential. India is looking forward to increase import from Russia and Iran at an affordable price.
- Accessibility challenge: - At present a certain percentage of Indian population, though it is not very much, do not have sufficient access to traditional energy for daily use as electricity and cooking gas.
- Insufficient transportation facility and supply line: - India has to do a lot in this regard to construct all weather roads and supply pipelines for gas and other energy essentials. It will be always helpful for industrial development and cater energy resources, conventional and unconventional throughout the country.

• External challenges :-

- a) The rising dependence on imported oil, regulatory uncertainty, international monopolies and opaque pricing policies of natural gas are all putting severe pressure on India's fragile energy security.
- b) A multifaceted approach is taken by India to achieve energy security e.g. Indo-USA nuclear agreement, East oil imports, etc.
- c) India has to deal strictly with China's grand design of her Belt and Road Initiative, as it is against India's national interest.
- d) Inability regarding establishing an assured supply of natural gas through the "ITI" (Iran - Pakistan - India) and



“TAPI” (Turkmenistan, Afghanistan, Pakistan, and India) gas pipelines.

An accelerating economy depends on energy supplies that are reliable, efficient and competitively priced. As part of the overall economic strategy of any developing country, energy development plays a critical role. As energy security concerns increase, environmental regulations become more stringent, natural gas emergence occurs, as well as soaring crude oil and natural gas prices, Indian oil and gas companies face both challenges and opportunities. As energy security concerns increase, environmental regulations become more stringent, natural gas emergence occurs, as well as soaring crude oil and natural gas prices, Indian oil and gas companies face both challenges and opportunities. In terms of refining capacity, India has 18 refineries, placing it among countries that export petroleum products. With its New Exploration Licensing Policy (NELP), India is giving importance to its domestic exploration to deal with the emerging crisis.

Blocks offered under the NELP regime have recently yielded some world-class discoveries.[1] To enhance energy security, India has also entered into long-term LNG contracts and acquired oil and gas assets overseas. In the next few decades, the petroleum industry will need to develop cross-country pipelines to carry crude oil and petroleum products, while protecting human health and safety at the same time. Considering the high oil prices and the dependency on imported oil, India is left with some tough choices. Natural gas in India has progressed and reached a certain degree of maturity with the advent of LNG and progressive deregulation of gas prices. In the last five years, it has steadily gained global attention and made rapid progress. The current policies governing natural gas have created numerous challenges for the industry. Consumer demand is one of the most important factors, as well as ensuring open access and competition in pipeline transportation and distribution networks, thereby reducing the supply-demand gap.

Indian energy reforms have been challenging since 1991 when economic reforms signalled the end of a highly regulated, socialist economic system. Several reasons have contributed to the difficulty of completing the designed project. Central government has command over underground and surface energy resources. This sometimes creates issues between centre and state so far as its exploration and distribution is concerned. Additionally, there are strong populist traditions that have led to chronic underinvestment in power infrastructure and technology due to fuel subsidies and energy price controls. It has been apparent that policies are determined by influence-peddling even when there has been considerable Indian private sector involvement, particularly in natural gas.

Indian energy policy is overwhelmed by domestic policy issues in a way that cannot be underestimated. India's political stability and dynamic and assertive foreign policy always stand with the time to deal with any sort of energy issue which arises hither and thither throughout the globe. The Indian government's external energy policy has thus been focused on peripheral or transient issues. It has been difficult to move forward with energy diplomacy because domestic political considerations tend to trump them.

As a new normative player in the renewable energy, India is making its mark on worldwide front. To ensure energy security, Prime Minister Modi has committed to building 175 GW of renewable capacity by 2022 and no matter what happens around the world, India will continue to fight global warming unrelentingly. In 2018, the UN Secretary-General awarded Prime Minister Modi with the “Champion of Earth” title, which contributes to India's growing conventional leadership role in this new energy regime that translates into geopolitics as it enhances India's international image.[2]

The goals of sustainable development can only be achieved through the use of mainly alternative energy resources with available energy resources and by ensuring that citizens have access to reliable, affordable, sustainable, and modern energy sources. In India, deploying renewable energy is aimed at advancing economic development, improving energy security, improving access to energy, and mitigating climate change. India believes in the policy of peaceful coexistence, cooperation and coordination for rapid development in healthy atmosphere. So far as unconventional energy sector is concerned, India is fast marching ahead to become leading power in the world through its energy diplomacy. Only then we can have eco-friendly and “health protective energy” to fulfil the domestic requirements. At the same time we will be capable enough to provide our expertise and additional stock of energy for the countries in need.

Energy policy- Challenges to meet the increasing demand include India's reliance on imported energy resources and the inconsistent restructuring of the energy industry. Between 2017 and 2040, India's energy consumption was expected to increase by 156%, according to the 2019 edition of BP's Energy Outlook. Fossil fuels will only make up 79% of demand in 2040, down from 92% in 2017, according to the forecast, as the nation's energy balance gradually changes through that time. In actuality, there will be a 120% rise in primary energy demand from fossil fuels between 2017 and 2040. Although India was on track to reach 100% household electricity connection early in 2019, there is a pressing need for more dependable power



supplies. In July 2021, the Power System Operation Corporation reported that the peak demand was 201 GW. The Ministry of Power estimates that nuclear power accounted for 6.78 GW (1.7%) of the total installed capacity at the end of November 2021, which was 392 GW. The 12th five-year plan of the government, covering the years 2012 to 2017, set a \$247 billion goal for the addition of 94 GW over that time. In order to accommodate 7-9% GDP growth by 2032, the plan aimed for 700 GW of added capacity overall, 63 GW of it nuclear. India would require about \$1.6 trillion in investments in power generation, transmission, and distribution by 2035, according to the International Energy Agency of the OECD (Organisation for Economic Co-operation and Development). In March 2018, the government stated that nuclear capacity would fall well short of its 63 GW target and that the total nuclear capacity is likely to be about 22.5 GW by the year 2031[3]. The nation's atomic energy minister reiterated this amended goal in December 2021.

The five power grids in India are the Northern, Eastern, North-Eastern, Southern, and Western. With the exception of the Southern grid, they are all connected to some degree. India has improved the capacity and efficiency of its transmission system since around 2010 in order to lower technical losses when delivering power to load centres. The National Load Dispatch Centre started managing regional load dispatch centres, scheduling and distributing electricity, and keeping an eye on how the national grid was functioning in 2009. The five regional grids of the nation were connected by the end of 2013 to operate synchronously and more effectively. In addition, since 2002, India has more than doubled the length and capacity of high-voltage, direct-current (HVDC) lines, which suffer from fewer long-distance losses than AC lines.

India's top priorities are economic growth and poverty alleviation. Because of how important coal is, reducing CO₂ emissions is not a top priority, and the government declined to declare goals before the 2015 Paris Climate Conference, the 21st Conference of the Parties on Climate Change. In September 2014, the environment minister stated that it will take 30 years for India to see a reduction in CO₂ emissions.

Energy is the engine for economic growth and when the country moves ahead on the growth path, it is necessary to exploit every energy resource available in the country.[4] Energy is significant for human development and the demand for energy is rising parallel to the human population, urbanisation and modernisation. Currently, the planet is still dependent on fossil fuels to be able to supply the amount of consumed energy across the world. Economies are dependent on energy, which is why energy security is such an important issue.[5] The concept of energy security refers to the availability of sufficient energy in various forms at reasonable costs. These conditions must prevail over the long-term if energy is to contribute to sustainable development.[6]

India is now dependent on fuel imports and is one of the world's top energy consumers. Coal makes about 60% of India's energy mix, with oil and locally produced natural gas following at 30% and 10%, respectively. Nuclear energy makes up for only about 3% and renewable energies about 10%.[7] There is a huge gap between energy demand and energy supply in India, due to its rapidly growing economy. Nevertheless, the government plans to maintain this growth of 8% annually, which implies that demand for electricity will grow 7.4% annually.[8] Consequently, India needs more and more reliable power supplies, since one third of its people do not have access to the country's five electricity grids. The power grids are operated by the state-owned Power Grid Corporation of India Ltd (PGCI). In July 2012, the grid in the North of the country failed and left 600 million people in 22 states without power for approximately 24 hours.[9]

Energy shortage in India may continue during the upcoming years. Nevertheless, India as an emerging economic power will need to find a middle path between economic development and environmental sustainability. Rather than utilizing traditional sources of energy, India has to rely on cleaner and sustainable sources of energy. Atomic energy is considered by many as being the only source of energy suitable to support continuous industrialisation and urbanisation. It provides only 3% of India's total electricity requirement. After the Indo-US Nuclear Deal, it is likely to gain importance and could reduce India's dependence on fossil fuels.[10] However, this is only possible if nuclear power can provide 25% of the total energy requirements. The Department of Atomic Energy therefore set up a program based on a mix of Pressurised Heavy Water Reactors (PHWRs), Light Water Reactors (LWRs) and Fast Breeder Reactors (FBRs).[11]

Mapping India's energy system- Coal, oil and biomass meet the maximum of India's energy demands. Since 1990 a combination of these resources has reliably supplied more than 80% of India's overall energy consumption. In addition to maintaining its leading position in the production of electricity, coal has increased its position as the primary energy source, becoming the fuel of choice for many different industries (especially heavy industries such as iron and steel). Between 2000 and 2019, the demand for coal nearly tripled, covering up half of the increase in primary energy consumption. In India, coal now provides 44% of the country's basic energy needs, up from 33% in 2000. While also contributing to air pollution and



rising GHG emissions, coal has been crucial to India's economic growth. In India, traditional biomass, which mainly consists of fuelwood but also includes animal waste and charcoal, was the second-largest energy resource after coal in 2000, accounting for roughly one-fourth of the primary IEA.

India's Oil Diplomacy- India's economic diplomacy has been influenced by oil diplomacy. The three periods of India's oil diplomacy are:

- (1) from independence to the 1960s;
- (2) from the 1960s to the end of the Cold War; and
- (3) from 1991 to the present.

Particularly in the 2000s, India looked for alternative foreign sources of oil and gas during the third phase. The oil crisis has dominated India's foreign policy in the twenty-first century. India initiated high-level diplomatic efforts in relation to foreign oil. Since 1991, India's energy security has been a major concern. The resources of India's oil supplies have shifted since the 1990s. India's government and oil companies sought to acquire foreign oilfields to increase commercial purchases on the global market. In the middle and late 1990s, these resources increased India's yearly oil production by 3 to 5 million tonnes.

India is now dealing with energy insecurity. The three primary energy resources of India are coal, oil, and gas, with just 50% of that energy coming from domestic petroleum reserves. We have validated Reliance Industries' discovery of gas in the (Krishna Godavari) KG basin D-6 almost seven years ago. Even the private sector has not made any fresh discoveries since then. The future appears uncertain if we do not invest the significant resources needed for research and development to address the unique geographic issues that only India faces in terms of oil and gas exploration and production.

Ways to Strengthen the Oil Diplomacy- With 1.2 billion people, India has the second-largest population in the world and is the seventh-largest country in terms of geographic landmass. The nation is one of the ten largest economies when GDP is taken into account. Furthermore, despite the 2008 financial crisis, the nation has had economic growth of about 7% year since 2000. Traditional and non-traditional energy resources are plentiful in the nation, but they are not enough to meet the country's expanding demands. Therefore, it has to import from Middle Eastern countries to satisfy its domestic needs of natural gas and crude oil. Now a days Russia has come forward to provide crude oil at an affordable price.

So, in an effort to ensure the best pricing and energy security, the nation has signed a number of short- and long-term contracts at the level of the government and, to a lesser extent, through private enterprises. India will exert the second-largest pressure on the world's energy resources by 2025, after China. The nation is attempting to address this in two ways: by boosting its nuclear power capacity, which is expected to increase from its current level of 4.2% of total energy capacity to 9% in the next 25 years. India currently has five nuclear reactors and plans to build another 18 by 2025. If this is done, the nation will have the most powerful nuclear reactors in the entire globe. Over 56% of rural homes in India lack access to electricity, which highlights the severity of the country's energy needs.

Large amounts of crude oil from various parts of the world have been imported by India. The following percentages of crude oil were imported by India from various sources in 2012: Saudi Arabia (almost 19%), Africa (18%), the Western Hemisphere (18%), Iraq (13%), Kuwait (10%), the United Arab Emirates (9%), Iran (6%), the Other Middle East (6%) and others (4%).

Nuclear energy- Nuclear power is an efficient method of boiling water to generate steam, which is then used to turn turbines, which generate electricity. Nuclear energy is regarded as advantageous in comparison to other renewable energy resources due to its lower environmental impact and waste production. In comparison to wind farms and solar photovoltaic facilities, nuclear energy needs 360 and 75 times less land, respectively. An inch-tall Uranium pallet, which is used to measure the energy density of nuclear fuel, is equal to 17,000 cubic feet of natural gas and 120 gallons of oil.

India's Nuclear Energy Program- While reflective of the aspirations and beliefs of her leaders, India's domestic and foreign policy concerning nuclear weapons came to be based upon a paradox centred on the concurrent 'pursuit of independence and a commitment to peace'. [12] On one hand, acquiring nuclear technology may help the nation reduce its energy needs, support economic growth, and offer (via nuclear weapons) an effective deterrence against the bad intents of its neighbours and others. The leaders of India, on the other hand, remained steadfastly in favour of nuclear disarmament, claiming that the presence of any nuclear weapons endangered both global and domestic security.

The primary goal of India's nuclear energy programme was the peaceful use and development of atomic energy. India sought to create a low-cost, effective power source while also using nuclear energy for a variety of other fields of study,



including the fundamental sciences, astronomy, astrophysics, cancer research, and education. The ambitious three-stage power generation programme of India's nuclear programme was designed to be a closed fuel cycle programme in which each step feeds into the next. In order to put this into perspective, the used nuclear fuel from the first stage of the nuclear fuel cycle still has 96% of the material that can be used again. This material is used once again in the second stage, and the spent fuel from the second stage is reused for the third stage. This establishes a closed chain in which the fuel is reused and recycled to maximise efficiency.

In 2013, with more than 22 nuclear reactors in 7 nuclear power facilities, the nation was able to successfully complete the first stage of its nuclear energy programme. The country generates 6780 MW of nuclear energy. 650 million tonnes of CO₂ emissions have been avoided and 755 billion units of electricity have already been produced in the nation.

Government Initiatives to assist the nuclear energy boom- The second phase of India's ambitious nuclear programme is in underway. By 2024, the nation hopes to have built 12 additional nuclear power plants. By doing this, the price will be further decreased from Rs.4 (US\$ 0.05) per unit to Rs.3 (US\$ 0.03). The country's nuclear goals will advance thanks to this decrease in prices. By 2024, the nation will have its first-ever northern reactor. Nine nuclear reactors that will provide 6700 MW of additional nuclear power are already under construction in the nation. The nation has also sanctioned and approved the construction of 12 more reactors with a combined capacity of 9000 MW. The government allocated Rs.10,000 crore (\$1.31 billion) to the Department of Atomic Energy in 2019 and proposed to boost the budget by Rs.10,000 crore (\$1.31 billion) year for the following ten years. The largest nuclear power plant in the nation will be built in Jaitapur, Maharashtra. This power facility will generate 9900 MW of energy and will be the world's most powerful nuclear power plant, creating thousands of jobs. Together with the French government, this project will be undertaken. In recent years, the government has taken several steps to increase nuclear power plant output.

- Allowing public-sector companies to form nuclear power plant joint ventures under the Atomic Energy Act.
- The establishment of an Indian Nuclear Insurance Pool (INIP) and resolution of issues related to Civil Liability for Nuclear Damage (CLND) Act.

Future of Nuclear energy in India- In contrast to wind and solar energy, which are not accessible continuously, India's nuclear power might offer a dependable solution to the country's energy needs. This could also result in a decrease in India's contribution to the world's Green House Gases (GHG), which was 6.5% and was primarily made up of the energy sector. By 2031, India's 6,790 MW nuclear power capacity is anticipated to reach 22,480 MW. As a result, the nation will be better able to use other clean energy sources and reach its zero energy goals.

Other Non-Conventional Forms of Energy- The idea of increasing power output through non-traditional and renewable energy sources as a substitute to fossil fuels has long been welcomed by the Indian government. In India, coal currently provides 78% of the country's electricity, with hydropower and other renewable sources providing 13%. The balance is provided by nuclear, natural gas, and oil power generation.

Hydro-electric power- More than half of the estimated rise in hydroelectric and other renewable energy use between 1995 and 2020 is expected to occur in developing countries, where large-scale hydropower projects enhance the level of renewable energy consumption. This has led to the planning of numerous large-scale projects in China and India.

Similar to China, India is concentrating on large-scale hydroelectric projects to help the nation's electricity shortage. In order to improve the country's energy mix, the government started a strategy of encouraging the growth of hydropower and wants to implement tariff subsidies to augment its development. As a result, it is not surprising that the government has approved plans to create 12 massive projects by 2002, increasing the existing hydro-electric capacity by 3.7 GW above what is now existent. It is estimated that new statesector projects will contribute 5.81 GW of extra hydropower, and private sector initiatives will add 350 MW. Despite India's wealth of rivers, large-scale hydroelectric projects are prohibited because of the political and environmental challenges they generate, as the current discussion surrounding the Sardar Sarovar project has shown. Thus, small-scale hydroelectric plants with a maximum 3 MW capacity could serve as a replacement and encourage growth in remote rural areas, especially in the hilly regions of the north-east. In the region around the Brahmaputra river, for instance, only 306 MW of the 30,000–40,000 MW potential have been used thus far.

The Ministry of Non-Conventional Energy Resources is promoting smallscale mini- and micro-hydel projects with a maximum capacity of 3 MW in order to develop remote rural areas. These projects, which might be carried out in 25 states and island territories, could produce about 2,040 MW of generating capacity.

Wind Energy- It might be claimed that using unconventional energy options other than nuclear energy to supplement



India's energy needs would be safer and more environmentally friendly.

According to the International Energy Agency (IEA), wind energy has been the fastest-growing renewable energy source for four years in a row, therefore it would seem logical if more money were set aside for the growth of this industry. Improvements in technology and favourable government policies drove the installation of 2,100 MW of new wind power generating capacity globally in 1998. In an effort to address environmental concerns, several nations have guaranteed a fixed price for wind-generated electricity. The price of the technology varies greatly, yet occasionally it is approaching the cost of conventional energy sources. Wind turbine prices fell by a factor of three between 1981 and 1991, while the cost of energy provided by turbines has been cut in half during the last decade as a result of reduced turbine prices, improved efficiencies, and cheaper operating and maintenance expenses. Overall, five nations— Germany, the US, Denmark, India, and Spain— account for more than 80% of the installed capacity in the world. India is the second-largest producer of wind energy, but meteorologically speaking, it lacks significant wind resources. Nevertheless, wind energy can be produced at a reasonable cost in some regions particularly in coastal areas. Although 3,000 wind-powered pumps have been installed, and recent wind farms have generated 71 MW of electricity, wind power projects in India have generally performed poorly. This is largely because some areas' wind resources were overestimated, the projects' design and operation were subpar, and there were issues with the utility grid. 10 As a result, it will take years for wind energy to become a financially viable alternative source of energy in India, even if it might be a safe and effective substitute for hydrocarbons.

Solar Energy- Solar power is another energy source with enormous promise in India. The high price of PV cells, which are used to convert solar energy into electricity, means that there is still a long way to go before solar and other renewable energies are fully integrated into the Indian economy. The installation of 700 PV pumps, 26,000 PV home lighting units, 800 PV-based TV and community units, and 30,000 PV-powered street lights by succeeding governments, which collectively produce about 530 KW, is a start, but much more work needs to be done to deploy PVs on a broad scale. Making solar thermal appliances widely accessible to households makes sense because many bulk energy uses (like heating and cooking) only require a low-grade energy source. But the installation of solar water heating devices appears to have slowed down, and though major savings can be achieved through the use of solar passive systems for heating and cooling buildings, apart from the few isolated architectural experiments, not much has been achieved in this area. [13]

Solar power revolution- In India, solar energy is expected to increase rapidly and would eventually surpass coal's proportion of the country's power generating mix, according to the STEPS scenario, or even sooner under the Sustainable Development Scenario. Currently, coal generates close to 70% of India's electricity, while solar produces less than 4%. In the STEPS, they converge in the low 30% range by 2040, and in some scenarios, the transition occurs even faster.[14] India's governmental aspirations, including the goal to reach 450 GW of renewable capacity by 2030, and the unprecedented cost-competitiveness of solar, which outperforms existing coal-fired IEA, are the driving forces for this dramatic turnaround. All rights are reserved. In conclusion even when combined with battery storage, 13 power by 2030. Utility-scale renewable energy projects are growing in popularity thanks to certain creative regulatory strategies that support combining solar energy with other production technologies and storage to provide "round-the-clock" supply.

Maintaining the momentum behind investments in renewables also requires addressing risks related to land acquisition, delayed payments to generators, and regulatory and contract uncertainties. The potential for solar energy to meet India's energy needs, particularly for other applications like rooftop solar panels, solar thermal heating, and water pumps, is not at anyway close to being exhausted by the forecasts in the STEPS.

India faces energy security hazards ahead- Oil is by far the greatest component of India's overall import cost for fossil fuels for the following two decades, which indicates that India's energy security will continue to be at danger. By 2040, net dependency on imported oil will have increased to 90% from the current 75% level as domestic production of oil and gas continues to lag behind consumption trends. This continuous reliance on imported fuels leaves the country vulnerable to price cycles, volatility, and potential supply interruptions. If the required flexibility in power system operation does not materialise, energy security risks could also exist in India's domestic market, particularly in the electrical sector. The weak financial standing of many electrical distribution businesses poses an additional systemic risk to the consistency of the electricity supply. The key to overhauling this industry is increasing the cost-reflectiveness of tariffs, the effectiveness of invoicing and collection, and lowering technical and commercial losses.

Covid19 Pandemic effect on Indian Economy- India has made remarkable strides in its recent energy development, but there are still numerous obstacles to overcome, and the Covid-19 outbreak has caused significant disruption. In recent



years, India has helped link hundreds of millions of its residents to electricity, encouraged the use of highly-efficient LED lighting by the majority of families, and sparked a significant increase in renewable energy sources, led by solar power. There has been noticeable improvement in the standard of living for Indian citizens. The Covid-19 crisis, on the other hand, has hindered efforts to address other important issues.

India's energy demand was anticipated to rise by approximately 50% between 2019 and 2030 prior to the worldwide pandemic, but the growth projections for this time period are now closer to 35% in the Stated Policies Scenario (STEPS) and 25% in the Delayed Recovery Scenario.

By forcing lower-income households to switch to dirtier and less efficient energy sources, the latter would jeopardise some of India's stubborn achievements in the fight against energy poverty. Furthermore, it would delay the reduction in energy investment, which, according to our projection, will have decreased by 15% in India by 2020. The disease and its aftermath may momentarily lower emissions, but they do not bring India any closer to its long-term sustainable development goals because coal and oil suffer the most from the decline in demand.

Conclusion- So far as its massive population and desire to sustain its anticipated rate of economic expansion is concerned, India urgently needs to enhance its power producing capacity. The majority of India's electricity is now produced by cost-based plants, but as the need for more environmentally friendly power production methods has come to light, the government has been attempting to switch the country's fuel mix away from coal and toward cleaner fuels like natural gas. However, it is a reality that the price of hydrocarbons will skyrocket in the next decades as world reserves become increasingly rare, and because India is not self-sufficient in hydrocarbon production, it will be forced to deal with a situation in which substantial sums of its foreign exchange would be depleted in order to cover its oil import bill.

As a result, substantial energy savings can only be realised through a sensible energy strategy that not only encourages energy-efficient and renewable energy-based technology, but also implements energy pricing based on actual resource costs. Utilizing all available energy resources is essential given the anticipated demand for electricity over the medium and long term. Nuclear power is a potential option to complement the nation's energy needs, even if significant portions of future electricity generation are anticipated to come from thermal and hydro-power plants.

Globalization has resulted in increased economic collaboration among states. A policy of total independence and isolation is not acceptable in the age of globalisation. India took this as a cue and abandoned its state-led economy and Non-Aligned hangover. India then declared "a new economic policy" in 1991, thus giving up socialism in favour of a "capitalist economic system" characterised by privatisation, liberalisation, and delicensing. India should continue to build on the momentum it has given its energy diplomacy in recent years.

India faces difficulties related to both energy security and climate change, often inextricably linked. The transition to clean energy must be included into traditional energy diplomacy and is just as crucial as securing energy supplies. The nation should make sure that it focuses on bolstering its ties with its long-time suppliers in West Asia and the Gulf States in addition to solidifying the achievements it has made with the new energy partners.

Securing oil and natural gas for India's expanding energy needs was also an essential component of that diplomacy.

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