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# The Rooppur Nuclear Power Plant's Role in Bangladesh's Economic Development

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**Abstract:**

This work focuses on the topic of nuclear power as a necessary solution for Bangladesh's electricity scarcity. The government of Bangladesh has initiated the Rooppur Nuclear Power Plant (NPP) project for two units with a capacity of 1200M[1]. We each in order to meet the rising demand for power. Bangladesh views nuclear energy as a means of achieving economic and social growth and technical advancement, energy security as well as lowering greenhouse gas emissions to avert environmental disasters like climate change. According to the Power System Master Plan from 2016, nuclear energy is expected to account for almost 10% of total electricity generation by 2041, when total electricity generation is expected to reach roughly 60,000 MW. This power arrangement will enable us to graduate to a developed nation in 2041 and assist us meet our development plan's SDG goals by 2030.

**Keywords:** Rooppur Nuclear Power Plant, economic development, electricity, energy security.

## 1. Introduction:

Energy is essential to any nation's national security because without it, the economy cannot exist, and society as a whole cannot advance. Access to reasonably priced, dependable, and environmentally friendly energy is essential for both rapid and sustainable economic growth. The goal of Sustainable Development Goal 7 (SDG 7) is to ensure that everyone has access to modern, affordable, sustainable, and dependable energy. Energy plays a crucial role in development. The Father of the Nation, Bangabandhu Sheikh Mujibur Rahman, pledged to use nuclear energy peacefully when he said, "Peace to sustain must be, peace based upon justice," during the UN General Assembly on September 25, 1974. In his remarks at numerous conferences and events, Bangabandhu underlined the significance of the Rooppur Nuclear Power Plant's founding. Under the capable direction of Hon'ble Prime Minister Sheikh Hasina, the daughter of Bangabandhu, the Rooppur Nuclear Power Project is now palpable and visible. Architect Yeafesh Osman, the Hon'ble Minister of the Ministry of Science and Technology, led the project work quickly from the start to the present with his expert hand, under the capable leadership of the Hon'ble Prime Minister[2]. Reiterating to build the country as "Smart Bangladesh", Prime Minister Sheikh Hasina said-

"Bangladesh will be turned into a smart country in future, and the nuclear power plant is another step towards building that Smart Bangladesh"[3].

Bangladesh's proposed 2.4 GW nuclear power station is called the Rooppur Nuclear Power station. At Rooppur of Ishwardi upazila in Pabna District, on the Padma River's bank, 87 miles (140 km) west of Dhaka, a nuclear power plant is now under construction. The first of the two units is scheduled to start up in 2024, making it the nation's first nuclear power plant[4,5,6].·As part of the nation's growth goal, Bangladesh began building the Rooppur NPP, The Russian Rosatom State Atomic Energy Corporation is building the crucial infrastructure and nuclear reactor VVER-1200/523[7]. which consists of two VVER-1200 water-cooled, water-moderated power reactors of the AES-2006/V-523 design. Reactors and four circulation loops, each with circulation pipelines, a reactor coolant pump, and a horizontal steam generator, make up each reactor unit. With a gross capacity of 2,400 MW, the reactor has a nominal thermal power of 3.2GW and a maximum utilization factor of above 90%[8].

## 2. Background:

In 1961, there was a plan to build a nuclear power plant in what was then East Pakistan[9]. No real progress was made. In 1970, The Bangladeshi government began negotiations with the Soviet Union in 1974 following the country's independence, but no deal was made. The project in Rooppur was deemed feasible after a feasibility study carried out in 1976–1977 by the French company Sofratom. A nuclear power plant project with 125 MW capacity was approved in 1980. But this endeavor too failed to bear fruit. A second feasibility assessment was carried out in 1987–1988 and the decision was reached to build a nuclear power station with a capacity of 300–500 MW. There were plans to build a 600 MW power station in 1998. In 2000, the nuclear action plan was authorized. A nuclear cooperation agreement was struck by Bangladesh and China in 2005. By 2015, Rooppur was to have two 500 MW nuclear reactors, according to a 2007 proposal from the Bangladesh Atomic Energy Commission (BAEC). China made the project's finance offer in 2008. Rather, a year later, the governments of Bangladesh and Russia began talks, and on February 13 of that year, they signed a memorandum of understanding between the two. By 2013, Rosatom stated that work will begin[10,11,12,13,14]. Beginning in 2009, the government of Bangladesh took a concrete step toward putting its nuclear power program into action. One of the first tasks was creating a thorough road map that took into account every infrastructural need. In order to construct Rooppur NPP, we used the IAEA's Milestones approach and adhered to the procedures needed for each of the 19 infrastructural challenges. In order to track the development of the nuclear power program and the Rooppur NPP project and to organize all necessary activities among the different implementing organizations/ministries involved in the development of nuclear infrastructure, Bangladesh established its NEPIO (Nuclear Energy Programme Implementing Organization) in 2010 based on the IAEA concept.

The development of national infrastructure, as well as the establishment of ownership patterns, project execution strategies, reactor technology choices, funding mechanisms, and HRD for the Rooppur NPP project, are all under the direction of the National Committee, which is chaired by the Honorable Prime Minister. Other responsibilities include building capacity within NPP owner/operating organizations, bolstering nuclear regulatory and legislative infrastructure, and developing nuclear security infrastructure. In addition, the Ministry of Science and Technology (MOST) has established the National Committee, a Technical Committee led by the Honorable Minister, a Working Group, and eight Sub-Groups under the direction of the Secretary, to oversee the project's progress and facilitate coordination among relevant organizations and stakeholders. These include regulatory bodies, NPP owners and operators, grid operators, transport authorities, power development boards, relevant law enforcement agencies, and academic, research, and educational institutions[15].

### 3. Dreams of Bangabandhu Sheikh Mujibur Rahman:

Though there had been talks of creating nuclear energy before Bangladesh (then East Pakistan) gained its independence, Bangabandhu Sheikh Mujibur Rahman's leadership was crucial in bringing the concept to life. He believe energy plays a crucial role in development. He had reaffirmed his intention to carry out the 200 MW Rooppur Nuclear Power Project in the 1970 election campaign[16]. And in 27 February 1973[17]. the founding of Bangladesh Anobik Shakti Kamishon, formerly known as the Bangladesh Molecular Energy Commission before being renamed the Bangladesh Atomic Energy Commission, was a significant initial step towards the development of nuclear energy. Promoting the use of atomic energy for peaceful purposes was the commission's goal. He also, stated at the UN General Assembly on September 25, 1974, "Peace to sustain must be, peace based upon justice," he made a promise to use nuclear energy peacefully[18]. Sheikh Mujibur Rahman designated renowned nuclear physicist and his son-in-law, MA Wajed Miah, as the project director in order to advance the Rooppur project's implementation. Bangladesh's realization of its nuclear dream was contingent upon the foundation established during the brief but remarkable time Bangabandhu served as prime minister. During the 2017 groundbreaking ceremony for the Rooppur Nuclear Power Plant, Prime Minister Sheikh Hasina stated, “the long-cherished dream of the nation’s founding father has come true as Bangladesh enters the world of nuclear energy” [19].

### 4. Methodology:

In the study, historical and exploratory descriptive methods are utilized. The empirical data is collected from secondary and primary sources. The secondary data is collected from relevant documents, books on autobiography and media reports.Primary data is collected from archival data. The archival data are historical records and Bangladesh government documents. It investigates online sources of archival data.

The study reviews the government documents and media reports. It re-checks the theme of historical records and media reports compared with those in other records and newspapers. Therefore, it investigates the research questions by analyzing the data collected from archive. Following each of records, cross-case analysis is done. This means grouping of answers to common questions.All the data are collected from different national and international journals and reports, several government and non-government surveys are also included where necessary. Some important data are collected from the RNPP project presentation and newspapers.

### 5. Legal and Regulatory Aspects:

The considerable levels of risks posed by nuclear energy to the health, safety, and well-being of the people involved in its processes and surrounding environments means that these risks warrant careful management[20]. This technology holds potential for numerous disciplines, including as medical science, agriculture, and electricity production, despite the significant and well-known risks involved[21].The first step in regulating nuclear energy in any State includes assessing the present and future anticipated programs and plans concerning atomic techniques and materials[22].

Bangladesh is obligated to fulfill all of the obligations imposed by the numerous conventions that it lays down. The Constitution of Bangladesh includes provisions pertaining to fundamental rights and principles of state policy, both of which heavily rely on universal and practical energy access. Article 15 enumerates several rights that are essential to the recognition of the right to a sufficient standard of living, such as the ability to obtain clothing, food, shelter, and the ability to endure continuous changes in living circumstances. The fundamental right to energy access is connected to these rights. In a similar vein, that same article strengthens the State's obligation to guarantee decent working conditions, which are inevitable with real access to energy.

Furthermore, Article 16 is predicated on national and collective advancement, and unrelenting

access to energy is thought to be the most effective and vital tool for bringing about positive changes in this area. The right to life is recognized in Article 31 as a fundamental right, which undoubtedly includes the right to work. However, the right to life upheld by the Bangladeshi Constitution does not equate to the freedom to breathe and exist as an animal. Rather, it places a high value on life, including the right to a dignified, respectful, and comfortable existence, as the judiciary demonstrated in Ain O Salish Kendra v. Bangladesh, 1999 BLD 488 case.

This makes it possible to interpret the right to access power as a sacred promise made by the State that the courts will uphold. Furthermore, it is the government of Bangladesh's protected duty to guarantee the safe and secure production of energy in addition to providing an adequate amount of energy to its citizens. For the benefit of the nation and its long-term sustainable growth, it is also necessary to approach the problem with caution and genuine insight. From an economic perspective, given the limited resources available, we should ensure that the current energy authorities are accessible to all members of the public, including the most disadvantaged members of society who are left behind by society, in order to promote equality and non-segregation.

It also requires the government to ensure that all essential efforts are taken to create energy through safe and secure means. In addition to the constitutional safeguards for the populace, the Bangladeshi government has passed a number of legislation and rules to guarantee the secure and safe production of nuclear energy:

a. The Atomic Energy Commission Order, 1973

b. The Nuclear Safety and Radiation Control (NSRC) Act, 1993 and the NSRC Rules 1997

c. The Bangladesh Nuclear Power Action Plan (BANPAP), 2000

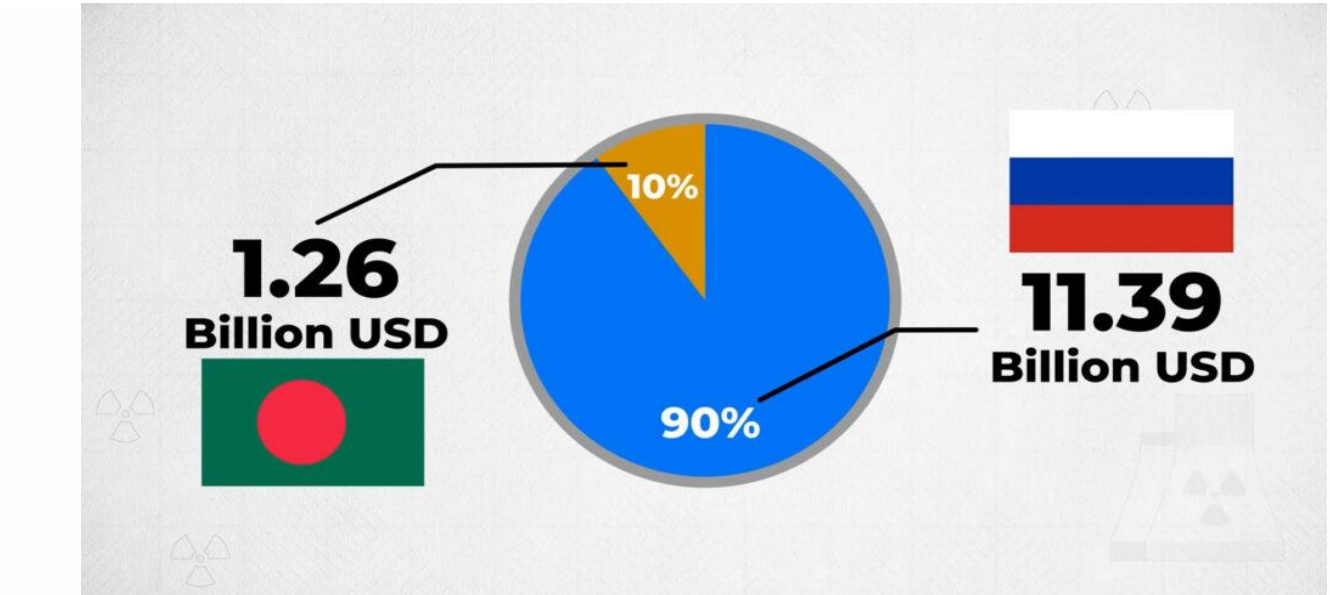
d. The Bangladesh Atomic Energy Regulatory (BAER) Act, 2012

e. The Nuclear Power Plant Act 2015[23].

As a matter of policy, Bangladesh has included the NPT and other pertinent international and bilateral conventions and accords in its laws, requiring compliance from anybody or any practice involving radioactive sources and nuclear materials. Bangladesh has put in place and is keeping up a system of tracking and managing everything nuclear materials within the nation[24].

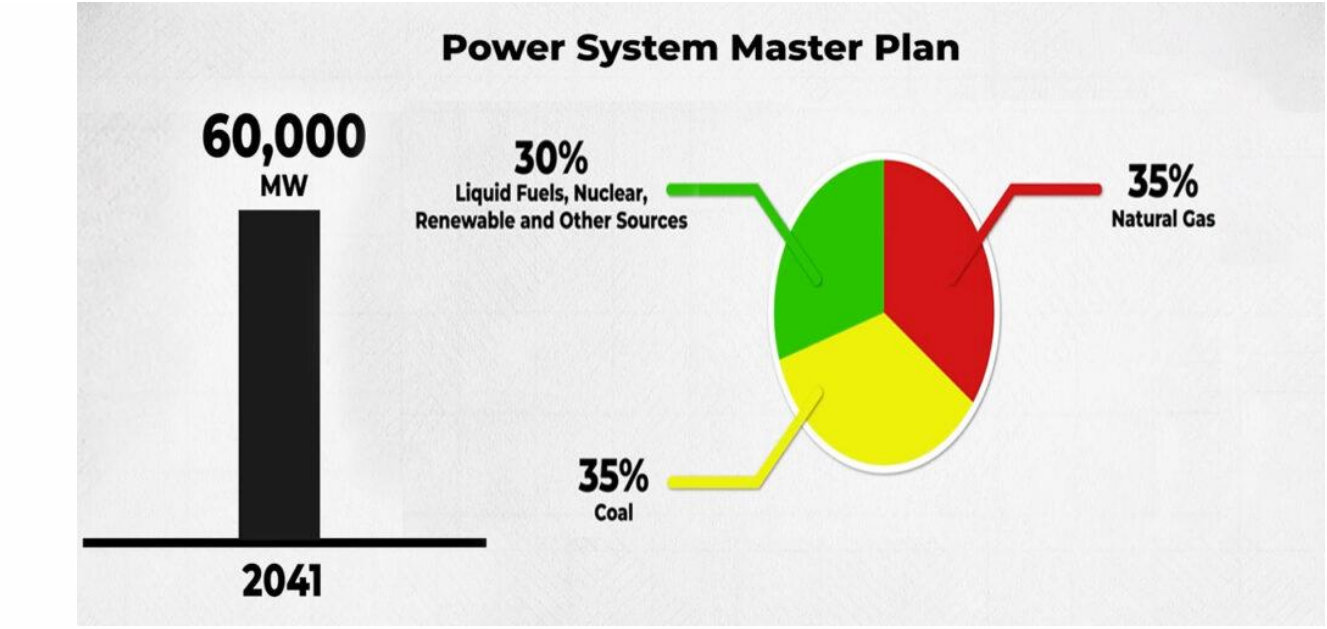
**6. Impact of Rooppur Nuclear Power Plant:**

Under the direction of the Bangladeshi government's Ministry of Science and Technology, the Bangladesh Atomic Energy Commission (BAEC) has been carrying out this project with Russian assistance since November 2017. An approximate budget of $13 (12.65) billion, or BDT 1 lakh 14 thousand crores, is allocated for the project. Ninety percent of this expenditure, or $11.39 billion, is being funded by Russia. Which, within 28 years of the project's execution, must be paid back with interest at a rate of 4%. Nonetheless, this repayment period. The government of Bangladesh will provide funding for the remaining portion of the budget.



The project budget for the Rooppur Nuclear Power Plant is financed by Russia (90%) and Bangladesh (10%)

A source from the Bangladesh Power Division claims that Bangladesh can currently produce more than twenty-five thousand (25,566) megawatts of power. A target of 60,000 MW has been set by 2041, according to the Power Department's Power System Master Plan. In the meantime, the 2400 MW Rooppur Nuclear Power station, if it is put into operation, will be able to generate more than 8% of the nation's entire output capacity. It will be crucial in lessening the nation's reliance on energy derived from coal, oil, and gas. Currently, the majority of the fuel oil, gas, and coal used to generate electricity in Bangladesh must be imported from Middle Eastern oil-producing nations or the spot market. Events throughout the world including inflation, economic sanctions, and conflicts frequently cause these fuel costs to soar. For instance, the post-pandemic worldwide inflation and the conflict between Russia and Ukraine are to blame for the current volatility in the fuel oil market. As a result, the cost of importing fuel into Bangladesh has gone up, further straining the country's foreign exchange reserves. Because of the Rooppur Nuclear Power station, fossil fuels will have a less dominant role in Bangladesh's electricity industry, which will help improve the nation's energy security.[25] IAEA head Rafael Grossi posted his congratulations on social media-"Bangladesh stands as a success story for newcomer countries in nuclear power development, advancing its program under the [IAEA's] guidance," he said-Bangladesh has faced its worst electricity crisis since 2013, according to the Reuters news agency, due to erratic weather and difficulty in paying for fuel imports amid declining foreign currency reserves and a weakened national currency[26].




to the Power System Master Plan, of the 60,000 MW target, 35% will come from natural gas, 35% will come from coal, and 30% will come from liquid fuel, nuclear, renewable, and other sources.

The Rooppur Nuclear Power Plant will contribute to the nation's socioeconomic advancement as well. There is currently a 309-acre industrial park with 324 business sites in Ishwardi. If Rooppur Nuclear Power Plant is operating, Ishwardi EPZ will have direct access to electricity. As a result, more international businesses will be interested in investing there and the productive activities there will become more efficient. Many jobs in Ishwardi Upazila will be created as a result. Bangladesh's economy is also heavily dependent on production, so having consistent energy is crucial for business. With the Rooppur Nuclear Power station, the nation's electricity production would rise and the manufacturing sector will be supported. Nonetheless, as low-cost production is

Bangladesh's primary unique selling point, the nation's export industry will benefit from cheap power generation costs, which will allow Bangladesh to maintain its cost-effective production capacity. An improvement in the nation's economy will result from this[27]. The power plant will play a vital role in reducing the unit cost of electricity production in the country as well as reducing the dependence on fossil fuels like gas-oil-coal for power production**.** Minister Yafesh Osman said "The people of Bangladesh will begin to enjoy the benefits of the nuclear power generated at Rooppur from the start of 2025. The power plant will contribute 2% to the country's GDP"[28].

**7. Economic Benefits:**

Numerous advantages of nuclear power facilities include Low emissions of greenhouse gases, high output power, cheap electricity, Fossil fuels are not needed for nuclear energy. Nuclear power offers a vast array of benefits to the economy. The gross domestic product (GDP) and energy use per capita are highly correlated. The GDP must increase to double digits, and each person must consume roughly 500 kWh of energy every year. Bangladesh produces extremely little electricity per person at the moment (around 165 kWh).and restrained by supply limitations. The quality of supply is also being impacted by inadequate system capacity, as evidenced by load shedding, unstable grids, and variations in voltage and frequency. As a result, it is thought that improving generation is necessary to support achieving the overall Millennium Development Goals (MDGs) in relation to national development. It is projected that in order to reach 2015, an additional 6,000 MW of capacity must be built, bringing the per-capita availability of power to 200 kWh[29]. It is estimated that in order to provide access to power for everyone by 2020, 1,000 MW of electricity must be generated annually on average. Currently 93 percent people of Bangladesh have access to electricity facilities[30]. Mohammad Hossain, the Director General of Power Cell, while speaking to the Nuclear Asia opined: “Electricity is a must for the industrial development of any country. The Rooppur Nuclear Power plant will surely accelerate the growth of the country’s industrial sector and thus it will contribute to the national economic development” [31]. Currently, the primary fuel and source of approximately 86% of the power generated is indigenous natural gas[32]. and restrained by supply limitations. Insufficient system capacity is also impacting the quality of supply, as seen by voltage and frequency oscillations, load shedding, and unstable grids. The Rooppur Nuclear Power Plant (RNPP) will assist us in ensuring an adequate supply of power to achieve the targeted degree of economic growth for socio-economic development, hence enhancing the nations rural and urban inhabitants' standard of living[33]. In every place where they are built, nuclear power plants (NPPs) and associated construction projects are the main driver of economic growth. Even though they have a large upfront cost, which was noted as one of the main problems and difficulties in the construction of the Rooppur Nuclear Power Plant (RNPP), when we take into account their extended life spans and cheap operating expenses, our Rooppur Nuclear Power Plant will prove to be a significant long-term national asset. Low operational and maintenance cost adds to the benefits from economic perspective. The power generation from the Rooppur NPP is highly cost competitive compared to that from gas, coal, and imported electricity from India. The Level zed Cost of Electricity is estimated less than 5 taka per unit where the average generation cost of electricity by other means is much higher than this. In addition to producing inexpensive electricity and satisfying society's need for consistent, reasonably priced power, Rooppur Nuclear Power Plants (RNPP) will create jobs and produce tax income that will sustain a strong economy. It is possible to evaluate the most obvious effects of this surge in infrastructure development on the local economy in Ishwardi. According to claims in the local media, the initiative has resulted in the direct employment of around 14,000 Bangladeshi laborers. Furthermore, around 3000 foreign nationals are employed by the project. The local economy has benefited greatly from the increase

in jobs. The power plant is the foundation for the development of local infrastructure. Among the several infrastructures constructed for the RNPP's assistance is the recently finished Padma River Port. Additionally, the Rooppur Nuclear Power Plant building site will be connected to a railway link[34].

According to local media sources, a number of new retail centers have opened up to accommodate the significant influx of foreign workers, and small businesses are seeing a significant rise in the amount of money that residents who work at the RNPP spend. For example: Masud Rana, 45, who cooks Russian dishes at a small roadside eatery, said, "That is not bad, since many local people are making a living out of the opportunities arising from this project," Rickshaw-puller Saidul Islam, 50, is happy his son got a job working on the construction of the plant. He said, "The income it generates has helped my family fare better"[35]. The power plant is the foundation for the development of local infrastructure. Among the several infrastructures constructed for the RNPP's assistance is the recently finished Padma River Port. Additionally, the Rooppur Nuclear Power Plant building site will be connected to a railway link. The project's long-term economic advantages to Bangladesh are difficult to predict at the national level. Nonetheless, a research discovered that the annual change in GDP brought about by the Rooppur Power Plant's ability to produce power is projected to be $1.4 billion due to the multiplier effect of consumption, investment, and government spending. There will be about $71.4 billion in net economic benefit, which is calculated as the difference between discounted economic benefit and discounted economic cost. Compared to the 1.3 marginal impact of producing power using coal, the Rooppur Power Plant would yield a 3.6 marginal impact for every dollar spent[36].

The benefits of the RNPP extend beyond helping Bangladesh meet its energy needs; it also generates a significant amount of employment possibilities, manufacturing capacity, and infrastructure development. The project has emerged as a focal point of the nation's new industrialization, which will open the door for long-term economic growth. Bangladesh intends to increase the national per capita income to $12,500 by 2041[37]. However this goal is mainly dependent on how quickly and to what extent the economy gets industrialized. Despite the fact that industrialization is one of the key drivers of a sophisticated economy, the nation struggles to supply enough electricity to run the looms and levers. Bangladesh's current energy production capability is insufficient to fuel this extensive industrialization .Nuclear energy can contribute to Bangladesh's decarbonization and eventually replace fossil fuels as the only source of sustainable energy, even though it cannot yet completely replace them. As an option for the nation's long-term electricity generation, the Rooppur Nuclear Power Plant (RNPP) project has been deemed to be technically, financially, and economically feasible as well as environmentally acceptable. IAEA Director General Rafael Mariano Grossi said at the opening of the 2020 Scientific Forum. “It will require us to make use of all energy sources that do not emit greenhouse gases. Nuclear power is part of the solution”[37].

**8. Discussion:**

In every place where they are built, nuclear power plants (NPPs) and associated construction projects are the main driver of economic growth. Even though they have a large upfront cost, which was noted as one of the main problems and difficulties in the construction of the Rooppur Nuclear Power Plant (RNPP), when we take into account their extended life spans and cheap operating expenses, our Rooppur Nuclear Power Plant will prove to be a significant long-term national asset. We can evaluate the advantages of the Rooppur Nuclear Power Plant (RNPP) by contrasting it with alternative energy sources. These days, solar panels have an average efficiency of 17–19%. Nuclear power plants, on the other hand, have an efficiency that is almost twice as high; 37.5% of the heat produced by the reactor is turned into electricity[38]. Electricity demand is rising rapidly

(about 7% per year) and capacity was 26.5 GW as of March 2024, up from 5 GW in 2009[39].The Rooppur Nuclear Power Plant's first unit is scheduled to start generating 1,200MW of energy in March 2024.It is anticipated that the second unit will begin generating power at a comparable rate by mid-2025.This project will contribute electricity to the country's electrical grid. Those concerned are hoping that this would help close the nation's power deficit[40]. It is sufficient to mention that the benefits of the RNPP go beyond helping Bangladesh meet its energy needs; it also generates a significant amount of employment possibilities, manufacturing capabilities, and infrastructure development. The project has emerged as a focal point of the nation's new industrialization, which will open the door for long-term economic growth[41]. Graduation ceremony) for RNPP Prime Minister Sheikh Hasina said-"I believe that Rooppur nuclear power plant will play an important role in the economic development of the country alongside building a smart Bangladesh" [42].

**9.Conclution:**

The above discussion reflects that, The Rooppur Nuclear Power Plant represents Bangladesh's technological ambitions, energy independence, and sustainable development objectives. It is more than just an infrastructural project. It bears witness to the country's progressive spirit and its steadfast dedication to forging its own path in the convoluted world of international energy politics. Although there are many obstacles in the way, from technological difficulties to popular fears, these are not insurmountable. Rather, they stand for chances for education, development, and creativity. As each obstacle is surmounted, the project moves one step closer to its goal of energy security and establishes a standard for similar projects in the future. The Bangladeshi government is also prepared to take the required actions to successfully implement this project in order to ensure a secure supply of electricity that will support our nation's economic development. According to the strategy, nuclear energy will supply almost twice as much electricity between 2020 and 2050. In the early 2030s, new capacity additions must exceed 30 GW annually to do this. By 2050, the percentage of energy used as electricity will rise from about 20% at present to almost 50%[43].

**References:**


1. IAEA, Country nuclear power profiles, Bangladesh.

   https://www.pub.iaea.org/MTCD/Publications/PDF/cnpp2017/countryprofiles/Bangladesh/Bngladesh.htm (2017)

2. Bangladesh Atomic Energy Commission Ministry of Science & Technology.

3. Rooppur power plant is another step towards Smart Bangladesh, Bangladesh Sangbad Sangstha (BSS), National news agency of Bangladesh, 5th Oct, 2023.

4. "Cabinet clears draft law to form company to operate Rooppur nuclear power plant". bdnews24.com, 4th May 2015, Retrieved 6 th June, 2015.

5. "Delay for Bangladesh nuclear plant", World Nuclear News, 20 th October, 2015, Retrieved 26 th October, 2015.

6. "Rooppur nuclear deal signed with Russia", The Financial Express, Dhaka, 25 th December, 2015, archived from the original on 26 th December, 2015, retrieved 27 th December, 2015.

7. "RPV welded for unit 1 of Bangladesh nuclear power plant", Rosatom, Retrieved 15 th May, 2020.

8. Bangladesh Atomic Energy Commission Ministry of Science & Technology.

9. "Nuclear Power in Bangladesh", World Nuclear Association, retrieved 1st January, 2016.

10. "N-plant funding deal cut",bdnews24, Mahbub Sumon ,15th January, 2013.

11. "PM seeks more Russian investment in ICT sector", The News Today, 15th January, 2013.
12. "Collaboration in defence, telecom agreed upon", The News Today, 15 th January, 2013.
13. "Bangladesh agrees nuclear power deal with Russia", BBC News, 2nd November, 2011.
14. "Bangladesh to Get $1Bln Loan for Weapons" , The Moscow Times, 16 th January, 2013.
15. "A snapshot on Rooppur Nuclear Power Plant Project" (PDF).
16. The Daily Sun, Publish, Sunday, 14 th March, 2021.
17. History of nuclear power in Bangladesh: Road to Rooppur N-Plant project, Nuclear Asia, 2nd December, 2017.
18. Bangladesh Atomic Energy Commission Ministry of Science & Technology.
19. Economic Benefits of Rooppur Nuclear Power Plant, Prof JillurRahman, banglanews24.com.
20. B.W.; Bradshaw, C.J.A. Key role for nuclear energy in global biodiversity conservation. Conserv, Biol, pp 29, 702–712, 2015. [Google Scholar] [CrossRef] [PubMed].
21. Stoiber, C.; Baer, A.; Pelzer, N.; Tonhauser, W. Handbook on Nuclear Law; International Atomic Energy Agency: Vienna, Austria, 2003; ISBN 92-0-105703-2. [Google Scholar].
22. IAEA. Building a National Position for a New Nuclear Power Programme; IAEA: Vienna, Austria, 2016. [Google Scholar].
23. Hoque, R. The Inclusivity Role of the Judiciary in Bangladesh. In Inclusive Governance in South Asia; Ahmed, N., Ed.; Springer International Publishing: Cham, Switzerland, pp. 99–122, 2018.
24. Bangladesh Atomic Energy Commission Ministry of Science & Technology.
25. Economic Impact of Rooppur Nuclear Power Plant, Sajjad Hossan, Business Inspection, 4thSeptember, 2022.Updated On: 28th May, 2023. ALJAZEERA, 6 th October, 2023.
26. Economic Impact of Rooppur Nuclear Power Plant, Sajjad Hossan, Business Inspection, 4thSeptember, 2022.Updated On: 28th May, 2023.
27. Rooppur Nuclear Power Plant, a booster for economic growth in Bangladesh, International affairs review 4thOctober, 2023.
28. Energy, Electricity and Nuclear Power Estimates for the Period up to 2030, IAEA.
29. Economic Benefits of Rooppur Nuclear Power Plant, Prof Jillur Rahman, Guest Writer, banglanews24.com. Update: 15thDecember, 2020**.**
30. Rooppur Nuclear Power Plant in Bangladesh – a booster for economic growth, Nuclear Asia ,6thJuly, 2017.
31. The Future of Nuclear Power, An Interdisciplinary MIT study.
32. Energy of the Future,Rooppur NPP: Social and Economic Benefits, http://www.baec.gov.bd/.
33. Economic Benefits of Rooppur Nuclear Power Plant, Prof Jillur Rahman, Guest Writer | banglanews24.com.
34. Energy of the Future,Rooppur NPP: Social and Economic Benefits, http://www.baec.gov.bd/.
35. Economic Benefits of Rooppur Nuclear Power Plant, Prof Jillur Rahman, Guest Writer | banglanews24.com, Energy of Power**,** FINANCIAL& ECONOMIC FEASIBILITY OF ROOPPUR NPP**,**Dr. Bazlul H Khondker;Professor, Department of Economics, University of Dhaka. Dr. Mohammad Iftekher Hossain; Associate

Professor, Department of Economics, University of Dhaka.

36. Rooppur Nuclear Power Plant, a booster for economic growth in Bangladesh, International affairs review, 4thOctober ,2023. http://www.baec.gov.bd/.
37. Economic Benefits of Rooppur Nuclear Power Plant, Prof Jillur Rahman, Guest Writer, banglanews24.com. Update: 15th December, 2020.
38. Rooppur NPP: Social and Economic Benefits, Energy of the Future, http://www.baec.gov.bd/.
39. Neclear power in Bangladesh, COUNTRY PROFILES, Update Monday 13th may, 2024.
40. Rooppur Nuclear Power Plant at a glance. Mahfuz Sadi, Dhaka Tribune,
41. The Business Standarad, 05th October, 2023,
42. The Future of Nuclear Power, An Interdisciplinary MIT study.