

Impact of Rampal Coal Power Plant on Livelihood of Local Community



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ABSTRACT: In the local community of Rampal, there are various problems, especially livelihood, that the Rampal coal-based power plant impacts the local people. The livelihood of the people living near the Rampal Power Plant in Bangladesh may be affected by the construction and operation of the plant. Some of the potential impacts include displacement, the environment, health, and employment diversification. Some residents may be displaced from their homes and land to make way for the power plant. The objective of the study is to investigate the differences in the local community's livelihood before and after the Rampal coal power plant station was built. Also, this is to explore the opportunities and initiatives that can benefit both the power plant's operations and the livelihood of the local community. Qualitative research was conducted by following Purposive sampling techniques. The research was conducted in a Rampal Power Plant area named Rajnagar Union. Among them, Twenty In-depth Interviews (IDI) and three Key Informant Interviews (KII) have been conducted to do an in-depth understanding from the people in this study. This study examines the socioeconomic transformations before and succeeding the installation of a coal-fired power plant. The results demonstrate substantial changes in livelihoods, encompassing extensive employment transfers and migration to metropolitan regions. Furthermore, food insecurity emerged as a significant issue, and a considerable segment of the population faced health insecurity. Nonetheless, the advancement of infrastructure has resulted in enhancements in local healthcare relative to the pre-establishment era. Based on the study findings, concerned authorities may formulate an initiative to recover those problems, and these can be achieved to fulfil SDG goals.

KEYWORDS: Coal, Community, Livelihood, Power Plant, Rampal

INTRODUCTION

The proposal for the Rampal power plant was met with significant opposition from residents of nearby areas in addition to students and youth. This coal-fired power station was established through an alliance between the Indian-owned National Thermal Power Corporation and the Bangladeshi government-controlled Bangladesh Power Development Board (K. F. Islam, 2018). The project's proposed location is 1834 acres, or roughly 14 kilometers northeast of the world's biggest mangrove forest, the Sundarbans. In the past, the main uses for this 1834-acre area included agriculture and shrimp aquaculture (Chowdhury, 2017). The building and operation of the Rampal Power Plant in Bangladesh may have an impact on the way of life of the locals. Displacement, the environment, health, and the diversification of employment are only a few possible effects. To make room for the power plant and its infrastructure, some residents may be forced to leave their houses and parcels of land, which could result in the loss of their livelihoods (K. Islam, 2018a). Anti-project sentiment is growing in the project areas as a result of expulsion from the land, unjust reimbursement, operational complications in the settlement delivery process, payment of compensation without authorization, insensitive behavior by the relevant authority toward those impacted, and incidents such as physical torture and threats. Long-term dangers for the projects could result from this outbreak (K. Islam, 2018a). The existing literature demonstrates that the establishment of the Rampal Power Plant will have a significant effect on the Sundarban economy as well. According to the Environmental Impact Assessment (EIA), the 1834 acres of land that were forcibly taken from the local population were formerly utilized for commercial endeavors, including farming and prawn farming. About 140461 tons of non-rice crops were previously produced in the purchased territory, which produced 62353 tons of rice. According to estimates, each household in the project and study region has between four and three cattle, two and three buffalo, four and four goats, one and one sheep, five and five ducks, and seven and six chickens (M. M. Hossain, 2019).

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In a coal-based power plant, coal is burned in a boiler to heat water and create steam, which generates electricity. Steam is forced at high pressure into a turbine, which turns a generator to create energy. Around 75% of the waste produced by a typical 500-megawatt coal power plant is disposed of in unlined, unmonitored onsite landfills and surface impoundments, endangering human health and the nervous system by contaminating a source of drinking water (ground water). This waste also contains arsenic, mercury, chromium, and cadmium, among other elements (Kazi Faisal Islam, 2018).

Once more, the region's varied water quality makes it ideal for the spawning of freshwater fish as well as fish in marine waters. The entire number of fish produced from approximately 5218.66 M. tones in this area. EIA additionally claims that rivers and other open-water fishery habitats (Passur, Maidara) and the intertidal zone may be impacted by dredging, traffic patterns, as well as chemical and oil spills. Activities related to dredging may potentially change the bottom feeder fish's environment for a short time (M. M. Hossain, 2019).

The developmental claims made in relation to the construction of the Rampal power station, taking into account the evidence about changes in land control resulting from this project. Land in Bangladesh's salinity-infested southwest coastal region has become a highly disputed resource. Property control modifications made for the Rampal power plant and related projects have heightened long-standing conflicts over rights and access to property. These conflicts date back decades. However, Studies claim that this effort actually results in a reorganization of land control, rights, and access that threatens the livelihoods of small landholders and landless laborers by prolonging and escalating waves of eviction and exclusion (Mahmud et al., 2020).

Although this establishment has numerous drawbacks, there are also some benefits, such as the opportunity for local residents to work on a daily or monthly basis. It is significant to remember that the effect of the Rampal Power Plant on local residents' livelihoods will rely on a variety of variables, including the area's unique circumstances and the steps taken to lessen the negative effects. An objective examination is essential since the construction of the power plant has a conflicting impact on the way of life of the local residents. Consequently, the researcher chose the subject appropriately after consulting with the supervisor (Anas et al., 2018). The Rampal Power Plant is being built with the intention of producing electricity that will be distributed disproportionately between Bangladesh and India. Regarding its goal, there is a heated dispute because it poses some risks to Bangladesh's population and ecology. Agriculture, fishing, and small enterprises make up the majority of the local population's sources of income in the region. Although the power plant's construction has brought about some economic prospects in the region, it has also sparked worries about the effects it would have on the environment and the way of life of those who depend on farming and fishing. Maintaining a balance between the power plant's financial advantages and any potential negative effects on the local community is essential to ensuring that measures are taken to mitigate any negative impacts and support community residents' lives (Shah , 2020).

The Rampal Power Plant has a significant impact on the lives of those living nearby. Therefore, further studies should be conducted. Hence, research must be done on both the positive and bad effects it may have on finances, careers, and other life-leading activities. Given that it examines issues including river erosion, noise pollution, health risks, and traditional activities like fishing, growing a wide variety of vegetables, planting trees, etc., it may be helpful to the government and concerned citizens. The researcher has kept a very close eye on the individuals' changing careers despite the fact that various publications have demonstrated the clinical traits, survival livelihood, genetic physiology, and livelihood's economic influence. The effect of a power plant on the local community's livelihood in Bangladesh. However, there isn't much research on how power plants affect the livelihood of the local community, where they attempt to address issues and the current state of power plants in Bangladesh. Therefore, the researcher found a scope to research the impact of the Rampal Coal Power Plant on the livelihood of the local community. Therefore, this study aims to investigate the differences in the local community's livelihood before and after the Rampal coal power plant station was built and to explore the opportunities and initiatives that can benefit both the power plant's operation and the livelihood of the local community.

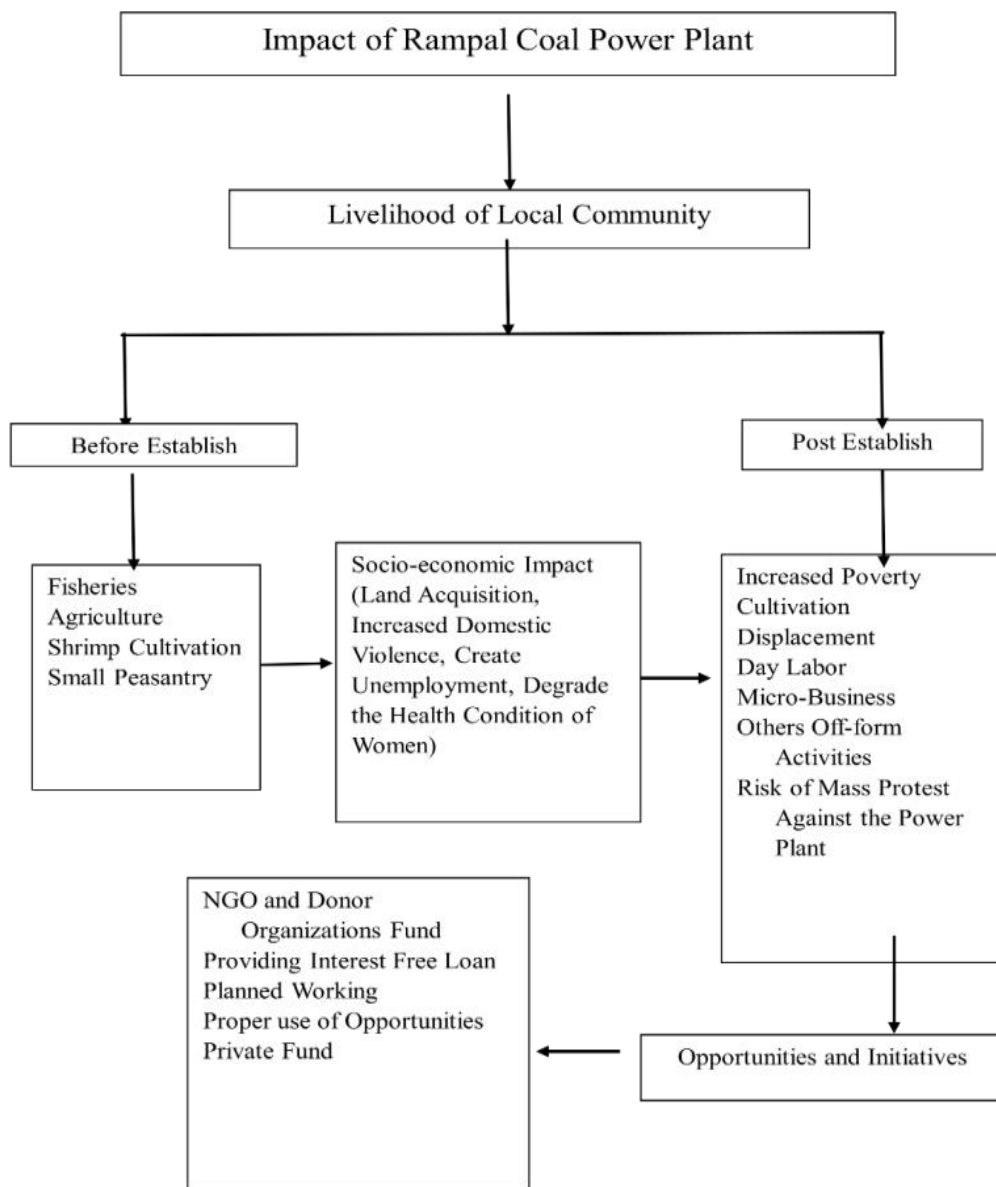


Figure 1- Source: Author’s Own Compilation, 2025)

METHODS AND MATERIALS

Qualitative research was conducted using Purposeful sampling techniques and using the explanatory approach. The researcher's units of analysis were Male and female participants who were over the age of 20 and were impacted by this plant. The current study was conducted in 05 no Rajnagar Union (Ward no: 09), Rampal, where the local people are more connected.

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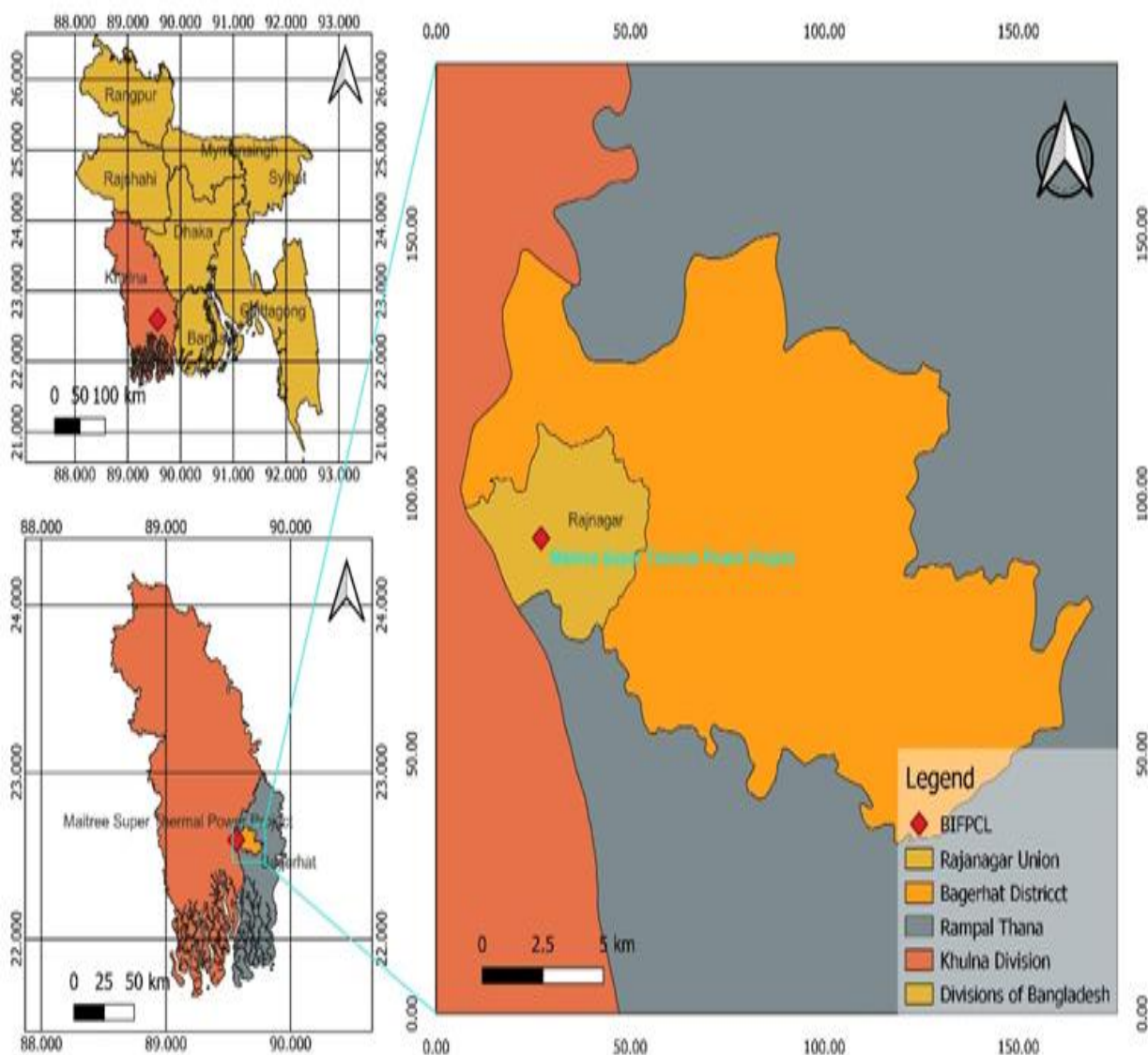


Figure: Map of the study area
(Source: Generated by Researcher)

FINDINGS

Socio-Economic challenges faced by the local community

Most of the respondent shares their economic vulnerability. In this case, respondents' occupations, sources of earning, children's employment, children's financial support, ownership of property, and other important factors in their economic situation that have challenged their livelihood will be discussed

Land acquisition and its impact

The majority of individuals here are in a vulnerable financial condition. Since the construction of the Rampal Power Plant, small businesses, shopkeeping, and daily and monthly services have taken the place of our old professions of agriculture, fishing, and cattle raising.

"We were mostly engaged in agriculture, fishing, fish processing, cattle, etc., prior to the formation of power plants. It is very unfortunate; our earning opportunity has been stopped to some extent because of land acquisition for the establishment of this plant." (IDI participant 08)

Unemployment

Most of the participants in the Rajanagar Union, ward number 09, mentioned that due to land acquisition for the power plant, many local people not only became homeless but also lost their jobs. This is because many of them previously made a living through shrimp cultivation, agricultural production, and fish production.

Some individuals have shared their experiences regarding their current situation. One person mentioned,

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"My family and I used to make a living by cultivating crops, shrimps, and fish. However, due to land acquisition, I lost my job and did not receive adequate compensation for my land. Now, we are living on public land." (IDI participant 01)

Displacement and looking for work

Another IDI participant stated that, previously, he worked in the power plant. Recently, he lost his job with false blame. Power plant authority had taken his land and home. But he did not get proper compensation. So he decided to go with his family to Dhaka in search of work. He quoted that,

"Recently, I was fired from the job. I and my family depend on my income. I do not have enough land for cultivation. So, I decided to go to Dhaka looking for work" (IDI participant, 11)

Decreasing the amount of producing crops and its impact

Low income after the establishment of the power plant

After the establishment of the power plant, the authority of the power plant sometimes dumped chemical waste in the river. Sometimes, in the rainy season, farmers' crops, fish, and shrimp cultivated land are affected by the water. As a result, those farmers get very low prices after selling these affected crops and fish. One IDI participant stated that,

"We have very little land for farming. Before the establishment of the power plant, the quantity of crops produced was enough for our family. However, after the establishment of the power plant, the quantity of crops produced has decreased. It is not efficient to support our family. We are a family of five members, with two daughters and one son. To support our family economically, I sent my son to Dhaka to earn money." (IDI participant 10)

Food security and livelihood

When asked about their daily intake food pattern. We found that most of the families cannot afford healthy food. This expenditure has become an overload for them after the establishment of the Rampal Coal Power Plant. In this phase, Researchers have found many families are suffering from food insecurity. Some of them cannot take the proper amount of food. Some parents cannot give their children nutritious food. They cannot afford money for this healthy food. Some of them need to browse food from their neighbors and nearby shopkeepers.

"MY son's wife is now pregnant. We cannot give her proper nutritious food because our production of crops has decreased and our income also decreased. Therefore, we are facing serious insecurity of food." (IDI Respondent 13)

As for the impact of food insecurity, he added,

"My son's wife is now very sick, and our other family members are getting unhealthy day by day because of the lacking of healthy food. We can afford a small amount of money to buy food. It is not enough for our family for food security." (IDI participant, 17)

Shifting towards micro-Business from agriculture

KII participant 03 about the micro business creation considering the power plant. He stated that,

"Some local communities have changed their profession; you can see that besides the power plant, different kinds of small shops have been established, such as small hotels, tea stalls, small departmental stores, etc. However, the amount of this micro business is not significant. Most of them previously cultivated their land, and some of them cultivated shrimp and fish. After the establishment of the power plant in a few years, both crop production and shrimp production have decreased significantly. Therefore, they are changing their profession and starting a micro business". (KII participant 03)

Employment in the power plant of the local community

When we asked them about their employment in the power plant. We got a very small amount of local community employment in the power plant. One of the KII participants in Rajnagar union stated that,

"Local community gets very few chances to work not only in the higher position in the power plant but also in the lower position. Very few amounts of local people mostly work as labor and security guards. We see that many people work in the power plant from different regions of the country, but the local community does not get jobs" (KII participant 01).

At the time of IDI, we found that there was a negative perception of the local community. When we asked another KII participant why the power plant authority was not eager to give the job to the local community. After the acquisition of the land, most of the people in Ward number 09 became homeless and jobless. As a result, they are involved in different illegal activities, such as stealing, robbery, etc.

"When they lost their home and land by the acquisition of the power plant, most of them did not get proper compensation. Because most of their land was acquired, therefore, they could not buy new land for their living and cultivation. So, to maintain their family, they engage in different kinds of illegal activities, such as stealing. Sometimes, they steal important power plant parts. Thus, the local community has created a bad image for the power plant authority." (KII participant 02)

We also knew from Participate 04, 05, & 11 and also KII Participant 02 that if the local community gets proper opportunities in the field of employment and if they got adequate compensation for their farming land, then they do not engage in these kinds of work. One of the participants added that,

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"If the local community got proper compensation in the contrary of their acquired land and if they get job in the power plant then they do not engaged thus kinds of heinous activities." (IDI participant, 14).

IDA participants 03 and 15 informed us that when they lost their homes and farming land, they and their husbands became completely jobless. This situation created a significant economic challenge for their family. Their husbands are now working in different parts of the country. IDI participant 03 mentioned that...

"Before the establishment of the power plant, my family and I made a living through farming and shrimp cultivation. However, we lost our home and land. My husband now works as a laborer in Khulna and sends me some money every month, but it is not sufficient for our family." (IDI participant, 3)

"My husband previously worked in the power plant. During working in the power plant, a tree was broken upon my husband. After that, he lost his leg and hand. I went to the authority of the power plant for compensation and sought a job of my own. But I could not get anything. Now, I continue my family through a tea stall. Now, I cannot afford for my son to be sent to school. My son also works with me in the tea stall." (IDI participant, 07)

Women job conditions in the power plant and micro business

women's job conditions were found to be poor conditions in the study and also discussed the women's job conditions in the power plant and women's employment in the micro business sector adjacent to the plant with KII participants 01 and 03. In this study, The findings mentioned that the number of women who work in the power plant was very low.

"In the power plant, local women have not significantly engaged in any official job. However, some of the women work for cooking, floor washing, and other household activities in the power plant. But the percentage of these employed women is very low." (IDI participant 03)

Then he also added that,

"Most of them previously were housewives; they did household work. Besides the household work, they helped their husband with crop production, fish production, poultry farming, etc."

A female IDI participant said that,

"Previously, I unloaded Coal from the track for the power plant. One day, while I was unloading coal from a track, I severely injured my backbone. After that I cannot do this heavy work. Now I work in a roadside hotel beside a power plant." (IDI participant 04)

IMPACT ON EDUCATION

When the Researcher asked about their school-going children, many children were going to the school. But some of the children are working as day laborers. Some children work in the hotel beside the power plant. Someone helps his mother in a tea stall. Some of them work with their father in the field for crops production. Some of the children are helping their families by collecting broken metal parts of the power plant.

Respondents (03, 09, 14, 18) stated that,

"Although the power plan impacted our economic condition. We are sending our children to the school." (IDI participant 11)

Respondent (01) stated that,

"Before establishing a power plant, we produced crops and cultivated shrimp and fish. At that time, my son went to school and our economic condition was not bad. But after establishing a power plan, we lost our land. Now my son is working in the hotel beside the power plant, and my husband is working as a laborer in the power plant." (IDI participant 01)

In this regard, a KII participant (chairman of the Rajnagar union) stated that,

"After establishing power plants, the production of crops, fish, and shrimps has decreased by almost half. Now, the poor villager can't send their children anymore. Most of the students are engaging in any work after class 7 or class 8 passes. Another reason for indifference to sending their children to school is that there are not sufficient numbers of schools and colleges. In this area the villagers have created a perception that without bribe, they do not get a job. So, they are not interested in sending their student to college or University. (KII participant 1)

In Ward 9, beside the power plant, we found some children who had stopped studying. After the power plant was established, they lost their homes and land. Before, they were leading their lives through farming. But at present, those children are stopping their studies. On the other hand, in Wards 3 and 6, most of the children are going to school."

HEALTH IMPACTS ON THE LIVELIHOOD OF THE LOCAL COMMUNITY

Lack of knowledge about the health impact of coal-based power plant

One of the KII participants argued that,

"Most of the people in this area are not well known about the bad impact of coal power plant on our health. Most of the villagers think that when a member becomes sick in their family, they are affected by that disease naturally." (KII participant 2).

Participant A stated that,

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"We are not well known about the health impact of the power plant, but we have noticed that after establishing the power plant in our village, my family members are suffering different kinds of disease, such as fever, diarrhea, typhoid, etc." (Respondent 04 & 15).

Lack of health infrastructure

During IDI, we noticed several health impacts after establishing the power plant. There have not been significant health infrastructure developments in this area. Respondents 02, 07, and 13 said that they are not feeling any health crises because of the power plant's impact. On the other hand, respondents 08, 15, and 16 said that after establishing the power plant, they noticed that they were suffering from several kinds of diseases. They also added that before confirming the power plant, their family seldom suffered disease.

KII participant 01 stated,

"I am also in charge of secretary in our community clinic. The government gives us some medicine for the villagers every month. The amount of the medicine was enough some years ago. But at present, that amount of medicine is not enough for the villagers. The amount of medicine those give us for one month, but those are finishing among 12 or 15 days." (KII respondent 1)

During data collection we noticed that the road has become developed and spacious. However, some IDI respondent said that in their union, there are no hospitals. When someone becomes very ill, they need emergency treatment. But the hospital is situated a very long distance. A woman IDI participant stated that,

The previous year, I lost my elder daughter. She was pregnant. At the time of taking hospital, she was dead. If we have a hospital in our union then my daughter may be remaining with us today. (IDI participant 18)

ENVIRONMENTAL IMPACT ON LIVELIHOOD

Decreasing the production of shrimp and crops

During our discussion about the power plant's hazardous and environmental impact, we found that most of the local community is not well-informed about environmental issues. They did not receive any training about the hazardous impact of coal-based power plants.

According to the KII respondent 3,

This kind of health and environmental impact grows slowly. That is why they suddenly cannot understand the harmful effects. On the other hand, if any non-governmental organization or government gave them any training on the impact of coal-based power plants. Then, the villagers can understand the effects of powerplant

Contaminating the Posur river water

Among the local community, some of them are well known about the environmental impact of coal power plants. We found from IDI participants that, after establishing a power plant, the environment beside the power plant became hotter. The Posur River near the power plant is becoming contaminated. The contaminated land is getting into the crops land and also shrimp and fish cultivating land. The production of crops and fish is decreasing. Fish, Crops, and other vegetables are affected by a virus. One of the KII respondents stated,

"Some years ago, in the Posur River, we found different kinds of big and small fish. But now we have not found that number of fish. Now, most of the rear fish are vanishing day by day. Like me, those were catching fish from the river and led their life. Most of them have changed their profession. Some of them are driving Van, some of them work others land, some of them are leaving their village. Some of them are working as a labor in the power plant." (KII participant 1)

Environmental degradation and changing profession

Most of the IDI participants and KII 1 informed that the production of crops a fish has decreased significantly. When we asked him why the fish production, shrimp production, and crop production had been reduced comparing before the establishment of the power plant,

"Not only the crops but also shrimp and fish are affected virus, and sometimes all the fish die in the pond. Thus, the production of crops and fish is decreasing. And it also emphasizes the farmer for getting an aversion to farming and changing their profession". (KII participant 01)

Power plant related training to adopt new job

The local community till now does not get any power plant-related workshops or training. According to participants 06, 14, and 19, if they get proper training to work in the power plant. They could join in the power plant. KII participants also supported this argument. One of the participants stated that,

"If we get proper training by the government and non-governmental organization or power plant authority, then we can get a job in the power plant." (IDI participant 06)

Another respondent stated that we cannot work directly in the power plant. We work under a contractor who sometimes does not pay us a proper wage.

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When the researcher asked them how government and power plant authority can help them with sustainable development. Then one of the IDI participants said,

“Power plant authority argues that, we are not efficient to work in the power plant. But my point is that If we are not efficient, then the power plant authority can give us plant-related work training. Then we do not remain jobless”. (IDI participant 11)

INFRASTRUCTURAL DEVELOPMENT

When we went to a coal power plant in Rampal, we saw that the transportation section had developed. However, this development only emerged surrounding the coal power plant because those roads are used for the power plant. But when we entered the village, we saw most of the road needed a rebuild. One IDI participant said,

“All those roads have been under construction for many years. The development of this road needs emergency. Beside this, we need a hospital in our union and also a high school.” (IDI participant 19)

Pure drinking water management

In ward number 09, we saw all the villagers taking water to drink from a big pond. The pond water was not clean. One of the participants quoted,

“The main problem of our village is lack of pure drinking water. We said to the authority about our problem, but no one took any initiatives to solve our drinking water problem.” (IDI participant 20)

Proper waste management for the power plant

The KII participant 2 told us about this waste management. When the authority dumps waste into the nearby Posur River. Then the river water gets contaminated. The KII participant 3 and one of the IDI participants said that,

“When the contaminated water is getting into their crops land and shrimp cultivation land, all the crops and fish are affected by the virus. This creates a great hamper of the farmer.” (IDI participant 16)

DISCUSSION

Agriculture and fisheries have suffered as a result of environmental issues brought on by the power plant, including air and water pollution (Roy, 2018). Farmers and fishermen have seen a decline in income as a result of the pollution that has been released into the air and water sources, which has also negatively impacted fish populations and soil fertility (K. Islam, 2018b). Furthermore, the purchase of land for the factory resulted in the eviction of many locals, who were then forced to relocate or look for other work (A. H. Chowdhury, 2017).

The study also found that some local communities have changed their profession. Researchers say that besides the power plant, different kinds of small shops have been established, such as small hotels, tea stalls, small departmental stores, etc. However, the amount of this micro business is not significant. Most of them previously cultivated their land, and some of them cultivated shrimp and fish. After the establishment of the power plant, in a few years, both crop production and shrimp production have decreased significantly. Therefore, they are changing their profession and their micro businesses. Notwithstanding these difficulties, the power plant did create some job possibilities. Within the factory, several residents have found employment in maintenance, transportation, and construction. Long-term advantages are limited by the fact that these positions are either transient or call for skills that many residents lack. Employment quotas for displaced people and skill development initiatives could be put in place to optimize local benefits. The general well-being of the community could also be enhanced by corporate social responsibility (CSR) programs, including infrastructure development and health services (Babui, 2021). Although it is argued that the power plant will create additional job opportunities among the locals, establishing the Rampal power plant is more likely to reduce the local community's economic participation (Islam, 2018). This study also found the same result. Although before the power plant was established, the authority assured the local people that they would be given jobs in the power plant after the power plant was established, the local community got very few opportunities to work in the power plant (M. N. Islam, 2016).

About 2.5 million people, including woodcutters, fishermen, and honey gatherers, depend on the Sundarbans, a UNESCO World Heritage site, for their livelihood in addition to being an ecological asset (Fox et al., 2020). This fragile ecology is at risk from the Rampal Power Plant's construction and operation. According to environmental evaluations, the facility may result in permanent changes to the topography, water quality, land use, and climate. These changes are expected to have a negative impact on forestry, fishery, and agriculture, which are the main sources of revenue for the local population (A. Chowdhury, 2018).

Even though the power plant would provide some infrastructure improvements and job possibilities, the possible economic disruptions outweigh these advantages. Fish populations and agricultural output may decline as a result of natural resource degradation, which would have a direct effect on the income of people who depend on these industries. Furthermore, populations may be forced to migrate or give up their traditional jobs as a result of increasing water logging, river erosion, and noise pollution, which may make some locations uninhabitable or unfit for farming (Muhammad, 2013). The probable economic disruptions outweigh any potential employment possibilities and infrastructure development that the power plant would provide. Reduced fish

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populations and agricultural output could result from the depletion of natural resources, which would have an immediate effect on the income of people who depend on these industries. Increased river erosion, noise pollution, and water logging may also make some regions unusable for farming or uninhabitable, causing communities to move or give up their traditional means of subsistence (A. Chowdhury, 2018).

In this study researcher found that most of the villagers in the Rajnagar Union do not well known about the health impact of coal-based power plants. However, some local people and KII respondents informed that, after the establishment of the power plant, they are suffering different kinds of disease rather than previous. Residents may experience respiratory problems as a result of these emissions, which also deteriorate the quality of the air. Furthermore, untreated wastewater flow into adjacent rivers contaminates water sources, impacting aquatic ecosystems and human health. Environmental pollution has been exacerbated by the plant's direct discharge of wastewater into the Maidara River since October 2022, according to the Centre for Environmental and Geographic Information Services (CEGIS) (Hossain, 2024).

CONCLUSION

This is particularly evident in the way that, after being uprooted from urban slum areas, a new social group known as "climate migrants" emerged. The study's findings showed that inadequate awareness and understanding of climate change scenarios, unemployment, a lack of capital, and a lack of shelter were the main obstacles preventing migrants from adjusting to life in these new metropolitan regions. One of the most crucial points is resettlement, which is quite challenging for the least developed community people. However, due to a lack of funding and land resources, Bangladesh is largely unable to implement resettlement initiatives. A comprehensive strategy for management ought to be required. All facets of the local community NGOs and CBOs, the business sector, the media, scholars, donors, and authority will require a workable and attractive plan. Increase the opportunities for a living. The goal of the strategy is to increase local communities' ability to lessen the effects that negatively affect their socioeconomic status. Women should be included in the policy and have appropriate career possibilities guaranteed for them. Need power plant related job training among the local community and proper west management system for the power plant.

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