A Carbon Catastrophe in the Making

The dirty energy plans in Chattogram, Bangladesh

Salt farmers working near the Matarbari coal-fired power project construction site in Cox’s Bazar District, Bangladesh. Photo Credit: Market Forces
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Known throughout Bangladesh for its beautiful beaches and mountainous terrains with deep tropical forests, the Chattogram division of Bangladesh is now at risk of being the location of one of the world’s largest carbon catastrophes. Plans by companies predominantly from Japan and the United States to more than double fossil fuel power in Bangladesh overwhelmingly focus on the Chattogram division, the location of two-thirds of the proposed new fossil fuel capacity in Bangladesh.

20 gigawatts (GW) of new coal and gas power capacity is proposed in the Chattogram division this decade, enough to double the current power capacity of Bangladesh. This massive buildout spells disaster for the local ecology and waterways, communities and livelihoods, health and the climate.

The climate impacts of the proposed Chattogram power buildout would be immense, adding 1.38 billion tonnes of carbon dioxide equivalent (CO₂-e) to the atmosphere throughout the plants’ operational lifetime. This is equivalent to more than five years of Bangladesh’s national emissions. This buildout is being proposed despite the International Energy Agency (IEA) stating that we need to stop adding fossil fuel supply if we are to achieve the goal of net-zero emissions globally by 2050, warning that much of the proposed and even existing liquefied natural gas (LNG) infrastructure risks becoming stranded.

Arguably the most damaging proposal is Matarbari 2, a 1,200 megawatt (MW) coal power station proposed to be built and funded by Japanese companies, contradicting Japan’s commitment to end coal financing made through the G7 in 2021. The Matarbari 1 project has already resulted in damage to local waterways while people have been displaced and lost their livelihoods as a result of construction. If built, health impacts related to air pollution from Matarbari 1 and 2 projects’ operational years would cause an estimated 6,700 premature deaths.

New coal and gas power in Bangladesh would also exacerbate a massive sovereign risk issue. The government of Bangladesh already paid US$1.6 billion in 2021 to companies for unused power capacity, while the Bangladesh Power Development Board (BPDB) is calling for tariff increases to offset the crippling costs of buying power from independent power projects.

By 2030, Bangladesh’s annual LNG import cost would be an estimated US$8.4 billion. With a further LNG-to-power project
construction cost of US$960 million per GW on average, Bangladesh’s economy would be exposed to the volatile prices of imported fuels and force the Bangladeshi public to bear financial risks that should be held by foreign private companies. Companies like Mitsubishi Corporation (Mitsubishi), JERA, and General Electric (GE) are holding Bangladesh as financial hostages so they can profit from the buildout of more polluting power.

Bangladesh has the potential to meet its new energy needs with renewable sources like wind and solar. Moreover, these sources do not require expensive and environmentally destructive fuel imports.

Wealthy nations like Japan and the United States should stop treating Bangladesh as one of the last dumping grounds for polluting power, and instead support Bangladesh to meet its new power needs with the clean, cheap and climate-friendly technologies the rest of the world is able to enjoy.

The Matarbari 1 project has already resulted in damage to local waterways while people have been displaced and lost their livelihoods as a result of construction.

This fishing community village is a stone’s throw away from the under construction Matarbari 1 coal power project.

Photo Credit: Market Forces
Fossil fuel pipeline in Bangladesh

Bangladesh energy state of play
As of November 2021, Bangladesh’s power production capacity was 22 GW, with coal, oil and gas making up 93% of the country’s energy mix, the remaining coming from imported or renewable energy sources. Renewable sources of power make up less than 2% of the country’s energy capacity. Currently, the only two LNG import terminals in Bangladesh are Floating Storage and Regasification Units (FSRUs) with 3.8 million metric tonnes per annum (mmtpa) capacity each, based in Maheshkhali in Chattogram division. Bangladesh started importing LNG in 2018.

Trending away from dirty coal
Bangladesh has typically relied on domestic gas for electricity. However, dwindling domestic supplies resulted in Bangladesh increasing fuel imports. For the last few years, Bangladesh was looking to coal to meet its energy needs.

In 2019, Bangladesh’s intention was to build 29 coal power projects, increasing the coal capacity from 525 megawatts (MW) to 33,200 MW. However, in the face of rising global pressures to tackle climate change, in June 2021 the government of Bangladesh cancelled ten proposed coal power projects. It appears overall that only three are close to coming online. While this clear shift away from coal is a crucial step to decarbonising Bangladesh’s energy future, a planned switch from coal to imported LNG-based power has been reported.

Major overcapacity issues
There is already a major overcapacity issue in Bangladesh. In 2020-2021, about 60 percent of installed

Power System Utilisation in Bangladesh
Future scenarios predict continued underutilisation

<table>
<thead>
<tr>
<th>50% system utilisation</th>
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</thead>
<tbody>
<tr>
<td>45%</td>
</tr>
<tr>
<td>40%</td>
</tr>
<tr>
<td>35%</td>
</tr>
<tr>
<td>30%</td>
</tr>
</tbody>
</table>

10% power demand growth
40%

7% growth 34%

Source: Bangladesh Power Development Board, IEEFA

IEEFA
capacity was not used. According to the Institute for Energy Economics and Financial Analysis (IEEFA), the gap between power production capacity and actual demand has gradually increased over the last few years. IEEFA predicts that as more capacity is added over the next five years, capacity utilisation will drop below 40%. As of January 2022, as many as 23 power plants were idle due to low electricity demand.

**Future plans “not fit for purpose”**

In seeking to achieve long term economic growth, the government of Bangladesh has set out an energy production plan aiming for a total capacity of 72 to 82 GW by 2041. However, energy experts have described this plan as “not fit for purpose,” criticising its heavy reliance on fossil fuels and overprojection of electricity demand.

This comes as no surprise given Japan’s government agency Japan International Cooperation Agency (JICA) has been assigned to prepare Bangladesh’s next energy and power master plan. Many of the world’s biggest corporate proponents of LNG are Japanese companies and it appears JICA’s control over Bangladesh’s energy strategy will serve mainly the interests of these companies. Energy experts are advocating for JICA to make this new plan a low or zero emissions roadmap with no further expansion of coal and LNG and calling for it “be designed in Bangladesh’s best interests, not Japan’s.”

**LNG power explosion**

The LNG power buildout in the Chattogram will cost close to US$18 billion, six times more than the country’s 2022 budget to tackle climate change.

<table>
<thead>
<tr>
<th>District</th>
<th>Number</th>
<th>Capacity (GW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Chattogram</td>
<td>21</td>
<td>18.7</td>
</tr>
<tr>
<td>Barisal</td>
<td>1</td>
<td>3.6</td>
</tr>
<tr>
<td>Dhaka</td>
<td>8</td>
<td>4.3</td>
</tr>
<tr>
<td>Mymensingh</td>
<td>1</td>
<td>0.4</td>
</tr>
<tr>
<td>Unclear</td>
<td>1</td>
<td>3.6</td>
</tr>
</tbody>
</table>

In 2020, 69% of Bangladesh’s electricity was provided by gas power. While most was being met by domestic gas, LNG imports began in September 2018 and are expected to rise. As of December 2021, there are 32 LNG to power projects with the capacity of 30.6 GW and 6 LNG import terminals/FSRUs proposed in Bangladesh. According to Wood Mackenzie’s LNG outlook, Bangladesh’s LNG demand is expected to grow to 21.2 Mtpa by 2030, increasing current LNG import volumes five-fold.

Of the 30.6 GW of LNG to power projects, almost two-thirds are planned in the Chattogram region. At least four of the six terminals or FSRUs are planned for the Chattogram region. For projects with known costs, 15 GW of LNG-based power projects total US$14.6 billion, averaging US$960 million per GW. Based on that average calculation, the LNG to power buildout in the Chattogram division will cost close to US$18 billion, six times more than the country’s 2022 budget to tackle climate change.
Who is behind the Chattogram division buildout?

This section is based on Market Forces’ analysis of known information regarding pending projects in Bangladesh.¹⁸ Typically, large-scale power projects in Bangladesh are partnerships between Bangladesh and foreign companies. Therefore, it would be expected that roughly half of the projects would have a Bangladesh company involved, although it may be the foreign company that is the driving force.

Many of the companies involved in the buildout of fossil fuels in Chattogram are domiciled in Japan. Matarbari 1 coal power plant is being built by Sumitomo Corporation (Sumitomo), which has since ruled out involvement in Matarbari 2. Similarly, the companies involved in the LNG power pipeline, from an analysis based on 21 projects, are overwhelmingly Japanese.

According to Oil Change International, “While framed as helping countries with energy transition, Japan’s push to expand LNG is largely motivated by corporate interests.”¹⁹ As noted in the list of companies below, there are a significant number of Japanese companies involved in multiple roles, including sponsor, engineering procurement and construction contractor (EPC) building projects, or lender. This fact makes it a clear conflict of interest for Japan to be developing the energy and power master plan for Bangladesh.
Japan Inc.’s fossil fuel problem

Both the Japanese government and corporations have continued to finance the expansion of fossil fuels, despite this contradicting the climate goals of the Paris Agreement. As stated by Fatih Birol, the IEA’s executive director in 2021: “If governments are serious about the climate crisis, there can be no new investments in oil, gas and coal, from now – from this year.”

Public finance

According to Oil Change International, Japan is one of the largest providers of public finance for fossil fuels in the world, providing at least US$4.5 billion for fossil fuels annually from 2018 to 2020.

In June 2021, the Japanese government revised its Infrastructure Systems Export Strategy 2025 to “end new direct international government support for unabated coal-fired power generation.” However, it appears that JICA may be considering financing the Matarbari 2 coal-fired power project in contradiction to this commitment. A whistleblower complaint was brought against JICA to the US Securities and Exchange Commission alleging JICA was misleading bondholders by advising that JICA’s bonds were not going to be used in coal power, when in fact the proceeds would be used to fund Matarbari 1 and, if approved, Matarbari 2.

Corporate support

Companies like Mitsubishi, JERA and Marubeni are doubling down on their support of fossil fuel expansion in Chattogram, despite making commitments to net-zero CO₂ emissions by 2050. The IEA’s Net Zero by 2050 Scenario published in May 2021 makes clear that achieving this goal means “no new natural gas fields are needed,” and “also not needed are many of the liquefied natural gas (LNG) liquefaction facilities currently under construction or at the planning stage.”

Nevertheless, Mitsubishi and JERA (through an equity stake in Summit LNG) are acting as sponsors of the proposed Matarbari Summit LNG Power Plant and the Matarbari Summit LNG Terminals. They are also bidding to be the sponsor of the Matarbari LNG Terminal.

Japanese companies sponsoring Chattogram LNG power plants

<table>
<thead>
<tr>
<th>Company</th>
<th>Project Name</th>
<th>Equity stake (of Summit’s 55% joint venture share)</th>
<th>Capacity (MW)</th>
<th>Relative capacity owned (MW)</th>
</tr>
</thead>
<tbody>
<tr>
<td>JERA (22% equity shareholder of Summit)</td>
<td>Matarbari Summit LNG Power Plant</td>
<td>22%</td>
<td>2400</td>
<td>290</td>
</tr>
<tr>
<td>Kyushu Electric</td>
<td>Anwara 590 MW CCPP (United)</td>
<td>20%</td>
<td>590</td>
<td>118</td>
</tr>
<tr>
<td>Marubeni</td>
<td>Pertamina LNG Power Plant</td>
<td>50%</td>
<td>1400</td>
<td>700</td>
</tr>
<tr>
<td>Mitsubishi Corporation</td>
<td>Matarbari Summit LNG Power Plant</td>
<td>25%</td>
<td>2400</td>
<td>600</td>
</tr>
<tr>
<td>Mitsui &amp; Co</td>
<td>CPGCBL-Mitsui 500-630 MW LNG Based CCPP</td>
<td>50%</td>
<td>630</td>
<td>315</td>
</tr>
<tr>
<td>Sojitz</td>
<td>Anwara 590 MW CCPP (United)</td>
<td>20%</td>
<td>590</td>
<td>118</td>
</tr>
</tbody>
</table>
Chattogram LNG import infrastructure projects and corporate involvement

<table>
<thead>
<tr>
<th>LNG infrastructure project</th>
<th>Role</th>
<th>Company</th>
</tr>
</thead>
<tbody>
<tr>
<td>Maheshkhali LNG Terminal</td>
<td>Sponsor</td>
<td>GE</td>
</tr>
<tr>
<td>Matarbari LNG Terminal</td>
<td>Bidder</td>
<td>Chugoko Electric</td>
</tr>
<tr>
<td>Matarbari Summit LNG Terminals (2)</td>
<td>Feasibility Study</td>
<td>Tokyo Gas</td>
</tr>
<tr>
<td>Matarbari Summit LNG Terminals (2)</td>
<td>Prospective Lender</td>
<td>ADB</td>
</tr>
<tr>
<td>Matarbari Summit LNG Terminals (2)</td>
<td>Shareholder in Summit</td>
<td>IFC, JBIC, JERA</td>
</tr>
<tr>
<td>Matarbari Summit LNG Terminals (2)</td>
<td>Sponsor</td>
<td>Mitsubishi Corporation</td>
</tr>
</tbody>
</table>

**General Electric: keeping the US in the game**

US involvement in this pipeline of LNG to power projects is driven largely by GE, a sponsor or EPC for at least three proposed LNG to power projects in Chattogram. GE is also involved as a sponsor or a bidder in all four proposed LNG terminals. Despite setting a goal to become carbon neutral in its facilities and operations by 2030, GE includes polluting technologies like gas power as a part of its energy transformation strategy.²⁸
Coal Power Generation Company Bangladesh (CPGCBL) and Sumitomo Corporation (Sumitomo) are building a 1,200 MW coal-fired power plant, Matarbari 1, on Matarbari Island in Cox’s Bazar, the southeastern coast of Bangladesh.29

The government of Bangladesh has requested JICA finance a further 1,200 MW coal power plant proposal, Matarbari 2.30 On February 28, 2022, after significant civil society pressure, Sumitomo Corporation updated its climate change policy and confirmed it would end its involvement in Matarbari 2.31

In March 2022, news reports revealed that the Environmental Impact Assessment (EIA) of Matarbari 2 fails to adequately address major environmental and health impact concerns. According to environmental and air pollution experts, JICA’s EIA report of Matarbari 2 “has furnished misleading information, used flawed air quality modelling and intentionally omitted facts to avoid addressing major crises likely to be caused by the project.”32

A detailed technical evaluation by Mark Chernaik, Staff Scientist of Environmental Law Alliance Worldwide (ELAW), has found the Matarbari 2 EIA:33

- Fails to provide adequate justification for the project in light of power overcapacity issues in Bangladesh,
- contradicts the Bangladesh government’s findings on renewable energy alternatives,
- does not apply international best practice to manage coal ash or follow Japan’s own ambient air quality standards, and
- fails to disclose detailed information on the true impact on the environment, climate and communities.

Matarbari 1 has created significant losses for project affected communities, including flooding from construction, and the filling of the Kohelia River.34 As a result of the construction, more than 2,000 fisherfolk who used to rely on the river lost their livelihoods, and trade from the region has been disrupted as boats cannot navigate the river any longer.35 Locals report pollution from the project’s development has damaged adjacent shrimp farms and the river water has become turbid after mixing with silt from the project work.36 The Deputy Director of the Department of Environment (DoE), which approved the Environmental Impact Assessment in 2014, noted that the encroachment of Kohelia River was not mentioned by project proponents, and that “DoE would not have issued any clearance” if it was.37

As of June 2021, according to testimonials of local community members, salt farmers and fishermen have lost their jobs due to the construction of Matarbari coal power project and are yet to receive compensation.38
Cost overruns

JICA is currently funding the construction of Matarbari 1, having paid 300.5 billion yen (US$2.7 billion approx.) in five loan tranches for the project to July 2019. While these funds have already been disbursed, it was reported in November 2021 that JICA signed a follow-on loan agreement of an additional 143 billion yen (US$1.2 billion) for Matarbari 1. Earlier in 2021, the project’s implementation agency announced a cost overrun of Taka 164.05 billion (US$1.9 billion), roughly 46% of the original cost.

Local and international opposition

The Matarbari coal power project has been challenged by local community members demanding compensation for the filling of the Kohelia river.
Protest in Tokyo in 2021: In June, activists in Japan protested outside of Sumitomo’s Annual General Meeting in Tokyo holding images of community members affected by Matarbari 1. Photo credit: ©Taishi Takahashi

Action outside the Embassy of Japan in the Philippines. Photo Credit: Asian Peoples’ Movement on Debt and Development (APMDD)
In October 2021, activists from around the world joined to protest Japan’s continued coal power finance, highlighting the government’s role in financing the Matarbari 1 coal project and considering Matarbari 2. More recently, a global petition was launched by Fridays for Future seeking that Matarbari be stopped.43
Chattogram, formerly known as Chittagong, is a major coastal region in southeastern Bangladesh. Chattogram city is the second largest urban area after the capital Dhaka, and hosts the main seaport of Bangladesh. Despite Chattogram Port being one of South Asia’s most important trading routes through the Bay of Bengal and one of the busiest ports in the world, the region is also home to long sandy beaches and reportedly Bangladesh’s last rainforest, making it a favourite tourist destination and ecologically important place for the people of Bangladesh.

Cox’s Bazar is one of the world’s longest natural beaches and a favourite tourist destination for the people of Bangladesh. Stretching across 100 kilometres, the blue waters, golden sandy beaches, and tropical weather of Cox’s Bazar attracts 10,000,000 tourists every year. The coastal plains offer tourists a respite away from the busy cities. Himchari National Park is a lush rainforest with waterfalls, home to hundreds of species of animals, birds and plants.

Parbotto Chattogram or the Chittagong Hill Tracts (CHT) span more than 13,000 square kilometres and is a group of three districts within Chattogram division. CHT is distinct in its ethnic, cultural, and environmental diversity to the rest of Bangladesh. The hill tracts are beautiful mountainous terrains with deep tropical forests, waterfalls and freshwater bodies. The hill tracts are also home to the majority of Bangladesh’s ethnic and indigenous peoples who have a unique history and culture.
Conservation scientists and researchers working with Indigenous parabiologists to protect threatened species using traditional ecological knowledge in Parbotto Chattogram. Photo Credit: Creative Conservation Alliance
Covering around 10% of the entire country’s land mass, CHT’s lush, green tropical forests make up a biodiversity hotspot. Although there is no definitive figure of the number of plants and animals in CHT forests, conservationists identify at least 26 globally threatened species that live in the hill tracts including the great Asian Elephant, Clouded Leopard and Chinese pangolin, among others. CHT forests are increasingly threatened by deforestation, degradation of forest resources and poor land management practices. The construction of the 230 MW hydro power station and dam at Kaptai in the 1960s affected 54,000 acres of forest and agricultural areas and displaced over 100,000 local and indigenous peoples, resulting in forced migration to neighbouring India.

The Chattogram division is at an increased risk of losing its charm and beauty due to unplanned urbanisation and rapid development of projects without due consideration of nature and biodiverse ecosystems.
Issues related to fossil fuel buildout

Financial cost of coal and LNG

Both coal and LNG are imported fuels and, as such, there is a substantial and volatile cost to using these fuels in electricity generation. According to the World Bank, natural gas and coal prices reached record levels in October 2021. The Australian thermal coal price was three times higher in October 2021 than January 2021.57 The LNG market can also be expensive and volatile,58 with Bangladesh already feeling the pinch, buying two LNG cargoes at record prices in October 2021.59

By 2030 it would cost Bangladesh an estimated US$8.4 billion every year to import LNG at the 2030 price forecasted by the IEA.60 Depending on costly imported LNG could significantly hurt Bangladesh’s growing trade deficit61 and threaten energy security.62

A report from Centre for Policy Dialogue finds “current price estimates for [LNG imports in] the fiscal year 2021-22 make LNG 24 times more expensive than [Bangladesh’s] national production by national companies”.63 Disruptions in global LNG trade can cause gas shortages, even when long-term supply contracts have been signed. For example, as of December 2021, Qatar and Oman, two contracted long-term LNG suppliers to Bangladesh, have planned to reduce their 2022 LNG deliveries.64

Domestic issues related to supply can also arise. One of Bangladesh’s two LNG importing facilities was forced to stop LNG imports in December 2021 due to a damaged mooring line.65

This cost is compounded by the fact that Bangladesh provides “capacity payments,” a monetary penalty paid to private power plant owners for unused capacity due to low electricity demand.66 For example, the newly constructed Payra coal power plant had not operated at full capacity for months due to low demand and delay in transmission infrastructure being built.67 For sitting idle, the owners received roughly US$116 million (Taka 10 billion) for seven months from the start of its commercial operation to June 2021.68

In 2021 the Bangladesh Power Development Board (BPDB) paid US$1.6 billion (approx.) in capacity payments, a 48% increase from the previous year.69 This burden is expected to increase as more plants are built. One third of the energy ministry’s budget has been allocated to capacity payments for idle power plants in the 2020-2021 financial year.70 Even though Bangladesh has scrapped some coal-fired power plants, the expectation is still that Bangladesh will produce a surplus of 17 GW of electricity by 2030.71

These rising costs from imported fuels may be passed on to consumers in the form of tariff increases. According to a February 2022 report by the Institute for Energy Economics and Financial Analysis, in January 2022, the BPDB proposed a bulk power tariff increase of up to 64% to cover a Taka 325 billion (US$3.8 billion) shortfall.72 Given the pipeline of projects, this proposed tariff increase is unlikely to be the last, and expected to become an added burden to everyday consumers of electricity.73

Damage to climate

In order to meet the climate goals of the Paris Agreement, there is no room for new carbon emitting power projects.74 This means the proposed fossil fuel buildout in Chattogram could end our chances of meeting the Paris climate goals.

The total lifecycle carbon emissions from Chattogram’s proposed coal and LNG power projects’ lifetime operations is estimated at 1.38 billion tonnes of carbon dioxide equivalent (CO2-e). This is equivalent to more than five years of Bangladesh’s annual greenhouse gas emissions.75

Moreover, “the production, processing, and transport of gas release large amounts of methane, a GHG that has a much greater and more immediate climate impact”76, which are not included in the figure above.
Intentional methane releases or leaks reduce any climate benefits from replacing coal with LNG. According to the Natural Resources Defense Council, “Emissions from burning gas to generate electricity are more than 50 percent higher than global sustainable development targets for the electricity sector, demonstrating that gas-fired power production is neither a strategic nor an effective approach to combat climate change and hold global warming at or below 1.5°C.”

Bangladesh is a climate vulnerable country, bearing some of the worst impacts of climate change. According to NGO Germanwatch, from 2000 to 2019, “Bangladesh suffered economic losses worth US$3.72 billion and witnessed 185 extreme weather events due to climate change.” According to the Environmental Justice Foundation, up to 50% of those now living in Bangladesh’s urban slums may be there because they were forced to flee their rural homes as a result of riverbank flooding.

In a scenario where global warming is limited to 2°C by 2050, 42 million people living on coastal Bangladesh (almost 18% of the projected 2050 population) would be at risk of flooding at least once a year, and the entirety of Matarbari Island is projected to be inundated by coastal flooding. It is ironic that the impacts of climate change, exacerbated by the additional fossil fuel power buildout, would be catastrophic to Chattogram’s physical LNG or coal power assets, threatening Bangladesh’s energy security, as storms, flooding and high winds damage infrastructure.

Health impacts of fossil fuels

Bangladesh is ranked as the world’s most polluted country by both IQAir and Air Quality Life Index (AQLI), two leading global air quality information platforms. According to a study published in the Journal of the National Academy of Sciences, every year Bangladesh experiences 73,000 avoidable deaths related to health impacts from air pollution from burning fossil fuels.

Several studies examining the health impacts of proposed coal-based power projects have shown alarming risks. If built, the Matarbari (1 and 2) projects alone have been estimated to cause 6,700 premature deaths “due to increased risk of stroke, heart disease, lung cancer and respiratory diseases,
including lower respiratory infections in children during the plants’ operational years. The air pollution from the projects would also increase asthma, cancer, preterm births and other chronic respiratory diseases. Studies by the Centre for Research on Energy and Clean Air (CREA) demonstrate emissions from proposed coal fossil fuel power projects in the Chattogram region would significantly worsen air quality, increasing the risk of death and illness from acute and chronic diseases.

LNG, although touted by the fossil fuel industry as a “cleaner fuel” than coal, has similar health impacts. According to a report by Physicians for Social Responsibility (PSR), LNG terminals lead to poorer air quality and are located in areas that fail to meet air quality standards. They state: “these extra air pollutants (methane as well as nitrogen oxides, volatile organic compounds, ozone and particulate matter) exacerbate the health risks that already face heavily burdened communities”. This is a particular concern for Chattogram, where residents live with the annual average particulate pollution level exceeding both the World Health Organization (WHO) guideline and Bangladesh’s own national standard.

Peer reviewed scientific studies show burning gas in combined cycle power plants results in toxic gases and particulate matter which cause premature deaths and other health impacts like chronic bronchitis, cardiovascular disease, asthma and other health impacts.

The coal and LNG build out in Chattogram would not only exacerbate the risks of climate change on already vulnerable coastal populations, but also deadly air-pollution related health impacts in the densely populated vicinities of the power plants.

**Displacement and loss of livelihoods**

Construction of coal power projects have already destroyed homes, relocated families and impacted traditional livelihoods. Here are some stories of the people whose lives and livelihoods have been harmed by coal and LNG projects in Chattogram.
Saleha Begum is a resident of Matarbari, Cox’s Bazar. Saleha and her family lost their home to the sea two years ago from erosion. According to Saleha’s testimony, the embankment eroded after sand was removed for the construction of the Matarbari 1 coal power project and port.

“MY HOUSE HAS COLLAPSED DUE TO SAND REMOVAL FOR THE CONSTRUCTION OF THE MATARBARI COAL POWER PROJECT.”
- Saleha Begum, Matarbari, Bangladesh

Nazimuddin has fished at the Kohelia River in Matarbari, Cox’s Bazar to support his family for the last ten years. Many fisherfolk like Nazimuddin have lost their livelihoods because of the filling up of the Kohelia River to build a road for the Matarbari coal power project.

“I USED TO EARN MY LIVELIHOOD THROUGH FISHING. NOW I CAN’T DO IT ANYMORE SINCE THE COAL POWER PLANT’S CONSTRUCTION BEGAN.”
- Nazimuddin, fisherfolk of Kohelia River, Matarbari, Bangladesh
Mizan is a third generation salt and betel leaf farmer in Maheshkhali. He is concerned that pollution from the Matarbari coal power project will destroy the salt and sweet betel leaf farms that Maheshkhali is famously known for around Bangladesh. Mizan worries he will soon be unemployed.

"I’ve learned that after the coal power plant is built, it will emit toxic gases and harm our salt and betel leaf farms.

- Mohammad Mizan, Saltworker, Maheshkhali, Bangladesh
What needs to happen?

The current overreliance on fossil fuels and massive proposed LNG buildout poses significant threats to the health, livelihoods and financial sustainability of Bangladeshis. Bangladesh can instead meet its energy needs with renewable sources. The country has potential for 30 GW of solar energy by 2041, according to the government of Bangladesh’s Sustainable and Renewable Energy Development Authority (SREDA). SREDA has also set a target of 5 GW of onshore and offshore wind power by 2030. The sources would produce energy more cheaply, as they would not require costly fossil fuel imports.

Japan’s involvement in the proposed fossil fuel buildout is particularly suspicious as the new energy and power master plan due in 2022 is funded and prepared by Japan. Although Japan claims that it is seeking a “transformation to a low or zero carbon energy system”, it has also stated its intention to continue financing LNG projects overseas, and has not ruled out funding the Matarbari 2 coal power project.

If US-based GE or Japan-based Mitsubishi Corporation, JERA, and Marubeni are able to deliver their polluting fossil fuel plans in Bangladesh, the transition to renewable clean energy will be stifled. GE, Mitsubishi and JERA should be supplying Bangladesh with climate-friendly renewable technologies to ensure that Bangladeshis can enjoy a safe, healthy future.
Methodology

This report examined the LNG projects (LNG to power, terminals and Floating Storage Regasification Units (FSRUs) proposed to be built in Bangladesh as of December 2021.

Market Forces identified proposed projects that have not reached financial close or have material prospects of being commissioned. Projects considered include the Matarbari coal-fired power projects, 32 LNG-based power projects (21 projects in the Chattogram region) with 30.6 GW capacity and LNG import infrastructure. Project data, including details on companies involved and potential financiers was compiled using Bangladesh Power Division’s Revisiting Power System Master Plan (PSMP) released in 2018, official government documents, publicly available resources, company websites, peer-reviewed academic journals, news and research reports and subscription based financial databases by IJGlobal and Thomson Reuters.

Disclaimer

The projects list compiled by Market Forces is not an exhaustive list of all gas and LNG projects in Bangladesh. Projects powered by domestic gas sources are excluded. Market Forces has made every effort to ensure the analysis and information provided in the report are sound, but cannot guarantee the accuracy or correctness of any of the data collected from external sources.

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### Appendices

#### Appendix A: List of proposed LNG power projects in Chattogram and rest of Bangladesh

<table>
<thead>
<tr>
<th>Name</th>
<th>Capacity (MW)</th>
<th>Completion Year</th>
<th>Sponsor</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Chattogram</strong></td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Anwara CCPP* (United)</td>
<td>590</td>
<td>2026</td>
<td>Kyushu Electric, Sojitz and United Enterprises</td>
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<tr>
<td>Anwara 600 MW CCPP (Jalalabad)</td>
<td>600</td>
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<td>Jalalabad Electric Power Company</td>
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<tr>
<td>Ashuganj 600 MW CCPP (Replacing existing Unit 3&amp;4)</td>
<td>600</td>
<td>Past 2030</td>
<td>Ashuganj Power Station Company Ltd (APSCL)</td>
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<tr>
<td>Ashuganj 600 MW CCPP (Replacing existing Unit 5)</td>
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<td>Past 2030</td>
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<tr>
<td>Ashuganj 600 MW CCPP at B-Type Area (Phase-1)</td>
<td>600</td>
<td>2030</td>
<td>Ashuganj Power Station Company Ltd (APSCL)</td>
</tr>
<tr>
<td>Ashuganj 600 MW CCPP at B-Type Area (Phase-2)</td>
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<td>2030</td>
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<tr>
<td>Ashuganj 600 MW CCPP at B-Type Area (Phase-3)</td>
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<td>Past 2030</td>
<td>Ashuganj Power Station Company Ltd (APSCL)</td>
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<tr>
<td>Boalkhali 400 MW CCPP (Phase-1)</td>
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<td>Rural Power Company Limited (RPCL)</td>
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<tr>
<td>Boalkhali 400 MW CCPP (Phase-2)</td>
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<td>CPGCBL-Mitsui 500-630 MW LNG Based CCPP</td>
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<td>2028</td>
<td>Coal Power Generation Company Bangladesh Limited (CPGCBL) Mitsui &amp; Co</td>
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<tr>
<td>Maheshkhal LNG Power Plant</td>
<td>3600</td>
<td>2025</td>
<td>Bangladesh Power Development Board (BPDB) General Electric Company (GE)</td>
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<tr>
<td>Matarbari Summit LNG Power Plant</td>
<td>2400</td>
<td>2023</td>
<td>General Electric Company (GE) Mitsubishi Corporation Summit</td>
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<tr>
<td>Mirsarai 1800 MW LNG Based CCPP Project</td>
<td>1800</td>
<td>2024</td>
<td>Rural Power Company Limited (RPCL)</td>
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<tr>
<td>Mirsharai 660 MW power project</td>
<td>660</td>
<td>-</td>
<td>Confidence Group General Electric Company (GE)</td>
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<td>Pertamina LNG Power Plant</td>
<td>1400</td>
<td>-</td>
<td>Marubeni Pertamina</td>
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<td>Raojan 400±10% MW CCPP (1st Unit)</td>
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<td>2024</td>
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<td>Raozan 550 MW CCPP (2nd Unit)</td>
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<td>Sonagazi, Feni 500-600 MW CCPP (1st Unit)</td>
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<td>Sonagazi, Feni 500-600 MW CCPP (2nd Unit)</td>
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<td>Sonagazi, Feni 500-600 MW CCPP (3rd Unit)</td>
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## Rest of Bangladesh

<table>
<thead>
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<th>Name</th>
<th>Capacity (MW)</th>
<th>Completion Year</th>
<th>Sponsor</th>
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<td>Gazaria 600 MW LNG Based CCPP Project (Phase-2)</td>
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<td>Gazipur 225 MW CCPP</td>
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<td>Gazipur 450 MW CCPP</td>
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<td>Meghnaghat (Unique)</td>
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<td>2022</td>
<td>General Electric Company (GE) Nebras Power Strategic Finance Unique Hotel &amp; Resorts</td>
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<td>Meghnaghat 600 MW CCPP (Edra)</td>
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<td>-</td>
<td>Edra Power Holdings Sdn Bhd Winnievision Power Ltd</td>
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<td>Munshiganj 660 MW CCPP (Phase 2)</td>
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<td>Shiddirgonj 550 MW CCPP</td>
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<td>B-R Powergen</td>
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<td>ACWA LNG Power Plant</td>
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<td>2024</td>
<td>ACWA</td>
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<td>Payra LNG Power Plant</td>
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<td>2024</td>
<td>North-West Power Generation Company Ltd Siemens</td>
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*CCPP = Combined Cycle Power Plant

### Appendix B: Foreign companies listed by role and number of projects in the Chattogram division (not including bidding)

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<th>Role</th>
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<tr>
<td>China</td>
<td>China Energy Engineering Group Northwest Construction &amp; Investment Co Ltd (EnergyChina/ CEEC)</td>
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<td>Powerchina International Group Ltd (PowerChina)</td>
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<td>SEPCO III</td>
<td>EPC</td>
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<td>India</td>
<td>Bharat Heavy Electricals Limited (BHEL)</td>
<td>EPC</td>
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<td>Indonesia</td>
<td>Pertamina</td>
<td>Sponsor</td>
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<td>JBIC</td>
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<td>Kyushu Electric</td>
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<td></td>
<td>Marubeni</td>
<td>Sponsor</td>
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<td>Country</td>
<td>Company</td>
<td>Role</td>
<td>Number of projects</td>
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<td>----------------------------------------------</td>
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<tr>
<td>Ministry of Economy, Trade and Industry (METI)</td>
<td>Feasibility Study</td>
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<tr>
<td>Mitsubishi Corporation</td>
<td>Sponsor</td>
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<tr>
<td>Mitsui &amp; Co</td>
<td>Sponsor</td>
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<td>1</td>
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<td>SMBC Group</td>
<td>Adviser</td>
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<tr>
<td>Sojitz</td>
<td>Sponsor</td>
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<td>1</td>
</tr>
<tr>
<td>TEPSCO</td>
<td>ESIA</td>
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<td>Multilateral</td>
<td>ADB</td>
<td>Lender (Prospective)</td>
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<td>Lender (Prospective)</td>
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<td>Singapore</td>
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<tr>
<td>USA</td>
<td>General Electric Company (GE)</td>
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<td>USA</td>
<td>General Electric Company (GE)</td>
<td>Sponsor</td>
<td>3</td>
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</tbody>
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Endnotes


2. Ibid.


18. Project data, including details on companies involved and potential financiers was compiled using Bangladesh Power Division's Revisiting Power System Master Plan (PSMP) released in 2018, official government documents, publicly available resources, company websites, peer-reviewed academic journals, news and research reports and subscription based financial databases by IJGlobal and Thomson Reuters. The data is necessarily incomplete, as information may not be publicly available and companies may not have yet been appointed. See Appendix A and Methodology section.


35. Ibid.


38. Interviews of Matarbari Community members (2021, July) Market Forces.


46. Bangladesh National Portal. (n.d.). Short guideline for traveling Cox’s Bazar. http://www.coxsbazar.gov.bd/en/site/page/AtnS-%E0%A6%95%E0%A6%9E%E0%A7%8D%E0%A6%B8%E0%A8%AC%E0%A6%BE%E0%A6%9C%E0%A6%BE%E0%A6%B0-%E0%A6%AD%E0%A7%8D%E0%A6%B0%E0%A6%AE%E0%A6%A3%E0%A7%87%E0%A6%B0-%E0%A6%B8%E0%A6%82%E0%A6%95%E0%A7%8D%E0%A6%B7%E0%A6%BF%E0%A6%AA%E0%A7%8D%E0%A6%A4-%E0%A6%97%E0%A6%BE%E0%A6%87%E0%A6%A1

51. (n.d.) MoCHTA - Background, Government of Bangladesh, https://mochta.gov.bd/site/page/a26cc3a5-8f9e-427a-9cbd-9e614de0c052/MoCHTA-Background


73. Ibid.


75. Emission estimate based on median lifecycle emissions from combined cycle gas power according to IPCC 2014, p1335. The 18.7 GW of proposed LNG projects in Chattogram (Appendix A) are assumed to have a 50% average capacity factor across a 30-year economic lifetime.


Lifetime CO2 estimates of the Matarbari 2 coal power project is based on the Global Energy Monitor’s (GEM) Global Coal Plant Tracker (GCPT) January 2022 dataset (not publicly available).

Bangladesh’s annual greenhouse gas emissions for 2018 was 257 million tonnes CO2 equivalent, according to the Emissions Database for Global Atmospheric Research (EDGAR).


77. Ibid.


87. Ibid.

88. Noting that some of these coal projects have been cancelled. Centre for Research on Energy and Clean Air. (2021, June 9). Air quality, health and toxics impacts of the proposed coal power cluster in Chattogram, Bangladesh –. https://energyandcleanair.org/publication/air-quality-health-and-toxics-impacts-of-the-proposed-coal-power-cluster-in-chattogram-bangladesh


