

# Finding a Way Out of the Energy and Climate Crisis: The Story of Bangladesh

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**Finding a Way Out of the Energy and Climate Crisis: The Story of Bangladesh** is developed by Energy Tracker Asia. Energy Tracker Asia commits to publishing high-value content, with the aim of showcasing the inevitable rise of clean energy in Southeast and East Asia by creating compelling stories and getting our stories to the people who need it most.

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## Foreword

Bangladesh is among Asia's most fossil fuel-dependent economies, far behind others in its decarbonisation progress. The country is struggling with an energy crisis while consistently suffering from climate change's worst impacts.

The climate crisis is causing internal migration, with more and more climate refugees gathering around Dhaka – the world's most densely-populated city <sup>1</sup>. The country's population is growing at 1.1% annually <sup>2</sup>, while the commercial energy demand will increase by 400% by 2038 compared to 2018 <sup>3</sup>.

All these factors have plunged Bangladesh into a dauntingly complex situation. It must find a way to decarbonise its economy, ensure a regular energy supply sufficient for the needs of its flourishing economy and protect its population from the climate crisis.

1. Cities with the highest population density worldwide in 2022, [Statista](#)

2. Bangladesh Population 2023, [Worldpopulationreview.com](#)

3. Anik, Asif & Rahman, Sanzidur. (2021). [Commercial Energy Demand Forecasting in Bangladesh. Energies. 14. 10.3390/en14196394](#)

## Bangladesh and Its Fossil Fuel Reliance

Bangladesh relies on fossil fuels for 98% of its electricity. As of 2022, the energy mix comprises natural gas (59%), coal (15%) and other fossil fuels (24%)<sup>4</sup>.

Solar, wind, biofuels and hydropower make up the rest. Instead of progressing, between 2015 and 2022, Bangladesh decreased its non-fossil electricity generation from 3% to 2%. For comparison, the rest of Asia increased its average from 24% to 32% during that time. As a result, Bangladesh's share of clean power (2%) remains the lowest among other South Asian countries and far behind India (23%) and Pakistan (43%), for example.

The domestic natural gas resources that have long been fuelling the country's power sector are now depleting. According to estimates, they will run out in the next nine<sup>5</sup> to 11 years<sup>6</sup>.

Under the new Integrated Energy and Power Master Plan (IEPMP) draft, the power sector's gas consumption will grow between 160% and 360% to generate 30% of power by 2050<sup>7</sup>. About half of the required investment for power generation will have to go to the gas sector.

4. Country Review - Bangladesh, [Ember](#)

5. Bangladesh's gas reserves drying up, [The Daily Star](#)

6. Bangladesh has gas reserves for over 11 years: Nasrul, [The Daily Star](#)

7. ANALYSIS-Bangladesh's energy plan faces gas dilemma as fuel crisis bites, [Reuters](#)

To satisfy that growth, Bangladesh is looking towards imports. As of 2022, they comprised 22% of the total gas demand <sup>8</sup>. By 2050, the country will import 49 million tonnes of LNG <sup>9</sup>. For comparison, in 2022, it imported 4.6 million.

According to the IEEFA, Bangladesh's oil and coal plants, with just a single exception, also run on imported fuels <sup>10</sup>.

8. Bangladesh's reliance on LNG increases heat stress, finance and energy risks, [Zero Carbon Analytics](#)

9. Bangladesh's energy plan faces gas dilemma as fuel crisis bites, [Japan Times](#)

10. Charting an electricity sector transition pathway for Bangladesh, [IEEFA](#)

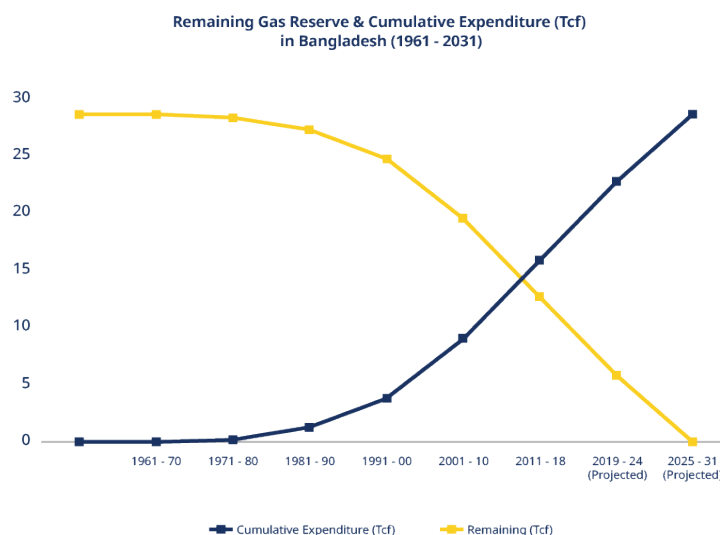
## Economic Impacts of Fossil Fuel Reliance

Bangladesh's dependence on fossil fuel imports has unleashed a myriad of economic and fiscal challenges.

### In the Midst of a Fiscal Crisis

At times, the wild rally in global gas markets in 2022 made it impossible for Bangladesh to outbid wealthier buyers. The inability to afford gas supplies led the government to cut power in 85 of the 92 days between mid-July and the end of October <sup>11</sup>. The blackouts, affecting 75% to 80% of the country <sup>12</sup> and over 130 million people <sup>13</sup>, will likely last until at least 2026 <sup>14</sup>.

To try and salvage the situation, Bangladesh was forced to strike gas delivery deals at prices up to 10 times higher than those in 2020 <sup>15</sup>. Compared to local gas, imported LNG was 24 times more expensive <sup>16</sup>.



Source: Energy and Mineral Resources Division

Figure 1 <sup>17</sup>

11. Analysis: Gas shortage exposes fragile South Asian economies to more pain, [Reuters](#)

12. Most of Bangladesh left without power after national grid failure, [CNN](#)

13. Power blackouts hit 130 million people in Bangladesh, [Le Monde](#)

14. Global Gas Crunch Leaves Bangladesh Facing Blackouts Until 2026, [Bloomberg](#)

15. Bangladesh Struggling with Pricy LNG, [Energy Tracker Asia](#)

16. Imported LNG to be 24 times more expensive than local gas: CPD, [The Business Standard](#)

17. Figure 1: Remaining Gas Reserves and Cumulative Expenditures in Bangladesh, [LightCastle Partners](#)

Furthermore, the depreciation of the Bangladeshi taka against the US dollar, in which gas deals are quoted, has strained the country's foreign currency reserves. The situation caused a fiscal crisis <sup>18</sup>, and Bangladesh had to seek financial help from creditors and the IMF <sup>19</sup>.

Yet, the government plans to continue importing fossil fuels. Ember estimates that spot market LNG purchases will cost Bangladesh USD 11 billion between 2022 and 2024 <sup>20</sup>.

### **Business Sector Challenges and the Cost of Living Crisis**

Bangladesh is among the leading manufacturing sites of the global textile and garments industry. The industry accounts for 10% of the country's GDP and 80% of its total exports <sup>21</sup>.

However, the energy crisis has proved to threaten its competitiveness greatly. Businesses had to bear with multiple electricity rate hikes, with gas prices for some sectors jumping from 14% to 179% <sup>22</sup>. As a result, production costs for businesses doubled <sup>23</sup>.

18. Bangladesh, Pakistan Face More LNG Uncertainty Despite Price Drop, [Energy Intelligence](#)

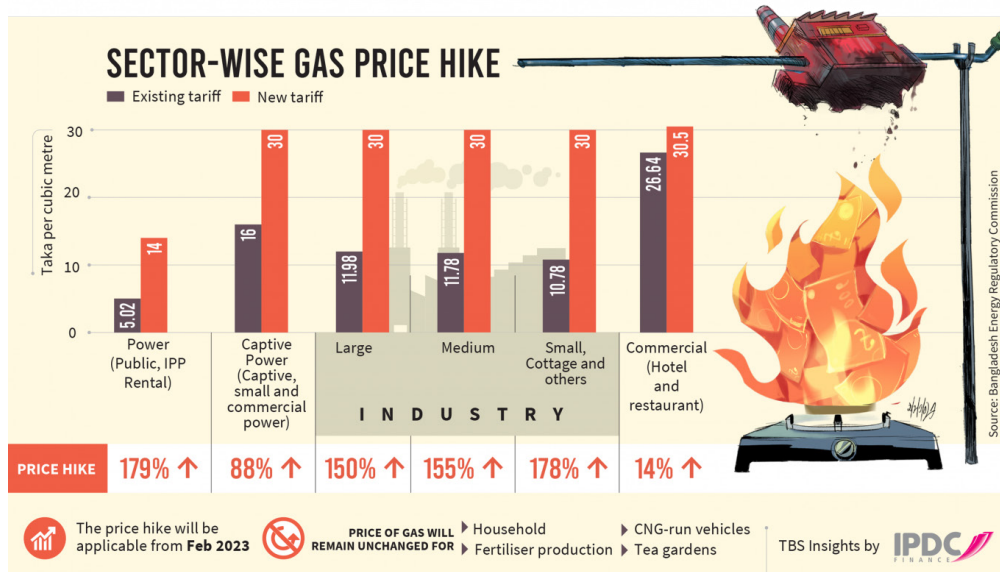
19. Global gas crunch leaves Bangladesh facing blackouts until 2026, [Business Standard](#)

20. Spot market LNG purchases can cost Bangladesh about \$11 billion between 2022 & 2024, [Ember](#)

21. Bangladeshi industries explore renewables as power crisis looms, [Mongabay](#)

22. Gas shock for industries, [The Business Standard](#)

23. Big hike in gas prices for Bangladesh's power plants, industry, [Asia News Network](#)

Figure 2<sup>22</sup>

Even those capable of bearing the high power costs weren't guaranteed a stable and regular supply.

The blackouts have lasted up to 13 hours<sup>13</sup> a day and have caused a 50% drop in production output<sup>24</sup>. Some factories lost up to 100 working hours per month<sup>25</sup>. No industry was unaffected – from textile and ice cream production to ceramic manufacturers and pharmaceutical companies<sup>26</sup>.

The crisis also worsened the energy poverty problem in the country. At the start of 2023, retail power users had to deal with multiple electricity rate hikes<sup>27</sup>, further fuelling the already high inflation.

The energy crisis has other social implications as well. Schools, hospitals and offices are being closed in a bid to save energy<sup>28</sup>.

24. Power crisis in Bangladesh: An overview of its economic and strategic implications, [Observer Research Foundation](#)

25. Power cuts make households, industries suffer in Bangladesh, [New Age Bangladesh](#)

26. Worsening electricity supply fresh blow to industries, [The Daily Star](#)

27. Bangladesh hikes power price again in less than three weeks, [New Age Bangladesh](#)

28. Frequent power cuts cripple hospitals, education institutes, [The Business Standard](#)



## A Future of Stranded Assets

The economic and financial consequences of fossil fuel import reliance hasn't stopped Bangladesh from planning to build new gas infrastructure.

Three new LNG terminals remain in the pipeline <sup>29</sup>, while the country might also consider Russia's offer for LNG deliveries and a new LNG hub <sup>30</sup>.

According to estimates, the annual debt bill of the projects would top USD 2 billion <sup>31</sup>. Another USD 16 billion investment in new gas infrastructure is in the pipeline <sup>32</sup>.

The country also has 5.7 GW of planned coal capacity <sup>33</sup>. Even if the projects are completed, their future operation is far from certain, judging by signs from other newly built plants. For example, one of the Rampal plant's units commissioned in 2022 suspended operation just 29 days after launch due to coal shortages.

The controversial Matarbari coal power plant, which couldn't even launch and was delayed until the end of 2026, cost eight to 10 times more than comparable projects in China <sup>34</sup>. As a result, Bangladesh is stuck with a brand new coal plant while others are decommissioning such assets.

29. Bangladesh plans to build 3 new LNG terminals (up to 31 bcm/year in total), [Ener Data](#)

30. Russia keen to set up LNG hub in Bangladesh, [Prothomalo](#)

31. Bangladesh's reliance on fossil fuel, LNG to worsen heat stress, [Dhaka Tribune](#)

32. The Dirty Truth About "Clean" Gas, [Global Energy Monitor](#)

33. Boom and Bust Coal 2023, [Global Energy Monitor](#)

34. Japan-funded Matarbari coal plant in Bangladesh costs 8 to 10 times more than comparable plants in China, [IEEFA](#)

In 2022, the fossil fuel crisis shut down many power plants in Bangladesh or left them underutilised. This trend will likely continue, considering that the World Bank sees fossil fuel prices in global markets remain elevated in the short term <sup>35</sup>. The IEEFA projects high LNG prices until at least 2025 <sup>36</sup>.

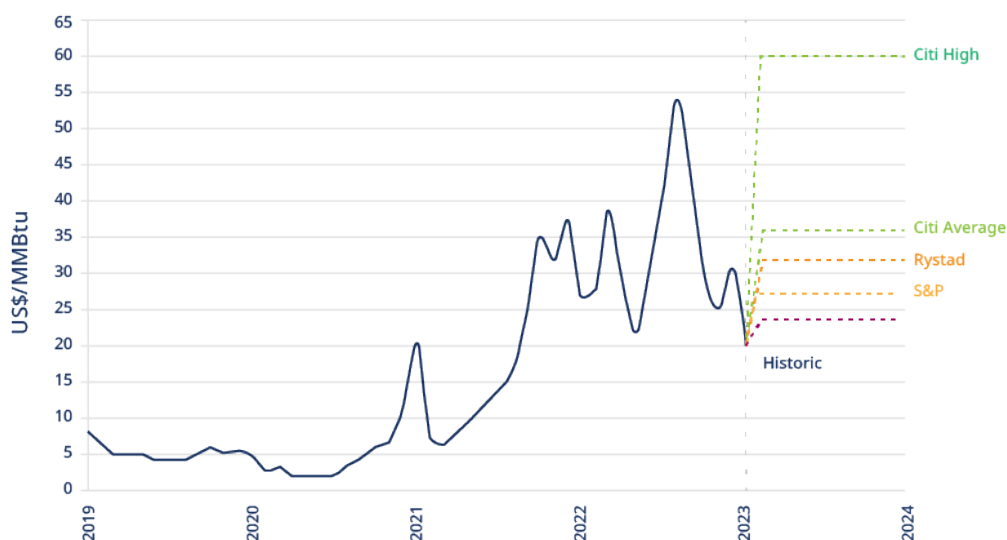


Figure 3: Historic and forecast Asian LNG prices <sup>8</sup>

35. The energy shock could sap global growth for years, [World Bank](#)

36. Global LNG Outlook 2023-27, [IEEFA](#)

## Climate and Health Impacts

The IPCC warns that climate change may cost Bangladesh 2-9% of its GDP by 2050 <sup>37</sup>.

But Bangladeshis have a more pressing problem than the economic toll: heatwaves and floods.

The country is the seventh-most vulnerable to climate change impacts <sup>38</sup>. Located on a low-lying delta, it is at risk of cyclones, extreme rainfall, flooding, landslides and droughts.



Figure 4 <sup>39</sup>

37. Climate change to cause 2-9pc GDP loss for Bangladesh: IPCC report, [Financial Express](#)

38. Climate Vulnerability Index 2023, [UNDP](#)

39. Figure 4: Major Climate Hazards in Bangladesh, Source: [ADB](#)

At the same time, due to high population density, 56% of the population (around 90 million people) is at high risk of suffering from climate change impacts, compared to a global average of 14% <sup>40</sup>.

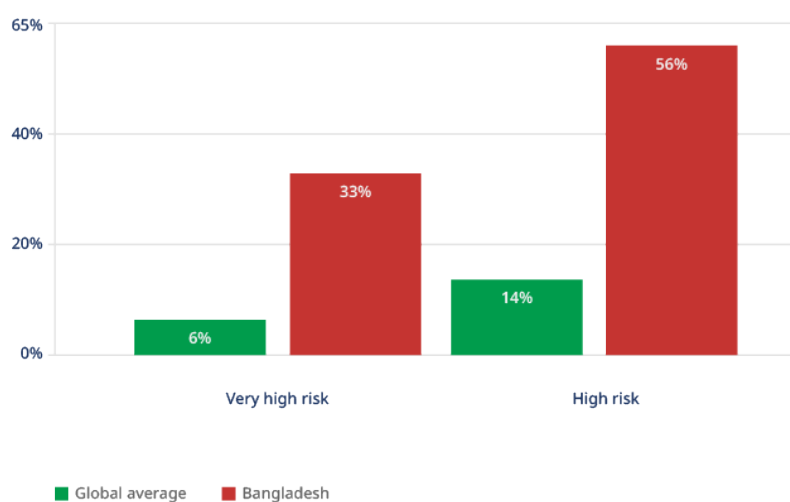


Figure 5: Proportion of population exposed to climate risks <sup>40</sup>

Between 2000 and 2019, the country experienced 185 extreme weather events with a combined total cost of USD 3.72 billion in losses <sup>41</sup>.

As a result, the World Bank estimates that, by 2050, up to 19.9 million people will be at risk of becoming climate migrants in Bangladesh – more than in any other country in Asia <sup>42</sup>.

Scientific American even warns that due to global warming, Bangladesh might experience what may become the largest mass migration in human history <sup>43</sup>.

40. Fragility and Climate Risks in Bangladesh, [USAID](#)

41. 10 of the countries most affected by climate change, [Concern Worldwide](#)

42. "Clement, Viviane; Rigaud, Kanta Kumari; de Sherbinin, Alex; Jones, Bryan; Adamo, Susana; Schewe, Jacob; Sadiq, Nian; Shabhat, Elham. 2021. [Groundswell Part 2: Acting on Internal Climate Migration](#). © World Bank, Washington, DC

43. The Unfolding Tragedy of Climate Change in Bangladesh, [Scientific American](#)

Projected Change in Suitability for Human Habitation in 2070\*

With warming of between 20°C and 2.5°C above pre-industrial levels

More suitable (no change)  
Less suitable  
Outside historical human niche

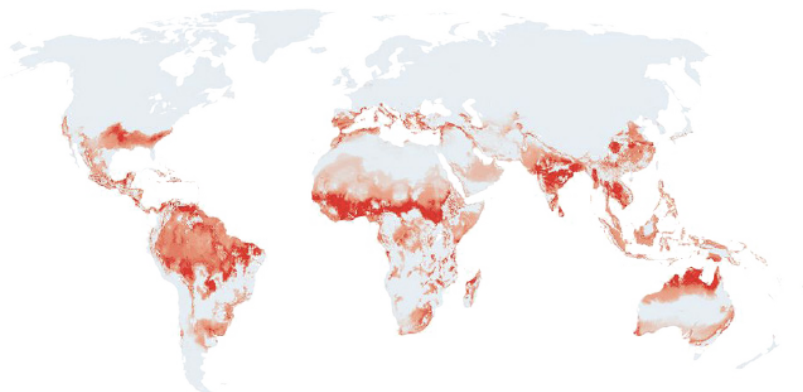


Figure 6 <sup>44</sup>

## Floods

Between 22%-30% of Bangladesh’s territory is inundated yearly <sup>45</sup>. In 2022, Bangladesh suffered one of the most devastating floods in its history, impacting 7.2 million people <sup>46</sup>.

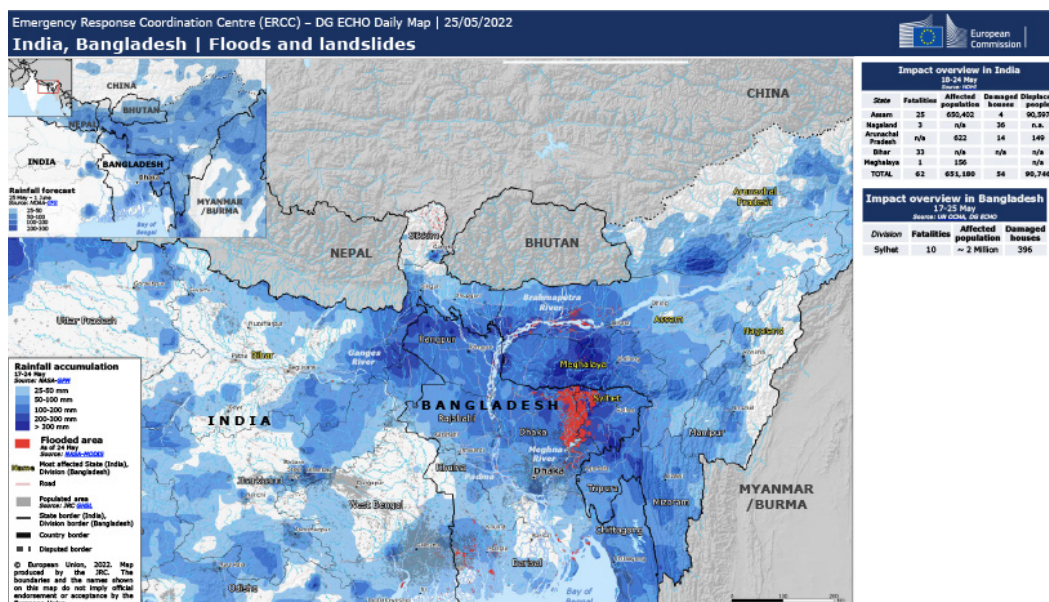


Figure 7 <sup>47</sup>

44. Projected change in suitability for human inhabitation in 2070, [IFRC](#)  
 45. Understanding climate-related security risks in Bangladesh, [UNDP](#)  
 46. Millions in Bangladesh impacted by one of the worst floodings ever seen, [IFRC](#)  
 47. Figure 7: Floods and landslides in India and Bangladesh, [Relief Web](#)

According to studies, 60% of global cyclone-induced deaths occurred in Bangladesh <sup>48</sup> in the past 20 years.

More disturbingly, according to the IPCC, the frequency and severity of the floods and riverbank erosions threatening Bangladesh will increase in the future <sup>49</sup>.

## Heatwaves

The 2022 heatwave brought temperatures unseen in decades to Bangladesh. What's worse, these events will become more frequent and severe going forward <sup>50</sup>.

According to the WHO, intense heat stress is associated with severe dehydration, acute cerebrovascular accidents, heat stroke and more <sup>51</sup>. It also elevates the risk of disease outbreaks and death in people with chronic diseases, children and the elderly. Heat stress increases mortality rates by as much as 31.3% for every degree Celsius increase <sup>52</sup>.

Furthermore, elevated temperatures can significantly increase mental health-related morbidity and mortality <sup>53</sup>.

48. Climate Risk and Adaptation Profile, Bangladesh, [World Bank](#)

49. IPCC Climate Report: Grim picture painted for Bangladesh, [The Daily Star](#)

50. Nissan, H., K. Burkart, E. Coughlan de Perez, M. Van Aalst, and S. Mason, 2017: Defining and Predicting Heat Waves in Bangladesh. *J. Appl. Meteor. Climatol.*, 56, 2653–2670, [American Meteorological Society](#)

51. Heatwaves, [WHO](#)

52. Raja, D. R., Hredoy, M. S. N., Islam, M. K., Islam, K. A., & Adnan, M. S. G. (2021). Spatial distribution of heatwave vulnerability in a coastal city of Bangladesh. *Environmental Challenges*, 4, 100122, [Science Direct](#)

53. Syed Shabab Wahid, Wameq Azfar Raza, Iffat Mahmud, Brandon A Kohrt, "Climate-related shocks and other stressors associated with depression and anxiety in Bangladesh: a nationally representative panel study", [The Lancet](#)

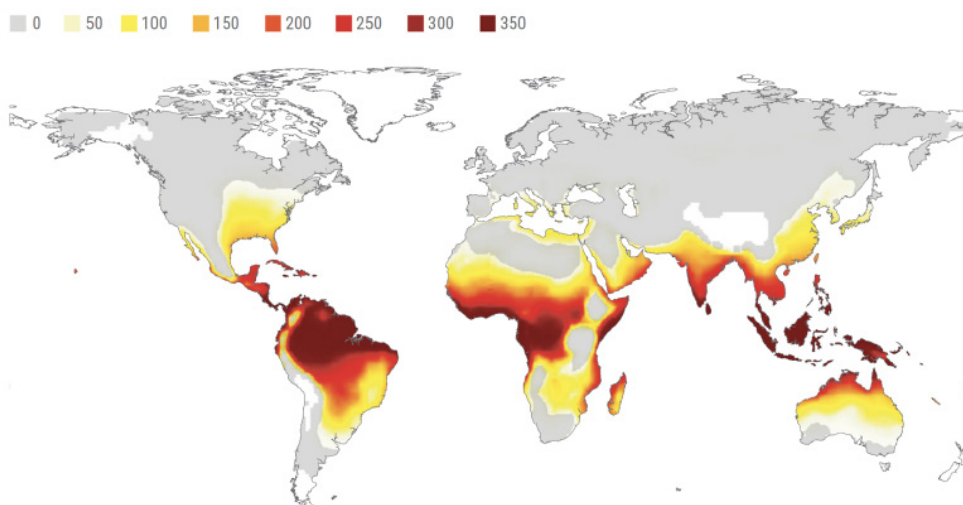


Figure 8: Number of Days Projected to Exceed Potentially Deadly Heat Levels per Year by 2100 <sup>54</sup>

The intense heatwave also led to an increased concentration of impurities in water <sup>55</sup>. This came on top of the drinking water contamination caused by the floods in the country <sup>56</sup>. Currently, around 20 million Bangladeshis are affected by the salinisation of drinking water caused by climate change <sup>57</sup>.

On top of this are the economic impacts of heat stress, including reduced labour efficiency and the wiping out of up to 10 billion working hours annually <sup>58</sup>. Dhaka alone loses USD 6 billion worth of labour productivity per year <sup>59</sup>.

54. Figure 8: Number of Days Projected to Exceed Potentially Deadly Heat Levels per Year by 2100, IFRC

55. Severe heat wave sets in, [New Age Bangladesh](#)

56. With nearly 75% of Bangladesh underwater, is the country facing a humanitarian crisis?, [Concern Worldwide](#)

57. "Rigaud, Kanta Kumari; de Sherbinin, Alex; Jones, Bryan; Bergmann, Jonas; Clement, Viviane; Ober, Kayly; Schewe, Jacob; Adamo, Susana; McCusker, Brent; Heuser, Silke; Midgley, Amelia. 2018. [Groundswell: Preparing for Internal Climate Migration](#). © World Bank, Washington, DC

58. Parsons, L. A., Shindell, D., Tigchelaar, M., Zhang, Y., & Spector, J. T. (2021). Increased labor losses and decreased adaptation potential in a warmer world. [Nature](#)

59. Hot Cities, Chilled Economies Dhaka, Bangladesh, [One Billion Resilient](#)

## Air Pollution

Bangladesh has the worst air quality in the world <sup>60</sup>. In 2022, the concentration of PM2.5 was 13.2 times the WHO's annual air quality guideline value <sup>61</sup>.

Pollution reduces a Bangladeshi person's life by around seven years on average <sup>62</sup> and is responsible for about 20% of the country's premature deaths <sup>63</sup>.

60. [Air Quality Life Index](#)

61. Air quality in Bangladesh, [IQAir](#)

62. World's worst air pollution slashes 7 years off life expectancy in Bangladesh, [Mongabay](#)

63. Bangladesh Needs Urgent Actions to Curb Air Pollution, [World Bank](#)



## Energy Crisis Solutions: What Will Bangladesh Gain?

The problem with Bangladesh isn't that it lacks power capacity but can't afford to fulfil what it already has. Building additional fossil fuel infrastructure will worsen the situation when struggling with overcapacity.

When climate change adaptation and mitigation funds are scarce, and every dollar is precious, Bangladesh can't afford to sink money into new fossil fuel projects.

The country is in dire need of a power plan that prioritises decarbonisation and energy independence. It needs a framework designed to solve the energy poverty problem – not one that will exacerbate it. The country's IEPMP, currently in the works, risks doing just this due to its focus on LNG, hydrogen and ammonia.

### Suppressing Fossil Fuels and Stimulating Renewables

Bangladesh must focus on removing the fossil fuel subsidies straining the budget and disincentivising investment in renewables. Studies show that their complete removal will increase GDP by up to 2.3%<sup>64</sup> and Bangladeshi's welfare by 1.89%<sup>65</sup>. Along with implementing favourable national and regional policies, it would also help the country's renewables sector scale up.

Estimates state that Bangladesh can potentially add up to 240 GW in solar power capacity<sup>66</sup>. Utilising just a third of the 1,500 km<sup>2</sup> area of ponds can help ensure 15 GW of floating solar<sup>67</sup>. The shallow water

64. How Much Would Bangladesh Gain from the Removal of Subsidies on Electricity and Natural Gas?, [World Bank](#)

65. Amin, Sakib; Marsiliani, Laura; Renstrom, Thomas. 2018. The Impacts of Fossil Fuel Subsidy Removal on Bangladesh Economy.

© [Bangladesh Institute of Development Studies](#)

66. Power Sector Reforms in Bangladesh: Scaling Up Renewable Energy (SURE), [USAID](#)

67. Solar power can meet full electricity needs in Bangladesh, [Financial Express](#)

areas and some big lakes can provide up to 45 GW or more. Regarding solar roof systems, utilising just 10% of the 5,000 km<sup>2</sup> available area would ensure another 25 GW.

In terms of wind power, the country has a territory of over 20,000 km<sup>2</sup> with wind speeds of up to 7.75 m/s, suitable for 30 GW of capacity <sup>68</sup>.

According to studies, utilising just 4% of the country's territory would ensure enough capacity for a 100% renewable energy-powered system <sup>69</sup>.

On top of that, the country has vast hydropower potential, with over 50% of its capacity remaining untapped today <sup>70</sup>.

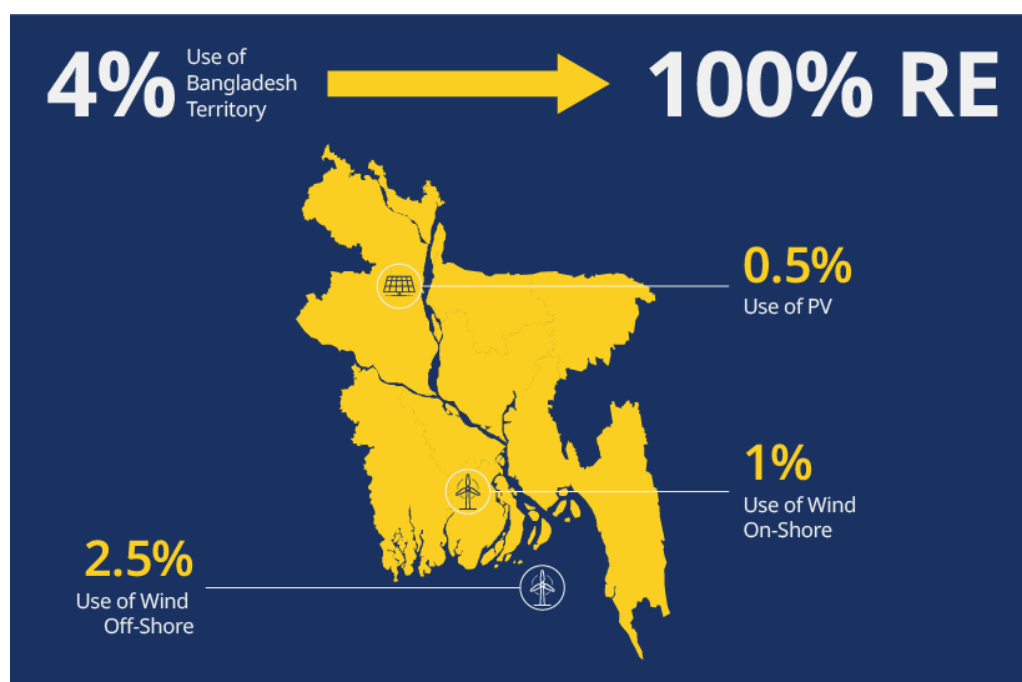


Figure 9 <sup>69</sup>

68. Jacobson, Mark, Draxl, Caroline, Jimenez, Tony, O'Neill, Barbara, Capozzola, Taj, Lee, Jared A., Vandenberghe, Francois, and Haupt, Sue Ellen. Assessing the Wind Energy Potential in Bangladesh: Enabling Wind Energy Development with Data Products, [U.S. Department of Energy Office of Scientific and Technical Information](#)

69. 100% Renewable Energy For Bangladesh, [World Future Council](#)

70. Bangladesh - An economic behemoth in the making, [Andritz Group](#)

## The Gains

Starting even with small steps would guarantee immediate results. For example, just 2 GW of installations would be sufficient for the country to save USD 1.1 billion per year from fossil import costs<sup>9</sup>. And according to the IEEFA, Bangladesh could immediately implement around 12.5 GW by installing rooftop solar panels<sup>71</sup>.

Furthermore, experts note that Bangladesh could exploit its vast geothermal resources by utilising existing gas drilling infrastructure. If Bangladesh decides to tap into its solar power potential, it can expect a lower LCOE than the average electricity generation cost paid in FY2021-22<sup>10</sup>. For example, the IEEFA estimates the LCOE from rooftop and utility-scale solar at around USD 0.05/kWh and USD 0.072/kWh, respectively, compared to USD 0.084/kWh during FY2021-22. Moreover, the gap is expected to widen since fossil fuel prices will likely remain elevated for a while.

According to Ember, if Bangladesh had prioritised solar power between 2022 and 2024, it could have reduced LNG imports by 25%, saving USD 2.7 billion<sup>20</sup>.

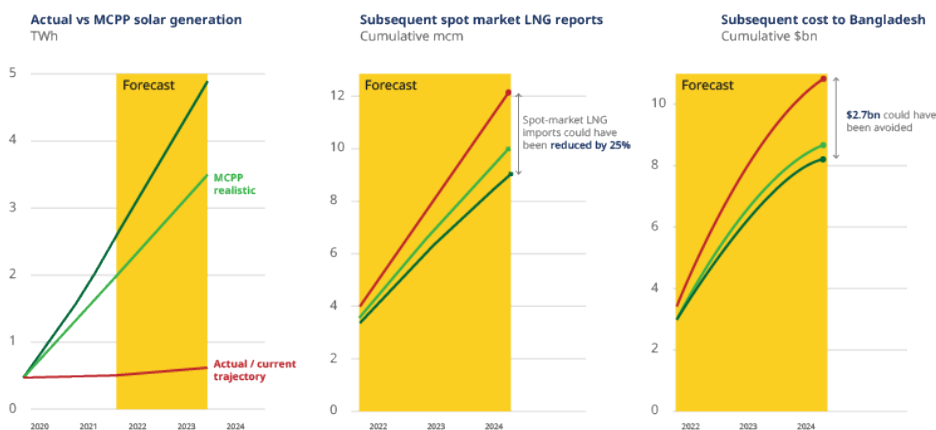
For reference, in the first half of 2022, solar power saved around USD 34 billion, or around 9% of the total fossil fuel expenditures of China, India, Japan, South Korea, the Philippines, Vietnam and Thailand<sup>72</sup>.

71. Stop financing fossil fuel, [The Daily Star](#)

72. The sunny side of Asia, [Ember](#)

**Solar power could have reduced Bangladesh’s spot LNG purchases by 25%, and saved \$2.7bn by 2024**

Projected spot market LNG imports and costs in 2022-2024, if solar power grew as per Mujib Climate Plan



Source: Embers analysis of Mujib Climate Prosperity Plan (MCCP), LNG Japan / Korea Marker (Platts), RFGCL data on LNG import activities. MCCP realistic and MCCP maximal refer to realistic and maximal scenarios respectively from MCCP’s Power Sector report.

Figure 10 <sup>22</sup>

The IEEFA estimates that the country would need between USD 1.53 and USD 1.71 billion annually in investment between 2024 and 2041 to achieve its 40% clean energy target <sup>73</sup>. The figure is significantly lower than the power sector’s FY2021-22 subsidy burden of USD 2.82 billion.

73. Bangladesh needs up to US\$1.71 billion annually until 2041 for 40% renewable energy capacity, [IEEFA](#)

## Finding a Way Out of the Crises

In 2023, Bangladesh suffered from a heatwave and a powerful cyclone. These events caused a power demand spike that the country couldn't keep up with. Consequently, the country had to shut down its biggest power plant for the entire month<sup>74</sup>. This forced the government to close schools and hospitals to save energy. The continuous blackouts caused massive losses to the export-oriented apparel sector. As a result, the economy's dollar reserves, which have plunged by around a third in the year up to April 2023, hit a seven-year low, further limiting the government's ability to pay for fuel imports.

Vicious cycles like these are poised to continue if Bangladesh doesn't change course. Accelerated decarbonisation is the only viable path towards a resilient and independent energy system with affordable power. Bangladesh is far behind other developing Asian countries while also facing other pressing issues. It has to deal with climate change's worst impacts, humanitarian crises, food and water insecurity, health problems and the loss of agricultural land and livelihoods.

Bangladesh has a lot to learn from other Asian countries. It can draw on lessons from Indonesia and Vietnam's JETPs to fund its electricity sector transition and India's disaster preparedness experience.

Overcoming this situation requires a holistic policy development approach that eases clean energy investments and prioritises grid improvement and energy storage systems to address power variability, climate change adaptation, mitigation and loss and damage efforts. Anything else will lock the country into a future of blackouts, high power costs and stranded assets.

74. Bangladesh facing more power cuts amid fuel shortage, [Al Jazeera](#)



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