BANGLADESH

Climate Transparency

CLIMATE TRANSPARENCY REPORT **BANGLADESH'S CLIMATE ACTION AND RESPONSES TO THE COVID-19 CRISIS**

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PER CAPITA GREENHOUSE GAS (GHG) EMISSIONS

0.96
tCO$_2$e/capita

Bangladesh's GHG emissions per capita (excl. land use) are 0.96 tCO$_2$e per capita.

5-year trend (2012-2017)

👎 **+16%**

Data for 2017. Sources: Enerdata 2020; United Nations Department of Economic and Social Affairs Population Division, 2020; Gütschow et al, 2019

2030 NDC TARGET

1.5°C

The unconditional 2030 NDC target of Bangladesh is 12 MtCO$_2$e and the conditional NDC target is 36 MtCO$_2$e. There is no Climate Action Tracker analysis for Bangladesh. All figures exclude land use emissions.[1&2]

NDC target range

152 MtCO$_2$e

	300			
250			
200			
150			
100			
50			
0	2017	2030	2050
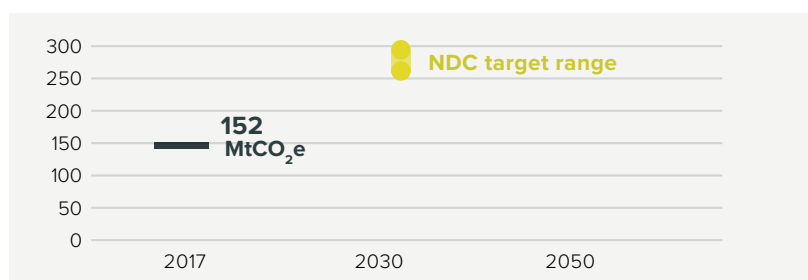
Since the preparation of this profile, Bangladesh has submitted an updated NDC including new sectors, additional mitigation and adaptation actions, and sector-wise climate financing needs.

KEY OPPORTUNITIES FOR ENHANCING CLIMATE AMBITION

ENCOURAGE MOVE AWAY FROM BIOMASS STOVES

80% of people still depend on biomass stoves. Financial policy packages could encourage a move towards cleaner, lower emission cooking methods.

SCALE UP DECENTRALISED, OFF-GRID ROOFTOP SOLAR

Increased support to scale up decentralised, rooftop and utility scale solar systems and solar irrigation pumps to phase out dependence on imported fossil fuels.

REDUCE EMISSIONS FROM AGRICULTURE

Agriculture contributed 28% of total emissions in 2018 (excl. land use). Increased use of organic fertilizer, enhanced manure management, and alternate wetting and drying during rice cultivation could help reduce such emissions.

RECENT DEVELOPMENTS

👍 The Eighth Five-Year-Plan encourages renewable energy. It places importance on solar, wind and imported hydropower while discouraging high fuel import dependency.

👍 According to the 2016 Power System Master Plan, Bangladesh aims to add two GW renewable energy projects to achieve an installed capacity of 2,470 MW by 2021, and 3,864 MW by 2041.

👍 Draft National Solar Energy Roadmap 2021-2041 recommends a new solar target of up to 30 GW by 2041 to address the slow progress in developing renewable energy.
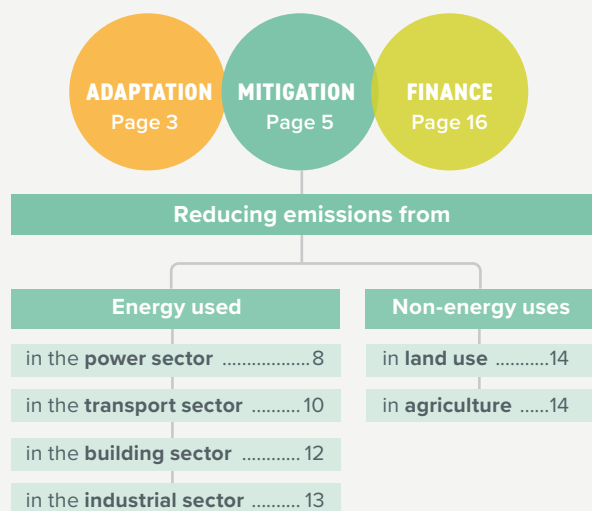
✷ CORONAVIRUS RECOVERY

Bangladesh is one of the most climate-vulnerable countries in the world and the ongoing COVID-19 pandemic has worsened this vulnerability by slowing down economic growth and reversing the steady poverty reduction trend. The national energy strategy, which earlier prioritised coal, has taken a back seat as demand for coal-fired electricity is falling in a post-COVID era with the increased price of imported coal. Bangladesh is substituting this coal with natural gas and imported LNG instead of renewable energy.

References: Islam, 2020; World Bank, 2021

CONTENTS

We unpack Bangladesh's progress and highlight key opportunities to enhance climate action across:

ADAPTATION Page 3
MITIGATION Page 5
FINANCE Page 16

Reducing emissions from

Energy used

Non-energy uses

LEGEND

Trends show developments over the past five years for which data are available. The thumbs indicate assessment from a climate protection perspective.

Policy Ratings[5] evaluate a selection of policies that are essential pre-conditions for the longer-term transformation required to meet the 1.5°C limit.

Low   Medium   High   Frontrunner

SOCIO-ECONOMIC CONTEXT

Human Development Index

The Human Development Index reflects life expectancy, level of education, and per capita income. Bangladesh ranks medium.

Very high
High
Medium
Low

MEDIUM 0.632
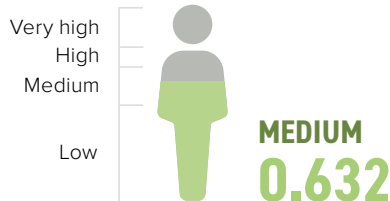
Data for 2018. Source: UNDP, 2019

Population and urbanisation projections

(in millions)

Bangladesh's population is expected to increase by about 18% between 2018 and 2050 and become more urbanised, as Bangladesh aspires to be a developed country by 2041.

163 — 36.8% urban — 2019
179 — 40.4% urban — 2030
192,6 — 43.5% urban — 2050
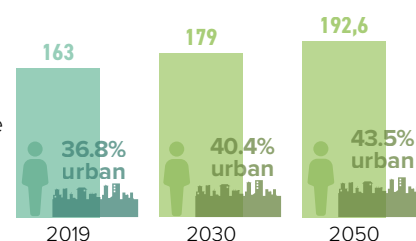
Sources: The World Bank, 2019; United Nations, 2018

Gross Domestic Product (GDP) per capita

$4,743
PPP constant 2015 international $

Data for 2019. Source: United Nations Department of Economic and Social Affairs Population Division, 2020

Death rate attributable to air pollution

Ambient air pollution attributable death rate per 1,000 population per year, age standardised

0.73

As a result of outdoor air pollution, over 82,000 people die in Bangladesh every year from stroke, heart disease, lung cancer and chronic respiratory diseases.

82,395 deaths per year

Data for 2016. Source: WHO, 2018

JUST TRANSITION

UPGRADE SKILLS FOR FUTURE EMPLOYMENT

In recent times Bangladesh has recorded steady economic growth and increasing per capita income. This has brought about social changes like increased women's empowerment, improved girls' education and an enhanced micro-credit programme.

As Bangladesh has domestic reserves of oil and natural gas, development thereof, would put it at high risk of having related assets stranded in the future.

A just energy transition for Bangladesh requires a guided and more inclusive strategy so that possible investment or job loss can be avoided. Promotion of the renewable energy industry could mean more job opportunities for people who previously worked in fossil fuel-based industries. Policy instruments to diversify the economy and explore alternate energy sources are crucial for sustaining economic and social growth.

References: Roy, Mahmud, and Assadi, 2019

1. ADAPTATION
ADDRESSING AND REDUCING VULNERABILITY TO CLIMATE CHANGE

🌐 **PARIS AGREEMENT** **Increase the ability to adapt to the adverse effects of climate change and foster climate resilience and low-GHG development.**

VULNERABLE TO CLIMATE CHANGE

Sea level rise threatens the lives and livelihoods of a significant population living in coastal areas – about 60% of land is only five metres above sea level. Projections show that Bangladesh could have up to 13.3 million internally displaced people due to climate change by 2050.

LARGE LOSSES IN AGRICULTURE AND FISHERIES

A third of agricultural GDP will be lost due to climate variability and extreme events by 2050 without adaptation. A World Bank study found potential losses of USD 66m in the fisheries sector.

LARGE ANNUAL ECONOMIC LOSSES

Without changes to current global mitigation policies, Bangladesh would experience annual economic losses equivalent to 2% of its GDP by 2050, rising to 9.4% by 2100.

References: Ministry of Environment, 2018; Rigaurd et al., 2018; Ministry of Finance, 2020

ADAPTATION NEEDS

Climate Risk Index

Impacts of extreme weather events in terms of fatalities and economic losses that occured. All numbers are averages (1999-2018).

Annual weather-related fatalities

577.45 DEATHS **0.39 PER 100,000 INHABITANTS**

Source: Germanwatch, 2019

Annual average losses (USD mn PPP)

$1,686 **0.41 PER UNIT GDP (%)**

Source: Germanwatch, 2019

☣ **CORONAVIRUS RECOVERY** COVID-19 impacted Bangladesh's agriculture sector in many ways. A significant portion of the rural population of Bangladesh is engaged in the livestock and poultry sectors. Losses of dairy farmers accounts for USD 470m between March and September 2020, mainly impacting small and marginal farmers. To improve resilience and adaptive capacities of those engaged in agricultural practices, promotion of climate-smart livestock solutions and dairy industry development as well as climate-smart agriculture technologies and crop diversification is needed.

The Bangladesh Ministry of Fisheries and Livestock and The World Bank have mobilised USD 96m to make cash transfers to the most vulnerable livestock farmers, improve their access to various equipment and improve mass communication with them.

The World Bank provided USD 250m budget support under its Jobs Development Policy Credit (DPC) programme. Reforms supported by the programme respond to the country's exposure to shocks, in particular climate-related disasters. They aim to help people and services adapt to climate change by building resilience, ensuring social protection programmes can respond swiftly and providing education on climate risks and mitigation/adaptation measures.

References: Berger and Janssen, 2020; Dharamvir Singh Rana, 2020

ADAPTATION POLICIES

National Adaptation Strategies

Document name	Publication year	Fields of action (sectors)													M&E process
		Agriculture	Biodiversity	Coastal areas and fishing	Education and research	Energy and industry	Finance and insurance	Forestry	Health	Infrastructure	Tourism	Transport	Urbanism	Water	
National Adaptation Programme of Action	2005; 2009	●	●	●				●	●					●	
Bangladesh Climate Change Strategy and Action Plan	2009	●		●	●	●		●	●	●		●	●	●	
Bangladesh Delta Plan 2100	2018	●		●	●			●		●		●	●	●	

Nationally Determined Contribution (NDC): Adaptation

| Targets	Actions
Not mentioned	1. To enhance climate change adaptation activities, Bangladesh has established innovative funds. Nearly USD 400m has been allocated from the government budget, with the support of development partners. 2. Bangladesh submitted the National Adaptation Programme of Action (NAPA) in 2005 (revised in 2009) and prepared a climate change action plan (the Bangladesh Climate Change Strategy and Action Plan) in 2009. 3. Among the first priorities for adaptation in Bangladesh are measures to further improve the country's disaster response and management, as well as ways to foster resilience against climate change. Bangladesh is already considered one of the leading countries in these regards.

2. MITIGATION
REDUCING EMISSIONS TO LIMIT GLOBAL TEMPERATURE INCREASE

PARIS AGREEMENT **Hold the increase in the global average temperature to well below 2°C above pre-industrial levels and pursue efforts to limit to 1.5°C, recognising that this would significantly reduce the risks and impacts of climate change.**

EMISSIONS OVERVIEW

CO₂ DECREASE EMISSIONS
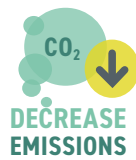
Bangladesh's GHG emissions have increased significantly – by 218% between 1990 and 2017. The unconditional emissions reduction target is 5% below business-as-usual (BAU) by 2030, or 15% below BAU by 2030, with international support.

1.5°C COMPATIBILITY
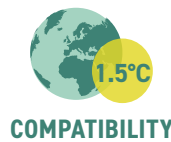
In 2030, global CO₂ emissions need to be 45% below 2010 levels and reach net zero by 2050. Global energy-related CO₂ emissions must be cut by 40% below 2010 levels by 2030 and reach net zero by 2060.

Source: Rogelj et al., 2018

GHG emissions across sectors and NDC (MtCO$_2$e/year)[3]

Total GHG emissions across sectors (MtCO$_2$e/year)

152 MtCO$_2$e

- Energy
- Industrial processes
- Agriculture
- Waste
— Total emissions (excl. land use), historic and projected
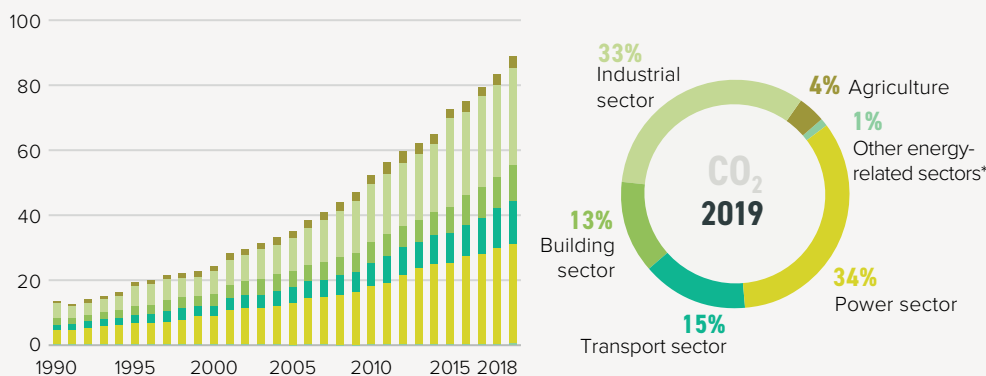● NDC target range
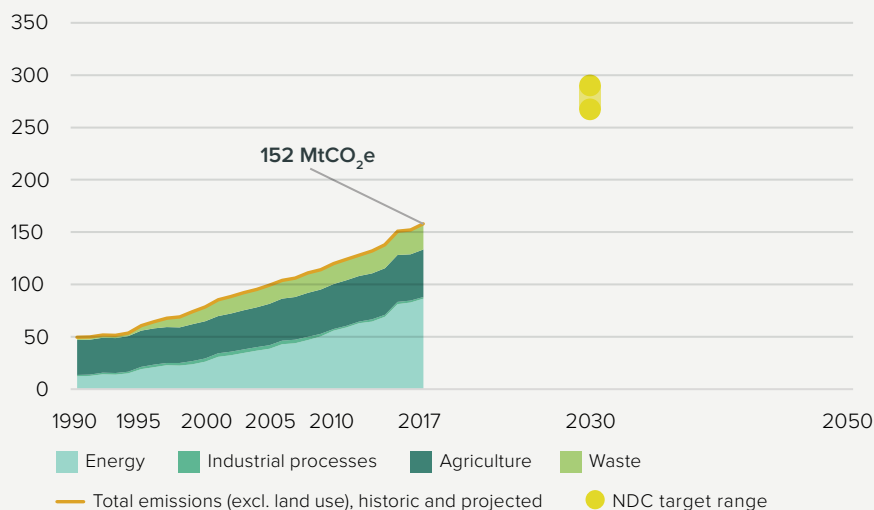
Bangladesh's emissions (excl. land use) have increased by 218% between 1990 and 2017. When considered by category, increases are seen in all sectors, except industrial processes. **Huge increases are seen in the energy and waste sectors, at 587% and 778% respectively albeit from a very low base.**

Bangladesh set an unconditional emissions reduction target of 5% below BAU and a conditional target of 15% below BAU. Bangladesh's emission reduction targets only consider energy-related emissions from power, transport and industry sectors, which are expected to represent 69% of total emissions (excl. LULUCF) in 2030. For other sectors, actions based on conditional contributions are mentioned in the NDC.

Source: Gütschow et al., 2019

Energy-related CO$_2$ emissions by sector

Annual CO$_2$ emissions from fuel combustion (MtCO$_2$/year)

33% Industrial sector

4% Agriculture

1% Other energy-related sectors*

CO$_2$ 2019

13% Building sector

34% Power sector

15% Transport sector

The largest driver of overall GHG emissions are CO$_2$ emissions from fuel combustion. Energy-related CO$_2$ emissions increased by 556% from 1990 to 2019. In 2019, the electricity sector – at 34% – was the largest contributor of total CO$_2$ emissions followed by industry and transport with 33% and 15% respectively. These three sectors have grown most rapidly since 1990.

* 'Other energy-related sectors' covers energy-related CO$_2$ emissions from extracting and processing fossil fuels. Due to rounding, some graphs may sum to slightly above or below 100%.

Source: Enerdata, 2020

⚙ CORONAVIRUS RECOVERY

The steady economic growth which Bangladesh had achieved in the past few years was initially significantly affected by the response to the pandemic which caused substantial reduction in electricity demand and revenue. However, demand quickly rose again back to the levels anticipated before the pandemic.

The pandemic has highlighted the inflexibility of a fossil fuel-driven energy sector and underscored the need to focus on sustainable energy options, which would offer more flexibility in times of crisis. Recovering from the COVID-19 crisis requires Bangladesh to use the recovery from COVID-19 crisis to create significant change in national energy policies .

Sources: Amin et al., 2021; Haque, Sultana, and Hossain, 2020

ENERGY OVERVIEW

77%
OF BANGLADESH'S
ENERGY MIX
IS FOSSIL FUELS

Fossil fuels still make up 77% of Bangladesh's energy mix (counting power, heat, transport fuels, etc) and natural gas use has more than doubled over the last two decades to meet demand. Thus, despite the increase in the share of renewables in total primary energy supply over that period, the carbon intensity of the energy mix has increased by 83%.
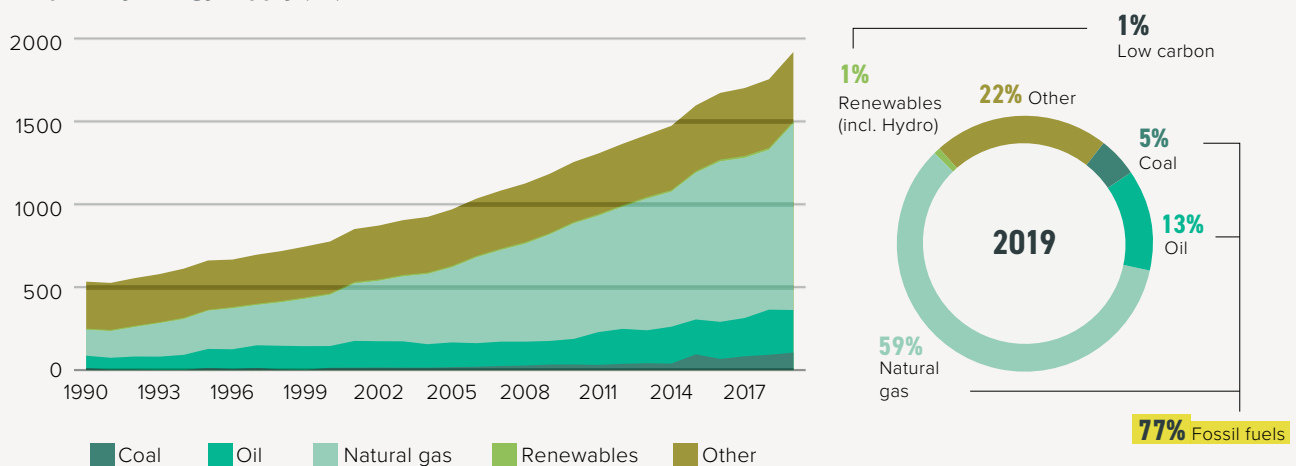
1.5°C
COMPATIBILITY
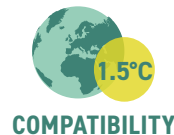
The share of **fossil fuels globally needs to fall to 67% of global total primary energy by 2030 and to 33% by 2050** and to substantially lower levels without Carbon Capture and Storage.
Source: Rogelj et al., 2018
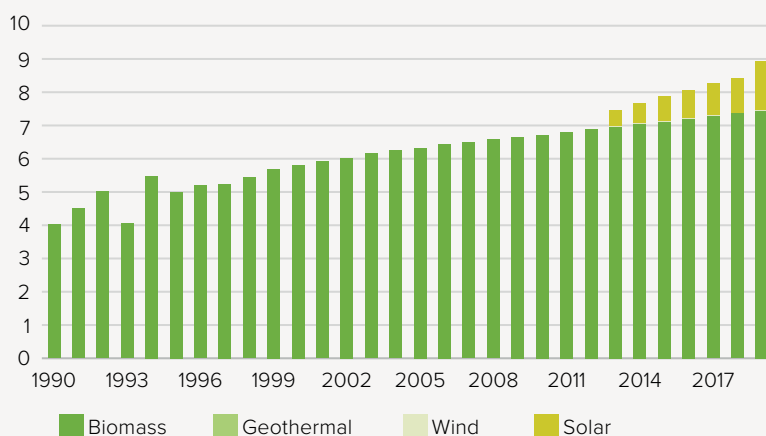
Energy Mix

Total primary energy supply (PJ)

Coal | Oil | Natural gas | Renewables | Other

Data for 2018. Source: Enerdata, 2020

Due to rounding, some graphs may sum to slightly above or below 100%.

2019

1% Low carbon
22% Other
1% Renewables (incl. Hydro)
5% Coal
13% Oil
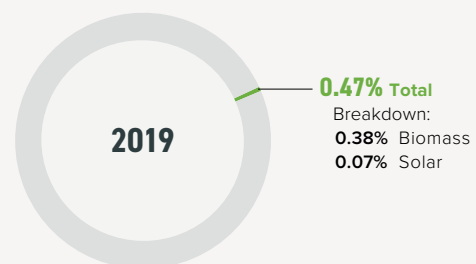59% Natural gas
77% Fossil fuels

This graph shows the fuel mix for all energy supply, including energy used for electricity generation, heating, cooking, and transportation. Fossil fuels (oil, coal and natural gas) still make up 77% of Bangladesh's energy mix. While the rollout of renewables has increased over time with the addition of some solar, the much more rapid increase of natural gas has resulted in the share of renewables in the overall mix decreasing by approximately 8.6% between 2014-2019.

Solar, Wind, Geothermal, and Biomass Development

Total primary energy supply (TPES) from solar, wind, geothermal and biomass (PJ)

Biomass | Geothermal | Wind | Solar

Solar, wind, geothermal and biomass account for 0.47% of Bangladesh's energy supply

2019

0.47% Total
Breakdown:
**0.38%** Biomass
0.07% Solar

Source: Enerdata, 2020

Large hydropower and solid fuel biomass in residential use are not reflected.
Due to rounding, some graphs may sum to slightly above or below 100%.

Solar and biomass (excluding traditional) together account for 0.47% of Bangladesh's primary energy. Modern biomass dominates with a share of 0.4%, while solar has only increased marginally since 2013 through the commissioning of grid-tied renewable energy, rooftop solar and utility scale projects, which have increased from 2018-2020.

Carbon Intensity of the Energy Sector

Tonnes of CO$_2$ per unit of total primary energy supply (tCO$_2$/TJ)

46.29.32 tCO$_2$/TJ
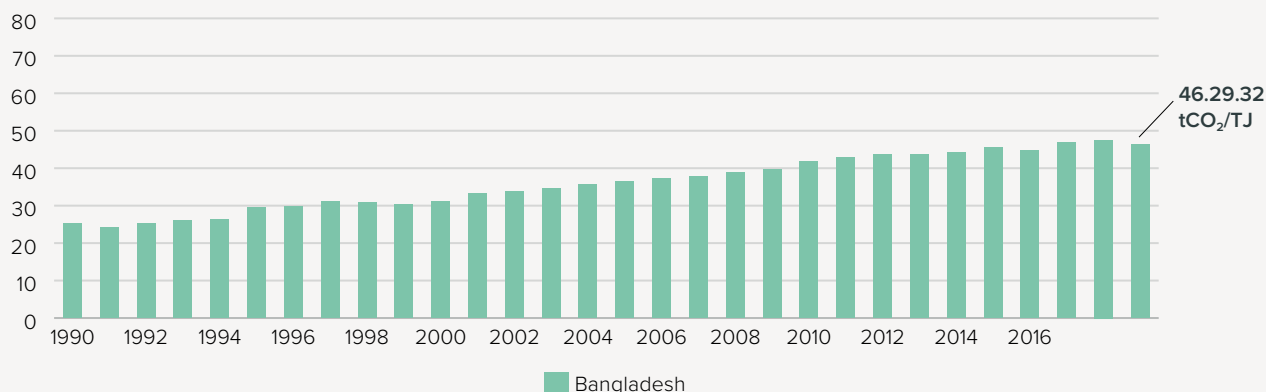
Bangladesh

Source: Enerdata, 2020

Carbon intensity shows how much CO$_2$ is emitted per unit of energy supply. In Bangladesh, carbon intensity has consistently increased since 1990 and has remained almost constant at ~45 tCO$_2$/TJ over the last five years. This high level reflects the continuously high share of fossil fuels in the energy mix.

Source: Enerdata, 2020

Energy supply per capita

12
GJ/capita

Data for 2019. Sources: Enerdata, 2020; The World Bank, 2019; United Nations, 2018

TPES per capita (GJ/capita): 5-year trend (2014-2019)	👎 +19.8%

The level of energy use per capita is closely related to economic development, climatic conditions and the price of energy. Bangladesh's energy supply per capita increased by 19.8% over the five years 2014-2019 from a low base, to reach 12 GJ/capita in 2019.

Energy intensity of the economy

⚡2.29
TJ/PPP USD2015 millions

Data for 2018. Sources: Enerdata, 2020; The World Bank, 2019; United Nations, 2018

| Energy intensity of the economy: 5-year trend (2013-2018)	👍 -11.1%

This indicator quantifies how much energy is used for each unit of GDP. This is closely related to the level of industrialisation, efficiency achievements, climatic conditions or geography. The energy intensity of the economy decreased by 11.1% to reach 2.29 TJ/ million USD 2015 GDP, mainly due much higher growth in GDP than in energy consumption in the given period.

POWER SECTOR
Emissions from energy used to make electricity and heat

Electricity generation in Bangladesh is heavily dependent on fossil fuels, with 79% of electricity generated from natural gas. In the longer term, continuing to rely on fossil fuels would not be compatible with global efforts to reach a 1.5°C pathway.

CO₂

34%
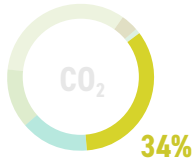
Electricity production contributes to 34% of energy-related CO_2 emissions in Bangladesh.

Source: Enerdata, 2020

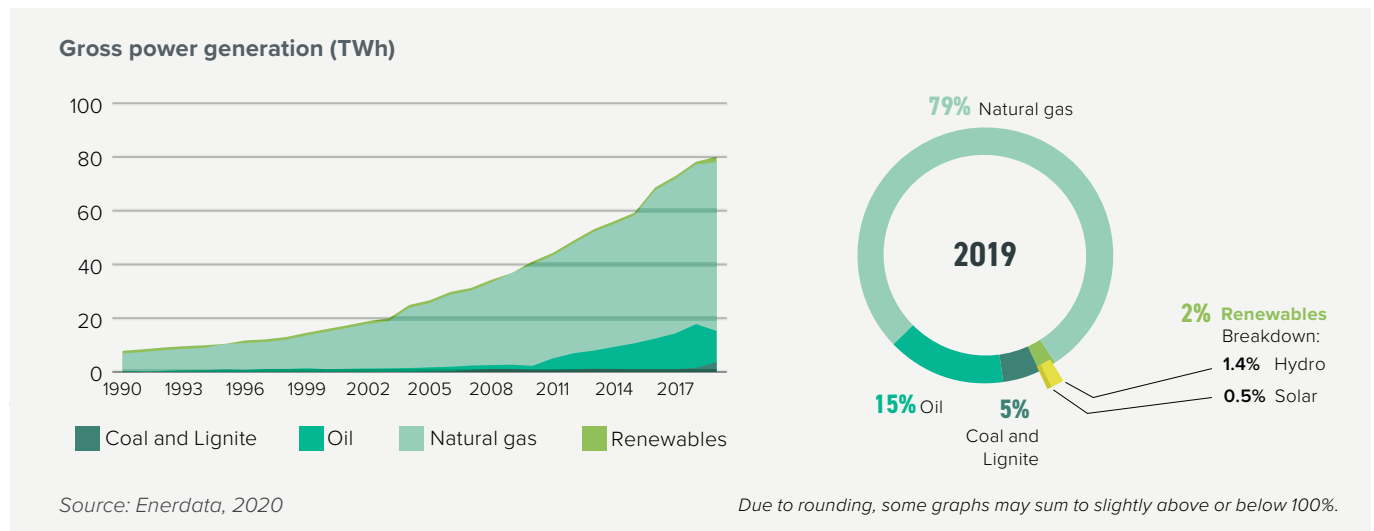**1.5°C**

COMPATIBILITY
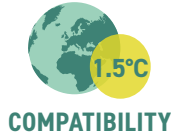
Coal and decarbonisation

Worldwide, **coal use for power generation needs to peak by 2020** and, between 2030 and 2040, all the regions of the world need to phase out coal-fired power generation. **Electricity generation has to be decarbonised before 2050**, with renewable energy the most promising alternative.

Sources: Climate Analytics 2016; Climate Analytics, 2019; Rogelj et al., 2018

STATUS OF DECARBONISATION

Electricity mix

Gross power generation (TWh)

Coal and Lignite	Oil
Natural gas	Renewables

79% Natural gas

2019

2% Renewables
Breakdown:
1.4% Hydro
0.5% Solar

15% Oil

5% Coal and Lignite

Source: Enerdata, 2020

Due to rounding, some graphs may sum to slightly above or below 100%.

Bangladesh's electricity generation from renewables has remained mostly constant at around 1-2% since 1990. Renewable generation is almost entirely from hydropower, with minor generation from solar. In sharp contrast, the level of natural gas power has more than doubled in the last 10 years, currently accounting for 79% of the power mix.

Share of renewables in power generation
(incl. large hydro)

2%

Share of renewables in power generation: 5-year trend (2014-2019)

👍 **+34%**

Source: Enerdata, 2020

Emissions intensity of the power sector

504
gCO$_2$/kWh

Emissions intensity: 5-year trend (2014-2019)

👍 **-16.0%**

For each kilowatt hour of electricity, 504 gCO$_2$ is emitted in Bangladesh. The emissions intensity has decreased only because the fossil fuels share in power generation has only dropped a little. Fossil fuel accounts for 98%* of the energy mix in total gross electricity generation.

Source: Enerdata, 2020

Note Domestic data suggests net generation from gas was close to 70% in the years 2018-19 and 2019-2020 and close to 90% from fossil fuel in the same period.*

POLICY ASSESSMENT

Renewable energy in the power sector

Medium
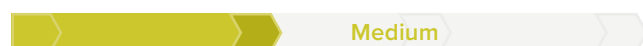
The stated aim of Bangladesh's Renewable Energy Policy (2008) is to increase the percentage of renewable energy in the energy mix to 10%. The policy includes instruments such as tax exemptions for the production of renewable energy equipment and project investors, commercial lending and a micro-credit support system for purchases of equipment in rural areas. The 2020 target was not achieved, and a new renewable energy policy is now being developed. The Eighth Five-Year-Plan (2020-2025) aims to have 'aggressive efforts' in the generation of solar and wind power. The National Solar Action Plan has guidelines for a decentralised generation system with solar, solar power-based irrigation and net metering facilities.

References: own evaluation based on Ministry of Power, Energy and Mineral Resources, 2008; Bangladesh Planning Commission, 2020; Islam, 2021

Coal phase-out in the power sector

Low
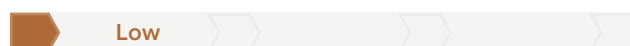
The Eighth Five-Year-Plan (2020-2025) acknowledged that the reliance on imported coal (and natural gas) has put an unsustainable financial strain on the country and the power system.

Bangladesh's earlier plans to build new coal power plants (17 GW) have been rolled back as, among other factors, the high price of imported coal during the pandemic rendered these projects no longer cost effective. In early 2021, the country's power secretary announced that the country would abandon nine planned coal plant construction projects, with a combined power capacity of 7,461 MW.

References: own evaluation based on Bangladesh Planning Commission, 2020; Gerretsen, 2021; Global Coal Plant Tracker, 2021

TRANSPORT SECTOR

Emissions from energy used to transport people and goods

Emissions from the transport sector in Bangladesh are on the rise and currently represent 14% of energy-related CO_2 emissions. The transport sector is completely dominated by fossil fuel, with oil contributing up to 72.3% of the total transport energy mix, and natural gas meeting the remaining energy need. For staying within a 1.5°C limit, passenger and freight transport need to be decarbonised.

CO_2

14% Direct emissions
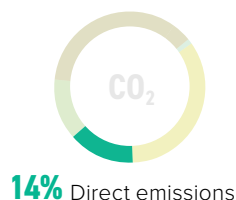
Share in energy-related CO_2 emissions from transport sector.

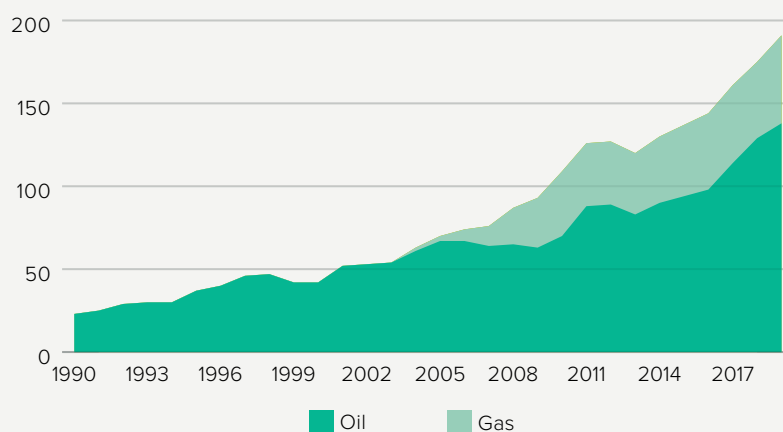*Source: Enerdata, 2020*

1.5°C

COMPATIBILITY
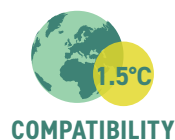
The share of low-carbon fuels in the transport fuel mix must increase to about 60% by 2050.

Source: Rogelj et al., 2018

STATUS OF DECARBONISATION
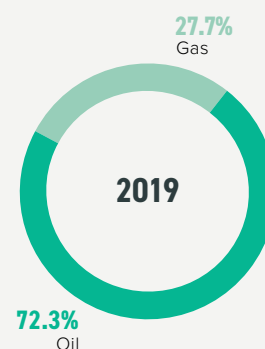
Transport energy mix

Final energy consumption of transport by source (PJ/year)

27.7% Gas

2019

72.3% Oil

Oil ▮ Gas ▮

Source: Enerdata, 2020

Due to rounding, some graphs may sum to slightly above or below 100%.

Oil and natural gas accounts for 72.3% and 27.7% of the energy mix in the transport sector respectively.

POLICY ASSESSMENT

Phase out fossil fuel cars

Medium

Bangladesh has no target to phase out fossil fuel-based light duty vehicles. Its draft Automobile Industry Development Policy 2020 calls for at least 15% of registered vehicles to be powered by "environment-friendly electricity" in 2030. It intends to attract electric vehicle production lines through tax exemptions. But in the absence of any clear plan of electricity supply and distribution transformation, this will only lead to more GHG emissions. Bangladesh's 2020 NDC sets out plans for the introduction of 10,000 hybrid or electric vehicles, good quality fuel, and Euro III and IV emissions standards for diesel and petrol cars respectively. The Eighth Five-Year-Plan (2020-2025) also supports a green transportation system for Bangladesh by laying out a plan for banning old vehicles, offering fiscal incentives for electric vehicles, and issuing penalties for violating environmental codes.

References: own evaluation based on Ministry of Industries, 2020; Ministry of Environment, Forest and Climate Change, 2020

Phase out fossil fuel heavy-duty vehicles

Low
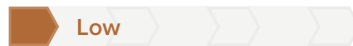
Bangladesh has no phase-out policies for fossil fuel heavy-duty vehicles. Emissions standards for light vehicles and heavy-duty vehicles is Euro 2 and Euro 1 respectively, with an increased standard of Euro 4 for light vehicles and Euro 43 for heavy-duty vehicles, to be implemented from July 2019. Emission standards for heavy-duty vehicles have not been met by 69% of the trucks, according to a study of the Department of Environment in 2019.

Reference: own evaluation based on Al Amin, 2020

Modal shift in (ground) transport

Medium

Bangladesh aims to modernise its transport network and encourage greater efficiency in travel. Measures include the expansion of its Mass Rapid Transit and Bus Rapid Transit system in Dhaka City. The national government plans to construct 798 km of new railway lines by 2025 and to introduce energy-efficient locomotives.

References: own evaluation based on Ministry of Environment, Forest and Climate Change, 2020; Bangladesh Planning Commission, 2020

BUILDING SECTOR
Emissions from energy used to build, heat and cool buildings

Building emissions make up 13% of total direct CO_2 emissions and 15% of electricity-related CO_2 emissions.

13%
Direct emissions

15%
Electricity-related emissions

CO_2
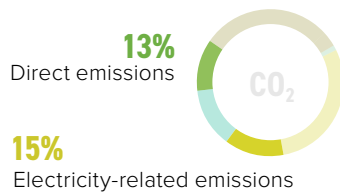
Building emissions occur directly (burning fuels for heating, cooking, etc) and indirectly (grid-electricity for air conditioning, appliances, etc.)

Data for 2018. Source: Enerdata, 2020

1.5°C
COMPATIBILITY
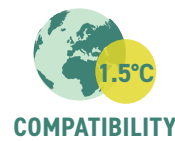
Global emissions from buildings need to be halved by 2030, and be 80-85% below 2010 levels by 2050, mostly through increased efficiency, reduced energy demand and electrification in conjunction with complete decarbonisation of the power sector.

Source: Rogelj et al., 2018

STATUS OF DECARBONISATION

Building emissions per capita
(incl. indirect emissions)

0.16
tCO$_2$/capita

Building emissions: 5-year trend (2014-2019)

+37.3%

Building-related emissions per capita reflect climatic conditions and also the high ratio of square footage per person. Bangladesh's building-related emissions per capita are increasing at a very high rate of 37.3% (2014-2019), but from a low base.

Source: Enerdata, 2020

POLICY ASSESSMENT

Near zero energy new buildings

Medium

Bangladesh's new 2020 National Building Code includes energy and resource efficiency standards for new buildings. It plans to accelerate Leadership in Energy and Environmental Design (LEED) certified buildings. Plans for rehabilitating existing or building new multipurpose community centres have incorporated green building features, such as solar panels, rainwater harvesting, energy efficient design and materials, and passive heating/cooling features.

References: own evaluation based on Bangladesh Planning Commission, 2020; Ministry of Housing and Public Works, 2020; Prime Minister, 2013

Renovation of existing buildings

Medium

In its 2020 National Building Code, Bangladesh laid out mandatory laws for building design and construction. This code is also extended to the maintenance and management of existing buildings.

Reference: own evaluation based on Ministry of Housing and Public Works, 2020

INDUSTRY SECTOR

Emissions from energy in the industrial sector

Industry-related emissions make up more than a third of CO_2 emissions (33%) and 18% of energy-related CO_2 emissions in Bangladesh.

Share in energy-related CO_2 emissions from industrial sector

Data for 2018.
Source: Enerdata, 2020

33% Direct emissions

CO_2

18% Electricity-related emissions

1.5°C

COMPATIBILITY
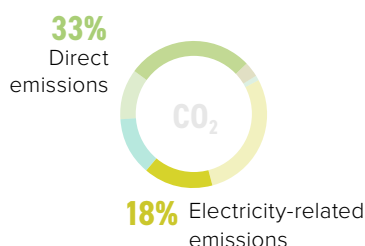
Industrial emissions need to be reduced by 75-90% from 2010 levels by 2050.

Source: Rogelj et al., 2018
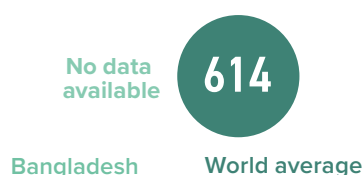
STATUS OF DECARBONISATION

Industry emissions intensity[7]

0.82
tCO_2e/USD2015 GVA

Industry emissions: 5-year trend (2011-2016)

👍 **-13%**

Data for 2017. Sources: Enerdata, 2020; Gütschow et al., 2019

Carbon intensity of cement production[8]
(kgCO_2/tonne product)

No data available
Bangladesh

614
World average

Data for 2016. Source: CAT Decarbonisation Data Portal, 2020

Carbon intensity of steel production[8]
(kgCO_2/tonne product)

No data available
Bangladesh

1,900
World average

Steel production and steelmaking are significant GHG emission sources, and challenging to decarbonise.

Data for 2016. Source: World Steel Association, 2018

POLICY ASSESSMENT

Energy Efficiency

The Energy Efficiency and Conservation Master Plan aims to reduce primary energy consumption per GDP for all sectors by 15% in 2021 and 21% in 2030. **A major contribution needs to come from industry – accounting for ~50% of primary energy consumption.** Industries are obliged to introduce an energy management system and can receive low-interest loans from the government for energy-efficient production processes. Bangladesh has set up a Green Transformation Fund (GTF) to facilitate import of eco-friendly equipment and material for textile and leather industries.

References: own evaluation based on Ministry of Power, Energy and Mineral Resources, 2015; Ministry of Environment, Forest and Climate Change, 2020

LAND USE SECTOR

Emissions from changes in the use of the land

NET SINK OF EMISSIONS

To stay within the 1.5°C limit, Bangladesh needs to make the land use and forest sector a net sink of emissions, for example by halting the expansion of residential areas that convert agricultural land, preventing the degradation of peatlands, converting cropland into wetlands, and by creating new forests.
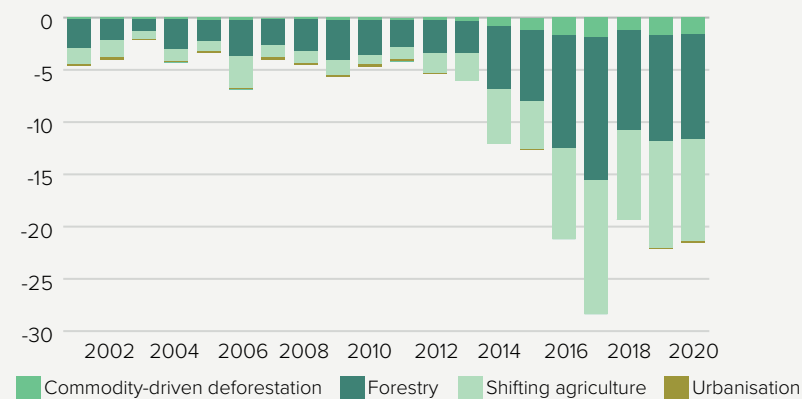
1.5°C COMPATIBILITY

Global deforestation needs to be halted and changed to net CO_2 removals by around 2030.

Source: Rogelj et al., 2018

Global tree-cover loss

Gross tree-cover loss by dominant driver (thousand hectares)

Commodity-driven deforestation ■ Forestry ■ Shifting agriculture ■ Urbanisation

From 2001 to 2018, Bangladesh lost 14,750 ha of tree cover, equivalent to a 5.2% decrease since 2000. This does not take tree-cover gain into account.

Source: Global Forest Watch, 2019

POLICY ASSESSMENT

Target for net-zero deforestation

Medium

Bangladesh aims to bring 24% of land under tree cover by 2025 (from 16% in 2010). Measures in the Eighth Five-Year-Plan include conserving natural forests, restoring degraded state forests, creating a coastal greenbelt, and strengthening forest and tree monitoring and information systems. It has one of the lowest per capita forest land worldwide and a high deforestation rate.

References: own evaluation based on Bangladesh Planning Commission, 2020; FAO, 2003; Global Forest Watch, 2021

AGRICULTURE SECTOR

Emissions from agriculture

DIETARY SHIFTS ARE NEEDED

Bangladesh's agricultural emissions are mainly from rice cultivation (24.8 MtCO$_2$e) and digestive processes in animals (24.5 MtCO$_2$e), accounting for 66% of agricultural CO_2 emissions. Emissions are also from livestock manure (19%) and use of synthetic fertilizer (11%).
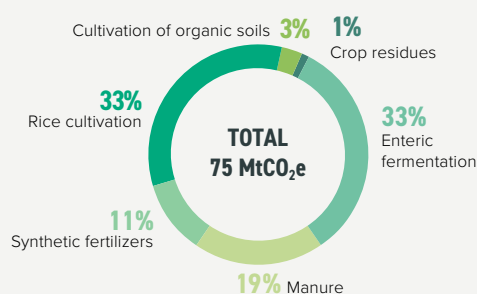
1.5°C COMPATIBILITY

Methane emissions (mainly enteric fermentation) need to decline to 10% by 2030 and to 35% by 2050 (from 2010 levels). Nitrous oxide emissions (mainly from fertilizers and manure) need to be reduced by 10% by 2030 and by 20% by 2050 (from 2010 levels).

Source: Rogelj et al., 2018

Emissions from agriculture (excluding energy)

Cultivation of organic soils **3%**   **1%** Crop residues
33% Rice cultivation
33% Enteric fermentation
TOTAL 75 MtCO$_2$e
11% Synthetic fertilizers
19% Manure

Data for 2017. Source: FAO, 2019

In Bangladesh, the largest sources of GHG emissions in the agricultural sector are rice cultivation, digestive processes in animals (enteric fermentation), livestock manure and the use of synthetic fertilizers. A shift to alternate wetting and drying irrigation during rice cultivation, more efficient use of fertilizers, changes to the diets of livestock, manure management, increased organic farming and less fertilizer use can help reduce emissions.

Due to rounding, some graphs may sum to slightly above or below 100%.

MITIGATION: TARGETS AND AMBITION

The combined mitigation effect of nationally determined contributions (NDC) submitted by September 2020 is not sufficient and will lead to a warming of 2.7°C by the end of the century. This highlights the urgent need for all countries to submit more ambitious targets by 2020, as they agreed in 2015, and to urgently strengthen their climate action to align to the Paris Agreement's temperature goal.

AMBITION: 2030 TARGETS

Nationally Determined Contribution (NDC): Mitigation

Targets

Bangladesh has set an unconditional emissions reduction target of 5% below BAU by 2030. Conditional on international support, it has an emissions reduction target of 15% below BAU for the power, transport and industry sectors.

Actions

1. Switching to 100% super-critical coal power generation
2. Developing utility-scale solar energy
3. Scaling up wind energy
4. Retrofitting existing steam turbines with more energy efficient combined cycle gas turbine (CCGT)
5. Expanding the Solar Homes Programme
6. Scaling up biomass production from sugar
7. Constructing express highways to reduce urban congestion
8. Introducing/expanding mass rapid transit systems

TRANSPARENCY: FACILITATING AMBITION

Countries are expected to communicate their NDCs in a clear and transparent manner in order to ensure accountability and comparability.

The NDC Transparency Check has been developed in response to Paris Agreement decision (1/CP.21) and the Annex to decision 4/CMA.1. While the Annex is only binding from the second NDC onwards, countries are "strongly encouraged" to apply it to updated NDCs, due in 2020.

NDC Transparency Check recommendations
For more visit www.climate-transparency.org/ndc-transparency-check

Bangladesh's NDC has not been assessed using the NDC Transparency Check tool.

3. FINANCE
MAKING FINANCE FLOWS CONSISTENT WITH CLIMATE GOALS

PARIS AGREEMENT   **Make finance flows consistent with a pathway towards low-GHG emissions and climate-resilient development.**

NO EXPLICIT CARBON PRICE   **Bangladesh spent USD 1.7bn on fossil fuel consumption subsidies in 2019.** A total subsidy equivalent to USD 1.15bn for the gas sector and USD 1.14bn for the power sector are planned in the 2019-2020 budget. The country has no explicit carbon price.
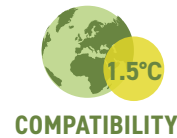
1.5°C COMPATIBILITY   Investment in green energy and infrastructure needs to outweigh fossil fuel investments by 2025

Source: Rogelj et al., 2018

FISCAL POLICY LEVERS

Fiscal policy levers **raise public revenues and direct public resources.** Critically, they can shift investment decisions and consumer behaviour towards low-carbon, climate-resilient activities by reflecting externalities in the price.

In 2020, Bangladesh provided USD 968m in electricity consumption subsidies, USD 449m in gas consumption subsidies, and USD 7m in oil consumption subsidies, for a total amount of nearly USD 1.424bn.

The 2019-2020 financial budget included subsidy increases for both electricity and gas compared to the previous year. A total subsidy of BDT 96bn (equivalent to USD 1.15bn*) was reported for the gas sector and one of BDT 95bn (equivalent to USD 1.14bn) for the power sector. This subsidy includes support for land acquisition, infrastructural development, resettlement and feasibility studies. In addition, the planned electricity subsidy was further reduced to BDT 74bn (USD 893bn) of achieved budgetary support to the electricity sector – this whole amount is considered to be a fossil fuel subsidy in the context of this analysis. As such, the country's electricity system is almost entirely fossil fuel-based. The subsidy trends are likely to continue in the coming years. The budget for FY 2021-22 shows the power and fuel sector will receive the second highest share (20.4%) in the Annual Development Programmed allocation.

The consumption subsidies reported in the IEA dataset include support for the state-owned utility Bangladesh Power Development Board (BPDB). In fiscal year 2018-19, the government subsidy that compensated BPDB for selling power below cost to avoid a major loss and cash flow shortfall amounted to BDT 80bn (USD 936m). BPDB expected that the subsidy required in 2019-20 would rise to BDT 90bn (USD 1.1bn). The almost-completed Payra coal-fired power plant is reportedly receiving capacity payments of BDT 16bn (USD 19m) a month, and this was estimated to amount to USD 230m for the year 2019.

The BPDB also gets government support in the form of cash loans. According to CPD's 2021 report, the very high electricity subsidies are, in part, driven by the power sector's over-capacity issues. For example, as of 2 June 2021, 48.4% of generation capacity remained unutilised and, as a consequence, the BPDB would need a significant amount of subsidy to meet its costs.

Bangladesh is one of the non-reporting jurisdictions with respect to tax expenditure (revenue foregone) data. This lack of transparency makes it difficult to estimate the exact extent of public support directed to fossil fuels in the form of favourable tax treatments. However, the following tax concessions represent some of the tools currently used to support various economic activities, including fossil fuel-intensive ones:

- Foreign investors in Bangladesh receive a tax rebate for the first 5-7 years, depending on the nature of the industry.

- In 2019, the National Board of Revenue (NBR) slashed VAT on coal imports from 15% down to 5% until 2025. This is the only tax applied on coal imports.

- The government selectively exempts fossil fuel projects or any other project from paying import duty, regulatory duty, VAT, or supplementary duty on importing plant and equipment, erection materials, machinery or machinery equipment. For example, the Ministry of Finance issued a Customs Statutory Regulatory Order (SRO) (#126-ain/2021/15/customs dated 24 May 2021) for the Coal-Fired Rampal Power Plant for waiving all the duties with the condition that the company is not misusing the SRO.

Sources: BPDB, 2019; CPD, 2021; Daily Star, 2019a; Daily Star, 2019b; IEA, 2021; NBR, 2021; Nicholas and Ahmed, 2020

* An exchange rate of 0.012 was used for all calculations to convert BDT into USD (https://www.poundsterlinglive.com/best-exchange-rates/us-dollar-to-bangladesh-taka-exchange-rate-on-2019-12-31)

❄ **CORONAVIRUS RECOVERY**   Asian Development Bank (ADB) has supported Bangladesh with a loan of USD 5.8m to recover from the COVID-19 pandemic for the period 2021-2023. This loan will be directed towards a wide range of projects related to rural development and the energy sector with a focus on renewable energy, rural electrification, energy efficiency, transport, water supply, and urban infrastructure to develop climate-resilient, green urban space.

Source: Asian Development Bank, 2020

PUBLIC FINANCE

Governments steer investments through their public finance institutions including via development banks, both at home and overseas, and green investment banks.

As a developing country, Bangladesh does not have any financing obligation under the UNFCCC, and only limited obligations to publish data on projects supported domestically. Bangladesh Development Bank does not publish a list of the projects it finances, nor provide information on any guidelines or restrictions regarding financing fossil fuel projects.

FINANCIAL POLICY AND REGULATION

Financial policy and regulation

Through policy and regulation governments can **overcome challenges to mobilising green finance**, including real and perceived risks, insufficient returns on investment, capacity and information gaps.

The Bangladesh Bank (the central bank of Bangladesh) is the primary enabler of green finance in Bangladesh. It has introduced priority lending requirements to rural enterprises and for green finance. In January 2016, the Bangladesh Bank set a mandatory 5% credit quota for direct green finance out of the total loan disbursement of all banks and financial institutions. The lending requirements are linked to capital adjustments and preferential refinancing opportunities. In 2009, the Bangladesh Bank established a re-financing scheme worth BDT 2bn to support green products such as biogas facilities, solar energy and effluent treatment plants for the development of the renewable energy, green industry and environment-friendly sectors. The Bangladesh Bank has also prepared environment risk management (ERM) guidelines for banks and financial institutions for assessing environmental impacts before financing any projects and has given directives to banks and financial institutions to establish a sustainable finance unit (SFU) in their head offices.

Sources: Hossain, 2018; see Hossain in Sachs, et al., 2019; D'Orazio and Popoyan, 2019

Nationally Determined Contribution (NDC): Finance

Conditionality	Conditional target to reduce 15% of CO_2 emission from BAU level by 2030 with support of international finance.
Investment needs	USD 42bn for adaptation between 2015-2030 and USD 27bn for mitigation between 2011-2030
Actions	Adaptation: Food security, disaster management, urban resilience, flood management Mitigation: deployment of clean coal technology, scaling up renewables, solar homes, urban traffic management
International market mechanisms	Not applicable

ENDNOTES

For more detail on the sources and methodologies behind the calculation of the indicators displayed, please download the Technical Note at: www.climate-transparency.org/g20-climate-performance/g20report2020

1 'Land use' emissions is used here to refer to land use, land use change and forestry (LULUCF). The Climate Action Tracker (CAT) derives historical LULUCF emissions from the UNFCCC Common Reporting Format (CRF) reporting tables data converted to the categories from the IPCC 1996 guidelines, in particular separating Agriculture from LULUCF, which under the new IPCC 2006 Guidelines is integrated into Agriculture, Forestry, and Other Land Use (AFOLU).

2 The 1.5°C fair-share ranges for 2030 and 2050 are drawn from the CAT, which compiles a wide range of perspectives on what is considered fair, including considerations such as responsibility, capability, and equality. Countries with 1.5°C 'fair-share' ranges reaching below zero,

particularly between 2030 and 2050, are expected to achieve such strong reductions by domestic emissions reductions, supplemented by contributions to global emissions reduction efforts via, for example, international finance. On a global scale, negative emissions technologies are expected to play a role from the 2030s onwards, compensating for remaining positive emissions. The CAT's evaluation of NDCs shows the resulting temperature outcomes if all other governments were to put forward emissions reduction commitments with the same relative ambition level.

3 In order to maintain comparability across all countries, this report utilises the PRIMAP year of 2017. However, note that Common Reporting Format (CRF) data is available for countries which have recently updated GHG inventories.

4 The Decarbonisation ratings appear only in the CTR profiles for the G20 countries, on which this profile is based.

5 The selection of policies rated and the assessment of 1.5°C compatibility are informed by the Paris Agreement, the IPCC's 2018 SR15 and the Climate Action Tracker (2016). The table below displays the criteria used to assess a country's policy performance.

6 This indicator adds up emissions from domestic aviation and international aviation bunkers in the respective country. In this Country Profile, however, only a radiative forcing factor of 1 is assumed.

7 This indicator includes only direct energy-related emissions and process emissions (Scope 1) but not indirect emissions from electricity.

8 This indicator includes emissions from electricity (Scope 2) as well as direct energy-related emissions and process emissions (Scope 1).

On endnote 5.	Low	Medium	High	Frontrunner
Renewable energy in power sector	No policies to increase the share of renewables	Some policies	Policies and longer-term strategy/target to significantly increase the share of renewables	Short-term policies + long-term strategy for 100% renewables in the power sector by 2050 in place
Coal phase-out in power sector	No targets or policies in place for reducing coal	Some policies	Policies + coal phase-out decided	Policies + coal phase-out date before 2030 (OECD and EU28) or 2040 (rest of the world)
Phase out fossil fuel cars	No policies for reducing emissions from light-duty vehicles	Some policies (e.g. energy/emissions performance standards or bonus/malus support)	Policies + national target to phase out fossil fuel light-duty vehicles	Policies + ban on new fossil-based light-duty vehicles by 2035 worldwide
Phase out fossil fuel heavy-duty vehicles	No policies	Some policies (e.g. energy/emissions performance standards or support)	Policies + strategy to reduce absolute emissions from freight transport	Policies + innovation strategy to phase out emissions from freight transport by 2050
Modal shift in (ground) transport	No policies	Some policies (e.g. support programmes to shift to rail or non-motorised transport)	Policies + longer-term strategy	Policies + longer-term strategy consistent with 1.5°C pathway
Near zero energy new buildings	No policies	Some policies (e.g. building codes, standards or fiscal/financial incentives for low-emissions options)	Policies + national strategy for near zero energy new buildings	Policies + national strategy for all new buildings to be near zero energy by 2020 (OECD countries) or 2025 (non-OECD countries)
Energy efficiency in Industry	0-49% average score on the policy-related metrics in the ACEEE's International Energy Efficiency Scorecard	50-79% average score on the policy-related metrics in the ACEEE's International Energy Efficiency Scorecard	80-89% average score on the policy-related metrics in the ACEEE's International Energy Efficiency Scorecard	Over 90% average score on the policy-related metrics in the ACEEE's International Energy Efficiency Scorecard
Retrofitting existing buildings	No policies	Some policies (e.g. building codes, standards or fiscal/financial incentives for low-emissions options)	Policies + retrofitting strategy	Policies + strategy to achieve deep renovation rates of 5% annually (OECD) or 3% (non-OECD) by 2020
Net-zero deforestation	No policies or incentives to reduce deforestation in place	Some policies (e.g. incentives to reduce deforestation or support schemes for afforestation / reforestation in place)	Policies + national target for reaching net-zero deforestation	Policies + national target for reaching zero deforestation by 2020s or for increasing forest coverage

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