



# BANGLADESH

## E-mobility Country Profile

### Background

Transport demand drivers, particularly economic growth and urbanization are expected to continue to strengthen in Bangladesh. Leading up to 2050, it is estimated that 1.8 million people will be added to urban areas per year, and the GDP per capita is expected to grow at an annual average of 6.3%.<sup>1</sup> Passenger transport activity is projected to grow at an annual average growth of 2.2% and freight transport activity projected to increase by 4.1% per annum.<sup>2</sup>

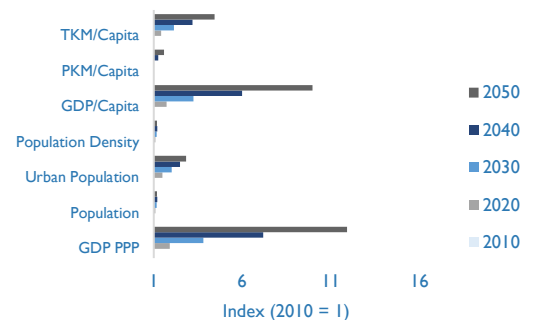
Such growth in activity is estimated to result in increasing road vehicle fleets. It is estimated that more than 3.2 million two and three-wheelers will be added between 2020-2050.<sup>3</sup> However, it must be noted that even such growth, overall motorization would still remain at relatively low levels by 2050, at 49.7 vehicles per 1000 people.<sup>4</sup>

The transportation sector is one of the major contributors to air pollution and greenhouse gas (GHG) emissions in Bangladesh. It is estimated that the transportation sector contributes 14% of the fuel combustion GHGs in the country (total of 84 million tons in 2020). Seventy-five percent (75%) of the transport GHG emissions are estimated to be from the road sector.<sup>6</sup>

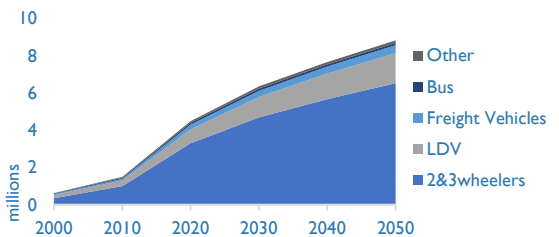
Air pollution has been ranked as the second largest risk factor for deaths and disability in Bangladesh.<sup>7</sup> Particulate Matter 2.5 (PM2.5) is a key pollutant that is both highly related to vehicular pollution, and has significant detrimental health impacts. City-level PM2.5 concentrations in 2018 were, on average, 72 µg/m<sup>3</sup>. Dhaka, the capital city, registered an average concentration of 108 µg/m<sup>3</sup>.<sup>8</sup> The World Health Organization's (WHO) guideline value for PM2.5 is 5 µg/m<sup>3</sup>.

Road transport air pollution is estimated to contribute around 7% of the total burden of disease from PM2.5 in Bangladesh. Road transport is deemed to have significant contributions to the PM2.5 burden of disease related to ischemic heart disease (29%), and chronic obstructive pulmonary disease (15%) in the country.<sup>9</sup> It is estimated that in 2019, more than 63 thousand people died prematurely due to PM2.5 in Bangladesh.<sup>10</sup>

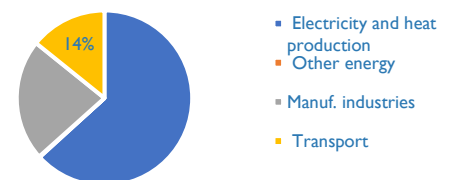
### Socio-economic & Transport Indicators



### Vehicle Stock Projections

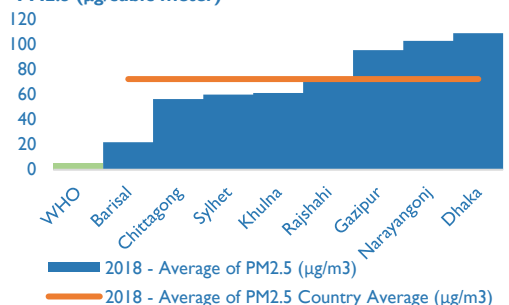


### 2020 Fuel Combustion CO<sub>2</sub>: % By Sector



Total: 84 million tons

### PM<sub>2.5</sub> (µg/cubic meter)



## E-mobility at a Glance

Currently, there are no official statistics on how many electric vehicles are running on the ground in Bangladesh. However, the government deems that the electric fleet is dominated by electric bikes, electric rickshaws and hybrid vehicles.<sup>11</sup> Hybrid vehicle sales, for example, had gone up during the pre-pandemic period, with the 4-wheeled hybrid segment experiencing 900% increase in 2018.<sup>12</sup>

The Road Transport and Highways Division of the Ministry of Road Transport and Bridges estimates that there are around 2 million electric two and three wheelers on the road.<sup>13</sup> These vehicles are estimated to carry more than 25 million passengers per day. Other sources estimate the value anywhere between 1 to 4 million.<sup>14</sup> E-rickshaws have become a staple on the road. In 2010, a local company started retrofitting rickshaws with imported kits from China. Later on, larger electric 3-wheelers, locally dubbed as “easy bikes” have gained popularity. It is estimated that 70% of the parts of these vehicles are supplied by the local industry, valued at more than 2 billion USD.<sup>15</sup> However, the governance of such has become an issue, as the lack of national standards and guidance have led city corporations and municipalities to adopt varying governance approaches, with some of them (e.g. Dhaka, Narayanganj, and Gazipur) banning such electric 3-wheelers. A Supreme Court ruling in May 2022 overturned an earlier decision by the High Court to ban electric three-wheelers, essentially paving the way for the legalization of easy bikes.<sup>16</sup>

In terms of major private sector interest, Omega Seiki recently announced a 12 million USD investment to set up manufacturing facilities in the country. Local manufacturer BDAuto is also positioning itself to manufacture electric 3-wheelers for both domestic and foreign markets.<sup>17</sup>

Charging infrastructure needs to be boosted. Looking at open data sources on charging stations in Bangladesh, only a handful are present in the country, mostly found in the capital, Dhaka.<sup>18</sup>

The rising costs of road fuels, the country’s high dependency on imported energy, combined with the thrust of the government to reduce the externalities from transportation have been propelling the interest towards electric mobility. In August 2022, road fuel prices increased by 50%, for example.<sup>19</sup>

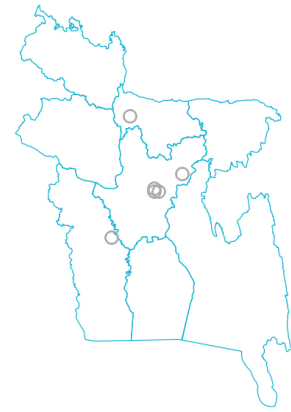
Electricity prices are still relatively cheap in Bangladesh, where the average price (2021) was 0.08 kWh.<sup>20</sup> This equates to the 52nd cheapest rates globally (230 countries). However, the country has experienced recent increases in electricity prices. Since January 2023, there had already been several rounds of electricity price increase that were announced.<sup>21</sup>

Moving towards electric mobility is also deemed to alleviate the risks associated with high dependency on imported fuels. In 2020, Bangladesh imported a total of 15.38 million tons of oil equivalent of energy (oil and oil products, coal, gas, and electricity), which is 34% of the total energy supply. In 2015, the imports only constituted 20% of the energy supply in Bangladesh.<sup>22</sup>

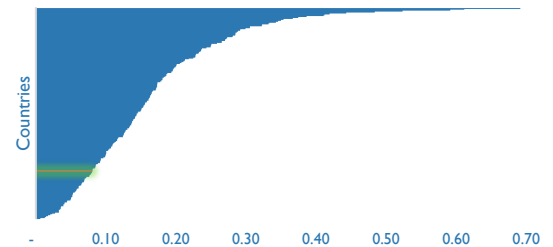
Considering overall access to electricity, Bangladesh has had significant strides in the last decade to provide access to its constituents. In 2010, it was estimated that only 55% of the population had access to electricity services. In 2020, the percentage was at 96%.<sup>23</sup>

In terms of the emissions impact of the electricity grid, Bangladesh is relatively on the higher end of the CO<sub>2</sub> emission factor spectrum. It is estimated that 561 kgCO<sub>2</sub> is emitted per MWh of electricity generated in the country. This is ranked 168th out of 225 countries globally.<sup>24</sup> The emissions intensity of the electricity grid has remained relatively flat since the 2000s. Bangladesh’s renewable energy contribution to overall electricity generation was at 3% in 2022.<sup>25</sup> The renewable energy installed capacity in Bangladesh is at 1170 MW (80% solar).<sup>26</sup>

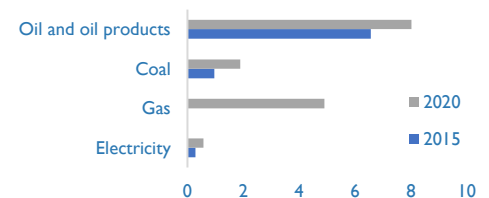
### Charging Stations



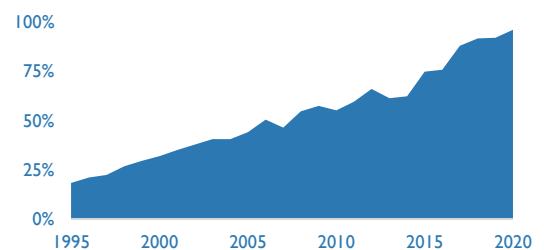
### Bangladesh: 0.08 USD/kWh



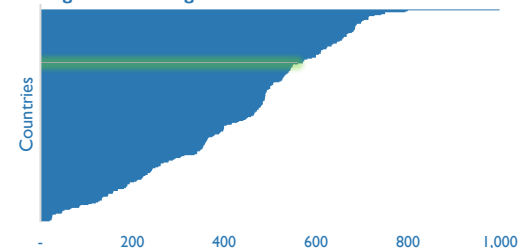
### Energy Imports : million TOE



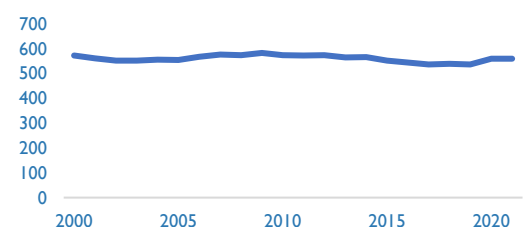
### % Population with Access to Electricity



### Bangladesh: 561 kgCO<sub>2</sub>/MWh



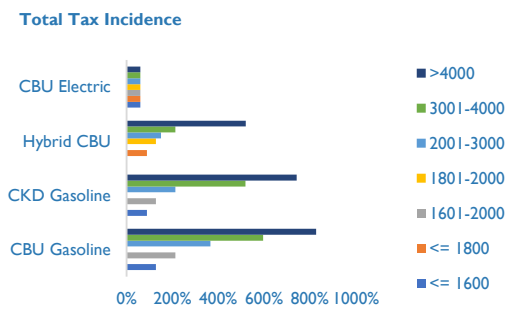
### Bangladesh Historical Grid kgCO<sub>2</sub>/MWh



## Policy Measures: Highlights

Fiscal measures, particularly vehicle taxation, are key policy measures that the government are using to promote cleaner vehicles. In essence:

- Lower cylinder capacity vehicles (e.g. smaller ones) are taxed lower than higher cylinder capacity ones
- Imported completely built-up (CBU) units which are taxed higher than completely knocked down (CKD) units which require local assembly
- Hybrids are taxed lower than conventional counterparts
- Electric vehicles are taxed significantly lower than conventional and hybrid units.<sup>27</sup>



The **Automobile Industry Development Policy 2021** (Ministry of Industry) puts forth targets towards transforming majority of passenger cars, bus, trucks, and 3-wheelers to electrics by 2030. The said policy includes the following policy measure proposals:<sup>28</sup>

- **Production/assembly of equipment:** 10-year tax holiday for local EV manufacturing and assembling ; establishment of an Energy Efficient Vehicle Manufacturing Fund (fines and taxes collected from pollutive vehicles will be ring-fenced)
- **Provision of infrastructure:** incentives for charging station networks
- **Acquisition and usage of e-mobility equipment:** Financial incentives, purchase subsidies, waiver of road tax and EV registration fees, reduction of VAT/Import duties ; establishment of an EV Cell in the Bangladesh Road Transport Authority
- **End-of-life:** incentives for setting up battery recycling industry

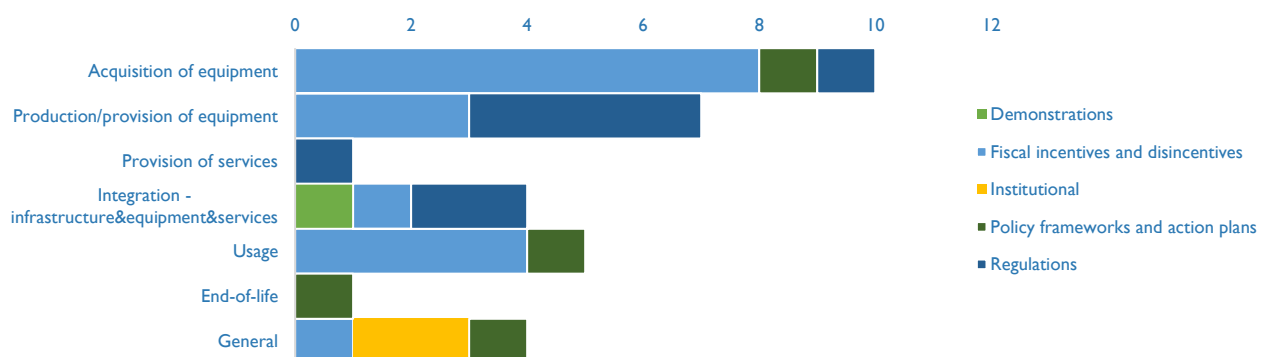
There is also an **Electric Vehicle Registration and Operation Policy** was approved in April 2023. It sets a target to convert at least 30% of vehicles to electric by 2030. The salient points of the proposed policy are:<sup>29</sup>

- **Production/assembly of equipment:** manufacturer/assembler would be required to register with the Bangladesh Investment Development Authority
- **Acquisition and usage:** enable the registration of electric vehicles into the vehicle registry; incentivize smaller EVs by using a similar staircase registration fee structure as with the ICE vehicles; imposition of a “brand new” requirement for imported EVs (entry of reconditioned imported EVs to be considered in the future); requirement for the use of lithium-ion batteries or more advanced chemistries (lead-acid will be allowed up to the end of 2025).

The **Munjab Climate Prosperity Plan** includes relevant e-mobility targets: 50% by 2025 and 100% by 2030— rideshare fleet to be electric/green; EV manufacturing to contribute up to 10% of GDP by 2030; electrification of 10,000 km of internal waterways; 50%-100% electrification/greening of the transport sector and strategic export industries. Bangladesh also aims to achieve 40% clean power generation by 2041. The **EV Charging Guidelines** have also been issued in July 2022 which includes guidance on private and public charging stations, as well as the reference standards and rules for use. Public charging stations are defined as any facility that can accommodate three or more vehicles.<sup>30</sup> The guidelines also require trade license and technical certificate as requirements for providing installation services for charging stations. Charging stations that are commercial in nature must have digital systems for payments, displays showing fees, as well as facilities such as toilets, drinking stations, and mobile network coverage.<sup>31</sup>

The figure below shows a summary of the documented policy measures (including enacted and proposed) related to e-mobility in Bangladesh. The policy measures are grouped according to the “stages” (left axis) and types of policy measures. Additional details are contained in the table in the next page.

### Distribution of Policy Measures



## Snapshot of E-mobility Policy Measures in Bangladesh<sup>32</sup>

Pillar	Stage	Category	Type of Policy Measure
Charging equipment and components	Integration - infrastructure&equipment&services	Regulations	Standards for chargers including interoperability of the EV charging system
		Regulations	Standards for Charging Stations
	Provision of services	Regulations	EV Charging Communication standards
	Usage	Fiscal incentives and disincentives	Grid-friendly tariff design for charging Evs
EVs and EV components	Acquisition of equipment	Fiscal incentives and disincentives	Company Tax Benefits for EV Purchase / procurement incentives
			Custom tariff waiver/ reduction for EV and components
			EV-specific cash-for-clunker scheme
			Excise tax waiver for EV and components
			Low cost credit lines for ev purchase and infrastructure
			Purchase incentives for EVs and components
			Value-added tax waiver or reduction for EV and components
	Policy frameworks and action plans	Corporate fleets electrification targets	
	Regulations	Regulating age of imported Evs	
	Production/provision of equipment	Fiscal incentives and disincentives	Tax Incentives for domestic manufacturing of EVs & batteries
		Regulations	Battery standards
			EV production environmental standards EV specifications, standards and Type approval
	Usage	Fiscal incentives and disincentives	Registration tax waiver or reduction for EV and components Road use tax waiver or reduction for Evs
Policy frameworks and action plans		EV Modal targets	
End-of-life	Policy frameworks and action plans	Battery recycling industry support	
General	Fiscal incentives and disincentives	Increased tax for ICE vehicles	
Infrastructure - Integration/support	Integration - infrastructure&equipment&services	Demonstrations	RE for EV charging
		Fiscal incentives and disincentives	Incentives for EV charging infrastructure
General	General	Institutional	National ev platform / Outreach program for stakeholder coordination
			Stimulate training and capacity building of staff for the electric mobility market
		Policy frameworks and action plans	Dedicated National EV Policy/Roadmap/Strategy

Note: The graph and the table pertaining to the e-mobility policy measures are mainly those that the authors had been able to collect, collate, and categorize. The authors make no claims about the completeness of the list, nor the accuracy of the categorization. These are presented to provide an approximation of the developments that are happening in terms of e-mobility policy measures, but may not be fully representative of the actual situation.

## Endnotes

- Nkiriki, J., Jaramillo, P., Williams, N., Davis, A., & Armanios, D. (2021). *Global Transportation Demand Dataset using the Shared Socioeconomic Pathways (SSPs) Scenario Framework*. <https://zenodo.org/record/4557615#ZGLJ8nZBxrp>
- Ibid.
- ATO. (2022). *Asian Transport 2030 Outlook*. <https://asiantransportoutlook.com/analytical-outputs/asian-transport-2030-outlook/>
- Calculated using population projections from Nkiriki et al. (2021) and ATO (2022).
- IEA. (2023) *Greenhouse Gas Emissions from Energy Highlights - Data product* – IEA. <https://www.iea.org/data-and-statistics/data-product/greenhouse-gas-emissions-from-energy-highlights>
- Raza, W., Mahmud, I., & Rabie, T. (2023). *Breathing Heavy: New Evidence on Air Pollution and Health in Bangladesh*. <https://openknowledge.worldbank.org/entities/publication/32c93d36-e66e-5233-a7fd-39f41ba4b624>
- WHO. (2022). *Air quality database*. <https://www.who.int/data/gho/data/themes/air-pollution/who-air-quality-database>
- McDuffie, E., Martin, R., Spadaro, J., Burnett, R., Smith, S., & O'Rourke, P. et al. (2021). Source sector and fuel contributions to ambient PM2.5 and attributable mortality across multiple spatial scales. *Nature Communications*, 12(1). Doi: 10.1038/s41467-021-23853-y. <https://www.nature.com/articles/s41467-021-23853-y>
- Ibid.
- Rahman, A. (2022). *Electric Mobility and Shift to the Electrification of Paratransit in Bangladesh*. [https://www.unescap.org/sites/default/d8files/event-documents/22%20Electric%20mobility%20\\_%26%20shift%20to%20electrification%2C%20\\_Bangladesh.pdf](https://www.unescap.org/sites/default/d8files/event-documents/22%20Electric%20mobility%20_%26%20shift%20to%20electrification%2C%20_Bangladesh.pdf)
- Ibid.
- Ibid.
- Thomas Reuters Foundation. (2022). Legalising Bangladesh 'easy bike' taxis could drive safer, greener industry. (2022). *Eco-Business.com Website*. <https://www.eco-business.com/news/legalising-bangladesh-easy-bike-taxis-could-drive-safer-greener-industry/>
- Ibid.
- Haque, A. (2022). Easy bikes: We like them, we like them not. *The Business Standard*. Retrieved 16 May 2023, from <https://www.tbsnews.net/features/panorama/easy-bikes-we-like-them-we-like-them-not-352426>
- See endnote 13.
- UKPACT Green Recovery Challenge Fund. (2023). *Road to a Green Bangladesh*. <https://www.lightcastlebd.com/wp-content/uploads/2022/05/UK-Pact-Bangladesh-EV-Report.pdf>
- Analysis by UEMI. Map data copyrighted OpenStreetMap contributors and available from <https://www.openstreetmap.org>
- Paul, R. (2022). Bangladesh announces fuel price jump, stokes inflation fears. *Reuters*. <https://www.reuters.com/markets/commodities/bangladesh-announces-fuel-prices-jump-stokes-inflation-fears-2022-08-06/>
- Cable.co.uk. (n.d.). *Worldwide Electricity Pricing*. <https://www.cable.co.uk/energy/worldwide-pricing/>
- Hosseain, E. (2023). Bangladesh increases power price 3rd time since January. *New Age*. <https://www.newagebd.net/article/195632/bangladesh-increases-power-price-3rd-time-since-january>
- IEA. (n.d.). *IEA Sankey Diagram*. <https://www.iea.org/sankey/#?c=IEA%20Total&s=Final%20consumption>
- World Bank. (n.d.). *World Bank Databank*. <https://data.worldbank.org/indicator/EG.ELC.ACCS.ZS>
- Ember. (n.d.). *Electricity Data Explorer*. <https://ember-climate.org/data/data-tools/data-explorer/>
- Sohag, M., Kumari, P., Agrawal, R., Gupta, S., & Jamwal, A. (2020). Renewable Energy in Bangladesh: Current Status and Future Potentials. *Proceedings Of International Conference In Mechanical And Energy Technology*, 353-363. doi: 10.1007/978-981-15-2647-3\_32
- SREDA. (2023). *National Database of Renewable Energy*. <http://www.renewableenergy.gov.bd/>
- See endnote 17.
- See endnote 10.
- Ibid.
- DMTCL. (2022). *Electric Vehicle Charging Guidelines*. <https://dmtcl.portal.gov.bd/site/notices/d860b2ac-5140-4567-980a-11829b879e63/Electric-vehicle-charging-guidelines>
- Mamun, S. (2022). Charging station guidelines pave way for e-vehicles. *Dhaka Tribune*. <https://www.dhakatribune.com/bangladesh/2022/07/14/charging-station-guidelines-pave-way-for-e-vehicles>
- Analysis conducted by the Asian Transport Outlook team, together with UEMI. The

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