PAKISTAN

E-mobility Country Profile

Background

Pakistan is located in South Asia, bordered by India to the east, Afghanistan and Iran to the west, China to the north, and the Arabian Sea to the south. It is the world's 33rd largest country by area. Pakistan has a population of over 220 million people, making it the fifth most populous country in the world and the second most populous in South Asia.

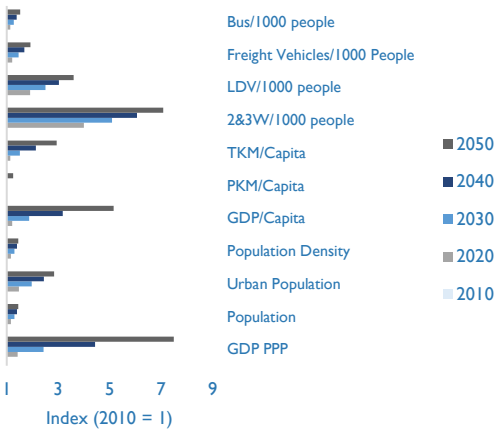
Pakistan's GDP per capita is projected to grow at long-term annual average rate of 4.9% (up to 2050).[1] Pakistan has one of the highest urbanization rates in South Asia and by 2025, the urban population is projected to reach 60%. Rapid urbanization and economic expansion are expected to drive growth in transportation activities. Passenger transport activity is estimated to grow at 2.6% per annum while freight transport activity is estimated to grow by 4% per annum over the same period.[2]

Consequently, there will be a notable rise in the number of vehicles on the road. It is estimated that between 2020 and 2050, approximately five million light-duty vehicles, and 31 million 2&3 wheelers will be added to the country's roads.[3] By 2050, it is projected that the motorization rate will reach 270 vehicles per 1000 people.

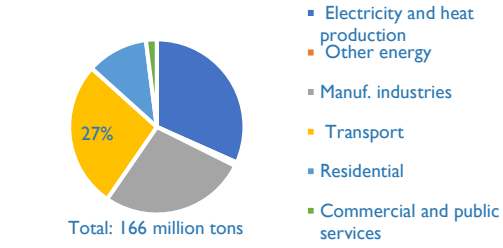
The transportation sector is one of the major contributors to air pollution and greenhouse gas (GHG) emissions in Pakistan and is estimated to contribute about 26% of the fuel combustion GHGs in the country (total of 166 million tons in 2020). Practically, all the GHGs of the transport GHG emissions are estimated to be from the road sector.[4]

In terms of ambient air pollution, the road transport sector is estimated to contribute 8.6 % of the total burden of disease related to Particulate Matter 2.5 (PM2.5) — in the country. It is estimated, for example, that 43% of the total air pollution load in Punjab, is from the transport sector.[5] Road transport air pollution is also deemed to have significant contributions to the burden of disease related to ischemic heart disease (38%), and chronic obstructive pulmonary disease (14%) in the country.[6] The average PM2.5 concentration in Islamabad, for example, stands at 32 µg/m³ which significantly exceeds the World Health Organization's guideline value of 5 µg/m³. In 2019, more than 86 thousand premature deaths were attributed to PM2.5 pollution in Pakistan.[7,8]

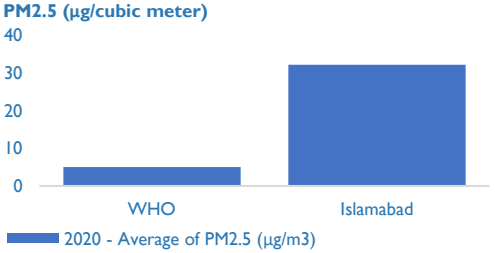
Socio-economic & Transport Indicators



2020 Fuel Combustion CO2: % By Sector



PM2.5 (µg/cubic meter)



E-mobility at a Glance

It is estimated that there are less than 15 thousand EVs in total on the Pakistani roads today.[9] Another source estimates a 2.2% adoption rate for 2&3 wheelers, and 0% for four wheelers.[10] Pakistan, through its EV Policy 2020-2025, has assumed targets of up to 100,000 cars, half a million two and three wheelers, a thousand trucks, and a thousand electric buses within 5 years of the issuance of the policy. The same policy envisages that 90% of sales of cars, two and three wheelers, buses and trucks are to be electric by the year 2040. To put things into perspective, it is estimated that there are around 27 million registered two-wheelers, 1 million three wheelers, and 4.5 million four-wheelers in Pakistan according to the Ministry of Finance.[11]

The automotive industry in Pakistan contributes about 2.8% to the country's GDP.[12] Momentum is catching up; more companies and brands are engaging in EV manufacturing. Thirty-two companies have received manufacturing licenses under the EV Policy 2020-2025, with all of them focusing on two and three-wheeler manufacturing.[13] Two-wheelers constitute three-fourths of the vehicle market and consumes over half of the total petrol in Pakistan. It is estimated that 90% of the two and three wheelers in the country are locally produced.[14] Estimates show that in terms of total cost of ownership, electric 2wheelers can be up to 30%-50% lower than comparable internal combustion engine (ICE) counterparts.[15] Electric rickshaw development is led by companies such as Sazgar Engineering.[16] Other brands such as Audi, BMW, Haval, MG, Seres, and Karakoram, are active in the EV landscape in Pakistan. In 2020, Daewoo Express also signed a strategic partnership with Skywell Automobiles to set up a value chain for EVs in Pakistan with a focus on electric buses.[17]

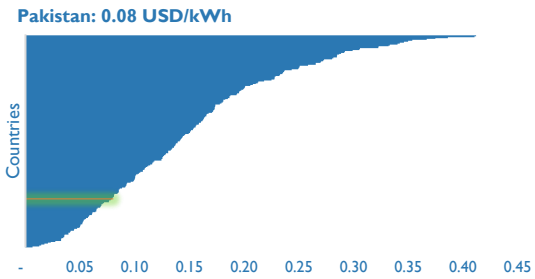
In 2017, In January 2017, the first public charging station was inaugurated in Lahore by Dewan Motors.[18] The electric vehicle (EV) charging infrastructure in Pakistan is undergoing significant developments, with efforts to expand and modernize the network to support the growing interest in electric vehicles. Key measures include introducing incentives for new foreign direct investment in EVs, lowering taxes for EV producers, assemblers, and related infrastructure sectors, and reducing import tax on charging equipment. Many startups in the EV sphere heavily rely on imports for core components such as drivetrains, battery cells, and electric motors.

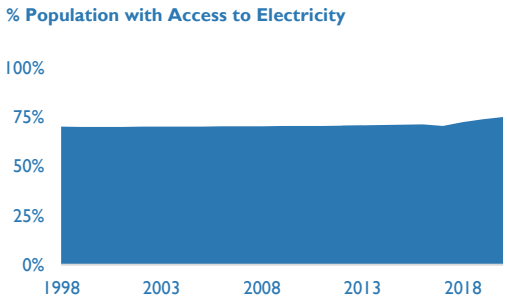
In terms of electricity prices, the average price of electricity in Pakistan (2021) was estimated to be 0.08 USD/kWh.[19] This ranks as the 58th cheapest average rate globally. Overall access to electricity in Pakistan is comparatively lower than other counterparts in the region, with less than three-fourths (73%) of Pakistanis having access to electricity. This is a key issue that needs to be considered while the strides moving towards e-mobility. In terms of the emissions impact of the electricity grid, the national average is estimated at 365 kgCO2 is emitted per MWh, which ranks at 89th place globally.[20] The installed generation capacity in Pakistan is composed of 58.8% thermal plants (46% of the generation). Renewables consist 6.8% of the installed capacity, and 4.2% of the generation.[21]

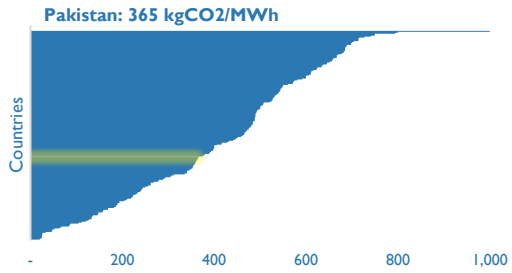
Policy Measures: Highlights

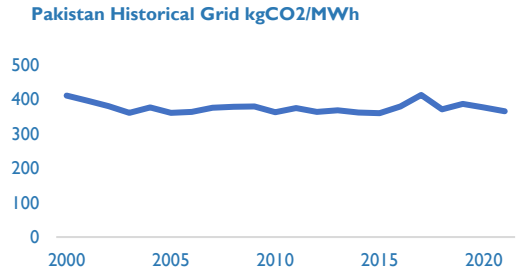
In May 2019, the Prime Minister's Committee on Climate Change approved minimum mandated targets for EVs in Pakistan which had also been adopted in the National EV Policy:

Charging Stations Approximate Locations









Policy Measures: Highlights

EV Penetration Targets	5-yearTargets	2030 Targets	2040 Targets
Cars, vans, jeeps, small trucks	100,000	3)% of new sales (~60,000 vehicles)	90% of new sales
2&3 wheelers and UNECE L vehicles	500,000	50% of new sales (~900,000 vehicles)	
Buses	1,000	50% of new sales	
Trucks	1,000	30% of new sales	

The Ministry of Climate Change issued Pakistan's National Electric Vehicle Policy in 2019. The policy covers battery electric vehicles which are not covered in the Auto Development Policy (2016-2021). The National EV Policy sets out the incentives for EVs. For new electric **cars** (including jeeps, SUV, vans, and small delivery vehicles (M1 and N1 under UNECE vehicle classification):

- removal of additional customs duty and additional sales tax for imported EVs;
- imported EV parts and components compliant with international standards will be allowed 1% customs duty and 0% sales tax;
- exemption from federal excise duty taxes;
- locally manufactured EVs to be sold at 1% sales tax;
- exemption from registration fee and annual renewal fee;
- EV registration plates coupled with EV specific zones in high density areas to introduce incentives.

For **2&3 wheelers** and low speed electric cars:

- completely knocked down units will be allowed to be imported at 1% customs duty;
- locally manufactured 2&3 wheelers to be sold at 1% sales tax
- exemption from registration fees and annual token tax
- imported EV parts and components compliant with international standards will be allowed 1% customs duty and 0% sales tax;
- EV registration plates coupled with EV specific zones in high density areas to introduce incentives.

For e-buses and e-trucks, these are the incentives that cut across:

- Importation of electric buses at 1% customs duty;
- Importation of all parts for locally manufactured buses will be at 1% customs duty
- CBU and CKD import will be at 1% customs duty
- Sales tax for locally assembled buses will be at 1% at sales stage
- exemption from registration fees and annual token tax
- ebuses to be allowed to be purchased under the Green Banking Guidelines
- 50% reduction in applicable toll tax

The EV Policy also sets out incentives for setting up EV manufacturing plants such as the following:

- 0% customs duty and 0% income and sales tax for machinery, equipment, and plant for EVs
- Import of machinery and equipment for the development of EV parts and infrastructure development equipment will be exempted from customs duty, sales tax, income/withholding tax
- 100 CBUs (each variant) to be allowed 50% of customs duty.
- Lower financing rates from the State Bank for EV manufacturing plants setup
- Lease of available land at lower rates

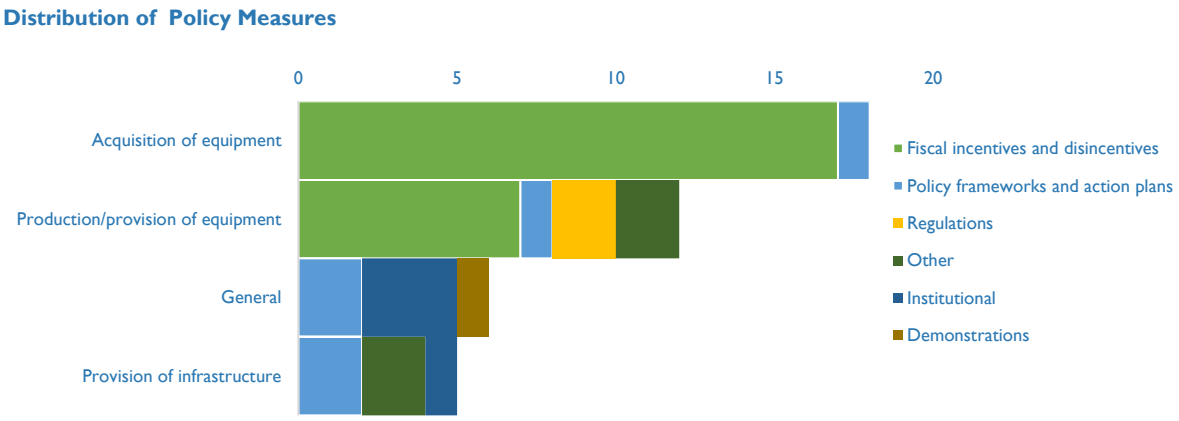
The policy also sets incentives for EV components and modules manufacturing, as well as for charging infrastructure and battery swapping stations. It also sets out categories for vehicle registration and establishes crucial institutions such as the National Center for Electric Vehicles, and the Inter-ministerial Committee on Electric Vehicles, as well as the designation of EV model cities, special economic zones. It also provides guidance on the specific roles of different ministries and government agencies. It also introduces a strategy, and targets for rolling out charging infrastructure (at least 1 direct current – DC- charging station per 3x3 km area in major cities; DC fast chargers for every 15-30 kilometres in major highways and motorways). The National Electric Power Regulatory Authority has also issued specific guidance on definitions, service pro-

Snapshot of E-mobility Policy Measures

visions (e.g. metering, billing), safety standards, and requirements for installation, maintenance, and operations of charging stations as contained in the Regulatory Framework for Electric Vehicle Charging Stations.[22]

The EV Policy is also complemented by the Auto Industry Development and Export Policy (2021-2026) which provides further incentives such as those related to tariffs for CKD manufacturing, fiscal incentives that apply to EVs in general, non-fiscal incentives (annual tax, power tariff, toll charges, insurance, registration), and safety standards.[23]

Pakistan's Updated Nationally Determined Contribution (NDC) states that it aims to shift to 60% renewable energy by 2030 and completely ban imported coal.[24] This is an upgrade from the 2019 targets set by the Alternative and Renewable energy Policy 2019 which aimed at 20% renewable energy generation by 2025, and 30% by 2030.[25] You may find visual depictions of the main e-mobility policy measures below:



Pillar	Stage	Category	Type of Policy Measure
EVs and EV components	Acquisition of equipment	Fiscal incentives and disincentives	Custom tariff waiver/ reduction for EV and components
			Sales tax waiver for EV and components
			Purchase tax reduction for EV and components
			Value-added tax waiver or reduction for EV and components
			Purchase incentives for EVs and components
		Policy frameworks and action plans	Public fleet electrification target
	Production/provision of equipment	Fiscal incentives and disincentives	Financing mechanism for production and assembly
			Excise tax waiver for EV and components - supply side
			Import tax exemption/ reduction - raw materials, supplies, components
			Corporate income tax reduction/holiday - manufacturers of Evs/ components
			Lighter vehicles
		Policy frameworks and action plans	Pronouncement of support for vehicle conversion
		Regulations	EV safety standards
		Other	Total EV fleet target
			Sales targets
			(blank)
	Usage	Fiscal incentives and disincentives	Registration tax waiver or reduction for EV and components
			Road fees reduction for Evs
		Regulations	Registration system revision to accommodate Evs
		Non-fiscal /incentives/disincentives	Distinct registration plates for Evs
General	General	Policy frameworks and action plans	Local renewable energy planning
		Institutional	Defined institutional setup
		Demonstrations	Dedicated cities/zones for electrification
Infrastructure	General	Policy frameworks and action plans	Electric infrastructure targets
	Provision of infrastructure	Policy frameworks and action plans	General pronouncement of support for charging infrastructure
			Pronouncement of support for smart grids
		Other	Electric distribution companies mandated to support
			Existing fuel stations retrofit to integrate EV charging
		Institutional	Appointment of single point of contact
	Integration	Regulations	Standards for Charging Stations

Note: The graph and the table above mainly representative of the policy measures that had been collected, collated and categorized by the authors. The authors make no claims about the completeness of the list, nor the accuracy of the categorization.

Endnotes

Photo: "putputput" by Waqas Mustafeez used under CC BY 2.0 / Cropped and recoloured from original

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