

Inventory of Lead Acid Batteries and Used Lead Acid Batteries in Bangladesh

March 2020

Prepared by the ILA for UNEP

Index

Section	Title	Page
1	Introduction	3
2	Vehicle Population	4
3	Solar Power Generation	6
4	Telecommunications	7
5	Used Lead Acid Batteries (ULAB) in Bangladesh	8
6	UN COMTRADE Data Analysis	10
6.1	Imports of Lead Acid Batteries	10
6.2	Imports of Refined Lead and Lead Scrap	10
6.3	Exports of Lead Acid Batteries and Refined Lead	11
7	LAB Manufacturers and ULAB Recyclers in Bangladesh	12
8	Conclusions	13
Appendix	COMTRADE Data: LAB - Lead - Scrap and ULAB Import and Export	17

Used Lead Acid Batteries in Bangladesh

1. Introduction

Bangladesh is one of the world's most densely populated countries, and especially in the delta region where the rivers of the Ganges Delta flow into the Bay of Bengal.

Poverty is widespread, but Bangladesh has in recent years reduced population growth and improved health provisions and education services.



Bangladesh was formerly part of Pakistan and known as East Pakistan, a legacy of Indian Independence and only came into being in 1971, when West Pakistan split with East Pakistan after a bitter war that was only brought to an end when the Indian army intervened on the side of East Pakistan.

Following the war, the population of the new country of Bangladesh spent 15 years under military rule and, although democracy was restored in 1990, the political scene can, at times, seem somewhat unstable.

Islamist extremism has also been rising in the traditionally tolerant country.

Much of Bangladesh is low-lying and vulnerable to flooding, cyclones and potentially climate change if sea levels continue to rise.

Dhaka is the capital of Bangladesh and largest city with a population of over 18 million. It is also the country's main financial centre and cultural hub. Chittagong, the largest seaport, is also the second largest city. The population of Bangladesh is approaching 169 million citizens.

The country's biodiversity includes a vast array of plants and wildlife, including the world's largest mangrove forest and the endangered Bengal tiger, the national animal.

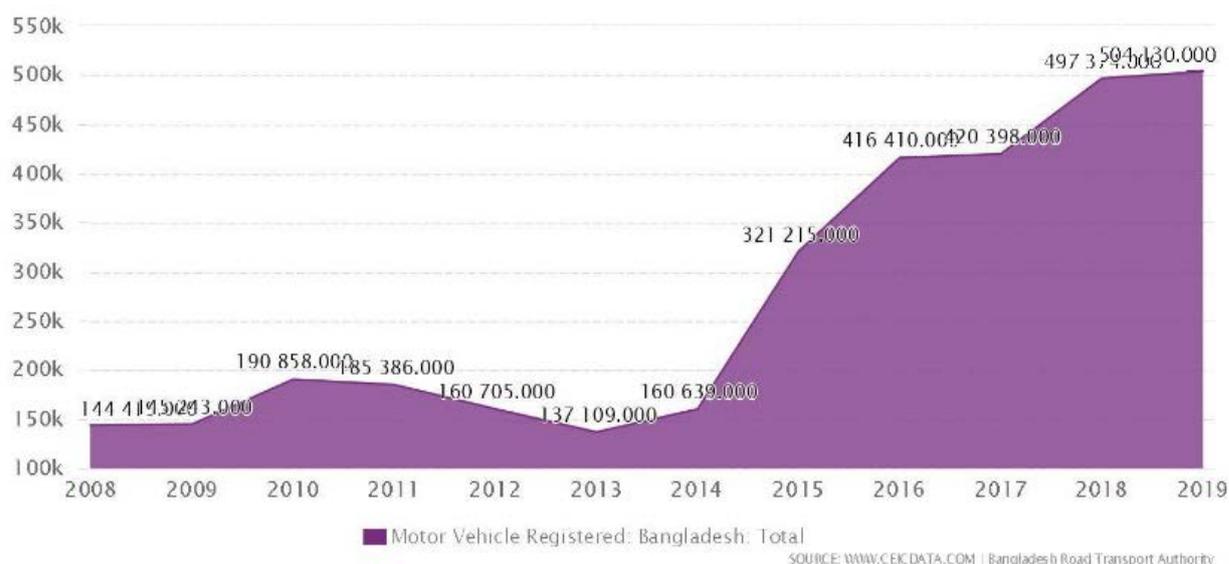
Bangladesh is a major textile and clothing manufacturer and exporting with the sector contributing USD\$ 35 billion to the economy.

Total GDP amounts to nearly \$317.5 billion USD (2019) and the annual growth rate is 8%¹.

¹ World Bank

2. Vehicle population

The number of motor vehicles registered in Bangladesh is reported to be 504,130 units as of units December 2019. The number of vehicles is, however, dwarfed by the number of motorcycles, amounting to over 2 million, that are not included in the official vehicle registration data published by the Government.



	Type of Vehicles	Up to-2010	2011	2012	2013	2014	2015	2016	2017	2018	Total
1	Ambulance	2793	219	181	243	338	480	378	495	172	5299
2	Auto Rickshaw*	126763	20423	23545	15697	19897	20000	11173	9168	2425	249091
3	Auto Tempo*	14266	175	626	395	500	1095	1322	1592	451	20422
4	Bus	27778	1761	1439	1107	1488	2391	3833	3760	817	44374
5	Cargo Van	3522	489	282	687	608	399	1017	1413	413	8830
6	Covered Van	5658	2354	1421	2271	2869	2354	3340	5176	1675	27118
7	Delivery Van	17063	1004	774	894	1176	1719	2181	2410	715	27936
8	Human Hauler*	6520	1152	715	385	225	1142	3487	3393	497	17516
9	Jeep (Hard and Soft top)	32286	2134	1569	1314	1870	3601	4892	5425	1346	54437
10	Microbus	66379	4051	3044	2537	4313	5224	5804	5575	1248	98175
11	Minibus	25644	276	249	148	256	323	472	492	102	27962
12	Motorcycle	759257	114616	101588	85808	90685	240358	332057	326550	94740	2145659
13	Pick Up (D/Cabin)	32240	10460	7625	6553	9554	10257	11371	13512	3587	105159
14	Private Passenger Car	219830	12950	9224	10472	14699	21062	20304	21959	5160	335660
15	S P Vehicle	6371	396	226	227	172	296	620	993	305	9606
16	Tanker	2706	317	195	226	362	324	394	319	96	4939
17	Taxicab	44380	75	172	51	374	88	44	15	32	45231
18	Tractor	20600	5200	3494	1885	1522	1699	2576	2777	1114	40867
19	Truck	82871	7327	4335	5129	8136	6330	7275	10353	3325	135081
20	Others	1317	7	1	1080	1595	2073	3870	5021	1558	16522
TOTAL		1498244	185386	160705	137109	160639	321215	416410	420398	119778	3419884

Bangladesh's Motor Vehicle Registrations: Totals from 1995 to 2019 (RTA)

The vehicle described as a “Human Hauler*” may not be a term familiar to anyone outside of Bangladesh, but it is best described as a converted open truck that carries people.



A typical “Human Hauler”

To avoid any confusion with the vehicles described and known as “Auto Tempo” and “Auto Rickshaw”, here are illustrations of both vehicles. As can clearly be seen in the photographs, the Tempo can carry more passengers than the Rickshaw



Typical Auto Tempo



Typical Auto Rickshaw

Human Haulers, Auto Tempos and Auto Rickshaws are currently banned from main highways in Bangladesh due to the high accident rates associated with these vehicles².

² Road Transport Authority

Estimates for the number of e-rickshaws vary from the Dhaka tribune's report of approximately 500,000 to the e-rickshaw's association's estimate of 1,500,000. These vehicles are typically powered by 4 to 6 lead acid batteries³ weighing 20 to 30 kilos, and taking about four hours to fully recharge providing a range that will serve for a full days' work.

It should also be noted that the number of auto rickshaws of all descriptions listed in the official government statistics may be a serious underestimate of the actual number of rickshaws on the road. The reason being that some 30 years ago the Dhaka City Corporation stopped issuing licences to rickshaws, because the rickshaws were considered by the City Corporation to be one of the main contributors to traffic gridlock in the capital. Since then it would appear that licence plates are still being issued, albeit illegally, with some drivers paying up to Tk 15,000 (USD\$ 180), which amounts to about 3 months earnings. On top of the initial outlay, in order to "keep" the license plate, divers are required to pay about Tk 500 every quarter. This trade in license plates means the municipal authority is losing income and worse still, the government have no idea how many rickshaws are on the streets. According to the two Dhaka city corporations, there are nearly 80,000 licenced rickshaws in the capital, but a Buet⁴ study put the number of illegal rickshaws at about one million, in fact, more that the total number of officially licensed rickshaws in Bangladesh, which number nearly 290,000.

3. Solar Power Generation

More than a quarter of the rural population in Bangladesh do not have access to a main grid electricity supply and that means for millions of families, cooking, working and studying are difficult, or even impossible, after sundown.

However, the Government of Bangladesh have initiated one of the world's most ambitious domestic solar energy programmes. With the support of the World Bank and other international development organizations and donors, together with the private sector, affordable home and work place solar-powered electricity is being installed in locations where grid electricity would be too expensive to install or where the geography makes it difficult to reach.

The small-scale solar systems have been installed in more than 4 million properties, including 13 mini-grid installations, providing electrical power to over 20 million of the population and irrigation to over 1,000 small holdings and 6,000 farmers⁵.

Of note here is the fact that the energy storage media of choice is the Lead Acid Battery.

³ <https://www.dhakatribune.com/bangladesh/power-energy/2017/09/27/pdb-bringing-battery-run-vehicles-tariff-regulations>

⁴ Rickshaws Revisited: Saimum Kabir, 2018 - <https://contextbd.com/rickshaw-revisited/>

⁵ World Economic Forum, 2018, Riccardo Puliti: <https://blogs.worldbank.org/energy/grid-bringing-power-millions>

4. Telecommunications

Mobile communications in Bangladesh are improving at a pace, and need to, to maintain the economic momentum. Currently there are four main players, namely:

- Banglalink (by international. Vimpelcom)
- Grameenphone (joint venture with Telenor)
- Robi-Airtel (Malaysian Axiata Group and Indian Bharti Airtel merging their networks).
- Teletalk (state-owned)

Out of the Four operators, Teletalk, Grameenphone, Robi, & Banglalink offer 3G nationwide, and 4G services in 64 districts of Bangladesh, and Banglalink provides a 3G service in all regions.

None of the telecoms companies have any CDMA Base Stations and only have GSM systems. In total there are over 47,269 GSM stations, but most of them are equipped with Lithium Ion batteries and not Lead Batteries. It would appear that the telecoms equipment adopted by the companies in Bangladesh has been imported from China⁶, and the equipment would have been installed with batteries manufactured in China. As telecoms batteries are made to a high specification with a guaranteed life of at least 15 years, it is not unreasonable to assume the any replacement batteries would be imported from China. Assuming that is the case, then the replacement batteries would be recorded in the Comtrade data base as Industrial batteries. Although it is not possible to determine exactly how many tonnes of used Lead batteries are generated currently, because many, if not most of the GSM stations are not 15 years old and so will not be adding to the recycling burden for a few more years. However, as and when replacement Telecoms VLRAs batteries do come to the end of their working lives, it is likely that they will be replaced on or just before their guaranteed life expectancy, so that the telecoms network does not fail. Therefore, in a mature Bangladesh telecom network nearly 2,000 mt of ULAB will be generated annually, assuming no growth in the network. Going forward as consideration is given to developing a strategy for managing the Lead risk posed by ULAB recycling, this estimate of telecoms ULAB will become more significant and so it is included in the current estimates, especially as the mobile network will expand.

Network	GSM Stations	VRLA @ 24/unit	LAB Weight mt	ULAB Weight mt
Banglalink	14,000	336,000	9,744	584
Grameenphone	15,900	381,600	11,066	664
Robi	8,392	201,408	5,841	350
TeleTalk	8,977	215,448	6,248	375
Totals	47,269	1,134,456	32,899	1,973

⁶ <https://www.ceicdata.com/en/indicator/china/exports-telecommunication-equipment>

For many people in Bangladesh, affordability is an issue, but despite this barrier, the mobile communications industry in Bangladesh has increased dramatically over the last decade to become the fifth largest mobile market in the Asia Pacific region with over 85 million subscribers in 2017, or half the population of Bangladesh⁷. Projections suggest that by 2022 the number of mobile phone subscriber will reach 100 million.

5. Used Lead Acid Batteries (ULAB) in Bangladesh

Bangladesh is a hot country and the average life of SLI automotive and motive Lead batteries in such countries is normally two years, although e-rickshaw batteries are sometimes failing after 3 or 6 months. Nevertheless, assuming that SLI vehicle battery life is about two years and the e-battery lasts for about 6 months, the following tabulation can be prepared and the approximate number of ULAB determined. Other assumptions are that the Lead average weight of automobile SLI batteries is 14 kilos, the fully electric e-rickshaw battery weighs around 20 kilos and the cycle version 14 kilos with one LAB in the cycle version and at least four in the e-version, and the average weight of truck and bus batteries is 25 kilos. The average weight of a solar system battery is taken at 10 kilos with a useful life of 5 years.

Lead Battery Use	Numbers	Av. Weight kg	Total Weight mt	ULAB Generated mt
Automotive – cars + vans and taxis	613,977	14	8,596	4,298
Motorcycles	2,245,659	5	11,228	5,614
All Rickshaws (+ microbuses)	1,000,000	5	5,000	2,500
e-rickshaws	1,500,000*	30	45,000	90,000
Trucks + Tractors + Ambulances	186,116	25	4,653	2,326
Buses (+ mini- buses + others)	88,858	25	2,221	1,111
Telecom	1,134,456	29	32,899	1,973
Industrial	Unknown	Unknown	10,330	2,066

预览已结束，完整报告链接和二维码如下：

https://www.yunbaogao.cn/report/index/report?reportId=5_13954

