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Prospect and Challenges in Bangladesh Autogas Market

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Abstract— Transportation system which is the basement of the industrial and socioeconomic development of any country and mainly depends on fossil fuel. In Bangladesh the reserve of fossil fuel is limited and will be exhausted within next 10–12 years if the existing consumption rate continues. The demand of petroleum products increasing gradually in Bangladesh where 70 % imported by BPC. Among the imported products, 64.27 % used by transportation sector which is costly and harmful for environment. Considering the environment and economic issues government stated CNG (Compressed Natural Gas) as transporting fuel after 2000s but the reserve of NG gas is decline mode. Bangladesh government thinking about new source of energy for transport sector which is sustainable, environmentally friendly and economically save. Autogas is the best option for vehicles fuel in Bangladesh which consumption increase 400% last five years. The objective of the study is to find out the Autogas market development challenges in Bangladesh and recommend to reduce the challenges. Secure supply chain, inadequate infrastructure, insufficient investment, lack of government monitoring and consumer awareness are the main challenges for develop Autogas market in Bangladesh. Bangladesh government as well as private owner of LPG industry should come forward to reduce the challenges for secure energy sector for sustainable development.

Keywords— Transport fuel, Autogas, challenges, economical sustainability, Bangladesh.

I. Introduction

Transportation system is the basement of the industrial and socioeconomic development of any country and predominantly depends on fossil fuel. Bangladesh is an energy starved country where natural gas and petroleum products are the main sources of energy. However, the country has only 12 Tcf proved natural gas reserve which will be exhausted within next 10–12 years if the existing consumption rate continues [1].

In Bangladesh, the average demand for petroleum products in 2020-21 about ~7 mMT which was 5.5 mMT in 2019-20 and it is increasing gradually. Only government owned Eastern Refinery Limited (ERL) can meet only 30% of our requirement and rest 70% is imported by the BPC [2, 3]. It saw from the demand/supply ratio of petroleum products in Bangladesh that the need for diesel is higher than all other petroleum oil because of transportation and irrigation [2]. According to Bangladesh Petroleum Corporation (BPC), 64.27 % oil used by transport which is 18 %, 7.65%, 6.74%, 1.97 % used by agricultural irrigation, industry, power generation and house hold respectively [3]. Considering the environment and economic issues government stated CNG (Compressed Natural Gas) as transporting fuel after 2000s. At present average production of natural gas is about 2978 MMcfd. A total 994 billion cubic feet (BCF) of natural gas was produced in 2019-20 which was used by power 46%, fertilizer 5%, captive power 15%, industry 16%, domestic 13%, CNG 4% and others very small amount [4]. Hence, it has become necessary to develop infrastructure in the local LPG industry to ensure an uninterrupted supply of LPG for cooking fuel, auto gas fuel and other commercial uses. Bangladesh Road Transport Authority (BRTA) and Rupantarita Prakritik Gas Company Limited (RPGCL) reported that total registered motor vehicles in Bangladesh is 4,471,625 (Table 1) where 505,170 vehicles use CNG as fuel which refill by 530 filling stations [5] [6] but actual number higher than the registered numbers. So, due to shortage of natural gas reserves in the country, the government has already decided to replace natural gas with Liquefied Petroleum Gas (LPG) and stopped the supply of pipeline natural gas for cooking all across the country which 98% owned by private organizations [7, 8] . The objective of the study is to find out the Autogas market development challenges in Bangladesh and recommend to reduce the challenges.

II. LPG MARKET IN BANGLADESH

Demand of Liquefied Petroleum Gas (LPG) in Bangladesh is very high and increasing day by day dramatically. Most of the LPG supplied by private company through import. During 2019-20 FY total LPG supplied was 848,441 MT where public sector produced only 13,414 MT remaining supported by private sector [4]. Last five years LPG scenario shown in figure 1. According to energy expert, the LPG market size would be would be 2,700,000 MT in 2025 and 3000,000 MT in 2030 [9,10,11].

The LPG market dominated by Bashundhara LP Gas Ltd and Omera Petroleum Limited (OPL) where this company market shares nearly 44 % flowed by Jamuna - 17%, BM - 11%, Laugfs - 7%, TotalGaz -5%, others 16% [9, 12, 13] shown in figure 2.

Table 1: Number of registered motor vehicles in Bangladesh [6]

Sl. No	Type of Vehicles	Up to 2015	2016	2017	2018	2019	Up to-June 2020	Grand Total
1	Ambulance	4254	378	495	564	667	311	**6,669**
2	Auto Rickshaw	226325	11173	9168	21638	30967	10217	**309,488**
3	Auto Tempo	17057	1322	1592	609	228	42	**20,850**
4	Bus	35964	3833	3760	2755	3606	1501	**51,419**
5	Cargo Van	5987	1017	1413	1280	4	1	**9,702**
6	Covered Van	16927	3340	5176	5729	3042	792	**35,006**
7	Delivery Van	22630	2181	2410	2100	1531	515	**31,367**
8	Human Hauler	10139	3487	3393	1423	510	91	**19,043**
9	Jeep(Hard/Soft)	42774	4892	5425	5555	5630	1943	**66,219**
10	Microbus	85548	5804	5575	4137	3683	1149	**105,896**
11	Minibus	26896	472	492	436	837	285	**29,418**
12	Motor Cycle	1392312	332057	326550	395603	406897	138193	**2,991,612**
13	Pick Up (Double/Single Cabin)	76689	11371	13512	13097	11952	4372	**130,993**
14	Private Passenger Car	288237	20304	21959	18227	16783	5009	**370,519**
15	Special Purpose Vehicle	7688	620	993	1339	1182	330	**12,152**
16	Tanker	4130	394	319	529	419	166	**5,957**
17	Taxicab	45140	44	15	161	11	6	**45,377**
18	Tractor	34400	2576	2777	3553	2561	856	**46,723**
19	Truck	114128	7275	10353	12663	8326	2229	**154,974**
20	Others	6073	3870	5021	5976	5294	2007	**28,241**
TOTAL		2463298	**416410**	**420398**	**497374**	**504130**	**170015**	**4,471,625**

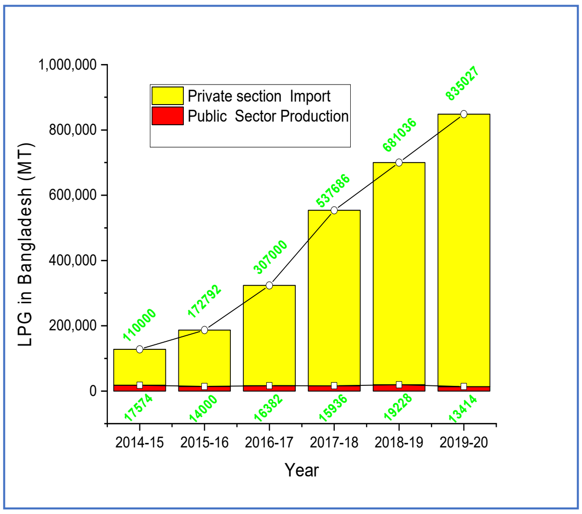

Figure 1: LPG scenario 2014-20 in Bangladesh [4].

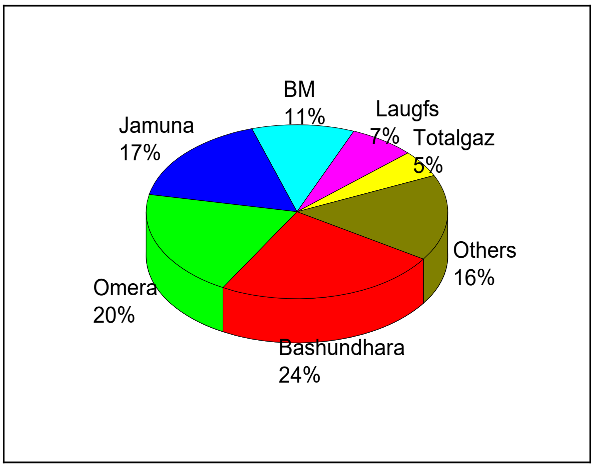

Figure 2: LPG gas Market share by company in Bangladesh [9, 12, 13].

III. AUTOGAS MARKET IN BANGLADESH

Liquefied petroleum gas (LPG) is used in internal combustion engines, it is termed as Auto LPG which is a mixture of propane and butane. Autogas is the 3rd most widely used automotive fuel globally and power as 27 million vehicles [14]. It is environment friendly and cheaper fuel than conventional fuels like petrol and diesel [14, 15]. Statistics shown that in Bangladesh around 30,000 vehicles are currently running with Autogas and the market volume is about 72,000 MT which was only 6000 MT in 2015 and predicted it would be 250,000 MT by 2025 [15]. The energy ministry has already given the sanction for setting up 2,550 Autogas stations across the country to 13 LPG operators, with many attaining approvals to erect conversion centers for the fuel use mechanisms in vehicles. The operator have already set up about 400 Autogas station in Bangladesh [16]. BM Energy, a market leader in the Autogas sector, has already set up 150 gas stations where they have 450 stations license flowed by Omera Gas One (set up 32 license 200), Petromax (set up 40, license100), Beximco (set up 25, license 500); G-gas (set up 42, 150 at implementation phase 100 agreement sign). Bashundhara LP Gas, JMI and Jamuna Gas are more aggressive to set up new Autogas stations [15, 16].

IV. Methodology

The LPG fuel used in LPG powered cars is called AUTO GAS which cleaner, greener and cheaper than liquid fuel. In this study data were collected by taking with stockholders (company representatives, Autogas filling stations owner, user etc.). Questionaries survey and site visited conducted to find out the challenges to develop Autogas market in Bangladesh.

Figure 3: Autogas storage system in filling stations

Figure 4: Taking with high officials of two LPG company.

V. Challenges To Develop Autogas Market In Bangladesh

Bangladesh has an Autogas supply capacity of 4,00,00 MT/year which is way less than its huge demand of 1.5 million MT/year. Experts estimate a 400% growth in the Autogas sector in Bangladesh in next five years [11, 15]. Bangladesh government has published rules and regulation for LPG storage, import, transport and distribution. The new rules ensure the safety culture in LPG industry. The LPG market increasing dramatically in Bangladesh, so the rules and regulation should be updated as per time demand and for sustainable business environment to all stakeholders. There are challenges for developing a sustainable LPG marketplace in Bangladesh which, affordability is the main challenge. The most common challenges to develop Autogas market in Bangladesh discussed below

A. Confirming adequate supply and availability

Adequacy of supply is clearly related to the size of demand. Energy business directly related with geo-politics worldwide. As LPG business is mainly private control market, adequate supply with increasing demand in acceptable price is a big challenge for Bangladesh LPG market.

B. Secure supply chain

Supply security is one of the most common challenge for a developing country like Bangladesh. There are likely to be additional difficulties of supply if Autogas is used gradually for automobile fueling – mutually because of four-wheelers (private vehicles and taxis) and CNG being converted. Inadequate storage capacities throughout the country and multi-mode transport facilities for moving Autogas from alternative destinations are big challenges for secure the LPG supply.

C. Appropriate distribution Process

Autogas business is not like FMCG (fast-moving consumer goods) business or any food and beverages like one-time business. LPG business is all about close relationship with the importers, distributors, retailers and customers. Growing up the safety culture as per government rules and regulation among the distributors and retailers is a big challenge for importer. Lack of awareness, malpractices by ill motivated businessman and traditional bureaucratic delays from different government bodies are concern of present LPG companies. On the other hand, draft of channel for large Autogas vessel to import is a big challenge. As we all know, most of the investors have built up their capacity in Mongla where they cannot bring big vessels. Higher premium charge of importing Autogas due to small vessel in operation.

D. Inadequate infrastructure

There are three sea port namely Chittagong Port, Port of Mongla and Port of Payra in Bangladesh. The entering and leaving draft of the ports are 9.50 m, 8.50 m 16 m for Chittagong Port, Port of Mongla and Port of Payra respectively. Large vessel cannot navigate in the port area due to lack of draft. The existing infrastructure at Bangladesh ports for Autogas is inadequate to meet current requirements. New deep-sea port Matarbari Port, is under construction where the draft is 16 m. On the other hand, inland port under BIWTA (Bangladesh Inland Water Transport Authority) are not sufficient to support the LPG business in Bangladesh. The Draft problem of the river, large ship can't inter those rivers from the deep sea. So, the distribution cost is increased. Due to inadequate import facilities on the coast, inland movement is required and the costs are substantial. In Bangladesh there are more than 18 Autogas/LPG terminal in 2018 and it will be reach to 30 in 2025.

E. Insufficient Investment

There should be balancing infrastructure roads, equipment suppliers, repair services, etc. built in tandem, to simplify the smooth operation of the system. Conversion of fuel consuming system and lack of conversion opportunities are considerable challenges in Autogas industry. Huge investment from government and private sector needed for smooth business. Low rate of ROI (Return on Investment) is a challenge for investor in this sector.

F. Lack of government monitoring and consumer awareness

Government monitoring is important for any business. Government authority should monitor the implementation of rules and regulation. Recently every month the government fixed the LPG Autogas price by monthly but proper monitoring is necessary. The consumers are not aware about the benefits of Autogas which is also a challenge in this sector.

VI. VCONCLUSION AND RECOMENDATION

The primary energy shortage is nowadays a mostly discussed issue in Bangladesh in the wake of widening energy and fuel crisis. Day by day the number of motor vehicles are increasing in Bangladesh. The number of total registered vehicles is 4,471,625 which is getting increased day by day. Most of the vehicles are running on diesel of CNG. But the quantity of natural gas is running out in Bangladesh and diesel also causes a lot of damage of vehicle engine and also harmful for nature. In this situation, Autogas can be a better alternative to these. Autogas is the fuel for a new sustainable mobility which can reduce the emission of greenhouse gases as well as improve urban air quality. Nevertheless, the Autogas industry is facing many challenges in Bangladesh. So there needs to be a coordination of the Autogas industry with the government. So, the government of Bangladesh should pay attention to this issue.

RECOMMENDATIONS

- Need to implement the government rules and regulation by proper monitoring. Government should strictly monitor the market so that no single piece of expired cylinder exists in the market. Such initiative assists to increase demand of Autogas obviously.
- More LPG conversion center as well as LPG station need to setup.
- Government should fix up CP (contract price) for Autogas for a specific time period.
- Autogas companies should increase investment on brand building activity.
- Encourage reputed foreign investment by the way of focusing on the benefits of investing in Bangladesh, arrange trade fairs, liaison via the Bangladesh embassies located in different countries etc.
- Ensure that the country has taken adequate steps to develop infrastructure, arrange proper land for investors at low cost, no bureaucratic tangle for the foreign investments.

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