

A road to mitigate energy demand until 2030 & acquisition of Bangladesh in power sector from 2009 to 2013

Ripon Saha¹, Kazi Tanvir Ahmed², MD. Muminur Rahman sonic³, Sujan Kumar Talukdar⁴

Abstract –

Power crisis is now one of the burning questions in Bangladesh. This paper will specify the acquisition of Bangladesh govt. from 2009 to 2013. Also specify a road of BD govt. to producing electricity by renewable fuel, establishing new nuclear based power plant, regional help to produce much power, improve the distribution system, improve the transmission system, to reduce system loss, develop the management system. It will show a road to mitigate energy crisis until 2030 in Bangladesh.

Index term- renewable fuel, nuclear power plant, improves distribution system, Bangladesh.

1. Introduction

Electricity crisis is the burning question in Bangladesh now. Our main source of electricity product is the natural gas which is shortage and is going to run out. Some power stations are furnace controlled and some others are oil dependent. This sort of power stations is more expensive and they are not atmospheric friendly. They produce green house gas which destroys the Ozone layer and causes the global warming. There are some power stations which run by renewable energy source, namely Hydroelectric power Scheme, Tidal power Scheme, Wind mill, Nuclear reactor and Solar Cell. Proper utilization of renewable energy is the up most choice for solving the power crisis in Bangladesh because it requires low cost and less risk. Initiative should be taken to develop skilled manpower required for the power sector considering renewable energy sources. By incorporating IPP and local Government (GOV), central

GOV may take the responsibility to increase the power generation and ensure its proper use in Bangladesh.

2. Significant approach of Bangladesh govt. :

1. Power production 8942 MW in 2009 but now 8525 MW.
2. Launching 54 new plant with capacity 3845 MW.
3. Increased the power privileged people from 43% to 60%.
4. Reduce the system loss from 15.67% to 12.27%.
5. 2.8 million new subscriber.
6. 80 MW power production by renewable fuel.
7. Established 19 new grid substation with total power 2743 MVA.
8. Made a master plan to produce 2000 MW nuclear power plant.

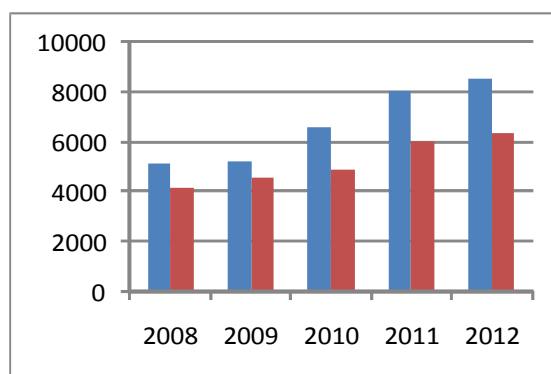


Fig 1: Extra electricity production from 2009 to 2012 In MW

[1] Ripon Saha¹, Electrical & Electronic Engineering, Pabna Science & Technology University,, Pabna, Bangladesh.

[2] Kazi Tanvir Ahmed², Electrical & Electronic Engineering, Pabna Science & Technology University,, Pabna, Bangladesh,

[3] MD. Muminur Rahman Sonic³, Electrical & Electronic Engineering, Pabna Science & Technology University,, Pabna, Bangladesh, +8801723704081,

[4] Sujan Kumar Talukdar⁴, Electrical & Electronic Engineering, Pabna Science & Technology University,, Pabna, Bangladesh,

	From 2009	To 2013	acquisition
Production (MW)	4942	8525	(+)3845
Max production	3267	6350	3082
X-mission line(circuit KM)	8305	8949	644
Distribution loss	16%	12%	(-)4%
Distribution line	256134	281123	(+)24980
subscriber	108000	136400	(+)2840000
Privileged population	756000	956000	(+)2000000
Privileged population percentage	43%	60%	17%
Annual power production per man (KWH)	183	192	(+)109

Table 1 : Comparative acquisition of energy sector in Bangladesh [1]

3.A road to met up energy demand :

I. Renewable fuel based electricity generation:

Bangladesh govt. has taken initiatives to produce 500 MW electricity from solar power [5]. For this region govt. will form Sustainable & renewable energy development authority (SREDA). There is a huge possibility to produce 80 MW power from renewable fuel. So it is huge possibility to utilize the renewable resource.

II. Establish nuclear power plant:

It is possible to produce 4000 MW electricity from nuclear power plant within 2030. For this reason bd govt. have made a master plan with Russia [7]. To fulfill this target Bangladesh have to generate electricity 1000 MW within 2018 & 1000 MW within 2020[2].

III. Develop sub Regional Co-operation:

Most probable way to importing electricity from neighboring countries, India, Nepal, Bhutan, Myanmar, is processing. To import 500MW electricity from India top level decision have already taken between these countries making of substation and 400 KV power transmission line in progress. It will be possible to import 500 MW electricity from India by 2013.[3]

IV. Development in Power Transmission System

In last four years, 19 new sub stations has been built with 743MVA capacity [4]. And capacity of another 60 olds sub stations has been enhanced upto 447 MVA. Besides, 644 circuit kilometer transmission line has already been built. Except this 2000 km transmission line construction line in progress and plan has been taken to construct 400KV highly power full transmission line.

V. Development of Power Distribution System

In last four years 2500 km distribution line and 500 sub stations has been build and 2.8 million consumers of different classes got electricity [5]. For the mass development in distribution system PDB (Power Development Board) has taken the plan to construct six new distribution line which costs 2087corer. Within these prospects in total 84 sub stations and 20000km transmission line will be built to provide electricity to 75000 consumers. Except this another projects by REB (Rural Electric Board) has taken to facilitate with electricity to1.8 million consumers with cost of 4500 corer. If these projects are realized within 2017 another 110000 km transmission line will be built and more new consumers will be able to be benefited with electricity.[4]

VI. Reduce system loss:

The flow of power across the transmission system causes power losses in the various elements of the system. Most of these power losses are a function of the square of the current flowing through the circuit or transformer windings (I^2R) and cause unwanted but inevitable heating of transmission lines, cables and transformers. Since such losses are variable they are often referred to as the 'variable' power losses. System loss has reduced 16 % to 12 % from 2009 to 2012[1]

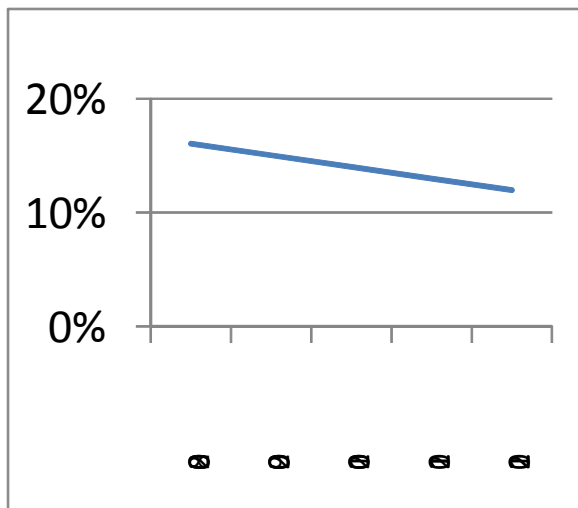


Fig 2 : System loss reduce from 2008 to 2012

4. Fuel saving program

To reduce waste & saving the electricity these points must be followed—

1. Include electricity saving equipment in national building code.
2. Include electricity saving & alternate fuel related lesson in text book
3. CFL bulb must be distribute in free of cost.
4. Inefficient & old power plant must be reconstructed.
5. Convert simple cycle power plant to combined cycle power plant.
6. Result based management program should be launched to reducing system loss.

5. Future Plan Bangladesh Govt.

1. To produce 800MW power in 1015 and 2000MW in 2020 power based on renewable energy.
2. To construct coal based power stations with capacity 4000MW in 2017 and 200MW in 2030.

3. According to the master plan to produce 22500MW power in 2020 and 39000MW power in 2030.

4. To construct nuclear based power station in 2013 with 400MW capacity

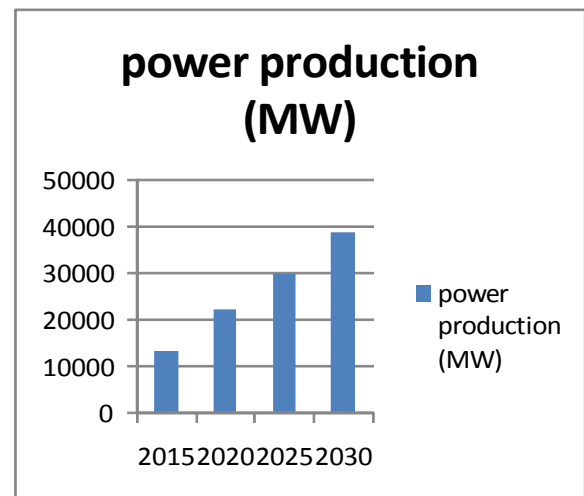


Fig 3: Target of electricity production until 2030[6]

6. Conclusion

In this paper, a novel model of an effective, convenient and robust proposal has been proposed especially for the urban, rural and remote areas of Bangladesh where it is difficult to provide a sufficient power supply from now to 2030. A six year plan up to 2020 has been adopted to improve power scarcity and provide excess power for future. Vision of increasing economic growth to 8 percent by 2014 and 10 percent by 2017 through industrialization will be a reality with the implementation of this plan. It can be an excellent, cost effective and also a reliable solution to mitigate the existing power crisis if we can implement these proposals properly.

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Authors:

Ripon Saha, Final year Student, Studying B.Sc at Electrical and Electronic Engineering (EEE) in Pabna Science and Technology University(PSTU), Pabna-6600, Bangladesh. His fields of expertise are renewable energy, nuclear energy, telecommunication, nanotechnology and optoelectronics.



Kazi Tanvir Ahmed, Final year Student, Studying B.Sc at Electrical and Electronic Engineering (EEE) in Pabna Science and Technology University(PSTU), Pabna-6600, Bangladesh . He has a diverse research interests which include Power System, nuclear energy, Wireless communication, Renewable Energy and Smart Grid Technologies.



Md. Muminur Rahman Sonic received the Bachelor of Science (Engg.) degree in Electrical and Electronic Engineering from Pabna Science & Technology University (PSTU), Bangladesh. His research interests are in the field of Renewable energy and its Technology, Nanotechnology and Telecommunication



Sujan Kumar Talukdar received the Bachelor of Science (Engg.) degree in Electrical and Electronic Engineering from Pabna Science & Technology University (PSTU), Bangladesh. His research interests are in the field of Renewable energy and its Technology, Nanotechnology and Telecommunication