

Energy Subsidy and Sustainable Development of Bangladesh

CHOUDHURY MOHAMMAD SHAHARIAR*

ASIF AHMED*

M.A. RASHID SARKAR**

Abstract *Subsidy is a regularly talked economic topic around the world. Energy subsidy, especially in the case of fossil fuels, is regularly practiced around the world. This idea of energy subsidy is taken by different countries due to various reasons among which, the most common is sustainable economic development which allows more investment in the energy sector and increases the use of energy technological and economic development. But, there are some downsides of energy subsidy such as it facilitates wastage of energy and promotes environmental damage. In the case of Bangladesh, a developing country in the South Asian region, it is a must to give subsidy in the energy sector. Even with the advantages it provides, Bangladesh, as a country, which does not have high energy reserve and financially is not very able to import high amount of energy resources, it is pretty harmful for the future. So, for sustainable development, measures should be taken to successfully phase out the subsidies through targeted compensation. In this paper we have discussed the amounts of subsidy provided by the government for different natural resources, how these affect the economy of Bangladesh, and the policy our government should come up with for sustainable development of the country.*

Keywords: *Bangladesh; energy production and consumption; subsidy; economic impact; environmental effect, sustainable development.*

* Department of Mechanical Engineering Bangladesh University of Engineering and Technology Dhaka, Bangladesh

* Engineer working at Stumberger Oil Company Ltd. Department of Mechanical Engineering, BUET

** Professor, Department of Mechanical Engineering, BUET

1. Introduction

Bangladesh, a developing country in the South Asian region, has been facing numerous obstacles regarding energy issues. It has been confronting problems in production and consumption of energy. In Bangladesh, with moderate per capita income, it is tough for the people to pay the international price. So, energy and power is invariably subsidized in Bangladesh to reach the goal of development. This process of subsidizing has both positive and negative consequences.

Though, in an economy like Bangladesh, there is utter need of subsidy in energy and power sector, this subsidizing process hurts the national economy as the government pays a lot for the people. This paper begins with definition of subsidy and its needs and then it focuses on the energy production and energy import situation of Bangladesh, the pricing system, and the present price range along with the subsidy given by the government in energy sector. The merits and demerits of energy subsidy are discussed and its implication for the Bangladesh economy is

analyzed. This paper finally makes recommendations on how the energy subsidy situation should be approached in Bangladesh.

2. Energy Subsidy and Reasons Behind It

2.1 What Is Subsidy

A subsidy is a type of financial support provided to a business or economic sector. Most kind of subsidies are made by the government to producers or distributors in an industry to prevent the decline of that industry as a result of continuous unprofitable operations or an increase in the prices of its products or simply to encourage it to hire more labor (as in the case of a wage subsidy). Examples are subsidies to encourage the sale of exports; subsidies on some foods to keep down the cost of living, especially in urban areas; and subsidies to encourage the expansion of farm production and achieve self-reliance in food production. Subsidies can be regarded as a form of protectionism or trade barrier by making domestic goods and services artificially competitive against imports. Subsidies may distort markets and can impose large economic costs. Financial assistance in the form of a subsidy may come from government, but the term subsidy may also refer to assistance granted by others, such as individuals or non-governmental institutions. [1]

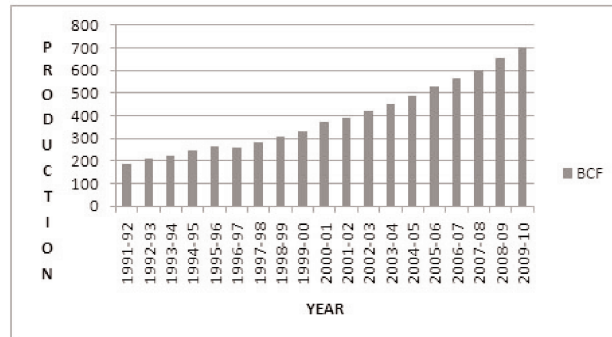
2.2 Energy Subsidy

Energy subsidies are those steps that keep prices for consumers below market levels or for producers above market levels, or reduce costs for consumers and producers. Energy subsidies may be direct cash transfers to producers, consumers or related bodies, as well as indirect support mechanisms, as tax exemptions and rebates, price controls, trade restrictions, and limits on market access. Main arguments for energy subsidies are:

1. Environmental development-subsidies are used to reduce pollution, which includes different emissions, and to fulfill international obligations like Kyoto Protocol.
2. Surety of supply-subsidies are used to guarantee adequate domestic supply by supporting indigenous fuel production in order to deflate import dependency, or supporting overseas activities of national energy companies.
3. Employment and social benefits - subsidies are used to conserve proper employment situation, especially in times of economic transition.
4. Economic benefits-subsidies in the form of reduced prices are used to innervate particular economic sectors or portion of the population. It can work to alleviate poverty and increase access to energy in developing countries. [2]

2.3 Types Of Energy Subsidies

- n Direct financial transfers-grants to producers; grants to consumers; low-interest or preferential loans to producers.
- n Preferential tax treatments-rebates or exemption on royalties, duties, producer levies and tariffs; tax credit; accelerated depreciation allowances on energy supply equipment.
- n Trade restrictions-quota, technical restrictions and trade embargoes.
- n Energy-related services provided by government at less than full cost - direct investment in energy infrastructure; public research and development.
- n Regulation of the energy sector-demand guarantees and mandated deployment rates; price controls; market-access restrictions; preferential planning consent and controls over access to resources.
- n Failure to impose external costs-environmental externality costs; energy security risks and price volatility costs.[2]
- n Depletion Allowance-allows a deduction from gross income of up to 27% for the depletion of exhaustible resources (oil, gas, minerals). [3]



Worldwide, fossil fuels are the most heavily subsidized energy sources, totaling an estimated USD 180 to 200 Billion per year. Support to the deployment of low-carbon energy sources currently amounts to an estimated USD 33 Billion each year.

3. Energy Sources in Bangladesh

Among all the energy sources, presently, Bangladesh heavily relies on fossil fuels, especially natural gas, petroleum oil and coal. Bangladesh has not yet gone for large scale usage of renewable energy sources except the hydroelectric power plant in Kaptai or a failed wind turbine power plant project in Kutubdia. But, steps are being taken to popularize renewable energy sources in the form of solar energy or wind energy. But, at present, it is almost all fossil fuels. Here is an overview of the present scenario of the energy resources of Bangladesh:

Table 1 : Natural Gas Reserve In Bangladesh [4] [5]

Natural Gas Reserve	Amount in Bcf
Reserve (Proven + Probable)	28,619.70
Reserve (Recoverable)	20,631.45
Cumulative Gas Production (Till Dec 2010)	9,407.14
Remaining Recoverable Reserve	11,224.31
Daily Gas Production in 2010-2011 (Till April 2011)	2.19

3.1 Natural Gas

Natural Gas is the most important energy source for Bangladesh. From household uses to heavy industries, natural gas is used frequently. But, unplanned use of natural gas in earlier years and highly subsidized price of it has made it difficult to perfectly utilize the full potential of total natural gas reserve in Bangladesh.

Contrary to popular belief, Bangladesh does not have a large reserve of natural gas. According to the latest information found, the natural gas reserve situation of Bangladesh looks like:

So, from the information stated in Table 1, it is clear that Bangladesh has used up almost half of the total reserve of natural gas. With the increasing rate of use of natural gases, it is obvious that Bangladesh will run out of Natural Gas reserve within 2025 if not sooner.

Now, if we look at the present pattern of gas consumption in Bangladesh, it can be seen that the consumers can be divided in to two broad divisions, a) Bulk and b) Non Bulk. In bulk sales, As per latest information from Petrobangla, in 2008-09 fiscal year, for total production of 653.7 Bcf, total bulk sales was 426.682 Bcf where grid power industry consumed 351.85 Bcf and fertilizer industry consumed 74.832 Bcf. The non-bulk sales consumed a total of 217.258 Bcf. Present situation of demand-supply relation of natural gas is not looking positive in Bangladesh. According to the monthly report for the month of august from Petrobangla, there is around 500 Mcf shortage of supply every day. [9]

Fig 1 Category wise Natural Gas Consumption [8]

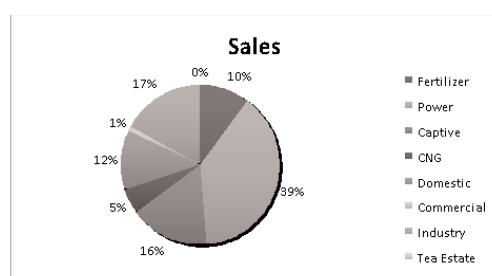


Table 2 Demand Supply Situation as in August 2011

Consumer	Demand (Mcf)	Supply (Mcf)	Shortage (Mcf)
Power	923	804	
Fertilizer	289	132	
Non-Grid Power	40	37	
Captive	425	340	
CNG	125	114	
Industry	400	323	
Domestic	275	224	
Commercial and others	36	26	
Total	2513	2000	513

3.2 Petroleum Oil

Petroleum oil is the most important fossil fuel around the world. Due to its higher heating value and portability by carrying in fuel tanks, it has become the most prominent fuel for different uses especially transportation sector. Though presently a very large number of vehicles and industries are running in CNG in Bangladesh, petroleum oil is still a very big source of energy. Unlike past, Bangladesh is presently producing enough petrol to serve its own needs. A healthy amount of petroleum products are being produced at different fields under Sylhet gas fields ltd. According to Monthly Production and Sales Statistics of different fields of the company, June 2011, in the month of June 2011, total production of condensate is 1088.83 Barrel from Haripur, Beanibazar and Rashidpur gas fields [11]. But unfortunately, petrol is not as important as diesel as a fuel because bigger machines usually run on diesel engines. The amount of diesel produced from this condensate can barely serve a very low percentage of demand. So, every year, Bangladesh has to import a huge amount of petroleum oil in the form of Crude oil, refined oil and lubricating oil.

Based on a presentation of BPC (Bangladesh Petroleum Corporation), in 2009-10 fiscal year BPC imported a total of 3778041 MT petroleum products. which had a value of 16781.75 crore taka. In 2010-2011 fiscal year (up to April) BPC imported 3851149 MT, which had a value of 20336.79 crore taka [12]. This sudden rise in cost is due to the increase in oil price per barrel around the world. A chart is given below where there is clear indication of world market scenario,

Table 3: Sector wise sale of petroleum products in fiscal year 2010-2011(up to May 2011)

Sector	Agric ulture	Industry	Power	Trans portation	Domestic & Others	Total
Amount (bb)	1070632	183852	362350	2362778	482836	4462448
Percentage	23.99	4.12	8.12	52.95	10.82	100.00

It is clear from Table 3 that the transportation sector is the principal consumer of petroleum products. Though a big number of vehicles in Bangladesh now run in CNG, still petroleum oil kept its place due to unavailability of CNG in western and south-western part of Bangladesh. Agriculture industry is the second biggest consumer as they use petroleum oil, mainly diesel to run the irrigation system, tractors etc. Presently, power and industrial consumers do not use petroleum oil due to excessive use of natural gas and coal.

3.3 Coal

Coal is a very important source of energy worldwide. Since the dawn of industrial age, coal has played a very big part as the primary energy source. But, in Bangladesh, coal is not a popular source because it is a new discovery in Bangladesh and due to bureaucratic red tape scenario coal has not yet been used at mass level. Presently, only one mine is on operation in Bangladesh and that is in Barapukuria, Dinajpur. According to the data found in the Centre for Energy Studies, BUET, the total amount of coal reserve in Bangladesh is 3.015 Billion MT of which 1.4 Billion MT is recoverable. [13]

Table 4: Coal deposits in Bangladesh (as of 2009)

Coal Basin/Area	Year of Discovery	Depth of Coal Seam	Cumulative thickness of coal seam	No. of coal seams	Area of coal fields	Reserve in Million MT
Barapukuria	1985	118-509	61	6	6.68	390
Phulbari	1997	141-270	38	5	24	572
Khalashpeer	1989	257-451	40	6	5.75	400
Deeghipara	1995	328-455	61	5	-	600
Jamalgonj	1962	640-1158	64	7	11.7	1053

4. Energy Pricing in Bangladesh and Profit-Loss Scenario of the Government

4.1 Natural Gas Pricing

The production companies like SGFL, BGFCL etc get BDT 7 per Mcf while BAPLEX receives BDT 25 per Mcf. Petrobangla pays IOCs significantly more than these companies to buy natural gas. A leading IOC in Bangladesh gets BDT 210 per Mcf. But, in case of selling, the price varies a lot. Based on the latest information from Petrobangla, Power and fertilizer sector has to buy gas at a rate of BDT 79.82 and BDT 72.92 per Mcf, respectively. But, private industry, commercial and CNG consumers have to pay a lot more for per Mcf of gas, which is in range of BDT 150 to 280 [14].

Table 5: Natural Gas Tariff in Bangladesh

Effective Form	Power	Fertilizer	Industry	Commercial	CNG	CAP. POWER
01-01-02	65.98	57.48	143.57	205.30	43.05	104.21
01-09-02	70.00	60.00	140.00	220.00	43.05	100.00
15-02-03	70.00	60.00	140.00	220.00	70.00	100.00
01-07-04	72.45	62.15	145.20	228.50	70.00	100.00
01-09-04	73.91	63.41	148.13	233.12	70.00	103.50
01-01-05	73.91	63.41	148.13	233.12	70.00	105.59
24-04-08	73.91	63.41	148.13	233.12	282.30	105.59
01-08-09	79.82	72.92	165.91	268.09	282.30	118.26

4.2 Petroleum Oil Pricing

Price of a litre of petrol has been fixed at 86 taka (112.34 U.S. cents) a litre, octane at 89 taka, diesel and kerosene at 56 and furnace oil at 55 taka [16].

Table 6: Average Import Price of Petroleum Products (USD per bbl)

Fiscal year	Crude oil	Refined oil	Lube oil
2003-2004	33.41	39.32	67.47
2008-2009	76.87	83.04	99.73
2009-2010	75.66	86.17	142.38
2010-2011	89.63	109.94	177.89

Bangladesh Petroleum Corporation, the country's sole oil importer and distributor, is currently paying 33.44 taka a litre as a subsidy for diesel, 32.49 taka for kerosene, 8.20 taka for octane and 12.96 taka for furnace oil. Due to subsidy, in 2010-2011 (up to April) fiscal year, BPC faced loss of 6178.53 crore taka. Until now, BPC had to face a cumulative loss of 28,150.46 crore taka from 1976 [12].

Table 7: Year wise profit-loss of BPC

Fiscal Year	Loss (Crore Tk.)
2004-2005	2317.87
2005-2006	3337.78
2006-2007	2314.63
2007-2008	7050.30
2008-2009	1022.64
2009-2010	2307.56
2010-2011 (Provisional)	6178.53

BPC is now burdened with huge liabilities worth over Taka 60 Billion as it has been incurring substantial amount of losses over the years. Of the total liabilities, the corporation presently owes around Taka 35 Billion to the state owned commercial banks and rest to foreign banks like Islamic Development Bank [17].

4.3 Coal Pricing

Coal is sold pretty cheaply at present. Total revenue earned from the sale of coal for domestic uses up to June 2006 was Taka 75.85 crore. Up to June 2006, a total of 2,09,234.57 metric ton of coal was delivered to Power Development Board at the rate of US Dollar 60.00 Per MT as fixed by the Government. Coal can be loaded on trucks/vehicles by using mechanised pay loading facility provided at the delivery point by Barapukuria Coal Mining Company Limited. Using of the company's loading facility will cost Taka 15.00 (fifteen only) per tonne. Coal can also be loaded on the trucks/vehicles by using different facilities provided by other than Barapukuria Coal Mining Company Limited, which may cost approximately Taka 27.00 (twenty seven only) per ton [18].

5. Socio-Economic Impacts of Reduction of Subsidies in Energy Sector

There is a strong impact of reducing subsidy in the energy sector or, in other words, increasing fuel price on the socio-economic situation of a country like Bangladesh. From researches done in South Asian and Southeast Asian region, we can come up to some decisions about what impact reduction of energy subsidy can have in Bangladesh.

- n Inflation is certain to take place in this situation, which will consequently hurt investment and economic growth.
- n Increase in inflation may lead to restrictive monetary policies and this inflation caused by phasing out subsidy may advancely affect Bangladesh's reports.
- n The impact on industrial output of phasing out energy subsidies depends on at least three parameters: (a) the importance of energy inputs in production as represented by their cost shares, (b) the ease with which energy can be substituted by cheaper sources or less usage and (c) the ability of producer to pass the increased cost to consumers.
- n Similarly, the impact on households depends on the elasticity of demand, the expenditure share, and the magnitude of the price change and the existing fiscal wedges.
- n In Bangladesh, the most affected sector would be the agriculture sector as production cost will rise due to the increase in price of diesel, and the cost of irrigation will rise. This extra cost will eventually raise the price of agricultural products, which primarily include rice, the staple food in Bangladesh, causing problems to general people.
- n Income groups differ greatly in their energy-consumption patterns, and

the distributional impact of subsidies is not the same for all types of fuels and electricity [19]

- n Phasing out inefficient energy subsidies could have direct positive effects on the economy, particularly in the longer-term, as it would reduce economic distortions.
- n Economic agents, both energy producers and consumers, respond to changes in energy prices and adapt in the longer run.
- n It is generally expected that if the price of a good goes up, demand goes down and consumers shift to substitute goods.
- n In the longer run, the economy adapts to a perceived permanent change in relative prices, creating greater scope for adjustment both on supply and demand sides.
- n The direction of technological developments is also influenced by price changes.
- n Increase in transportation (shipping) costs can lead to the “neighborhood effect”: manufacturers would locate nearer their customers [20].

6. Environmental Impact of Rationalized Energy Pricing

Rationalizing energy pricing benefits the environment in different ways, such as:

With the increase in conventional fuel price, people will tend to use less fuel and try to find more efficient use of energy as cost of living increases with excess the use of fuel. These will result in less fuel burning and thus less CO₂ emission and other pollution. An example of this can be the increased use of public transport as maintaining individual vehicles will become costly. Higher price of fuels will ensure less wastage of energy.

Reduction of subsidy in conventional fuels will attract people to renewable sources of energy such as the use of wind turbines for irrigation, solar power for electricity etc [20].

7. Summary and Policy Recommendations

Energy subsidies are expensive, damage the climate, disproportionately benefit the well-off, and misuse occurs. Their reduction can encourage energy efficiency, increase the attractiveness of renewable energy and allow more resources to flow towards poor people.

Withdrawal of energy subsidy is justified by all means but, as we mentioned earlier, it would cause an increase in prices of all commodities. Given that the revised price regime will generate net positive earning to the government, it has

two options: i) lowering the price marginally and ii) finding better instruments for distributing subsidy to targeted sectors and people. [22]

Agriculture and small industries, which are the most productive sectors of Bangladesh, are going to take the heavy blow. To minimize the impact on output in the agricultural and industrial sectors, government may develop schemes to help producers through a) subsidized supply of diesel for irrigation purposes and b) subsidized fuel price for the small industries or readjustment of VAT for small sized producers.

Subsidies to support renewable and energy-efficient technologies can be an effective way of overcoming market barriers for their development and helping to reduce greenhouse-gas emissions. Our government has already set targets for developing renewable energy resources to meet five percent of the total power demand by 2015 and ten percent by 2020. So to fulfill this target they should start promoting appropriate, efficient and environment friendly use of renewable energy and the prospects of clean energy technologies [23].

Since many countries have already eliminated petroleum product subsidies and reduced losses, energy price reform is not a pipedream anymore. Our government, led by energy and finance ministers, should seize the present opportunity to reduce commercial energy subsidies since the costs of these subsidies far outweigh the benefits. The government should start working on the opportunity to improve natural resource management, encourage energy conservation, reduce environmental pressures, mitigate fiscal burdens and promote economic growth.

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