Anniversary Issue-Promoting renewable energy the FIT way

Sunday, Nov 15, 2015

By *Dr. Bazlul Haque Khondker*

A popular, emerging and yet expensive energy source is renewable energy (RE). Despite its higher social value compared to the traditional fossil-fuel-based energy, the widespread use of RE has been limited due to the higher cost of generating it. Feed-in-Tariff (FIT) has been found an acceptable method of promoting RE. The key element of an FIT is to set a price that reflects the cost of generating the energy, including a reasonable rate of return that is fair and equitable to both investors and customers. The rate of return is critical, since there is the evidence that the necessary rate of return under an FIT programme can be lower than the typical rate of return that utilities require. This means that renewable energy is cheaper with an FIT than without.

Recently the government of Bangladesh (GOB) has taken initiatives to introduce the FIT policy as a part of popularising renewable energy as well as minimising the pressure on

conventional fuel. The Institute of Energy under the University of Dhaka; Idam Infrastructure Advisory Pvt Ltd and the Asia Foundation in a study in 2014 (i.e. IE/Idam/TAF (2014) argued that the promotion of renewable energy in Bangladesh should be made on the following three grounds:

1. It can help ensure universal access to energy: The government vision of providing electricity to all can be realised through RE which has unlimited potential.

2. It can help ensure national energy security: Electricity generation in Bangladesh depends on imports of fossil fuel. RE would substitute imported fossil fuel leading to lower import bills and dependence and thereby enhancing national energy security.

3. It can help mitigate degradation of environment: Large-scale adoption of RE can significantly contribute to reduction of the country' carbon emissions and prevent further degradation of environment.

Under the BERC Act, 2003 Bangladesh Energy Regulatory Commission (BERC) is empowered to regulate the tariff for all the generating stations including the renewable energy power plants. The BERC will promote renewable energy covering wind energy and solar energy (both utility and small scale) to begin with. While the tariff is determined under the conventional tariff regulation on the case-to-case basis, it is suggested that with a very high number of RE project developers and the smaller unit size of each RE project in the renewable energy space, a generic tariff approach is preferable. Hence, it is proposed that the generic feed-in tariff for each type of RE technology would be determined by BERC suo motu annually based on the norms approved under the FIT regulations.

In line with the BERC vision of regulating the tariff for all the generating stations including the renewable energy power plants, the 'Institute of Energy under the University of Dhaka; Idam Infrastructure Advisory Pvt Ltd; and the Asia Foundation (i.e. IE/Idam/TAF) under the aegis of (BERC) identified the FIT framework for developing renewable energy in Bangladesh. Although the report provides a very comprehensive assessment of FIT options for Bangladesh including costing of various types of RE, it did not explore funding options. This policy brief

summarised the estimated cost and resource requirement and also provided various finding options for promoting FIT in Bangladesh.

The cost and tariff (i.e. levelised, front-loaded and back-loaded) estimations required for installing wind power and solar PV (for different utility scales) in Bangladesh have been provided in the joint IE/Idam/TAF report (Discussion Paper: Development of FIT Framework for Renewable Energy in Bangladesh). The report suggests that the marginal cost of producing solar PV is more than Tk 12 per kWh and the cost of wind power is Tk 11.3 in Bangladesh. The estimated marginal cost is thus significantly higher than the marginal cost of conventional energy sources such as fossil-fuel electricity (i.e. Tk 5.4/kWh). The report also provides the base capital cost per megawatt (MW). The base capital costs for wind and solar power have been calculated based on international market scenarios for both developed and developing countries. Moreover, the estimated costs of one MW are close to the estimated cost of one kWh, when appropriately converted. Accordingly, the base capital cost has been estimated at: (i) Tk 100 million/MW for wind power and (ii) Tk 112 million/MW for Solar PV (utility scale).
The long-term power generation plan of the government of Bangladesh is shown below. According to the plan, the government of Bangladesh intends to increase the current power generation capacity of 10,616 MW to 39,000 MW by 2030. According to the plan, power would be supplied from both national and regional sources.

Although much of the projected power would be supplied from coal (i.e. both domestic and imported) and gas, around 2,700 MW power has been earmarked for renewable energy (i.e. other source in the above figure). The plan thus suggests that every year up to 2030, around 200 MW power needs to be supplied from renewable energy (RE) sources. The pertinent question is: Is this feasible from the resource mobilisation perspective?

The above findings (i.e. cost and power generation plans) have been considered, given exploring the funding options for renewable energy in Bangladesh. In accordance with the global funding experiences, the following options have been explored for Bangladesh. These include: (i) ratepayers or users' fee; (ii) subsidy from budget; (iii) higher revenue effort; and (iv) cross-subsidisation.

Ratepayer: Given that the conventional electricity (i.e. fossil-fuel) tariff is around Tk 6/kWh,

on the promotional ground the users' fee for solar PV users may be set at Tk 4.0 /kWh so that the potential electricity subscribers would find solar PV more attractive than the conventional electricity. On the other hand, this charge (i.e. Tk 4/kWh) will account for 30 per cent of the RE marginal cost and would help mobilise Tk 6,720 million. In terms of cost, it only accounts for 0.06 per cent of their total expenditure in the FY 2015.

Budgetary subsidy: In the FY 2012 the subsidy on electricity and petroleum products stood at 0.87 per cent and 0.75 per cent of GDP respectively. Together the energy subsidy in the percentage of GDP stood at 1.62 in the FY 2012. Being a family of the energy sector, the government should extend new subsidy or set aside part of the conventional electricity subsidy for RE. Assuming that only 0.1 per cent of GDP is now allocated exclusively for RE, the estimated resource would be around Tk 15,279 million or almost 68 per cent of the estimated annual resource requirement for 200 MW solar PV. This thus suggests that the budgetary allocation of only 0.1 per cent of the GDP along with the user fee of Tk 4/kWh would help mobilise 98 per cent of the total annual resource needed for producing 200 MW Solar PV.

Higher Revenue Effort: Revenue effort (i.e. measured as revenue to GDP ratio) is low in Bangladesh compared to its economic expansion. Potential tax bases and tax rates suggest a great scope for improvement in revenue mobilisation. It is argued that the revenue potential is likely to be in the range between 14 and 15 per cent of GDP, compared to the current ratio of 9-10 per cent. Low resource mobilisation has also partly been constraining the growth of government expenditure, which is hovering around 14 and 15 per cent of GDP. In a developing country like Bangladesh, desirable government expenditure levels are suggested to be between 18 and 20 per cent of GDP. The full realisation of revenue potential may lead to increased government expenditure in Bangladesh. Realisation of full revenue potential (i.e. additional 4 per cent of GDP) would generate additional resources equal to Tk 611,173 million. Since promoting RE is high on the government agenda, only 5.0 per cent of additional revenue effort may be allocated for RE, bringing in Tk 30,559 million annually. This measure alone would cover the annual cost of 200 MW solar PV.

Cross-subsidisation or surcharge: It was found that in response to aggressive development of RE, some countries (i.e. Germany, Spain, Slovenia and Malaysia etc.) have introduced ways to distribute the extra costs for that development over a wider area. In this approach, utilities

or load-serving entities operating do not shoulder the full burden of any supplementary costs. Bangladesh may also introduce such a measure to mobilise resources required for RE development.

Bangladesh may impose a small additional surcharge on the retail electricity bills. According to the Bangladesh Power Development Board (BPDB) annual report for FY 2013-14, the total retail bill collection was Tk 46,439 million in that fiscal.

Imposing a small surcharge at the rate of 2.5 per cent on retail electricity bill would raise resource equal to Tk 1,161 million. However, an upward rate revision of conventional electricity would automatically increase resource mobilisation from the surcharge.

Carbon Tax: A study on Economics of reducing greenhouse gas emissions in South Asia by the Asian Development Bank (ADB) suggests that a carbon tax on the predominantly carbon-emitting activities such as power generation, industry and transport could contribute to reducing Bangladesh's climate-relevant emissions by almost 10 per cent by 2030. The tax would be an incentive for switching to climate-friendly energy sources, such as, water and wind, biomass, nuclear power, polar power and up-to-date waste management. Thus, Bangladesh may impose a carbon tax on the carbon emitting-activities (e.g. transport, power generation and manufacturing) on the basis of a thorough study.

The above findings of the exercise suggest that resource requirement for promoting RE in Bangladesh can be raised from domestic sources without imposing any burden on the other sectors in the economy.