An economist's perspective of power sector reforms

The role of electrical power in the economy

by Professor A. D. V. de S. Indraratna

The address delivered by Professor A. D. V. de S. Indraratna at the Open Forum on Power Sector Reforms organised by the Ceylon Electricity Board Engineers Union (CEBEU) at Hotel Inter-Continental, Colombo on June 5, 1999, is as follows:

Power sector is the major part of the energy sector. Energy in turn is a major subsector of the physical or economic infrastructure of a country, alone with irrigation, sanitation, transport, and telecommunication. The infrastructure determines a country's, particularly a developing country's, success or failure, helps to diversify its production and to expend its trade, coping with population growth, reducing poverty and improving environment. Inadequate infrastructure contributes to low productivity, consequently to low economic growth even despite high investment. This is, in fact, evident from our own - Sri Lanka's - experience, Sri Lanka's infrastructure as gauged by the electric power, telephone main lines, and paved roads, per person is one of the lowest in Asia. Its productivity Level is the lowest in South and South East Asia except Bangladesh, Nepal and Bhutan. Its growth rate, therefore, has been much lower than those, Asian countries recording an investment/output ratio of 7.6 in comparison with ratios ranging from 3.3 in Thailand to 6.3 in Philippines.

Infrastructure

It has been estimated, even though very roughly, that 1 per cent increase in the stock of infrastructure of a country is associated with a 1 per cent increase in its GDP. As a country develops its infrastructure must adapt to support changing patterns of demand with corresponding changing shares of power etc. Just as much as increase in infrastructure engenders increase in growth, increase in growth or economic expansion demands increase in infrastructure.

Our theme at this Forum relates to energy which includes in addition to electric power, other forms of power as well, even though very often the terms energy and power are synonymously used. I shall however keep them separately and whenever the term power is used it shall refer to electric power. For instance, in Sri Lanka, nearly 50 per cent of power is biomass generated by fuel-wood. Of the balance 50 percent electric power, around 70 per cent is hydro and 30 percent thermal. According to available data, almost all of Sri Lanka's hydro-power potential has been utilised (98 per cent by 1998), and therefore, further expansion of electric power would have to depend on thermal power. My perspective in today's presentation is in regard to electric power or the power sector.

Electric power comprises 50 percent of the infrastructure of high income countries. It is less than 25 per cent in low income countries with irrigation taking a larger, in fact the largest, share. (This is, of course, to be expected with the low income countries being largely agricultural). Middle income countries occupy a place in between. The share of electric power in the composition of a country's infrastructure thus indicates its level of development - the higher the level of development, the larger is the power sector and vice versa. This shows the close mutual link or interdependence between the power sector and the economy of a country and the crucial role this sector plays in its economy.

The power sector plays this crucial role because it not only provides the output to the household sector for lighting and heating, but also, more importantly provides a very substantial input to the other sectors of the economy. The cost of power affects not only the cost of living of the people but also all the productive activities of the economy. The importance of power: becomes the greater and the faster the demand for it rises, the more industrialised the country gets. At present around 1/3 of the total power generated is consumed by the domestic sector while the other 2/3 is taken up by the industrial and commercial sectors. Therefore pricing of power becomes an important integral of power policy. I shall come back to this later.

The role of power in the economy also becomes significant because of its production characteristic and its public interest. Power requires lumpy investment. The production of power confers external economies, and also external diseconomies unless care is taken to prevent environmental damage. Because of these externalities their is a divergence between the private costs and benefits and social costs and benefits. The private sector has not been willing to undertake investment in this sector because of the huge outlay of investment required and because it is not prepared to make allowance for the external economies. On account of these reasons the state has been taking the responsibility of providing power and it has been considered a public good.

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Ownership

There is a difference between public and private ownership. That latter is motivated and guided by profit while the former is motivated by the welfare of the people rather than profit. Because of the latter reason, public monopolies in developing countries have often been making losses and have been a drain on the government coffers.

In Sri Lanka, what is the present status quo of the power sector? From the time Ceylon Electricity Board (CEB) was established in 1969, it has been holding the monopoly of generation and distribution of electric power. Although it was set up as an autonomous body, it has remained, for all purposes, a Government monopoly since it requires Government approval for investment and tariff revision. Even though Lanka Electricity Company (LECO) was incorporated as a public company in 1983, for distribution of power, its operations have been limited to some distribution schemes around Colombo.

Even though hydro power is being supplemented by thermal power, the supply is falling short of demand. It has been estimated that on average the demand has been increasing annually by 10 per cent but the supply has not been increasing by even half this. In 1999, the most recent year, demand is estimated to have increased by 12 per cent while the supply has increased by only 4 per cent. Still, half of the population of Sri Lanka (48 % in 1998) has no electricity, more than 4/5 of whom live in rural areas.

The generation and distribution of power is significant for several reasons, as hinted before :

1. It determines investment;
2. It determines productivity;
3. It affects international competitiveness and export potential;
4. It affects living standards.

Price of electric power must be supportive of enhancement of all these. Price, however, depends on supply - both availability and unit cost of production of power. Supply is inadequate to meet even the present demand. This demand according to the projections made by the Ministry of Irrigation and Power itself is expected to grow at around 10 per cent annually upto the middle of the next decade, implying thereby that the present generation capacity has to be doubled in seven years requiring an investment of around US$ 1.5 billion (Rs. 105 billion) in generation. Cost of power is also affected by the prices of fuel and the level of efficiency of maintenance. Price of power has also to take into account the externalities referred to earlier. Power sector reforms must take note of all these considerations as meeting the increasing demand and supplying power at the least possible price in order to enhance investment, productivity, international competitiveness and living standards.

To what extent would the power sector reforms so far announced meet these considerations? Let me start with the vision of the Ministry in this regard announced in the Ministry document titled Power Sector Policy Directions issued in August 1997 and amended in October 1998:

Dynamic power sector

"The country will have an efficient and a dynamic power sector which would facilitate economic growth. A reliable supply of grid electricity will be available to at least 80% of the population at affordable prices (does not say by when). The industrial sector will have reasonably priced reliable power supply to sustain their competitiveness, in the international markets, There will be transparent regulatory processes where interests of consumers investors and environmentalists will be adequately safeguarded. There will be a non-monopolistic situation in the power sector and it will operate on sound commercial and business principles. The private sector will have substantial investments in the sector. There will be a reliable distribution and transmission system with losses reduced to internationally accepted levels". What a better vision than this could one have! However, would the power sector reforms envisaged so far help to fulfil this vision?

The Ministry document sets out the proposed reforms in a series of policy directions. The major ones can be summarised as follows

1. Lowering of prices to the consumer and ensure a high level of service and supply reliability;
2. Sustenance of an adequate level of investments in the power sector;
3. Accommodation of greater competition and creation of a nonmonopolistic situation;
4. Operation on sound commercial and business principles, with integrated resource planning and commercially sound and viable tariff structure which would ensure a reasonable price stability, minimum level of service to low income consumers, and adequate revenue to meet the financial requirements of the sector;
5. Establishment of a regulatory authority to ensure transparency and an appropriate balance between the interest of the producers and the consumers;
6. Establishment of a publicly-owned transmission authority.

The power sector aims to achieve the first four of these by harnessing private sector investment in thermal power generation and rationalising the tariff structure to reflect cost and demand of various sectors. The privatisation of the Ceylon Electricity Board, which at present controls 94 per cent of the installed capacity and 91 per cent of the power generated, is also not ruled out in the future, for this purpose. So far no concrete steps have been taken to establish the regulatory and transmission authorities.

To be continued tomorrow