

The second oil crisis of 1979 had just ended when the Government of Sri Lanka decided in 1982 to place energy efficiency and demand management as the top priority, with the energy ministry functioning directly under the President. By 1983, burdened with a severe drought requiring more thermal power generation as well, Sri Lanka spent 45% of her export earnings to buy oil, and the situation was getting worse. Thanks to the Mahaweli power plants, moderate weather, moderate oil prices and fast growth of the economy, Sri Lanka never had to spend such a large share of her income to buy oil. The more recent peak was in 2008, when the country spent about 35% of the export income on oil.

There has always been a clear need to improve energy efficiency, manage the demand, and in general, "do with a lower amount of electricity and oil". Energy use in households is in the form of biomass (firewood) or LPG for cooking, and kerosene or electricity for lighting. The efficiency of using the traditional three-brick open hearth is only 10%. This means, 90% of energy in a stick of firewood is lost, when burnt in the open. A semi-enclosed clay stove would increase this efficiency to 25%, thus reducing the firewood use in the household to 40%. The efficiency can be further improved if the clay stove is permanently fixed at the fireplace, with additional clay around the stove to contain the heat. More recent improvements include the stove for household use developed by the National Engineering Research and Development Centre (NERD), which uses wood chips and has the best ever efficiency. The government promoted the enclosed stoves in the 1980s by providing stoves at a subsidised price, and at the peak of the program, had provided 10% of the households with an efficient stove. Many others including the Intermediate Technology Development Group and the Sarvodaya Movement joined the effort.

Energy use in lighting required a different approach. By year 1985, only 18% of households had electricity, and now by 2009, the connected households exceed 82%, while the government is working on a target of 95% to be reached within the next few years. The target appears to be well within reach, provided adequate funds are made available because when the network goes further and further deep into thinly populated areas, the cost of the network per household keeps increasing. Lighting in households, especially the newly connected ones and those in the low and middle income groups is with the conventional incandescent lamps, which converts only 5% of electricity to light and the balance is wasted as heat. A campaign to popularise compact fluorescent lamps was spearheaded by Ceylon Electricity Board (CEB) and Lanka Electricity Company (LECO) in the mid-1990s. Although the incentive program has now come to an end by, CFLs are so popular and widely used, but much needs to be done to improve and standardise the quality of CFLs entering market.

A focused effort on energy efficiency was a long-felt need, and in 1984 the government moved to establish the Energy Conservation Fund (ECF), which provided an institutional framework to conduct research, training, promotion and publicity on energy efficiency. This move was preceded by the establishment of Sri Lanka Energy Managers Association (SLEMA) in 1984, a body of professionals whose objective is to promote the rational development and use of

energy. SLEMA's work is focused on training and education of workers and professionals to manage their energy systems efficiently. Every year, an average of 75 workers and professionals go through a variety of training courses organised by SLEMA.

The importance placed by the government on energy efficiency was further emphasised when the Energy Conservation Fund was expanded and re-established as the Sri Lanka Sustainable Energy Authority (SLSEA) in 2007. The new institution has a broader mandate and carries the authority to introduce legislation and enforcement activities to ensure all energy suppliers and users adhere to the best practices in energy efficiency and management. In a few months, Sri Lanka should see the introduction of mandatory labeling of lighting devices to indicate their efficiency, while it will be mandatory for large energy users to monitor their energy use, and send a report on efficiency every year.

User have to watch their electricity meter to measure savings. Electronic meters can improve the information available to customers.

A lot more needs to be done to improve efficiency. Are we using the most efficient refrigerators ? Obviously not, but would you take the initiative to buy a more efficient one if the price is higher ? There has to be innovative financing schemes to explore and exploit the specific opportunities in a wide range of common appliances we increasingly use in the households. Do we know that a table fan or a wall fan uses only half the energy as a ceiling fan ? This points out the need for a sustained campaign to educate the energy users about appliance efficiency. Obviously, a lot more remains to be done.

The largest potential to save energy is in the industrial and commercial sector. In spite of 25 years of focused efforts on energy efficiency, most large energy users do not even have a designated energy manager to look after their energy system and the energy accounts. Most industries and commercial buildings have a potential to save at least 10% of their energy use. This is not to say that nothing has been done: many industries have done their best to improve efficiency. Notable recent achievements are the control systems in the withering troughs in the tea industry which save 30% of electricity previously used for the process, and the green buildings promoted and implemented by several industrial companies.

We have to be mindful of two important issues: the first is that energy efficiency too has its own limitations. Many believe that we should not build oil refineries or power plants, but if we save what we waste, that will be adequate for generations to come. Wrong. Energy efficiency too has its theoretical limitations. For example, one may be alarmed to learn that the most efficient power plant is only 60% efficient, so there is no point in blaming someone for running a power plant at 60% efficiency. Furthermore, improving efficiency to top levels would at most save 15% of energy used in Sri Lanka, but the annual growth in demand is over 5%. So, we cannot satisfy the growing demand by saving alone. Secondly, efficiency improvement also has a cost, and hence we cannot maximise efficiency, but we can optimise efficiency.

The writer is a past president of Sri Lanka Energy Managers Association. This year, SLEMA celebrates 25 years of active promotion of energy efficiency.

Petroleum imports eat up 38% of our export income. Energy efficiency can relieve this burden.

~ island.lk~ By Dr. Tilak Siyambalapitiya
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