

# Energy Crisis: Where we are heading

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The Ministry of Power and Energy has announced recently that it would definitely proceed with the building of a coal power plant, and the site would be announced soon. The Government has also passed recently a new Energy Supplies Act on an urgent basis whereby the country's environmental law has been suppressed for two years in respect of matters coming under this new Act. Surprising, the media or the public or the members of the civil society or the environmentalists or the NGOs (except one) did not raise any voice against this move.

## New Energy Supplies Act

The purpose of introducing a new law on energy supplies with the environmental law suppressed was apparently to expedite the establishment of emergency power supplies on the presumption that the environment law would be a barrier. Regrettably, this has been a wrong presumption. Under this new Act, there is no need for any new power project to be scrutinized for any environmental damage it would cause, and also there is no need for any new plant to comply with any of the provisions in the environmental law. It also denies the public the opportunity to examine any environmental impact assessment reports that would have been prepared under normal law.

The new law has provision to obtain a report from the CEA on a proposed new plant, after which the Minister-in-charge could recommend issuing the approval for the project. However, what matters here is that the description of a plant prior to installation and its actual performance after installation are two different things. If the actual performance of a plant falls short of the specified description in terms of noise, pollution, and other adverse impacts, there is nothing that the public can do to prevent the operator from continuing unabated.

The public cannot seek redress from a court of law, even if the power plant is a public nuisance or a health hazard. The new law only provides opportunities to entrepreneurs to import outdated plants, which do not comply with the accept-

ed standards with no provision to verify their performance.

## Emissions from diesel plants

The plants that are easy to obtain and cheap to operate are the diesel plants operating on residual/fuel oil. These fuels have high sulphur content of the order of 3.5%, resulting in excessive amounts of sulphur oxide emitting to the atmosphere. A diesel plant operating on fuel oil emits about 15 g of SO<sub>2</sub> for every kWh of electricity produced, while a plant operating on auto-diesel emits only about 4 g/kWh. The total amount of sulphur dioxide emitted from CEB's thermal plants operating on heavy/fuel oil in 2000 has been about 29,500 tonnes. Furthermore, both these fuels emit particulates depending on their ash content. At present, there are no regulations gazetted to limit the emission of pollutants from thermal power plants. The Central Environmental Authority has drafted a set of emission standards for power plants several years ago, but has not taken any action to have them gazetted so far. However, even this set of standards is incomplete, as they do not cover the gas turbines or the large diesel plants. Only the steam turbines operating on oil and coal are listed in these standards. For the purpose of EIA reports, the proponents are required to use these draft standards.

## Commissioning delays

The present shortfall of thermal capacity has been caused by the delays in the commissioning of the two combined cycle gas turbine (CCGT) plants each of capacity about 160 MW, being installed at Kelanitissa. One of these plants is being built for the CEB and the other for a private operator on BOOT basis. The EIA report of the CEB plant was published in 1995, but it took several years for the contract to be awarded. There were absolutely no objections on environmental grounds against the project, and the delays were entirely due to administrative and bureaucratic factors such as protracted negotiations, slow tender board decisions, slow Treasury approvals etc. Though the CEB 1996 Planning Report gives the target as 1999 for its commissioning, only part of the plant was commissioned in 2001 and the balance is yet to be

commissioned. The press notice calling proposals for the BOOT plant was published towards the end of 1995. It took several years to select the supplier and the EIA report was published only in 1999, and here too, there were no objections at all on environmental grounds. Even though the CEB 1996 report gave its commissioning year as 2000, its financial closure was completed only in 2001. The plant is still under construction, seven years after calling for proposals. Generally in any other part of the world, such CCGT plants would be commissioned within a period of 3-4 years from the date of calling of the proposals. The project got delayed again due to various reasons such as protracted negotiations, slow decision-making process and failure to raise finances on time; none on environmental grounds. If these two power plants totalling 320 MW were commissioned on time, there would not have been any necessity to impose the recent power sheddings.

## Environmental laws

Recently, there had been two instances of court cases against hired power operators, filed under the Public Nuisance Ordinance, mainly for creating excessive noise, both at daytime and night-time. Had these plants been new and conforming to internationally recognized standard specifications, these would not have created such a nuisance. Even in these two instances, the court cases were not filed under the environment law. The EIA requirement is also not applicable for power plants under 25 MW. If the Government wanted this regulation relaxed, it could have been done under the present environment law by raising this limit to a higher value such as 50 MW.

It is partly true that the preparation of an EIA report, required under the present environment law, sometimes takes over a year to complete, thus contributing to the delays. The current practice is for a consultant hired by the proponent to prepare the report and he would naturally attempt to prepare it in the proponent's favour. He also would justify the high fee levied, by padding the report with unnecessary details, which again would take additional time. It is absolutely necessary to change

this system and have the EIA carried out by an independent consultant contracted by the CEA, and by limiting the Terms of Reference to the most essential items in order to expedite its completion. The EIA should be carried out as an integral component of the design rather than as a separate study.

From the foregoing it very clear that the delays in implementing power projects had been due to administrative or financial or procedural reasons. Hence, there is absolutely no justification to cast the blame on environment laws for delays in getting power projects into operation, and to suppress the environmental laws. Obviously, the government has been wrongly advised. Suppression of one law to implement another is not good governance. If the government was interested in the welfare of the people while providing electricity to them, the least it could have done was to make the provisions in the environment law enforceable by gazetting regulations on power plant emission standards and remove other barriers, such as administrative, financial and legal, that slow down the approval process. The former would ensure that power providers will not bring in outdated plants that have been decommissioned from elsewhere, and the latter will ensure transparency in the transactions and expedite the approval. The suppression of the environment law will not shorten the commissioning of emergency power plants of medium capacity even by a single day.

## Proposed coal power plant

The construction of a coal power plant will take much longer than 2 years and therefore it will be very likely that at the end of the 2 years, the Energy Supply Act will be amended on an urgent basis to extend the non-validity period of the environmental law beyond two years. Most likely, no one will raise any voice against this move too, because everyone is eager to get a cheap supply of power, however dirty it is. The concept of cheap coal power has been inculcated among everyone including laymen, businessmen, industrialists, professionals, politicians, academics, media and policy makers so

much that all of them are now awaiting this so called cheap power to light up their homes, industries and business places.

It is common knowledge that coal power is dirty, confirming "cheap things no good". They emit sulphur dioxide, oxides of nitrogen, particulates, fly ash and bottom ash containing heavy metals including mercury, and liquid effluents. The countries where these plants operate have introduced strict laws to control their operations so as to minimise the environmental and health damage that these plants inflict on the public. The installation of these controls is very expensive, so much so that many coal power plant operators even in the USA are evading installing them because of the heavy expenditure. The US EPA has prosecuted many of these operators for non-compliance with the law.

The government has also decided that in the future, only the private sector will be allowed to build thermal power plants. A 300 MW coal power plant will cost between \$ 300-400 million. It is not easy to raise this kind of money even for a consortium and it will be likely that they will ask for all sorts of guarantees from the government. An easier option for them would be to reduce the capital cost by doing away with all frills such as emission control equipment. When there are no regulations in force, plant operators are not obliged to reduce any emissions, be it air pollutants, or liquid effluents or ash dumps. No operator will spend money unnecessarily in trying to control these. The objective of the private sector in coming forward to build power plants here is to make profits and not for doing us a service.

## Emissions from coal plants

According to the EIA report of the proposed Kalpitiya coal power plant, a 300 MW plant will generate each day, 28 tonnes of NO<sub>x</sub>, 250 tonnes of fly ash and 60 tonnes of bottom ash. The SO<sub>2</sub> generated will vary from 32 to 43 tonnes a day depending on the sulphur content in coal, which could be in the range 0.6-0.8%. Without any control measures, all these quantities of air pollutants will be emitted to the atmosphere. The wind data taken at Puttalam

meteorology observatory indicates that for 8 months of the year, wind blows towards the land at the time the readings were taken, while it blows towards the sea only for 2 months.

Hence, tonnes of all the pollutants emitted from the stacks each day will find their way into the interior land most of the time. One has to do a detailed study of their impacts on the health of the people, crops and vegetation to assess the cost of damage, and see whether it is worth going for this "cheap" power.

The EIA report recommends installation of various controls to reduce emissions to bring them within the limits set out by the environmental regulations. It also recommends that several monitoring stations be established to ensure that the actual emissions are within the expected limits. It also says that the instruments used in the monitoring exercise should be calibrated once a fortnight at least.

The question is who is going to do all these. Without any laws in place, the project proponent will not undertake any of these. The thermal power plants at Kelanitissa and Sapugaskanda emit high volumes of SO<sub>2</sub>, NO<sub>x</sub> and particulates. Is anyone monitoring these emissions? Even the ambient air quality around these power plants is not monitored regularly in a systematic manner. Under such circumstances, what guarantee is there that the operation of a coal power plant will be monitored closely as suggested in the EIA report?

## Coal use elsewhere

It is often said that many other countries, both developed and developing have been using coal power for decades without any problem, so why not Sri Lanka? It is true that many countries, particularly those who had domestic sources of coal, started using coal many decades ago because coal-fired steam turbines was the only technology available for large scale electricity generation at that time. Many of these countries have now adopted strict laws to minimise environmental pollution caused by them, though there are operators who violate them as compliance with these laws were found to

be very costly. These countries have the infrastructure to monitor any pollution caused by not only the power plants but also from other sources like industries and vehicles. Anyone who has been to these countries would not have seen any belching vehicles on their roads, or stacks emitting black smoke or piles of garbage at every street corner as found here. There both the public and the authorities take environmental protection seriously, and they consider it their duty to protect it. In contrast, here the environmental authorities as well as the local bodies have failed miserably in addressing the issue of garbage disposal, resulting in piles of garbage lying in every street corner for days and weeks. Similarly, vehicle with trails of smoke ply our roads freely, with no hindrance from the Traffic Police. The cement factory at Puttalam was discharging cement dust several kilometres around it for decades without anyone taking any action. Wouldn't it be a similar case even with a coal plant?

The countries where coal power is used have hundreds of stations for monitoring the ambient air quality, whereas here we are unable to keep even the two gifted to us by the World Bank in operating condition regularly for lack of funds. In fact, one has been taken out of service as the land where it was installed has been handed over to a foreign embassy. The 60 odd smoke meters that were purchased on a foreign line of credit are now abandoned for lack of funds and logistics to keep them in working order. It is simply that we do not have the resources to keep our environment free of pollution and to monitor its status.

## Natural gas plants

Under the circumstances, the best we could do is to install a plant that will intrinsically not generate any pollution. Then there is no need to install control equipment at great cost, or undertake monitoring to see whether they perform as expected, or carry out calibration of measuring instruments regularly etc.

The natural gas fired combined cycle gas turbines would fulfil this requirement. These CCGT plants are about half the cost of a coal plant of equal capacity, and takes about 1/3 the

time to install compared to that needed for a coal plant. There is absolutely no sulphur dioxide emissions, no particulate emissions, no solid waste piled up, much less nitrogen oxides emitted and much less hot water discharged. As such, the environmental authorities need not waste their time and energy to monitor their emissions. The most important factor is that a full EIA reports may not be necessary for a NG fired plant.

Last September, the Ministry of Finance published a press notice calling for proposals to set up three 300MW thermal power plants on a phased programme with the fuel option left open, to include coal or oil or natural gas (NG). However, just before the closing date, which was a few weeks before the general election, the closing date was postponed indefinitely. This action prevented the government from getting reliable information from the potential suppliers on the cost of plants of different technologies. Had they received the proposals, these could have been evaluated side by side, and the cheapest option could have been easily determined, rather than go by speculation. We also have to remember that "good things no cheap".

At a recent seminar on Power Crisis organized by the Institution of Engineers, Sri Lanka attended by the Minister of Power and Energy, the Secretary to the Ministry, in his address said that if NG was cheaper, the government would go for that. When it was suggested during the question time to call proposals for both coal and NG plants, which would enable the authorities to find out which was cheaper, the response was that the demand for NG did not justify the heavy expenditure for the infrastructure necessary for its import.

However, when an entrepreneur posed the question that he was willing to submit a proposal for a NG plant and asked the CEB whether they would consider it, the response was different. The CEB reply was that they could entertain it, but after calling proposals openly. It is hoped that the CEB would honour its word and seek proposals for NG plants together with coal plants when calling bids in due course.