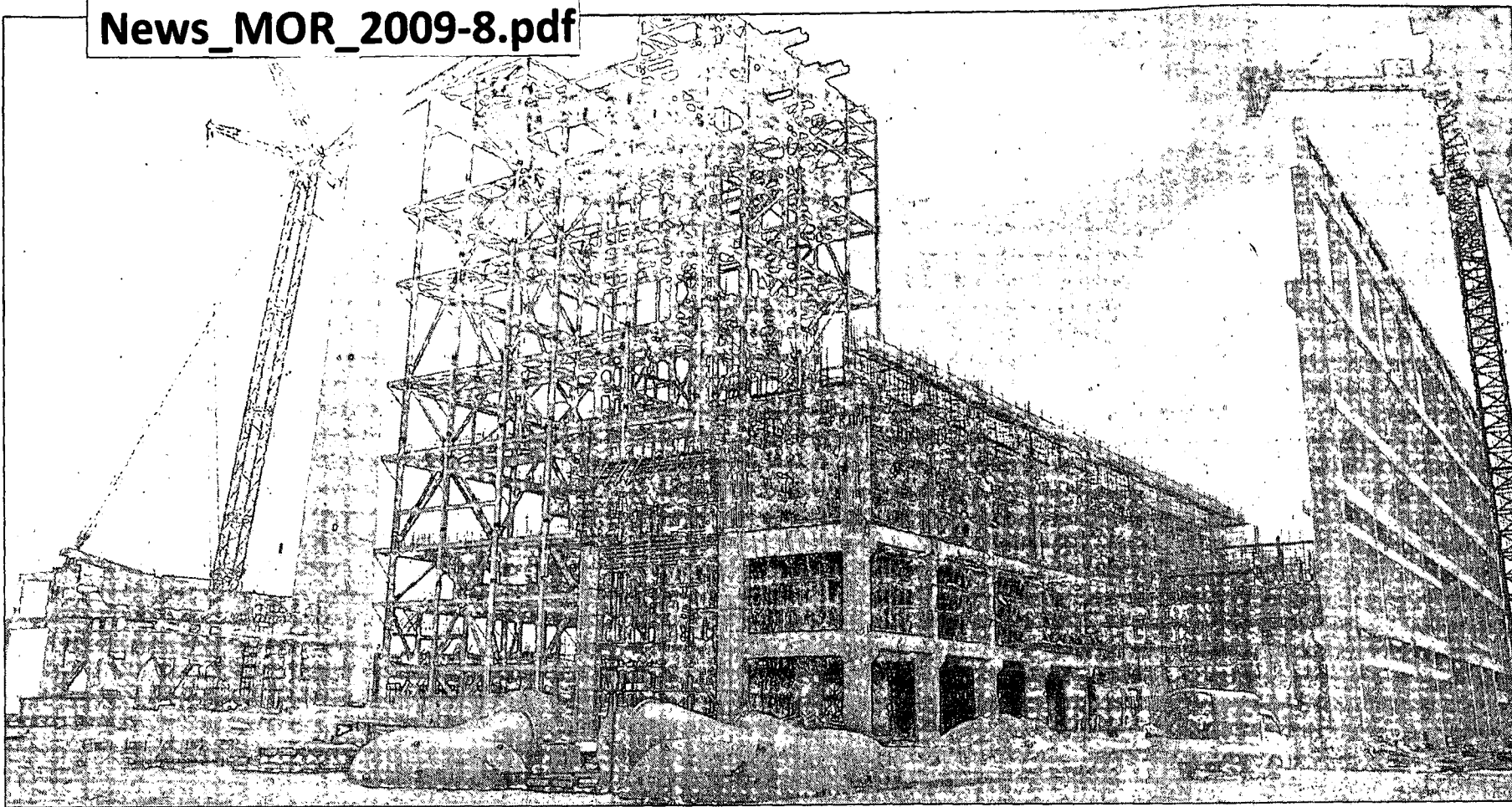


The significance of Norochcholai power plant

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The Norochcholai coal power plant. Pictures by Sarath Weerasinghe

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The media has reported that the stages two and three of the on-going Norochcholai coal power plant construction in Puttalam would also commence shortly, with the signing of the agreements on 29th June 2009.

With the President and the Government firmly behind the project, construction of stage one is moving ahead, to be followed by stages two and three in the same premises. Once completed, the power plant will have a total gross generating capacity of 900 MW. After discounting for the in-house consumption and losses in transmission, the power plant would provide about 850 MW of capacity to the national grid. The difference of 50 MW is typical for this kind of a power plant; there is nothing unusual. Even if a power plant is built to use oil, the same losses would occur.

The power plant would help Sri Lanka reduce the use of the most expensive power plants on its system: CEB system has four power plants burning auto diesel, adding up to about 600 MW. They will be the first to be curtailed. Then the next group of power plants using fuel oil will be curtailed. All hydropower plants except Kukule and Ukuwela will move to operation only at the evening peak hours. Kukule and Ukuwela have no reservoirs, and they will run always when water is available.

None of the protestors who used all their might to block the Norochcholai project over 1996-2005, including national and local politicians, religious leaders, environmental forums and scientists, academics have said anything about the project, since it was launched by the President in 2006.

Construction of stage

one is over 30 percent complete. The protestors have moved on to protest on other issues, depending on the amount of support and publicity they receive from various agencies. Numerous politicians who were against the project have changed sides, and are now with the Government. The development that is going on in the once sleepy Kalpitiya peninsula is seen everywhere.

There were two specific issues raised not only the protestors but by the many reasonable and knowledgeable people during the height of the debate: (1) Will the power plant cause any damage to the environment? (2) Will it produce electricity cheaper than other means?

The answer to the first question lies in the manner in which the environmental approval issued to the power plant is adhered to by its operator, Ceylon Electricity Board (CEB). The power plant is being built based on the approval to build issued by the Provincial Environmental Authority, after the due process in accordance with the Environment Act. Once the power plant is ready for operation, CEB has to apply for an Environmental Protection Licence (EPL), and then adhere to the conditions stipulated in it. Once the emissions and other environmental impact data are available, CEA will determine whether there are any adverse impacts on the environment and violation of standards specified. There are many who would ask: will CEB adhere to regulations? Well the laws are there to force CEB to abide by the regulations, and for Central and Provincial Environmental Authorities to force CEB to do so, and for the public to force both parties to do their duty. Just because we do not know, Sri Lanka cannot force electricity customers

to pay unreasonably high prices for electricity.

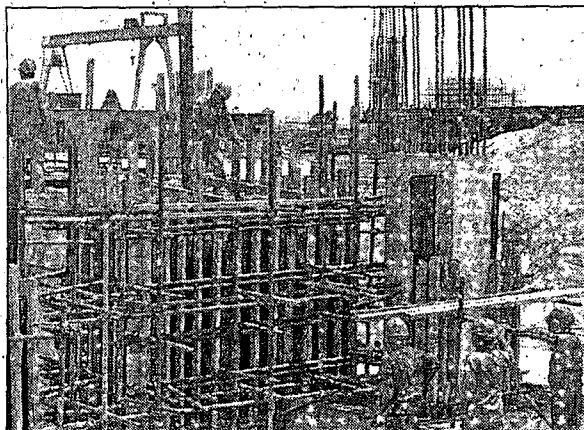
On the second issue of whether it will indeed produce electricity cheaper, some estimates can be made now, because the full cost of the project has now been published in the media. The full cost of the project has been reported to be USD 450 million for stage one, and a total of USD 890 million for stages two and three. The costs include all the coal supply, power generation and

about 1.25 UScts/kWh. Therefore, the economic cost of electricity produced in this power plant will be 7.24 UScts/kWh. If oil prices reach 140 USD/barrel as they did last July, coal prices may also double, and then this cost will increase to 11.42 UScts/kWh.

Oil and gas options

Now, 7.17 UScts per unit of electricity is the economic cost, based on the long-term country perspective.

The power plant has an economic life of at least 30 years. Therefore, at the official discount rate of 10 percent, the capacity cost of the project will be 1.77 UScts/kWh. The present estimated price of coal is about 100 USD/tonne delivered to Norochcholai, and hence it will have a fuel cost of 4.2 UScts/kWh



Workers at the project site

transmission infrastructure, to deliver 850 MW of power to the grid at Veyangoda, Chilaw and Anuradhapura. The power plant has an economic life of at least 30 years. Therefore, at the official discount rate of 10 percent, the capacity cost of the project will be 1.77 UScts/kWh. The present estimated price of coal is about 100 USD/tonne delivered to Norochcholai, and hence it will have a fuel cost of 4.2 UScts/kWh. The maintenance cost to run the power plant, inclusive of meeting all the environmental standards will be

Today, the oil price is USD 70 per barrel, and instead of Norochcholai, if we build a power plant burning fuel oil, the costs will be as follows: Capacity cost 1.43 UScts/kWh, Fuel cost 7.61 UScts/kWh, maintenance 1.00 UScts/kWh. Total 10.04 UScts per unit of electricity. All this is if we build the power plant to use the cheapest liquid fuel, that is furnace oil.

Furthermore, if we reject Norochcholai and went for the liquefied natural gas option, as promoted by many and opposed by many, the costs will be as

follows. This assumes that the gas terminal will be given to Sri Lanka free of charge by a company in Australia, as recently reported in the media. Although it is too optimistic to assume a company will give a USD 600 million gas terminal to Sri Lanka free of charge, for this comparison, let us assume so. Then the cost of electricity from a gas fired power plant will be 1.37 UScts/kWh for the power plant investment, 8.21 UScts/kWh for gas and 1.00 UScts/kWh for maintenance. Total 10.58 UScts per unit of electricity.

So the comparison is 7.17 UScts (or Rs 8.21) for coal, 10.04 UScts (or Rs 11.54) for oil and 10.58 UScts (or Rs 12.17) for gas. So compared with coal, a power plant using the cheapest kind of oil will cost 40 percent more, and one using gas will cost 48 percent more.

The coal and its alternative oil power plant will have all its equipment and systems covered by the above cost, while the gas plant assumes that a company will gift a gas terminal to Sri Lanka, and we have to pay only for the gas, and not for the infrastructure. The above price of Rs 8.30 per unit is on the basis of economic costs. Owing to the concessional 20-year loan, the actual cost of production of Norochcholai at the present price of coal would be Rs 7.83 per unit. Yes, it is more than the approximate price of Rs 4.00 per unit stated in the late 1990s. Why? The rupee has depreciated from 70 to 115 Rs to the USD, coal prices have increased from 47 to 100 USD to be delivered to Norochcholai, the investment has increased from USD 900 to USD 1340. These increases are all applicable to any other kind of power plant, oil or gas, we would have built if we did not build Norochcholai.

Future price increases

A frequent argument is whether coal prices will remain fixed. Definitely they will not remain fixed. When oil prices go up, coal prices and gas prices too, also go up. Oil has the smallest proven reserves and coal has the largest proven reserves. So, when oil and gas prices double, coal prices too increase by about 80 percent. No country in the world can escape that. They go up together, and come down together.

Thus the decision of the Government to proceed with the full development of the Norochcholai coal-fired power plant to its full design capacity of 900 MW will cause Sri Lanka to see an economic cost of electricity around 7.83 Rs per unit to produce from coal. Mixed with 30 percent large hydropower and 10 percent of other small renewables (some of which are indeed very expensive), Sri Lanka is likely to see the most competitive cost of electricity production by year 2015. Electricity customers should see the first price reductions in 2011 when Norochcholai power plant Stage one begins full operation, and the full benefits by 2014, when all the stages are in full operation. If oil and coal prices remain as they are today (at 70 USD and 100 USD, respectively), electricity customers should indeed receive an actual price reduction from the first month of operation of Norochcholai.

Sri Lanka is not alone in building coal power plants. India is building five mega power plants 5000 MW each in various locations (total 25,000 MW against Sri Lanka's 900 MW in Norochcholai), and Vietnam is building 2,000 MW in Mong Duong with finances from Asian Development Bank. Hundreds of projects are under construction in USA, China, and other large economies.