FINANCIAL IMPACT OF DELAY IN IMPLEMENTATION OF POWER PLANTS

Generation Expansion Plan 2018-2037

Public Utilities Commission of Sri Lanka

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This report attempts to identify any prospective delays in the plant implementation schedule of the Least Cost Long Term Generation Expansion Plan 2018-2037 approved by the Public Utilities Commission of Sri Lanka, and attempts to forecast the financial implications and economic consequences of such delays.

Introduction

Implementation issues pertaining to power plants identified in Least Cost Long term Generation Expansion Plans (LCLTGEP) have been prevalent over the last 20 years. Many of the identified power plants were delayed and some were not implemented at all.

This has resulted in serious problems that have plagued the electricity sector over the past decade and seriously hampered its progress. Cost overruns and load shedding are the most prominent and direct consequences while the impact of these two factors on the economy of Sri Lanka and its competitiveness are secondary consequences. The cost overruns happen because of the expensive emergency power procurement and over dispatch of existing expensive power plants. The financial loss due to non-implementation/delaying of the approved power plants over the last 20years is enormous and the economic/impact of load shedding and high prices is much bigger.

And the issue of implementation delays or non-implementation of power plants is not some past phenomena, but something very much prevalent even at present.

Expected issues of implementation of LCLTGEP 2018-2037

Public Utilities Commission has been continuously monitoring the progress of the CEB in implementing the approved plan and has observed delays in the procurement process of power plants expected to be commissioned by 2020.

Based on the information obtained from CEB the Commission expects delays in implementation of the power plants that had been approved to be implemented by 2020. A detailed implementation plan and the actual expected implementation schedule are given in the table below.

Year	Plant Additions as per LCLTGEP 18-37		Plant Additions as per CEB Implementation Plans August 10, 2017	
	Power Plant	**Commissioning Month**	**Power Plant**	**Commissioning Month**
2018	100 MW Furnace Oil (FO)	January 2018	170 MW FO	January 2018 (Already available)
	70 MW FO	January 2018	100 MW FO	August 2018
	150 MW FO	January 2018	50 MW (1×50 plants)	2018
	160 MW Solar	January 2018	60 MW (rooftop)	2018
	15 MW Mini Hydro	January 2018	15 MW	2018
	5 MW Bio Mass	January 2018	5 MW	2018

2019	2× 35 MW Gas Turbines (GT)	January 2019	96 MW DG	March 2019
	300 MW LNG	January 2019		
	122 MW Uma Oya	January 2019		
	95 MW Solar	January 2019	50 MW (rooftop)	2019
	50 MW Wind	January 2019		
	15 MW Mini Hydro	January 2019	15 MW	2019
	5 MW Bio Mass	January 2019	5 MW	2019
2020			300 MW LNG	June 2020
	1× 35 MW Gas Turbines	January 2020	3× 35 MW GT	January 2020
	35 MW Broadlands Hydro	January 2020	35 MW Broadlands	January 2020
	15 MW Thalpitigala Hydro	January 2020		
	100 MW Mannar Wind (CEB)	January 2020	100 MW	January 2020
	120 MW Wind	January 2020	170 MW (Pooneryn)	January 2020
	105 MW Solar	January 2020	100 MW (Siyamabalanduwa)	January 2020
	15 MW Mini Hydro	January 2020	15 MW	2020
	5 MW Bio Mass	January 2020	5 MW	2020

Financial impact due to delaying of power plants identified to be implemented in years 2018 to 2020

Kerawalapitiya 300 MW Natural Gas fired power plant

Even though the plant is expected to be commissioned in January 2019 according to the LCLTGEP, as per the CEB implementation plan it will be commissioned only in June 2020.

Because of this commissioning delay the expensive thermal plants which are already connected to the system has to be dispatched. Thus, the additional energy cost of dispatching the expensive thermal plants is taken as LKR 8.95 per kWh. It was assumed that the plant when commissioned, will be dispatched at a plant factor of 80%. Therefore if the plant is delayed by one month the energy generated at 80% plant factor will be substituted by expensive thermal power at an additional cost of LKR 8.95 per kWh.

Considering all these factors, calculated loss for a month of delay is LKR 1.55 Billion. If the plant is going to be delayed for 18 months as per the CEB implementation plan, the loss will increase to LKR 28 Billion.

122 MW Uma Oya Hydro plant

The plant is expected to be commissioned by January 2019, but the expected commissioning date is not given in the CEB implementation plan. Therefore it was assumed that the plant will be delayed by one year.

As per the LTGEP the expected energy generated from the Uma Oya plant is 290 GWh per annum, if the plant is delayed the substitute energy will cost additional LKR 22.00 per kWh. Therefore the financial loss for one year is calculated as LKR 6.4 Billion. This translates to a monthly loss of LKR 0.5 Billion assuming constant plant factor if the plant would have been implemented.

Solar, Wind and Mini-hydro projects that are to be implemented by year 2018 - 2020

Because of the implementation delays, each project is assumed to be delayed by one year.

- Solar (2018-2020)

According to the LTGEP, expected solar additions for 2018-2020 period are 160 MW, 95 MW and 105 MW by January 2018, January 2019 and January 2020 respectively.

Levelized cost paid to a solar power generator is assumed as LKR 11.86 per kWh, which is the lowest price of last solar tender. Given that the oil fired plants (that generates a unit at LKR 22 per kWh) will have to be dispatched in an event of a delay in Solar plant, the additional cost owing to the delay of solar plants will be LKR 10.14 per kWh. The expected plant factor of solar plants was taken as 17%.

Based on these assumptions, the financial loss of delaying each of the solar plants by one year is estimated. The results are shown below in the table.

Plant Capacity	Year of Commissioning as per LTGEP	Loss due to delay of one year (LKR Billion)	Loss due to delay of one month (LKR Billion)
160 MW	2018	2.42	0.2
95 MW	2019	1.43	0.12
105 MW	2020	1.59	0.13

- Wind (2018-2020)

According to the LTGEP the expected wind additions for the 2018-2020 period are 50 MW by January 2019 and another 220MW by January 2020.

With a levelised cost of LKR 10.07 per kWh (lowest price of last wind tender) the additional energy cost that would have to be paid for expensive thermal plants to substitute wind energy will be LKR 11.93 per kWh.

Assuming a plant factor of 32% for above wind plants, the financial loss associated with delaying of above wind plants can be calculated. The results are shown in the table below.

Plant Capacity	Year of Commissioning as per LTGEP	Loss due to delay of one year (LKR Billion)	Loss due to delay of one month (LKR Billion)
50 MW	2019	1.67	0.14
100 MW	2020	3.34	0.28
120 MW	2020	4.01	0.33

- Mini-hydro (2018-2020)

The approved LCLTGEP expects an addition of 15 MW mini-hydro capacity in January each year from 2018 to 2020. If these plants are going to be delayed by one year, the expected generation needs to be substituted by expensive thermal plants, at an additional energy cost is LKR 12 per kWh. At an assumed mini hydro plant factor of 37%, the financial loss associated with delay of a 15 MW plant can be approximated to LKR 0.58 Billion per year and LKR 0.05 Billion per month.

Total approximate Cost overrun

Based on the discussion above, the total expected financial loss due to implementation delays of 2018-2020 plant schedule in the long term generation expansion plan is **LKR 50.62 Billion**

The financial loss due to any further delay beyond what is forecasted in the previous section will cost **LKR 3.43 Billion** for each month.

Recommendations

Given the scale of financial losses, that can be expected, and prospective impact this is going to have on the national economy, the Commission recommends expediting the procurement of the above listed power plants in accordance with the approved schedule, as a matter of national importance.

It has to be noted that these financial loss or cost overrun figures are merely the primary outcomes of implementation delays. Cumulative effect of implementation delays over next three year period can very likely trigger a power crisis that can seriously affect the national economy.

The Commission does not recommend purchasing emergency power in the future to meet any capacity or energy deficit due to implementation delays of these upcoming power plants and is of the view that such costs should not be passed through to the consumers through tariffs.

The government may consider a change in industry structure if the generation plan implementation cannot be efficiently carried out within the current structure.