

**COMMENTS ON THE
LONG TERM GENERATION EXPANSION PLAN
2018-2037
OF THE
CEYLON ELECTRICITY BOARD**



Power Committee
Institution of Engineers Sri Lanka

June 2017

Preamble - Call by PUCSL

- Proposed (Base case) generation plan/ plant addition
- Electricity Demand Forecast
- Reliability criteria and economic parameters used for the plan
- Proposed candidate energy supply technologies, their costs and efficiency parameters
- Fuel prices
- Renewable technologies and their cost parameters
- Social and environmental damage cost.
- Scenarios selected for analysis
- Modelling tools used to prepare the plan
- Future fuel mix and use of indigenous resources

1. Analysis on demand forecast on the planning horizon with emphasis on expected mega development projects

Comment:

- “The Demand Forecasting methodology consists of combination of time trend modeling and Econometric approach while incorporating the expected new mega development projects *identified* by the government” IESL is appreciative of the fact a scientific approach is being adopted by the CEB in this regard. Future major development projects such as Colombo port city, Megapolis development etc. have been considered.
- It is understood that the day peak will surpass the night peak in **2030** which would be a very positive outcome, this can also have a positive effect of solar energy integration to the system.
- Demand Side Management (DSM) and energy conservation have been duly recognized though unlike last proposed LTGEP there is no scenario.

Recommendation:

IESL would like to emphasize on the importance of developing a clear policy guideline on Demand Side Management programme and ensuring implementation through the appointed Presidential Task Force by Sustainable Energy Authority with the active participation of CEB and other relevant institutions. **This is to be taken very seriously if DSM measures are to be a reality and taken into consideration.**

2. Study on Other Renewable Energy (ORE) integration and the analysis of techno – economic impacts of ORE additions

Comment:

• In this connection IESL can not ignore the following statement:” *The energy contribution from ORE plants were maintained above 20% from 2020 onwards complying with the **Government Policies**.*” IESL is not sure if such an approved Government policy exists , especially in view of the following:

- Considerable increase in Wind and Solar additions have been identified in this plan compared to LTGEP 2018-2037. IESL is not opposed to this. However...
- The additional Present Value cost **153 USD million** (**LKR Million 24,000** in today’s terms) for ORE integration is an incremental cost to the economy. This means Sri Lanka is committing to pay in economic terms this additional cost over the planning horizon of 20 years i.e. additional LKR Million 1,200 annually.
- Implementation of Pumped Storage Power Plant would positively affect integration of ORE.
- The question remains who shall pay this additional cost?

Recommendation:

It is suitable to implement the base case plan with the Pumped Storage Power Plant to achieve a balanced energy mix with thermal /renewables and lower levelized cost of electricity for the consumer.

3. Integration of Solar PV energy to the power system

Comment:

- With the ever reducing capital cost of Solar PV technology, it is prudent to consider more solar energy additions to the system.
- It is imperative to study the technical limitations and to find a viable storage such as in hydro reservoirs.
- It is important to consider utility scale as well as the residential/industrial scale implementation of solar schemes.
- Even though considerable solar PV additions are projected in this plan, it is appropriate to review the figures in the next cycle with the rapid advancement of technology and cost reductions.

Recommendation:

It is important to carry out a comprehensive analysis on the technical limitations which restricts Solar PV additions to the system and identify possible solutions such as energy storage systems using our existing hydro reservoirs.

4. Introduction of Liquefied Natural Gas (LNG) as a fuel for power generation in Sri Lanka

Comment:

- Addition of LNG based combined cycle power plants and conversion of the existing oil based combined cycle power plants to LNG would enhance the energy security of the system in terms of fuel diversification.
- With the reduced emissions, it is possible to develop LNG based power plants near load centers.
- In the event of local gas discovery, this would open up possible gas usage options for power generation and various other fields.
- However lack of clear milestones in developing the LNG infrastructure (LNG terminal, pipelines etc.) and a LNG procurement process might hinder the progress of introducing LNG to Sri Lanka.
- It is however important that identified LNG plants run on Natural Gas rather than on Diesel or any other fuel. Hence it should be ensured that required infrastructure is in place in a timely manner.

Recommendation:

IESL would like to emphasize on the need to develop a proper action plan to develop LNG infrastructure and a LNG procurement process for the timely implementation of the proposed power plants.

5. Environmental Considerations of the Plan

Comment:

- Special attention should be given to the environmental implications from the coal plants (especially ash disposal).
- It is commendable that supercritical coal power plants are considered even with the higher capital cost for their lower emission values.
- Continuous development of renewable energy would contribute to further reduction of environmental implications from power generation.
- Responding to climate change, in the Sri Lankan context, options of INDCs, Carbon Trading, Carbon Partnership Facility (CPF) should be further explored.

Recommendation:

The IESL **would highly recommend** to develop a proper mechanism to monitor and mitigate the environmental implications from all the power plants. IESL recommends that CEB publishes the environmental parameters on a periodic basis and make them available to the public.

6. Other Scenarios Studied in the Plan

Comment:

- It is commendable that different scenarios have been studied in the planning process to arrive at the least cost capacity and energy mix for the country.
- Out of the scenarios studied, no future coal development scenario and energy mix scenario with nuclear development are two alternative pathways which are seen as much more expensive than the Base Case.
- In no future coal development scenario, it is expected that the additional PV cost of 1,040 USD million over the base case plan would have to be incurred and it will be an additional cost to the economy. (LKR Million 164,000 in today's value for 20 years which means an economic burden of **LKR Million 8,200 pa**)
- It is also important that nuclear based power generation option is further studied and the capacity building activities should be carried out.

Recommendation:

The IESL would like to draw attention to the importance of determining the optimum energy mix for the country for the planning horizon giving due consideration to the world trends and not burdening the economy and the consumer with high electricity prices.

7. Recommendations on the Base Case and Contingency Analysis

Comment:

- It is of utmost importance that all the proposed power plants including renewable energy developments should be implemented in a timely manner.
- It is noteworthy that a contingency analysis has been carried out to evaluate the impacts of hydrology, plant delays etc. in the short term.
- Especially with the experiences in the recent past, hydrology variations play a major role in determining the power situation and with this contingency analysis, a clear pathway is proposed to tackle these situations.

Recommendation:

The CEB, SEA, Ministry of Power and Energy should collectively ensure the timely implementation of the proposed power plants with the backing of firm government decisions.

A Final Note

- IESL Considers the LTGEP proposed by the CEB as a credible document developed after much thought and study.
- It has taken into account all possible scenarios that one would want to follow.
- IESL is however concerned with the addition of large capacity of oil fired power plants and equally concerned with the prospects of these power plants though the expectation is that they will eventually run on Natural Gas if the LNG terminals will be built in time.
- IESL is highly concerned with the inordinate delays in decision making especially with regard to the implementation of the Coal power plants which by far has the least economic cost given the fact that all precautions are proposed to mitigate the negative environmental impacts.
- IESL is also highly appreciative of the accommodation of indigenous renewable sources of energy and the policy makers should be made aware of the economic burden that it will entail.
- The IESL thanks the PUCSL and the CEB for giving an opportunity make our contribution in this national endeavour.

Thank You