Renewable Energy Sector

On Grid Battery Energy Storage Solution (BESS)

Sri Lanka

Sri Lanka, Land of Opportunity

Recording its first primary surplus in decades in 2017, the Sri Lankan Government continues its program of fiscal reform, improving public financial management and increasing public and private investments, while at the same time addressing infrastructure shortages and improving competitiveness. 'Vision 2025', launched in 2017, will further help strengthen democracy and reconciliation, inclusive and equitable growth and support good governance.

Since the end of the country's civil war in 2009, Sri Lanka's economy has grown at an average 5.8% per year. Sri Lanka's economic performance was affected by weather and a challenging political environment in 2017. Fiscal and monetary policy measures contributed to stabilisation, however prolonged drought took a toll on growth (3.1%) while raising inflation (6.6% annual average). Growth in 2018 is projected to rebound to 4.5%, driven by private consumption and investment.

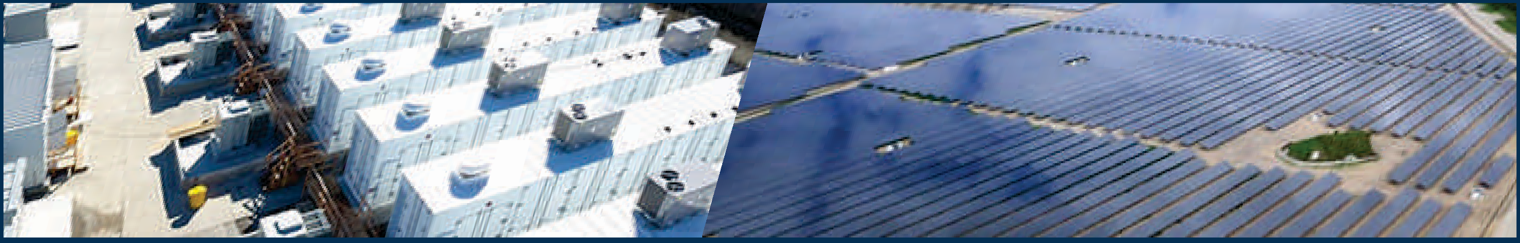
Long Term Energy Expansion Plan

The Ceylon Electricity Board (CEB) and the Sri Lanka Sustainable Energy Authority (SEA) are mandated to supply reliable electricity supply to the nation at affordable prices, together with operational demand side management while addressing climate change induced impacts.

As identified in the draft CEB Long Term Generation Expansion Plan 2018-2037 (LTGEP-Draft), a severe electricity capacity shortage is identified for the period 2018-2023. Recommendations to address this shortage have been made in the plan, including utilising technology that can become standby energy generation capacity beyond the year 2023.

The total investment required in the base case implementation of the LTGEP is US $14.568 billion, without consideration of plants for which funds have already been committed. A very significant factor in the success of the plan is the ability to attract private investment.

Sri Lanka's electricity demand has grown at an average annual rate of 5-6% over the last 20 years, and this trend is forecast to continue into the foreseeable future.



Clean Energy Solutions

The adoption of large scale alternative energy supplies and advanced technologies available for broadening of solar energy generation, such as Battery Energy Storage Systems (BESS), has been considered in the preparation of the LTGEP. In that context, the plan is to elevate the use of biomass (fuel wood) and waste (municipal waste, industrial and agricultural waste) as modern and convenient energy sources. The introduction of pump storage power plants and the proliferation of micro-solar generation (1MW) are also identified in the plan. Hydropower, which covers 9% of the total primary energy supply, is the main indigenous source of commercial energy in Sri Lanka but there is considerable potential for wind and solar power development. The first commercial wind plants were established in 2010, the first commercial solar plant established in 2016.

In the medium term, it is apparent that coal will be the major source of power during the forecast period, with its share reaching 40% in 2025 and 50% in 2034. Renewable sources will also be considerable, with a share of more than 40% by 2025.

Benefits of the BESS Solution

The BESS solution proposed by Synthesis Global delivers many benefits to Sri Lanka and the CEB. The solution:

- Addresses great peak demand shortfalls which result in regular rolling brownouts due to load shedding. This delivers social as well as economic benefits to Sri Lanka.
- Can deliver value to Sri Lanka in a very short timeframe, units can be in place and delivering energy within 16 weeks.
- Is modular, scalable and transportable. This provides built in redundancy avoidance measures as the long term plan is implemented.
- Is flexible, able to integrate with all forms of energy generation capability in the future.
- Delivers significant financial benefits to Sri Lanka, via incremental revenue opportunity to the CEB at a minimal marginal cost.

No other technology can deliver the short and medium term social and financial benefits of the BESS proposed by Synthesis Global. When combined with the medium to long term redundancy avoidance benefits, the implementation of the BESS represents a ground-breaking technological advancement for Sri Lanka and the CEB.

Scalability of the solution is such that the initial pilot project in advanced discussions is valued at circa US$75-100 million, forming a part of a broader BESS/Solar project in Sri Lanka valued in excess of US$1 billion. Noting the future investment required in energy generation capacity of US$14.568 billion in the base case LTGEP plan, BESS provides a moderate and scalable short-term solution.

Applicability of BESS to Broader Emerging Economy Markets

The energy generation challenges present in Sri Lanka are largely consistent across the emerging economies where Synthesis Global operates, and indeed many developed economies. To that end, the solution strategy applicable to Sri Lanka is equally appropriate yet on a much broader scale, reflecting the breadth of the opportunity available to Synthesis Global.

BESS solutions alone in economies where Synthesis Global is currently active total present an opportunity in excess of US$5 billion, and when considered as part of a consolidated energy supply strategy, the opportunities for Synthesis Global reach into the many US$Billions. This market size is a key target for Synthesis Global's growth.

Funding Opportunities

Synthesis Global is now engaging with International finance, funding and development organisations to deliver to the people of Sri Lanka and the CEB a BESS pilot solution that meets the social, economic and financial needs of the country. We are proposing to convert this pilot into an "Emerging Market Emerging Technology (EMET)" fund, building upon the strategy noted above. Clearly, the initial funding partners in the BESS project will be best placed to benefit from future investment opportunities as the EMET fund takes shape.

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