Power Sector Reforms in Sri Lanka & Way Forward

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Global Trends in Power Sector

- Electricity supply industry started in 1900 – 1950 as municipal managed utilities.
- Centralized vertically integrated mostly state-owned utilities were formed in 1950s and large coal , hydro , nuclear and natural gas power plants dominated the industry.
- Electricity sector reforms started in 1990s in UK and Chile and then in Asian countries in 2000 – 2010.
    - Vertically integrated utilities were unbundled into separate entities for generation , transmission and distribution.
    - Private investments in power generation
    - Spot markets for electricity where generators submit day ahead bid were established
    - Regional interconnections.
- Since 2010 Renewable Energy achieved cost parity and more innovative market structures for RE integration emerged
    - Markets for ancillary services like energy storage and frequency control
    - Demand Response (flexible demand) to off-set supply side fluctuations.
    - Market based products such as RE purchase obligations and tradable RE certificates
    - Climate financing products to promote energy transition to green energy
    - Green Hydrogen is supposed to facilitate energy transition of difficult to transform industries.

Strengths of Sri Lanka Electricity Sector

- Achieved universal electrification with almost 100% household electrification
- Relatively low distribution losses of below 7%. (i.e. India losses are in the range of 17.5%).
  - Low level of illegal connections and electricity theft
  - Metered household connection
  - Low level of account receivables
  - Low level of electricity usage in agriculture for water pumping.
- Good reliability of electricity supply and absence of persistent load shedding.
- Technical competence in utility management in traditional manner.
- High share hydro power plants in energy mix (30 % - 40%) with storage capacity of about 10% of annual energy consumption.
- High level of Renewable energy in energy mix. (40% - 50%).

Weaknesses of Sri Lanka Power Sector

- High cost of electricity. The cost of electricity in Sri Lanka is about 50% higher than its regional competitors.
- High level of dependence on imported expensive fossil fuel. Oil contributes to about 25% - 35% of energy mix.
- Weak transmission connectivity specially in RE rich regions.
- Absence of transparent competitive procedures for generation capacity procurement.
- Long delays in generation capacity procurement.
- Opaque price discovery mechanisms for RE energy based on administratively determined FIT .
- Lack of Interconnections with neighboring countries.
- Absence of domestic fossil fuel sources and relatively small market.
- High risk premiums demanded by investors due to poor payment record of CEB and country risk premium.

Opportunities for Sri Lanka Power Sector

- Good potential for RE development especially off-shore wind energy
- Proximity to huge electricity market and as well as low-cost electricity from India. (i.e. Installed capacity and peak demand in India is 100 times of Sri Lanka).
- Good potential for developing pump storage hydro for energy storage.
- Technical expertise of Sri Lankan power engineers especially in Australia and Canada.
- Absence of entrenched upstream fossil fuel / coal based vested interests
- Good prospects for green hydrogen development using off-shore wind energy to achieve energy transition in transport and industry.
- Availability of large number of water bodies that can be used for floating solar development

Threats for Sri Lankan Power Sector

- Lock in to high-cost electricity
  - Inability to procure electricity at a regionally competitive tariffs
  - Continuation with high-cost oil based generation mix.
  - Relatively high RE off-take prices due to lack of competition.
  - High cost of financing
- Inability of CEB to mobilize funds for augmenting the transmission system required for RE integration.
- Exodus of competent engineers due to lack of incentives and performance based corporate culture.
- Outdated planning and dispatch procedures that does not encourage indigenous RE.
- Reluctance to adopt state of the art technologies required for greater integration of RE.
- Lock into outdated vertically integrated institutional culture
- Institutional risk aversion and resistance to change
- Lack of accountability of utility management for poor performance
- Weak financial management and internal controls
- Limited regulatory oversight and resistance to regulatory interventions.

Key Objectives of Proposed Power Sector Reforms

Establish the legal and institutional framework for modern, dynamic and consumer centric power sector.

Bring down the cost of electricity to consumers through competition, efficiency improvement and accountability

Functionally unbundle the sector to have accountability and efficiency at each stage of electricity supply value chain to improve the sector performance.

Facilitate competition in generation and electricity supply and establish wholesale competitive electricity markets.

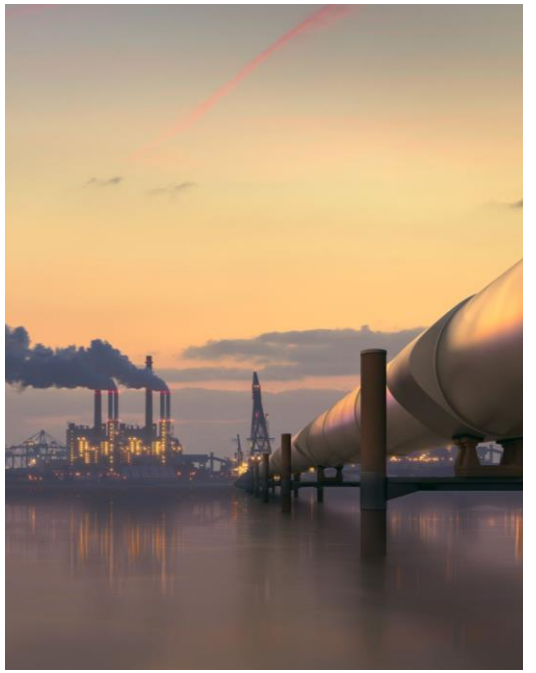
Ensure licensees perform efficiently and ensure adequate tariffs to cover the eligible costs at each stage of value chain

Ensure energy security and reduce dependency on imported fossil fuel in line with government's net zero commitments.

Facilitate private sector investments in generation and transmission in a transparent and competitive manner.

Allow choice to the consumers to select their energy supplier and source of energy initially through open access and later through competitive electricity market.

Key Aspects of Proposed Power Sector Reforms



- CEB will be unbundled into 12 corporate entities with clearly defined responsibilities for different aspects of electrify supply value chain.
  - Four generation companies to take over hydro, oil based, coal and renewable generation plants of CEB.
  - National System Operator to initially act as the single buyer and system operation.
  - Transmission company to take over the existing national grid
  - Four distribution companies for power distribution activities undertaken by CEB.
  - Separate company to take over CEB's non core businesses
  - Separate company to manage the terminal liabilities of CEB employees.
- Each of these entities will have regulated cashflows and will be incentivized achieve efficiency improvements.
- Management will be held accountable for efficiency improvements.
- PUCSL will remain as the electricity sector regulator
- National Electricity Advisory Council to advice the government on policy and technical aspects.

Role of National System Operator

- **Real Time Power System Operation.**

  Optimum generation scheduling and dispatch to minimize the variable cost of generation and maximize dispatch of RE plants.

  Ensure adequate secondary and tertiary reserve requirement to maintain system reliability.

  Management of transmission congestion and curtailment of renewable energy plants to maximize RE utilization,

- **Long Term Power System planning**

  Undertake long term power system planning in accordance with the National Electricity Policy and be accountable for implementing the approved Long Term Power Development Plan

  Identify the requirements for energy storage at different levels of RE integration.

  Identify the transmission system augmentation requirements.

Generation and Transmission capacity procurement

Procurement of new generation and transmission capacity in accordance with the National Procurement Guidelines using PPPs.

Entering SPPAs with RE generators below a threshold capacity specified by the Minister on approved terms.

Bulk power procurement as per PPA and SPPA terms and bulk power sale to DISCOs and operating the bulk supply account in a transparent manner.

Role of National Transmission Network operator

- Take over the transmission system of over 33 kV currently operated by CEB Transmission Licensee. (National Grid)
- Maintain the National Grid and allow the NSO to operate the transmission system as per the transmission service agreement with the NSO.
- Undertake future investments in National Grid as per the Long-Term Power Development Plan.
- Provide non-discriminatory interconnection to private sector investors engaged by NSO for transmission investments.
- Allow open access to transmission system for eligible consumers and generators.

Main Features of Proposed Power Sector Reforms

- Electricity sector specific procurement regulations will be stipulated based on competitive and transparent processes.
- Regular tariff setting based on multiyear tariff framework to ensure cost recovery and affordability with more frequent adjustment to account for fluctuations in fuel cost and hydrologoy.
- NSO cash flows will be contractually protected and to ensure act credit worthiness of off taker to private sector investors.
- Private sector investments in power transmission will be allowed. They will have annuity type transmission tariff linked to the availability of the transmission asset.
- NSO is held accountable for implementing the Long Term Power Development Plan
- Open access to transmission and distribution network will be allowed for eligible consumers subject to payment of open access charges and availability of network capacity.
- Performance based incentives for staff promotion.
- Hydro company and NSO will be 100% owned by the government and majority government ownership of transmission company.
- Gradual establishment of wholesale electricity market where day ahead electricity trading and balancing market for ensuring Realtime demand and supply.
- Existing PPAs will continue for the duration of PPA.

Open Access and Wholesale Power Market

- Open Access to Transmission and Distribution Network
    - Non-Discriminatory Open Access will be allowed to eligible consumers to directly purchase electricity from generators.
    - Power purchase price for open access transactions will not be regulated.
    - Open Access charges to be levied by TRANSCO and DISCO will be regulated.
    - Metering and other requirement for open access to be stipulated in Regulations to be issued.
    - Cross subsidy surcharge can be levied to compensate the loss of cross subsidy due to Open Access.

Wholesale Power Market

- To be introduced in a staggered manner in 5 years extendable by further 5 years with Cabinet Approval in a staggered manner.
- Convert the single buyer function exercised by NSO to multi buyer with distribution licensees allowed to directly purchase electricity from generators
- Phase out existing PPAs with more market based power purchase agreements.
- Initially the trading may be limited to real time balancing market and gradually day ahead market for uncontracted capacity,

Expected Benefits of proposed power sector reforms

- Reduction in cost of electricity
  - Facilitating phasing out of expensive oil based generation with renewable energy plus energy storage.
  - Efficiency improvement in transmission and distribution by effective regulation and enforcing managerial accountability.
  - Reduction in risk premium demanded by investors by establishing NSO as a trustworthy off-taker.
  - Reduction in cost of new generation capacity through competitive tendering and benchmarking FITs for smaller RE plants.
  - Ensuring Long Term Power Development Plan is implemented in a timely manner.
  - Ensuring daily dispatch is done to minimize the economic cost.
- Allowing eligible consumers to elect the source of electricity and generation licenses to sell direct to the consumers.
- Allowing private investments in transmission and energy storage.
- Performance based incentives and remuneration to key technical and managerial staff to arrest the brain drain and facilitating reverse migration.
- Introduction of state of the art technologies to facilitate energy transition in line with the global trends and modern digital utility management practices to promote prosumer concept.
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