

Renewable Energy Development In Sri Lanka and Development Approaches for RTS in Large Island Country

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INTRODUCTION

The government of Sri Lanka has set a goal of achieving 70% electricity from renewable energy by 2030 and becoming carbon neutral by 2050. This is in line with achieving Sustainable Development Goal 7, which focuses on affordable and clean energy, and also implementing Nationally Determined Contributions (NDCs) to reduce greenhouse gas (GHG) emissions. As part of its NDC plan,

Sri Lanka aims to develop an additional capacity of 5167MW of renewable energy by 2030. Given its abundant renewable energy sources such as solar, wind, hydro, and biomass.

Key policy targets

- 70% of Electricity Generation from RE Sources by 2030.
- Achieving carbon neutrality by 2050

Cumulative Capacity of RE Projects

Resource	Capacity (MW)
Minihydro	437
Solar Ground mounted	164
Rooftop Solar	1,200
Wind	263
Biomass	50
Total	2,114
Large hydro	1,538
Grand Total	3,652

Development Plan for Addition of RE Projects

Resource	Installed Capacity 2024	2025	2026	2027	2028	2029	2030	Total Additions 2024-
Major Hydro	1,538	1,571	1,571	1,571	1,571	1,571	1,571	33
Pumped Storage	-	-	-	-	-	350	700	700
Mini Hydro	437	500	525	550	575	600	610	173
Wind	263	733	823	1,073	1,273	1,523	1,754	1491
Solar (Rooftop)	1200	1360	1520	1,680	1,840	2,000	2,160	960
Solar (Ground mounted/floating)	164	804	1,144	1,484	1,844	2,224	2,514	2350
Biomass	50	62	140	160	180	190	210	160
Battery Storage		140	300	500	850	1,000	1,125	1125
Total (MW)(Storage Excluded)	3,652	5,030	5,723	6,518	7,283	8,108	8,819	5167
Additions in the each year – (MW)	599	1,378	693	795	765	825	711	

RENEWABLE ENERGY & CO2 SAVING

Resource	Capacity (MW)	PF	Hours of the Year	Energy (kWh)	CO2 Emmission Reduction(kg)
Minihydro	437	45%	8760	1,722,654,000	1,240,310,880.00
Solar Ground mounted	164	19%	8760	272,961,600	196,532,352.00
Rooftop Solar	1,200	17%	8760	1,787,040,000	1,286,668,800.00
Wind	263	32%	8760	737,241,600	530,813,952.00
Biomass	50	60%	8760	262,800,000	189,216,000.00
Total	2,114			4,782,697,200	3,443,541,984.00
Large hydro	1,538	45%	8760	6,062,796,000	4,365,213,120.00
Grand Total	3,652	0		10,845,493,200	7,808,755,104.00

EQUIVANAT MONEY SAVING

Resource	Capacity (MW)	PF	Hours of the Year	Energy (kWh)/y	Equivalent Oil Saving (Liters)/y	Money Saving Million LKR/year
Minihydro	437	45%	8760	1,722,654,000	430,663,500	129,199,050,000.0
Solar Ground mounted	164	19%	8760	272,961,600	68,240,400	20,472,120,000.0
Rooftop Solar	1,200	17%	8760	1,787,040,000	446,760,000	134,028,000,000.0
Wind	263	32%	8760	737,241,600	184,310,400	55,293,120,000.0
Biomass	50	60%	8760	262,800,000	65,700,000	19,710,000,000.0
Total	2,114			4,782,697,200	1,195,674,300	358,702,290,000.0
Large hydro	1,538	45%	8760	6,062,796,000	1,515,699,000	454,709,700,000.0
Grand Total	3,652	0		10,845,493,200	2,711,373,300	813,411,990,000.0

Solar Rooftop Development and Approaches

- Rooftop Scheme was introduced in 2013 with a net metering scheme
- in 2015 introduced new Schemes,
 - Net meter and Net Accounting
 - Later Net Plus and Net Plus Plus
 - New Tariff structures were introduced
 - Introduce service provider schemes
 - Introduce Business opportunities for the Private Sector

The facilities provided for the *solar rooftop development*

- Prepared Standards for rooftop to comply with IEC standards.
- Conducted the awareness for Utilities
- Measures were taken to remove the barriers for TR promotion tax e..
- Provided awareness programs to other stake holders

2015 started the “Sooryabala Sangramaya”

following activities were conducted.

- Registered rooftop services providers(with a committee recommendation)
- Conducted the training programmes for Engineers technicians and institutional staff
- Conducted solar rooftop services providers performance testing
- Facilitated for
 - Import Instruments

The directives and trainings are providing for Service Providers to installed to comply the standards, and if the installations are not complying the standards, the registration holds until the installation is get corrected.



Sooryabala Sangramaya Cont...

Conducting Training Programs for All.

Comprehensive Workshops for the CEB Engineer

Workshop on Design, Installation and Commissioning of Rooftop Solar PV Systems (for engineers)



WOMEN TRAINING -STRENGTHENING THE WOMEN IN SECURITY FORCE

A comprehensive Training of Trainers Workshop, namely 'Capacity Development' of Women of Sri Lanka Armed Forces



Sooryabala Sangramaya Cont...

Continuation of the Training

'Solar Power for Women Empowerment' programme



WOMEN IN OTHER INSTITUTIONS TRAINED -STRENGTHENING THE WOMEN



Training at Hambantota park



Training for Government officials





TRAINING -STRENGTHENING THE INDUSTRIES...













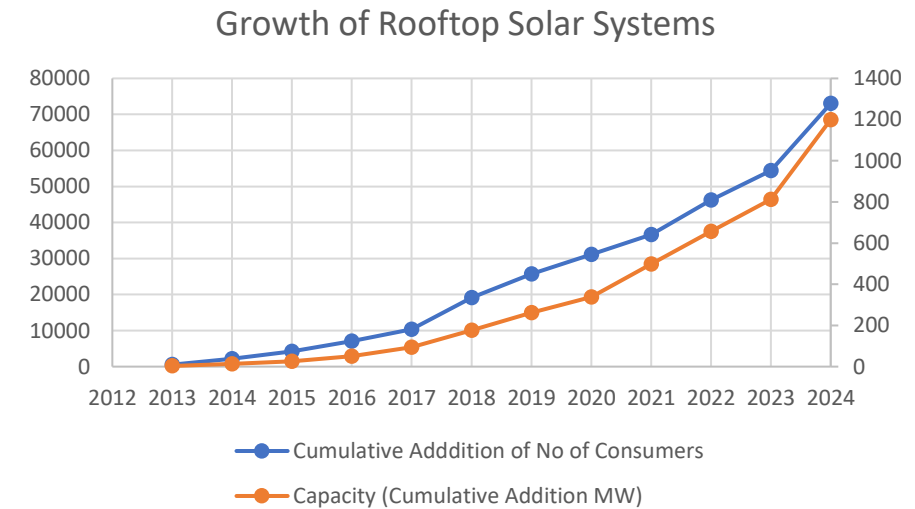


Sooryabala Sangramaya Cont...

- Registration of total service providers – 416
- Created 7,600 direct and 5,500 indirect jobs so far
- VERY SMALL ACCIDENTS

Sooryabala Sangramaya Cont ..

Year	Cumulative Addition of No of Consumers	Capacity (Cumulative Addition MW)	Yearly Growth
2013	550	3.35	3.35
2014	2,201	13.3	9.95
2015	4,196	26	12.7
2016	7,108	50.42	24.42
2017	10,389	93.72	43.3
2018	19,164	176.37	82.65
2019	25,712	261.37	85
2020	31,165	337.87	76.5
2021	36,640	499	161.13
2022	46,203	656.97	157.97
2023	54,374	812	155.03
2024	73,035	1,200	388



Government Rooftop Projects & initiated pre-project activities by SLSEA –Funding Facilitation by the Government of India

- **Solar Rooftop projects for 5000 Religious**
 - Site selection and document part finished and installations are going
 - Grid connections utilities
- **10MW Ground Mounted Solar Project for reducing electricity bills of temples**
 - Site selection, preparation of tender documents are going on

New Challenges/ Solutions

- Insufficient Grid capacity- to be Upgraded the transmitting and distribution systems
- Technical issues – Voltage and frequency fluctuation
- Insufficient skilled technical personals- need more trainings
- Resources Curtailment- introduction of Battery Storage systems
- Monitoring large number of systems- need a solution
- Integration Challenges
- High Initial Costs:

Thank you

