



# Policy Frameworks and Incentives for Decarbonisation



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# Key Policy Goals

- Achieving carbon neutrality by 2050
- 70% of Electricity Generation from RE Sources by 2030
- Adding of 5000 MW of RE Sources by 2030



# National Energy Policy & Strategies of Sri Lanka

1. Assuring Energy Security
2. Providing Access to Energy Services
3. Providing Energy Services at the Optimum Cost to the national economy
4. Improving Energy Efficiency and Conservation
5. Enhancing Self Reliance
- 6. Caring for the Environment**
- 7. Enhancing the Share of Renewable Energy**
8. Strengthening Good Governance in the Energy sector
9. Securing land for future energy Infrastructure
10. Providing opportunities for Innovation and Entrepreneurship





## Strategies identified under the Caring of the environment

- ✓ Reduce incremental carbon foot print
- ✓ Possible carbon sequestration plantations
- ✓ Constant monitoring and reporting of emissions of energy sector facilities
- ✓ Establish closed loop storage and distribution system
- ✓ Introduce HSE standards for all energy sector utilities



## Strategies identified under the Enhancing the share of RE


- ✓ Acquisition of land resources for RE projects
- ✓ RE grid integration
- ✓ Competitive bidding for RE investments
- ✓ Alternative options for different technologies
- ✓ Advanced forecasting systems for hydro, solar and wind energy



## Nationally Determined Contributions (NDCs)

- GHG reduction of 25% with 5% unconditionally and 20% conditionally in the electricity sector
- equivalent to an estimated mitigation level of 9,819,000 tons (9.8 mn) unconditionally and 39,274,000 tons (39.3 mn) conditionally (total of 49,093,000 tons) of CO<sub>2</sub> equivalent during the period of 2021-2030.
- The Target is to Develop an additional capacity of 3,867 MW renewable energy approximately 950 MW are on an unconditional basis and 2917 MW on a conditional basis.
- National electricity generation mix development by increasing Solar PV , Wind , Hydro and Sustainable Biomass

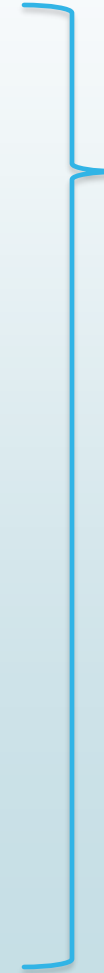


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- Energy mix identified in the Long-Term Generation Expansion Plan 2023-2042 is only green energies
  - Conditional targets require an external financial and technical support to supplement the domestic capacity
  - It is forecasted that the electricity peak demand increases on average at 5.3%

# Demand Forecast 2023-2047

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Year	Demand	System Loss %	Generation	Peak
	GWh		GWh	MW
2023	16,741	7.95	<b>18,186</b>	<b>3,021</b>
2024	17,705	7.89	<b>19,222</b>	<b>3,149</b>
2025	18,725	7.83	<b>20,317</b>	<b>3,283</b>
2026	19,854	7.77	<b>21,526</b>	<b>3,432</b>
2027	21,124	7.70	<b>22,886</b>	<b>3,651</b>
2028	22,419	7.63	<b>24,272</b>	<b>3,890</b>
2029	23,794	7.57	<b>25,741</b>	<b>4,127</b>
<b>2030</b>	<b>25,253</b>	<b>7.50</b>	<b>27,300</b>	<b>4,378</b>
2031	26,801	7.45	<b>28,958</b>	<b>4,645</b>
2032	28,165	7.40	<b>30,415</b>	<b>4,880</b>
2033	29,601	7.35	<b>31,949</b>	<b>5,127</b>
2034	31,099	7.30	<b>33,548</b>	<b>5,385</b>
2035	32,646	7.25	<b>35,198</b>	<b>5,652</b>
2036	34,241	7.25	<b>36,917</b>	<b>5,929</b>
2037	35,879	7.25	<b>38,684</b>	<b>6,214</b>
2038	37,547	7.25	<b>40,482</b>	<b>6,504</b>
2039	39,253	7.25	<b>42,321</b>	<b>6,801</b>
2040	41,002	7.25	<b>44,207</b>	<b>7,106</b>
2041	42,777	7.25	<b>46,120</b>	<b>7,415</b>
2042	44,584	7.25	<b>48,070</b>	<b>7,730</b>
2043	46,431	7.25	<b>50,061</b>	<b>8,051</b>
2044	48,321	7.25	<b>52,098</b>	<b>8,380</b>
2045	50,259	7.25	<b>54,188</b>	<b>8,718</b>
2046	52,248	7.25	<b>56,332</b>	<b>9,064</b>
2047	54,315	7.25	<b>58,560</b>	<b>9,426</b>

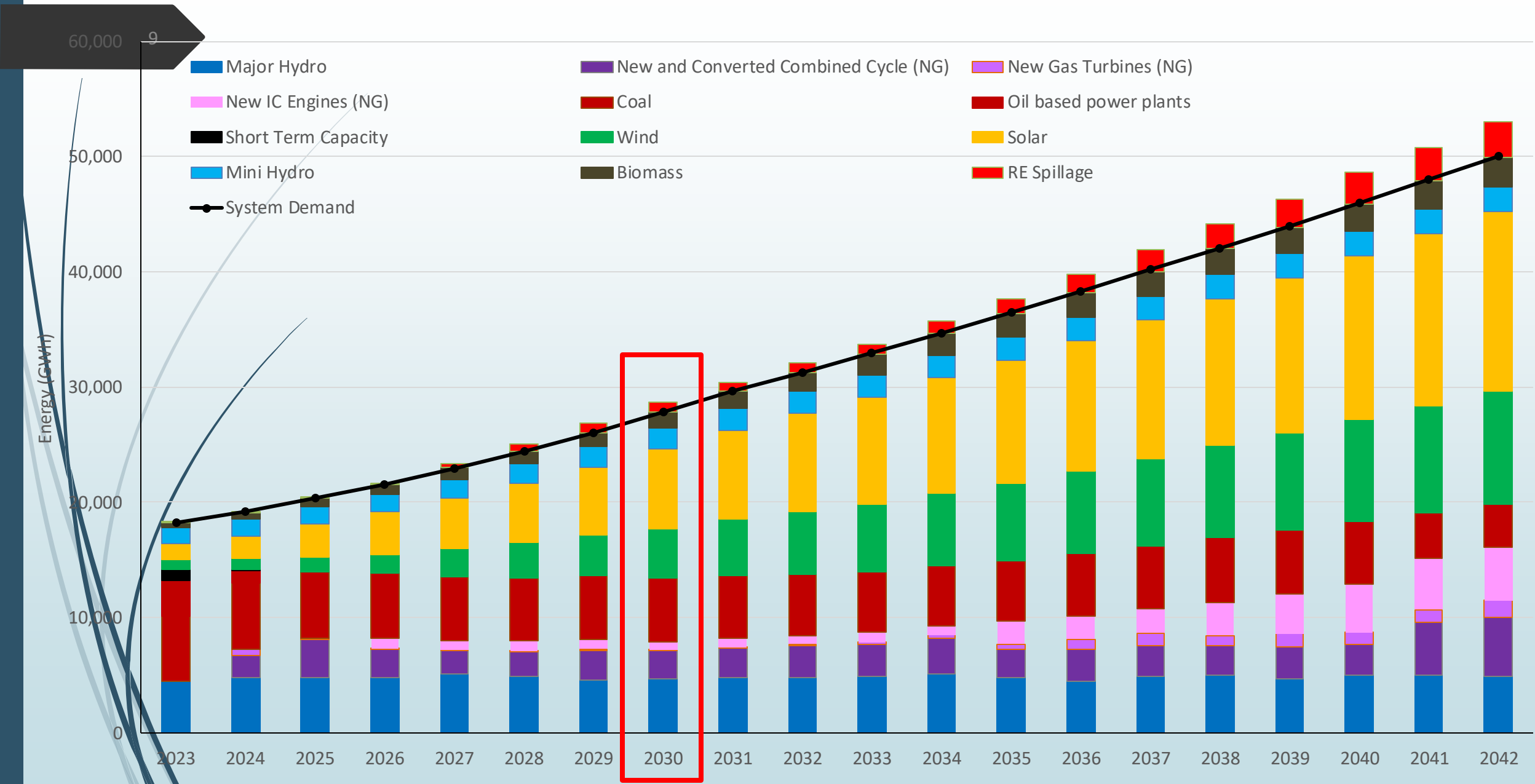


Night  
Peak

Day Peak



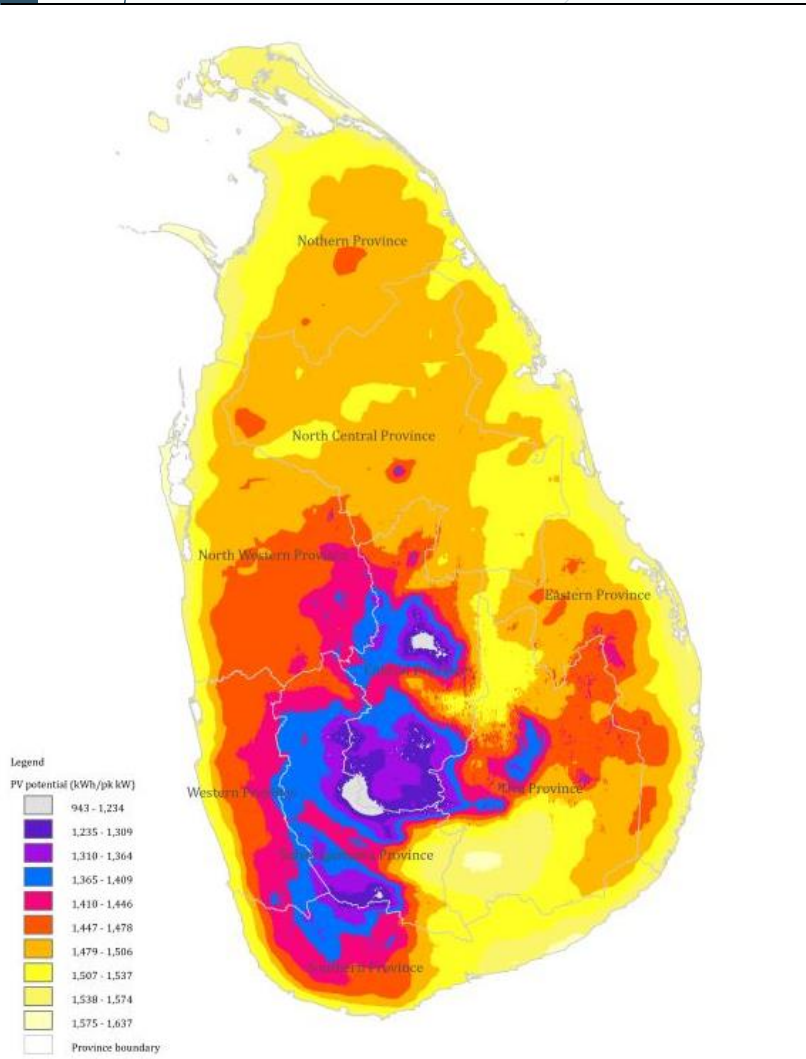
# Energy Mix of The Base Case Plan For Next 20 Years



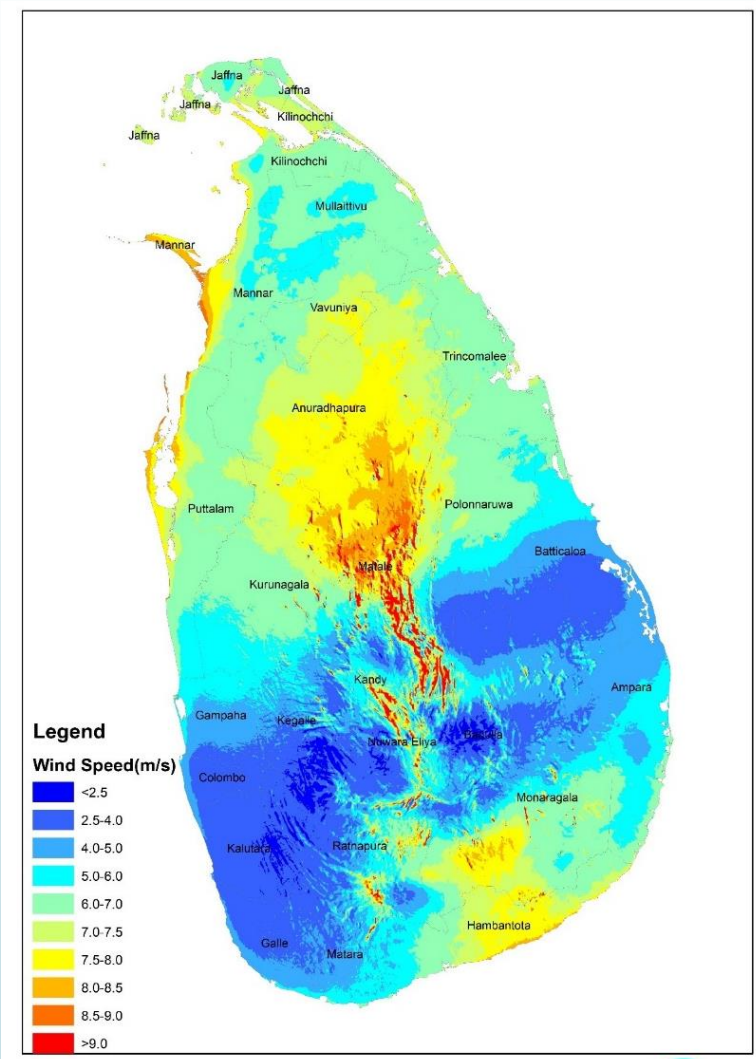
# RE Development Potential



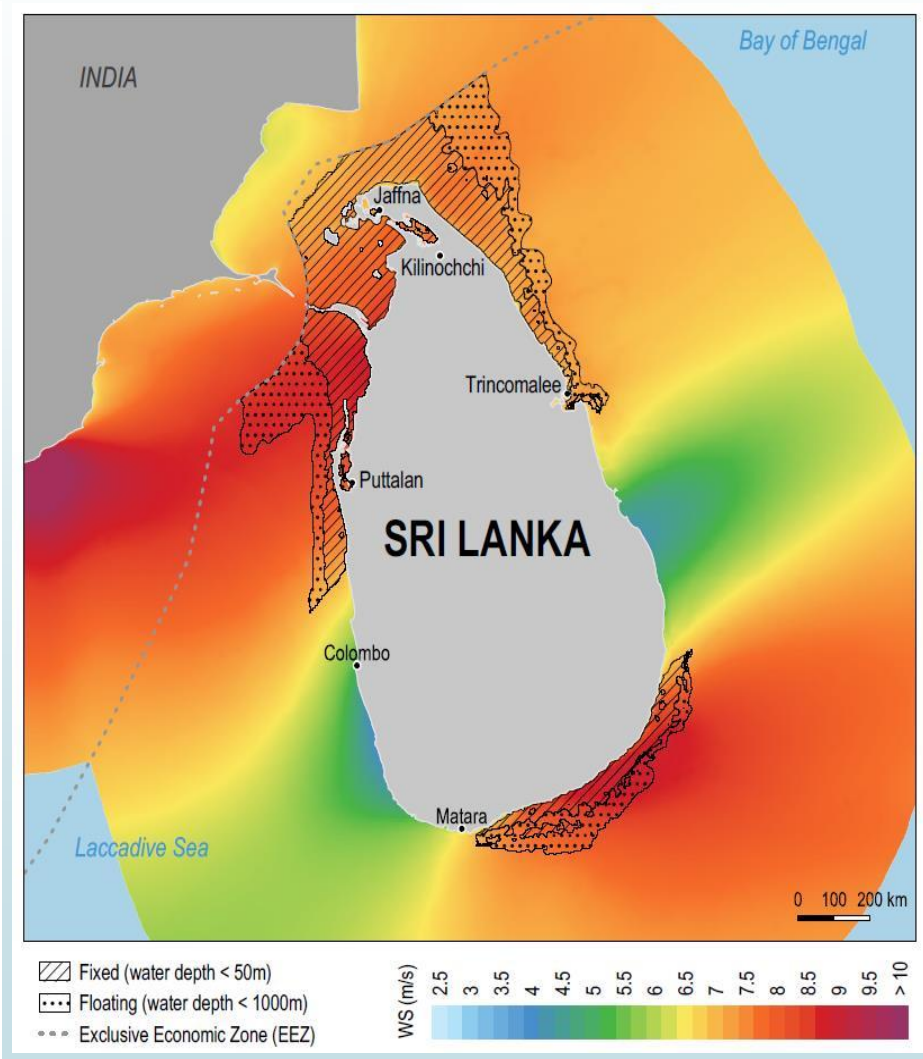
# RE Resources of Sri Lanka



**Solar**



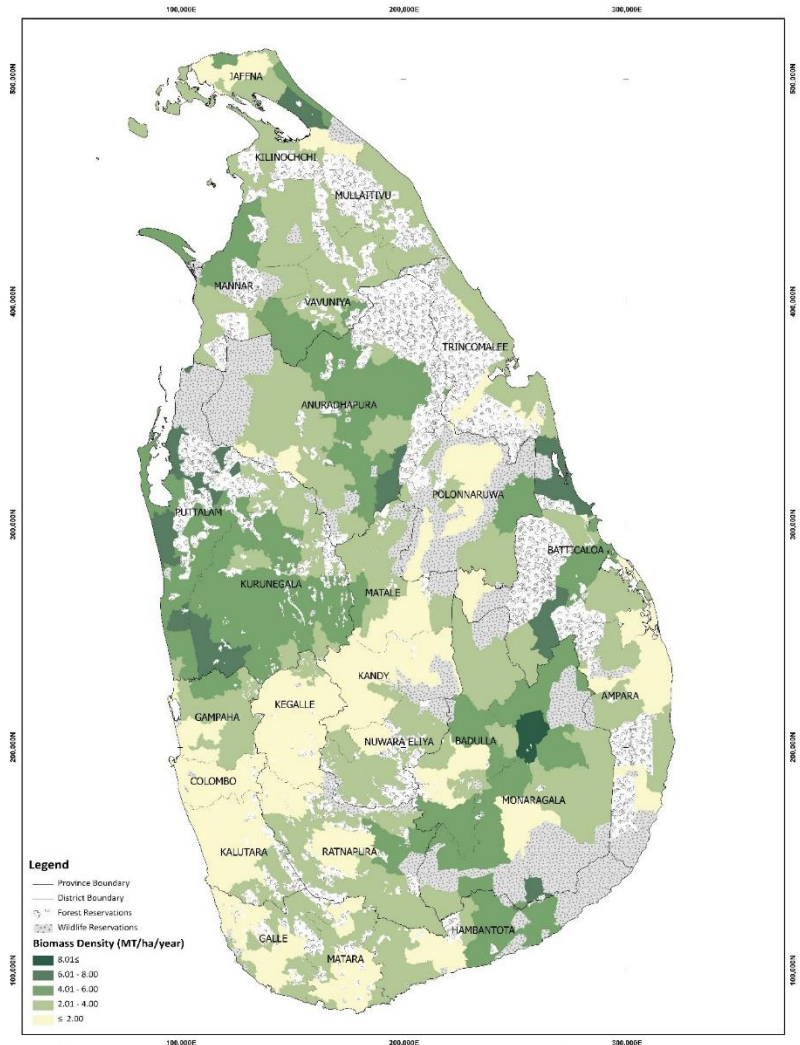
**Wind**



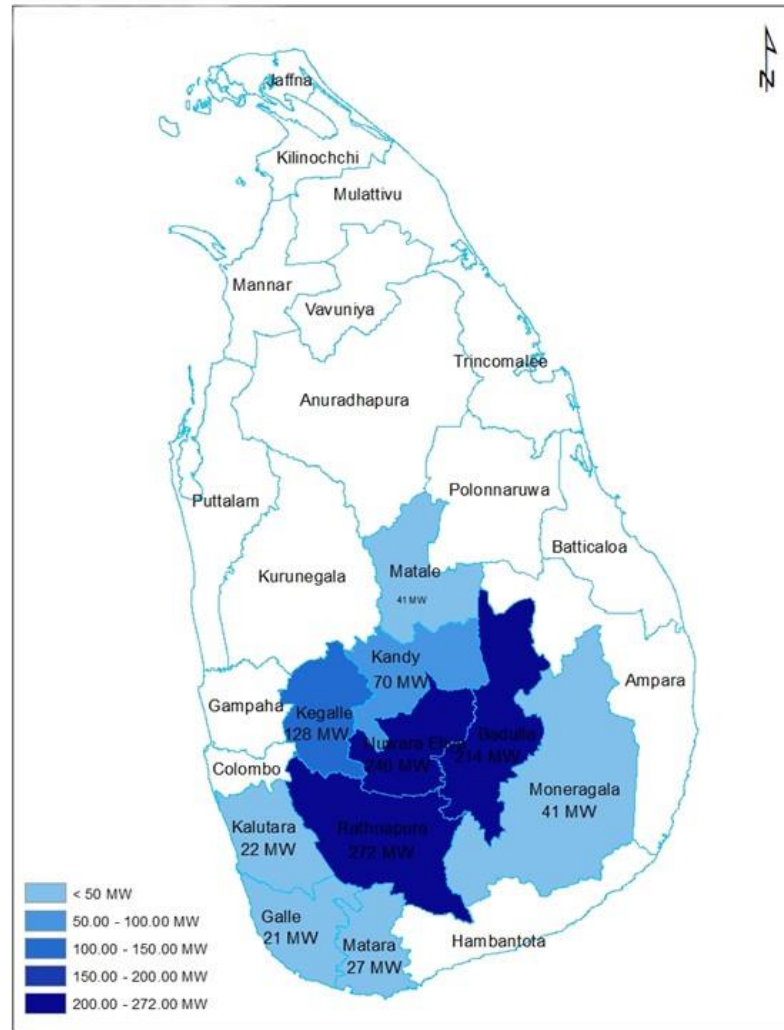
**Offshore Wind**



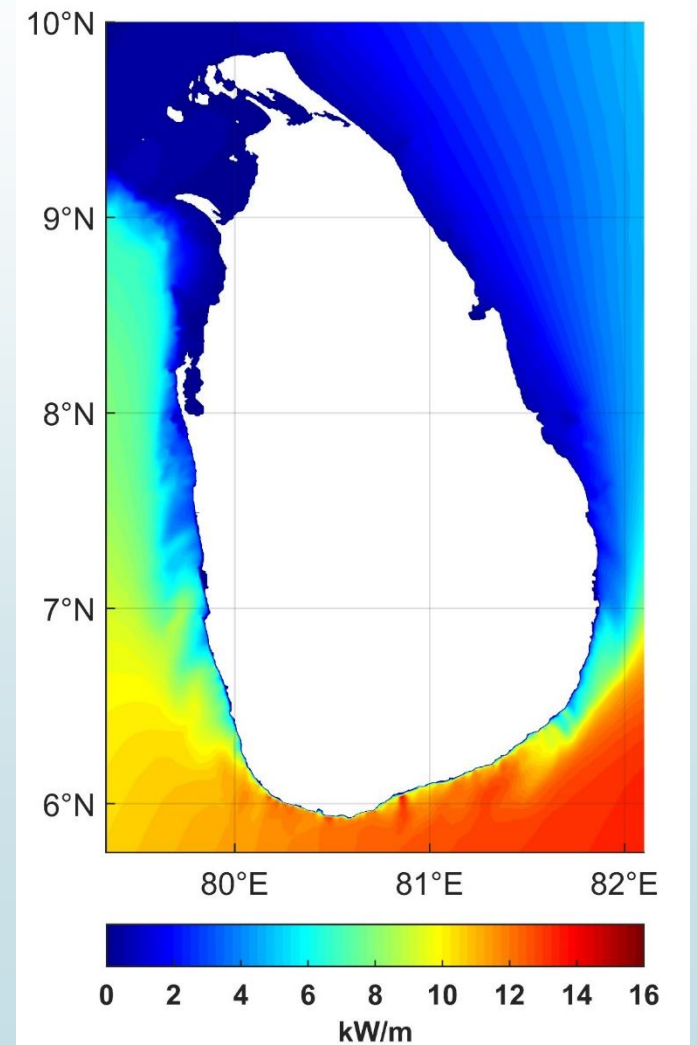
# RE Resources of Sri Lanka (Contd.)



**Biomass Energy Plantation**



**Hydro**



**Wave Energy**

## Solar Power Potential

Description	Capacity (MW)
<b>Overall Potential</b>	
Overall potential using island-wide scrub/barren lands (around 400,000 hectares)	200,000 MW
Overall floating solar power potential considering total reservoir surfaces (around 120,000 hectares)	60,000 MW
Potential for Rooftop	100,000 MW



# Wind Power Potential

Description	Capacity (MW)
On-shore Wind Power Potential	
Overall potential	10,000 MW
Developable potential	5,000 MW
Developed potential	248.5 MW
Potential for future	4,750 MW
Off-shore Wind Power Potential	
Overall potential	57,000 MW (Source: Resource Assessment done by World Bank)



## Proposed New Renewable Energy Capacity (MW) (2023-2030)

Resource	Installed Capacity 2023	2024	2025	2026	2027	2028	2029	2030	Total Additions 2024-2030
Major Hydro	1,383	1,571	1,571	1,571	1,571	1,571	1,571	1,571	188
Pumped Storage		-	-	-	-	-	350	700	700
Mini Hydro	432	475	500	525	550	575	600	610	178
Wind	263	333	733	823	1,073	1,273	1,523	1,754	1491
Solar (Rooftop/Ground mounted/floating)	880	1,380	2,164	2,664	3,164	3,684	4,224	4,674	3794
Biomass	50	50	62	140	160	180	190	210	160
Battery Storage		20	120	300	500	850	1,000	1,125	1125
<b>Total (MW) (Storage Excluded)</b>	<b>3008</b>	<b>3,812</b>	<b>5,030</b>	<b>5,723</b>	<b>6,518</b>	<b>7,283</b>	<b>8,108</b>	<b>8,819</b>	<b>5,811</b>
<b>Total Expected Additions in the each year – (MW)</b>		<b>804</b>	<b>1,218</b>	<b>693</b>	<b>795</b>	<b>765</b>	<b>825</b>	<b>711</b>	

**Storage (BESS & Pumps) Capacities not included to the total additions**  
 Since it is used for system stability and reduce the curtailment of excess RE generations and other

## Demand Side Management (DSM)

- Introducing energy Efficient electric lamps and equipment
- Expected to save 2,603 GWh and 5,189 GWh energy respectively
- 1,848 Gg and 3,684 Gg CO<sub>2</sub> emission reduction respectively, by 2030.



## Reduction of GHG emissions in energy sector

- Decommissioning of all coal power plants by 2048
- No NG plant additions after 2033
- Nuclear power plants to be introduced starting from 2035. The first addition will be 600 MW in capacity which will be introduced in 2035. The next addition will be in 2040 with a capacity of 1000 MW
- Cross boarder electricity trade
- Efficient energy storage solutions-  
Battery and Pumping storage





## Incentives for Renewable development and deployment

- There was a Duty free/ VAT free facility for solar panels and related instruments importation
- Bonded ware house facility of 30% custom duty exemption was given to all renewable instrument importations more than 1MW
- Battery policy should be developed to reduce cost as the present duty is very high (5 kW about more than Rs. 1.0 mn)





## Promoting green transportation and sustainable construction

- National policy on E -mobility by the Ministry of Transport and Highways.
- About 50 vehicle charging points established in the country with the private sector involvement.
- CPC plan to establish 10 charging facilities in selected fuel stations in this year.
- As the government plan to import 200 electric buses to the country it is expected to provide electricity through RE.
  
- Green building code has been prepared by the SEASL to guild the construction sector on energy efficient new buildings in the country.
- The regulations will be gazzetted in this year and new constructions which above 5000 sqm<sup>2</sup> will be regulated.

# Implementing Carbon taxes and Emissions trading

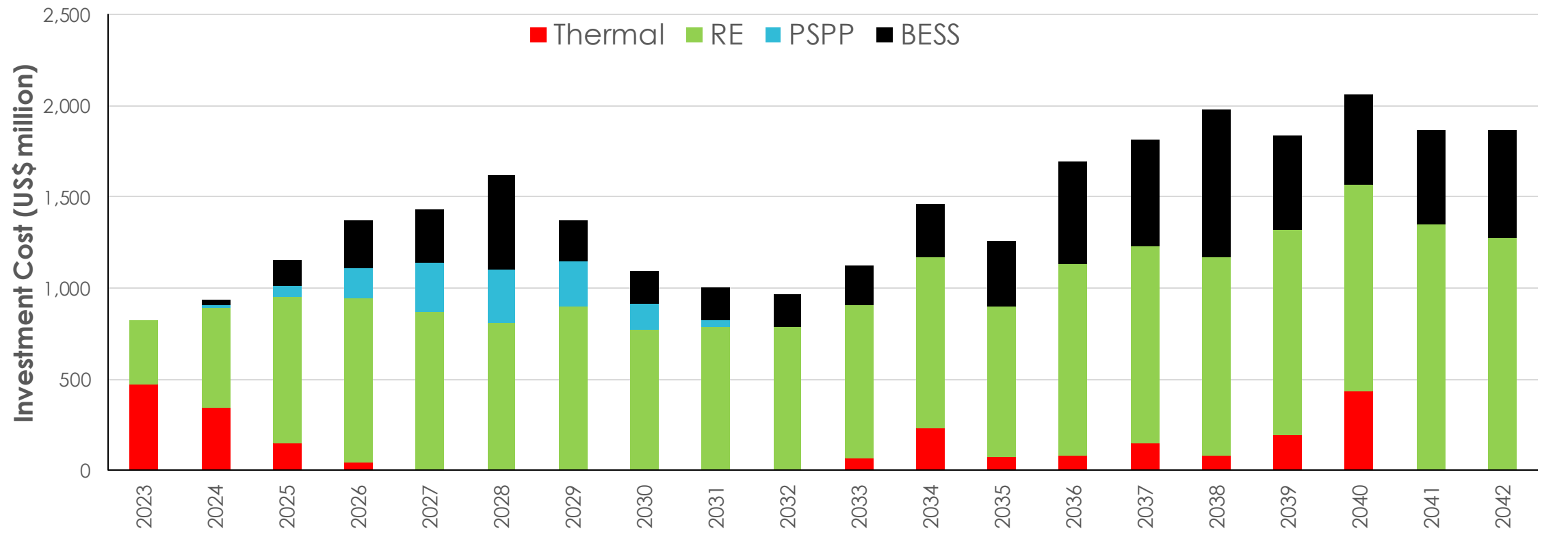
- At present no carbon tax implement in Sri Lanka.
- Provision under the SEASL Act to impose CESS on fossil fuel importation.
- Green Climate Fund under the Ministry of Environment is working on to prepare “Carbon Market Strategy and Guiding principles” for Sri Lanka.
- The investors of RE projects claim Carbon rights that could approach lenders for concessional financing and other benefits. However it is necessary to keep required amount of savings of non emission with the Government to report as NDC mitigation outcomes of the country. (The RE projects such as roof top solar, ground mounted solar, floating solar, onshore wind, mini hydro and sustainable biomass projects identified to implement so far are in the unconditional list).
- Apart from above mentioned technologies, any other forms of Renewable power projects which are entering into carbon trading agreements should pass the benefit to consumers through the tariff.
- Proper guideline should be prepared.

## Challenges

- Investment in RE, related infrastructure and Green technologies



# Base Case Plan – Annual Investment Requirement



	Thermal	Renewables	Storage	Total
Average annual investment requirement for 2023-2030	USD 125 million	USD 744 million	USD 358 million	USD 1,226 million
Average annual investment requirement for 2031-2042	USD 109 million	USD 1,022 million	USD 446 million	USD 1,578 million
Average annual investment requirement for total horizon	USD 116 million	USD 911 million	USD 411 million	USD 1,438 million



## Way forward

- Private Sector Investments and Facilitation
- Legal Framework
- Different Procurement Methods
- Guarantee Facilities
- Long Term Contracts
- Simplification of the Approval Process
- New technologies (Green H<sub>2</sub>, Offshore wind, Power wheeling, etc.)



# Green Energy-Green world



**THANK YOU . . .**