

Policy and Legal Framework for Renewable Energy Development in Sri Lanka



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Director General

Energy Policy Formulation: Past efforts

- ◆ **In 1984, the first attempt to prepare the comprehensive energy policy**
 - ⓐ A coping strategy for second oil crisis
 - ⓐ Decided the way the sector is structured
 - ⓐ As a result the Established the ECF
- ◆ **In 1997 another attempt focussing on**
 - ⓐ Energy access to all and energy independence
 - ⓐ Developing indigenous resources
- ◆ **The Energy Policy formulation was completed and published 2008**
- ◆ ,

The path taken

- ❖ **Understanding the status and issues**
- ❖ **Understanding external influences including the energy transition**
- ❖ **Constructing the status the country aspires to be in future**
- ❖ **Determining how to reach that status**
- ❖ **Determining who will do what, when and the method to gauge success**

Guiding principles

- ◆ **Management of the large expenditure on energy commodities**
 - Ⓢ Retaining as much as possible
 - Ⓢ Saving as much as possible
- ◆ **Expansion of the energy sector**
 - Ⓢ Priority for user and practitioners
 - Ⓢ Resources diversity
- ◆ **Provide economic stability**
 - Ⓢ Timely implantation of energy sector projects
 - Ⓢ Achievement and maintenance of supply side equilibrium
- ◆ **Protecting the environment**
 - Ⓢ Meeting energy demand whilst reducing the impact on the environment
 - Ⓢ Sustainable development goals and meeting national commitments
- ◆ **Creation of opportunities**
 - Ⓢ Opening up sizable markets
 - Ⓢ Providing a fertile ground for technology intense enterprises to grow

The ten pillars

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 the Good Governance in the Energy Sector**
9. **Securing Land for Future Energy Infrastructure**
10. **Providing Opportunities for Innovation and Entrepreneurship**

An Outline of the Legal Framework

- ◆ **On-grid Renewable Energy Projects Regulation 2009 (published in Gazette No. 1599/6 of 27th April 2009 was amended)**
 - ⌚ A new regulation with new schedules was gazetted on 31 May 2011 (Gazette No.1705/22 of 10th May 2011)
- ◆ **Guidelines were formulated by SEA in association with PAC to;**
 - ⌚ Advise the Board of Management of SEA on technical, economic and environmental guidelines on granting Provisional Approval (PA) and Energy Permits (EP)
 - ⌚ Review and recommend changes in policies, plans and strategies in developing renewable energy
- ◆ **Need to overcome stalemate arising out of the prevalent regulation**
 - ⌚ Many sites in abeyance with cancelled PAs



Applying for RE Projects development

❖ Any person can apply to develop a new renewable energy (NRE) site, provided that the application is accompanied by ;

- Ⓒ A report on Pre-feasibility study carried out by a Consultant accredited by SEA, which include;
 - ⊕ A brief description of the project, including the amount of power to be generated
 - ⊕ The total estimated cost and financial model
 - ⊕ Project location, describing the relative location of energy conversion plant and equipment to the resource
 - ⊕ A sketch indicating the method of interconnecting the project to an existing point in the national grid
- Ⓒ A copy of the map of the geographical location of the proposed project,
- Ⓒ Proof of availability of adequate finances or the manner in which the required finances for the project are to be obtained,
- Ⓒ A copy of the receipt obtained from the SEA, for the payment of the prescribed application fee



Applying for RE Projects development

◆ Application fee structure amended

- Ⓢ Presently changed to reflect the process involved and also limited only to cash / bank drafts

Amount of power proposed to be generated	Fee to be paid on application and reapplication
1,000 kW or part thereof	LKR 100,000
Each additional 1,000 kW	LKR 50,000 payable on pro rata basis

Note: Projects of capacities less than 10,000 kW implemented by a single party or parties acting in concert, in parallel or in phases in a same geographical or spatial context will be considered as a single project capable of generating more than 10,000 kW of power and will not be considered unless a policy directive from the Ministry of Power & Energy is issued on that behalf



Pre-feasibility and Consultants

◆ Pre-feasibility studies will be done by a panel of accredited Consultants

@ For the technology

- ◆ Small Hydro
- ◆ Wind
- ◆ Biomass(Dendro)
- ◆ Biomass (Agricultural and Industrial Waste)
- ◆ Municipal Solid Waste
- ◆ Waste Heat Recovery
- ◆ Other: Any other NRE resource which can be converted to produce electricity which can be fed to the national grid.

- **Panel of Consultants limited to Chartered Engineers (Civil, Electrical and Mechanical only)**



Granting EP

◆ Grant PA for obtaining the approvals

- @ Completion of the approval process
- @ Apply for the EP
- @ Forward to PAC for EP approval
- @ After the PAC approval for EP
- @ Informed to pay for EP

◆ One time permit fees

- @ Less than 10MW projects : LKR500,000 per kW
- @ More than 10MW project : LKR1,000,000 per kW

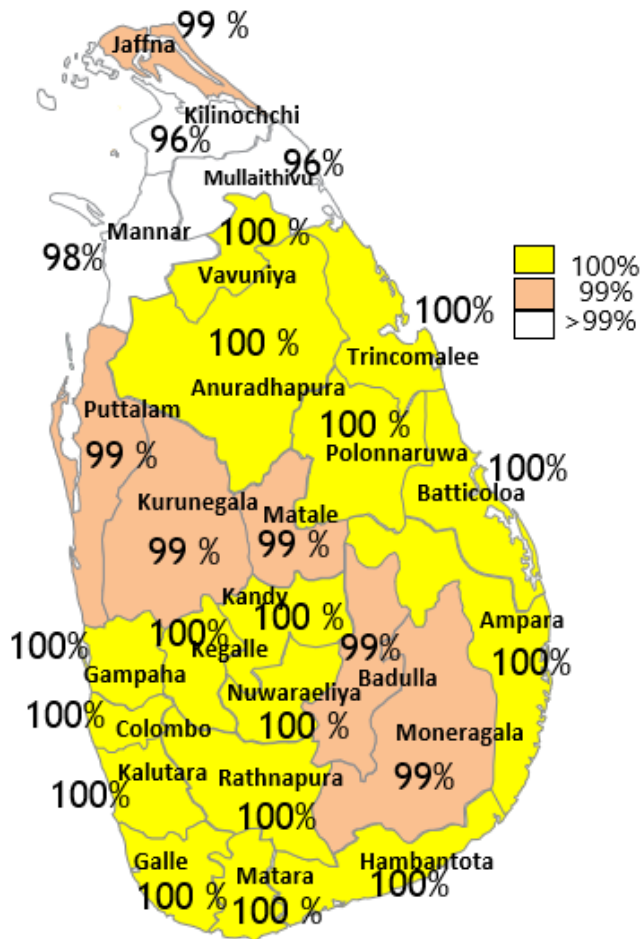


Policy Targets

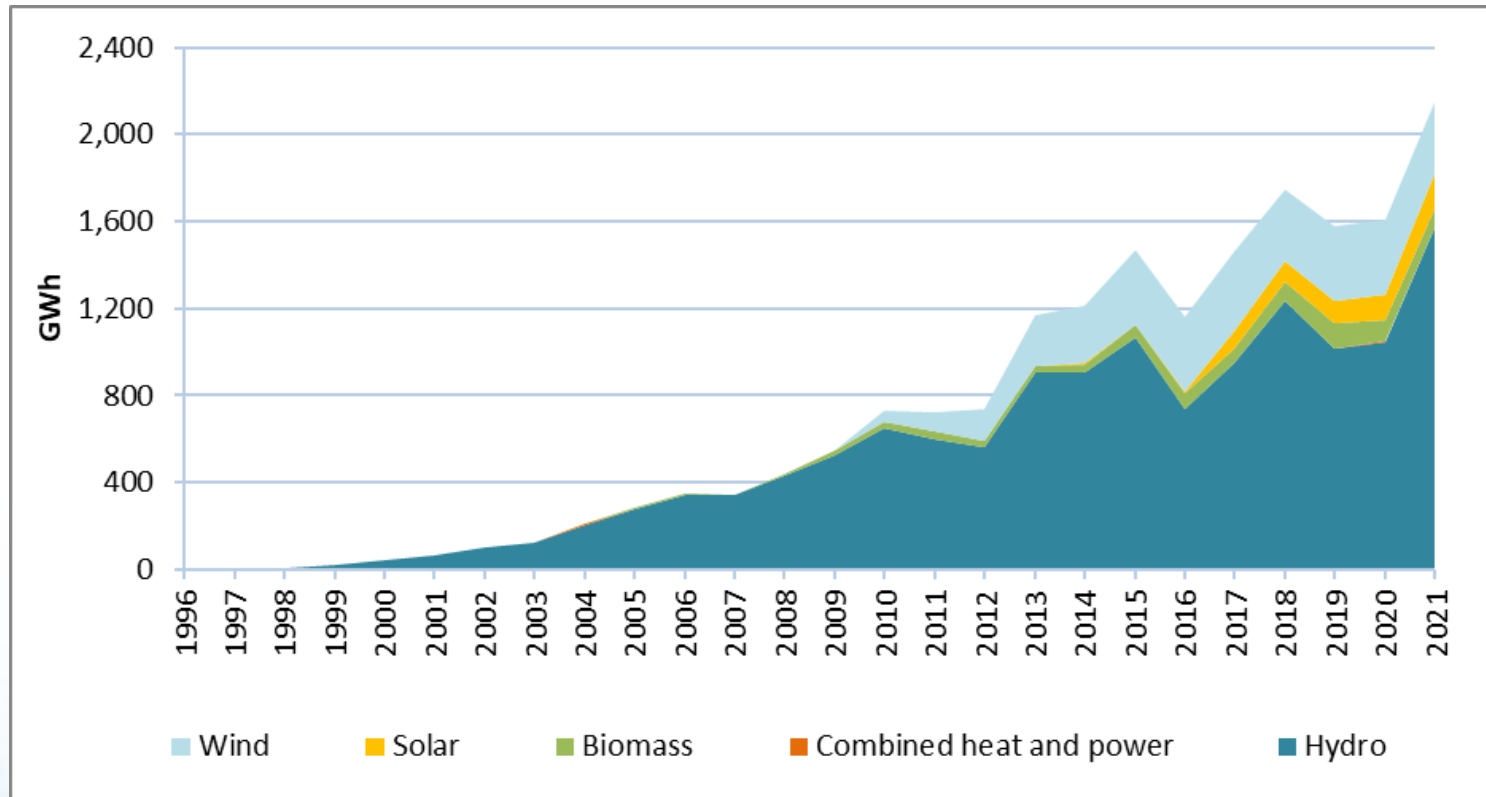
- ❖ **10% generation from NRE by 2016 (achieved in 2015) in energy policy 2008**
- ❖ **100% electrification by 2020 (achieved in 2016)**
- ❖ **70% by 2030 (clean energy target)**
- ❖ **Clean and modern cooking fuels (improved wood fuel cookers to increase penetration by 10%)**
- ❖ **Carbon neutrality by 2050**

Households with Grid Electricity 99.8%

The number of households with grid electricity connections include almost all remote villages. Some homes in isolate islands and homes where occupants have declined to be connected remain outside the national grid.



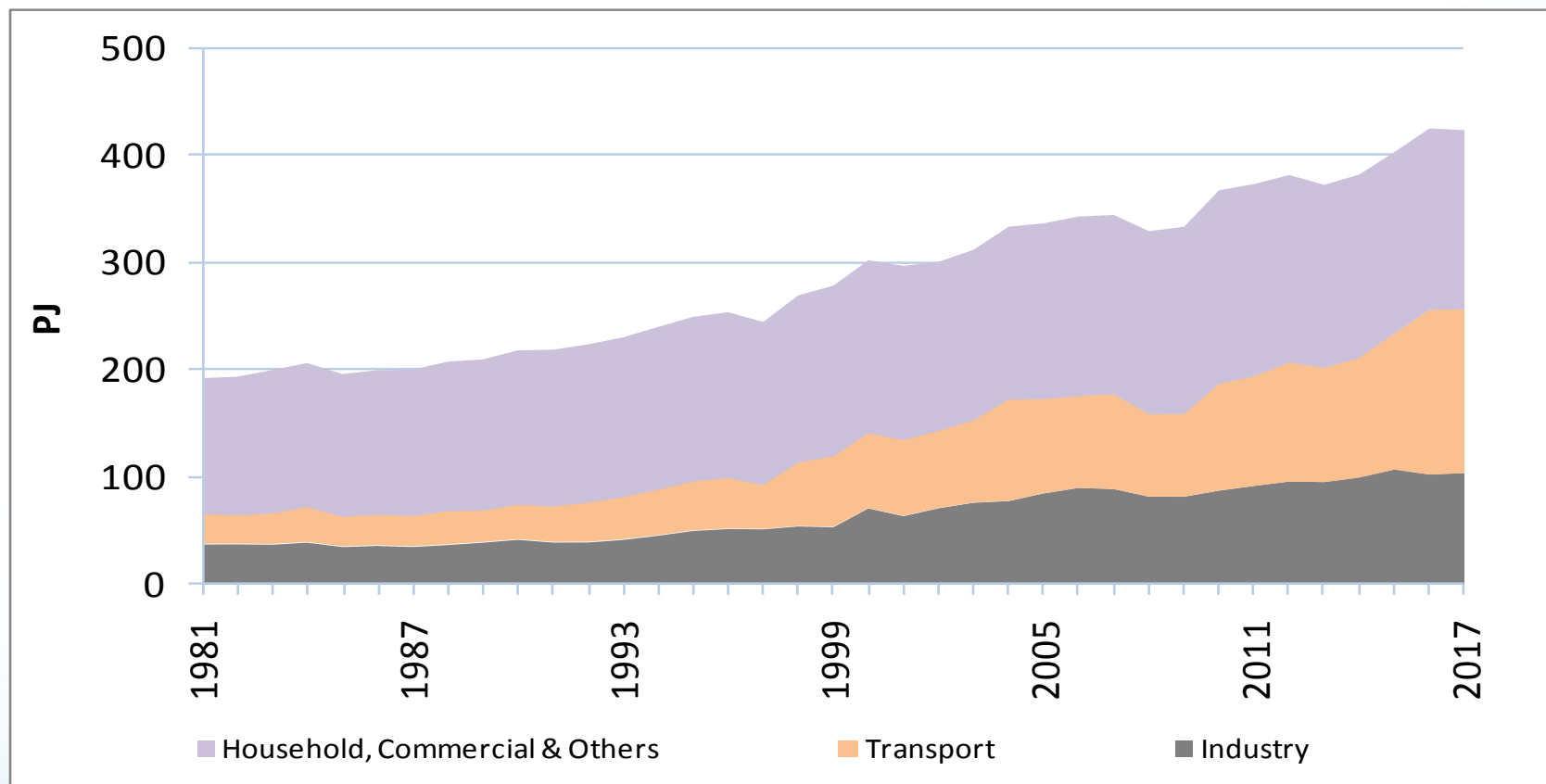
Growth 1996 - 2023



Renewable Energy Capacity Addition up to 2023

Resource	Capacity (MW)
Mini Hydro	434
Wind	265
Ground Mounted Solar	140
Biomass	63.5
Rooftop Solar	742
Total	1644.5

Energy Demand Growth



A Simple Intervention

❖ Sooryabala Sangrama

- @ 780MW on rooftops
- @ 400+ companies (mostly startups)
- @ 12,000 employed (8,500 direct + 3,500 indirect)
- @ 1 Panel manufacturing company

❖ **47,000+ installations with total capacity 780MW**

- @ Estimated contribution 1,000GWh / year
- @ Approximately 6.8% of total generation required



Sri Lanka
Sustainable Energy Authority



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	434	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)	944	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
Total (MW) (Storage Excluded)	3,074	3,812	5,030	5,723	6,518	7,283	8,108	8,819	5,811
Total Expected Additions in the each year – (MW)		804	1,218	693	795	765	825	711	

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

Challenges

❖ **Technical Challenges in terms of inadequacy of the grid in Renewable Energy integration.**

❖ **Seasonality**

- ⌚ Hydro related to Monsoons
- ⌚ Wind related o Monsoons
- ⌚ Biomass – Labour supply, Harvesting seasons
- ⌚ Solar – Day & Night

❖ **Energy on Demand**

- ⌚ Requires Storage solutions
- ⌚ Hydro Reservoirs/Pump Hydro solutions
- ⌚ Cost effective batteries

Challenges...

◆ Social Issues

- Ⓢ All most all power projects are opposed by various groups
 - ⊕ Conflict with wildlife and Forest
 - ⊕ Conflict with Villagers
 - ⊕ Conflicting demand for Natural Resources
 - ⊕ Land Constraints
 - ⊕ Agriculture vs. Power Generation



RET opportunities in other sectors

❖ **Agrovoltaics – combining controlled agriculture with renewable energy technologies**

- Ⓢ Largescale deployment of modern agricultural technologies
- Ⓢ Saving water, space and labour
- Ⓢ Reducing the use of fertilizer and pest control substances

❖ **Agricultural water pumping**

- Ⓢ In support of traditional agriculture, now dependent on large volume diesel / kerosene water pumps

Biomass energy

- ❖ **A good potential to be developed**
- ❖ **Power generation from fuelwood**

W2E in agriculture

◆ Biogas systems are widely available

- Ⓢ In smaller scale applications
- Ⓢ Need large scale technologies, especially storage and refining

Next frontiers and opportunities

- ◆ Energy transition
- ◆ New energy sources and carriers
- ◆ Energy storage solutions
- ◆ Fuel switching
- ◆ Smart grids and demand response
- ◆ Advance forecasting
- ◆ Super efficient appliances
- ◆ Resource development

Future energy policies

❖ Will have to embrace an even more complex and dynamic environment

- @ Climate change?
- @ Regional cooperation?
- @ Energy independence?
- @ Emergence of electricity and decline of oil as the dominant energy vector?



RENEWABLE ENERGY RESOURCE DEVELOPMENT PLAN

2021-2026



SRI LANKA SUSTAINABLE ENERGY AUTHORITY



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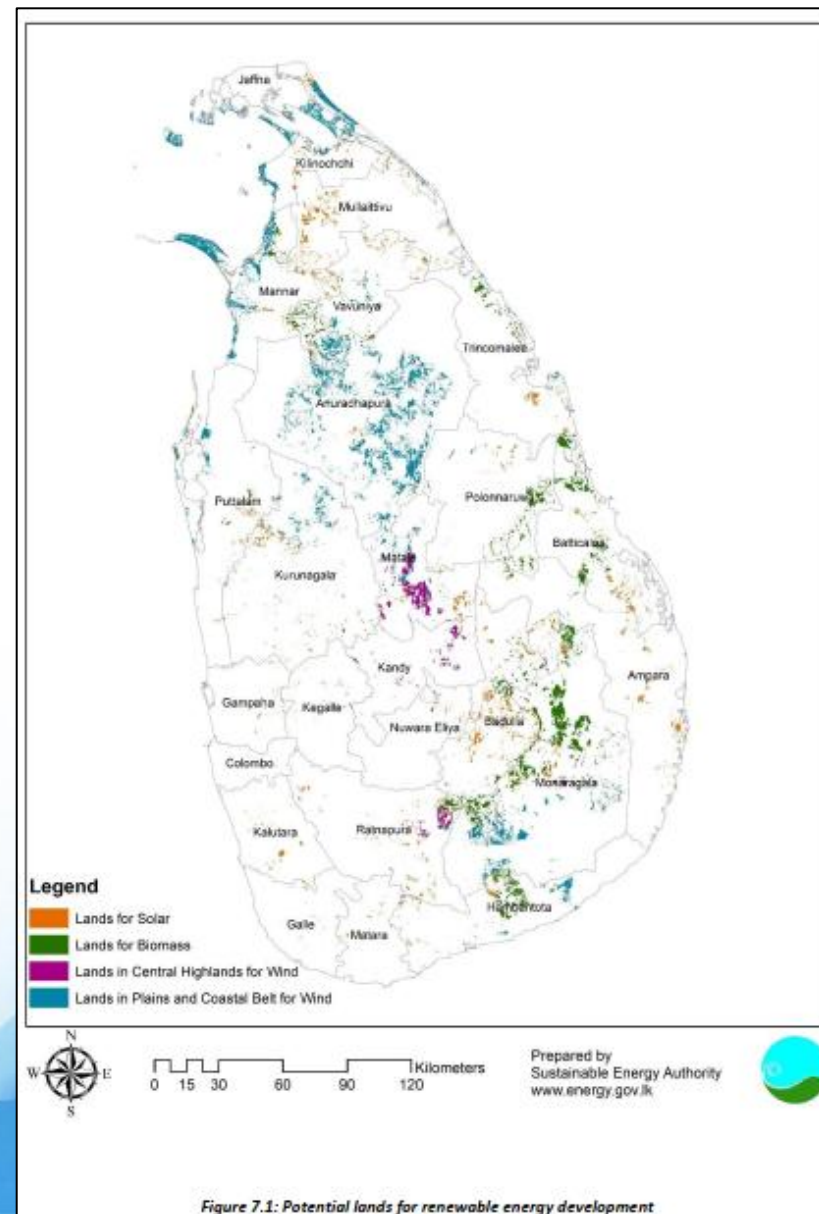
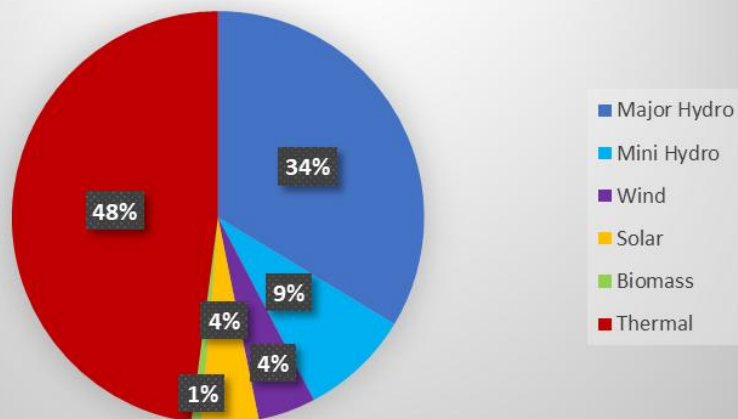


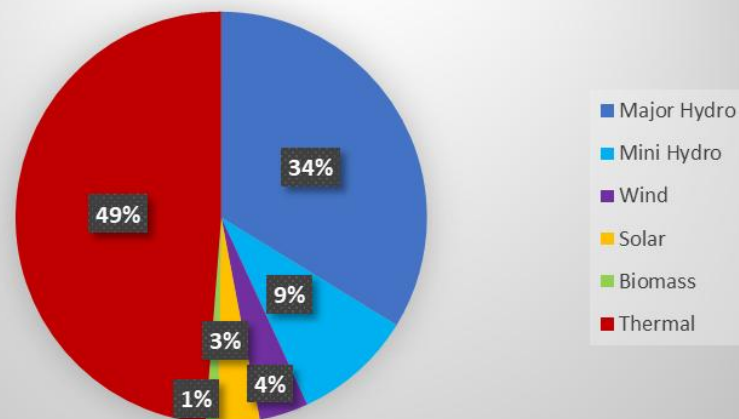
Figure 7.1: Potential lands for renewable energy development

Electricity Generation in 2022 and the RE Share50%

Electricity Generation (2022)



Electricity Generation (2021)



 **Thank You**