RENEWABLE GENERATION REPORT

Quarter 01

JAN 2024 – MAR 2024

Public Utilities Commission of Sri Lanka

www.pucsl.gov.lk

Introduction:

This report offers comprehensive insights into the quarterly performance of renewable energy generation in Sri Lanka. The data and analysis presented herein aim to guide investment decisions within the country's electricity sector. The main focus is on Non-Conventional Renewable Energy (NCRE) sources, including Mini Hydro, Wind, Solar PV, Biomass, and Municipal Solid Waste.

Most solar PV systems tend to be either utility-scale installations with a capacity usually above 1 megawatt (MW) or rooftop PV typically below 1 MW. Residences may be limited to small systems usually up to 20 kilowatts (kW), while larger public, commercial, and industrial buildings may have systems with a capacity as large as 1 MW or even more. Land based wind power projects have been implemented so far while offshore wind projects are considered in the pipeline.

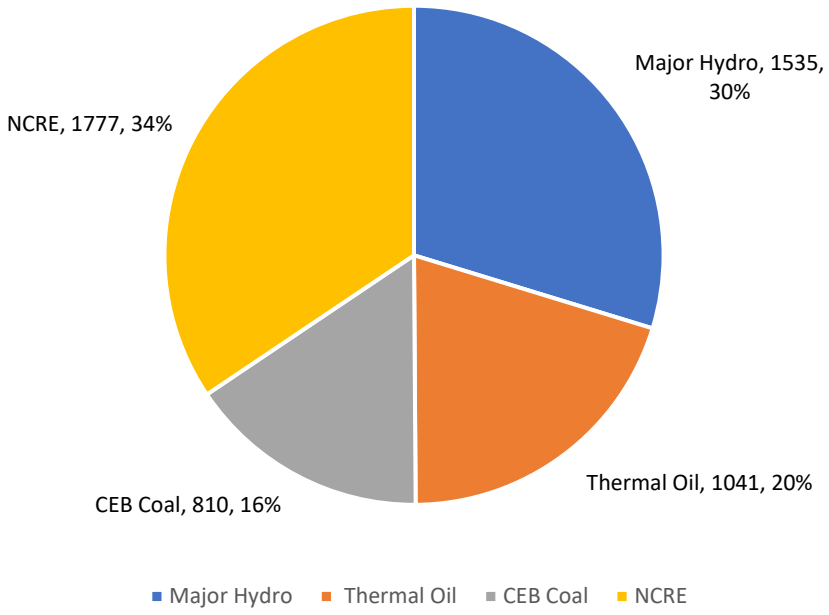
In 2019, the Minister of Power, Energy, and Business Development published the National Energy Policy & Strategies of Sri Lanka, prepared after reviewing and revising the National Energy Policy and Strategies of Sri Lanka published in the Gazette Extraordinary No. 1553/10 of 10.06.2008. The primary objective of the energy policy is to ensure energy security through supplies that are cleaner, secure, economical, and reliable, and to provide convenient, affordable energy services to support the socially equitable development of Sri Lanka.

Policy guidelines such as the 'General Policy Guidelines on the Electricity Industry' as required under Sri Lanka Electricity Act No. 20 of 2009 statutorily required to be issued for each sub-sector, are expected to be prepared and issued, based on this national energy policy.

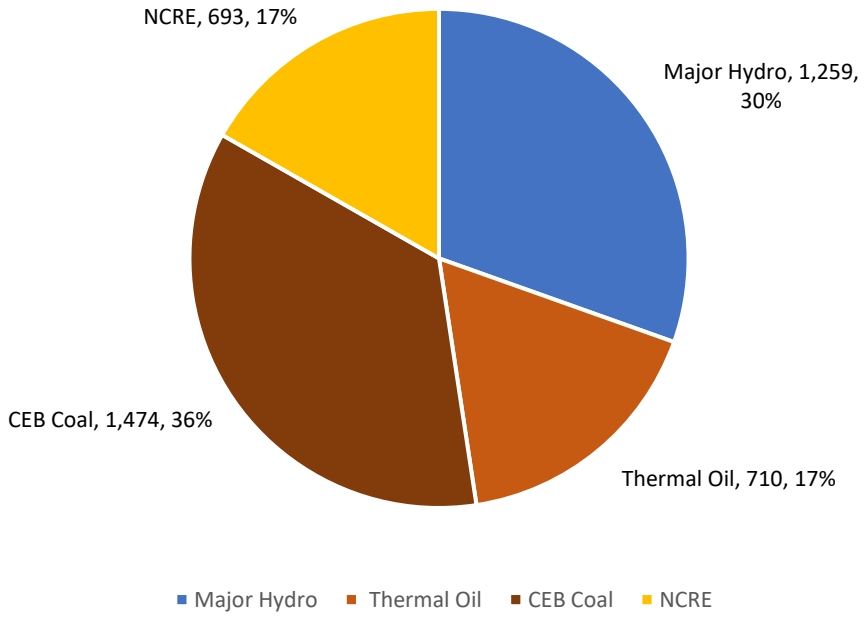
Sri Lanka's power sector development is carried out based on the Long-term generation expansion plan (LTGEP) prepared by the Transmission Licensee (ie. Ceylon Electricity Board (CEB)) and approved by the Public Utilities Commission of Sri Lanka (PUCSL). LTGEP is a rolling plan prepared in every two years incorporating the changes introduced by the varying economic and technical parameters used in the planning process.

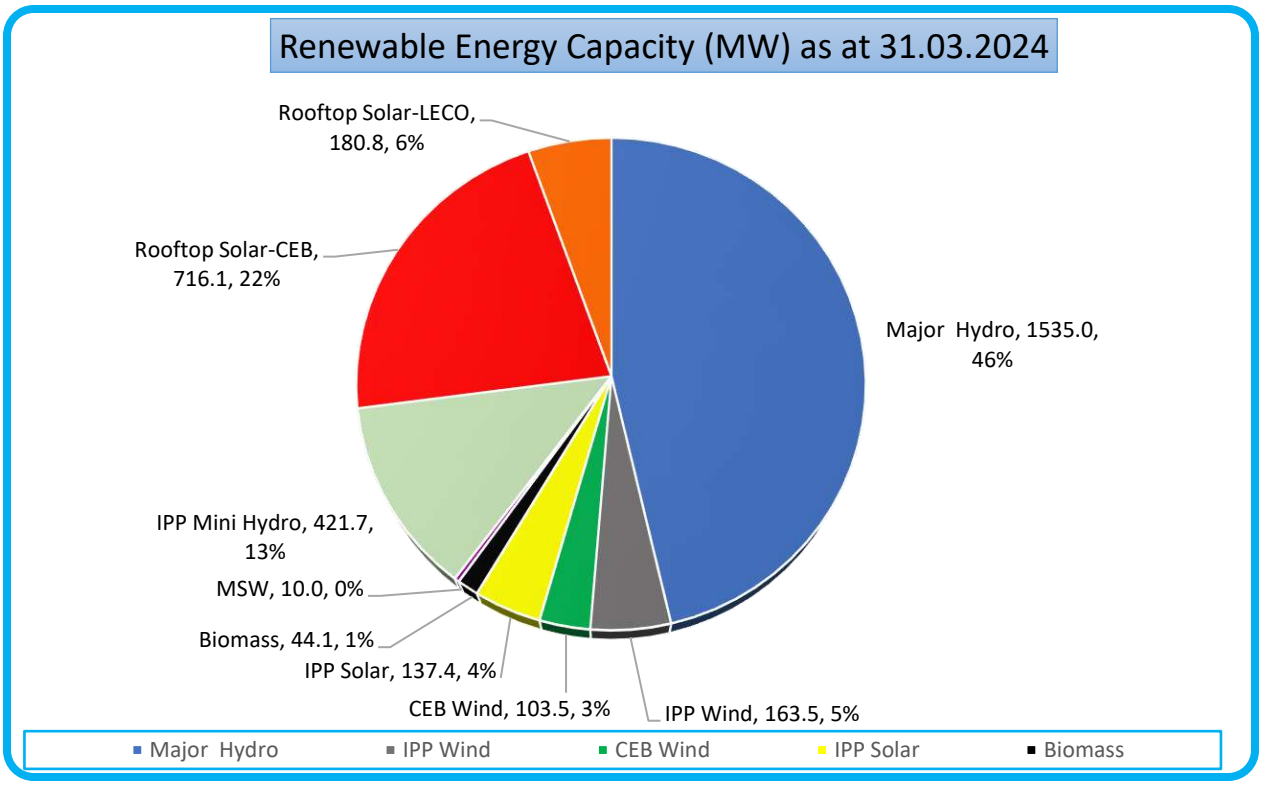
Target: To increase the renewable energy (RE) share from 50% to 70% by 2030.

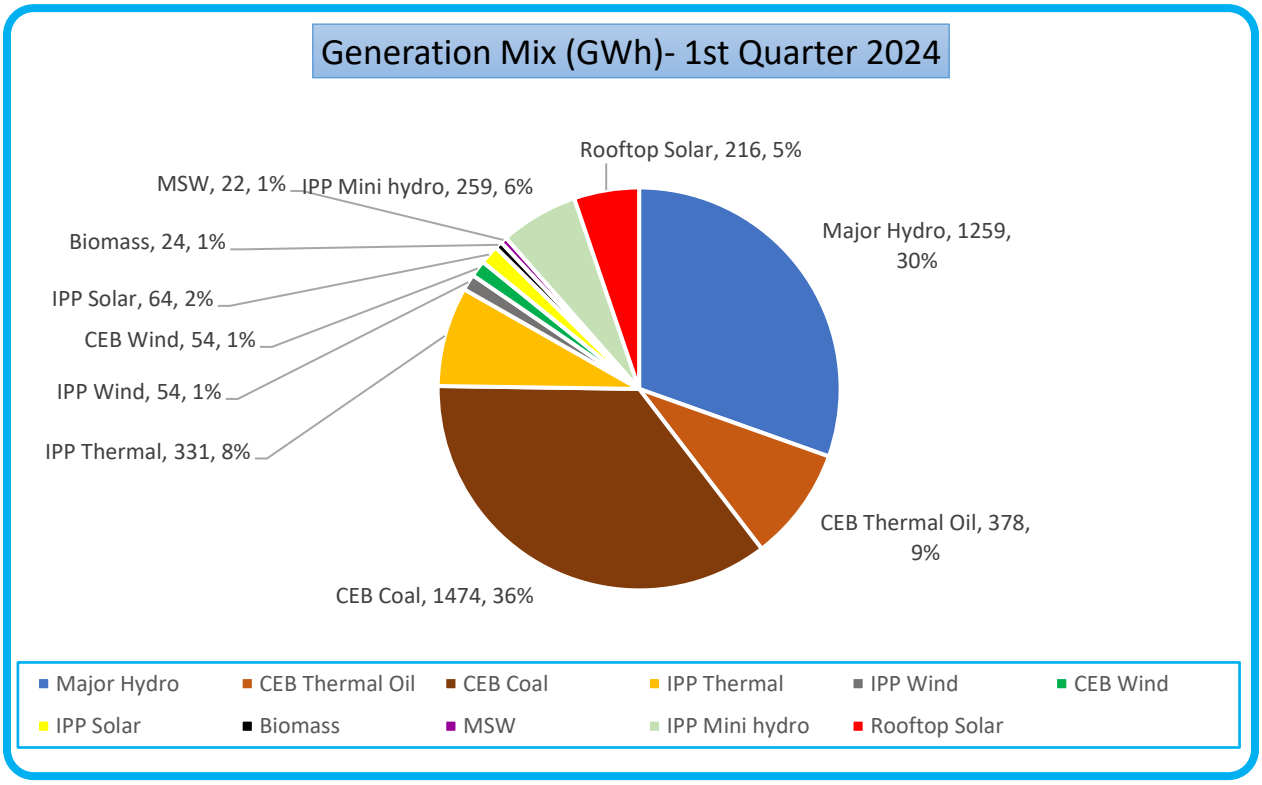
Installed Capacity (MW) by Source - as at 31.03.2024

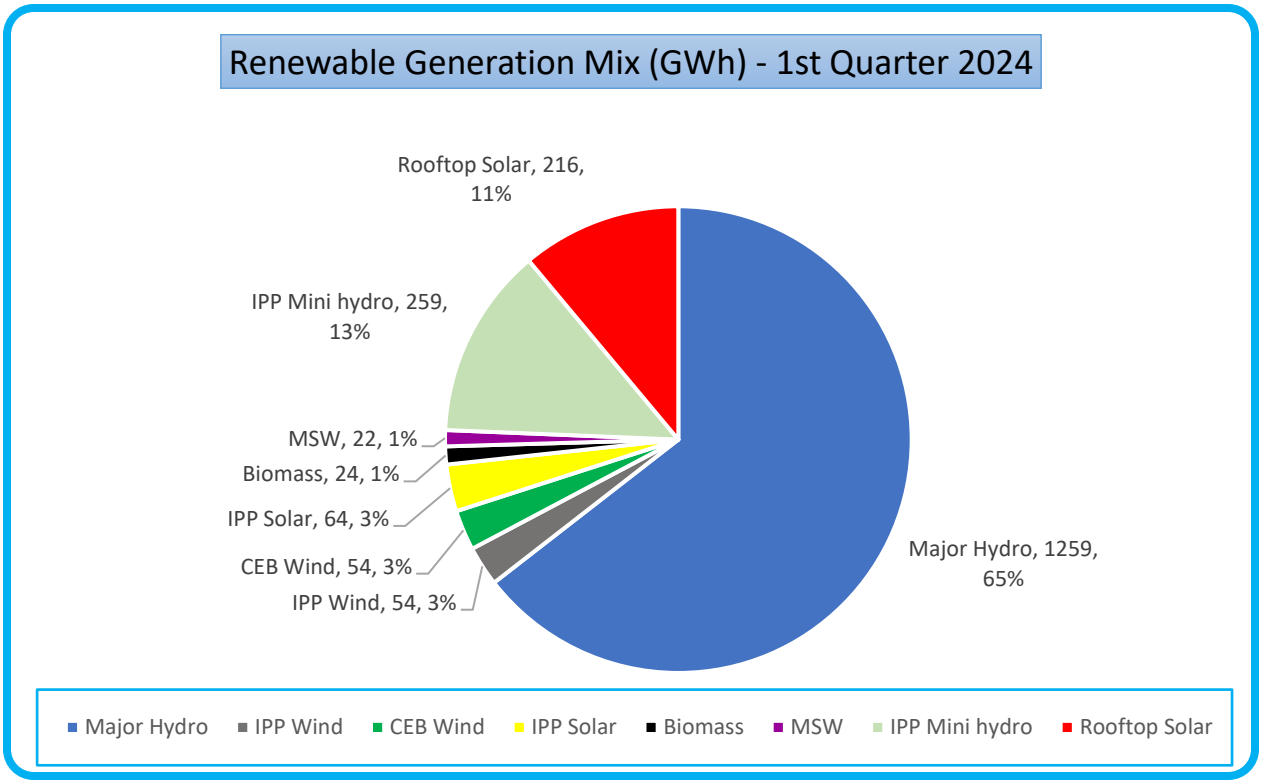


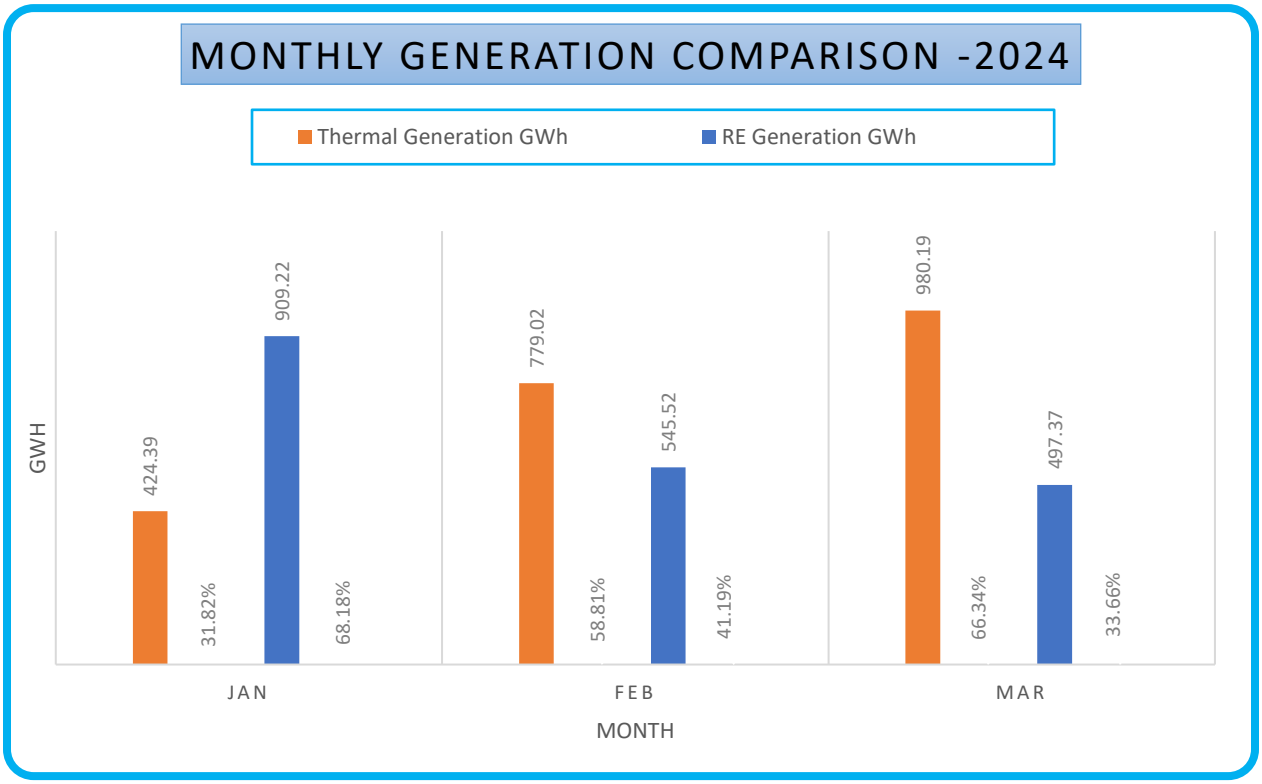
Generation by Source (GWh) - 01.01.2024 to 31.03.2024

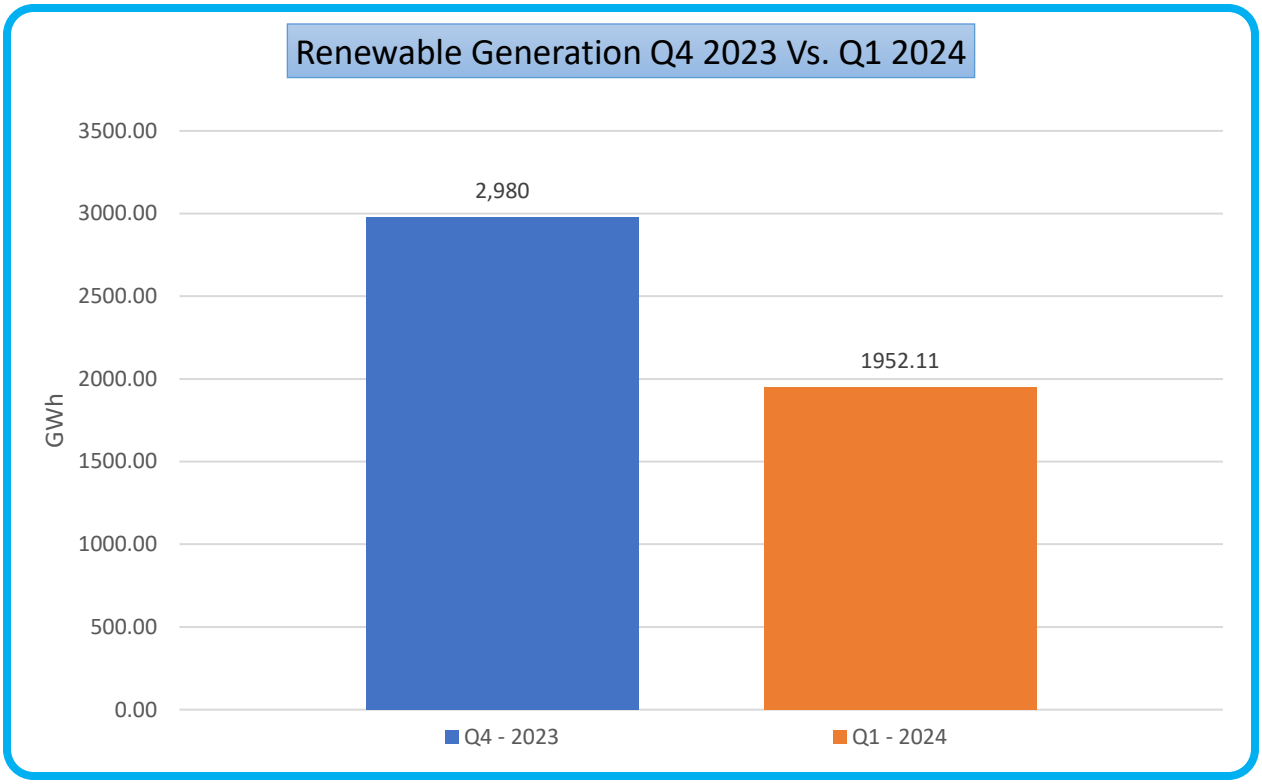



Renewable Energy Capacity (MW) as at 31.03.2024
Rooftop Solar-LECO, 180.8, 6%
Rooftop Solar-CEB, 716.1, 22%
Major Hydro, 1535.0, 46%
IPP Mini Hydro, 421.7, 13%
MSW, 10.0, 0%
Biomass, 44.1, 1%
IPP Solar, 137.4, 4%
CEB Wind, 103.5, 3%
IPP Wind, 163.5, 5%
Major Hydro
IPP Wind
CEB Wind
IPP Solar
Biomass


Generation Mix (GWh)- 1st Quarter 2024
Rooftop Solar, 216, 5%
MSW, 22, 1%
IPP Mini hydro, 259, 6%
Biomass, 24, 1%
IPP Solar, 64, 2%
CEB Wind, 54, 1%
IPP Wind, 54, 1%
IPP Thermal, 331, 8%
Major Hydro, 1259, 30%
CEB Thermal Oil, 378, 9%
CEB Coal, 1474, 36%
Major Hydro
CEB Thermal Oil
CEB Coal
IPP Thermal
IPP Wind
CEB Wind
IPP Solar
Biomass
MSW
IPP Mini hydro
Rooftop Solar


Renewable Generation Mix (GWh) - 1st Quarter 2024
Rooftop Solar, 216, 11%
IPP Mini hydro, 259, 13%
MSW, 22, 1%
Biomass, 24, 1%
IPP Solar, 64, 3%
CEB Wind, 54, 3%
IPP Wind, 54, 3%
Major Hydro, 1259, 65%
Major Hydro
IPP Wind
CEB Wind
IPP Solar
Biomass
MSW
IPP Mini hydro
Rooftop Solar

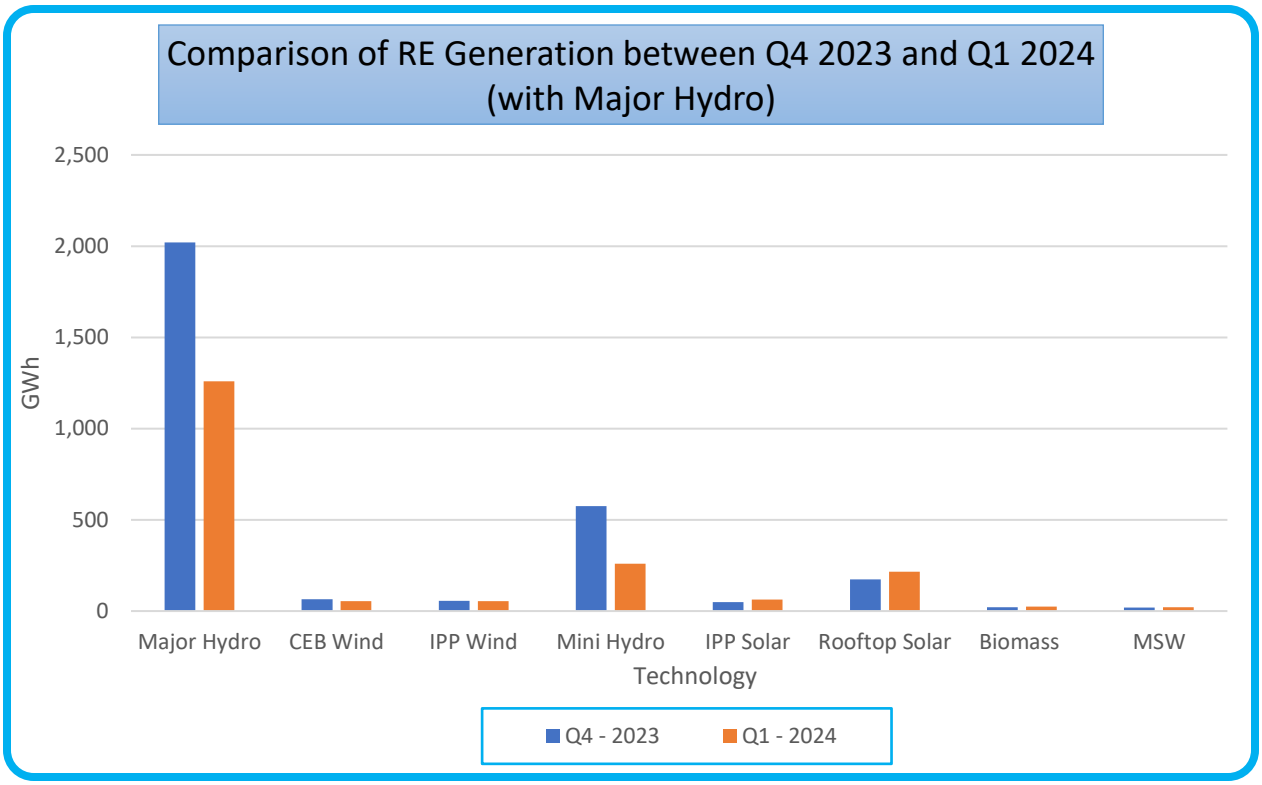

MONTHLY GENERATION COMPARISON -2024
Thermal Generation GWh
RE Generation GWh
GWH
424.39
31.82%
909.22
68.18%
779.02
58.81%
545.52
41.19%
980.19
66.34%
497.37
33.66%
JAN
FEB
MAR
MONTH

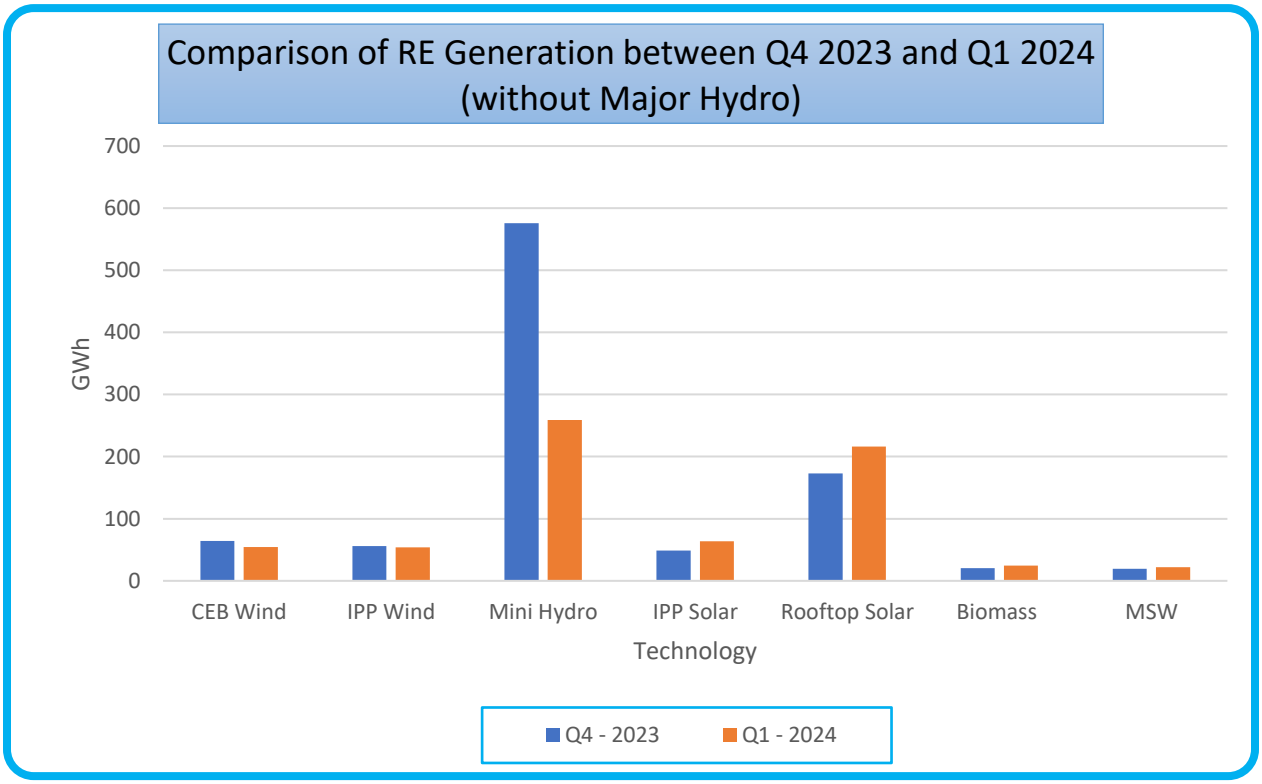


RE Generation in Q1 - 2024 decreased by 41.7% as compared to Q4 – 2023

Renewable Generation (GWh) – 4th Quarter 2023 Vs 1st Quarter 2024

Technology	Q4 - 2023	Q1 - 2024	Deviation (%)
Major Hydro	2,021	1,259	-38%
CEB Wind	64	54	-16%
IPP Wind	56	54	-4%
Mini Hydro	576	259	-55%
IPP Solar	49	64	30%
Rooftop Solar	173	216	25%
Biomass	21	24	19%
MSW	20	22	11%

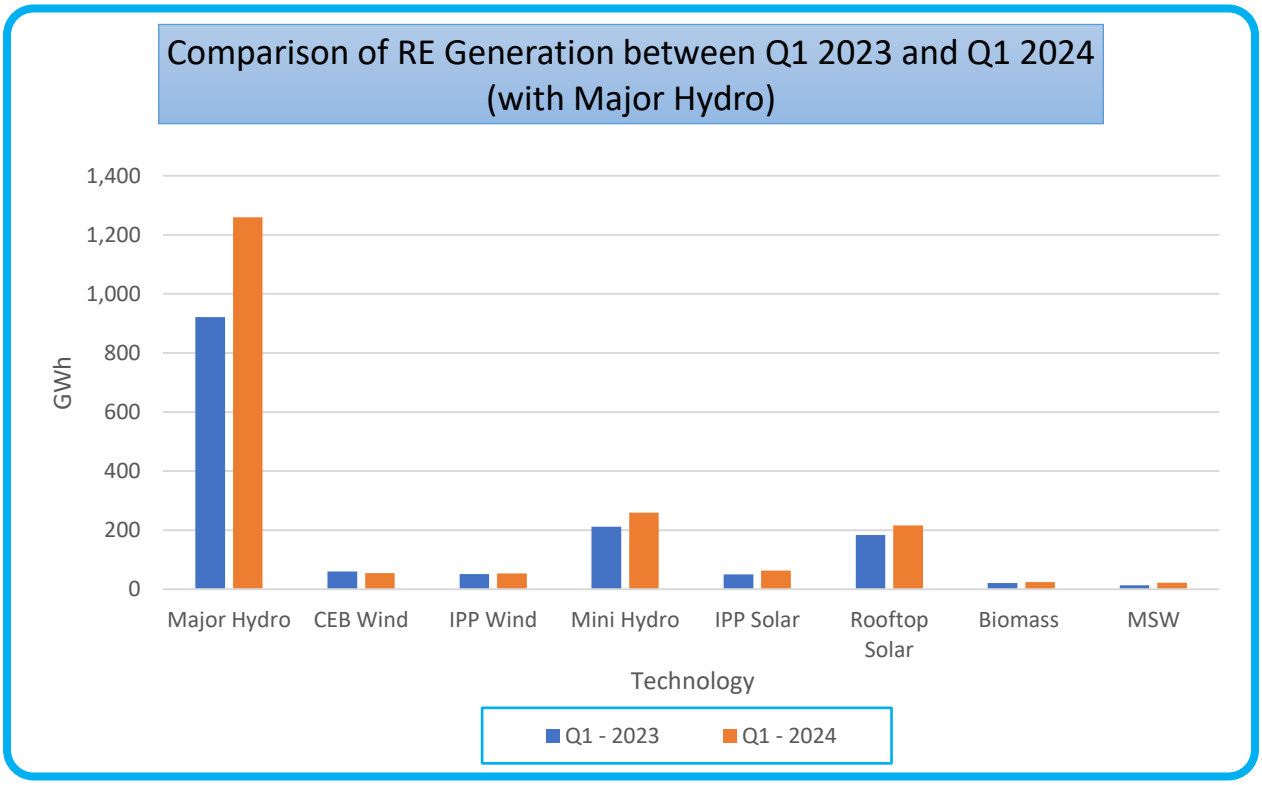

Comparison of RE Generation between Q4 2023 and Q1 2024 (with Major Hydro)
2,500
2,000
1,500
1,000
500
0
GWh
Major Hydro
CEB Wind
IPP Wind
Mini Hydro
IPP Solar
Rooftop Solar
Biomass
MSW
Technology
Q4 - 2023
Q1 - 2024

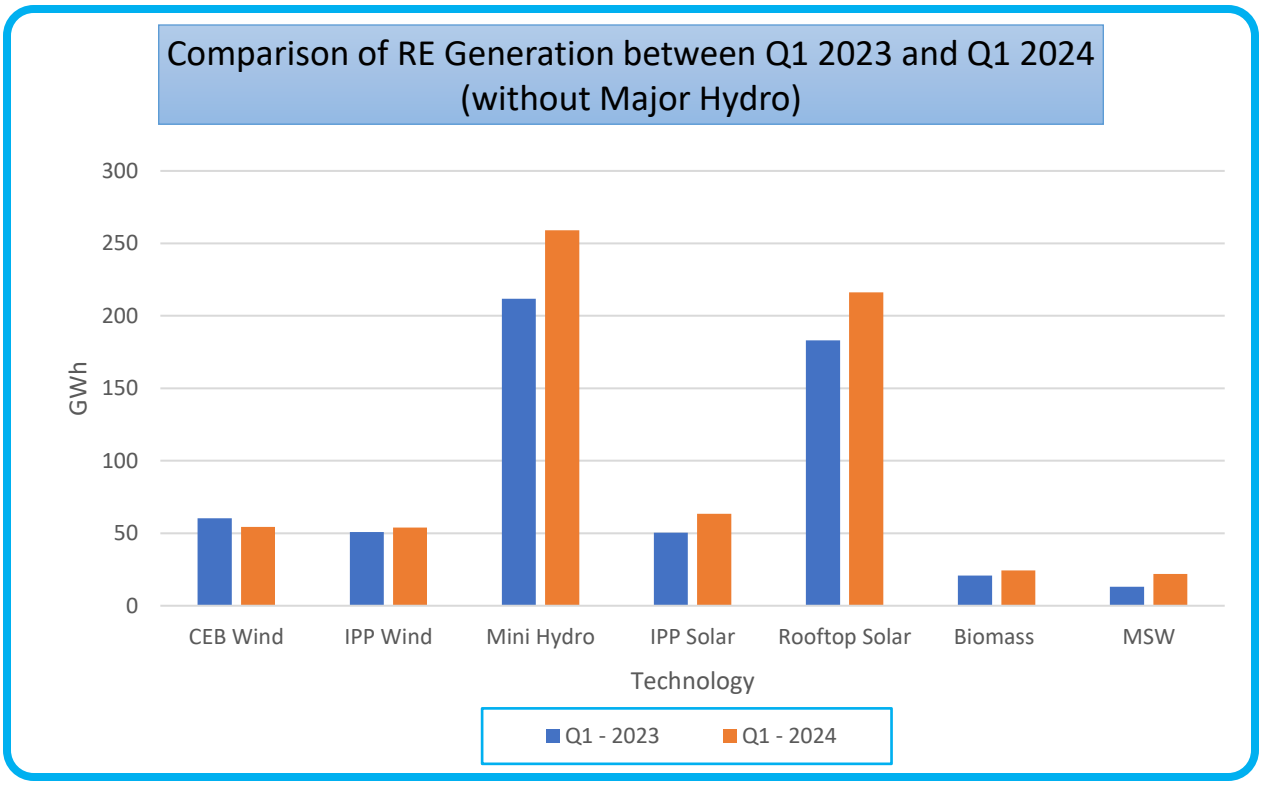

Comparison of RE Generation between Q4 2023 and Q1 2024 (without Major Hydro)
700
600
500
400
300
200
100
0
GWh
CEB Wind
IPP Wind
Mini Hydro
IPP Solar
Rooftop Solar
Biomass
MSW
Technology
Q4 - 2023
Q1 - 2024

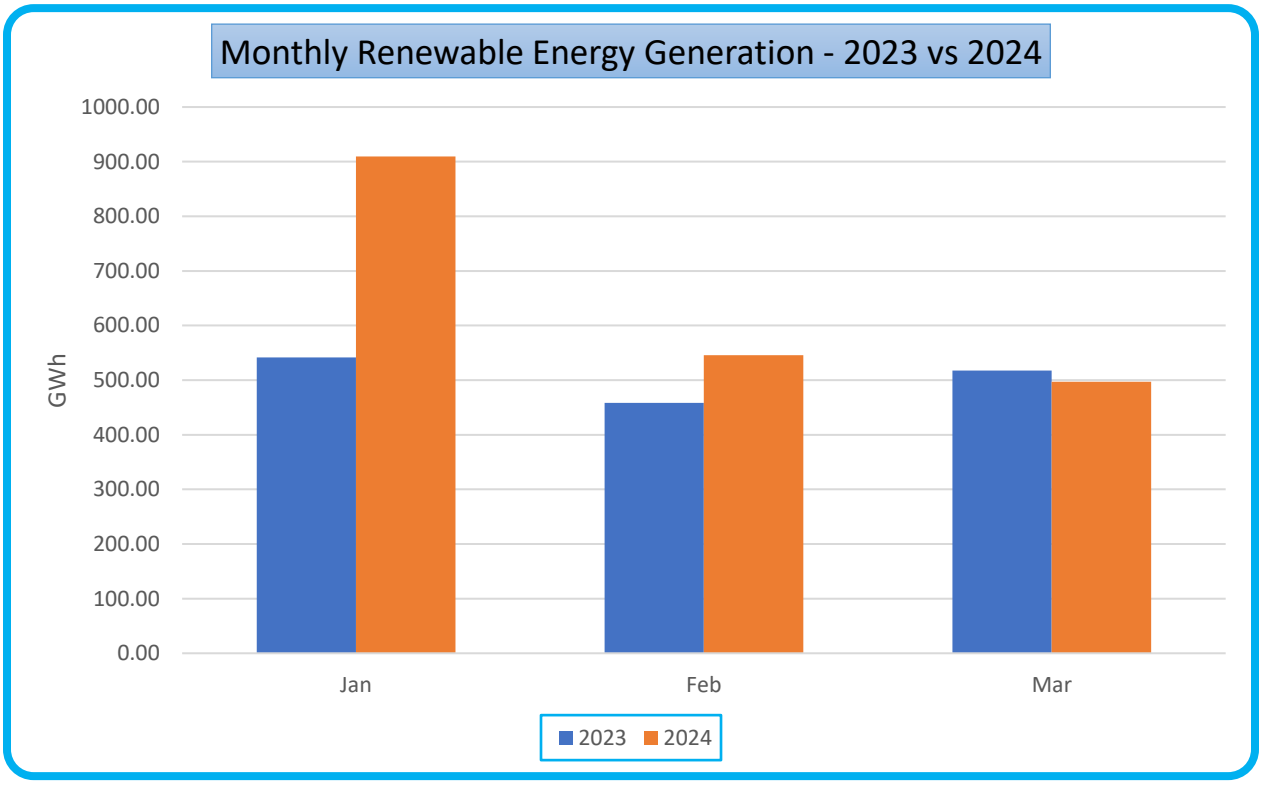
Renewable Generation Comparison

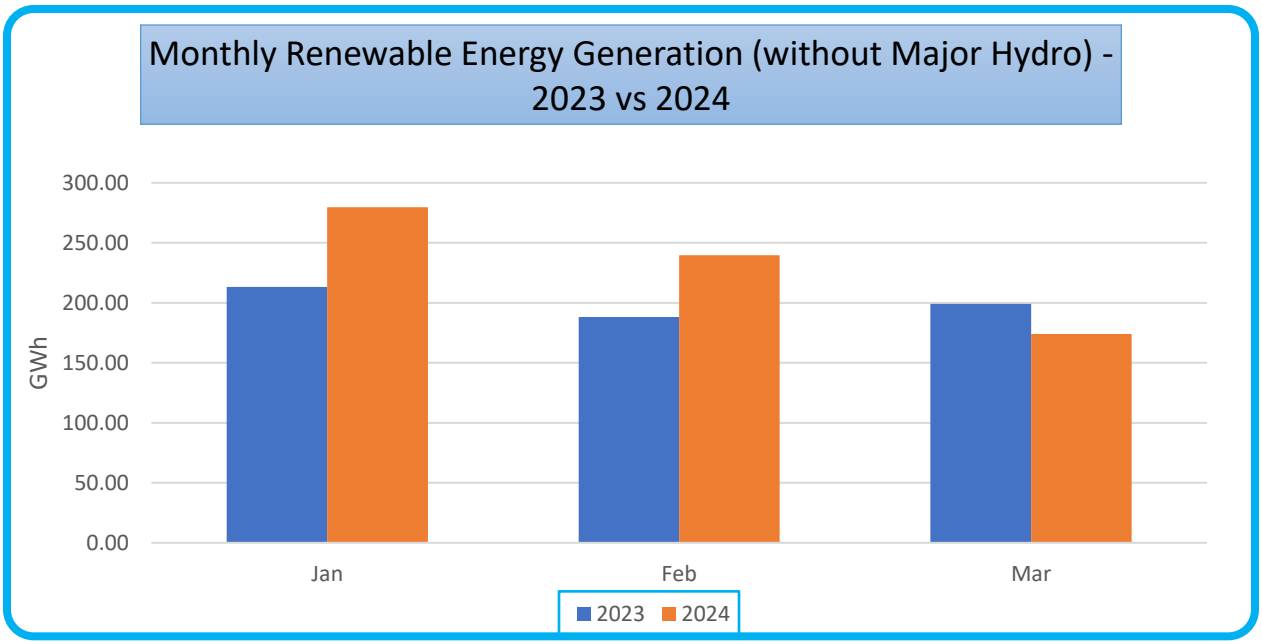
Renewable Generation (GWh) – 1st Quarter 2023 vs 1st Quarter 2024

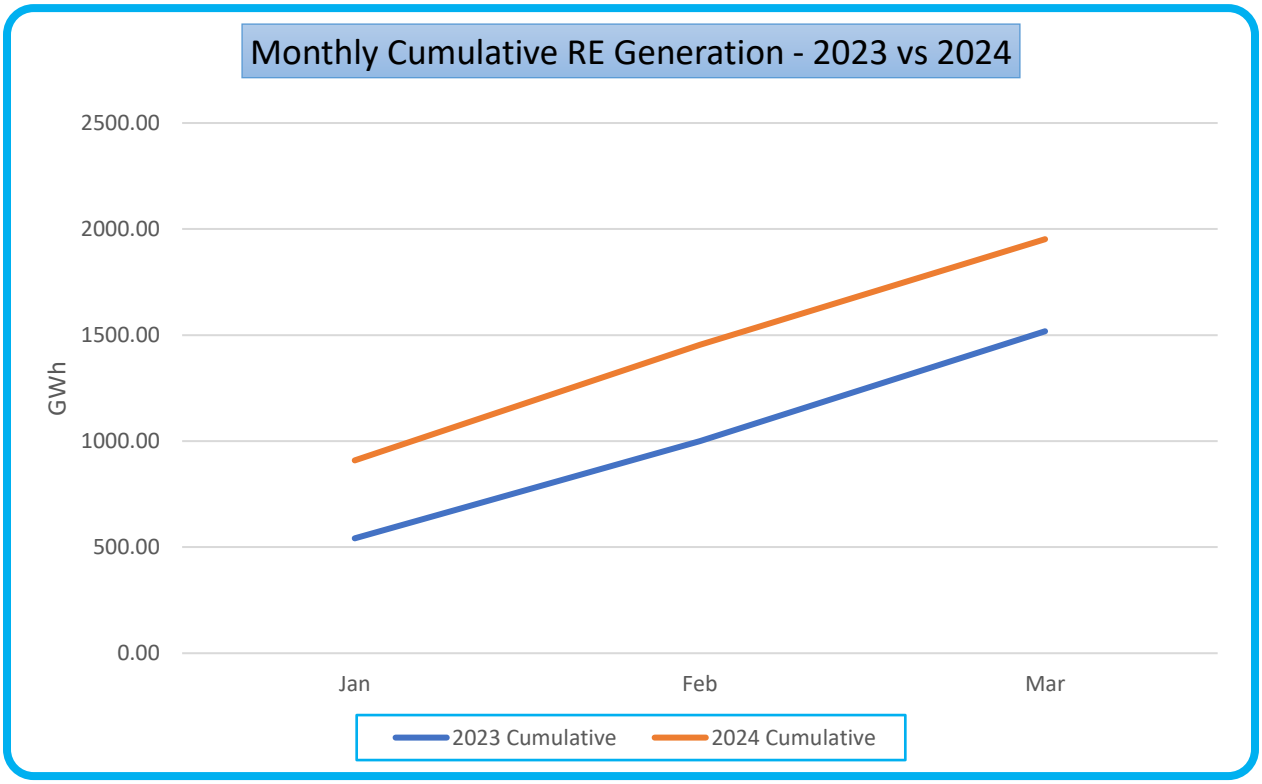
Technology	Q1 - 2023	Q1 - 2024	Deviation
Major Hydro	921	1,259	37%
CEB Wind	60	54	-10%
IPP Wind	51	54	6%
Mini Hydro	212	259	22%
IPP Solar	50	64	26%
Rooftop Solar	183	216	18%
Biomass	21	24	17%
MSW	13	22	66%



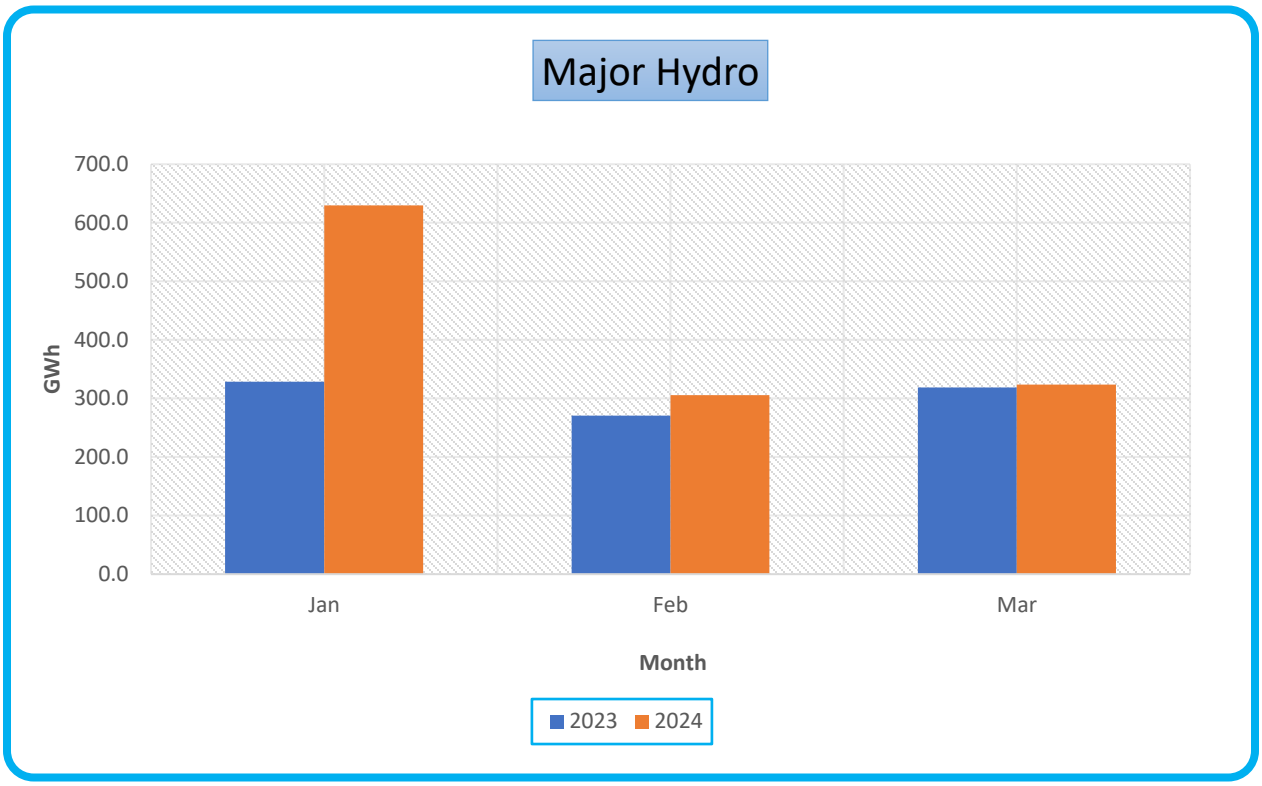

Comparison of RE Generation between Q1 2023 and Q1 2024 (without Major Hydro)
300
250
200
150
100
50
0
GWh
CEB Wind
IPP Wind
Mini Hydro
IPP Solar
Rooftop Solar
Biomass
MSW
Technology
Q1 - 2023
Q1 - 2024

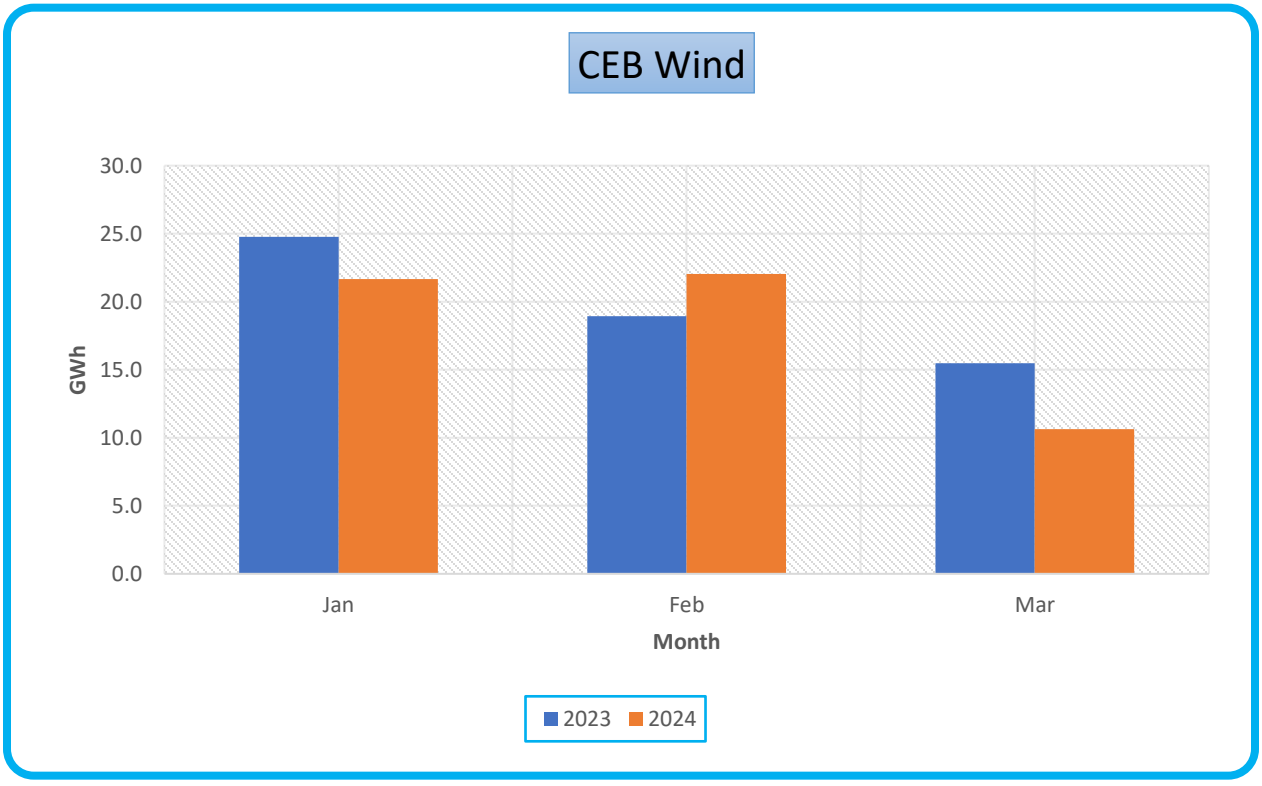

Monthly Renewable Energy Generation - 2023 vs 2024
1000.00
900.00
800.00
700.00
600.00
500.00
400.00
300.00
200.00
100.00
0.00
GWh
Jan
Feb
Mar
2023
2024

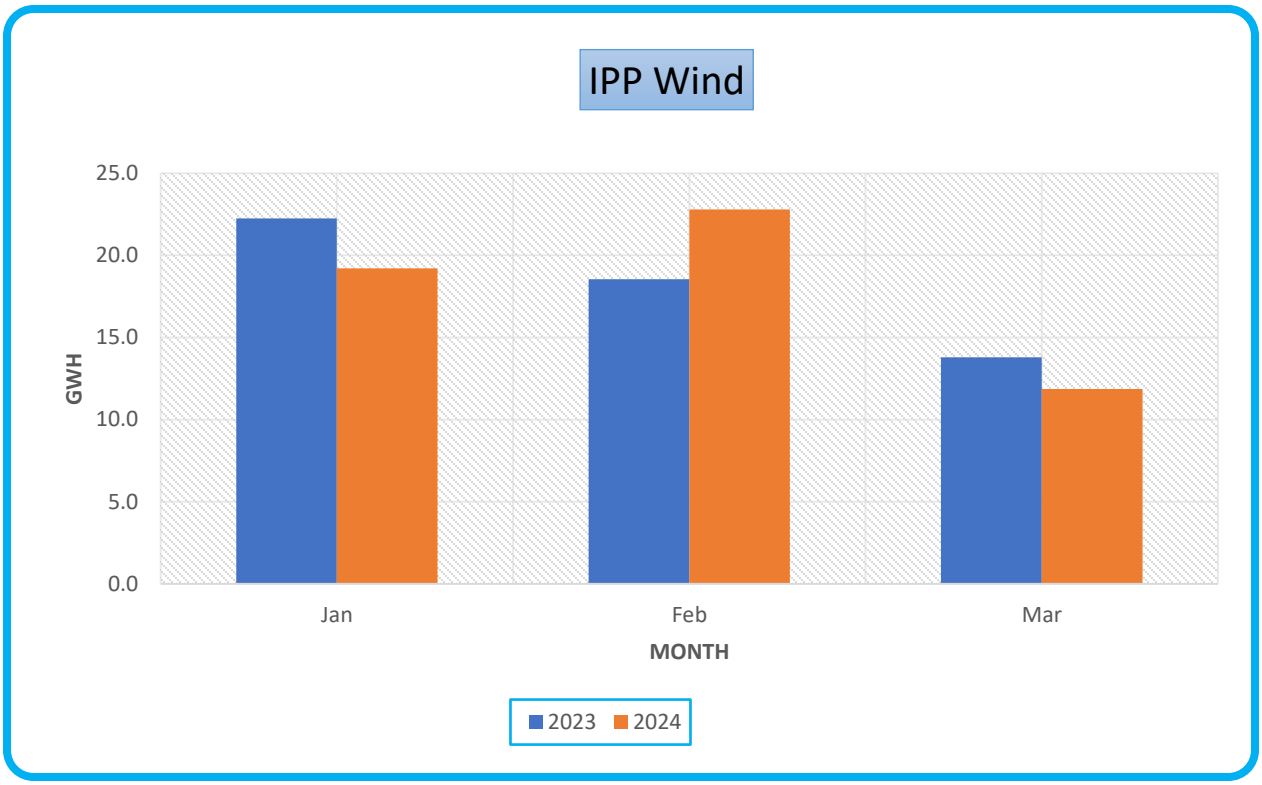

Monthly Renewable Energy Generation (without Major Hydro) - 2023 vs 2024
300.00
250.00
200.00
150.00
100.00
50.00
0.00
GWh
Jan
Feb
Mar
2023
2024

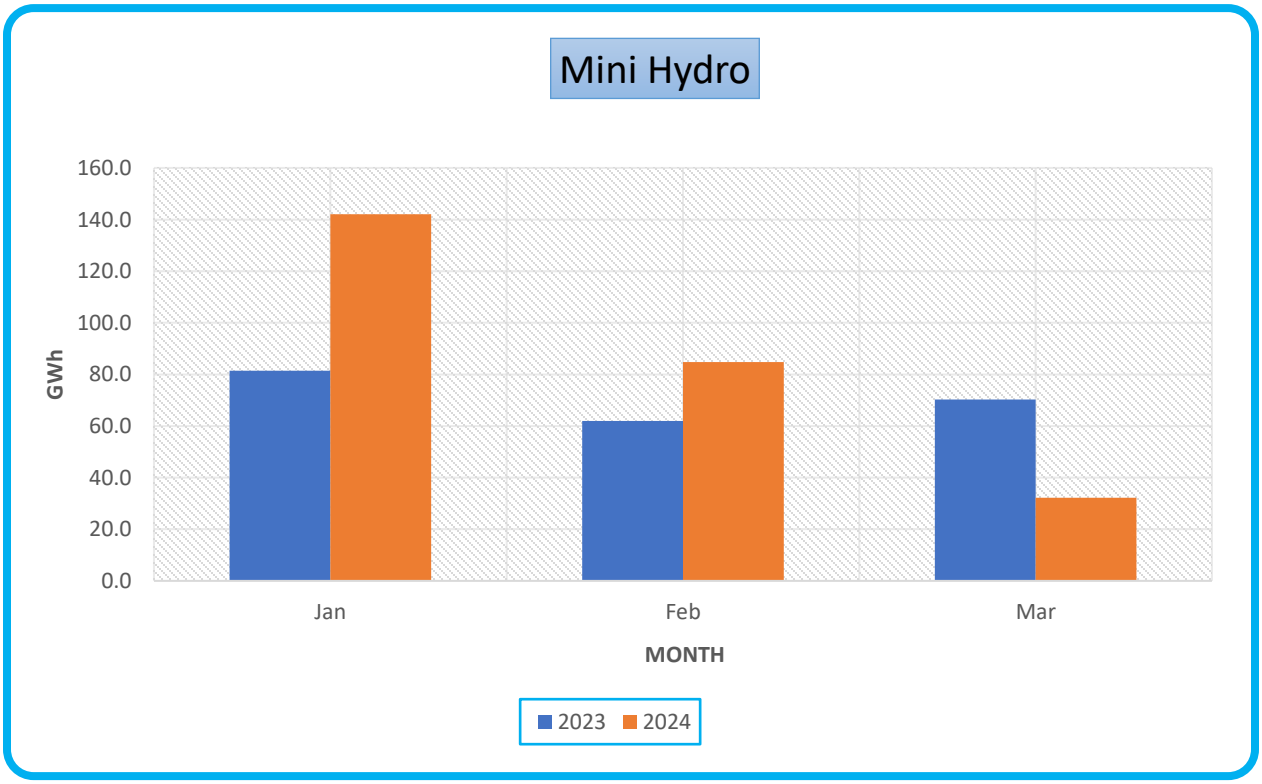

Monthly Cumulative RE Generation - 2023 vs 2024
2500.00
2000.00
1500.00
1000.00
500.00
0.00
GWh
Jan
Feb
Mar
2023 Cumulative
2024 Cumulative

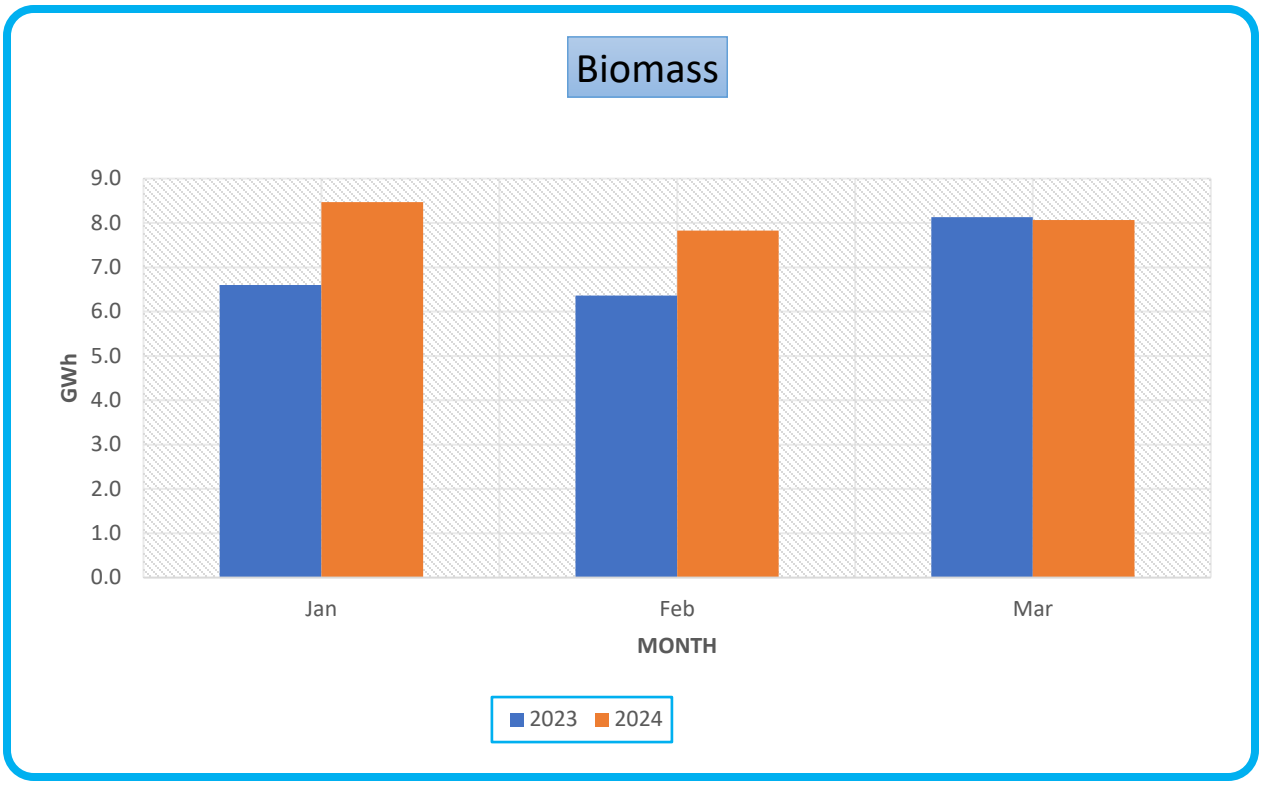
Monthly Variation of RE Generation - 2023 vs 2024 – Technology Wise

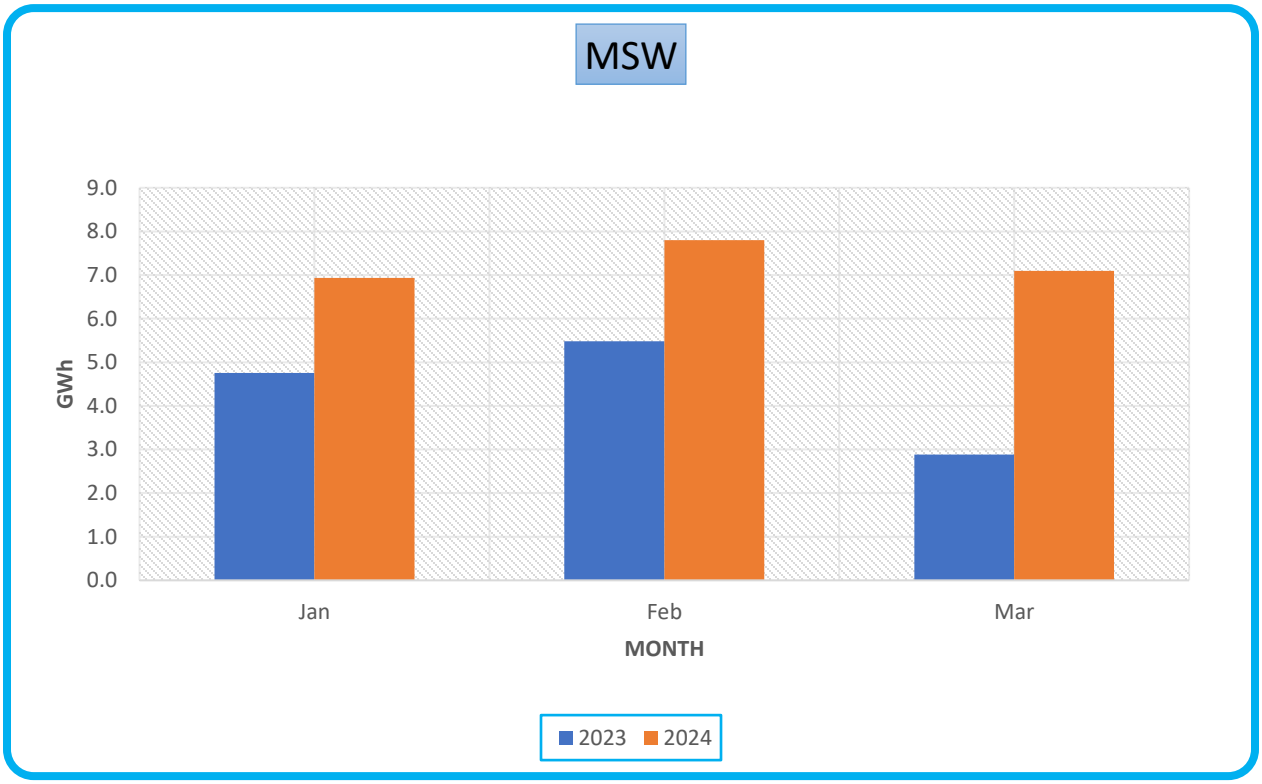


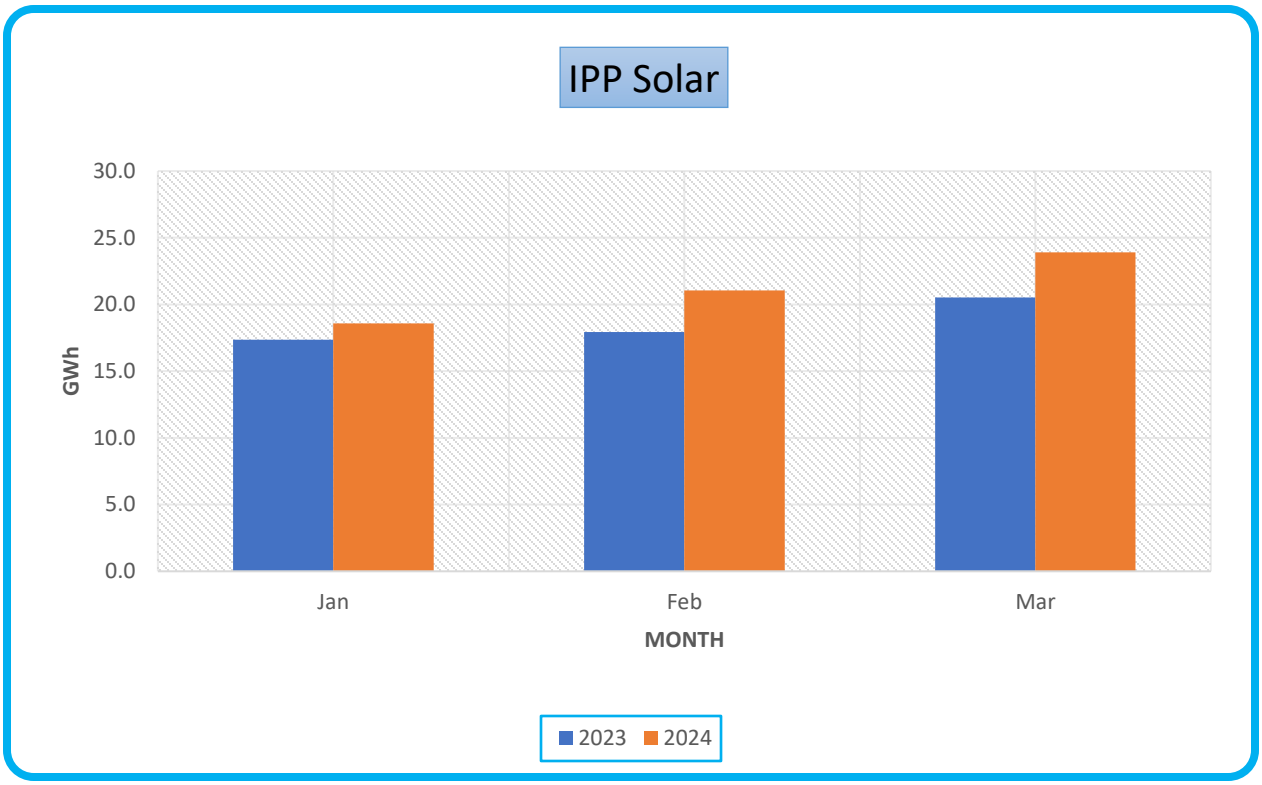


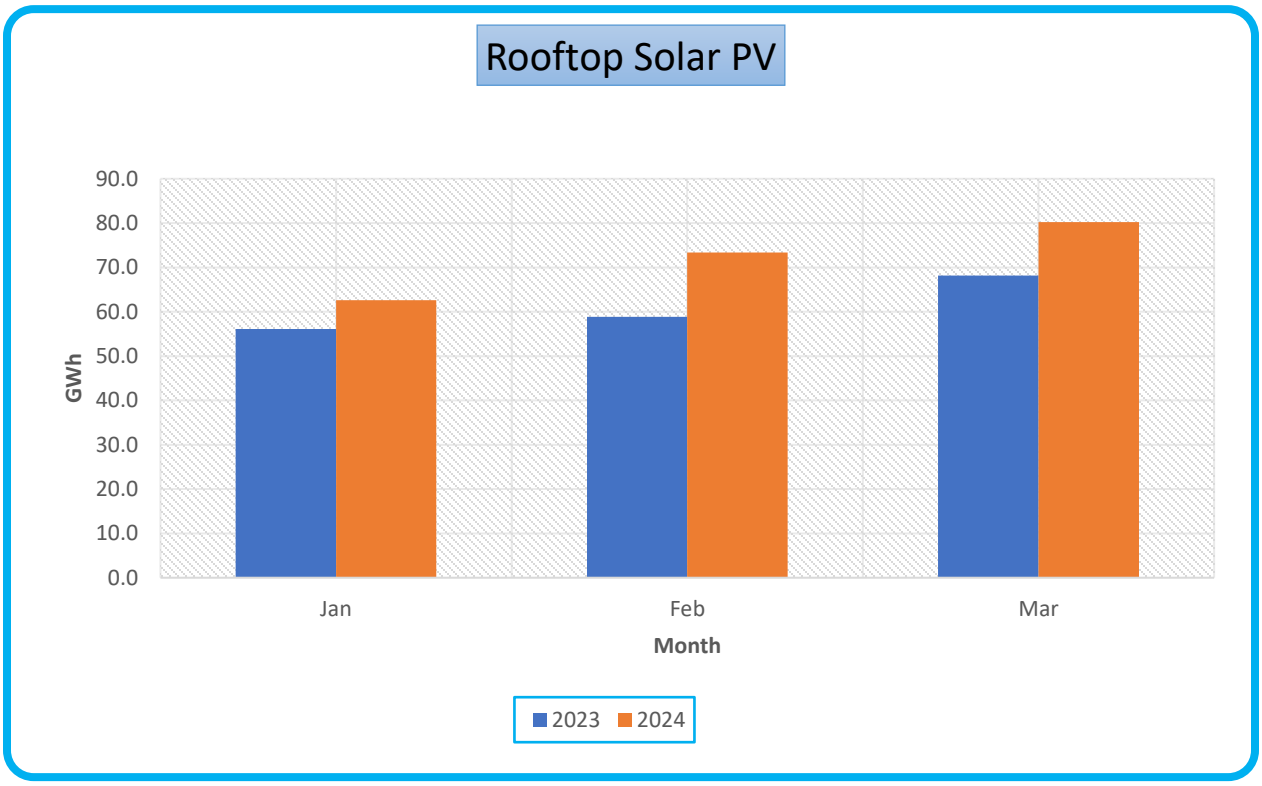

IPP Wind
25.0
20.0
15.0
10.0
5.0
0.0
GWH
Jan
Feb
Mar
MONTH
2023
2024


Mini Hydro
160.0
140.0
120.0
100.0
80.0
60.0
40.0
20.0
0.0
GWh
Jan
Feb
Mar
MONTH
2023
2024


Biomass
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
GWh
Jan
Feb
Mar
MONTH
2023
2024

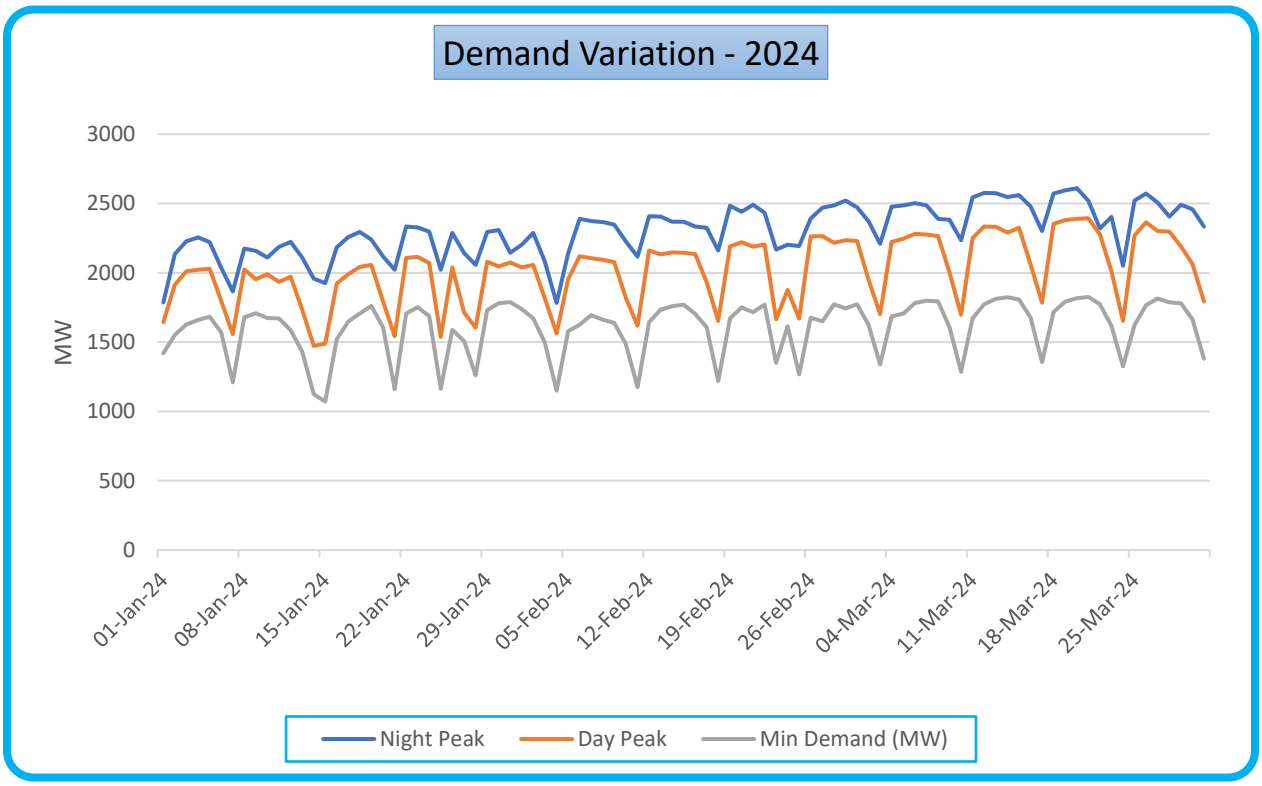

MSW
9.0
8.0
7.0
6.0
5.0
4.0
3.0
2.0
1.0
0.0
GWh
Jan
Feb
Mar
MONTH
2023
2024

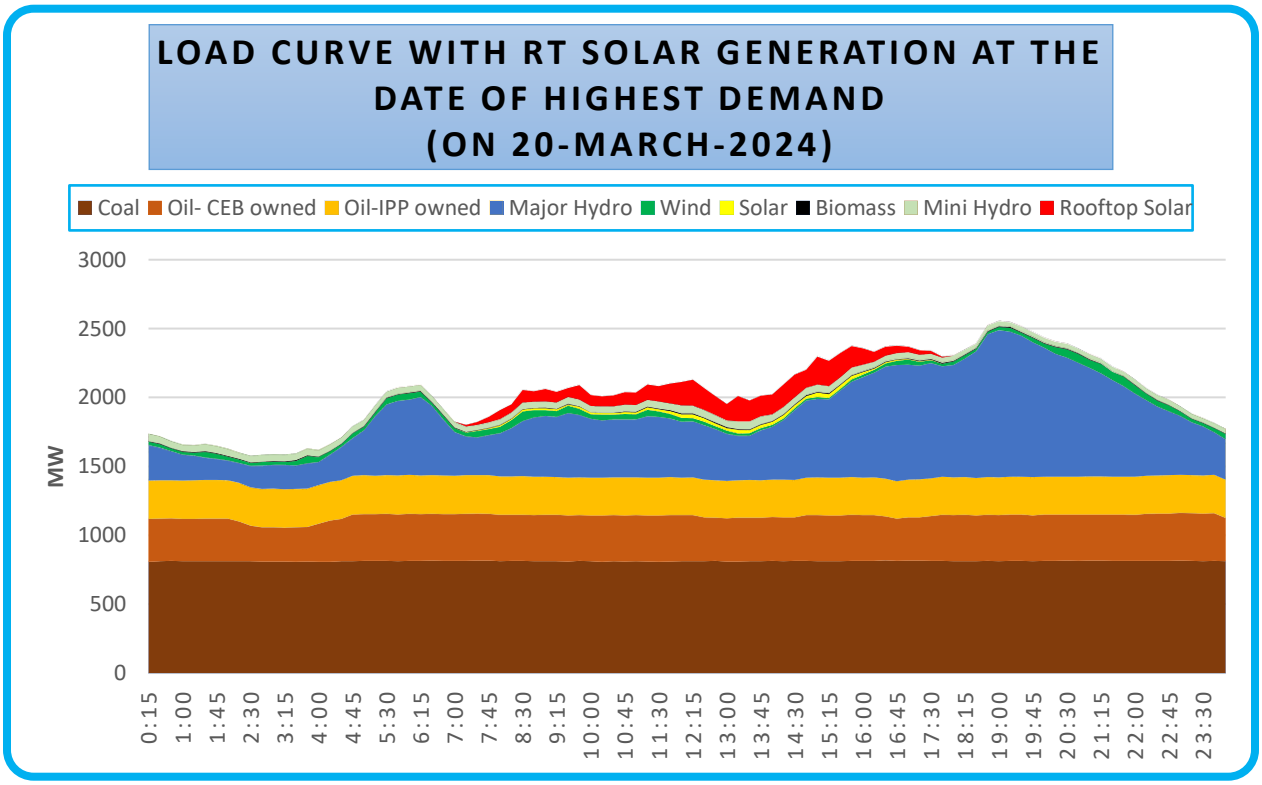




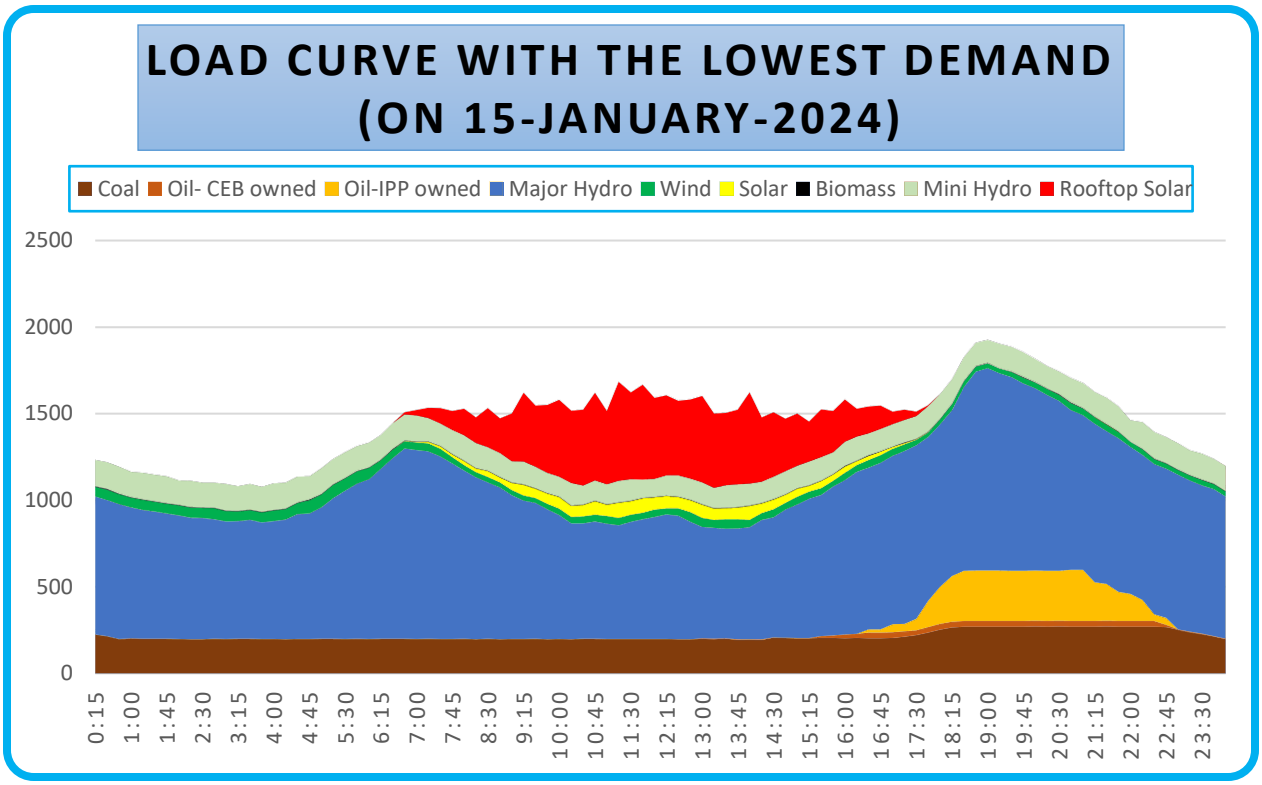
Source: CEB monthly Review Report

Daily Demand Variation

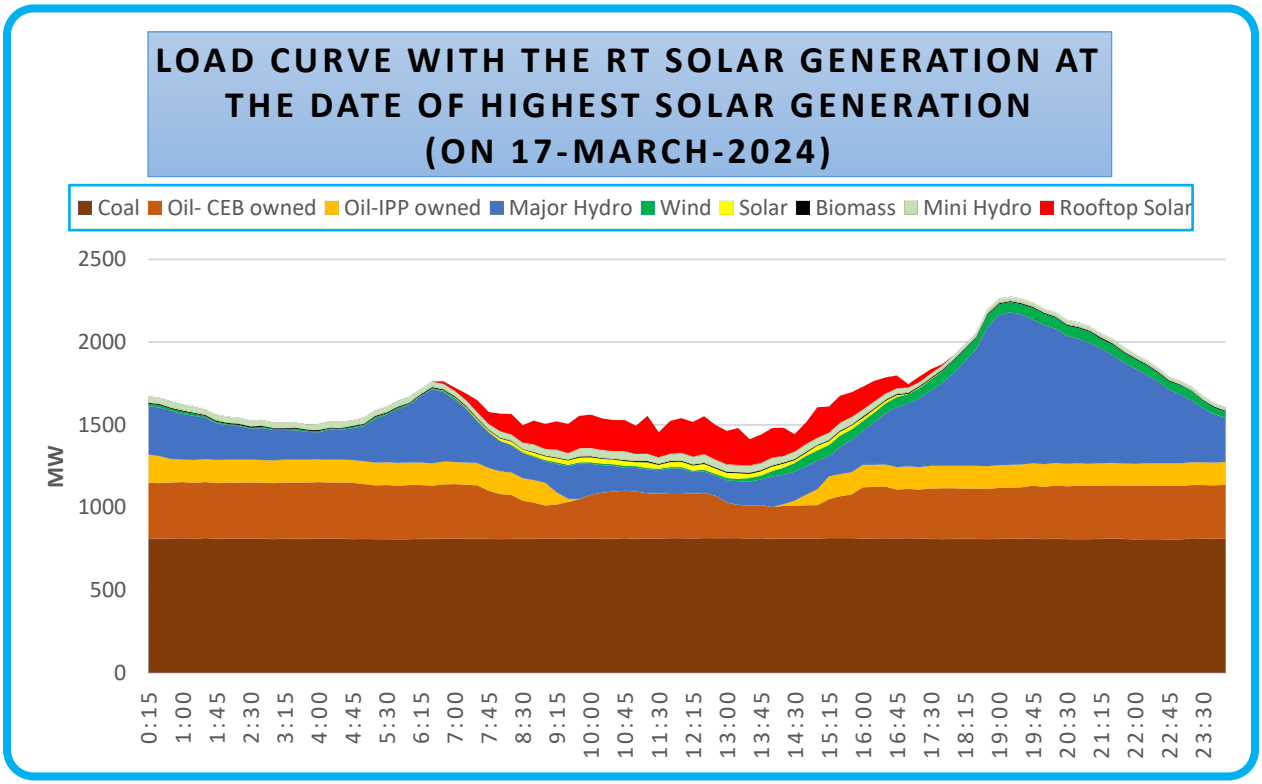




Note: Contribution from Rooftop Solar PV, IPP Solar (1MW), and Non-telemetered Mini Hydro is estimated based on the relevant actual generation and modelled in the generation profile



Note: Rooftop Solar PV, IPP Solar (1MW), and Non-telemetered Mini Hydro daily generation for Load Curves are calculated relative to actual monthly generations.



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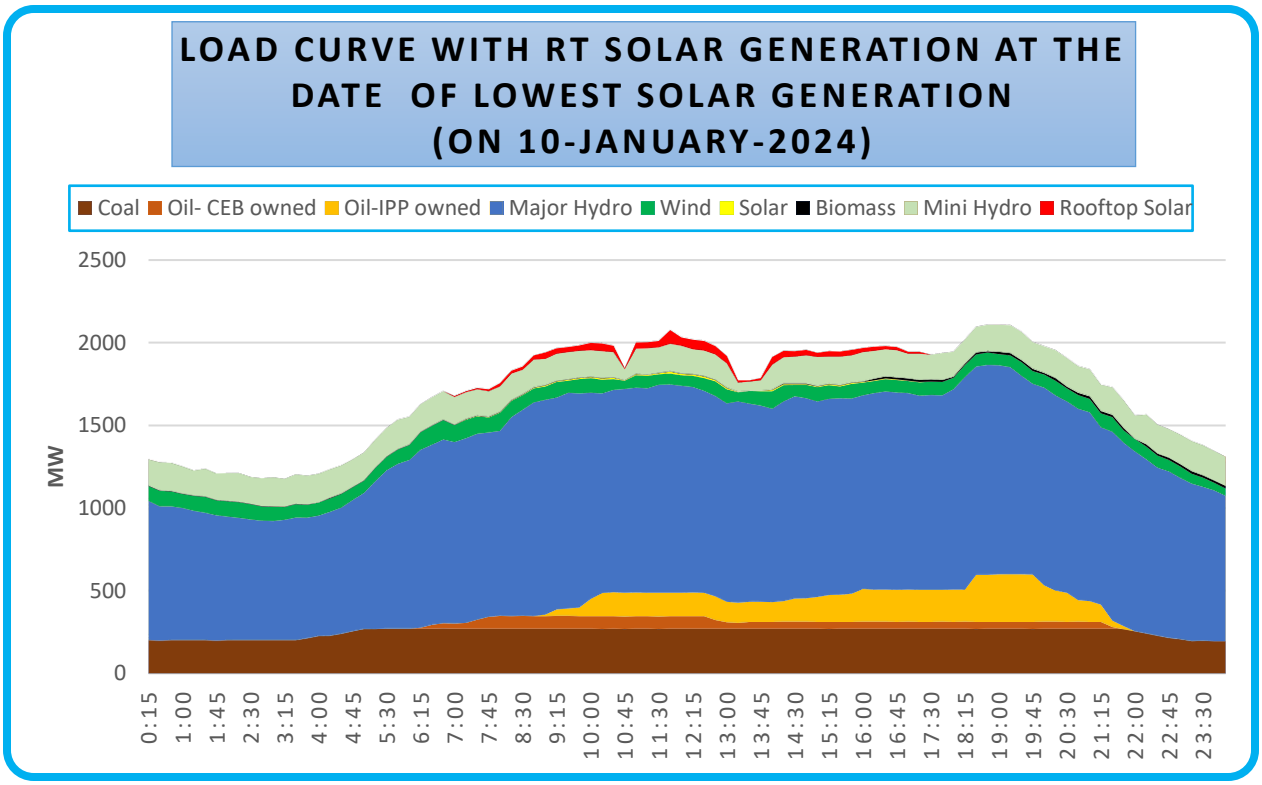

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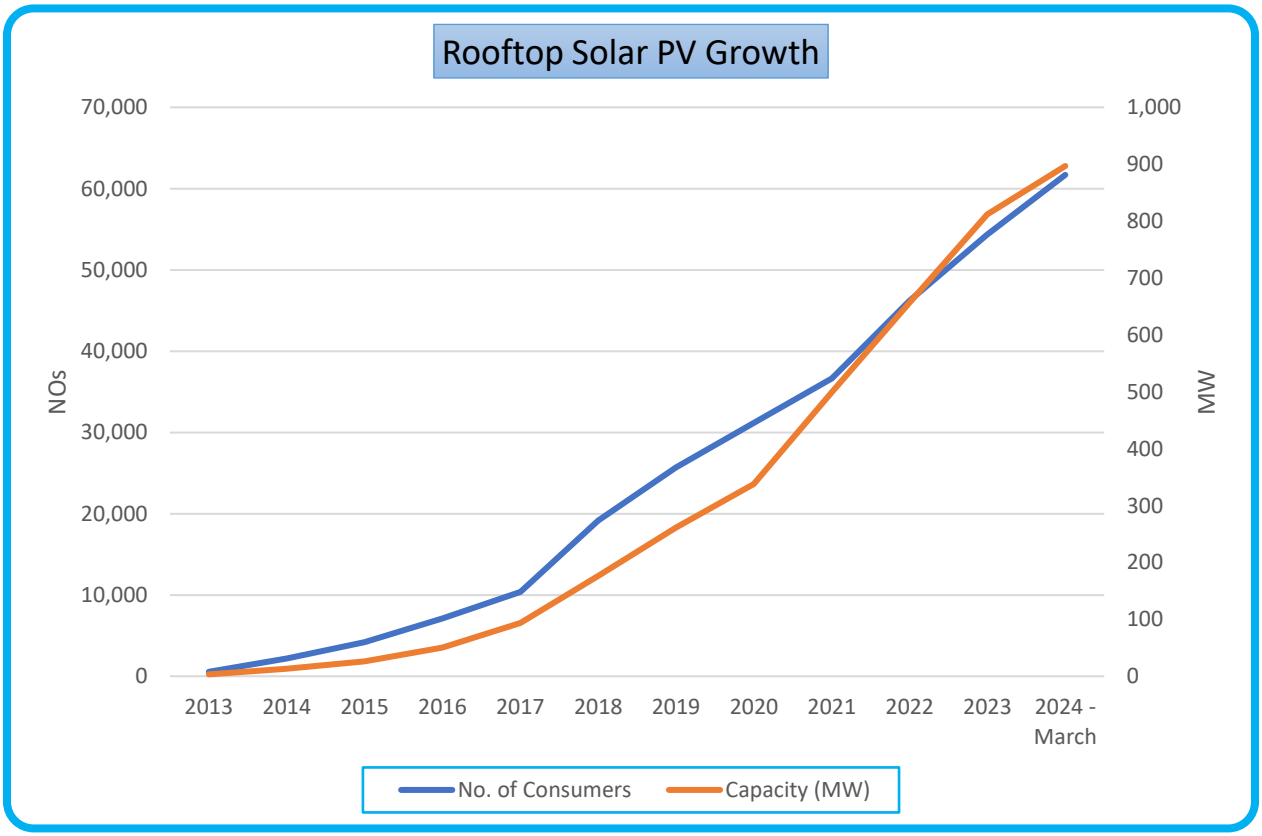
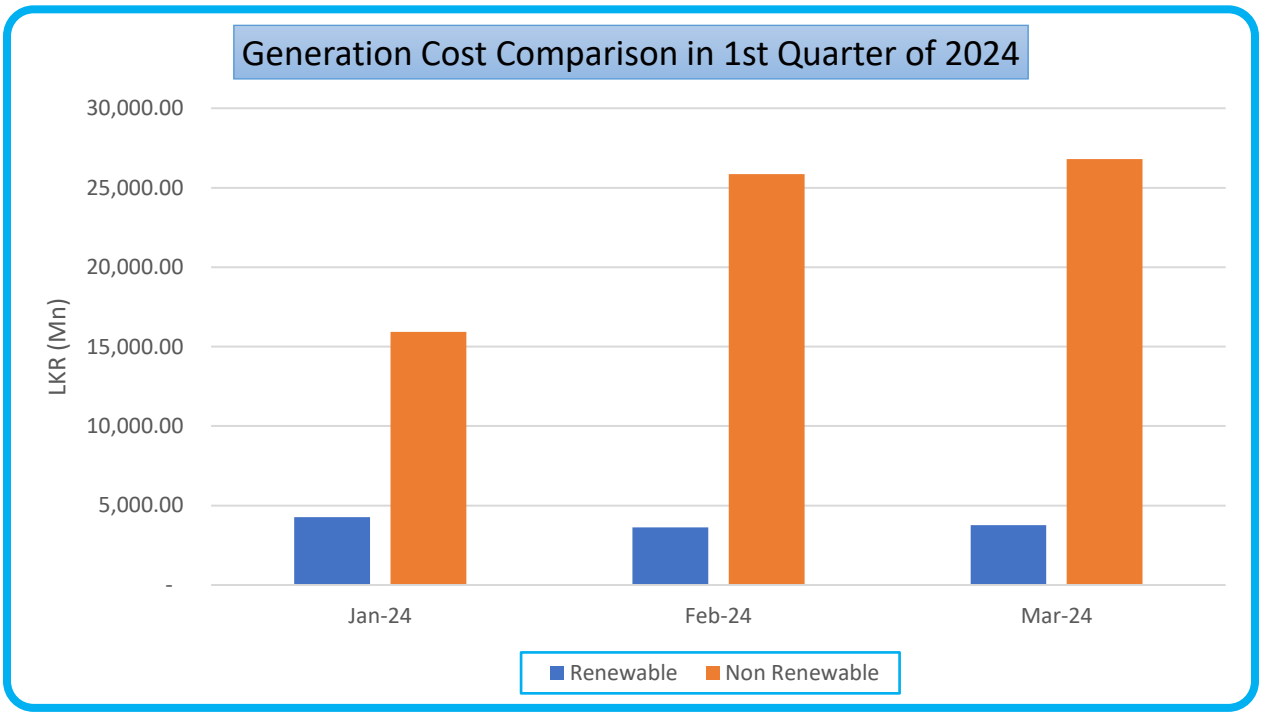
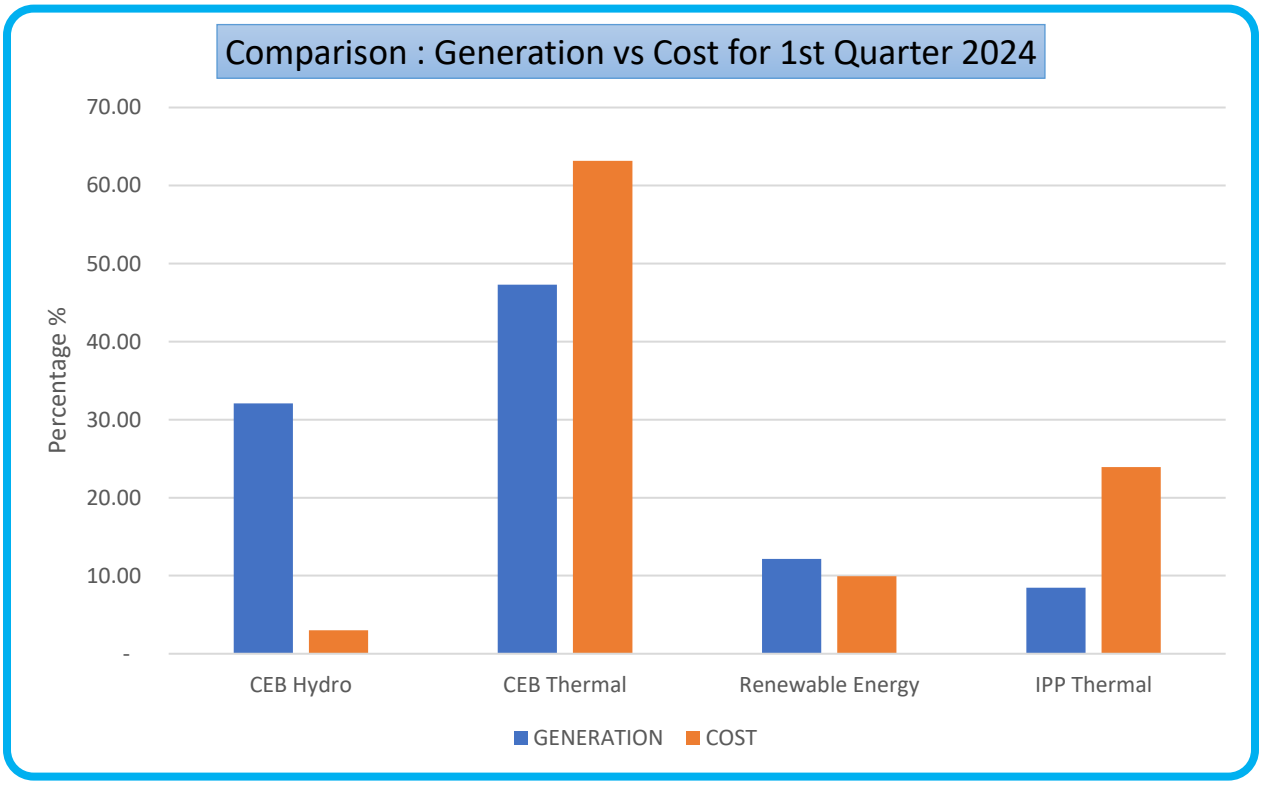


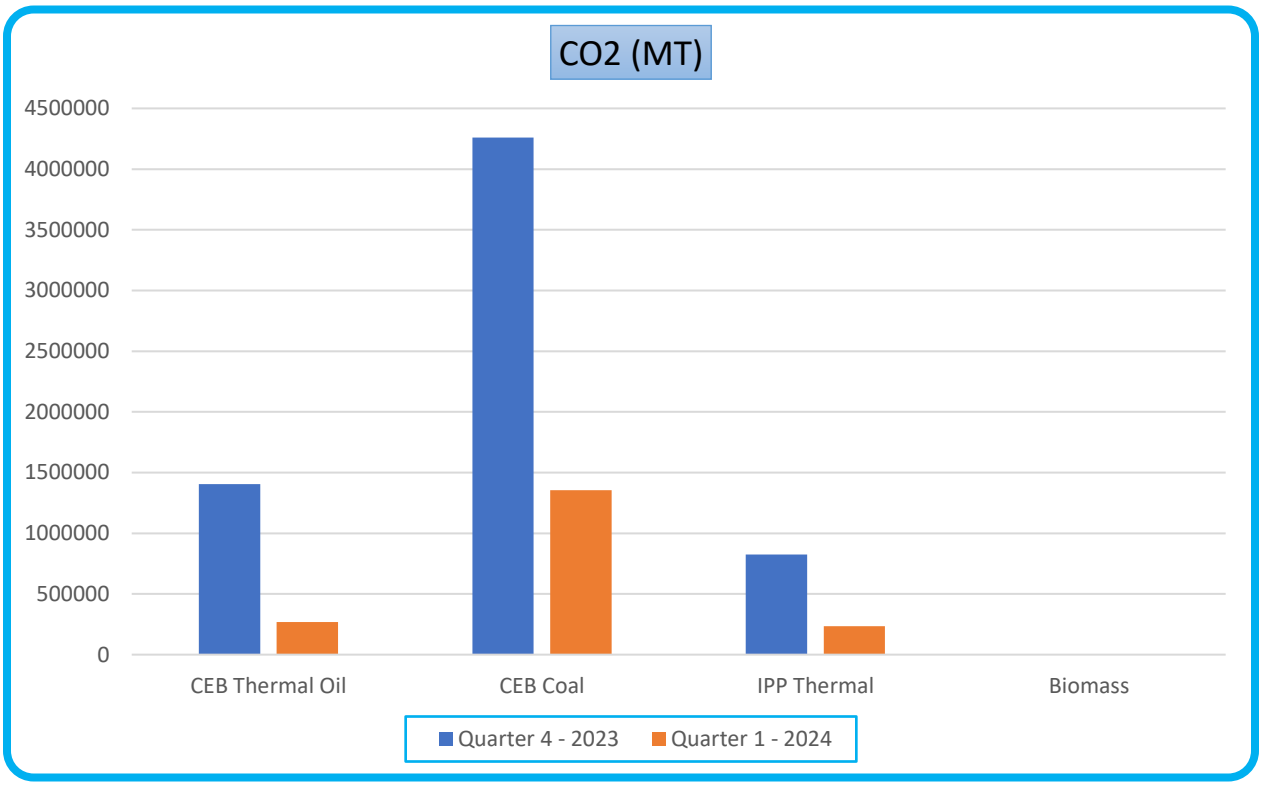
Generation Cost

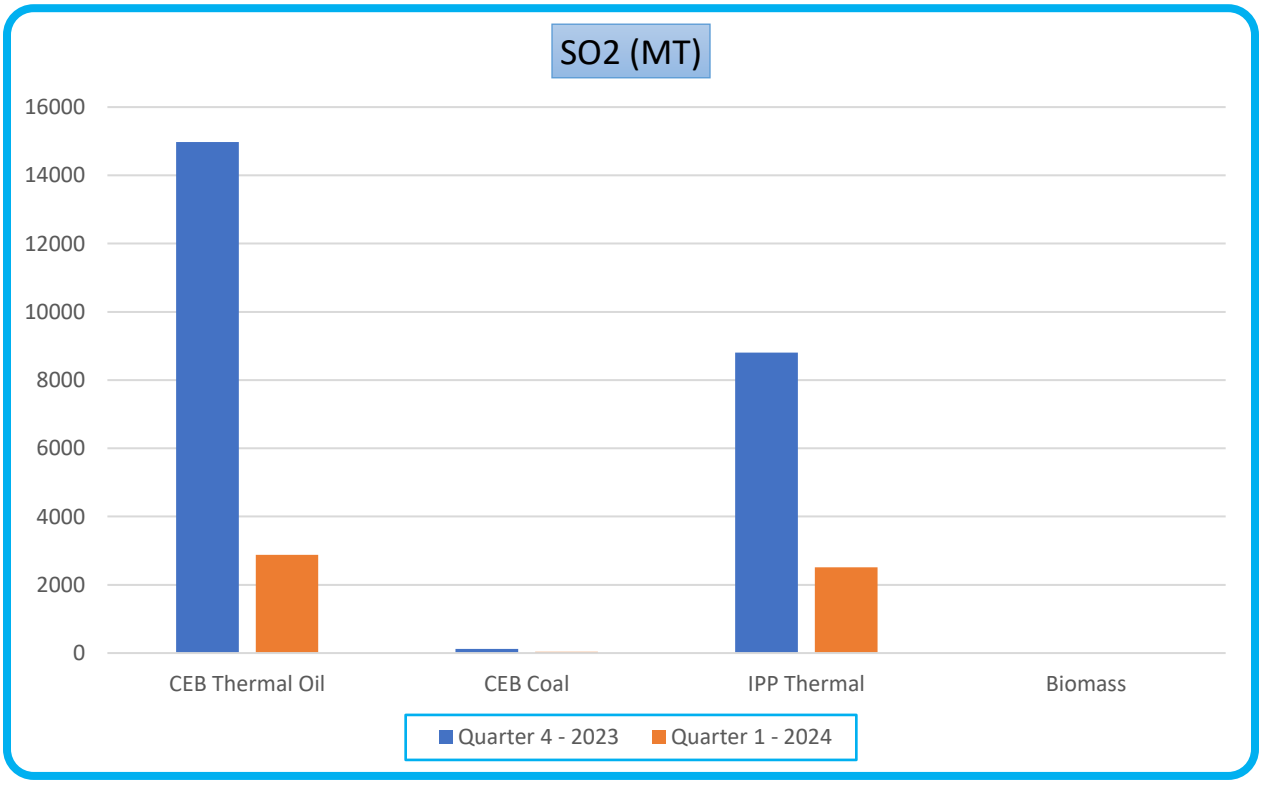


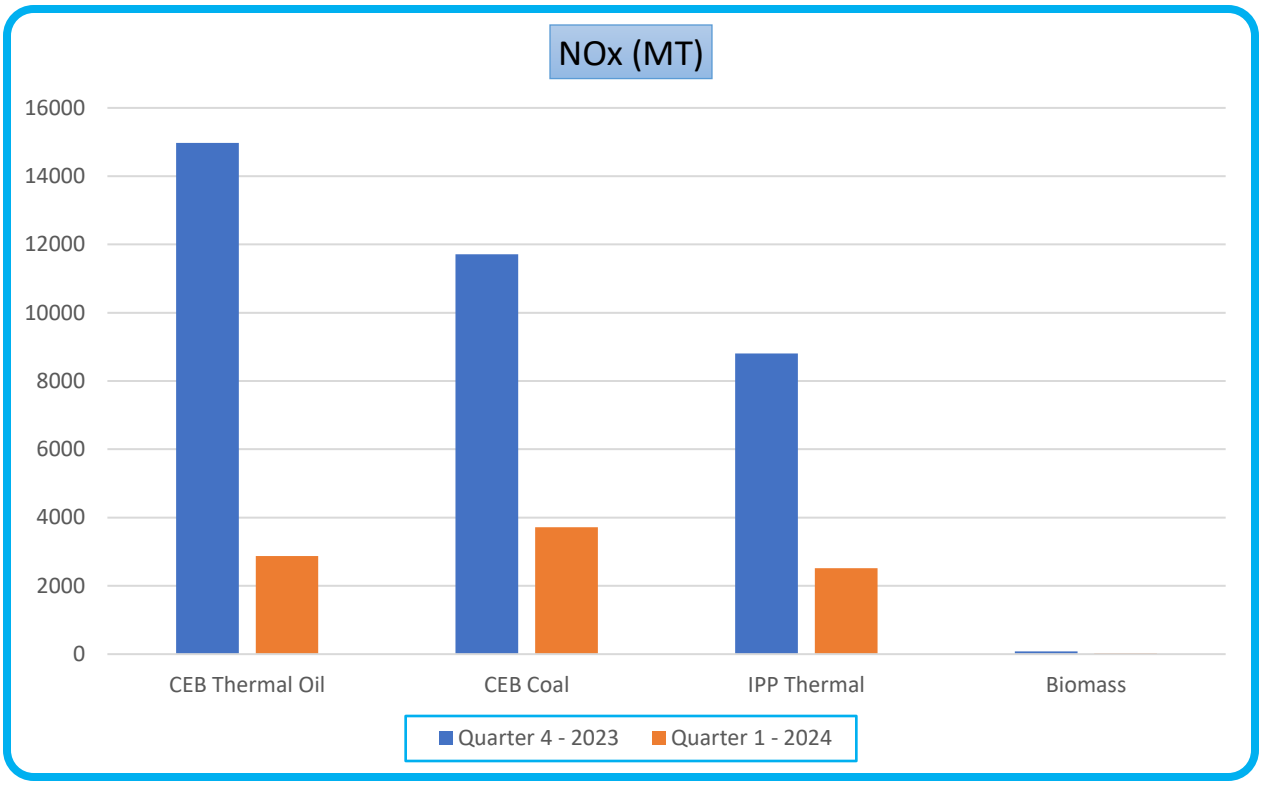


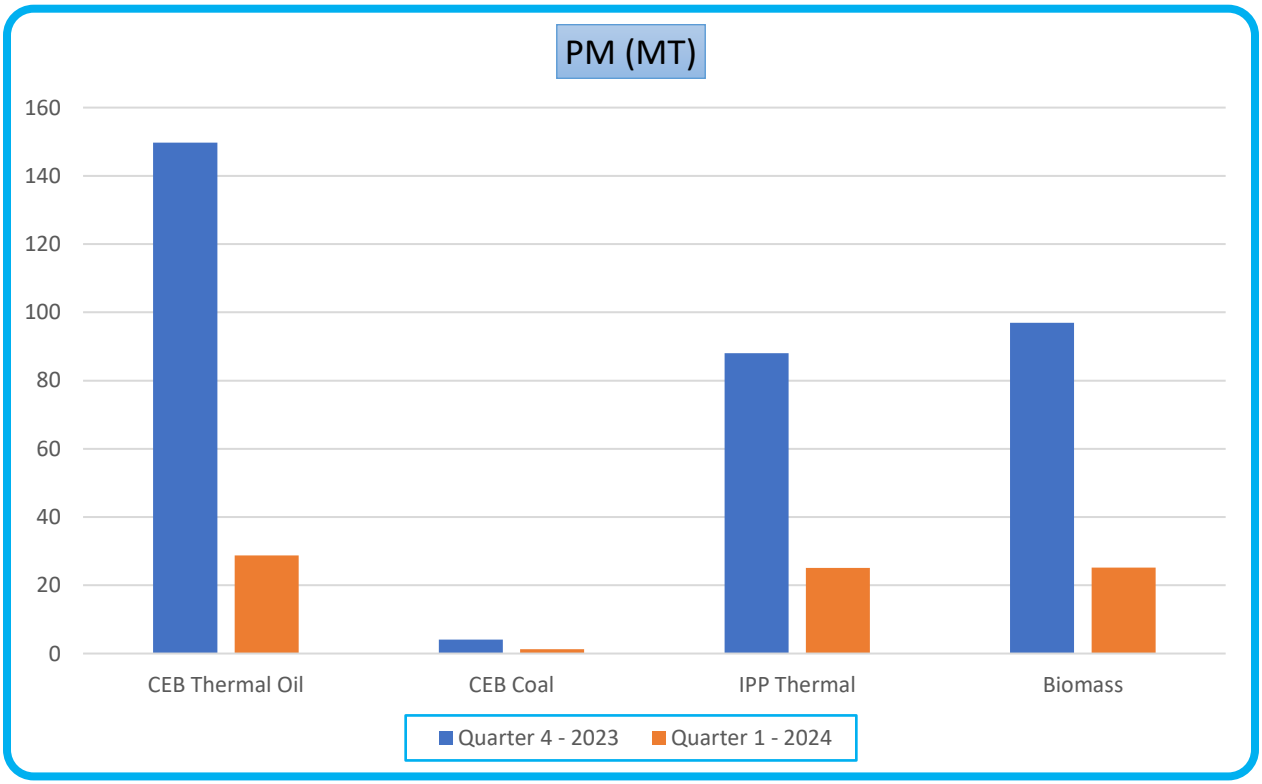
Source: CEB monthly Review Report (March 2024)

Generation Source wise Emission Q4 2023 vs Q1 2024









Source: Estimated base on actual generation

Generation License issued in 2024

Generation License details can be found via the following

Link:**https://www.pucsl.gov.lk/electricity/licensee/list-of-licensees/**

Renewable Generation Power Plants in Sri Lanka

Locations of the Renewable Power plants can be found via the following link.

https://www.pucsl.gov.lk/electricity/quality/environment-and-renewable-energy/

Electricity Dispatch Data Dashboard

Electricity Dispatch Data can be found via the following link.

https://gendata.pucsl.gov.lk/home