Generation Performance in Sri Lanka

2013 (First Half)

Prepared By : Public Utilities Commission of Sri Lanka

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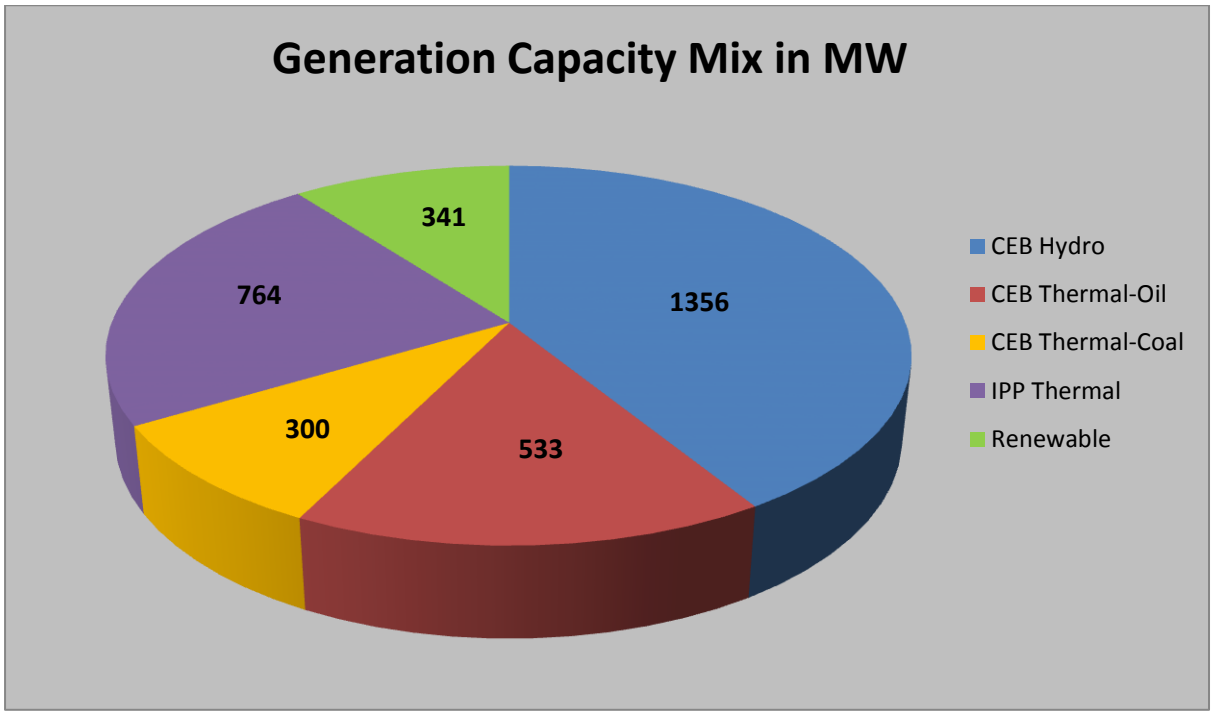
1. Introduction

During the first half of year 2013, maximum recorded electricity demand in Sri Lanka was 2164.2MW (excluding NCRE component) which is a slight higher value compared to the maximum demand of 2146.4MW in year 2012 and a nearly similar value compared to the maximum demand of 2163.1MW in year 2011. In order to attain this demand and to satisfy the electricity requirement in Sri Lanka, altogether 161 Grid connected power plants and 3 power plants in Jaffna peninsula with total installed capacity of 3294MW have been operated in the first half of 2013. Out of these power plants 26 have been owned and operated by Ceylon Electricity Board including 17 hydro plants, 8 thermal plants and 1 wind power plant. Withal, 7 thermal power plants have been operated by Independent Power Producers (IPPs) and 128 renewable power plants have been operated by Small Power Producers (SPPs) including mini hydro plants, solar power plants, wind power plants and biomass power plants. 6 renewable power plants have been commissioned in the first half of 2013 to raise the generation capacity of the country.

The chart below shows the existed installed capacities in MW of each type of power plants by the end of June 2013.



This Generation Performance Report contains a summary of information and performance statistics of the generation units and electricity network in Sri Lanka for the first half of year 2013.

All the index and other calculations in this report have been done based on the data received through Licensee Information Submission System (LISS) and details obtained from CEB Monthly Operational Data Reports.

2. Energy Generation

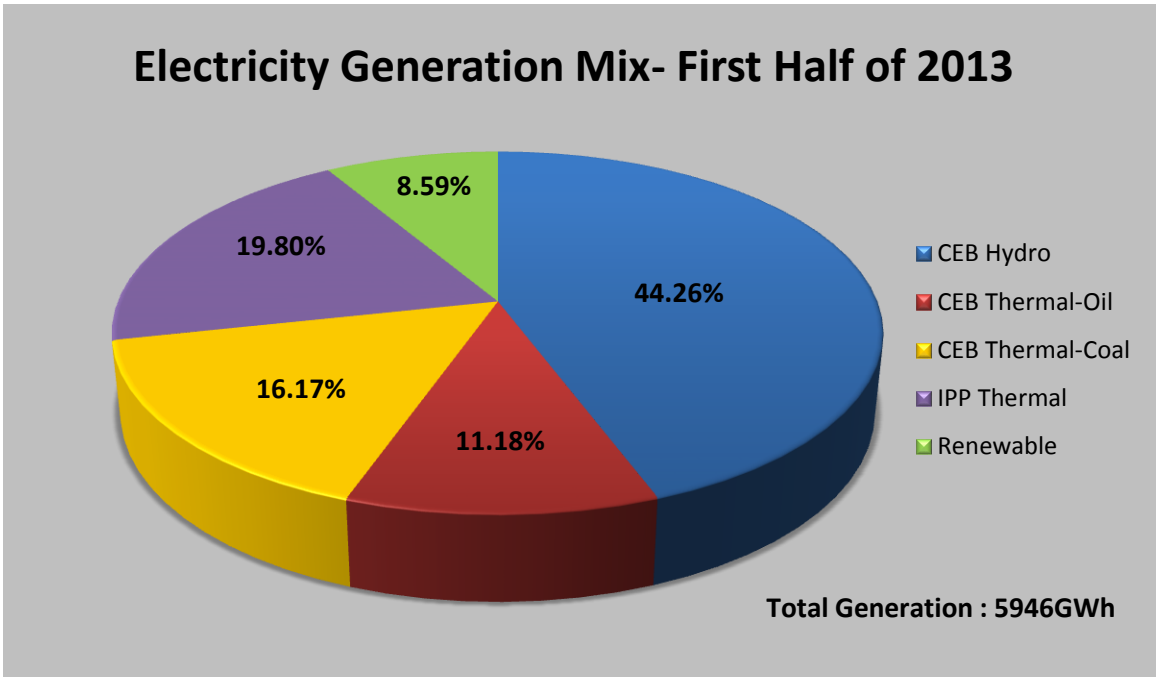
All grid connected generation plants sell their power to the only transmission licensee in Sri Lanka to deliver the power to the consumers through distribution licensees.

The chart below shows the semiannual generation figures in 2013 in MWh.

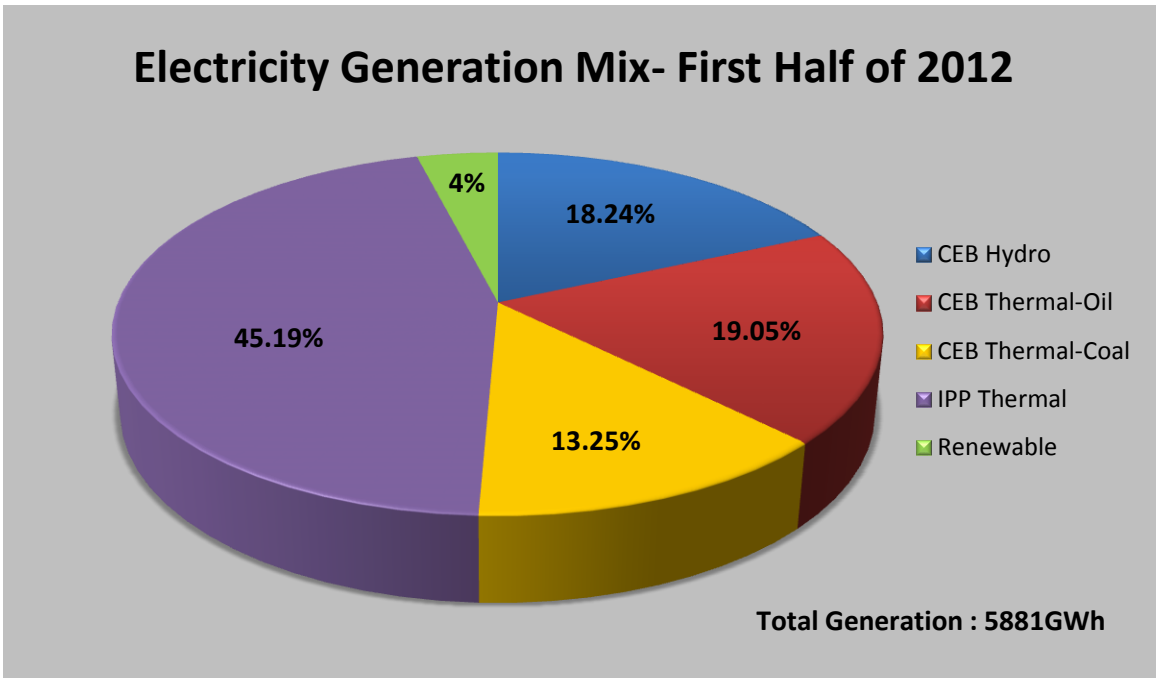
	CEB Hydro	CEB Thermal Oil	CEB Thermal Coal	IPP	Renewable	Total
Jan	539,017	82,994	150,874	139,288	75,855	**988,027**
Feb	373,812	93,161	159,516	234,893	52,376	**913,758**
Mar	351,493	160,338	180,996	309,349	53,877	**1,056,053**
Apr	371,682	150,551	149,882	270,270	55,715	**998,100**
May	416,643	136,610	175,208	178,444	116,694	**1,023,599**
Jun	578,924	41,184	144,854	44,793	156,394	**966,149**
Total	**2,631,571**	**664,837**	**961,330**	**1,177,037**	**510,910**	**5,945,686**

Source :LISS

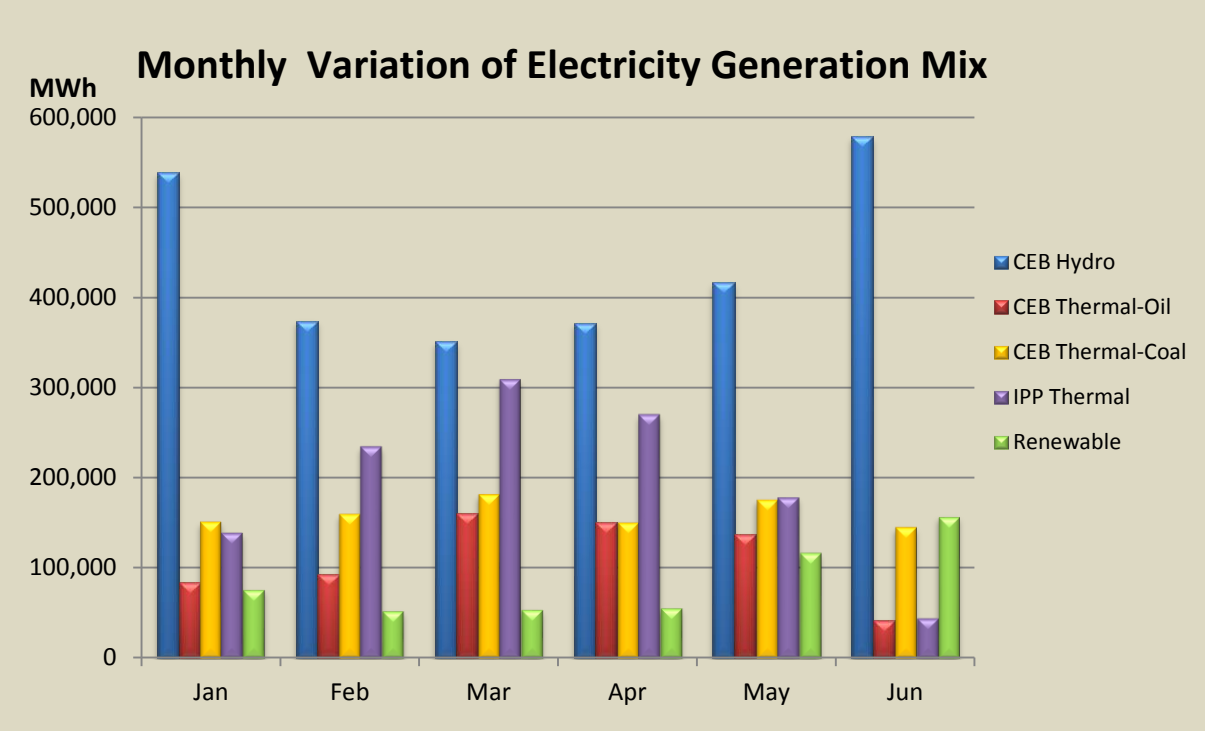
The chart below shows the generation mix in Sri Lanka for the first six months of 2013.



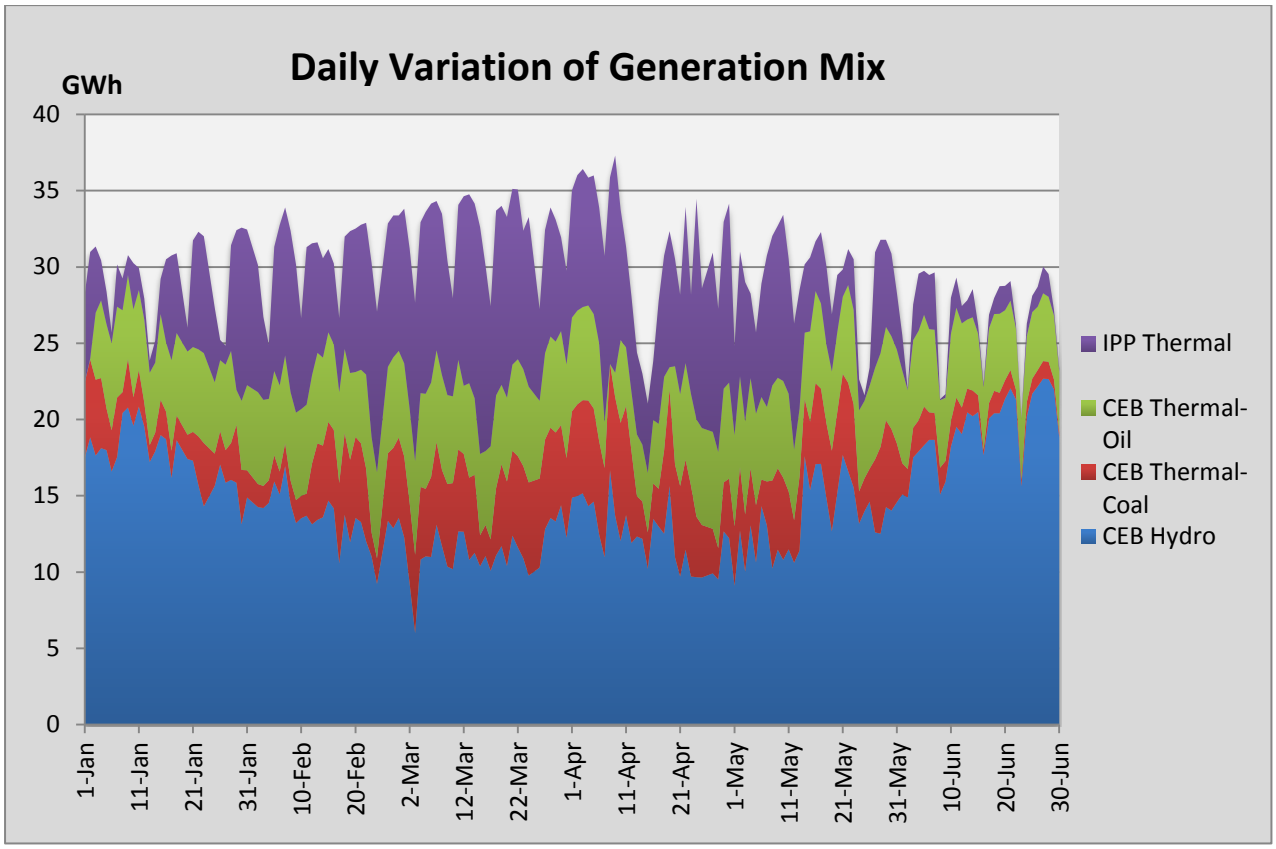
The chart below shows the generation mix in Sri Lanka for the first six months of 2012.



The chart below shows the monthly variation of generation mix in Sri Lanka during the first six months of 2013.



The following chart shows the daily variation of generation mix in Sri Lanka during the first six months of 2013.

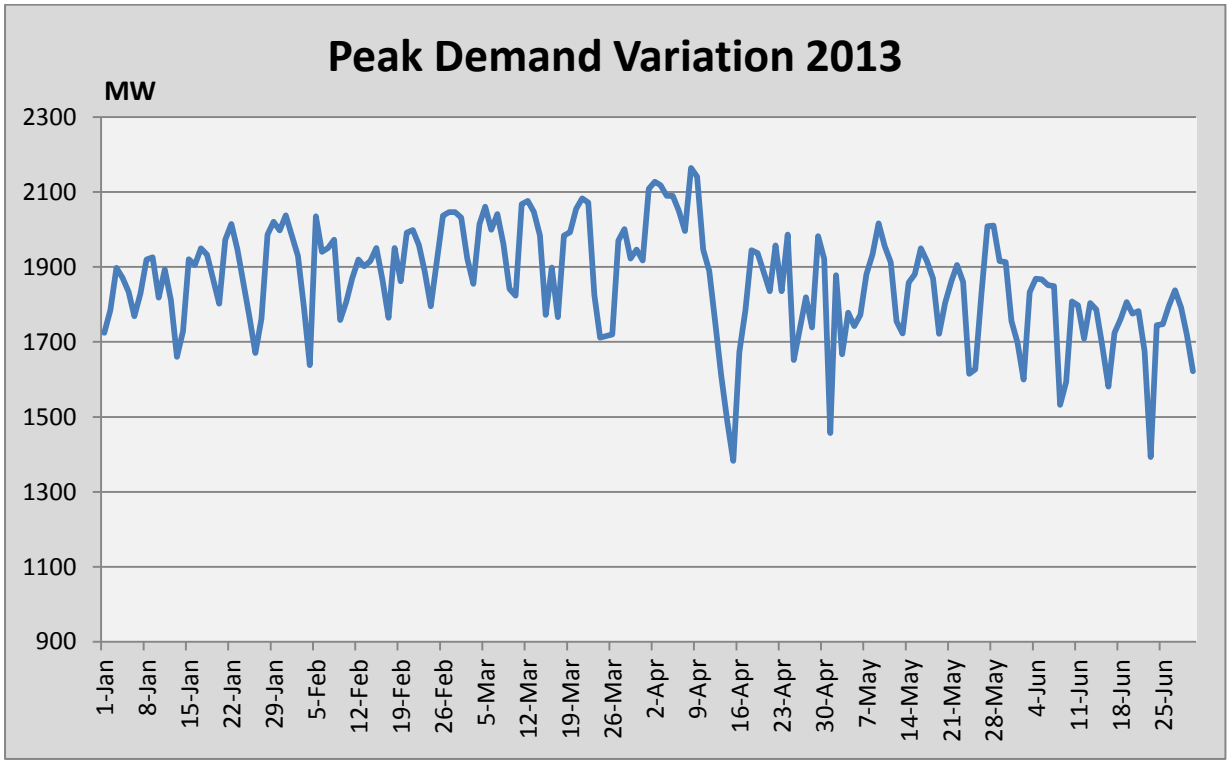


Note: *Daily generation data of renewable power plants is not included.*

3. System Peak Demand

CEB System Control records the daily peak power demand of the country.

Daily variation of country's system peak demand during the first half of the year 2013 is depicted by the following graph.



Highest Peak Demand: 2164.2MW on 08th April 2013

Lowest Peak Demand: 1383MW on 15th April 2013

Note: *NCRE contribution is not included for the peak demand.*

4. Load Factor

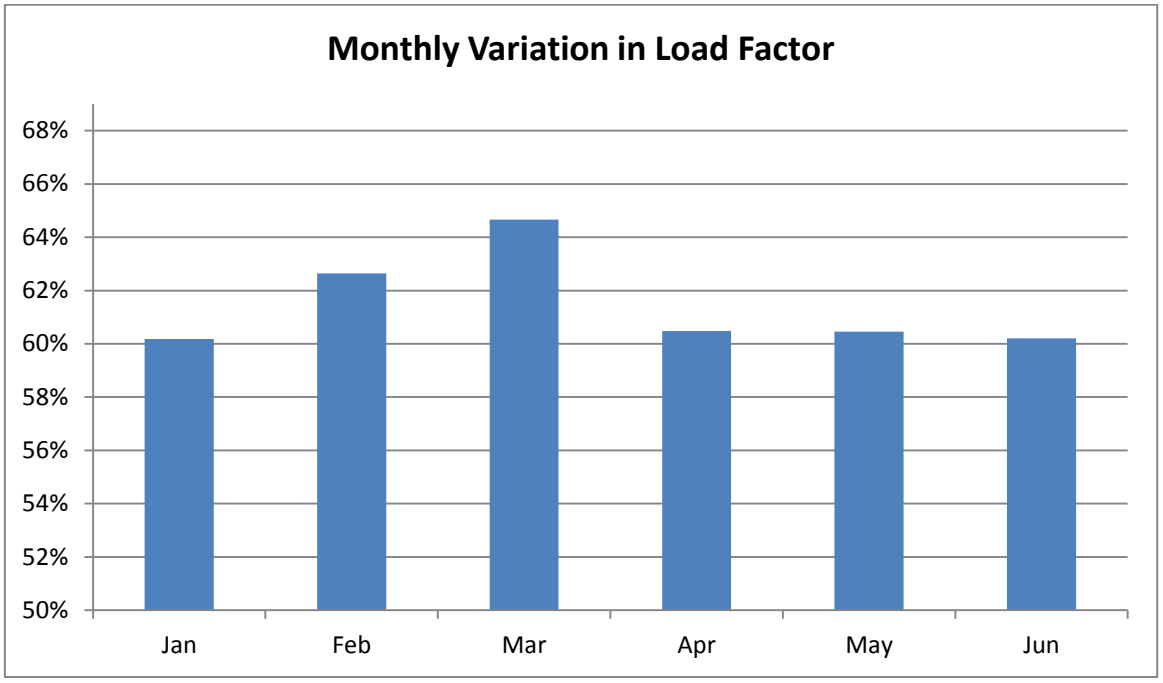
Load Factor is an indicator which shows how steady an electrical load over time. It is simply the average load divided by the peak load in a system over a period of time. But normally load factor is calculated subjected to the produced energy according to the following formula.

$$Load\ Factor = \frac{Total\ Generation\ During\ the\ Nominal\ Period}{Maximum\ Demand\ \mathrm{x}\ No.\ of\ \ hours\ in\ the\ report\ period}$$

Calculated Load Factor for the total system for first half of year 2013 = **57.81%**

Calculated Load Factor for the total system for first half of year 2012 = **60.21%**

Load factor of any system must be tried to keep in its maximum by pulling down the concentrated maximum demand and shifting the loads to periods of otherwise low usage. Load factor maximization is essential in maintaining the security of supply of the countries in which, meeting the concentrated maximum demand is critical. Countries which have a flat load curve own a higher load factor.



Sri Lanka has a load curve with a steep peak in the night, where starting from about 6.00 pm the load grows to about 2,000 MW by 7.30 pm and starts falling off after about 08.30 pm. Therefore the system must be comprised a substantial additional generation capacity only to meet that abrupt sharp night peak; hence the load factor in Sri Lanka is comparatively low. As a solution for that, CEB has introduced a three tier tariff plan for the industrial electricity consumers with low off peak rates and penal peak rates to smoothen the daily peak load and push some industrial activities to low demand hours, and this time-of-day tariff scheme is expected to be facilitated for the domestic consumers as well in near future.

***Note**: Load Factors were calculated excluding NCRE component of the system*

5. Plant Factor

The plant factor of a power plant is the ratio of the actual energy output of the power plant over a period of time to its potential output if it had operated at full nameplate capacity the entire time.

Plant Factors vary greatly depending on the type of power plants and it is calculated according to the following formula.

$$Plant\ Factor = \frac{Actual\ Energy\ Production\ During\ the\ Nominal\ Period}{Potential\ Energy\ Production\ During\ the\ Period}$$

Calculated plant factors for all grid connected power plants in Sri Lanka during the first half of the year 2013 are listed below.

CEB Hydro

Old Laxapana	73.26%
Rantambe	67.02%
Nilambe	60.20%
Polpitiya	58.08%
Randenigala	56.56%
Victoria	55.72%

New Laxapana	55.38%
Inginiyagala	47.20%
Samanala	44.48%
Udawalawe	42.90%
Wimalasurendra	36.97%
Upper Kotmale	35.66%

Ukuwela	32.14%
Canyon	31.72%
Kukule	30.74%
Kotmale	27.74%
Bowatenna	19.41%

CEB & IPP Thermal

Plant Factors of thermal power plants are listed below in the order of calculated unit cost for the first half of year 2013.

1	Coal Puttalum	73.77%
2	Chunnakum	15.31%
3	Heladhanavi	53.75%
4	Sapugaskanda 2	57.27%
5	Colombo Power	75.66%
6	ACE Embilipitiya	54.20%
7	Uthura Janani	53.68%
8	Asia Power	49.23%

9	KPS CCY	47.80%
10	Sapugaskanda 1	22.83%
11	West Coast	22.69%
12	AES Kelanitissa	17.80%
13	Northern Power	11.10%
14	GT 7 - Kelanitissa	1.98%
15	Small Gas Turbines	0.14%

CEB Wind – 7.48%

SPP

Badulu Oya MHP	77.71%
Kalupahana Oya MHP	71.17%
Loggal Oya MHP	65.23%
Kirkoswald MHP	63.23%
Watakelle MHP	63.19%
Green Energy MHP	59.93%
Denawak Ganga MHP	59.87%
Giddawa MHP	59.76%
Manelwala MHP	58.84%
Rathganga MHP	58.07%
Hapugastenna - 2 MHP	57.12%
Hapugastenna - 1 MHP	56.45%
Somerset MHP	56.05%
Belihul Oya Oya MHP	54.54%
Palmerston MHP	54.38%
Bogandana MHP	53.42%
Lenadora MHP	52.91%
Alupola MHP	52.62%
Wee Oya MHP	51.64%
Sithagala MHP	51.56%
Kotanakanda MHP	50.21%
Delgoda MHP	49.93%
Kumburuteniwela MHP	49.91%
Gampola Walakada MHP	49.61%
Pathaha MHP	49.03%
Bopekanda MHP	48.79%
Kaduruwan Dola MHP	48.58%
Waltrim MHP	48.42%
Guruluwana MHP	47.41%
Bambarabatu Oya MHP	46.57%
Batatota MHP	45.69%
Soranathota MHP	45.63%
Glassaugh MHP	45.20%
Erathna MHP	44.88%
Gomala Oya MHP	43.91%
Halathura Ganga MHP	43.68%
Kokawita 1 MHP	43.63%
Brunswic MHP	43.55%
Atabage Oya MHP	43.38%
Henfold (Agra Oya) MHP	43.34%
Lemastota MHP	43.17%
Asupiniella MHP	43.05%
Wembiyagoda MHP	42.90%
Galaboda (Denawak Ganga) MHP	42.78%
Magal Ganga MHP	42.18%
Sheen MHP	41.98%
Karawila Ganga MHP	41.62%
Ritigaha Oya II MHP	41.20%
Dunsinane MHP	41.19%
Watawala B Estate MHP	40.84%
Lower Neluwa MHP	40.75%
Mandagal Oya MHP	40.60%
Huluganga MHP	40.58%
Kotapola (Kiruwana) MHP	40.49%
Ellapita Ella MHP	40.12%
Way Ganga MHP	39.65%
Lower Hemingford MHP	39.39%
Amanawala Oya MHP	38.97%
Kabaragala MHP	38.76%
Gangaweraliya MHP	38.57%
Barcaple II MHP	38.56%
Labuwewa MHP	36.82%
Maduruoya MHP	36.82%
Kolonna MHP	36.62%
Upper Ritigaha Oya MHP	36.06%
Punugala MHP	35.99%
Niriella MHP	35.67%
Bowhill MHP	35.56%
Delta MHP	35.40%
Koswatta Ganga MHP	35.40%
Kandadola MHP	35.12%
Ganthuna Udagama MHP	34.85%
Galatha Oya MHP	34.85%
Miyanawita Oya MHP	34.81%
Kudah Oya MHP	34.03%
Mulgama MHP	33.82%
Adavikanda MHP	32.80%
Gurugoda Oya MHP	32.59%
Kalupahana MHP	32.17%
Barcaple I MHP	31.93%
Kiriwan Eliya MHP	31.67%
Lower Atabage MHP	31.29%
Kehelgamu Oya MHP	31.04%
Upper Magal Ganga MHP	30.81%
Waverly MHP	30.25%
Nakkawita MHP	30.09%
Aggra Oya MHP	29.82%
Upper Korawaka MHP	29.37%
Deiyanwala MHP	29.25%
Minuwanella MHP	29.01%
Forest Hill MHP	28.46%
Koladeniya MHP	27.97%
Nilambe Oya MHP	27.33%
Nandurana MHP	26.11%
Falcon Valley MHP	25.59%
Indurana MHP	25.44%
Sanquahar MHP	24.86%
Rajjammana MHP	24.21%
Bambarabotuwa III MHP	23.33%
Radella MHP	22.89%
Wellawaya MHP	22.73%
Nugedola MHP	22.34%
Watawala (Carolina ii) MHP	21.74%
Carolina MHP	18.18%
Weddemulle MHP	17.66%
Black Water MHP	15.95%
Kolapathana MHP	13.79%
Coolbawn MHP	10.43%
Kadawala I MHP	9.44%
Kalugala-Pitawala MHP	8.55%
Battalagala MHP	5.79%
Kadawala I MHP	3.94%
Branford MHP	0.31%

Madurankuliya WPP	44.41%
Vidatamunai WPP	33.33%
Nirmalapura WPP	32.07%
Seguwantivu WPP	30.38%
Kalpitiya WPP	29.50%
Mampuri WPP	28.50%
Uppudaluwa WPP	15.12%
Willwind WPP	11.23%
Ambewela WPP	11.07%
Erumbukkudal WPP	5.88%

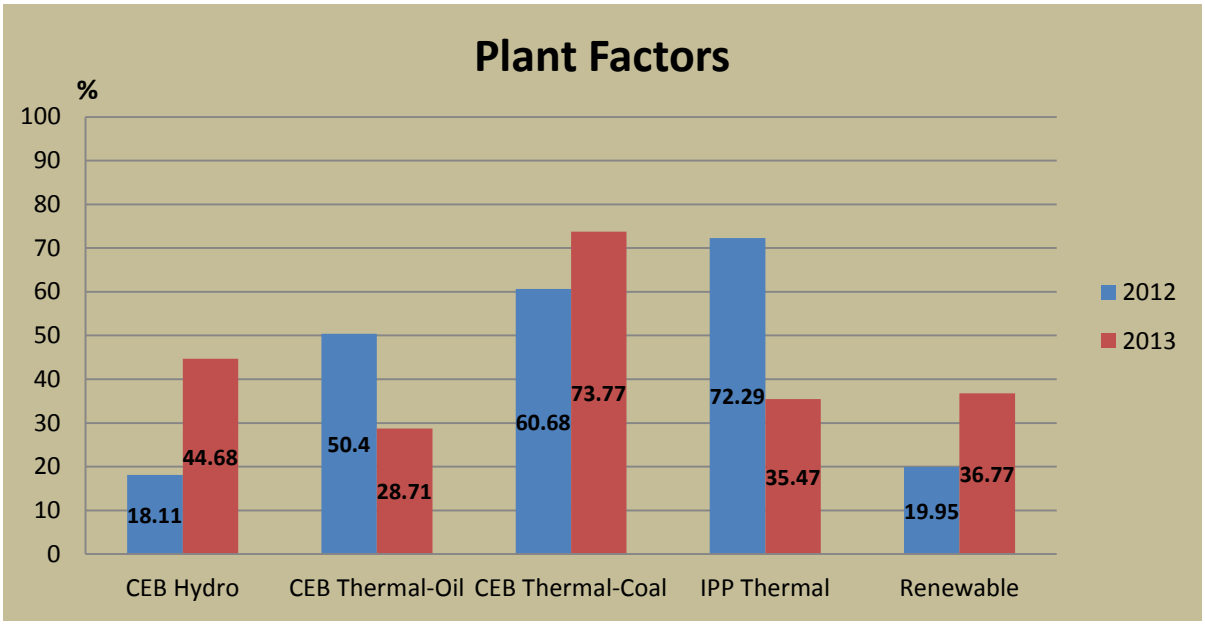
Tokyo BMP	26.36%
Badalgama BMP	25.75%
Kottamurichchana BMP	4.36%
Embilipitiya BMP	0.73%

Gonnoruwa I SPP	16.47%
Gonnoruwa II SPP	15.18%
Tirappane SPP	0.84%

Note: *Plant Factors for the CEB power plants were calculated using gross generation figures*

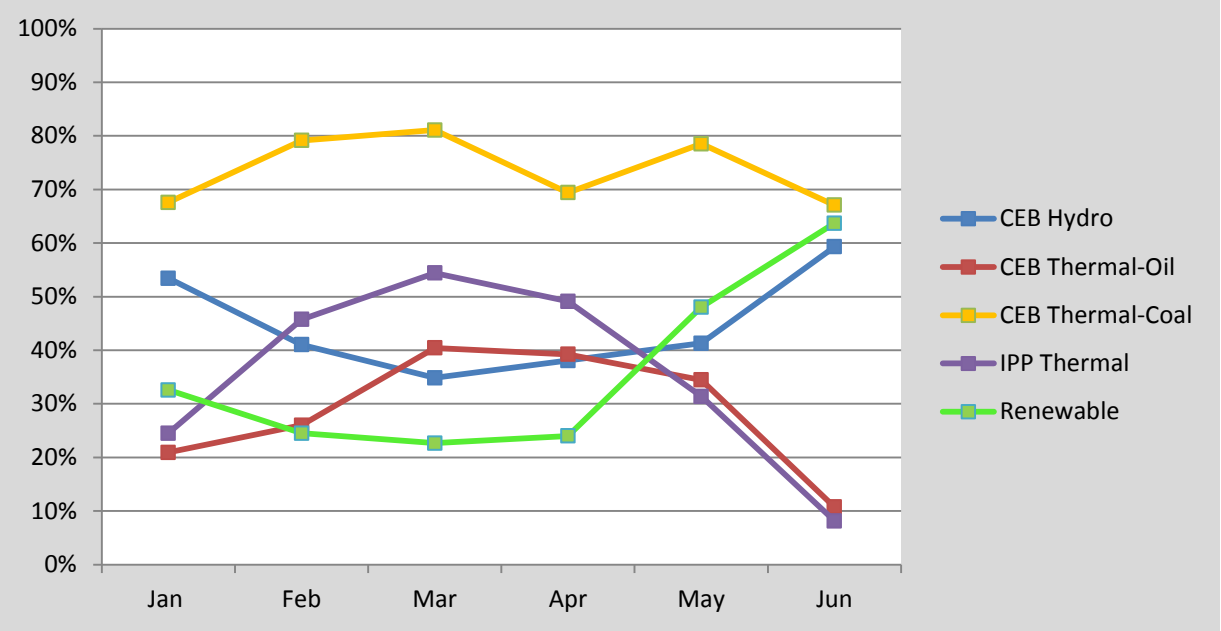
Gross generation data for IPPs and SPPs were not available for Plant Factor calculation. Therefore the Net generation data were used to calculate the plant factors of these plants.

First Semi Annual Overall Plant Factors for the major types of generation options in 2012 & 2013 are given below.



Overall plant factors of CEB hydro plants and Renewable plants have been improved due to higher rainfall, which has highly impacted towards dropping of thermal oil plant dispatch.

The chart below shows the variation of plant factors during the first 6 months of different types of generation plants operated in 2013.



6. Running Plant Factor

The running plant factor of a generation unit is the ratio of the actual energy output of a generation unit over a period of time to its potential output if it had operated at full nameplate capacity during the period in which it has been operated.

Running Plant Factor shows the extent to which the generation units have been operated when they are running out of their nominal capacities.

Calculated running plant factors for CEB owned generation units in the first half of the year 2013 are listed below.

CEB Hydro

Old Laxapana	Unit 1	109.22%
	Unit 2	109.78%
	Unit 3	111.66%
	Unit 4	87.84%
	Unit 5	93.65%
Ukuwela	Unit 1	94.13%
	Unit 2	93.07%
Rantambe	Unit 1	93.95%
	Unit 2	93.69%
Kukule	Unit 1	93.88%
	Unit 2	91.65%
Randenigala	Unit 1	88.34%
	Unit 2	89.11%
Upper Kotmale	Unit 1	0.00%
	Unit 2	87.69%
Wimalasurendra	Unit 1	73.87%
	Unit 2	79.24%
Victoria	Unit 1	73.75%
	Unit 2	76.10%
	Unit 3	76.87%
Samanalawewa	Unit 1	72.73%
	Unit 2	71.45%
Polpitiya	Unit 1	63.67%
	Unit 2	68.35%
Canyon	Unit 1	67.58%
	Unit 2	66.41%
New Laxapana	Unit 1	66.68%
	Unit 2	66.21%
Kotmale	Unit 1	62.62%
	Unit 2	66.96%
	Unit 3	62.68%
Bowatenna	Unit 1	47.87%

CEB Thermal

Puttalam Coal	Unit 1	76.27%
Sapugaskanda 2	Unit 5	95.40%
	Unit 6	93.19%
	Unit 7	94.48%
	Unit 8	95.27%
	Unit 9	93.68%
	Unit 10	93.87%
	Unit 11	97.09%
	Unit 12	97.26%
Sapugaskanda 1	Unit 1	80.04%
	Unit 2	85.33%
	Unit 3	82.60%
	Unit 4	50.96%

Uthuru Janani	Unit 1	13.98%
	Unit 2	13.41%
	Unit 3	16.08%
KPS CCY	Unit 8 (GT)	86.70%
	Unit 8 (ST)	94.43%
KPS GT7	Unit 7	70.59%
KPS(Small) GT	Unit 1	38.46%
	Unit 2	53.81%
	Unit 3	0.00%
	Unit 4	90.34%
	Unit 5	97.77%

***Note**: Running Plant Factors for IPPs and SPPs were not calculated since the operation durations of those plants were not available.*

7. Generation Cost

Power Station	Semi Annual Generation (GWh)	Total Cost to CEB (Mn.LKR)	Average Unit Cost(Rs/kWh)
Asia Power	109	3139	28.78
AES Kelanitissa	126	5252	41.68
Colombo Power	197	4331	21.96
Heladhanavi	234	5085	21.78
ACE Embilipitiya	235	5392	22.90
Westcoast	266	10752	40.40
Sapugaskanda A	71	2215	31.02
Sapugaskanda B	179	3930	21.94
Kelanitissa Small GTs	1	225	440.27
Kelanitissa PS GT 7	10	657	66.31
Kelanitissa CCY	343	10329	30.15
Puttalam Coal	961	7972	8.29
Chunnakum	5	98	18.45
Uthura Janani	56	1309	23.39
Northern Power	10	526	54.53
Victoria	508	1050	2.07

Ukuwela	56	331	5.94
Kotmale	242	901	3.72
Upper Kotmale	232	768	3.31
Randenigala/Rantambe	442	751	1.70
Bowatenna	34	313	9.29
Nilambe	8	55	6.98
Old Laxapana/New Laxapana	400	553	1.38
Polpitiya	189	286	1.51
Wimalasurendra	80	158	1.97
Canyon	83	330	4.00
Samanalawewa	232	739	3.19
Kukule	93	326	3.49
Inginiyagala	21	66	3.21
Udawalawe	11	53	4.70
Renewable	511	7326	14.34
All Hydro	**2632**	**6681**	**2.54**
All CEB Thermal	**1626**	**26734**	**16.44**
ALL IPP Thermal	**1177**	**34477**	**29.29**
All Plants	**5946**	**75218**	**12.65**

Source: *LISS Data*

7.1 Amount Paid in Excess of Capacity and Energy Charges

CEB has paid to Independent Power Producers (IPP) in excess of capacity and energy charges according their Power Purchase Agreements (PPA). The amounts which have been paid are summarized below.

Power Plant	Start/Stop Charge (Mn.LKR)	Reimbursement Claim (Mn.LKR)	O & M Charge (Mn.LKR)	Total (Mn.LKR)
Asia Power	0.00	45.77		**45.77**
AES - Kelanitissa	201.50	36.20		**237.70**
Colombo Power - Barge	31.09	52.08		**83.16**
Heladhanavi	26.34	370.99		**397.33**
ACE Embilipitiya	20.39	172.58		**192.97**
Westcoast	415.91	404.44		**820.36**
Northern Power	0.00	14.20	25.65	**39.85**
Total (Mn.LKR)	**695.23**	**1096.26**	**301.35**	**1817.15**

8. Comparison of Scheduled Dispatch and Actual Dispatch

CEB implements a generation dispatches schedule every 6 months prior operation. It contains the amount of energy to be produced by each power plant for the forthcoming months. Due to numerous reasons the actual dispatch could be deviated from this schedule and, the comparison between actual and scheduled dispatches for the first six months of year 2013 is given below.

	Capacity MW	Scheduled GWh	Actual GWh	Variation GWh	Scheduled PF	Actual PF
Puttalam Coal	300	919.7	961.3	41.6	70.57%	73.77%
Sapugaskanda 2	72	236.5	179.1	-57.4	75.62%	57.27%
Heladhanavi	100	365.5	233.5	-132.0	84.14%	53.75%
Sapugaskanda 1	64	191.1	71.4	-119.7	68.74%	25.68%
Colombo Power Barge	60	211.6	197.2	-14.4	81.18%	75.66%
ACE Embilipitiya	100	309.9	235.4	-74.5	71.34%	54.20%
ASIA Power	51	168.0	109.1	-58.9	75.83%	49.23%
Kerawalapitiya	270	627.1	266.2	-360.9	53.47%	22.69%
AES Kelanitissa	163	275.9	126.0	-149.9	38.96%	17.80%
KPS GT 7	115	17.2	9.9	-7.3	3.44%	1.98%
KPS CCY	165	408.4	342.6	-65.8	56.98%	47.80%
KPS Small GT	85	3.6	0.5	-3.1	0.97%	0.14%
Total Grid Con. Thermal	1545	3734.5	2732.3	-1002.2	55.64%	40.71%
Northern Power	20	58.5	9.6	-48.9	67.33%	11.10%
Chunnakam	8	2.9	5.3	2.4	8.34%	15.31%
Uthura Janani	24	88.7	56.0	-32.7	85.08%	53.68%
Total Northern	52	150.1	70.9	-79.2	66.45%	31.40%
Renewable energy	341	283.3	510.9	227.6	19.12%	34.49%
CEB Hydro	1356	1880.0	2631.6	751.6	31.92%	44.68%
Total Generation	3294	6047.9	5945.7	-102.2		

9. Auxiliary Consumption

Auxiliary system facility is a major part of a power generation facility and the auxiliary consumption of a power plant depends on its configuration, age and related technical parameters. Purpose of an auxiliary system is to supply power for its own electricity requirements.

Normally 0.5% - 2% of power generated is consumed for the auxiliary system in hydro plants while the auxiliary consumption in fossil fuel power plants is 7% - 15% since there are different equipment like feed pumps, cooling water pumps, air fans, coal grinding mills, ash handling equipment etc. utilized in thermal plants.

Calculated percentages of auxiliary consumption out of gross generation during the first six months in 2013 of CEB power plants are as follows.

- CEB Hydro 0.37%
- CEB Thermal 1.30%
- CEB Wind 0.62%

Note: *Auxiliary power consumption data was available only for CEB power plants and consumptions for each plant separately were not available.*

10. Availability Factor

The evaluation of availability of a power plant is one of the most important tasks at any power station. To analyze plant availability performance, generation unit outages should be scrutinized to identify the causes of unplanned or forced energy losses and to reduce the planned energy losses. Reducing outages increases the number of operating hours, therefore increases the plant availability factor.

Availability Factor of a generation plant can be calculated using the formula given below.

$$Availability\ Factor = \frac{Duration\ in\ which\ the\ generation\ unit\ was\ available\ for\ opertaion}{Total\ length\ of\ the\ period}$$

Total Availability Factor for all CEB generation Units in first half of 2013 = **76.46%**

Availability Factor for CEB hydro generation units in first half of 2013 = **80.03%**

Availability Factor for CEB thermal generation units in first half of 2013 = **65.69%**

Availability Factor for CEB wind generation units in first half of 2013 = **98.92%**

Calculated availability factors for CEB owned generation plants in the first half of year 2013 are listed below.

CEB Hydro

Rantambe	98.67%
Nilambe	98.25%
Randenigala	97.98%
Samanalawewa	96.94%
Ukuwela	96.62%
Bowatenna	95.63%
Victoria	94.27%
Canyon	89.72%
Polpitiya	88.65%

New Laxapana	87.61%
Kotmale	85.55%
Wimalasurendra	80.06%
Old Laxapana	71.24%
Upper Kotmale	67.33%
Udawalawe	57.51%
Inginiyagala	52.49%
Kukule	51.79%

CEB Thermal

Puttalam Coal	95.44%
Uthura Janani	95.34%
KPS CCY	89.32%
Sapugaskanda 2	71.65%
KPS(Small) GT	54.23%
KPS GT7	42.07%
Sapugaskanda 1	32.52%

Note: *Interruption data is available only for CEB owned power plants*

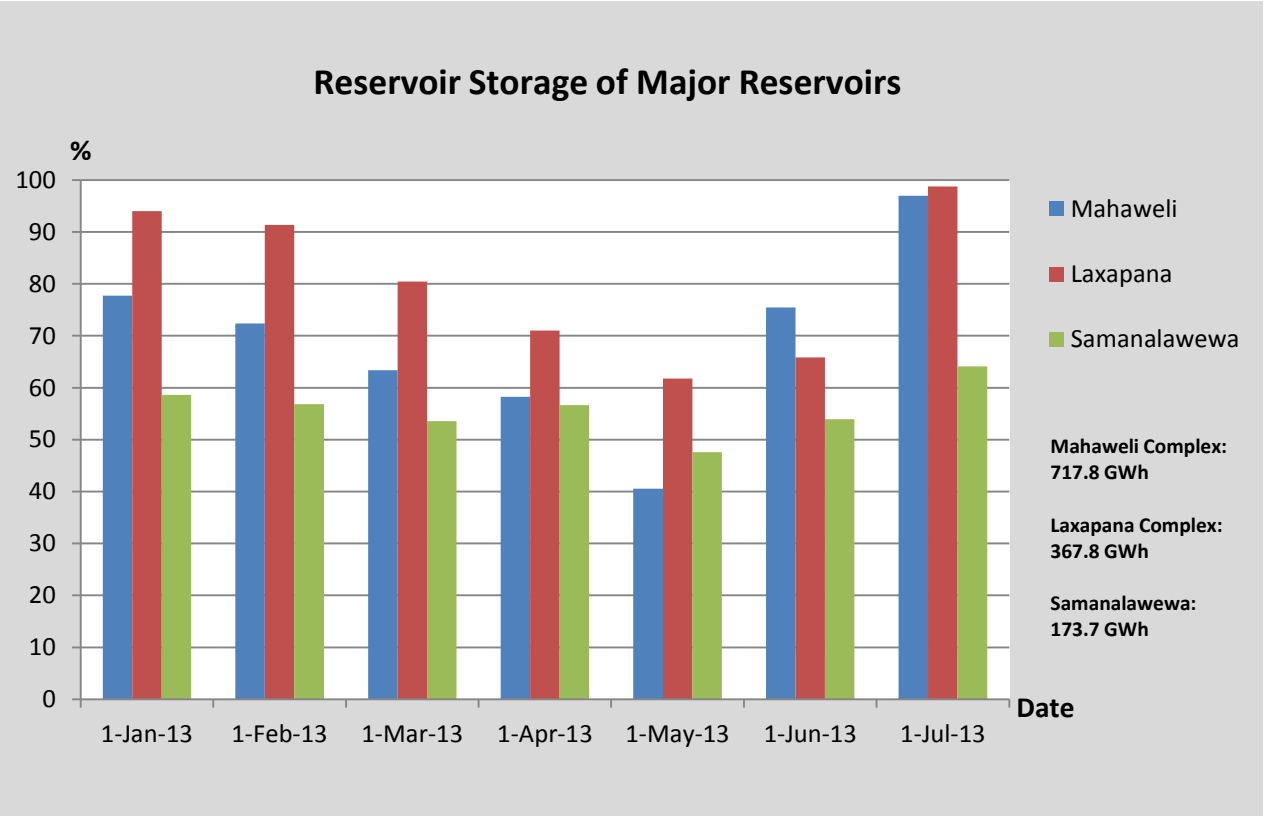
11.Reservoir Storages

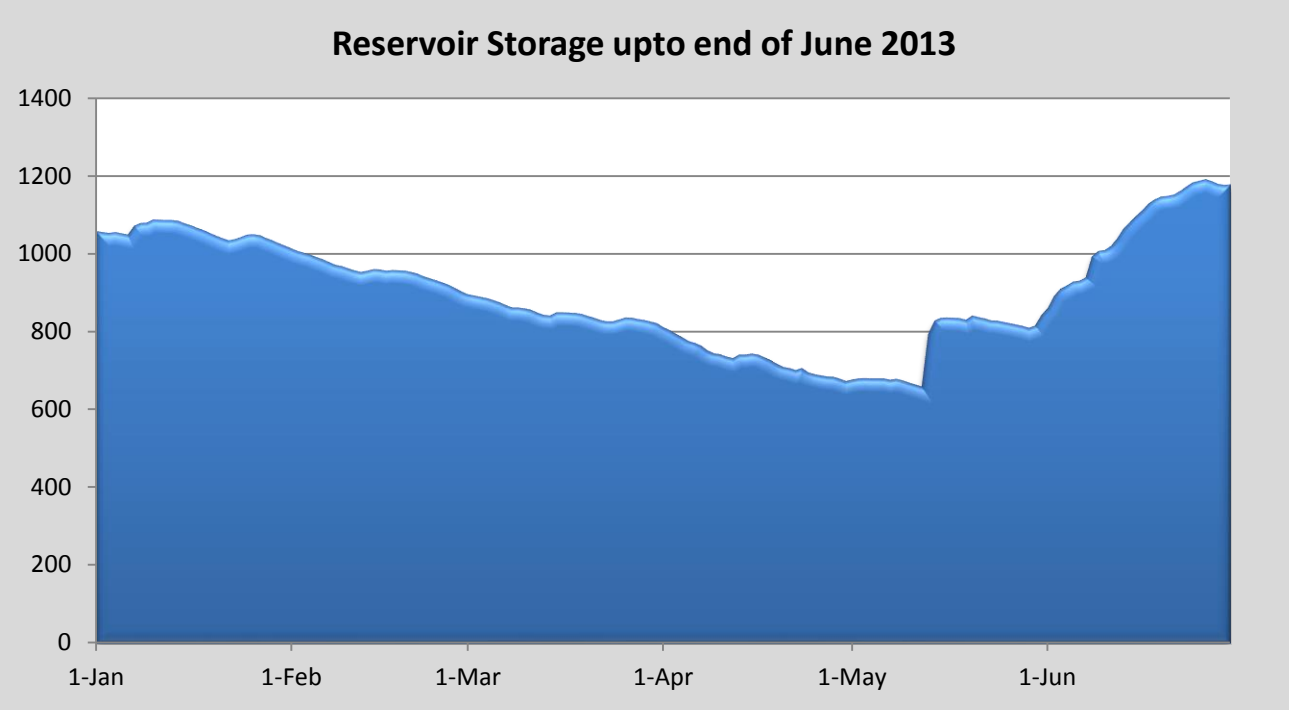
Hydro power is one of the major sources of electricity generation in the Sri Lanka and most of the large scale hydro projects have been developed by CEB. In 2013 approximately 41% of the total existed capacity by the end of June was covered by 17 CEB hydro stations and a contribution of 44.26% has been given out of total generation.

The major hydropower schemes already developed are associated with Kelani and Mahaweli river basins. Laxapana complex comprises five hydro power stations which have been built associated with the two main tributaries of Kelani River; Kehelgamu Oya and Maskeli Oya. Castlereigh and Moussakelle are the major storage reservoirs in the Laxapana complex. Mahaweli complex comprises seven hydro power stations and three major reservoirs; Kotmale, Victoria and Randenigala. In addition to above mentioned reservoirs Samanalawewa, which is on Walawe River, is also can be considered as a large reservoir. And all the other small reservoirs which contribute to power up the run-of-river type plants are considered as ponds.

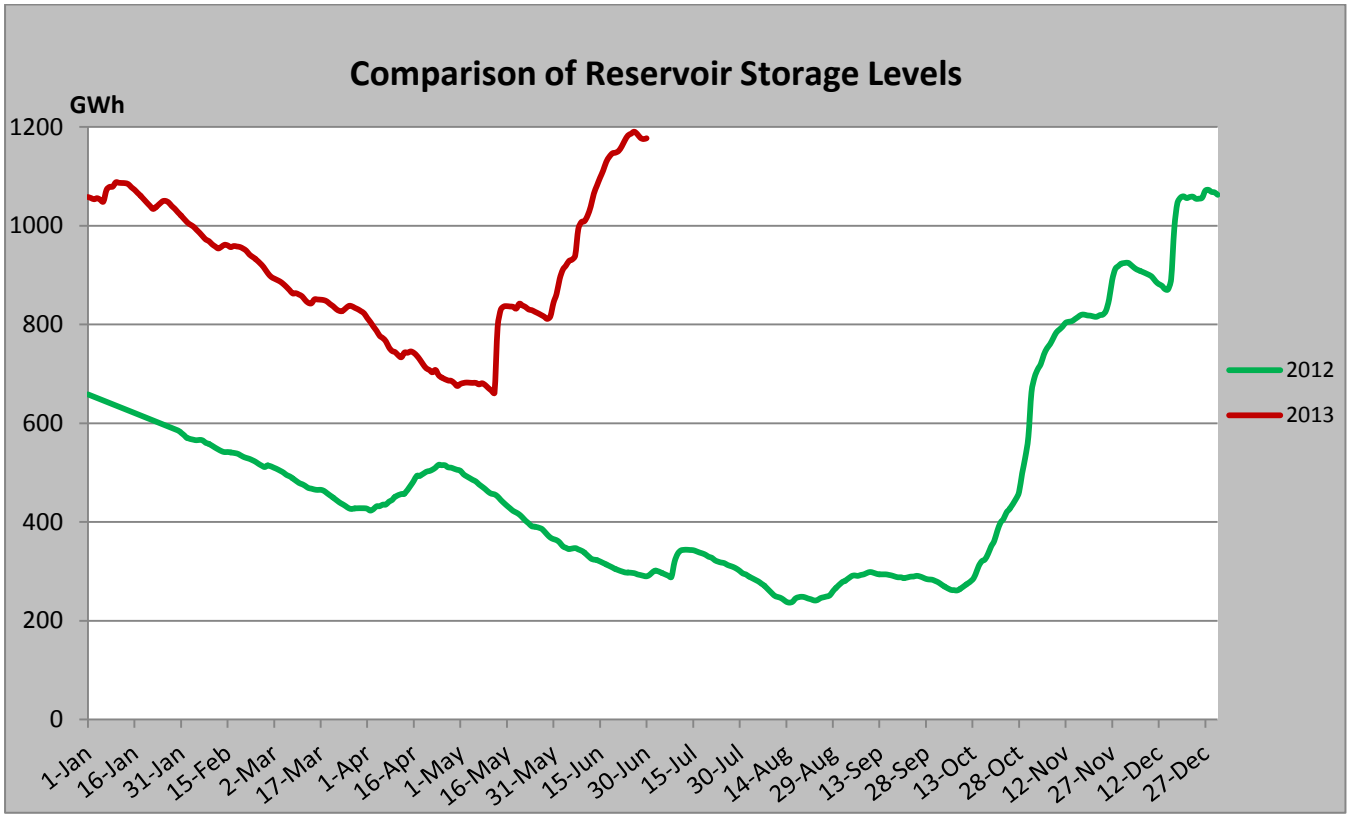
Therefore having a satisfactory capacity of water in these reservoirs throughout the year is essential to dispatch the hydro power to a significant amount.

The major reservoir storage levels prevailed during the first half of the years 2013 are depicted below.





Note: Only Mahaweli, Laxapana and Samanalawewa Complexes' reservoirs are considered in total reservoir storage profile.



12.Conclusion

Compared to the generation figures in first six months of year 2012, it can be perceived that hydro generation contribution of 18.24% has been climbed up to 44.26% during the first half of year 2013 as a result of the rich levels of hydro storage conditions. Also the contribution of renewable energy component has been improved to 8.6% which was 4% in year 2012, due to high rainfall. Therefore low IPP thermal generation (20% of total generation) has been dispatched during first six months of 2013.

The Report has described and calculated a number of key performance indicators for total generation system and individual generation plants operated in Sri Lanka. And it moreover gives a comparison of the generation statistics between first halves of year 2012 and 2013. The indicators for the present technical performance of the generation system are useful when planning the future developments and taking the corrective actions if necessary to improve the efficiency of generation.

Maximum electricity demand recorded in the year 2013 is 2164.2MW and it is expected to be risen to 2324MW in 2014 subjected to the peak demand growth rate of 7.4% as specified by the Long Term Generation Expansion Plan (2013-2032). To achieve this demand a system capacity of 3253MW (excluding NCRE contribution, including Puttalam Coal phase II) is available to dispatch during the year 2014. Therefore there will be a Reserve Margin of 40% when the peak demand of year 2014 is reached, assuming that all the power plants are readily available to dispatch with their full capacities. But when it comes to the practical state it is obvious that all the plants will not be available fully at the same time.

Even though the available dispatchable total capacity is dropped by 695MW the Reserve Margin can be maintained above 10%, which is the minimum allowed Reserve Margin by the Least-Cost Generation Expansion Planning Code. And it is to be noted that the phase 2 of the Puttalam Coal Power Plant will be commissioned by first quarter of 2014 to enhance the generation capacity of Sri Lankan electricity network.

Improving the performance of existing power plants is the most cost effective way to increase the energy producing capabilities of them. Performance indicators are very useful in identifying the areas where the improvements are needed. Among generation plants' performance measures plant factor, availability and auxiliary consumption are critical performance indicators, both in technical and commercial terms. Nevertheless, generator outages' details and auxiliary consumption data of IPPs are not available to assess the availability and percentage of auxiliary consumption of them. And individual auxiliary consumption data of CEB owned power plants are also not available to measure their individual performances. Therefore the availability details and auxiliary consumption data of all CEB and Private power are intended to be received in future through LISS in order to measure their performance.