Role of Biogas in the Current Energy Mix & Future Energy Plans of Sri Lanka

By

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Sri Lanka at a Glance

- Latitude 5° - 10° N, Longitude 79° -82° E
- 650 km north of equator
- 433 km N to S, 226 km E to W
- 65,610 km^2
- Population - 20.966 m (2015,CB) (Growth 1.3% p.a)
- 309 people per sq km
- Mean household income (2012/13) – Rs 45,878
- Gini coefficient 0.48
- Human Development Index (2014) 0.757, Rank 73

Electricity Sector

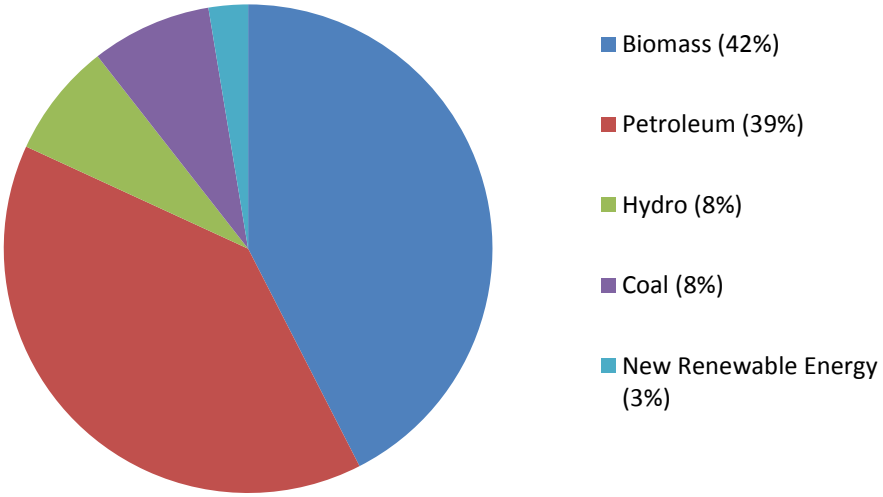
- Electricity supply – 230-240 V, , 50 Hz
- Installed capacity – 3,850 MW (2015, CB)
- Grid connectivity : 98.5 % HH (2015, CB)
- Per capita electricity consumption 562.1 kWh (2015, CB)
- Highest Peak Demand: 2,210 MW on 23rd March 2015 (first half of 2015)(PUC)
- Lowest Peak Demand: 1,495 MW on 15th April 2015 (first half of 2015)(PUC)
- MoP&RE, CEB, LECO, SEA - PUC

Energy Supply in Sri Lanka

(2014, SEA)

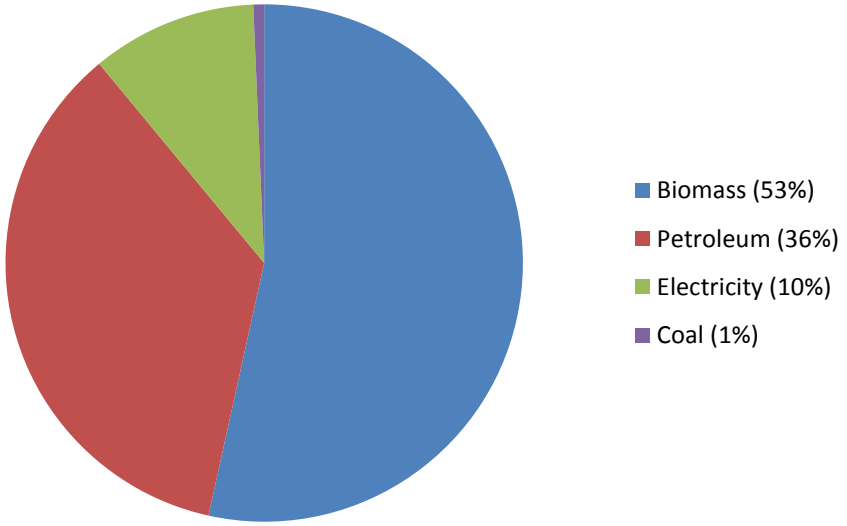
Primary Energy

Total Thousands of TOE 11,566

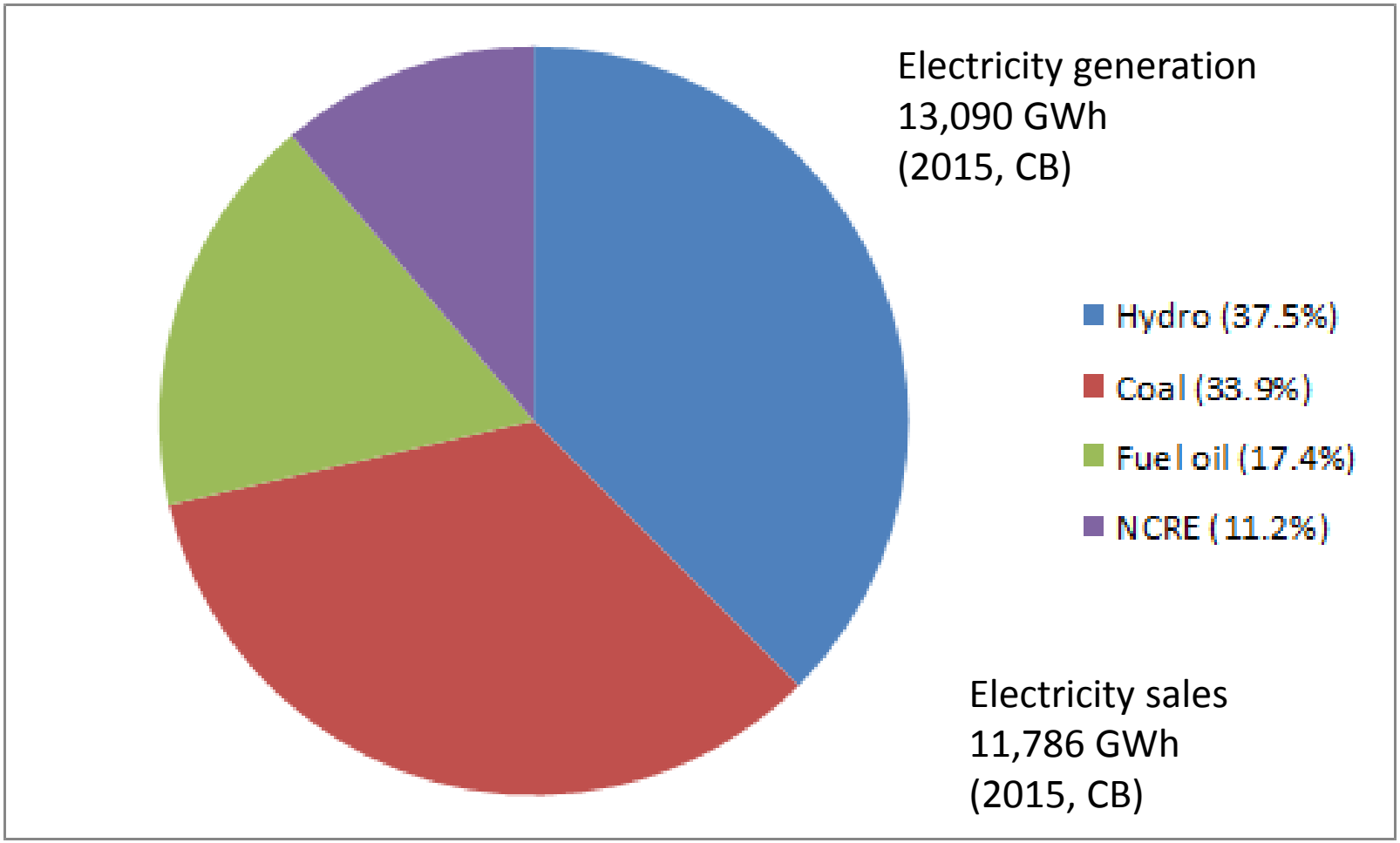


Secondary Energy

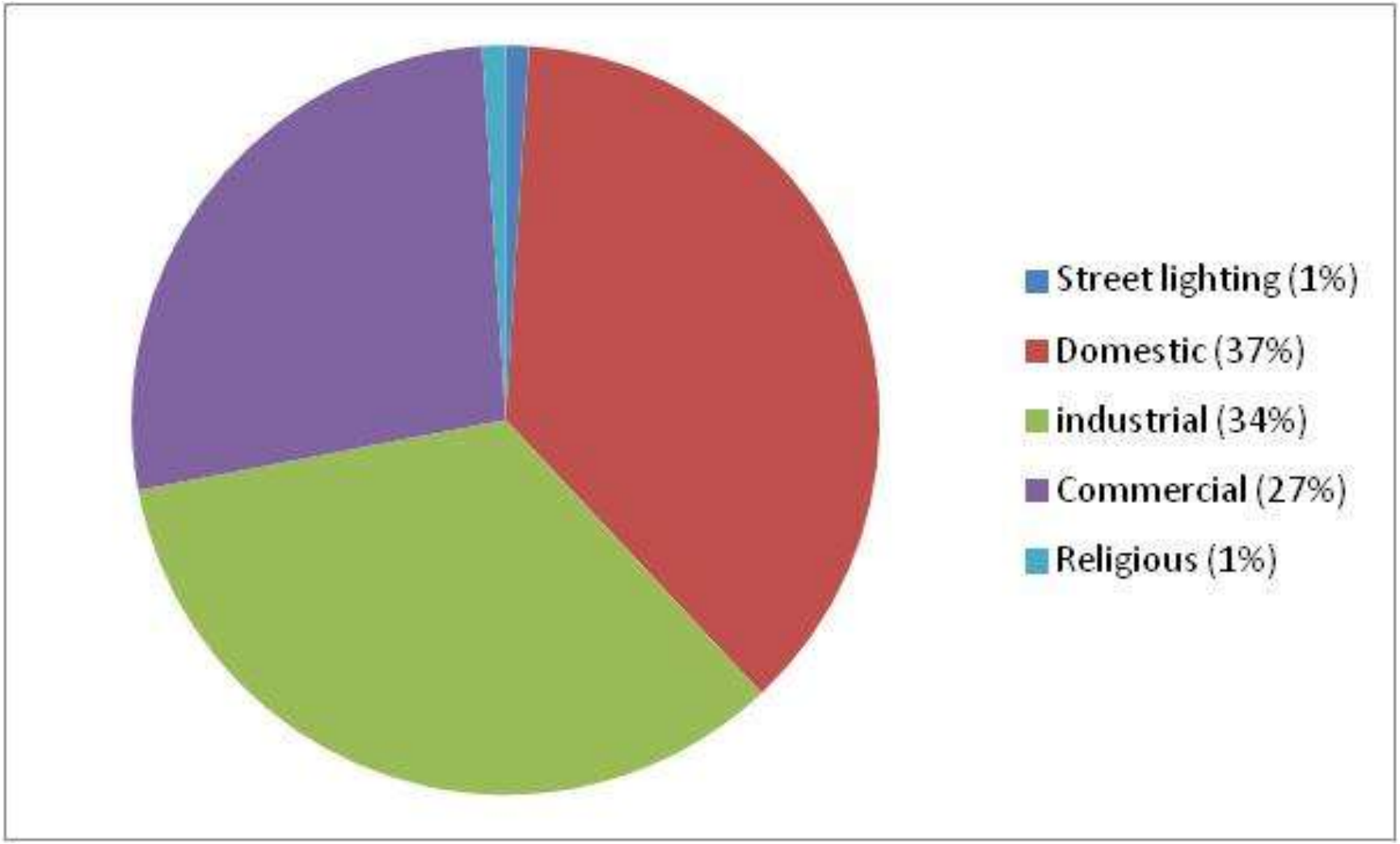
Total Thousands of TOE 9,136



Electricity Generation Mix (2015, CB)



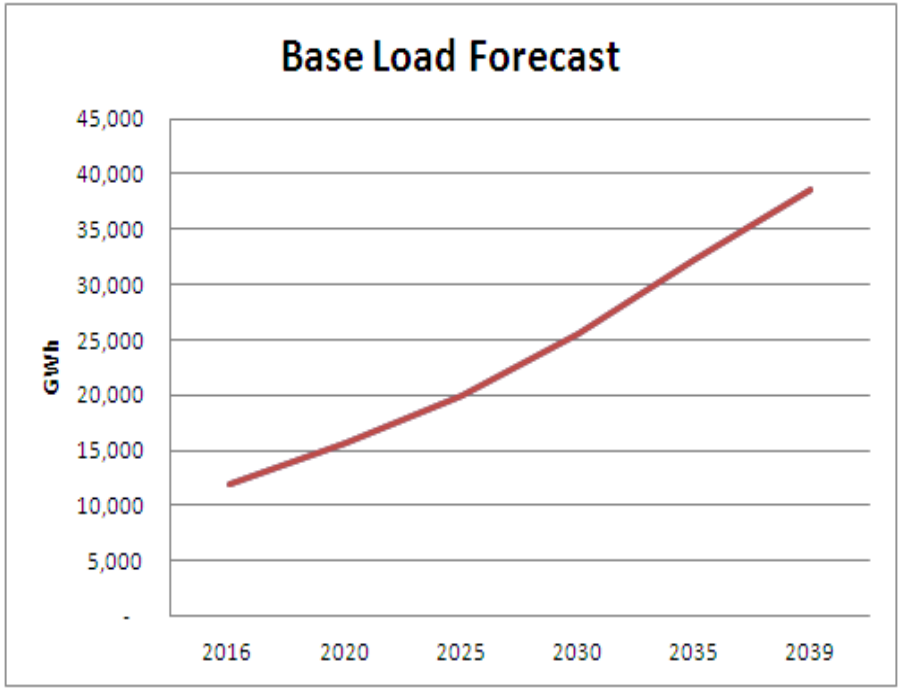
Sectoral Consumption of Electricity (2014)



Base Load Demand Forecast

(Long Term Generation Expansion Plan 2015-2039, CEB)

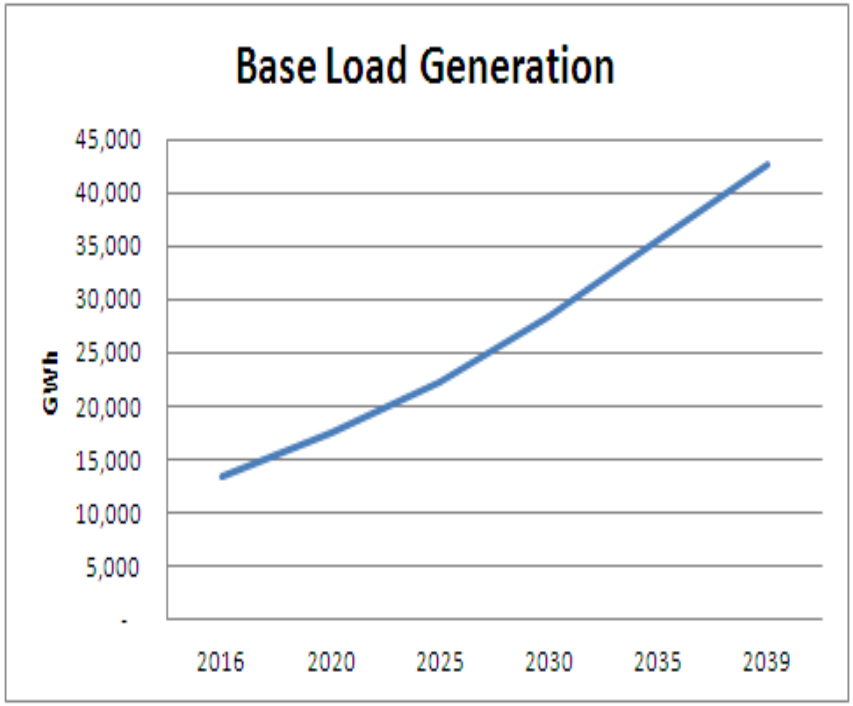
Base Load Demand Forecast	
Year	**Demand (GWh)**
2016	12,015
2020	15,681
2025	20,033
2030	25,598
2035	32,184
2039	38,569



Base Load Generation Forecast

(Long Term Generation Expansion Plan 2015-2039, CEB)

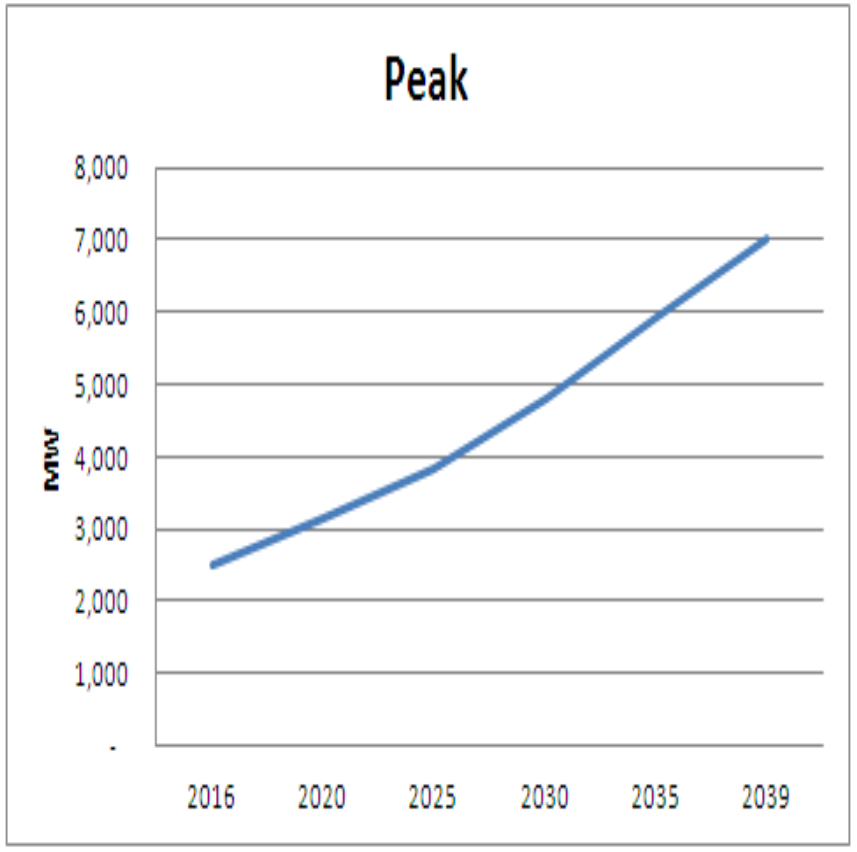
Base Load Generation Forecast	
Year	Generation (GWh)
2016	13,451
2020	17,512
2025	22,303
2030	28,410
2035	35,611
2039	42,571



Peak Forecast

(Long Term Generation Expansion Plan 2015-2039, CEB)

Peak Forecast	
Year	**Peak (MW)**
2016	2,483
2020	3,131
2025	3,836
2030	4,805
2035	5,934
2039	7,013



Consumer Tariffs

Monthly Consumption (1) kWh	Unit Charge (Rs./kWh)	Fixed Charge (Rs./month)
0-30	2.50	30.00
31-60	4.85	60.00

Monthly Consumption (1) kWh	Unit charge (Rs/kWh)	Fixed charge (Rs/month)
0-60	7.85	N/A
61-90	10.00	90.00
91-120	27.75	480.00
121-180	32.00	480.00
>180	45.00	540.00

Time of Use Electricity Tariff for Domestic Consumers

This is optional for 3Φ customers, piloting from September 2015

Time of Use (TOU)	Unit Charge (Rs./kWh)	Fixed Charge (Rs./month)
Peak (18.30-22.30)	54.00	540.00
Day (5.30-18.30)	25.00	
Off-peak (22.30-05.30)	13.00	

National Energy Policy on NCRE

The Government will endeavor to reach a minimum level of 10% of electrical energy supplied to the grid from NCRE by 2015

Renewable Energy Resource Potential (PJ)

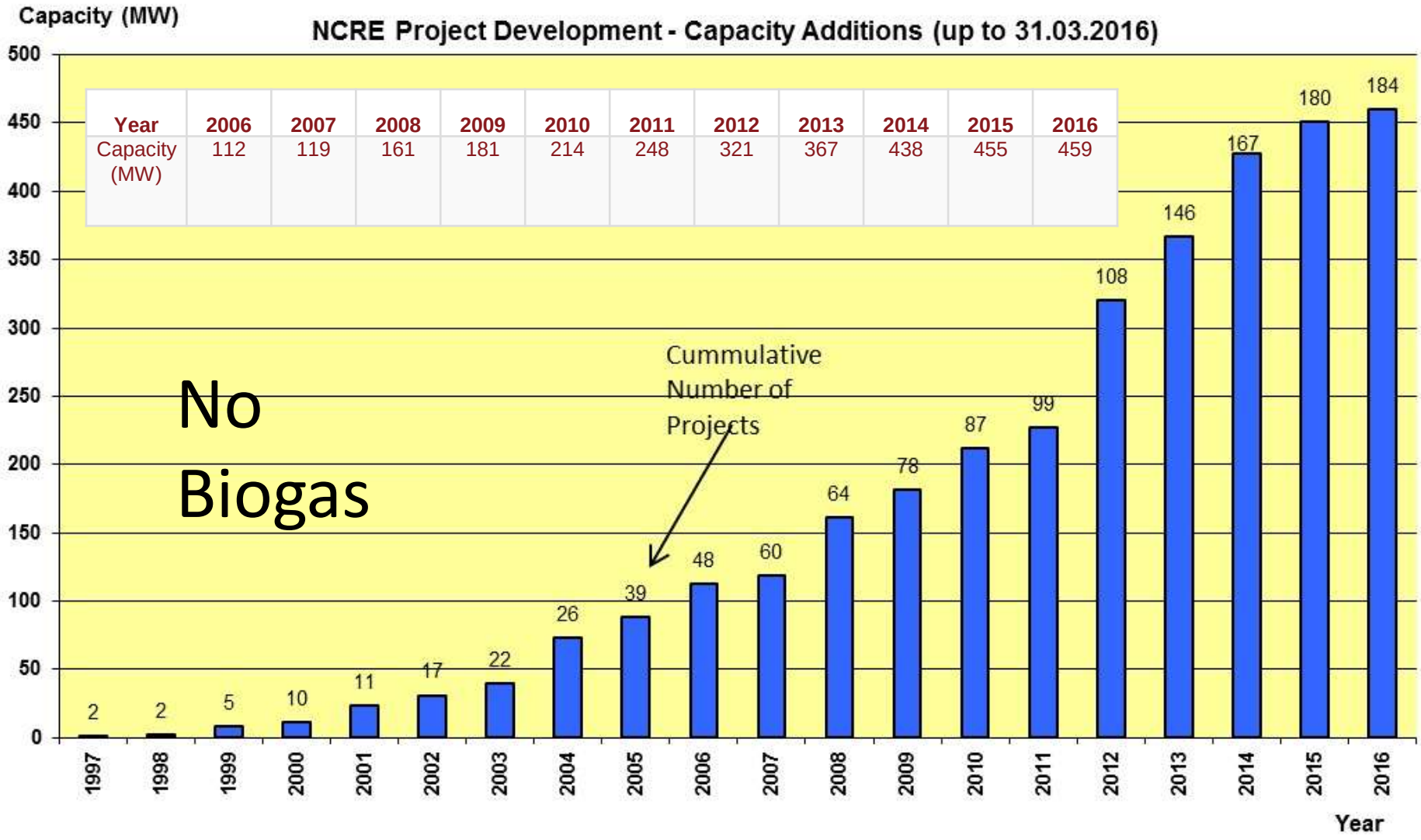
[Sri Lanka Energy Sector Development Plan 2015-2025, MoP&E, 2013]

RE Resource	Theoretical Potential	Technical Potential	Already Developed
Biomass	97	60	0.6
Hydro	33	30	21.9
Wind	242	57	1.3
Solar	35	32	0.01

Potential of Biogas is missing ! !

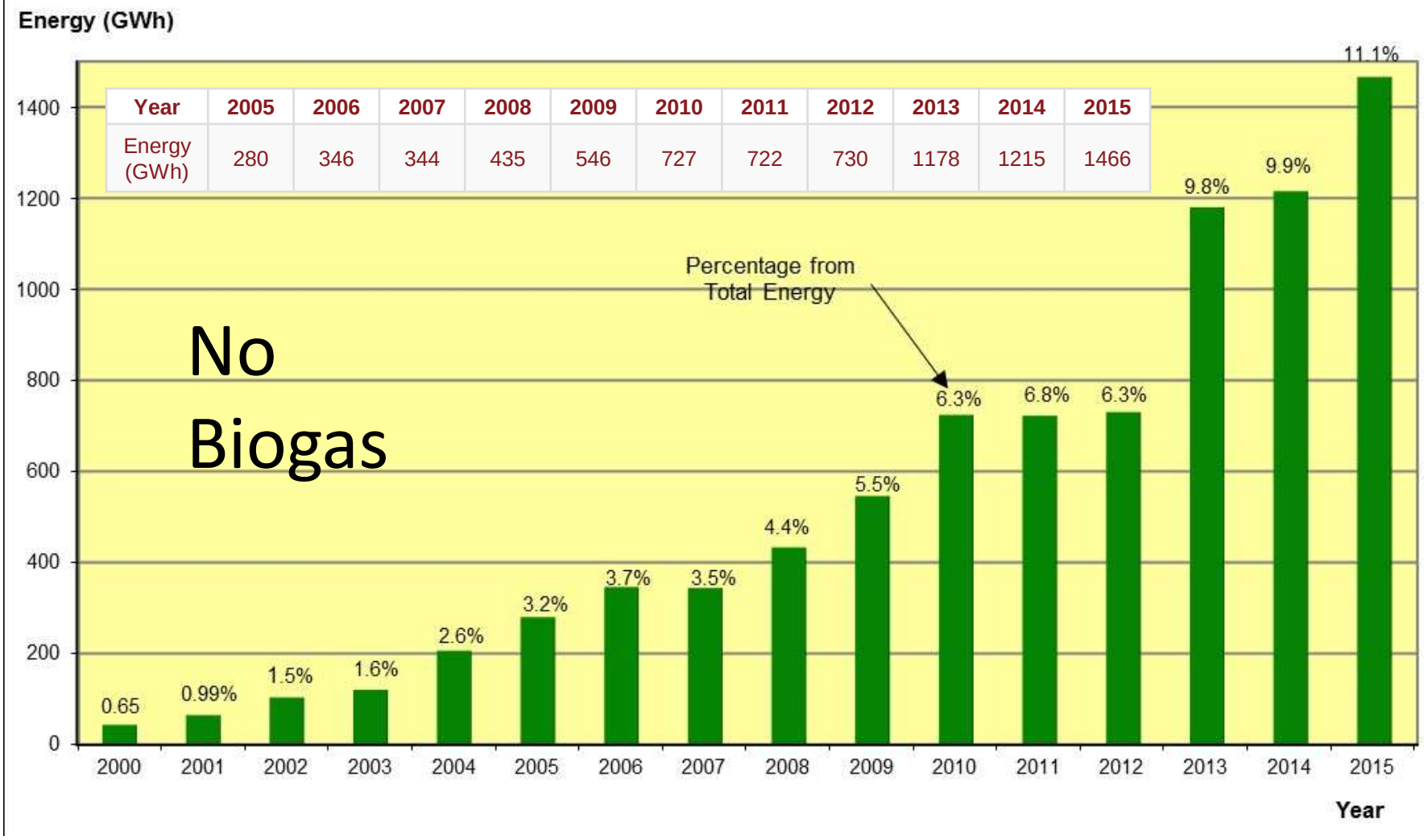
None conventional Renewable Energy

(CEB)



Annual Energy Contribution from NCRE Projects

(CEB)



Present Status of Non-Conventional Renewable Energy Sector

(as at 31/03/2016, CEB)

Project Type	No.of Projects	Capacity (MW)
Mini Hydro Power	158	315
Wind Power	15	124
Biomass-Agricultural & Industrial Waste Power	4	13
Biomass- Dendro Power	4	7
Solar Power	3	1
Total – Commissioned	**184**	**460**

No Biogas !!

Feed in Tariff for NCRE

All inclusive rates for 20 years per kWh

Under Standardized Power Purchasing Agreements (PUC, 2012)

Technology	Rate (LKR)
Mini Hydro	16.70
Mini Hydro-Local turbine	17.15
Wind	20.62
Wind-Local turbine	21.22
Biomass (Dendro)	25.09
Biomass (Agri & industrial waste)	17.71
Municial Solid Waste	26.10
Waste Heat	9.19
Other RE under SPPA	25.09

Role of Biogas in the Current Energy Mix & Future Energy Plans of Sri Lanka

- Current biogas contribution – Negligible
- Future biogas contribution – Negligible
- Only 1 on-grid biogas project is in pipeline
- 2 projects – NAMA & EC Switch Asia
- DAPH & Provincial Ministries – Domestic Biogas
- No national biogas program yet
- High potential from Institutions and MSW
- We, enthusiasts, thrive hard ! !

THANK YOU

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