

# POWER SECTOR DEVELOPMENT IN SRI LANKA

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# INTRODUCTION

## Mandate of the Ministry of Power & Energy is to

- Implementation of Policies, plans and programmes in respect of matters relating to Power & Energy
- Investigation, planning and development of electricity facilities throughout the island including hydropower, thermal power, mini hydro, coal power etc.
- Rural electrification
- Development of a sound, adequate and uniform electricity policy for the control, regulation and utilization of National power resources
- Energy efficiency, demand management etc.
- Investigation, planning, implementation and co-ordination of energy matters
- Renewable energy development

## INSTITUTIONS UNDER THE PURVIEW OF THE MINISTRY

- **CEYLON ELECTRICITY BOARD**
- **LANKA ELECTRICITY COMPANY**
- **LANKA TRANSFORMERS LIMITED**
- **SRI LANKA SUSTAINABLE ENERGY AUTHORITY**



# STATUS OF POWER & ENERGY SECTOR IN 2005

# POWER GENERATION IN 2005

## ■ GENERATION CAPACITY TO THE CEB GRID

### CEB CAPACITY

- HYDRO PLANTS – 1207MW
  - THERMAL PLANTS – 529MW
  - WIND POWER PLANT – 3MW
- CEB TOTAL CAPACITY – 1739MW**

### Hydro Power Plants

- Laxapana Complex
- Mahaweli complex
- Samanalawewa
- Kukule

### Thermal Power Plants

- Kelanitissa
- Sapugaskanda

### IPP CAPACITY

- THERMAL PLANTS – 585MW
- MINI-HYDRO PLANTS – 80MW
- PRIVATE RENEWABLE – 2MW

### IPP Thermal Power Plants

- Asia Power
- Lakdhanawi
- Barge Mounted
- Ace
- Heladhanavi
- AES-KPS
- Kool Air
- Aggreko

**TOTAL PRIVATE CAPACITY – 667MW**

**TOTAL GENERATION CAPACITY – 2406MW**

# TRANSMISSION

Number of 220 kV Grid substations – 6

Number of 132 kV Grid Substations – 34

Total length of 220 kV transmissions lines – 331km

Total length of 132kV transmissions lines – 1675km

Total length of 132 kV UG Cables – 13km



# POWER DISTRIBUTION IN 2005

- comprises 33kV, 11kV and 400V, 21,000km of MV lines and 15,000 transformers feeding LT network 71,000km low voltage lines.
- Over all Electrification level is 70%(3.3mn households of the country)
- Electrification levels in Provinces

- Colombo – 96%
- Gampaha – 96%
- Kalutara – 78%
- Galle – 91%
- Matara – 86%
- Hambantota – 68%
- Monaragala – 47%
- Ratnapura – 61%
- Nuwaraeliya – 77%
- Badulla – 63%
- Jaffna– 49%
- Kilinochchi – -

- Batticaloa – 47%
- Ampara – 60%
- Kandy – 74%
- Kegalle – 70%
- Polonnaruwa – 61%
- Matale – 74%
- Trincomalee – 50%
- Anuradapura – 62%
- Kurunegala – 66%
- Puttalam – 73%
- Mannar – -%
- Vavunia – 66%
- Mullative – -



# ROAD MAP FROM 2005



# Power Generation

	Total installed capacity(MW)	Peak demand (MW)
2005	2411	1748
2006	2434	1893
2007	2444	1842
2008	2645	1922
2009	2645	2645

# NEW GENERATION PROJECTS INITIATIVES FROM 2005

- Kerawalapitiya 200MW thermal power plant. 100MW ST part of Keraw.CCY plant.
- Upper Kotmale Hydro Power Project. Expected capacity is 150MW. JEBIC of Japan has provided funds for this project.
- Puttlam Coal Power plant. 3X300MW capacity. Funds were committed from Chinese government.
- Broadlands (35MW), Moragolla (45MW), Gin Ganga (35MW), Uma Oya 125MW) hydro power projects were also initiated.
- Energy diversification enhancement project (construction of LNG related facilities)
- Trincomalee coal fired Thermal Power Plant 02 X 500MW

## Rehabilitation of existing generation capacity

- Rehabilitation of Old Laxapana Power Station
- Rehabilitation of Ukuwela Power Station
- Expansion of Victoria Hydro power Project
- Rehabilitation of new Laxapana and Wimalasurendra Hydro power Project

# Transmission Projects

- Power sector development project : Part C funded by ADB

This project is packaged in to two lots.

Lot A – 63MVA 132/33kV Grid substations at Ambalangoda, Pannala, Aniyakanda and complete Augmentation of Deniyaya Grid substation to 63MVA.

Lot B – 44 km of 132kV transmission lines and reconductoring of one earth wire of 104 km with OPGW.

- Greater Colombo Grid substation Project funded by KFW

04 no.s of 2X 31.5MVA grid substations at Dehiwala, Maradana, Havelock town and Sri Jayawardanapura (Lot A ) and Installation of 28km of 132 kV cables (Lot B).

# Transmission cont....

- **Kerawalapitiya Kotugoda 220kV project funded by Japan**

220kV gas insulated indoor substation at Kerawalapitiya, 220kV outdoor substation at Kotugoda and 220kV transmission line from Kerawalapitiya to Kotugoda

- **Transmission and Substation Development Project 2 funded by Japan**

2X 31.5MVA grid substations at Ratnapura and Athurugiriya. Complete rehabilitation of Thulhiriya grid substation including addition of one 31.5MVA 132/33kV transformer, construction of the 132kV bays at Balangoda grid substation , addition of 132kV outdoor switchgear at Chilaw Grid Substation. Installation of 130MVA capacitor banks.

- **New Galle Transmission development project funded by Nordic Banks**

36km long 132 kV line from Ambalangoda to Galle , construction of 31 MVA 132/33 kV transformer and nine 132 kV switchyard bays and fifteen 33kV switchyard bays and 20MVAR Capacitor banks at Galle grid substation.

- **New 220kV transmission Line from Puttlam to Veyangoda 118km**

- **Indo Sri Lanka Power Interconnection Line- Construction of Power interconnection between Madurei and Anuradapura**

# Transmission cont.

- Beliatta grid substation project
- North-East Power Transmission development Project
- Vavunia- Kilinochchi Transmission line
- Kilinochchi-Chunnakam Transmission line
- Veyangoda – Habarana – Trincomalee
- Rehabilitation and improvement of 33kV sections and 132kV sections of Kotugoda substation
- Clean Energy Access Improvement Project
  - B21– Augmentation of Panadura, Veyangoda, Matara, Kurunegala. Habrana and horana Grid sub stations. And construction of Pallekele, Maho and Naula Grid Sub stations.
  - B22- construction of transmission lines for Ukuwela-Pallekele, Maho-Puttlam, Galle-Matara
  - Eastern Province- Augmentation of Ampara and Valachchena grid substations and constructions of transmission lines for Habarana-Valachchena
  - E1- Augmentation of Balangoda, Seethawaka, Nuwaraeliya, Ukuwela, Badulla and Mahiyangana Grid Substations
  - Construction of Rantembe-Mahiyangana Transmission Line and Augmentation of Ratnapura and Wimalasurendra Substations

# Distribution Projects

- Rural Electrification project 4 – 225 new schemes
- Power sector development project – part A  
(Rural Electrification project 6) – 729 new schemes
- Power sector development project –part B
- Rural Electrification project 7 – 426 Schemes
- Colombo City Electricity Distribution development project.- extension of 132 kV feeder base at Kolonnawa, installation of a new 132kV indoor gas insulated switch gear substation at Kelanitissa and new 11kv cable network.
- Lighting Sri Lanka Projects  
(Hambantota, Ratnapura, Kandy, Kegalle, Monaragala, North Centrl, Trincomalee)



# **STATUS OF POWER & ENERGY SECTOR TODAY**



# POWER GENERATION TODAY

## GENERATION CAPACITY TO THE CEB GRID

### CEB CAPACITY

- HYDRO PLANTS – 1207MW
- THERMAL PLANTS – 548MW
- WIND POWER PLANT – 3MW

**CEB TOTAL CAPACITY – 1758MW**

### IPP CAPACITY

- THERMAL PLANTS – 737MW
- MINI-HYDRO PLANTS – 150MW

**TOTAL PRIVATE CAPACITY – 887MW**

#### Hydro Power Plants

- Laxapana Complex
- Mahaweli complex
- Samanalawewa
- Kukule

#### Thermal Power Plant

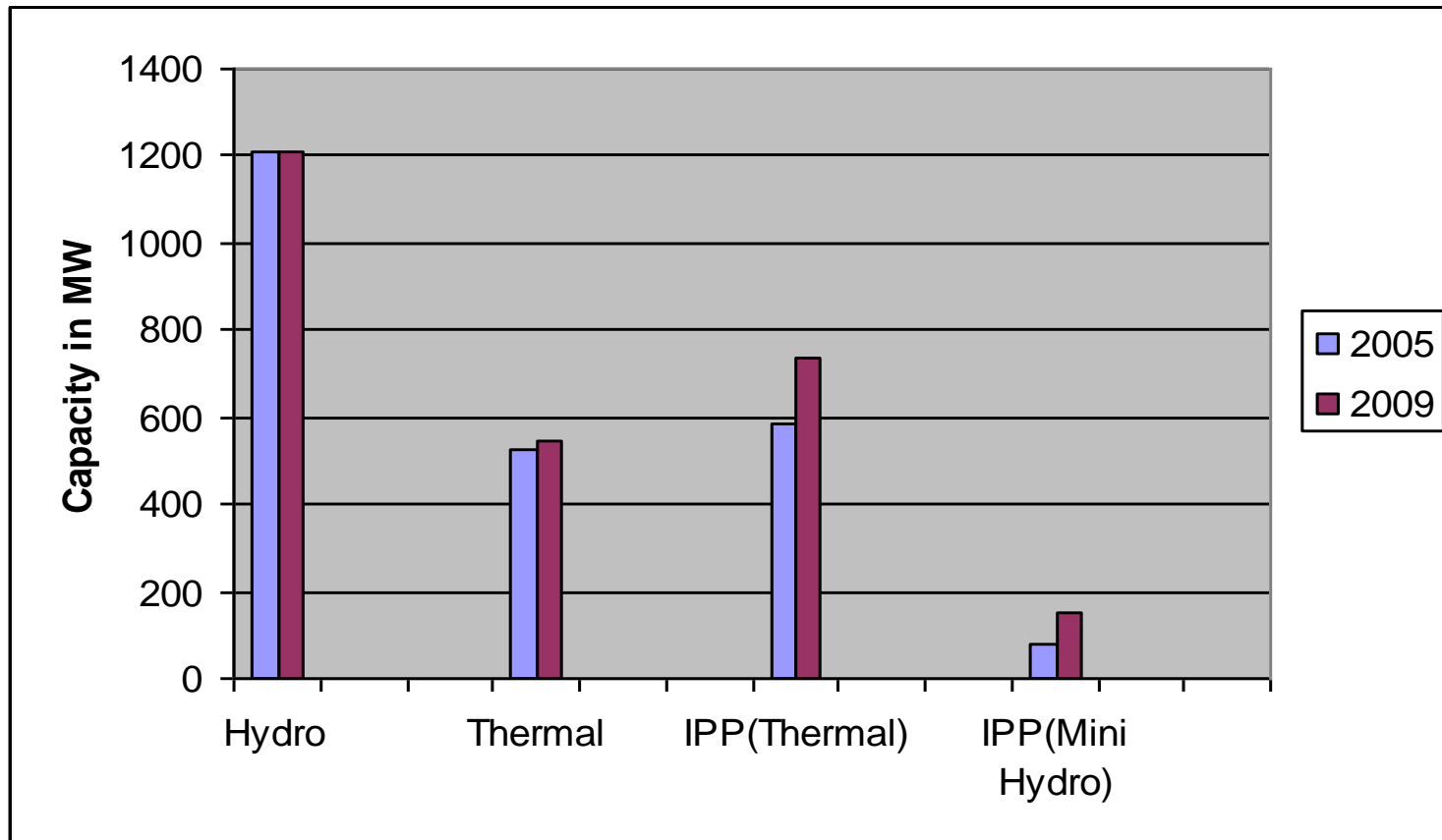
- Kelanitissa
- Sapugaskanda

#### IPP Thermal Power Plant

- Lakdhanavi
- Heladhanavi
- Colombo Power
- Asia Power
- ACE- Matara, Horana, Ambilipitiya
- West Coast

**TOTAL GENERATION CAPACITY – 2645MW**

# Total Power Installation Capacity in 2005 & 2009

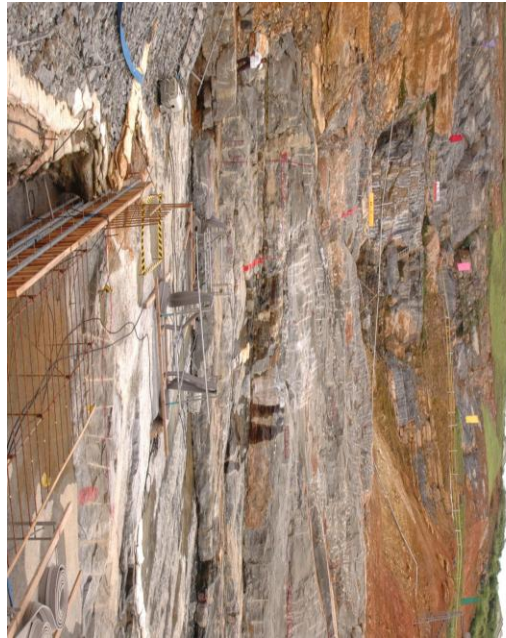


Total Installation Capacity – 2411MW – 2645MW

# On going Projects for power Generation

- Upper Kotmale Hydro Power Project.  
Project installation capacity is 150MW. Funded by Japan and GOSL.  
Project will be commissioning by end of 2010.
- Kerawalapitiya Combined Cycle Power Plant. Project. Installation capacity is 270MW will be fully commissioning Nov.2009.
- Puttlam Coal Power Project. Total installation capacity is 300MW.  
First phase will be completing by 2010.
- Trincomalee Coal Power Project. MOU has been signed and Agreement has been finalized.
- Broadlands Hydro Power Project of 35MW. Tender has already been awarded and commissioning by 2013.

# Upper Kotmale Hydro power Project



# Kerawalapitiya Power Project



6/17/2010

# Puttlam Coal Power Project



6/17/2010

# TRANSMISSION

Number of 220 kV Grid substations – 6

Number of 132 kV Grid Substations – 41

Total length of 220 kV transmissions lines – 350km

Total length of 132kV transmissions lines – 1722km

Total length of 132 kV UG Cables – 41km



# Transmission capacity from 2005-2009

	<b>2005</b>	<b>2009</b>
No.of 220kV Grid substations	6	6
No.of 132kV Grid substations	34	41
Total length of 220kV lines	331km	350km
Total length of 132kV lines	1675km	1722km
Total length of 132kV UG cables	13km	41km



# On going Projects for Transmission

- Power Sector Development Project (Part C) – Augmentation of Deniyaya Grid Sub Station and Construction of Katunayaka Grid Sub station
- Colombo City Distribution Project
- Beliatta Grid Substation Project
- Vavunia Kilinochchi Transmission Line Project
- Kilinochchi-Chunnakam transmission Line Project
- Kerawalapitiya Kotugada Transmission Line
- Clean Energy Access Improvement Project

B21– Augmentation of Panadura, Veyangoda, Matara, Kurunegala. Habrana and horana Grid sub stations. And construction of Pallekele, Maho and Naula Grid Sub stations.

B22- construction of transmission lines for Ukuwela-Pallekele, Maho-Puttlam, Galle-Matara

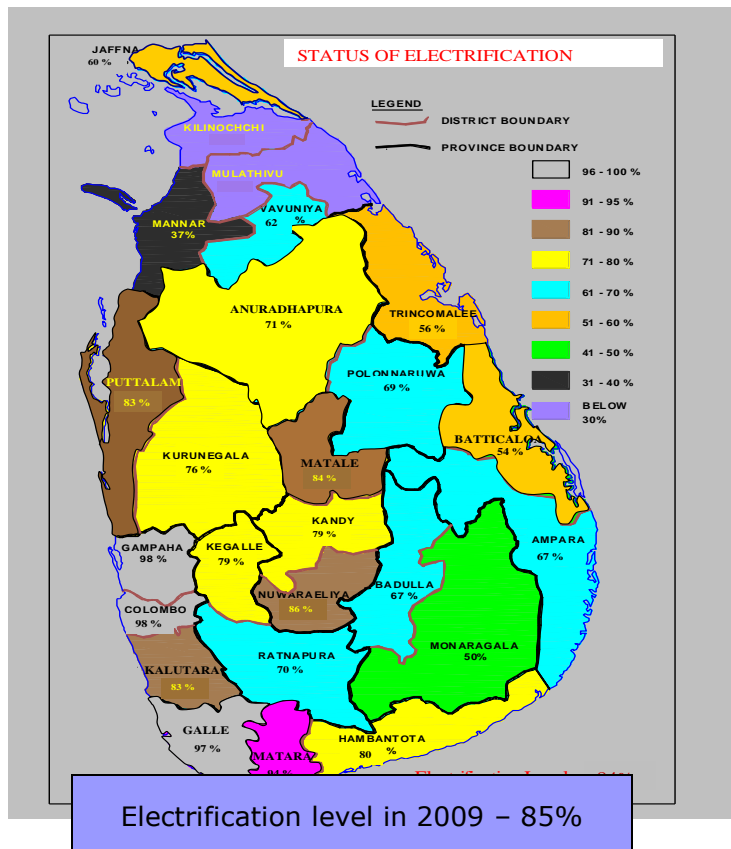
Eastern Province- Augmentation of Ampara and Valachchena grid substations and constructions of transmission lines for Habarana-Valachchena

E1- Augmentation of Balangoda, Seethawaka, Nuwaraeliya, Ukuwela, Badulla and Mahiyangana Grid Substations

Construction of Rantembe-Mahiyangana Transmission Line and Augmentation of Ratnapura and Wimalasurendra Substations

# Distribution

## Overall Electrification level is 85%



### Status of Electrification

- Colombo – 98%
- Gampaha – 98%
- Kalutara – 83%
- Galle – 97%
- Matara – 94%
- Hambantota – 80%
- Monaragala – 50%
- Ratnapura – 70%
- Nuwaraeliya – 86%
- Badulla – 67%
- Jaffna – 60%
- Kilinochchi – 4%
- Ampara – 67%
- Batticaloa – 54%
- Kandy – 79%
- Kegalle – 79%
- Polonnaruwa – 69%
- Matale – 84%
- Trincomalee – 56%
- Anuradapura – 71%
- Kurunegala – 76%
- Puttalam – 83%
- Mannar – 37%
- Vavunia – 62%
- Mullative – 1%

# Electrification levels increased from 2005 to 2009

Overall Electrification Level increased from 70% -85%

■ Kandy	-	74%	-	79%
■ Matale	-	74%	-	84%
■ Nuwaraeliya	-	77%	-	86%
■ Anuradapura	-	62%	-	71%
■ Polonnaruwa	-	61%	-	69%
■ Kurunegala	-	66%	-	76%
■ Puttalam	-	73%	-	83%
■ Gampaha	-	96%	-	98%
■ Ampara	-	60%	-	67%
■ Batticaloa	-	47%	-	54%
■ Trincomalee	-	50%	-	56%
■ Vavunia	-	66%	-	62%

■ Colombo	-	96%	-	98%
■ Kalutara	-	78%	-	83%
■ Galle	-	91%	-	97%
■ Matara	-	86%	-	94%
■ Hambantota	-	68%	-	80%
■ Badulla	-	63%	-	67%
■ Manaragala	-	47%	-	50%
■ Ratnapura	-	61%	-	70%
■ Kegalle	-	70%	-	79%
■ Mannar	-	-	-	37%
■ Mulltieve	-	-	-	-1%
■ Kilinochchi	-	-	-	4%
■ Jaffna	-	49%	-	60%

# Major on going projects for electrification

- Uthuru Wasanthaya for Northern Province – 400 new schemes
- Accelerated Rural Electrification Programme – 600 new schemes
- Rural Electrification – 4 – 225 new schemes
- Rural Electrification – 8 – 1000 schemes
- Lighting Sri Lanka Projects
  - Southern Province
  - Ratnapura
  - Kegalle
  - Trincomalee
  - Monaragala
  - Eastern Province
  - Matale
  - Kalutara
  - Polonnaruwa & Anuradapura



**THANK YOU**