

# TRAINING AND DIALOGUE PROGRAMS

## Energy Policy (B)

June 3, 2012 to June 23, 2012  
IEEJ, Japan

**Mr. Phan Bunthoeun (Cambodia)**

**Ministry of Industry, Mines and Energy**

# Contents

- Basic Facts of Cambodia
- Cambodia Power Sector Overview
- Major Issues
- Cambodia Power Industry (Structure)
- Energy Policy
- Cambodia Power Development Plan



# Basic Facts of Cambodia

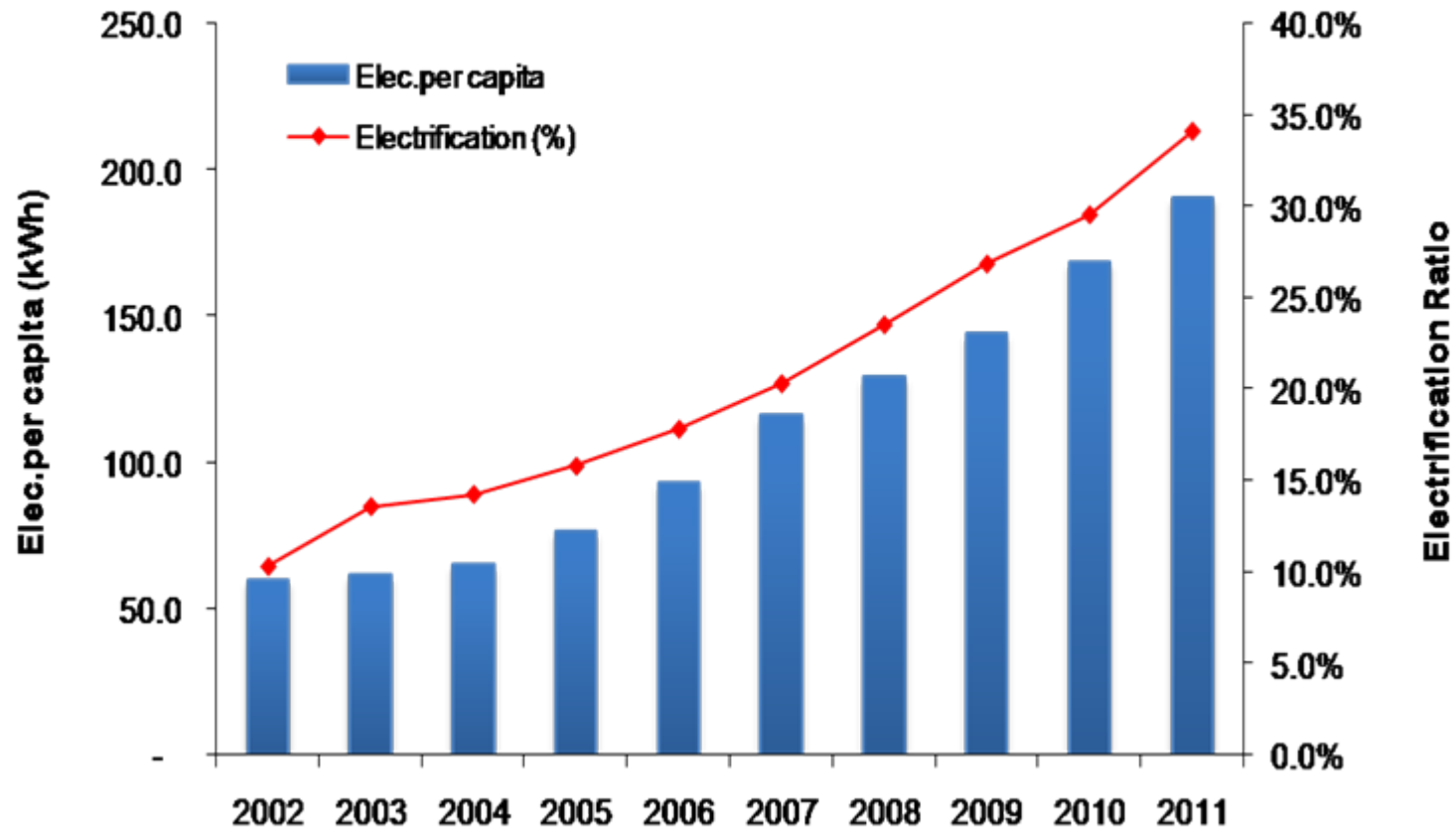
- Country area 181,035 sq. km
- Population 14 million
- GDP/capita \$900. GDP by sectors, Agriculture 31%, Industry 26%, Service 43%
- Hydro power potential about 10,000 MW, at present capacity < 10% used



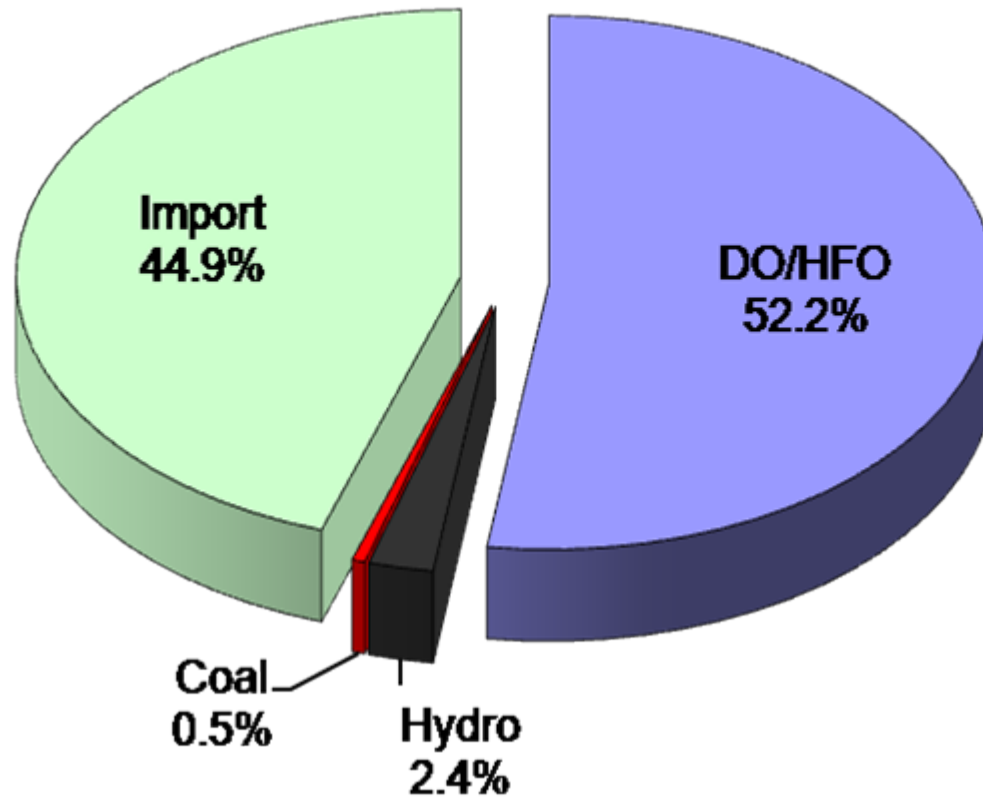
# Cambodia Power Sector Overview

- Electricity demand growth 16%
- Annual energy consumption per capita 190 kWh
- Electrification 35%
- Capacity supply 635 MW
- Electricity supply 2,675 GWh

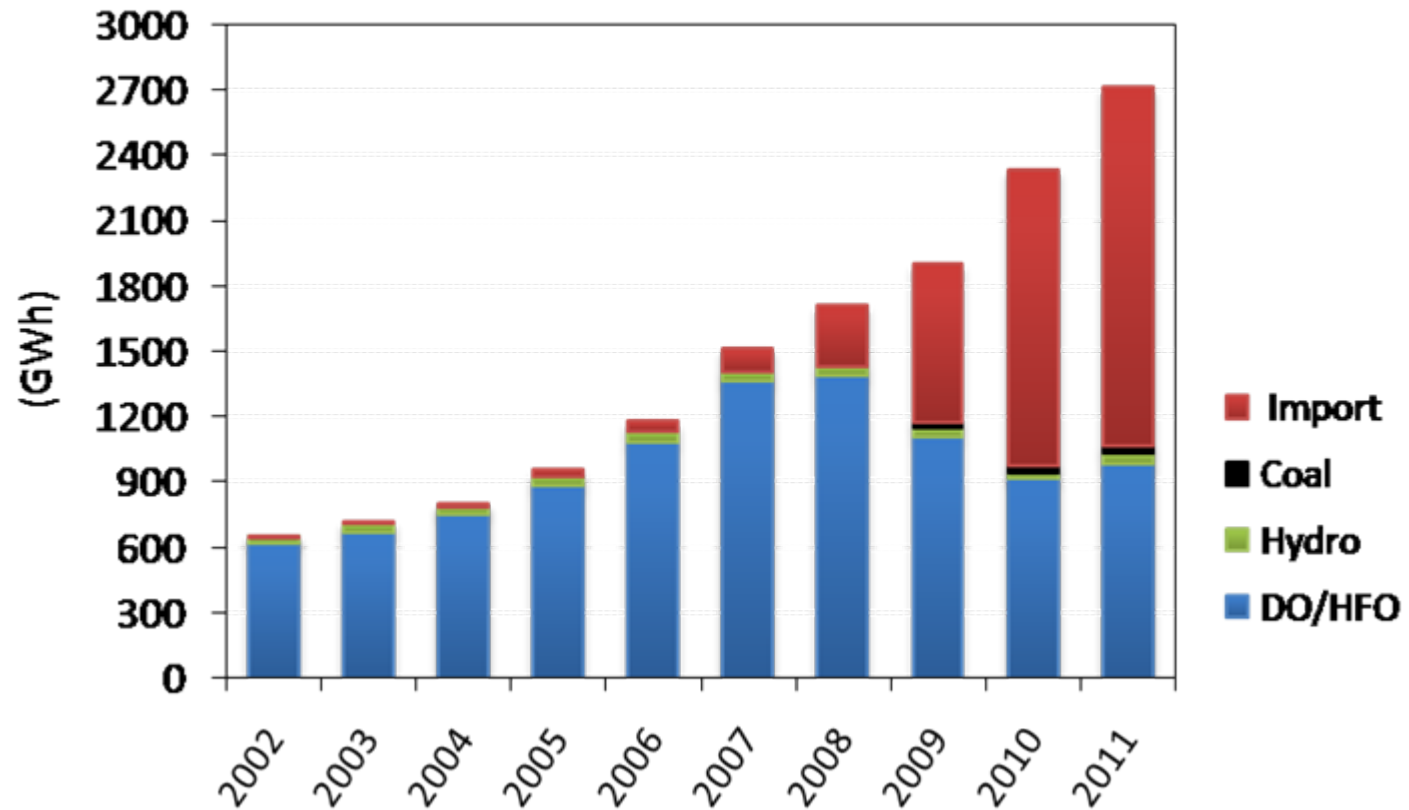
## Electricity Indicators



## Fuel Share in Electricity Generation 2011



## Trend of Electricity Supply by Fuel Mix in Cambodia

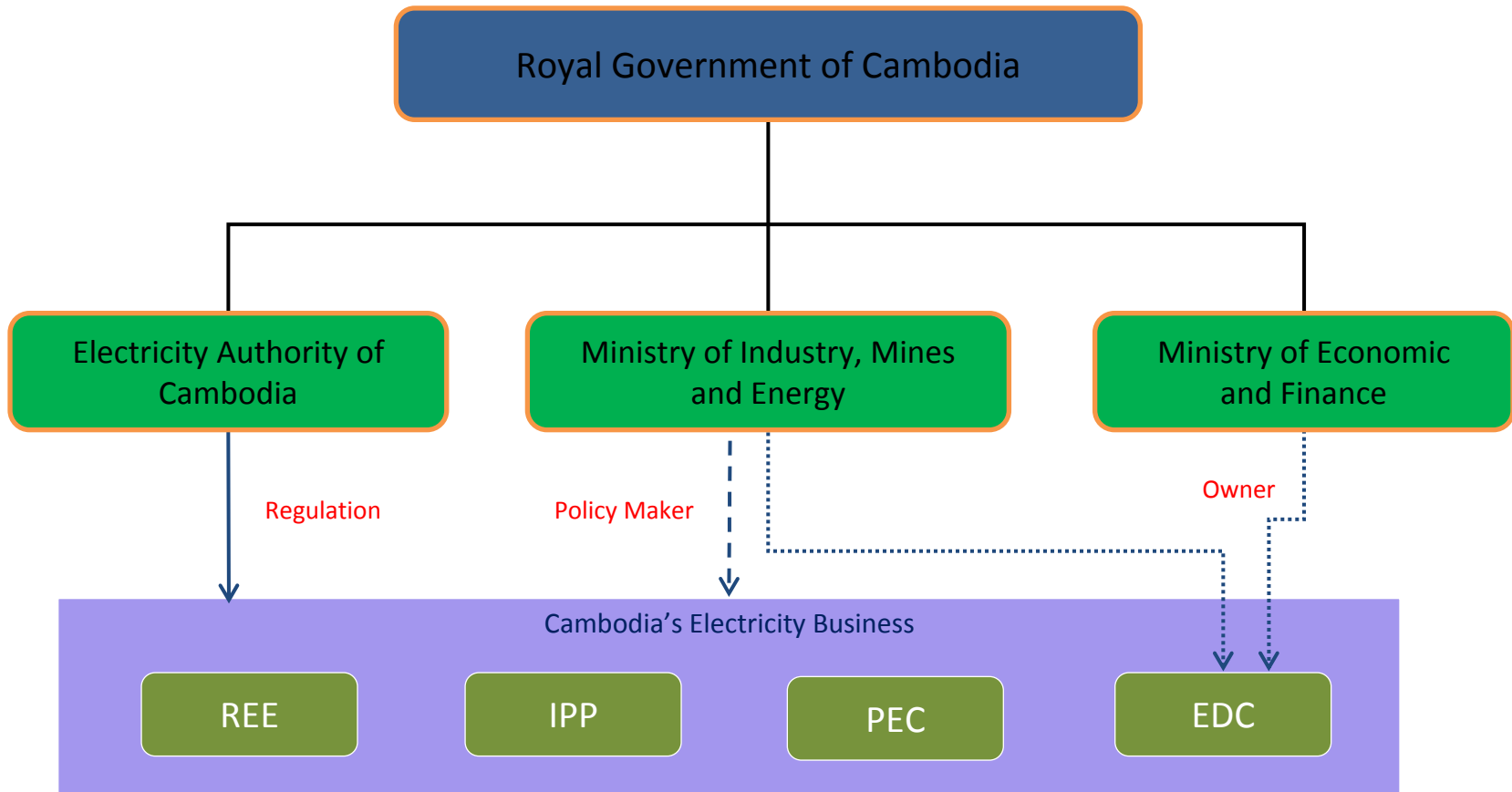


# Major Issues

- Lack of Policy and Legal Framework
- Access to Financing of Renewable Energy Devices
- Lack of Information on Market Characteristics and Resource Potential
- Institutional Capacity for Planning, Implementation and Maintenance
- General planning for interconnected system
- Rural electrification
- Improving quality of electricity network
- Energy efficiency and conservation



# Cambodia Power Industry



.....→	-Ownership of EDC
- - -→	-Policy, Planning, Technical Standard
———→	-Tariff, License, Financial Performance, Enforce the regulations, Rule and Standard.

# Energy Policy

- To provide an adequate supply of energy throughout Cambodia at reasonable and affordable price,
- To ensure a reliable and secured electricity supply at reasons price, which facilitates investment in Cambodia and development of national economy,
- To encourage exploration and environmentally and socially acceptable development of energy resources needed for supply to all sectors of Cambodia economy,
- To encourage the efficient use of energy and to minimize the detrimental environmental affects resulted from energy supply and consumption.

# Policy Target

- 100% of villages have access to electricity services by 2020,
- 70% of rural households have access to quality electricity services by 2030.

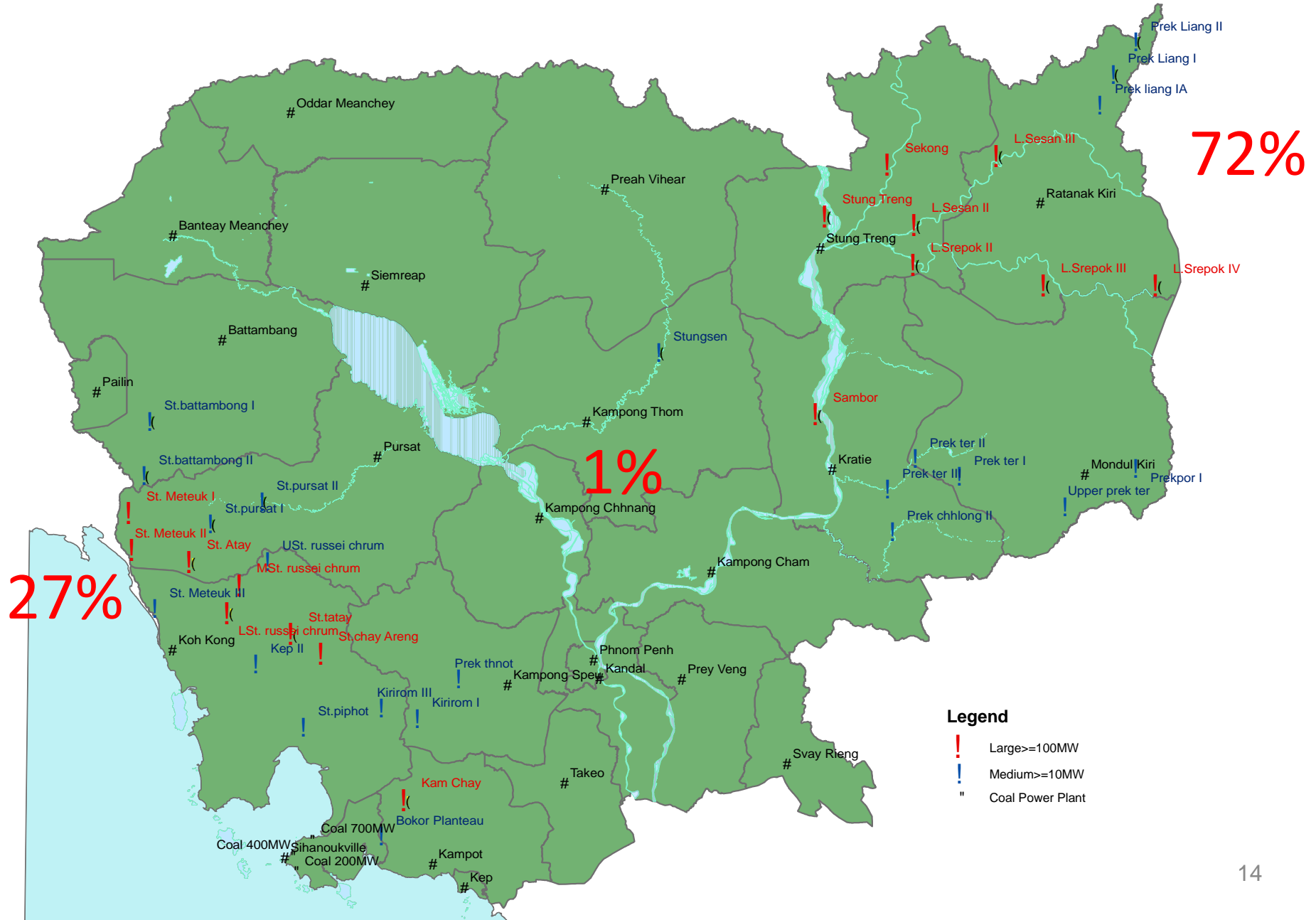
# Cambodia Power Development Plan (Cambodia Power Sector Strategy)

Power demand forecasting by year 2020, with the annual demand growth rate of 11% the peak demand in the country would increase to 1,700 MW in the base case scenario.

Base Case	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
Peak in Main Grid [MW]	351	495	587	710	814	925	1,093	1,217	1,332	1,452
Peak in Whole country [MW]	671	762	856	961	1,078	1,203	1,322	1,439	1,567	1,699
Energy in Main Grid (GWh)	1,940	2,735	3,244	3,919	4,499	5,112	6,038	6,724	7,357	8,019
Energy in Whole country (GWh)	3,400	3,914	4,453	5,050	5,717	6,424	7,099	7,753	8,466	9,205

No.	Generation Expansion Plan	Fuel Type	Install Capa.MW	COD
1	Kamchay Hydro Power Plant	Hydro	194.1	2011
2	Kirirom III Hydro power Plant	Hydro	18	2012
3	Stung Atay Hydro Power Plant	Hydro	120	2013
4	200 MW Coal Power Plant (I) in Sihanouk Province - Phase 1	Coal	100	2013
5	Stung Tatay Hydro Power Plant	Hydro	246	2013-2014
6	Lower Stung Russei Chrum Hydro Power Plant	Hydro	338	2013
7	700 MW Coal Power Plant (II) -Phase 1	Coal	270	2014
8	700 MW Coal Power Plant (II) -Phase 2	Coal	100	2016
9	700 MW Coal Power Plant (II) -Phase 3	Coal	100	2017
10	200 MW Coal Power Plant (I) in Sihanouk Province - Phase 2	Coal	135	2016
11	Lower Se San II Hydro Power Plant	Hydro	400	2016
12	700 MW Coal Power Plant (II) -Phase 4	Coal	100	2018
13	Stung Chay Areng Hydro Power Plant	Hydro	108	2017
14	700 MW Coal Power Plant (II) -Phase 5	Coal	100	2019
15	Add 700 MW Coal Power Plant at Offshore	Coal	200	2020
16	Sambor Hydro Power Plant	Hydro	450/2600	2019
17	Coal Power Plant (III) or Gas Power Plant	Coal/Natural Gas	400	2020
18	Stung Treng Hydro Power Plant	Hydro	900	2020
<b>Total</b>			4,279.1 (6,429.1)	

# Hydro Power Site





# Power projects under construction

No.	Power-Project	Install Capa.MW	IA/PPA/LA	Company	Country	COD	Achievement
1	Kirirom III	18	BOT	CETIC	China	2012	95%
2	Coal Power Plant	100	BOO	CEL	Malaysia	2013	20%
3	Atay Hydro	120	BOT	CHD	China	2013	49%
4	Coal Power Plant	270	BOO	CIIDG	China	2014	10%
5	LSt. Russei Chhrum	338	BOT	China Huadian	China	2014	40%
6	Tatay Hydro	246	BOT	Sinohydro	China	2015	40%
7	Coal Power Plant	270	BOO	CIIDG	China	2016	-

No.	Transmission Expansion Plan	Distance (Km)	Grant/ Invest	Year
1	230 kV, Takeo - Kampot, (construct substation in Kampot),	87	KFW	2011
2	230 kV, Steung Treng - Loa PDR, (construct substation in Steung Treng),	56	WB	2014
3	110 kV, Kampong Cham - Viet Nam, (construct 3 substations: - Kampong Cham, - Soung, - Pongnearek ),	68	WB	2010
4	230 kV, Kampot - Sihanouk Ville	82	ADB & JBIC	2013
5	230 kV, Phnom Penh - Kampong Chhnang - Pursat - Battambang, (construct 3 substations: - Kampong Chhnang, - Pursat, - Battambang),	310	CYC	2012
6	230 kV, Pursat - Osom, (construct 1 substation in Osom Commune),	175	CYC	2012
7	230 kV, Kampong Cham – Kratie,	110	CUPL	2013
8	230 kV, Kratie – Stung Treng,	126	INDIA	2015
9	230 kV, Phnom Penh – Kampong Cham,	110	CUPL	2012
10	220 kV, Phnom Penh – Sihanoukville, along national road 4, (construct 1 substation in Sre Ambil)	220	CHMC	2013
11	115 kV, East Phnom Penh – Neakleung – Svay Rieng, (construct 2 substations: - Neakleung, - Svay Rieng)	120	-	2014
12	230 kV, Stung Tatay Hydro – Osom substation,	15	CHMC	2015
13	115 kV, West Phnom Penh – East Phnom Penh ( construct substation GS4 at South Phnom Penh)	20	WB	2015
14	230 kV, Stung Chay Areng Hydro – North Phnom Penh (NPP) substation	145	CUPL	2017
15	230 kV, Stung Chay Areng - Osom substation	60	CSG	2017
16	230 kV, Kampong Cham - Kampong Thom - Siem Reap, (construct 1 substation in Kampong Thom)	250	KTC	2019
17	500 kV, Loa PDR (Ban Sok)- Steung Treng – Vietnam (Tay Ninh), (construct substation in Steung Treng)	220	ADB	2019
	Total Transmission Line	2,174		

Thailand

Loa PDR

Vietnam

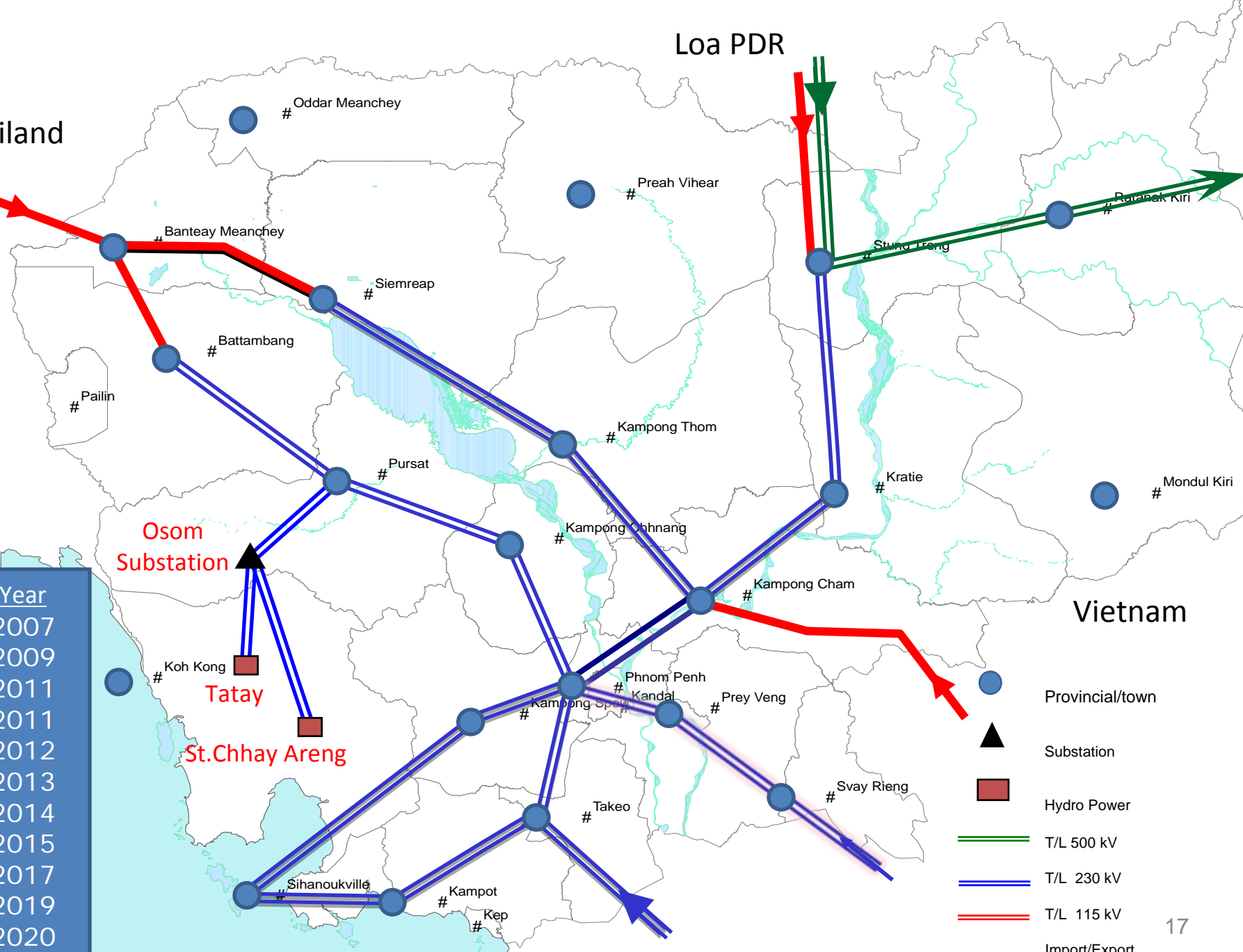
Year
2007
2009
2011
2011
2012
2013
2014
2015
2017
2019
2020

Osom Substation

Tatay

St.Chhay Areng

- Provincial/town
- ▲ Substation
- Hydro Power
- ▬▬▬ T/L 500 kV
- ▬▬▬ T/L 230 kV
- ▬▬▬ T/L 115 kV
- Import/Export



# Power trade with neighboring countries

- Import from Vietnam at high voltage 230 kV 100 MW by year 2009 to serve southern grid and Phnom Penh
- Import from Thailand at 115 kV starting 2007 to serve northern grid up to 80 MW
- Import from Vietnam to Kampong Cham Province at high voltage 115 kV with capacity 60 MW by 2010
- Import from Lao to Stung Treng Province at 115 kV with capacity until 60 MW by 2010
- 9 Cross border 22 MV links from Vietnam 10.25 MW and 8 from Thailand about 15.5 MW to serve Cambodian communities close to the border (2008)
- 12 Cross border 22 MV links from Vietnam 22.7 MW and 8 from Thailand about 22.5 MW to serve Cambodian communities close to the border (2009)

# Interesting Subjects

- Energy Policy in Japan
- Energy Demand and Supply in Japan
- Energy Balance Table
- Energy Demand Prediction Technique
- Hydropower Plant
- Thermal Power Plant (Coal & Gas)
- Nuclear Power Plant



*Thank you for your attention*



**BCS**  
Contact : [report@tky.ieej.or.jp](mailto:report@tky.ieej.or.jp)

A yellow building with a dark roof is shown in the bottom left corner of the oval. To its right is a large industrial machine with multiple red and white components, possibly a water treatment or filtration system.