



Annual Report

2017

We provide high quality and best productive services.

Message from Chairperson



On behalf of the Board of Directors, I would like to express sincere appreciation to EDC for bringing out its Annual Report for the year 2017. We are proud and appreciated achievements of EDC during 2017 and we strongly believe that EDC is moving towards

its goal and vision to be the foremost power utility in the Kingdom of Cambodia that builds a deep customer relationship with a reputation for supplying reliable and affordable electricity to its valued customers.

The Board of Directors takes great pride in acknowledging the huge success of the EDC management and staff. The cumulative achievements in recent years have been unprecedented.

On this occasion, I wish to extend my personal heartfelt thanks to the management and staff of EDC who have worked tirelessly to create many enduring achievements. It is through their dedication and hard work that EDC is well placed to realize its vision and goals.

A handwritten signature in blue ink, appearing to read 'Victor Jona'. The signature is stylized and fluid.

Victor Jona

Chairperson of the Board

Message from

RGC DELEGATE IN CHARGE OF MANAGING EDC

H.E Keo Rottanak

(Managing Director of EDC)



It gives me great pride to present the annual report of Electricité du Cambodge (EDC) for the year 2017, as this year is another turning point in the power sector development in the Kingdom of Cambodia.

The vision of EDC is to become the leading power utility in the Kingdom of Cambodia. We have always strived to meet our customers' load demand and focus on improving the quality and reliability of power supply. During this year, we intensified our efforts to further strengthen our service support for our valued customers.

Our energy sale for 2017 was 6,994 GWh, an increase of 14.45% over the energy sale of the previous year. The total system loss was reduced to 8%. Our revenue grew by 10.5% over the previous year to reach 4,679 billion riels. We had a combined workforce of 5,087 staff members providing services to 987,346 customers.

Out of the eight units of 50 MW each under construction at the Lower Sesan II Hydro Power Plant, the first unit became operational in late 2017. Before that the 230 kV transmission lines connecting Kampong Cham substation to Kratie substation and further connecting Kratie substation to Stung Treng substation was commissioned, so that power from the Lower Sesan II Hydro Power Plant could be transmitted to the load center through the National Grid. The substations at Kratie and Stung Treng made it possible to supply electricity from the National Grid to the provinces of Kratie and Stung Treng.

The government of Cambodia strongly encourages renewable energy generation (Clean energy). The Solar Pilot Project in Bavet city, Svay Rieng province, installed on 21 hectares of land with a capacity of 10 megawatt was commissioned in 2017. This project brings in a new era of energy development in Cambodia reducing greenhouse gas emissions in electricity generation and encouraging more solar generation in Cambodia.

Apart from the 230 kV Kampong Cham-Kratie-Steung Treng line, a number of 115 kV lines were commissioned in 2017 to provide grid connected electricity supply to many areas. The 60 km long 115 kV line from Laos border to Preah Vihear commissioned in 2017, imported electricity from Laos to supply in Preah Vihear Province and parts of Kampong Thom and Stung Treng Provinces. This opened a new page in power trade between the two countries by importing power at 115 kV from Laos for the first time. The commissioning of 115 kV line from Siem Reap substation to the new Siem Reap East substation improved the power supply to Siem Reap area. The 115 kV line from GS7 Phnom Penh to Prey Veng and Bavet in Svay Rieng Province made grid supply available in these two provinces. The 115 kV line from Battambang to Ratanak Mandal, the first part of the transmission line from Battambang to Pailin was completed.

During 2017, a number of transmission line projects are under construction, which when completed will ensure a sustainable and reliable grid supply at reasonable in new areas and areas already having grid supply. Prominent transmission line projects under construction are : (i) The 230 kV transmission line project around Tonle Sap lake, covering Battambang, Siem Reap, Kampong Thom, and Kampong Cham provinces, (ii) 115 kV transmission line from Kampong Thom to Preah Vihear I substation, (iii) 115 kV transmission line from Kampong Soeung to the new sub-station at Svay Antor (iv) 115 kV transmission line from Sihanouk substation to the new substation of Ream, (v) 230 kV transmission lines from Stung Treng to Ratanakiri and (vi) 230 kV transmission line from Kratie to Mondulkiri.

Loans have been sanctioned by China Exim Bank for construction of more than 2,040 km of distribution lines in 14 provinces.

Message from

RGC DELEGATE IN CHARGE OF MANAGING EDC

By the end of 2017, a total of 238 power purchase agreements were in operation between EDC and REEs (licensees), who provide electricity distribution services, for bulk supply of electrical energy from the National Grid. This resulted in discontinuation of operation of high-cost small diesel generators by these licensees.

The Royal Government of Cambodia has established a strategic plan to reduce tariffs in the Kingdom of Cambodia in stages during 2015-2020 with the following actions:

1-) Implement in steps to achieve the goal of having the same tariff for downtown and rural areas having electricity from the national grid.

2-) Lower tariffs for low-income consumers in rural areas using less amount of electricity.

3-) Lower tariff for electricity supplied at night from 9:00 pm to 7:00 am. for pumping water for agriculture.

The tariff reduction plan have been implemented since March 2016. EDC has granted 52 million US dollars, and the German Government-owned Development Bank (KfW) has provided a grant of 2.6 million US dollars (total of 54.6 million US dollars) to the Rural Electrification Fund for the implementation of the Strategic Plan for reduction tariff of electricity in the country during the period from 2015-2020 and to continue promoting and developing electrification throughout the country.

EDC has established a 24-hour (24h/7) hotline and created an official Facebook page "[អគ្គិសនីកម្ពុជា-EDC](#)" to collect feedback and circulate important information, aiming at improving the effectiveness of the customer services and giving important news as well as announcements to the customers. The above efforts have resulted in many direct and indirect benefits for millions of households and businesses across the country. This is clearly, a concrete and real progress in helping Cambodia build a stronger foundation for a sustainable economy and social development country.



*We would like to take this opportunity to acknowledge the contribution and commitment of all our employees and the consultants who have played such an indispensable role in the success of this organization. We are highly indebted to the great guidance and wisdom provided by **Samdech Aka Moha Sena Padey Techo Hun Sen**, Prime Minister of the Kingdom of Cambodia, who has always provided key support at every major turning point.*

We are also grateful to the Ministry of Mines and Energy (MME) for their ongoing sectoral direction and relentless efforts and to the Ministry of



Economy and Finance (MEF) for their support. Our special appreciation goes to the Electricity Authority of Cambodia (EAC) and the Board of Directors of EDC for their valuable input and guidance. We also highly value the support of all our client groups. In addition, we highly appreciate the continued assistance extended to us by all development partners, particularly the Exim Bank of the People's Republic of China and all our Independent Power Producer partners.

With such a solid progress, EDC is moving forward with a renewed sense of optimism in its noble

mission to develop the power sector in the Kingdom of Cambodia.

A handwritten signature in blue ink, appearing to read 'Keo Rottanak', with a long, sweeping underline.

H.E Keo Rottanak
(Managing Director of EDC)





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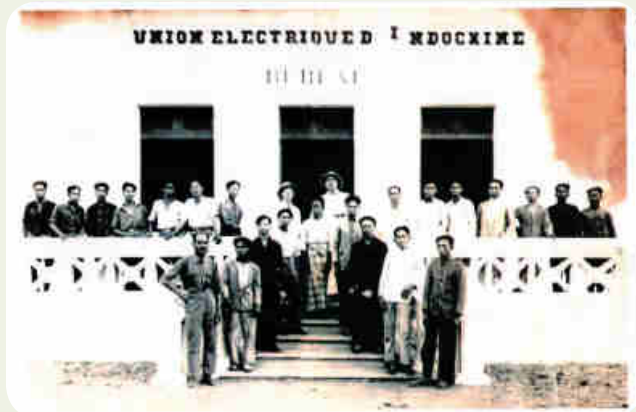
ABBREVIATION

ADB	:	<i>Asian Development Bank</i>
AFD	:	<i>French Development Agency</i>
APG	:	<i>ASEAN Power Grid</i>
APGCC	:	<i>ASEAN Power Grid Consultative Committee</i>
ASEAN	:	<i>Association of South East Asian Nations</i>
BIO	:	<i>Biomass</i>
BOT	:	<i>Build Operate Transfer</i>
BTB	:	<i>Battambang</i>
BTC	:	<i>Banteay Meanchey</i>
BVT	:	<i>Bavet</i>
C	:	<i>Coal</i>
Cct-km	:	<i>Circuit-kilometer</i>
CEIB	:	<i>China Export Import Bank (China Exim Bank)</i>
CEE	:	<i>Compagnie des Eaux et Electricité</i>
CFKE	:	<i>Compagnie Franco-Khmère d'Electricité</i>
CHMC	:	<i>China National Heavy Machinery Corporation</i>
Con't	:	<i>Continue</i>
EAC	:	<i>Electricity Authority of Cambodia</i>
EDC	:	<i>Electricité du Cambodge</i>
EDP	:	<i>Electricité de Phnom Penh</i>
EPP	:	<i>East Phnom Penh</i>
ESRP	:	<i>East Siem Reap</i>
FO	:	<i>Fuel Oil</i>
GS	:	<i>Grid Substation</i>
GWh	:	<i>Gigawatt-hours</i>
H	:	<i>Hydro</i>
HQ	:	<i>Headquarter</i>
IE	:	<i>Industrial Estate</i>
IEB	:	<i>Indian Exim Bank</i>
IMP	:	<i>Import</i>
IPP	:	<i>Independent Power Producer</i>
JICA	:	<i>Japan International Cooperation Agency</i>
KfW	:	<i>KfW Development Bank</i>
KGT	:	<i>Kampong Trach</i>
KPC	:	<i>Kampong Cham</i>
KPS	:	<i>Kampong Speu</i>
KPT	:	<i>Kampot</i>
KRT	:	<i>Kratie</i>
KSM	:	<i>Keosiema</i>
LDP	:	<i>Looking for Development Partner</i>
LSRC	:	<i>Lower Stung Russei Chrom Hydropower Plant</i>
LV	:	<i>Low Voltage</i>

<i>MDKR</i>	:	<i>Mondulkiri</i>
<i>MIME</i>	:	<i>Ministry of Industry, Mines, and Energy</i>
<i>MME</i>	:	<i>Ministry of Mines and Energy</i>
<i>MMT</i>	:	<i>Memot</i>
<i>MOU</i>	:	<i>Memorandum of Understanding</i>
<i>MV</i>	:	<i>Medium Voltage</i>
<i>MW</i>	:	<i>Megawatt</i>
<i>NCC</i>	:	<i>National Control Center</i>
<i>NDF</i>	:	<i>Nordic Development Fund, Finland</i>
<i>NG</i>	:	<i>National Grid</i>
<i>NPP</i>	:	<i>North Phnom Penh</i>
<i>P2P</i>	:	<i>Power to the Poor</i>
<i>PHN</i>	:	<i>Phnom Penh</i>
<i>PKK</i>	:	<i>Ponhea Krek</i>
<i>PPA</i>	:	<i>Power Purchase Agreement</i>
<i>PST</i>	:	<i>Pursat</i>
<i>PRV</i>	:	<i>Prey Veng</i>
<i>REE</i>	:	<i>Rural Electricity Enterprise</i>
<i>REF</i>	:	<i>Rural Electrification Fund</i>
<i>RGC</i>	:	<i>Royal Government of Cambodia</i>
<i>RTK</i>	:	<i>Ratanakiri</i>
<i>RUPP</i>	:	<i>Royal University of Phnom Penh</i>
<i>SHS</i>	:	<i>Solar Home Systems</i>
<i>SHV</i>	:	<i>Preah Sihanouk Province</i>
<i>SNL</i>	:	<i>Snuol</i>
<i>SPP</i>	:	<i>South Phnom Penh</i>
<i>SRP</i>	:	<i>Siem Reap</i>
<i>STH</i>	:	<i>Steung Hav</i>
<i>STR</i>	:	<i>Steung Treng</i>
<i>SVP</i>	:	<i>Suvannaphum Coal-fired Power Plant</i>
<i>SVR</i>	:	<i>Svay Rieng</i>
<i>SWS</i>	:	<i>Switching Substation</i>
<i>TKO</i>	:	<i>Takeo</i>
<i>UNEDI</i>	:	<i>Union d'Electricité d'Indochine</i>
<i>WPP</i>	:	<i>West Phnom Penh</i>
<i>WB</i>	:	<i>World Bank</i>

Electricity has come to Cambodia in 1906. Before October 1958, power and light in Cambodia were provided by three private companies:

- Compagnie des Eaux et Electricité (CEE)
- Union d'Electricité d'Indochine (UNEDI)
- Compagnie Franco-Khmère d'Electricité (CFKE).



The CEE served the Greater Phnom Penh Area. The UNEDI took care of all other provinces, except Battambang. The CFKE had been serving Battambang-city all along.

By virtue of Kret N° 665-NS of October 10, 1958, the first two companies, CEE, and UNEDI merged under the name of ELECTRICITE DU CAMBODGE.

During 1970 to 1979, the power sector in the country passed through two dangerous events: civil war (1970-1975) and turbulent history during the Khmer Rouge Regime (1975-1979). During this time, all kinds of generation, transmission, and distribution facilities were destroyed not only in Phnom Penh but also in other areas.

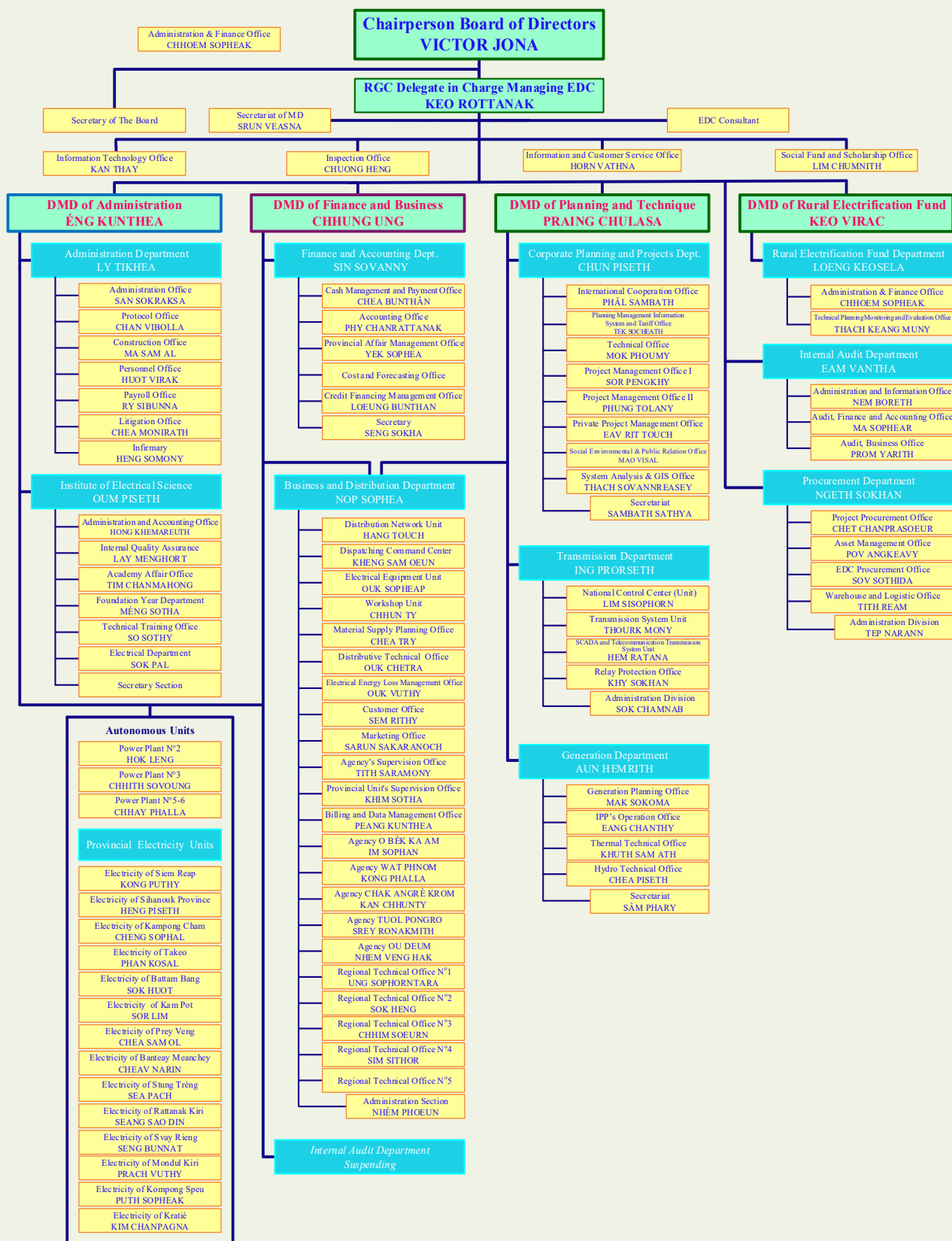
In 1979, EDC was reintegrated into an administrative structure under Ministry of Industry and then transferred to Phnom Penh Municipality in 1991, by the name Electricité de Phnom Penh (EDP) to manage the electric supply in Phnom Penh while the electric generations in the provinces were managed by the Department of Industry of the provincial authorities.

In 1992, EDP was re-named Electricité du Cambodge and was attached to the Ministry of Energy. After the election in 1993, EDC was restructured under the Ministry of Industry, Mines, and Energy (MIME) and was responsible for the development, management, and operation of the power system in Phnom Penh. Power utilities in a few provinces continue to remain under the control of Provincial Authorities, which receive budgetary support through MIME.



In March 1996 by the Royal Decree # 0396/10, Electricité du Cambodge became an autonomous wholly state-owned limited liability company to generate, transmit and distribute electric power throughout Cambodia. EDC is a judicial organization with administrative, financial, and managerial autonomy. EDC is responsible for its profits and losses and liable for its debts to the extent of the value of its assets.

Organization Chart of EDC



1 Our Vision

EDC's vision is to become the leading power utility in the Kingdom of Cambodia by striving to meet the customers' demands and to improve the quality and reliability of power supply.

2 Our Mission

Provide sufficient and consistently reliable power supply to consumers in its entire coverage areas at a competitive price by improve the business operation to excellence and efficiency and participate in the implementation of the government's policies on poverty reduction, environmental preservation, and socio-economic development.

3 Role and Responsibilities

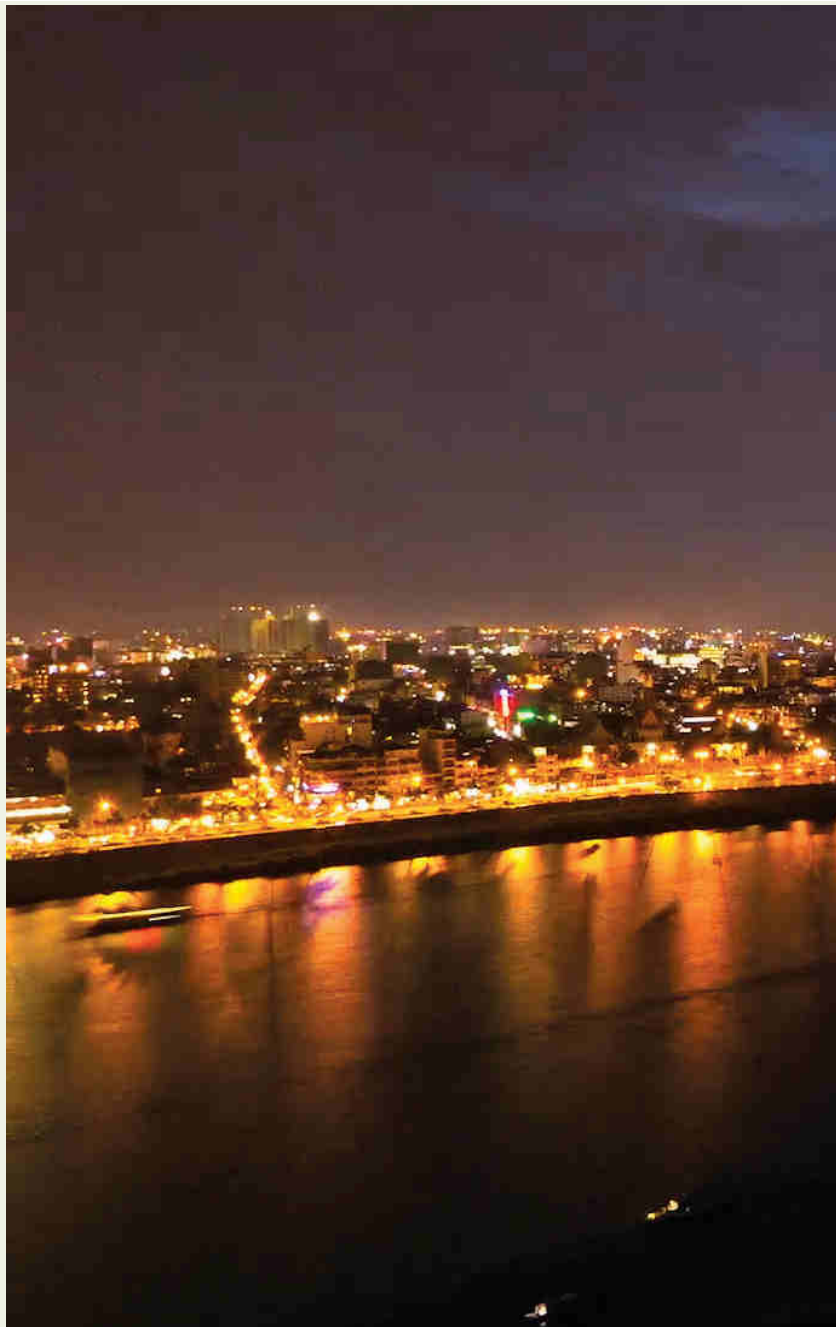
EDC has the rights and responsibilities for generating, transmitting and distributing electricity throughout the Kingdom of Cambodia in conformity with its commercial obligations stipulated by laws, statute, license and other regulations of the Royal Government of Cambodia.

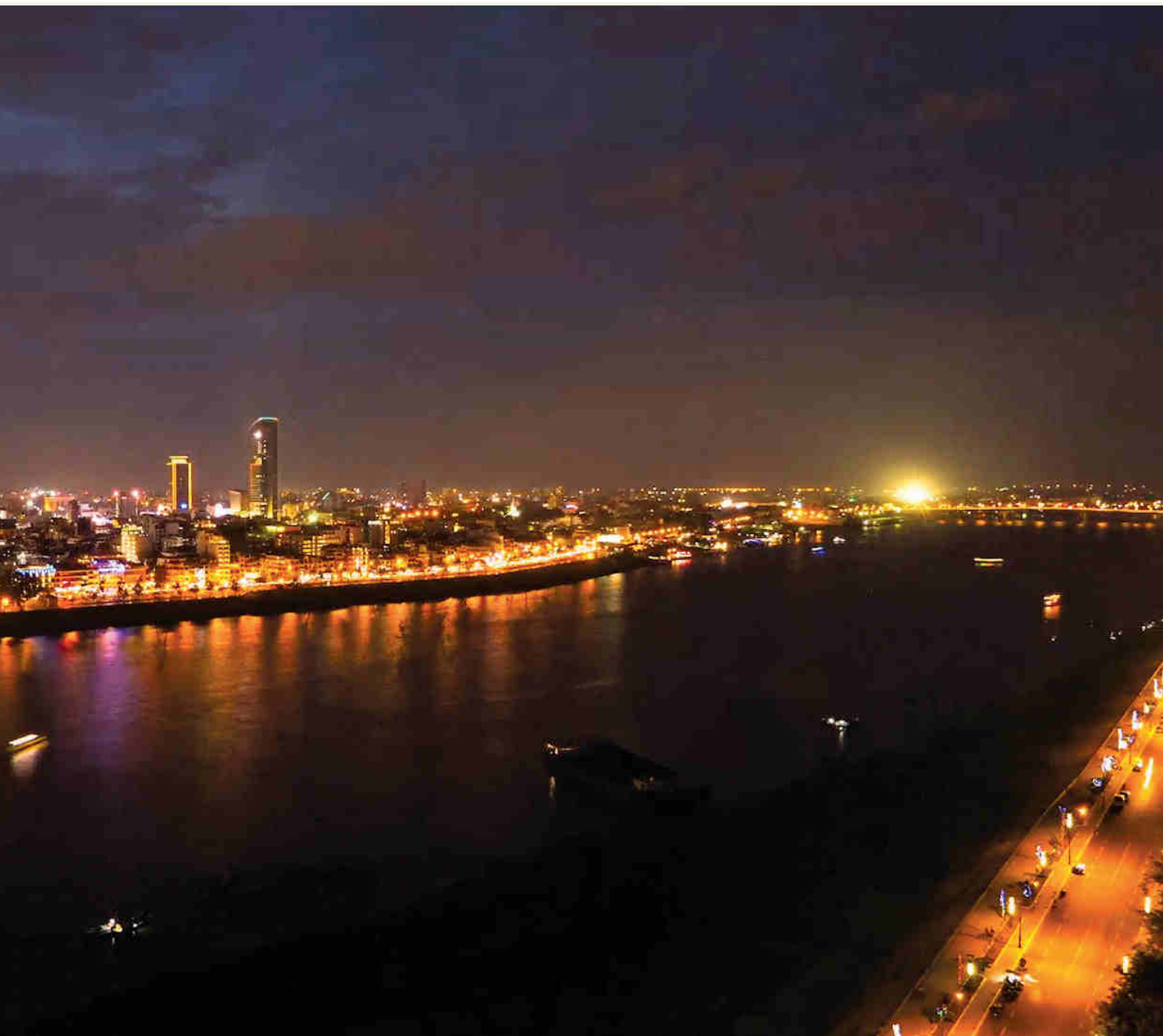
EDC operates as a commercial enterprise with independence to organize its business of generation, transmission, and distribution of electricity and raise capital investments, in the appropriate response to market requirements and earn a profit and raise productivity.

EDC is required to abide by the conditions of its license issued by the Electricity Authority of Cambodia in providing electricity service. EDC is required to achieve its objectives by implementing its business plan approved by its Board of Directors and in accordance with the national energy policy and national development plan.

EDC shall limit its business activities to the types stipulated in its Statute and license granted by EAC. EDC has its source of capital from:

- 1-Grant contribution from the Royal Government of Cambodia.
- 2-Assets and land transferred by the Royal Government to EDC as per Article 7 of the Sub-Decree No. 23
- 3-Capital generated from revenue as per the accounting rules of EDC.





4-Grant and other financing received by EDC with approval from the Officers;

5-Finance received by EDC from other financial sources with the approval of the Officers

EDC is permitted to be responsible for:

1-Generating, transmitting, and distributing electric power with the purpose of meeting the demand for all categories of buyers

2-Exporting electric power to neighboring countries and import electricity from neighboring countries;

3-Constructing and operating national electric grid for energy transmission in order to ensure adequate and quality supply

4-Constructing and operating sub-transmission system for distribution of electricity and facilitate connections and operations between EDC and other distribution systems;

5-Selling electric power and other related services;

6-Purchasing, transferring and exchanging electricity from other generators

Management Structure

On behalf of the Royal Government of Cambodia, the Ministry of Mines and Energy and the Ministry of Economy and Finance are co-owners of EDC.

H.E. Victor Jona
Chairperson
Representative of the Ministry
of Mines and Energy



I Board of Director



H.E. Hem Kranh Tony
Member
Representative of the Council of
the Ministers



H.E. Chan Sothy
Member
Representative of the Ministry
of Economy and Finance
Advisor to the Prime Minister



H.E. Keo Rottanak
Member
RGC Delegate in charge
of Managing EDC
Advisor to the Prime Minister

II EDC Management

Dr. Praing Chulasa
Deputy Managing Director
Planning and Technique



Mr. Chhung Ung
Deputy Managing Director
Finance and Business



Mr. Chun Piseth
Executive Director
Dept of Corporate
Planning and Projects



Mr. Aun Hemrith
Executive Director
Dept of Generation



Mr. Ing Prorseth
Executive Director
Dept of Transmission



Mr. Nop Sophea
Executive Director
Dept of Business
and Distribution



Miss. Sin Sovanny
Executive Director
Dept of Finance and
Accounting

EDC is headed by an RGC Delegate in charge of Managing EDC, with the ranking equivalence of a Secretary of State in the Government who reports to the Board of Directors, which in turn reports to the shareholding ministries. EDC's Managing Director is assisted by four Deputy Managing Directors and nine Executive Directors. As of 2017, the management level of EDC comprises of:



Mr. Hang Touch
Member
Representative of EDC's
Employees



Mr. Ky Khemlin
Member
Representative of the
Ministry of Justice



Ms. Sok Sotheavy
Member
Representative of the Chamber
of Commerce of Cambodia.



H.E Eng Kunthea
Deputy Managing
Director
Administration
and Training



Mr. Keo Virac
Deputy Managing
Director
Rural Electrification
Fund



Mr. Oum Piseth
Executive Director
Institute of
Electrical Science



Mr. Ly Tikhea
Executive Director
Dept of Administration



Mr. Loeng Keosela
Executive Director
Dept of Rural
Electrification Fund



Mr. Ngeth Sokhan
Executive Director
Dept of Procurement



Mr. Eam Vantha
Executive Director
Dept of Internal Audit

2017 Financial & Operational Highlights



Our Total Asset

7,631 Bn Riel

Our Current Liabilities

1,095 Bn Riel

Our Equity

3,201 Bn Riel

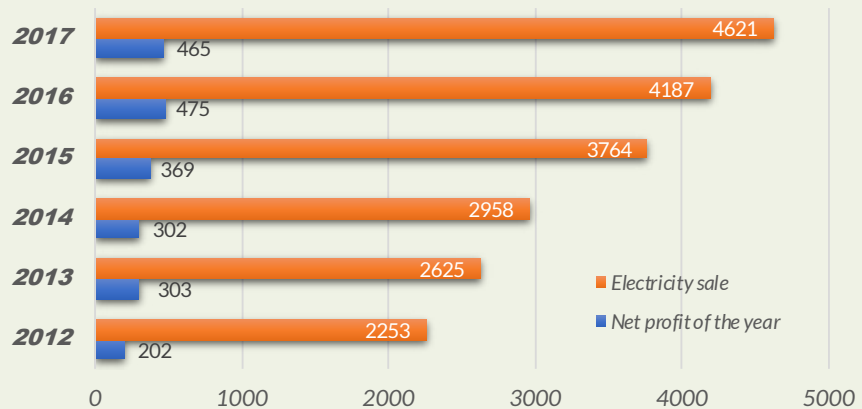
Our Revenue

4,679 Bn Riel

Our Net Profit

464 Bn Riel

Electricity Sale & Net Profit (Billion Riel)



EDC Statement of Financial Position at 31 December 2017

	2017 KHR'000	2016 KHR'000
ASSETS		
Current assets		
Cash and bank balance	1,262,509,881	1,119,567,075
Trade and other receivables	665,103,452	608,665,753
Inventories	398,811,783	326,323,268
	2,326,425,116	2,054,556,096
Non-current assets		
Property, plant, and equipment	5,303,220,990	4,156,962,404
Intangible assets	1,619,345	750,939
	5,304,840,335	4,157,713,343
TOTAL ASSETS	7,631,265,451	6,212,269,439
LIABILITIES AND EQUITY		
Liabilities		
Current liabilities		
Trade and other payables	862,893,437	634,027,652
Borrowings	172,138,360	109,693,559
Current income tax liability	60,393,402	83,152,879
	1,095,425,199	826,874,090
Non-current liabilities		
Borrowings	3,044,017,533	2,433,713,314
Customer deposits	246,107,252	214,913,172
Provision for retirement benefits	3,398,264	3,349,947
Deferred tax liabilities, net	40,350,952	32,992,267
	3,333,874,001	2,684,968,700
Equity		
Assigned Capital	833,691,461	772,906,441
Retained Earnings	2,368,274,790	1,927,520,208
	3,201,966,251	2,700,426,649
TOTAL EQUITY AND LIABILITIES	7,631,265,451	6,212,269,439

EDC Statement of Comprehensive Income for the year ended 31 December 2017

	2017 KHR'000	2016 KHR'000
Revenue		
Electricity sales	4,621,417,322	4,186,986,746
Connection service fees	35,284,199	31,110,473
Other income	23,115,531	17,836,957
	4,679,817,052	4,235,934,176
Operating expenses		
Purchased power	(3,314,063,910)	(2,949,421,687)
Fuel costs	(5,277,383)	(18,332,808)
Import duty	(25,500,387)	(28,005,342)
Salaries and other benefits	(227,268,471)	(185,441,109)
Other operating expenses	(327,671,791)	(272,541,286)
Depreciation	(137,409,477)	(141,379,081)
Amortisation	(379,207)	(233,077)
	642,246,426	640,579,786
Net finance costs	(76,392,568)	(46,293,765)
Profit before income tax	565,853,858	594,286,021
Income tax expense	(101,335,662)	(119,012,184)
Net profit for the year / total		
Comprehensive income for the year	464,518,196	475,273,837

EDC Statement of Cash Flows for the year ended 31 December 2017

	2017 KHR'000	2016 KHR'000
Cash flow from operating activities		
Net profit for the year	464,518,196	475,273,837
Adjustments for:		
Depreciation and amortisation	137,788,684	141,612,158
Foreign exchange loss(gain)	32,617,365	(25,809,082)
Loss on disposal of property, plant, and equipment	25,256	11,818,367
Interest expense	92,073,165	62,863,897
Income tax expense	101,335,662	119,012,184
(Reversal) / Addition of allowance for bad and doubtful debts	(1,701,311)	3,180,852
Allowance for retirement benefits	48,317	199,756
Allowance for inventory obsolescence	6,081,673	4,342,305
	832,787,007	792,494,274
Changes in:		
Trade and other receivables	(65,025,743)	(85,044,550)
Inventories	(192,375,393)	(217,135,033)
Trade and other payables	208,948,296	3,499,097
Customer deposits	31,194,080	36,041,497
Net cash generated from operations	815,528,247	529,855,285
Interest paid	(72,155,676)	(59,971,709)
Interest tax paid	(116,736,454)	(97,407,313)
Net cash generated from operating activities	626,636,117	372,467,263
Cash flows from Investing activities		
Purchases of property, plant, and equipment	(409,514,671)	(229,023,615)
Purchase of intangible assets	(549,485)	(463,508)
Proceeds from disposal of property, plant, and equipment	37,156	46,255
Fixed deposit with banks	14,912,062	126,630,260
Capital reserve	(9,008,489)	(6,058,664)
Net cash used in investing activities	(404,123,427)	(362,129,792)
Cash flow from financing activities		
Proceeds from borrowings	9,249,312	14,724,326
Repayments on borrowings	(109,662,119)	(86,725,874)
Grant Received	35,754,985	2,643,388
Net cash used in financing activities	(64,657,822)	(69,358,160)
Net increase /(decrease) in cash and cash equivalents	(157,854,868)	(59,011,689)
Cash and cash equivalents at beginning of the year	992,936,815	1,051,948,504
Cash and cash equivalents at end of the year	1,150,791,683	992,936,815





Human Resource Development

New skill and knowledge can spark a lifetime of change. For recent years, Electricité Du Cambodge (EDC), has designed and delivered programs in education for various subjects for our employee included local and abroad.

As Cambodia's economic growth, the demand for human resources in Cambodia is a major priority in driving development in all areas. To contribute to the development of electricity and other sectors in Cambodia, EDC continues to contribute to the development of human resources in Cambodia, especially in EDC through the provision of opportunities and resources for its employees to develop their knowledge, including technical and leadership skills through financial project on human resource training of EDC and through assistance from companies in cooperation with EDC as well as from other countries on providing scholarships abroad.

Human Resource Development Target

EDC's Management has the following vision for the betterment of its employees:

- To provide its employees with opportunities for professional growth and advancement on the basis of their performance, integrity, and loyalty to EDC.
- To provide its employees with competitive remuneration and benefits to ensure good living conditions.
- To guarantee fairness, equal treatment and opportunity to employees, to maximize their contribution to the development of EDC.
- To provide suitable working conditions that facilitate an open and honest communication of information among employees to promote teamwork, productivity, and cooperation for the organization's growth.

In order to work effectively, human resource recruitment plays an important role. To respond to the demand for human resources, EDC recruits its employees with quality, transparency and fairness.



In addition, to continue to develop the capacity of its employees, EDC has further trained its employees by sending them for short-term and long-term training both local and overseas as follows:

Local Capacity Building

I Institute of Electrical Sciences (IES)

Institute of Electrical Sciences (IES) is an essential training center for EDC's employees in Phnom Penh as well as Provincial Unit controlled by EDC. The employees may request for extra skills in addition to knowledge were educated to the existing courses proposed by IES every single year. The main purpose is to develop and absorb effectively the new knowledge to maximize their ability for improving work.



In 2017, there were 1,266 trainees in 137 batches and 79 courses who comes from the departments and provincial units, were trained in IES on the various skills such as 392 trainees on the distribution network, 165 trainees on Power Plant Protection, 217 trainees on metering, 215 trainees on safety, 63 trainees on generation, 99 trainees on the high voltage transmission line, 47 trainees on software program and 68 trainees on technical English.

II Australia Center for Education (ACE)

On November 23 2016, EDC also provided its employees the short courses for English training by collaborating with the Australia Center for Education (ACE) beyond the course study from its English part-time. Until now, there are 363 employees have been studying English course.

International Capacity Building

EDC has continued its efforts to collaborate with other national and international institutions to mobilize scholarships and short-term training in the power sector computer skills and foreign languages to increase wider knowledge and more understanding of the innovative technologies for its employees. As of 2017, EDC has established overseas study opportunities for employees at all levels to discover additional knowledge through scholarships such as:

- “EDC’s Young Professional Scholarship” is the scholarship which EDC shoulders all expenses for studying the Master’s Degree in only ASEAN countries. “EDC’s Young Professional Scholarship” was established on September 17, 2015, in order to encourage and motivate employees who have the willingness to expand their knowledge and bring this knowledge to Cambodia. Until now, EDC has dispatched 6 employees to study Master’s Degree in various fields in Thailand and Singapore.

- Japan’s Grant Aid for Human Resource Development Scholarships (JDS) through the RGC, Cambodia is one of the twelve countries in the region that receive huge benefits from this scholarship. EDC has dispatched 20 employees to study Master’s Degree in various fields such as electrical engineering, economic accounting and financial to the famous university in Tokyo and also Hiroshima. Japan’s Grant Aid for Human Resource Development Scholarships (JDS) still committed to gain more scholarships for EDC employees.



- EDC has signed an MOU with CHMC, a Development Partner Company to offer a Master’s Degree in China. Until now, EDC has dispatched 3 employees to study Master’s Degree in electrical engineering field.
- Ministry of Mines and Energy has signed an MOU with China Southern Power Grid Co., Ltd (CSG) to provide the scholarship to officers and EDC’s employees to pursue the Master’s Degree in China, with 6 scholarships was provided to EDC.



Table 1: EDC Employees’ Qualification from 2012 to 2017

Staff Education Level	2012	2013	2014	2015	2016	2017
Doctorate	3	4	4	4	5	6
Post-graduated	142	141	151	165	179	193
Engineering & other graduation	822	934	1,078	1,240	1,383	1651
Vocational Technicians	493	570	736	917	1,175	1373
Skilled Workers	188	180	178	173	168	1336
High school, Unskilled	1,287	1,398	1,438	1,527	1,687	528
Total	2,935	3,227	3,585	4,026	4,597	5,087

POWER GENERATING FACILITIES AND ELECTRICITY SUPPLY

Production of energy generation for filling consumption demand in the national grid system is currently focused on the clean energy source.





Generation Sources

For the year 2017, the total installed capacity is 2,520 MW, consisting of hydro (1330 MW), coal (535 MW), Fuel oil (248 MW), Biomass (6 MW), Solar(10MW) and power import from neighboring countries (388 MW) including Thailand, Vietnam, and Laos. Total energy generation is 7,665 GWh in which hydro shares 35%, coal 46.5%, fuel oil 3%, biomass 0.5%, solar 0.1% and import from neighboring countries 15%. As a result of domestic power source development, there has been dramatically decreasing in energy import from neighboring countries from 62% in 2010 to 15% in 2017 as well as fuel oil consumption from 34% in 2010 to 3% in 2016, and the annual generation growth is around 16% compared to 2016.

DEMAND & SUPPLY IN NATIONAL GRID

As of 2017, Cambodian National Grid is connected with Vietnam HV System, Thai HV System, Hydropower plants located in Kampong Speu, Koh Kong and Pursat, (Hydropower plants located along Kirirom mountains and Kamchay mountains), and Coal-fired power plants located in Preah Sihanouk Province. The National Grid now supply power directly to 14 city/provinces: Phnom Penh, Kandal, Kampong Speu, Takeo, Kampot, Kep, Preah Sihanouk, Kampong Chhnang, Pursat, Battambang, Banteay Meanchey, Siem Reap, Kampong Cham, and Koh Kong. The four provinces of Tbong Khmum, Prey Veng, Kampong Thom, and Pailin are supplied electricity from the National Grid through sub-transmission lines connected to the National Grid. The peak demand in the coverage area is 1,269 MW, and generated energy is 7,665 GWh. Coverage areas are as follows:





PHNOM PENH AND SUBURBAN AREAS: PHN is the capital city of Cambodia. The PHN system is supplied by National Grid via 230 kV substations such as GS4, GS6, and GS7 with the total capacity of about 900 MW which is then delivered to 115 kV system via GS1, GS2, GS3, GS4, GS5, GS6, and GS7. Generated by local fuel oil power plants, about 194 MW is additionally injected into the system. EDC Phnom Penh's coverage area includes Phnom Penh, its suburban areas, and Ta khmau, the provincial town of Kandal Province.

In 2017, for Phnom Penh System, the peak demand is 777 MW. Supplying power to 652,858 customers, EDC has absorbed 4,756 GWh of energy from National Grid while, in 2016, there was only 4,596 GWh

SIEM REAP: SRP is the area of tourist attraction and located in the northwest of Cambodia. The power system of SRP was handed over to EDC on December 30, 1995. Electricity supply in SRP is from its own power plant and GS Puok (power import from Thailand via a 115 kV transmission line in 2007 and the system was connected to the National Grid in 2013). The main operational features of the power system in SRP for 2017 are around 90 MW of power supply originating from the National Grid and 11 MW from the local power generation. Peak Demand is 89 MW, 530 GWh of electrical energy supplied by the National Grid, 2,356 cct-km of MV and LV lines, and 61,745 customers.



PREAH SIHANOUK: SHV has the most stunning fine sandy beaches and is located in the southwestern part of Cambodia. The power system of SHV was handed over to EDC on June 11, 1996. Originally, the system was isolated and supplied by local power generation with an installed capacity of 20 MW. At the end of 2011, it was connected to KPT system that got power from the National Grid as well as imported power

from Vietnam. At the end of 2012 and early 2013, the system was supplied by the National Grid through a 230 kV transmission line from GS KPT to GS STH and a 115 kV transmission line from GS STH to GS SHV. As of 2017, 90 MW of supply comes from the National Grid and 20 MW from the local power generation. This has increased the system's capability to supply power to more areas and to other licensees in SHV. The main operational features of the power system in SHV for 2017 are 317GWh of the annual energy generation, 68 MW is the peak demand, 984 cct-km of MV and LV network, and 20,157 customers.

KAMPONG CHAM: KGC is a province with the most fertile rubber plantations, located in the eastern part of Cambodia. The power system of KGC was handed over to EDC on March 23, 1998. The system was supplied by local power generation in 1996. Some parts of the system received imported power from Vietnam in 2011. KGC system has been connected to the National Grid since 2013. The main operational features of the power system in KGC for 2017 are: 90 MW



of power supply coming from the National Grid and 8 MW from the local power generation, 103 GWh is the energy generation, 36 MW peak demand, 1,024 cct-km of MV and LV lines, and 21,341 customers.

MEMOT AND PONHEA KREK: The power supply system for MMT and PKK is a part of Kampong Cham province. The power supply to these areas has been imported from Vietnam since 2002 with the contracted capacity of 10 MW. As of 2017, the import is 49 GWh. The system has total MV and LV lines of 420 cct-km, 13 MW of peak demand, and 18,730 customers.

BATTAMBANG: BTB is the leading and economically potential province in term of agriculture, particularly rice production. It is located in the northwestern part of Cambodia. The power system of BTB was handed over to EDC on June 28, 2000. BTB system has covered the 22 kV sub-transmission lines in Pursat Province. A 115 kV transmission line for importing power from Thailand was connected with SRP and BTC systems in 2007. Then, it was linked to the National Grid in 2012. The system has been supplied by the

National Grid via GS BTB(CPG) and GS BTB(CPTL) with the total capacity of 185 MW and 2 MW of local power generation. As of 2017, the system has 2,465 cct-km of the total MV and LV lines, 364 GWh of energy generation, 71 MW of peak demand, and 50,093 customers.

BANTEAY MEANCHEY AND MONGKUL BOREI: BTC is located in the northwestern part of Cambodia. The power system of BTC was handed over to EDC on August 14, 2003. BTC was supplied by its own power plant and imported power from Thailand in 2007. Then the system was connected to the National Grid in 2013. As of 2017, 68 MW of the supply capacity is from National Grid (GS BTC and GS IE), and 3 MW more is generated by the local fuel oil power plant. There are 133 GWh of the energy generation, 26 MW of peak demand, 340 cct-km of MV and LV network and 23,568 customers.

STEUNG TRENG: STR is a remote and sparsely populated province located in the northeast of Cambodia. The power system of STR was handed over to EDC on August 14, 2003. The power system of STR town has been connected to Laos system at 22 kV since 2010. As of 2017, the system has 6 MW of installed capacity (2 MW generated by its own power plant and 4 MW imported from Laos), 769 cct-km of total MV and LV lines, 12 MW of peak demand, 49 GWh of the energy generation, and 9,503 customers.

RATANAKIRI: RTK is situated on the border of Vietnam's central highlands and Laos. The power system of RTK was handed over to EDC on August 14, 2003. As of 2017, the system has 4 MW of installed capacity that is the sum of fuel oil and hydro generations, 8 MW of power import from Vietnam via a 35 kV sub-transmission line, 730 cct-km of MV and LV lines, 19 MW of peak demand, 50 GWh of energy generation, and 8,075 customers.



TAKEO AND ANG TASOM: TKO is located in the plain region of the southern part of Cambodia. The power system of TKO was handed over to EDC on June 26, 2000. The 230 kV line from Vietnam to TKO substation was energized on 31st March 2009 to import power from Vietnam. As of 2017, 45 MW of the supply capacity comes from the National Grid and 2 MW from local fuel oil power generation. The system has a peak demand of 21 MW, 786 cct-km of MV and LV line. Generated energy from its own power plant, power import from Vietnam, and National Grid are 97 GWh supplied to 23,732 customers.

KAMPOT:KPT is located in the southern part of the country. The power system of KPT was handed over to EDC on August 14, 2003. The power from the local fuel oil power generation and import from Vietnam that has been transmitted via a 22 kV line through Kampong Trach are used for supplying in KPT city. The supply capacity from National Grid was about 45 MW in 2011. As of



2017, energy generation from its own power plant, National Grid, and power import from Vietnam is 87 GWh. The system has 15 MW of peak demand, 689 cct-km of MV and LV lines, and 14,249 customers.

KAMPONG TRACH: The power supply system for KGT is a part of KPT province, and it has imported electricity from Vietnam since 2002. The power system in KGT has been supplied by the National Grid since 2014. As of 2017, the contracted capacity has been 10 MW, and the system has 144 cct-km of the line length of MV and LV lines, 14 GWh of energy generation, 3 MW of peak demand, and 6,651 customers.

PREY VENG: PRV is located in the southeast of the country. The power system of PRV was handed over to EDC on August 14, 2003. The supply sources of PRV City system are comprised of EDC's own power generation with an installed capacity around 1 MW (in 2003) and imported power from Vietnam (in 2009). After energizing lines of the rural project, PRV has also got power from KGC system (in 2013), PNH system for supplying areas along National Road No.8 (in 2014), and Suvannaphum coal fired power plant (in 2015). There are 867 cct-km of MV and LV lines and 21 MW of peak demand. The available energy is 88 GWh supplied to 7,129 customers.

SVAY RIENG: SVR is located in the southeast of the country. The power system of Svay Rieng was handed over to EDC on August 14, 2003. The source of power supply consists of power import from Vietnam (in 2003), its own power generation (in 2006), and Suvannaphum coal fired power plant (in 2015). The available capacity of the system is 8 MW. Power import and generation, as of 2017, are 194 GWh while the peak demand is 19 MW. The line length of MV and LV network is 887 cct-km to connect to 27,811 of customers have been supplied.

BAVET: The power system for BVT is a part of SVR province, and the power supply source for this area is from Vietnam. As of 2017, there is a peak demand of 27 MW, 16 MW of imported power from Vietnam, and the system has 5,043 customers.

MONDULKIRI: The power system of MDKR was handed over to EDC on May 10, 2010. The installed capacity of the system is comprised of 370 kW of hydro power generation, 300 kW of diesel power generation, and 1 MW imported from Vietnam. Under EDC control, as of 2017, available energy has been 11 GWh, and peak demand is about 3 MW. The line length of MV and LV network is 295 cct-km through which 3,735 customers have been supplied.



KEOSIEMA: The power system for KSM is in MDKR province. Supply source is by power import from Vietnam with a contracted capacity of 0.4 MW. The import has been 4 GWh and, a peak demand is 1 MW. The line length of MV and LV network is 131 cct-km through which 3,825 of customers have been supplied.

KRATIE: The power system of KRT was handed over to EDC on April 20, 2011. The system is supplied by local power generation with an installed capacity of around 1 MW (in 2011) and KGC system (in 2015). Under EDC control, as of 2017, a generation has been 36 GWh, and a peak demand is about 9 MW. The line length of MV and LV network is 552 cct-km through which 10,115 of customers have been supplied.

SNUOL: The power system is in KRT province. This system is supplied by 5 MW of imported power from Vietnam with the annual energy of 12 GWh and 2 MW of peak demand. The line length of MV and LV network is 101 cct-km through which 2,576 of customers have been supplied.

KAMPONG SPEU: On March 14, 2012, KPS branch was upgraded to a province unit as it had been under Phnom Penh System. This unit is in charge of the system in KPS town and the areas along National Road No.4, which get power supply from GS KPS. Some areas of KPS are getting power supply from GS4, GS6, and GS TKO. As of 2017, 45 MW of the supply capacity is from the National Grid. Energy generation from the National Grid has been 120 GWh, and the annual sale energy has been 111 GWh. Peak demand is 46 MW. The line length of MV and LV network is 775 cct-km through which 16,410 customers have been supplied.

POWER GENERATING FACILITIES AND ELECTRICITY SUPPLY

Table 2: Installed Capacity and Output from Power Plants and Import, MW

Year			2012	2013	2014	2015	2016	2017	
Location		Capacity							
National Grid			Installed	839	1,426	1,972	1,959	2,094	2,509
			Output	768	1,168	1,768	1,888	2,014	2,080
PHN			Installed	634	1,220	1,728	1,842	1,977	2,387
			Output	571	968	1,531	1,778	1,905	1,965
EDC	IPP	FO	Installed	44	44	44	81	81	81
			Output	41	41	41	75	75	75
CUPL	IPP	FO	Installed	37	37	37	-	-	-
			Output	32	32	32	-	-	-
KEP	IPP	FO	Installed	49	49	49	49	49	49.20
			Output	43	43	43	43	43	43
CITY Power	IPP	FO	Installed	-	8	-	-	-	-
			Output	-	7	-	-	-	-
CEP	IPP	FO	Installed	49	49	49	49	49	49
			Output	45	45	45	45	45	45
COLBEN	IPP	FO	Installed	20	20	20	14	14	14
			Output	10	10	10	10	10	10
Kirirom I	IPP	H	Installed	12	12	12	12	12	12
			Output	11	11	11	11	11	11
Kirirom III	IPP	H	Installed	18	18	18	18	18	18
			Output	18	18	18	18	18	18
Kamchay	IPP	H	Installed	194	194	194	194	194	194
			Output	194	194	194	194	194	194
Atay	IPP	H	Installed	-	120	120	120	120	120
			Output	-	120	120	120	120	120
LSRC	IPP	H	Installed	-	338	338	338	338	338
			Output	-	169	338	338	338	338
Tatay	IPP	H	Installed	-	-	246	246	246	246
			Output	-	-	246	246	246	246
CEL	IPP	C	Installed	-	120	120	120	120	120
			Output	-	100	100	100	100	100
Lower Sesan II	IPP	H	Installed	-	-	-	-	-	400
			Output	-	-	-	-	-	50
Sunseap	IPP	Solar	Installed	-	-	-	-	-	10
			Output	-	-	-	-	-	10
CIIDG	IPP	C	Installed	-	-	270	270	405	405
			Output	-	-	125	251	377	377
SVP	IPP	C	Installed	10	10	10	10	10	10
			Output	7	8	8	8	8	8
Thailand	IMP		PPA	-	-	120	120	120	120
			Output	-	-	120	120	120	120
Vietnam	IMP		PPA	200	200	200	200	200	200
			Output	170	170	200	200	200	200
Provinces			Installed	205	207	244	117	117	123
			Output	197	199	236	109	109	115
SRP	EDC	FO	Installed	11	11	11	11	11	11
			Output	11	11	11	11	11	11
	IMP		PPA	40	40	80	-	-	-
			Output	40	40	80	-	-	-

Table 2: Installed Capacity and Output from Power Plants and Import, MW (Continue)

Year			Capacity	2012	2013	2014	2015	2016	2017
Location									
KGC	IPP	FO	Installed	8	8	8	8	8	8
			Output	7	7	5	5	5	5
	NG		Installed	2	2	2	2	2	2
			Output	2	2	2	2	2	2
SHV	EDC	FO	Installed	6	6	6	6	6	6
			Output	5	5	5	5	5	5
	IPP	FO	Installed	14	14	14	14	14	14
			Output	10	10	10	10	10	10
TKO	EDC	FO	Installed	2	2	2	2	2	2
			Output	2	2	2	2	2	2
	NG		Installed	16	16	16	-	-	-
			Output	16	16	16	-	-	-
BTB	EDC	FO	Installed	3	2	2	2	2	2
			Output	2	2	2	2	2	2
	NG		Installed	20	20	20	-	-	-
			Output	20	20	20	-	-	-
BTC	EDC	FO	Installed	3	3	3	3	3	3
			Output	3	3	3	3	3	3
	IMP		PPA	20	20	20	-	-	-
			Output	20	20	20	-	-	-
KPT	EDC	FO	Installed	3	3	3	3	3	3
			Output	3	3	3	3	3	3
KPS	IPP	BIO	Installed	-	-	-	6	6	6
			Output	-	-	-	6	6	6
PKK	IPP		PPA	5	5	5	5	5	5
			Output	5	5	5	5	5	5
MMT	IPP		PPA	5	5	5	5	5	5
			Output	5	5	5	5	5	5
KGT	IPP		PPA	10	10	10	10	10	10
			Output	10	10	10	10	10	10
PRV	EDC	FO	Installed	2	2	2	2	2	2
			Output	2	2	2	2	2	2
	IMP		PPA	1	3	3	3	3	3
			Output	1	3	3	3	3	3
STR	EDC	FO	Installed	2	2	2	2	2	2
			Output	2	2	2	2	2	2
	IMP		PPA	4	4	4	6	6	11.64
			Output	4	4	4	6	6	11.50
KRT	EDC	FO	Installed	-	1	1	1	1	1
			Output	-	1	1	1	1	1
	IPP	FO	Installed	3	3	-	-	-	-
			Output	1	1	-	-	-	-
SNL	IMP		PPA	4	4	4	5	5	5
			Output	4	4	4	5	5	5
SVR	EDC	FO	Installed	0.8	0.8	0.8	0.8	0.8	0.8
			Output	0.8	0.8	0.8	0.8	0.8	0.8
	IPP		PPA	7	7.5	7.5	7.5	7.5	7.5
			Output	7	7.5	7.5	7.5	7.5	7.5
BVT	IMP		PPA	16	16	16	16	16	16
			Output	16	16	16	16	16	16

Table 2: Installed Capacity and Output from Power Plants and Import, MW (Continue)

Year			Capacity	2012	2013	2014	2015	2016	2017
Location									
Off Grid			Installed	10	10	13	13	13	11
			Output	10	10	12	12	12	11
MDK	EDC	H/FO	Installed	1	1	1	1	1	1
			Output	1	1	1	1	1	1
	IMP	PPA	1	1	1	1	1	1	
		Output	1	1	1	1	1	1	
KSM	IMP	PPA	0.4	0.4	0.4	0.4	0.4	0.4	
		Output	0.4	0.4	0.4	0.4	0.4	0.4	
RTK	IPP	FO	PPA	-	-	3	3	3	0
			Output	-	-	1	1	1	0
	EDC	H	Installed	1	1	1	1	1	1
			Output	1	1	1	1	1	1
	IMP	PPA	7	8	8	8	8	8	
		Output	7	8	8	8	8	8	
TOTAL			Installed	849	1,437	1,985	1,972	2,107	2,520
			Output	778	1,178	1,779	1,899	2,026	2,090
Percentage(%)				92%	82%	90%	96%	96%	83%

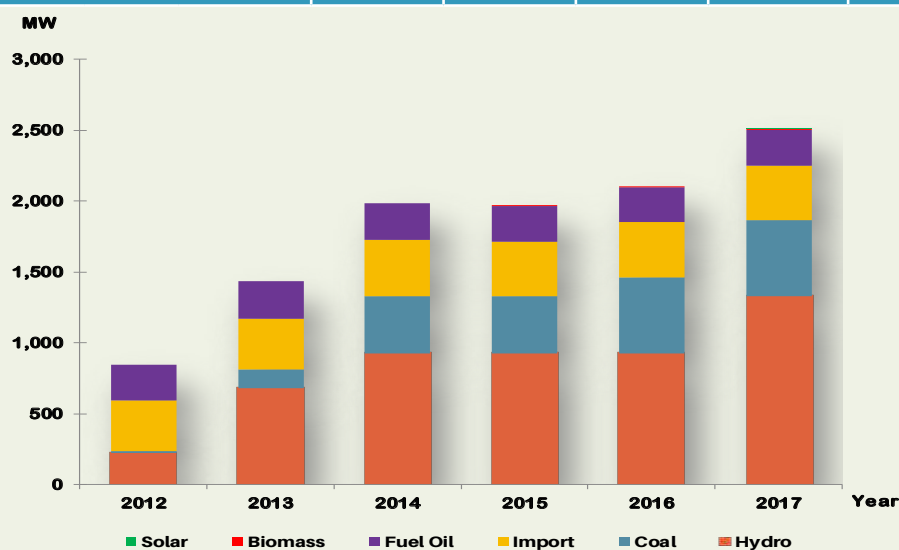


Figure 1: Installed Capacity by type from 2012 - 2017

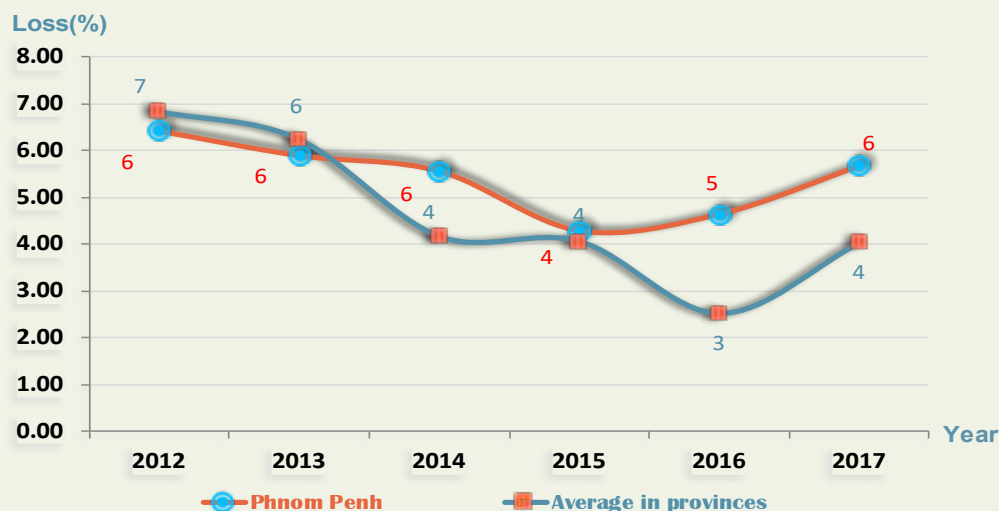


Figure 2: Distribution Losses from 2012 to 2017

Table 3: Energy Generation from Power Plants and Import, GWh

Year	2012	2013	2014	2015	2016	2017
Location						
National Grid	3,285	3,660	4,477	5,658	6,566	7,603
EDC PHN	58	36	26	9	72	35
CUPL	132	73	35	5	-	-
Kirirom I	29	45	39	35	42	43
Kam Chay	396	463	424	363	438	406
Kirirom III	86	90	80	79	82	87
ATAY	-	267	327	106	214	243
LRSCR	-	138	866	831	923	994
TATAY	-	-	104	736	859	899
KEP	197	140	80	51	115	114
CITY POWER	16	13	-	-	-	-
CEP	209	144	96	66	160	103
COLBEN	31	19	11	4	16	8
S.L Garment	10	6	1	4	7	5
Suvannaphum	37	30	43	34	52	38
CEL	-	139	654	620	574	655
CIIDG	-	-	167	1,474	1,766	2,877
Sunseap	-	-	-	-	-	5
Thailand	76	417	350	139	147	87
VN	1,199	1,329	879	804	737	710
PP Sugar	1	1	10	23	23	38
SRP	268	4	5	4	8	2
SHV	90	25	9	3	11	0
KGC	57	32	8	0.2	2	0
TKO	26	0.03	0.02	0.02	0.01	0.01
BTB	106	0.01	0.01	0.01	0.01	0.01
KPT	14	12	15	12	23	0.08
BTC	40	0.16	0.04	0.04	0.1	0.08
PKK	40	39	30	22	23	26
MMT	14	16	16	19	22	24.3
KGT	17	17	13	7	14	17
PRV	12	15	13	9	5	2.05
STR	9	11	14	18	35	54.05
SVR	27	33	137	155	164	110.02
BVT	74	87	-	-	-	-
KRT	7	10	15	15	20	13.82
SNL	7	9	10	11	12	7
Off Grid	21	28	35	42	47	62.17
RTK	17	23	28	33	37	51
MDKR	3	3	4	5	6	7
KSM	1	2	3	4	4	4.17
Total	3,306	3,688	4,512	5,700	6,613	7,665

Table 4: Generation by types from Power Plants and Import during 2017, GWh

LOCATION	FUEL OIL	HYDRO	BIOMASS	SOLAR	COAL	IMPORT	TOTAL
National Grid	239	2698	42	5	3,569	1,050	7,603
PHN	EDC	-	-	-	-	-	35
	IPPs	202	2,698	42	5	3,569	7,312
KPS	-	-	-	-	-	-	0
SRP	2	-	-	-	-	-	2
SHV	-	-	-	-	-	-	0
KGC	-	-	-	-	-	-	0
TKO	0.01	-	-	-	-	-	0.01
BTB	0.01	-	-	-	-	-	0.01
KPT	0.08	-	-	-	-	-	0.08
BTC	0.08	-	-	-	-	-	0.08
PKK	-	-	-	-	-	26	26
MMT	-	-	-	-	-	24.3	24.3
KGT	-	-	-	-	-	17	17
PRV	0.05	-	-	-	-	2	2.05
STR	0.05	-	-	-	-	54	54.05
SNL	-	-	-	-	-	7	7
KRT	0.01	-	-	-	-	13.82	13.83
SVR	0.02	-	-	-	-	110	110.02
Off Grid	0.06	6	0	0	0	56.17	62.23
RTK	-	4	-	-	-	47	51
MDKR	0.06	2	-	-	-	5	7.06
KSM	-	-	-	-	-	4.17	4.17
TOTAL	239	2,704	42	5	3569	1,106	7,665

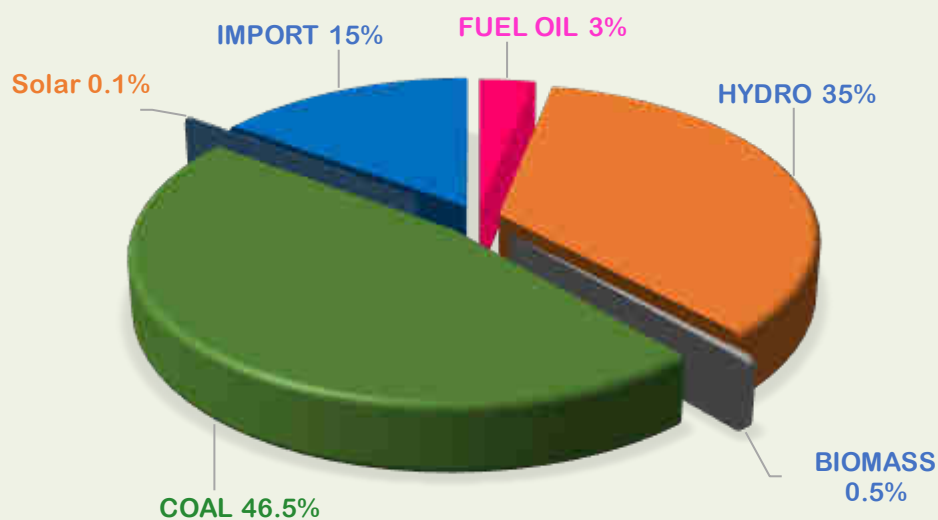


Figure 3: Generation by type in 2017

Table 5: Yearly Peak Demand, MW

Location	2012	2013	2014	2015	2016	2017
National Grid	508	625	784	951	1,068	1,269
PHN	410	493	563	674	757	777
SRP	47	57	59	68	83	89
SHV	19	25	30	40	46	68
KGC	10	17	14	22	32	36
PKK	7	7	6	4	4	7
MMT	4	5	4	7	7	6
TKO	7	9	18	20	23	21
BTB	21	23	26	47	65	71
KPT	5	6	13	18	16	15
KGT	3	3	3	5	3	3
PRV	3	3	8	14	15	21
BTC	9	11	19	23	24	26
STR	3	4	5	3	8	12
RTK	4	4	5	6	7	13
SVR	5	7	8	12	30	19
BVT	15	16	17	17	16	27
MDKR	1	1	1	1	2	4
KSM	0.4	0.5	1	1	1	1
KRT	1	2	3	3	8	9
SNL	1	1	2	2	3	2
KPS	-	-	-	38	42	46

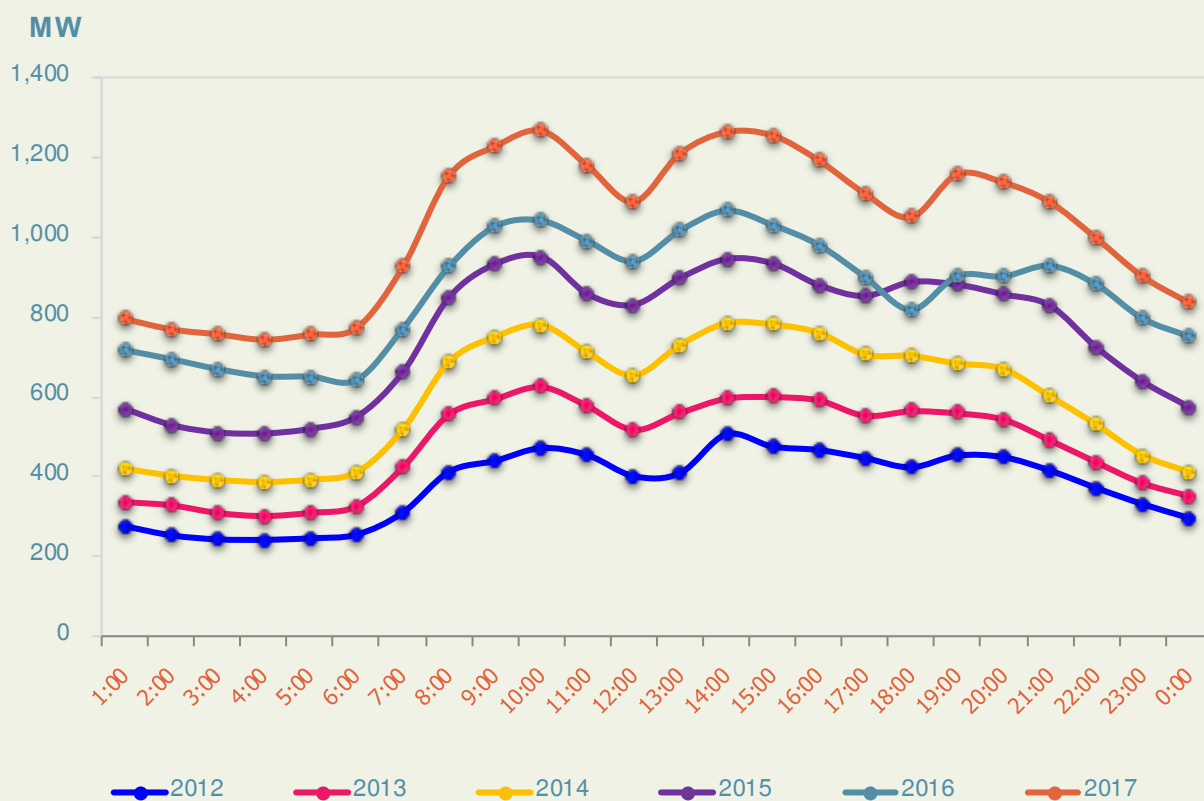


Figure 4: Daily Peak Load Curve from 2012 to 2017 in National Grid

Table 6: Energy Sales, GWh

Location	2012	2013	2014	2015	2016	2017
PHN	2,266	2,531	2,956	3,748	4,289	4,807
SRP	237	270	319	376	447	511
SHV	80	96	141	186	232	309
KGC	52	44	43	68	75	94
PKK	38	37	29	23	23	26
MMT	13	15	15	19	23	23
TKO	24	37	54	90	94	88
BTB	99	127	161	222	278	346
KPT	49	29	44	81	97	110
KGT	17	16	13	-	-	-
PRV	11	14	20	42	45	74
BTC	36	47	71	106	110	118
STR	8	10	12	16	35	44
RTK	16	21	26	31	35	45
SVR	24	26	129	159	186	229
BVT	71	87	-	-	-	-
MDKR	3	3	4	5	6	8
KSM	1	2	3	3	4	4
KRT	6	10	15	18	28	36
SNL	6	8	11	10	9	10
KPS	42	52	84	137	94	111
TOTAL	3,098	3,484	4,152	5,341	6,110	6,994

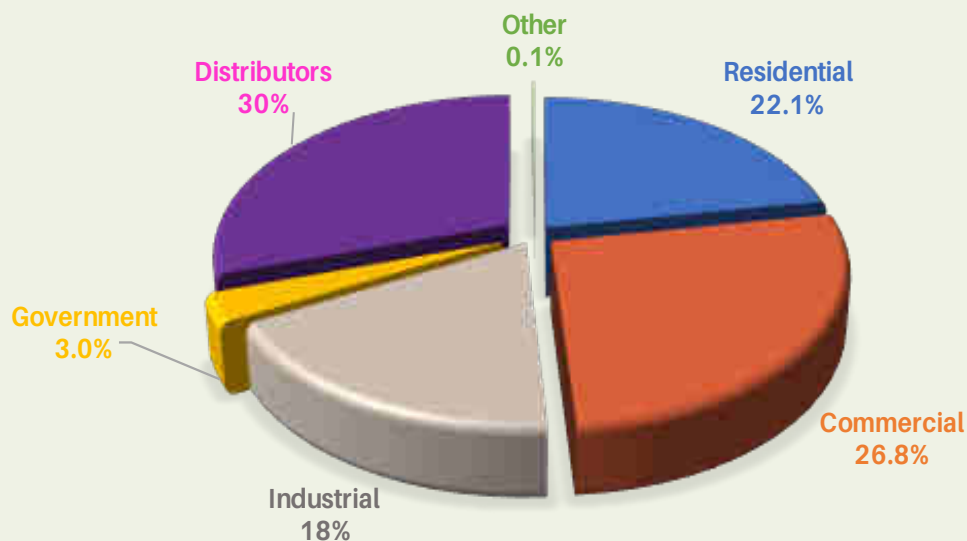


Figure 5: Energy Sale by type in 2017

Table 7: Customer from 2012 to 2017

Location	2012	2013	2014	2015	2016	2017
PHN	276,307	299,774	319,423	522,517	610,582	652,858
SRP	28,791	32,725	36,694	40,949	48,482	61,745
SHV	12,246	13,146	14,238	15,975	17,930	20,157
KGC	12,239	13,003	14,876	16,999	19,436	21,341
PKK	2,694	2,849	2,996	3,958	6,644	7,401
MMT	4,992	5,321	5,591	7,608	8,652	11,329
TKO	11,201	13,081	15,636	20,203	21,899	23,732
BTB	38,498	40,735	42,336	45,216	47,899	50,093
KPT	9,332	10,559	11,234	11,989	13,128	14,249
KGT	2,831	3,499	3,670	4,176	5,759	6,651
PRV	5,538	5,790	6,110	6,497	6,742	7,129
BTC	17,213	18,022	19,217	21,186	22,348	23,568
STR	3,563	4,668	5,782	6,280	7,448	9,503
RTK	3,538	4,233	4,722	5,235	6,503	8,075
SVR	10,298	12,474	13,892	13,968	19,962	27,811
BVT	4,518	3,174	3,802	6,742	4,465	5,043
MDKR	1,719	2,070	2,195	2,348	2,692	3,735
KSM	1,202	1,337	1,554	1,753	1,926	3,825
KRT	3,632	4,404	4,776	6,707	8,442	10,115
SNL	1,094	1,167	1,238	1,311	1,827	2,576
KPS	9,547	10,828	11,159	12,996	14,409	16,410
TOTAL	460,993	502,859	541,141	774,613	897,175	987,346

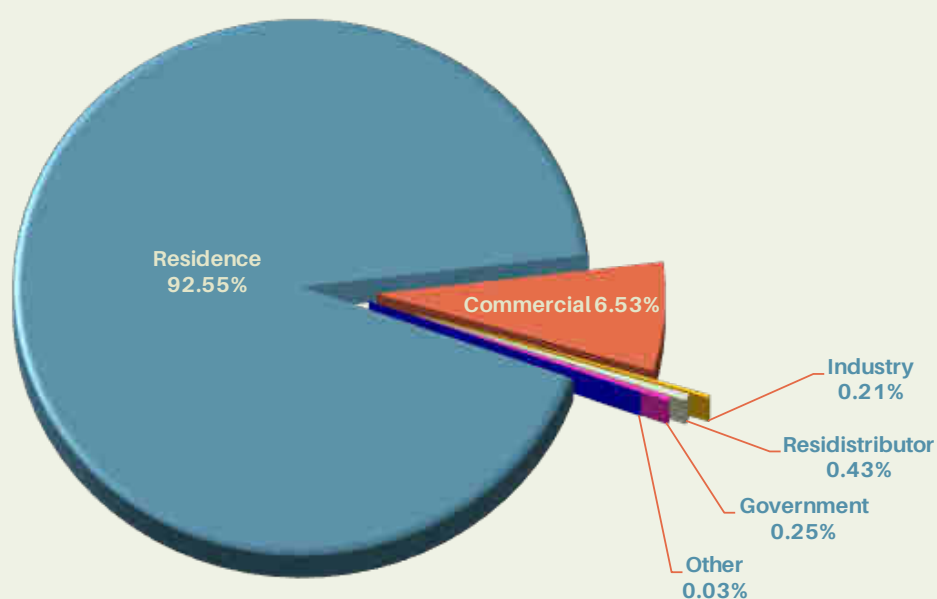
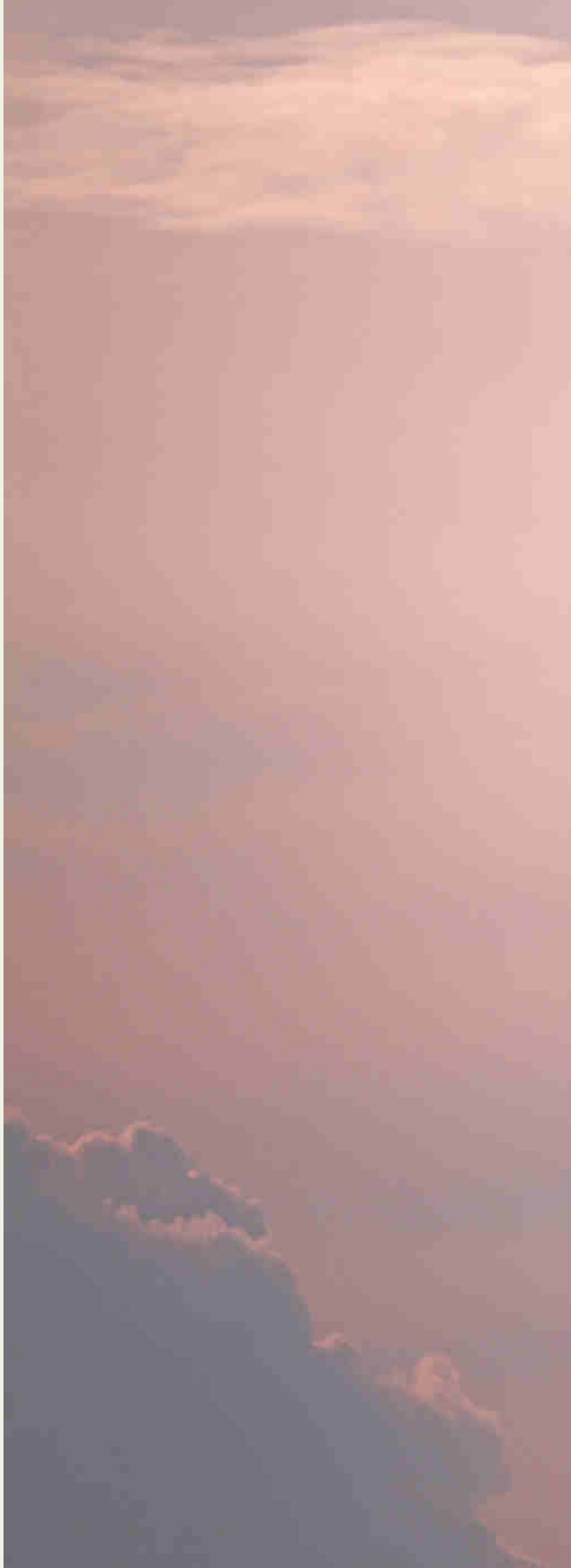
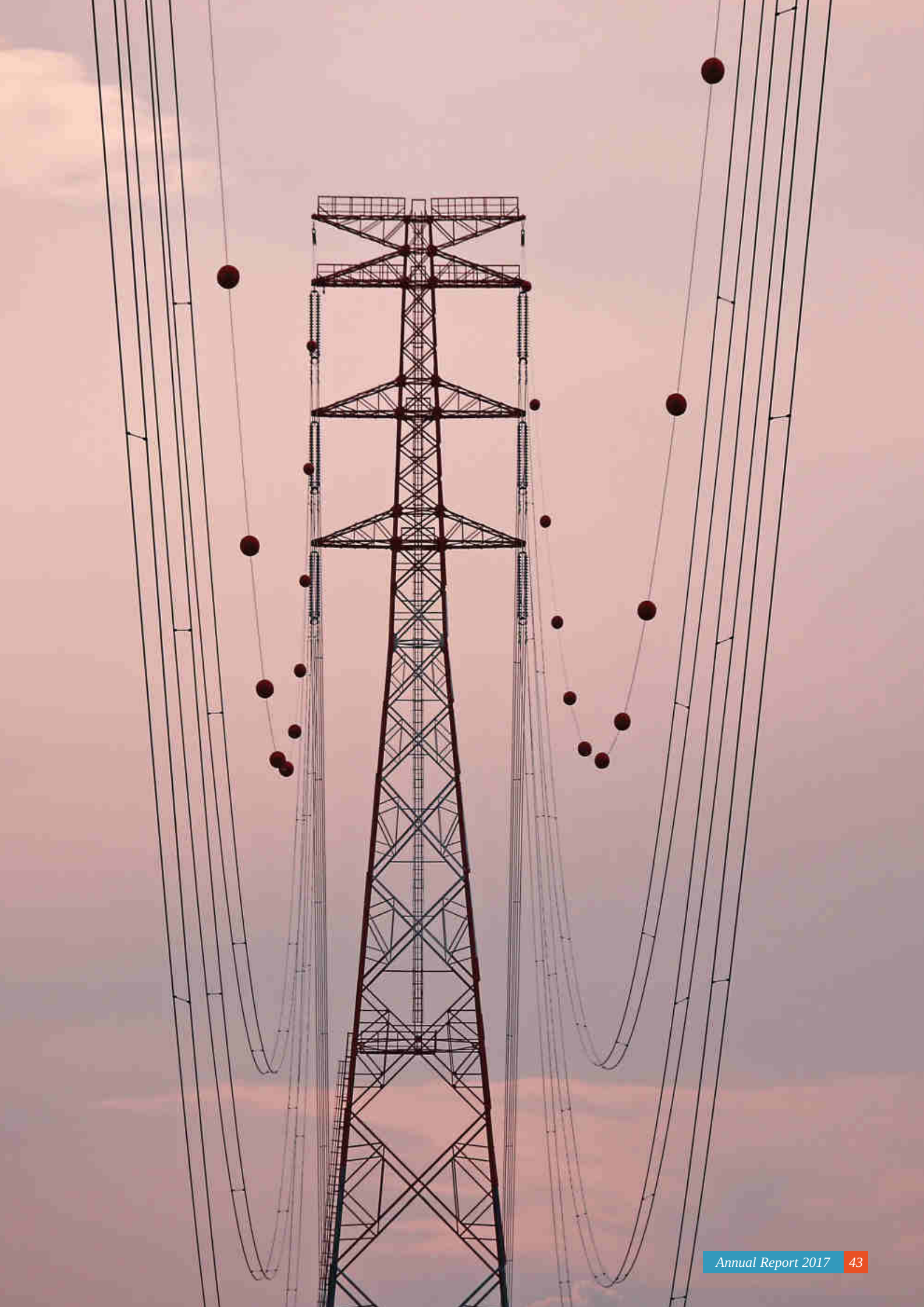


Figure 6: Customer by Type in 2017

TRANSMISSION NETWORKS

Transmission networks are the blood vessels that play an important role in transmitting energy from power plants to substations. The transmission lines of EDC are currently divided into two types: 230 kV and 115 kV.





Transmission Networks

The main purpose of the 115 kV ring bus line around Phnom Penh is to supply power to Phnom Penh area and to increase the reliability of power supply in Phnom Penh system by interlinking three grid substations. The first 115 kV transmission line of 23 km length linking the three grid substations (GS1, GS2, and GS3) in Phnom Penh System was energized in 1999. In 2002, another 115kV transmission line of 111 km length was erected to link Kirirom I Hydro Power Plant to GS1. The Major source of power supply for three provinces in the north - western Cambodia - Battambang, Banteay Meanchey, and Siem Reap are imported from Thailand via 115 kV transmission line of 185 km length which was commissioned at the end of 2007.

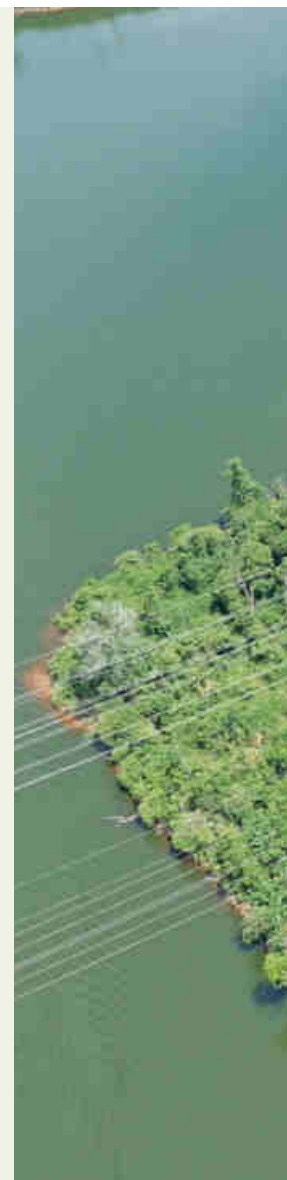
In 2009, the first 230 kV transmission line in Cambodian history with 97 km in length to supply power to Takeo Grid Substation and the West Phnom Penh Substation (GS4) was put in service getting power from Vietnam. The 115 kV transmission line ring system connecting West Phnom Penh Substation (GS4) to the three existing substations in Phnom Penh was also put in operation.

In 2011, the 230 kV transmission line with 73 km in length was extended from Takeo Grid Substation to Kampot Grid Substation and linked to Kamchay Hydropower plant with another 230 kV transmission line with a length of 11 km.

The 230 kV transmission line from Phnom Penh to Battambang has started operating since April 2012 with a length of 300 km and another 230 kV transmission line from Ou Soam substation (Koh Kong) to Pursat province substation with a length of 130 km under BOT construction scheme. The construction of 115 kV from 230/115/22 kV substation of CPG (Cambodia Power Grid) to connect with 115 kV substation of CPTL (Cambodia Power Transmission Line) which was put in service on September 01, 2012 permits the National Grid to be able to extend from a part of the southern grid (Phnom Penh, Kandal, Kampong Speu, Takeo, Kampot and Kep) to the northwestern grid (Battambang, Banteay Meanchey and Siem Reap) through Kampong Chhnang and Pursat provinces.

In 2013, the 230 kV transmission line from Kampot to Preah Sihanouk province under ADB and JICA loans with a length of 88 km and another 230 kV transmission line from Phnom Penh to Kampong Cham with a length of 110 km have been put in operation. These projects permit the National Grid to cover two more provinces: Preah Sihanouk and Kampong Cham.

In 2014, 11 km of 115 kV transmission line from GS STH to GS SHV, funded by JICA loans, and 12 km of 115 kV transmission line from Chhouk to Banteay Meas Substation, funded by EDC's budget, as well as 48 km of 230 kV transmission line in Phnom Penh Loop Line project, connecting GS 6 to GS 5 and funded by loans from China Exim Bank, were put in operation.





In 2015, a 115 kV transmission line was constructed to link our GS7 with GS2 and put into operation in 2015. This is a part of the Project for Phnom Penh Loop Line funded by China Exim Bank. A new interconnection point from Champasak province, Ban Hat Substation, Lao PDR to Kampong Sralau, Preah Vihear province, Cambodia, the initial design and construction for the 115 kV transmission line was energized at 22 kV voltage level for the first stage until the transmission line from Lao border to Chey Sen Substation was completed.

In 2016, Phnom Penh - Bavet and Kampong Cham - Kratie - Stung Treng - Lower Sesan II Hydro Power Plant transmission lines with a total length of 426 km are under construction. These projects are expected to be completed by the end of 2017.

TRANSMISSION NETWORKS

Projects for a transmission line surrounding Tonle Sap Lake (connecting Battambang - Siem Reap - Kampong Thom - Kampong Cham), Phom Penh Loop Line Phase 2 (NPP - Chroy Changvar - EPP - SPP), and a transmission line connecting Kampong Thom - Preah Vihear - Lao PDR Border are under study. These projects are funded by China Exim Bank.

Transmission line expansion project in Koh Kong, Kampong Cham and Kratie which funded by the Agence Francaise De Developpement (AFD) has been conducted the feasibility study and bidding preparation. The beginning of project study and negotiation 115kV transmission lines from GS Kampong Soeng to a new GS Svay Antor and from GS Preah Sihanouk to a new GS Ream with a total length of 62 km and a 230kV loop transmission line in Eastern Part of Cambodian National Grid part 1 which is going to construct from Stung Treng to Ratanakiri and from Kratie to Mondulkiri with a total length of 275 km.

In 2017, 230kV Transmission Line which connected from Lower Sesan II to Steung Treng substation and continued to Kratie substation and Kampong Cham substation have been operated for transmitting the power into the nation grid that allowed the consumer surround and under transmission line could absorb the maximum

Grid Substation Facilities

No.	Grid Substation Name	Rate Voltage (kV)	Number of Transformer	Total Capacity (MVA)	Operation Year
1	GS1	115/22	2 x 75	150	1999(Upgraded in 2013)
2	GS2	115/22	3 x 50	150	1999 (Added 1 unit in 2013)
3	GS3	115/22	2 x 50	100	1999
		115/22/15	1 x 50	50	2013
4	GS KPS	115/22	1 x 50	50	2002
5	GS BTB (CPTL)	115/22	1 x 25	25	2007
6	GS BTC	115/22	1 x 25	25	2007
7	GS SRP	115/22	2 x 50	100	2007(Added 1 unit in 2014)
8	GS4 (WPP)	230/115	2 x 200	400	2009
		115/22	2 x 50	100	
9	GS TKO	230/22	1 x 50	50	2009
10	GS KPT	230/22	1 x 50	50	2011
11	GS Kampong Chhnang	230/22	1 x 25	25	2012
12	GS Pursat	230/22	1 x 25	25	2012
13	GS BTB (CPG)	230/115/22	2 x 90	180	2012(Added 1 unit in 2015)
14	GS5	115/22	2 x 50	100	2013
15	GS STH	230/22	1 x 50	50	2013
16	GS6 (NPP)	115/22	1 x 50	50	2013
		230/115	2 x 200	400	
17	GS Osom	230/115/22	1 x 150	150	2013
18	GS KGC	115/22	2 x 50	100	2013 (Added 1 unit in 2015)
		230/115	1 x 200	200	(Added 1 unit in 2017)
19	GS Chhuk	230/115	1 x 100	100	2014
20	GS SHV	115/22	1 x 50	50	2014
21	GS Banteay Meas (SWS)	115	-	-	2014
22	GS7 (SPP)	230/115	1 x 200	200	2015
		115/22	1 x 50	50	
23	GS Tatay	230/35/22	1 x 60	60/60/40	2015
24	GS IE	115/22	1 x 50	50	2015
25	GS East Siem Reap	115/22	1 x 50	50	2016
26	GS Kampongsoeng	115/22	1 x 50	50	2017
27	GS 8 (Toul Pongror)	115/22	1 x 75	75	2017
28	GS Chrok Mates	115/22	1 x 50	50	2017
29	GS Kratie	115/230	1 x 50	50	2017

power directly, especially through the transmission line, it could send a large amount of power to Phnom Penh where is a prime location in the industrial, commercial and development that is going to absorb huge amounts of electricity consumption in the future.

115kV Transmission line with the total length 145km, connecting from GS7 to GS Kampong Soeng and GS Chrok Mates has been commissioned in early of 2017 that allowed the people in Svay Rieng and Prey Veng province could get the power directly from the national grid and reduce the importing power from neighbors country.

Transmission Facilities

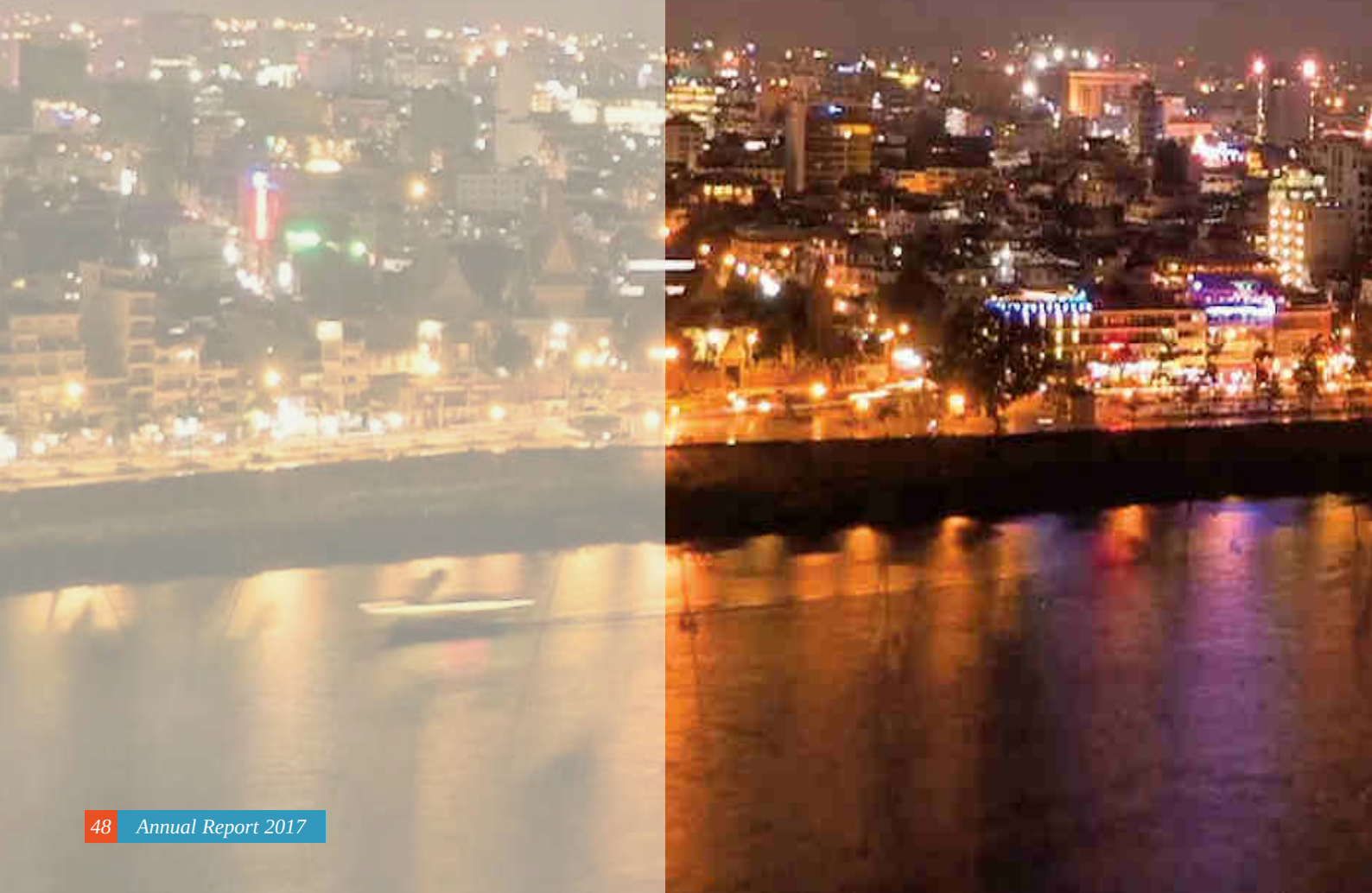
I	115 kV Transmission line	Circuit	Cross Section (mm ²)	Line Length (km)	Operation Year	Capital Source
1	GS1 - GS3	1	2x250	12	1999	WB
2	GS3 - GS2	1	2x250	12	1999	WB
3	GS1 - GS KPS	1	150	41	2002	BOT
4	GS KPS - Kirirom I	1	150	65	2002	BOT
5	Thai Border - GS IE	2	400	4	2007	BOT
6	GS IE - GS BMC	2	400	43	2007	BOT
7	GS BMC - GS SR	1	400	85	2007	BOT
8	GS BMC - GS BTB	1	400	53	2007	BOT
9	GS4 - GS1	1	2x250	30	2009	WB
10	GS4 - KEP	1	2x250	23	2009	WB
11	KEP - GS2	1	2x250	7	2009	WB
12	Kirirom I - Kirirom III	1	150	32	2012	BOT
13	Atay Hydropower Plant - GS Ou saom	2	630	18	2013	BOT
14	GS STH - GS Sihanouk Ville	2	400	11	2014	JICA
15	GS Chhuk - GS Banteay Meas	1	400	12	2014	EDC
16	Phnom Penh Loop Line	2	2x250	45	2015	CEIB
17	GS Siem Reap - GS East Siem Reap	1	400	25	2016	BOT
18	Lao Border - GS Preah Vihear I	1	240	60	2017	ADB
19	GS7(South Phnom Penh) - GS Kampong Soeng - GS Chrok Mates	2	2x240	160	2017	CEIB
20	GS Battambang - GS Ratanakmundol	2	400	35	2017	EDC
Total length				773 km		

II	230 kV Transmission line	Circuit	Cross Section (mm ²)	Line Length (km)	Operation Year	Capital Source
1	Vietnam Border - GS TKO	2	400	50	2009	ADB - NDF
2	GS TKO - GS4 (WPP)	2	630	47	2009	ADB - NDF
3	GS TKO - GS KPT	2	450	73	2011	KfW
4	GS KPT - Kamchay Hydro Power Plant	2	400	11	2012	BOT
5	GS4 - GS6(NPP) - GS Kampong Chhnang - GS Pursat - GS Battambang	2	2x630	297	2012	BOT
6	GS Pursat - GS Ou Saom	2	2x630	132	2012	BOT
7	GS KPT - GS Stung Hav(SHV)	2	630	82	2013	ADB - JICA
8	GS6(NPP) - GS KGC	2	2x400	97	2013	BOT
9	GS Ou Saom - Lower Russei Chrum Hydropower Plant	2	2x400	42	2013	BOT
10	Phnom Penh loop line (WPP - SPP)	2	2x630	24	2014	CEIB
11	Lower Upper Russei Chrum Hydropower - Tatay Hydro	2	2x400	38	2014	BOT
12	GS KGC - GS Kratie	1	2x630	125	2017	BOT
13	GS Kratie - GS Steung Treng	1	2x630	117	2017	BOT
14	GS Steung Treng - Lower Sesan II Power Plant	2	2x400	60	2017	BOT
Total length				1,195 km		

DISTRIBUTION NETWORKS

The distribution line has an important role to supply power to end-user customers that cover every province. EDC's distribution network is divided into two categories:

- 1. Medium voltage network of 35 kV & 22kV.*
- 2. Low voltage network of 0.4kV & 0.23kV.*





DISTRIBUTION NETWORKS

The voltage of medium voltage systems of EDC generally is 22 kV and low voltage 0.4/0.23 kV. During 2009 and 2010, distribution network in Phnom Penh, Kampong Speu, Prey Veng, Banlung (Ratanakiri), Stung Treng, and Preah Sihanouk province have been strengthened with 22 kV medium voltage lines. The detailed data of lines of different voltages are shown in the following table.

Table 10: Distribution Facilities of EDC System

	Item	2012	2013	2014	2015	2016	2017
PHN & Kandal	Line Length, cct-km	2,573	3,586	3,779	4,187	4,421	4,647
	Medium Voltage	1,287	2,204	2,325	2,641	2,759	2,897
	Low Voltage	1,285	1,382	1,453	1,546	1,662	1,750
	# MV Substation	2,170	2,385	2,665	2,994	3,367	3,879
	Indoor	-	-	1,076	1,218	1,356	1,549
	Outdoor	-	-	1,589	1,776	2,011	2,330
KPS	Line Length, cct-km	152	806	825	401	614	775
	Medium Voltage	96	673	683	242	409	540
	Low Voltage	56	132	142	160	205	235
	# MV Substation	71	87	95	102	231	263
	Indoor	-	-	-	3	3	3
	Outdoor	-	-	95	99	228	260
SRP	Line Length, cct-km	658	736	808	1,129	1,309	2,356
	Medium Voltage	368	414	462	749	861	1,279
	Low Voltage	290	322	346	380	448	1,077
	# MV Substation	184	196	230	308	380	383
	Indoor	-	-	132	141	147	94
	Outdoor	-	-	98	167	233	289
SHV	Line Length, cct-km	298	304	362	503	889	984
	Medium Voltage	204	208	266	401	773	864
	Low Voltage	94	96	96	103	116	120
	# MV Substation	178	187	281	312	355	479
	Indoor	-	-	51	54	62	87
	Outdoor	-	-	230	258	293	392
KGC	Line Length, cct-km	145	150	667	732	845	1,024
	Medium Voltage	51	52	548	607	679	823
	Low Voltage	94	98	119	125	165	201
	# MV Substation	59	64	141	201	221	245
	Indoor	-	-	6	6	6	8
	Outdoor	-	-	135	195	215	237
PKK	Line Length, cct-km	45	45	64	75	122	137
	Medium Voltage	27	27	46	50	71	69
	Low Voltage	18	18	18	25	51	68
	# MV Substation	31	21	33	43	47	43
	Indoor	-	-	-	-	-	-
	Outdoor	-	-	33	43	47	43
MMT	Line Length, cct-km	46	48	216	246	281	283
	Medium Voltage	23	23	189	189	206	206
	Low Voltage	23	25	26	56	75	77
	# MV Substation	37	24	25	77	87	93
	Indoor	-	-	-	-	-	-
	Outdoor	-	-	25	77	87	93

Distribution Facilities of EDC System (Continue)

Location	Item	2012	2013	2014	2015	2016	2017
TKO	Line Length, cct-km	280	368	567	746	786	783
	Medium Voltage	158	158	316	353	356	345
	Low Voltage	122	210	251	394	431	437
	# MV Substation	104	113	167	188	188	169
	Indoor	-	-	17	25	26	6
	Outdoor	-	-	150	163	162	163
BTB	Line Length, cct-km	643	692	691	696	2,276	2,465
	Medium Voltage	401	444	444	447	1,977	2,110
	Low Voltage	242	247	247	249	299	355
	# MV Substation	228	240	240	252	696	743
	Indoor	-	-	-	1	7	8
	Outdoor	-	-	240	251	689	735
KPT	Line Length, cct-km	339	339	339	436	658	673
	Medium Voltage	227	227	227	311	534	545
	Low Voltage	112	112	112	125	125	127
	# MV Substation	90	105	105	187	229	245
	Indoor	-	-	-	-	7	7
	Outdoor	-	-	105	187	222	238
KGT	Line Length, cct-km	60	76	76	100	121	144
	Medium Voltage	39	47	47	48	56	65
	Low Voltage	21	29	29	52	65	78
	# MV Substation	36	44	44	47	53	63
	Indoor	-	-	1	1	2	2
	Outdoor	-	-	43	46	51	61
PRV	Line Length, cct-km	112	474	790	794	824	867
	Medium Voltage	56	417	731	731	760	804
	Low Voltage	57	57	59	63	65	63
	# MV Substation	20	21	194	202	247	290
	Indoor	-	-	-	4	8	8
	Outdoor	-	-	194	198	239	282
BTC	Line Length, cct-km	171	174	181	229	229	247
	Medium Voltage	46	49	51	65	65	65
	Low Voltage	125	125	130	164	164	182
	# MV Substation	50	55	60	86	56	66
	Indoor	-	-	-	8	8	8
	Outdoor	-	-	60	78	48	58
MKB	Line Length, cct-km	82	82	82	89	89	93
	Medium Voltage	45	45	45	46	46	47
	Low Voltage	37	37	37	44	44	46
	# MV Substation	35	35	39	42	22	23
	Indoor	-	-	-	-	-	-
	Outdoor	-	-	39	42	22	23
STR	Line Length, cct-km	133	202	240	240	327	769
	Medium Voltage	92	132	151	151	227	600
	Low Voltage	41	70	89	89	100	169
	# MV Substation	23	37	48	53	63	79
	Indoor	-	-	-	4	9	5
	Outdoor	-	-	48	49	54	74

DISTRIBUTION NETWORKS

Distribution Facilities of EDC System (Continue)

Location	Item	2012	2013	2014	2015	2016	2017
RTK	Line Length, cct-km	130	139	141	167	592	730
	Medium Voltage	90	92	92	103	492	586
	Low Voltage	40	47	49	63	100	145
	# MV Substation	50	72	85	103	72	145
	Indoor	-	-	1	5	4	4
	Outdoor	-	-	84	98	68	141
SVR	Line Length, cct-km	418	419	605	369	887	663
	Medium Voltage	325	325	466	154	670	433
	Low Voltage	92	94	139	215	217	230
	# MV Substation	71	54	76	114	284	168
	Indoor	-	-	-	5	5	5
	Outdoor	-	-	76	109	279	163
BVT	Line Length, cct-km	174	186	-	-	-	120
	Medium Voltage	141	141	-	-	-	77
	Low Voltage	33	44	-	-	-	43
	# MV Substation	50	21	-	-	-	41
	Indoor	-	-	-	-	-	-
	Outdoor	-	-	-	-	-	41
MDKR	Line Length, cct-km	109	120	125	133	300	295
	Medium Voltage	69	73	77	85	243	225
	Low Voltage	40	47	47	48	56	70
	# MV Substation	49	54	55	76	107	100
	Indoor	-	-	-	-	-	-
	Outdoor	-	-	55	76	107	100
KSM	Line Length, cct-km	64	78	89	90	90	131
	Medium Voltage	33	46	48	48	48	83
	Low Voltage	31	32	41	42	43	48
	# MV Substation	22	22	26	30	30	30
	Indoor	-	-	-	-	-	-
	Outdoor	-	-	26	30	30	30
KRT	Line Length, cct-km	136	160	160	225	380	552
	Medium Voltage	117	123	123	139	279	434
	Low Voltage	19	38	38	85	101	118
	# MV Substation	44	49	53	71	101	123
	Indoor	-	-	-	-	-	-
	Outdoor	-	-	53	71	101	123
SNL	Line Length, cct-km	33	33	33	37	84	101
	Medium Voltage	19	19	20	24	25	40
	Low Voltage	14	14	14	14	60	61
	# MV Substation	25	28	32	40	51	33
	Indoor	-	-	-	-	-	-
	Outdoor	-	-	32	40	51	33
Total	Line Length, cct-km	6,800	9,216	10,838	11,622	16,127	19,550
	Medium Voltage	3,915	5,939	7,356	7,583	11,536	13,624
	Low Voltage	2,885	3,277	3,482	4,040	4,591	5,926
	# MV Substation	3,627	3,914	4,694	5,528	6,887	7,849
	Indoor	-	-	1,284	1,475	1,650	1,794
	Outdoor	-	-	3,410	4,053	5,237	6,055

Distribution Networks

Medium voltage lines of the total length of about 2,000 km in four provinces of Kampong Cham, Prey Veng, Kampong Speu, and Preah Sihanouk were commissioned under the rural electrification

Meanchey, which has a total length of 2,158 km. Then, the Rural Electrification Project utilizing grant funded by Australian Agency for International Development (AusAID) through the Asian Development Bank(ADB)



projects funded by China Exim Bank loan.

In addition, the construction of medium voltage lines of 1,200 km covering 6 provinces including Kratie, Stung Treng, Rattanakiri, Mondulhiri, Oddar Meanchey, and Siem Reap has been started under the rural electrification project phase II with funds from Royal Government of Cambodia. The project is expected to be completed in 2016. Preliminary work for construction of more than 2,040 km of distribution line in 14 provinces such as Kandal, Kampong Speu, Kampong Chhnang, Pursat, Siem Reap, Oddar Meanchey, Preah Vihear, Kampong Cham, Kratie, Stung Treng, Ratanakiri, Mondulhiri, Koh Kong, and Preah Sihanouk are under construction for which loan is sanctioned by China Exim Bank in Phase 2, 3, and 4. Medium Voltage Sub-transmission line expansion project financed a loan by the Asian Development Bank(ADB), which is being constructed in 5 provinces: Siem Reap, Kampong Cham, Kandal, Banteay

with the contribution of Cambodian side with a total length of medium and low voltage lines about 620 km.

The distribution line expansion project in Koh Kong, Kampong Cham and Kratie which funded by the Agence Francaise De Developpement (AFD) has been conducted the feasibility study and bidding preparation.

Rural Electrification Extension Project Phase 5 and phase 6 have been started and conducted negotiations in order to further expand the rural electrification grid in 13 provinces, including Oddar Meanchey, Siem Reap, Battambang Province Prey Veng Province Province Mondulhiri Khmom Ratanakiri province and province Kompong Speu, with a total length of about 2.525 km.





RURAL ELECTRIFICATION FUND OF EDC

Rural Electrification Fund is a part of EDC which established in 2012 for promoting the development of electricity system to the people who living in remote area in Cambodia.

Establishment of Rural Electrification Fund (REF)

The Royal Government of Cambodia (RGC) issued the Royal Decree No. NS/RKT/1204/048 dated 4 December 2004 on the establishment of Rural Electrification Fund of the Kingdom of Cambodia under MME to accelerate the development of rural electrification. Then, on 22nd August 2012, RGC issued a new Royal Decree No. NS/RKT/0812/734, amending some articles of the old Royal Decree on the formation of Rural Electrification Fund, to integrate Rural Electrification with EDC as a department so that REF can continue to perform its works independently on Cambodian funding by receiving major fund from EDC and also grant and donations from external funding to assist in the development of rural electrification in Cambodia.

Work progress of REF after integration with EDC until the end of 2017

In 2017, REF's funding is from EDC and Kreditanstalt für Wiederaufbau (KfW). During this year, EDC has provided a fund of 52 million USD and KfW has provided a fund of 2.6 million USD, totaling 54.6 million USD, for extending the benefits of electrification to the population in rural areas. The fund provided by EDC is also for the operation of REF.

1 Power to the Poor (P2P)

The purpose of this program is to facilitate the poor households in rural areas to access to electricity for their houses from grid supply by providing interest free loan to meet (i)-costs for the connection fees, (ii)- costs for deposit, (iii)-costs for the equipment and the installation of wires from the connection point to its house, and (iv)- costs for the equipment and the installation of in-house wiring. So far, 134 rural families' equivalent to 616 people have directly benefited from this program.

2 Solar Home Systems (SHS) Program

The purpose of this program is to facilitate the remote rural household, which may not access to the electricity network for a long period, to access electricity through SHS. REF subsidizes 100 USD per SHS to rural households, as assistance to reduce the cost of the SHS and purchasers, shall pay monthly installment without interest, in a period of four years. After the purchaser has paid the remaining cost in full, the SHS will become the property of the purchaser. So far, 20,300 rural families' equivalent to 93,380 people has directly benefited from this program.



3 Program for Providing Assistance to Develop Electricity Infrastructure in Rural Areas

The purpose of this program is to facilitate the private electricity supplier in rural areas having legal license to access fund for investing on expansion of electricity supply infrastructure to fully cover its authorized distribution area in order to allow all rural households to have access to electricity for use. So far, 87 licensees equivalent to the length of 1,242 km has directly benefited from this program

4 The purpose of this program is to provide subsidy, under the framework of Strategic planning for reuduction the rate and gap of the tariff for sale of the electricity in the Kingdom of Cambodia for the year 2015 to 2020 in provinces and cities, to the licensees connected to the grid system for reduction of tariff for sale of electricity in rural areas.

The purpose of this program is to provide subsidy, under the framework of Strategic planning for reuduction the rate and gap of the tariff for sale of the electricity in the Kingdom of Cambodia for the year 2015 to 2020 in provinces and cities, to the licensees connected to the grid system for reduction of tariff for sale of electricity in rural areas. so far, 285 licences has been subsidy for reduction tariff for sale electricity in rural areas.

5 Program for Promoting Access to Grid Electricity for ID Poor Households(P2P for ID Poor HH) under Output Based Aid (OBA)

The purpose of this program is to facilitating to access electricity from the grid system for agricultural irrigation uses at concessional tariff rate for use during night tine from 9:00 PM to 7:00 AM and normal rate for use during day time from 7:00 AM to 9:00 PM. So far, EDC, under this program, has been recruiting (i)- the contractor

for supplying and construction of electricity infrastructure and (ii)- the contractor for supplying the prepaid time of use TOU meter.

6 Program for Promoting Access to Grid Electricity for ID Poor Households(P2P for ID Poor HH)under Output Based Aid (OBA)

The purpose of OBA Program is to facilitate the ID Poor Households(the eligible beneficiary)in rural areas by helping eligible low income and vulnerable households to have access to electricity for their house from grid supply by providing sudsidy of USD 100 per household through the electricity suppliers to meet (i)-cost of material and labor for the installation of service wires for service line within a length of 150m from the connection point (meter on the pole) to its house and (ii)-cost of material and labor for installation of in-house wiring.

Asian Development Bank (ADB) has provide a fund of 1 million USD for implementation in six target provinces of Kandal, Kampong Cham, Tboung Khmum, Kampong Thom, Siem Reap and Banteay Mean Chey. The target number of the ID Poor HH beneficiaries under this OBA program is 10,000 HHs.





CAMBODIA POWER DEVELOPMENT PLAN

Energy Planning is the main priority focus point to think about for adorted to the amount of power usage significantly increasing.



I Power Sector Development Policy

The Royal Government of Cambodia formulated an energy sector development policy in October 1994, which aims at:

- Providing an adequate supply of electricity throughout Cambodia at reasonable and affordable price
- Ensuring reliable and secure electricity supply which facilitates investment in Cambodia and development of the national economy,
- Encouraging exploration and environmentally and socially acceptable development of energy resources needed for supply to all sectors of the Cambodian economy,
- Encouraging efficient use of energy and minimizing environmental effects resulting from energy supply and use.

II Power Demand Forecast

According to Power Development Plan of the Kingdom of Cambodia, prepared in 2015, electricity demand is expected to face a significant increase for the next 15 years. Electricity generation in Cambodia is projected to grow from 409 MW and 2,242 GWh in the year 2010 to 2,678 MW and 14,951 GWh in the year 2025. To meet the future demand, the Royal Government has developed Power Development Plan up to 2030. The majority of this growth will occur in the southern grid which includes Phnom Penh. The Table below depicts the expected power demand and energy output for Cambodia.

Cambodia's Power Demand Forecasting

Base Case	Unit	2017	2020	2025
Peak in National Grid	MW	1,356*	1,681	2,678
Peak in Whole Country	MW	1,530		
Energy in National Grid	GWh	7,586*	9,406	14,951
Energy in Whole Country	GWh	8,566**		

*Peak Demand and Energy in National Grid are actual data in 2016.

** Energy in the whole country is actual data in EAC Annual Report 2016

III Generation Master Plan

Generation Master Plan has been developed on the following criteria:

- Peak thermal generation in Phnom Penh.
- Small and medium size diesel units for base and peak load generation in the provincial towns and cities.
- Expansion of hydro development based initially on smaller size hydropower plants which are easily accessible such as Kirirom I & III, and subsequently mid and large size hydro projects such as Lower Sesan II, Battambang, Lower Srepok II.

Cambodia's Power Demand Forecasting

No.	Project Name	Type	Capacity(MW)	Operation Year
1	Lower Sesan II(Unit 2 - Unit 8)	Hydro	350	2018
2	Coal Fired Power Plant CEL II	Coal	135	2019
3	Solar Park Power Plant	Solar	60	2020
4	Solar Park Power Plant	Solar	60	
5	Coal Fired Power Plant CIIDG	Coal	350	2023
6	Pursat I	Hydro	80	
7	Coal Fired Power Plant CIIDG	Coal	350	2024
8	Lower Sesan III	Hydro	260	2025
9	Coal Fired Power Plant I	Coal	200	2027
10	Coal Fired Power Plant II	Coal	350	2028
11	Coal Fired Power Plant III	Coal	350	2029
12	Coal Fired Power Plant IV	Coal	350	2030
Total			2,895 MW	

EDC Transmission Master Plan

1_Transmission 115kV Development Plan 2018 - 2025

No.	Project 115 kV Transmission Line	Length (km)	Year	Development Partner
1	GS2 - GS Hunsen Park and Grid Substation	5	2019	BT
2	GS Rottanak Mundul - GS Pailin	45		EDC
3	GS3 - GS Toul Kork	5		EDC
4	GS5 - GS Chroy Changvar	18		CEIB
5	GS Kampong Cham - GS Praek Prosab (Kratie)	91		AFD
6	GS Svay Antor - GS Kampong Soeng	46		CEIB
7	GS Preah Sihanouk - GS Ream	12		CEIB
8	GS Ream - GS Chamkar Loung	60		AFD
9	GS Kampong Thom - GS Preah Vihear	140		CEIB
10	Underground Line from GS1 - GS EDC HQ - GS Samdech Hunsen Park - GS Olympic Stadium - NCC - GS3	14	2020	JICA Phase 1
11	GS Praek Prosab - GS Kratie	30	2021	AFD
12	GS Krolanh - GS Oddar Meanchey	80	2022	BOT
13	GS Chamkar Loung - Kirirom III Hydro Power	30	2024	CEIB
14	GS Kampot - GS Chip Mong	46		CEIB
15	GS Chrak Mates - GS Pornhea Krek	75	2025	CEIB
16	GS Pornhea Krek - GS Suong	45		IEIB
17	GS7 - GS Koh Thom	40		CEIB
18	GS Koh Thom - GS Takeo	45		CEIB
Total			827km	

2_Transmission 230kV Development Plan 2018 - 2025

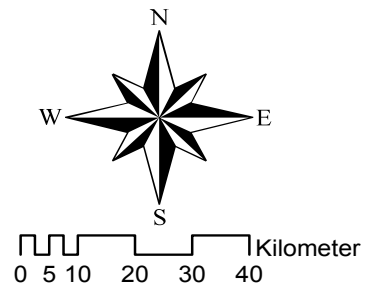
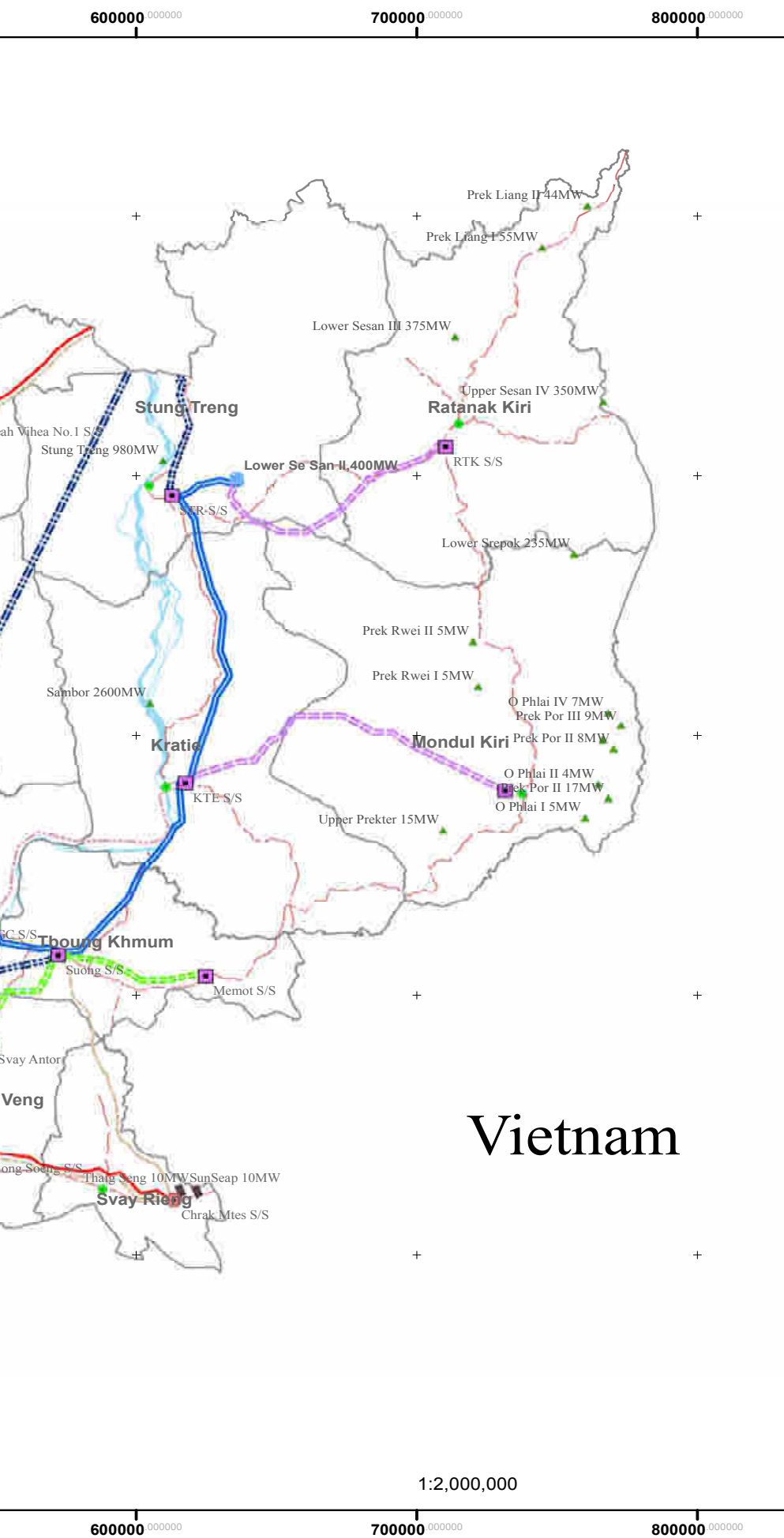
No.	Project 230kV Transmission Line	Length (km)	Year	Development Partner
1	GS Battambang - East Siem Reap - Kampong Thom - Kampong Cham	350	2019	CEIB
2	Phnom Penh Loop Line Phase 2 (NPP - Chroy Changvar - EPP - NPP)	96		CEIB
3	Tatay Hydropower - Phnom Penh	182		BOT
4	GS Koh Kong - GS Koh Kong City	20		AFD
5	GS Chamkar Loung - GS Botumsakor	54		AFD
6	GS Botumsakor - Tatay Hydropower	70		LDP
7	GS Kratie - GS Mondulkiri	170		CEIB
8	GS Ratanakiri - GS Stung Treng	120		CEIB
9	GS Beak Chan - GS5 - NCC	20	2021	JICA Phase II
10	GS4 - GS Kampong Speu(New) - GS Kampong Speu	48		CEIB
11	GS Steung Hav - GS Outres	16		EDC
12	GS Suong - GS Svay Antor	45		CEIB
13	GIS2 - GS Prek Hou	15	2022	CEIB
14	GS5 - GS Sensok	6		EDC
15	GS Steung Treng- GS North Siem Reap	200	2025	CEIB
16	GS North Siem Reap - GS East Siem Reap	44		CEIB
Total		1160km		

3_Transmission 500kV Development Plan 2018 - 2025

No.	Project 500kV Transmission Line	Length (km)	Year	Development Partner
1	GS Chamkar Luong - GS Bek Chan	198	2019	BOT
2	GS Steung Treng - Lao Border	55	2021	CEIB
3	GS Bek Chan - GS East Phnom Penh	45		CEIB
4	GS East Phnom Penh - GS Suong	90	2022	CEIB
Total		388km		







Legend

- Town/City
- Hydro Power Plant_Operation
- ▲ Hydro Power Plant_Understudy
- Coal Power Plant
- ⬢ Grid_Substation_500kV
- Grid Substation 115kV
- ⬢ Grid Substation 230kV
- ☀ Solar Park

Transmission_Line_115kV

Type

- In service
- In service
- - - Under_Construction
- - - Under_Construction
- - - Under_Study
- - - Under_Study
- - - In service and Under Study
- - - Under Construction and Study

Transmission_Line_230kV

TYPE

- In service
- - - Under Construction
- - - Under Study

Transmission_Line_500kV

TYPE

- - - Under Construction
- - - Under Study
- National Road
- Subnational Road
- Province Border
- Tonlesab
- Ocean
- MainRiver

1 Power Interconnection with Thailand

The Power Cooperation Agreement with Thailand was signed on 3rd February 2000. This agreement provided a framework for the power trade and technical assistance between these two countries and opened the power access to the third countries. The Power Purchase Agreement (PPA) was signed in 2002 and amended in 2007. It encouraged the joint utilization of the existing natural resources of the two countries. When the power pool is established in the future, both countries will be able to participate widely in terms of receiving and supplying the power. Electric Power between Cambodia and Thailand is transmitted at 115 kV and 22 kV levels. 115 kV transmission line from Aranya Prathet substation, Thailand connection to BTC, BTB, and SRP was commissioned in 2007.

An agreement was signed with Trat Province (Thailand) to supply power to Koh Kong province (Cambodia) and Poit Pet (Cambodia) via 22 kV line. The above areas have been connected since 2001. transmission line from Aranya Prathet substation,

Thailand connection to BTC, BTB, and SRP was commissioned in 2007. An agreement was signed with Trat Province (Thailand) to supply power to Koh Kong province (Cambodia) and Poit Pet (Cambodia) via 22 kV line. The above areas have been connected since 2001.

2 Power Interconnection with Lao PDR

The Power Cooperation with Lao PDR was signed on 21st October 1999. The agreement aims at the cooperation in Power Sector between the two countries. The supply of power to the areas along the border via medium voltage (22kV) lines and interconnection between high voltage links are also encouraged. The 22 kV interconnection line from Lao to Stung Treng was charged in 2010.

In 2015, A new interconnection point from Champasak province, Ban Hat Substation, Lao PDR to Kampong Sralau, Preah Vihear province, Cambodia, the initial design and construction for the 115 kV transmission line was energized at 22 kV voltage level for the first stage until the transmission line from Lao border to Chey Sen Substation was completed.

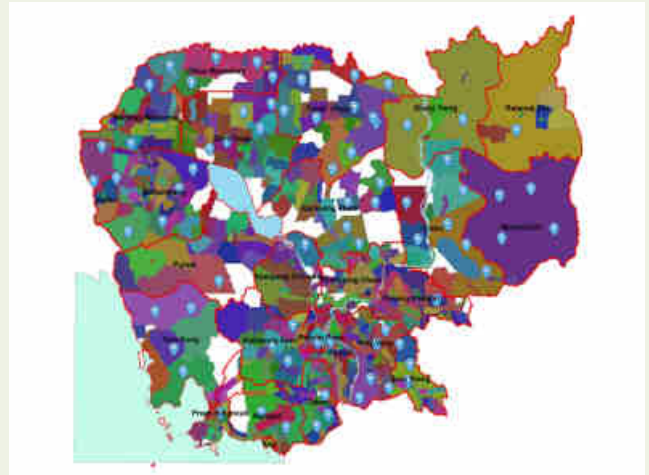


3 Power Interconnection with Vietnam

The Power Cooperation with Vietnam was signed on 10th June 1999. The agreement aims at the cooperation in Power Sector between the two countries. The supply of power to the areas along the border by medium voltage lines and interconnection between high voltage lines is encouraged.

In early 2009, EDC imported power from Vietnam via a 230kV transmission line to supply Phnom Den, Takeo Province, and Phnom Penh in March 2009.

Since 2002, EDC has imported power from PC2 (Vietnam) to supply power to Memut and Ponhea Krek Districts of Kampong Cham Province, Bavet in Svay Rieng Province, Kampong Trach in Kampot Province, Koh Thom and Chrey Thom in Kandal Province, Snuol District in Kratie Province, Keo Seima District in Mondulkiri Province, Kompong Ro in Svay Rieng Province.



4 Sub-regional Interconnection

Interconnections between the isolated grids of the countries within the Mekong Basin (Cambodia, Laos, Thailand, Vietnam, Yunan-China, and Myanmar) or even a further extension of this grid to include Malaysia and Singapore have been subjected to a number of studies which aim at improving the utilization of energy resources. The report of ASEAN interconnection Master plan has been adopted since 2002,



CORPORATE SOCIAL RESPONSIBILITIES

Apart from core business activities, EDC has contributed to social affairs, humanitarian work, human resource training and environmental protection through offering financial support, materials and other activities as follow:

I. Assistance to the Army

EDC signed a Memorandum of Understanding with Infantry Brigade No. 42, the Battalion No. 702 and Intervention Brigade No. 14 since 2005. From 2010 in every two months, EDC leaders and its employees regularly visit the army who sacrifice themselves to defend territorial sovereignty at borders by bringing them with other materials, including solar panels for electric power generation and foods as well as organization of parties and offering financial support to build bunkers and houses for the armies.



II. Humanitarian Work

To contribute to help poor people facing difficulties, EDC has sponsored funds to the Headquarter of Cambodian Red Cross and its provincial branches every year. In addition, in 2017, EDC rescued people affected by floods in Kratie Province through providing a number of essential foods and supplies and donated financial support for re-construction of a market that was burnt down in Stung Treng Province. That support is for an emergency assistance to

the targeted victims. EDC has further contributed to the construction of roads in rural areas.

Since 2016, EDC has donated funds to Kantha Bopha Hospital, which is an act of kindness of EDC's employees to save Cambodian children, and include a small portion of budget of EDC's clients. In 2017 EDC donated 32,550 USD to Kantha Bopha Hospital.



III. Participation In Promoting Education And Training Human Resources

EDC pays close attention to the development of human resources in Cambodia, especially youth, the pillar of the nation. In 2017, EDC signed a Memorandum of Understanding with the Royal University of Phnom Penh to provide scholarships to poor students to have access to higher education in a variety of subjects or skills. Those skills are of an importance for the development of economy and society. In addition, hundreds of students at Institute of



Electrical Science (IES) received scholarships under EDC's subsidies on electrical skills, which are needed to contribute to the current and future development of the electricity sector. Also, EDC funded the publication of 2,000 copies of Phyrum Ouhaw Ngoy's books and edited electronic Samdech Chuon Nath Dictionary application, in cooperation with the Ministry of Economy and Finance. Furthermore, EDC always joins and shares experience as well as sponsors a number of youth to attend various international forums.

IV. Environmental Protection

EDC contributes to preserve the forest through the collaboration with ABC Radio to grow hundreds of seedlings in Pursat Province in 2017.





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