



**KINGDOM OF CAMBODIA**  
**NATION RELIGION KING**



Royal Government of Cambodia

**Power Development Masterplan**  
**2022-2040**

September 2022

Ministry of Mines and Energy



**KINGDOM OF CAMBODIA  
NATION RELIGION KING**

**Office of the Council of Ministers  
No. 802 Sor Chor Nor**

*Wednesday 11 Roach, Month of Phutrobot, Year of the Tiger, Chatvasak, B.E. 2566  
Phnom Penh, 21 September, 2022*

**Permanent Deputy Prime Minister  
Minister in charge of the Office of the Council of Ministers  
To  
His Excellency Minister of Mines and Energy**

**Subject:** Response to the request for review and approval of the Power Development Masterplan 2022-2040 which is prepared in the framework of cooperation between the Royal Government of Cambodia and the Asian Development Bank.

**References:** - Letter No. 4143 MME dated on 13 September 2022 of the Ministry of Mines and Energy  
- Letter No. 498 KN/022 Sor Chor Nor dated on 16 September 2022 of the Cabinet of Samdech Akka Moha Sena Padei Techo **Hun Sen**, Prime Minister of the Kingdom of Cambodia.  
- Respectful annotations of Samdech Akka Moha Sena Padei Techo **Hun Sen**, Prime Minister of the Kingdom of Cambodia., in September 14<sup>th</sup>, 2022.

Referring to the above subject and references, the Office of the Council of Ministers is pleased to inform Excellency Minister that the Royal Government of Cambodia has endorsed the Power Development Master Plan 2022-2040, which has been reviewed and approved by a series of inter-ministerial committee meetings and public consultations during the Cambodia Energy Forum, so that it can be used by the Ministry of Mines and Energy as official master plan for further development of the power sector.

As mentioned above, please, Excellency, be informed and take action as convenient.

**P.O. Minister in charge of the Office of the Council of Ministers**

**KHOY KHUN HOUR  
Secretary of State**

**CC:**

- Ministry of Economy and Finance
- Electricity Authority of Cambodia
- Electricite' Du Cambodge
- Cabinet of **Samdech Akka Moha Sena Padei Techo Prime Minister**
- Cabinet of Excellency Honorary Legal Doctor, Permanent Deputy Prime Minister
- Document – Archives

**KINGDOM OF CAMBODIA**  
**NATION RELIGION KING**



**Ministry of Mines and Energy**  
**No. 4143.MME**

*Tuesday 3 Roach, Month of Phutrobot, Year of the Tiger, Chatvasak, B.E. 2566*  
Phnom Penh, 13 September 2022

**Minister of Mines and Energy**

**To**

**Samdech Akka Moha Sena Padei Techo HUN SEN**  
**Prime Minister of the Kingdom of Cambodia**

**Subject:** Request for review and approval of the Power Development Master Plan 2022-2040 which is prepared within the framework of cooperation between the Royal Government of Cambodia and the Asian Development Bank.

**Reference:** Executive summary of the Cambodia Power Development Master Plan 2022-2040.

Referring to the above subject and reference, I have the honor to inform **Samdech Akka Moha Sena Padei Techo HUN SEN, Prime Minister of the Kingdom of Cambodia** that since 2019 the Royal Government of the Kingdom of Cambodia (RGC) has cooperated with the Asian Development Bank to develop the “**Power Development Master Plan 2022-2040**”, hereinafter referred to “**PDP**”. The PDP is developed with three main objectives: Firstly, to fulfill the future demand for power adequacy with the supply of reliable and affordable electricity across all sectors in Cambodia. Secondly, to strengthen energy security by reducing the dependency on energy imports and maximizing the development of domestic energy resources. Thirdly, to increase the share of clean energy, including renewable and variable renewable energy, and energy efficiency, by ensuring reliability and affordability of supply, to contribute to the achievement of Cambodia’s national environmental goals and global commitments to reduce greenhouse gas emissions. However, in the dry season of 2019, Cambodia faced a power shortage. In that situation, the Ministry of Mines and Energy hired Chugoku Electric Power Co., Inc. from Japan using a budget of Électricité du Cambodge (EDC) to prepare an urgent and interim power development plan to fast track the development of an adequate and stable supply of power while at the same time, continue preparing a comprehensive and long-term masterplan to achieving the three objectives as aforementioned.

The PDP was developed by consulting firm, Intelligent Energy System Pte Ltd (IES), from Australia and was guided by the inter-ministerial technical working group of Cambodia in terms of policy and vision directions, which comprises of the Ministry of Mines and Energy, Electricity Authority

of Cambodia, Électricité du Cambodge, and relevant line ministries and stakeholders. The PDP was prepared in following steps:

1. Electricity demand growth of Cambodia from 2021 to 2040 was studied and projected by benchmarking regional trends of neighboring countries such as Thailand and Vietnam. Then a regression analysis was applied to decompose the demand growth against Cambodia's gross domestic product by sector, and finally it involved reconciling the projections for three growth cases: 1) Low Demand Growth, 2) Medium Demand Growth, and 3) High Demand Growth. The demand forecasts are used to guide and match five generation planning scenarios, namely **Scenario 1**: traditional development of power generation such as coal and hydropower; **Scenario 2**: follows Scenario 1 but includes the development of Liquefied Natural Gas-fired power plants to replace coal power plant development; **Scenario 3**: follows Scenario 2 but increases the uptake of variable renewable energy; **Scenario 4**: follows Scenario 3 but includes the NEEP's energy savings, and **Scenario 5**: features a contingency variation of Scenario 4 that was formulated to establish an alternative generation expansion strategy in the case of unforeseen delays in the commissioning of a planned large power source or any of those. Scenario 4 was selected as the final generation expansion development plan for 2022-2040, and Scenario 5 is considered an alternative scenario for implementation if there are unforeseen operation delays of any power sources, domestically and imported.
2. The transmission development plan for High Voltage network from 2022 to 2040 was then prepared, which includes calculation and analysis methods to develop an additional transmission network for the base years 2025, 2030, 2035, and 2040, to expand and increase the capacity of the transmission system to be consistent with expected increases of electricity demand in Scenario 4 generation plan, ensuring the efficient, reliable and operational power of the planned power system and the flow of electricity in both dry season and rainy season. At the same time, the PDP also sets out strategies for the further development of distribution network in the Kingdom of Cambodia to supply the electricity to end-users according to the growth of electricity demand that is projected and monitored. The solution is to provide electricity to the remaining villages that are not yet supplied by the national grid to have temporary electricity access until the supply from the national grid is reached.

To review and decide on the PDP findings, the Ministry of Mines and Energy has requested additional composition from relevant ministries and institutions, including Ministry of Economy and Finance, Ministry of Planning, Council for the Development of Cambodia, Ministry of Environment, Ministry of Land Management, Urban Planning and Construction, Ministry of Public Works and Transport, Ministry of Rural Development, Ministry of Agriculture, Forestry and Fisheries, Ministry of Industry, Science, Technology and Innovation, Ministry of Education, Youth and Sports, Ministry of Water Resources and Meteorology, Electricity Authority of Cambodia and Électricité du Cambodge to form an inter-ministerial committee to review and decide on each step of the study. The meetings on the PDP were conducted in 3 phases, namely: **Phase 1**: The first meeting of the inter-ministerial committee

reviewed the electricity demand forecast and generation plan to allow the consultant to continue developing further plan on transmission network; **Phase 2:** the Cambodian Energy Forum, an inter-ministerial committee meeting, and open to the private sector, embassies, development partners, NGOs, and relevant national and international experts, companies, consultants and ADB representatives. More than 400 people participated in that forum, reviewing, and commenting on the results of the draft PDP, and **Phase 3:** the last inter-ministerial committee meeting to decide on the final PDP documents to prepare for submission for endorsement from the GRC.

*Following the above-mentioned principles, I have the honor to request **Samdech Techo, Prime Minister**, to review and endorse the PDP 2022-2040, which has been reviewed and approved by a series of the inter-ministerial committee meeting and public consultations during the Cambodian Energy Forum, with an executive summary attached herewith, for the Ministry of Mines and Energy to use as an official master plan for further development of the power sector.*

In this regard, **Samdech Techo, Prime Minister**, please consider the PDP with the utmost favor.

Please accept, **Samdech Akka Moha Sena Padei Techo HUN SEN, Prime Minister of the Kingdom of Cambodia**, the assurances of my highest consideration.

**SUY SEM  
Minister**

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## 1. INTRODUCTION

The Power Development Master Plan (PDP) of Cambodia 2022-2040 has been prepared under the framework of cooperation between the Royal Government of Cambodia (RGC) and the Asian Development Bank. The preparation of the PDP was guided by an inter-agency technical working group of the RGC, and its different components were reviewed and approved by an inter-ministerial committee led by the Ministry of Mines and Energy prior to final approval by the Royal Government of Cambodia. The PDP is a comprehensive and long-term plan for the development of Cambodia's power sector, and it lays out a detailed roadmap for the 2022-2040 period, which includes demand forecasts, generation expansion, and a transmission and distribution plan.

## 2. OBJECTIVES AND SCOPE

Cambodia's PDP 2022-2040 was developed with three main objectives: Firstly, to fulfil the future demand for power adequacy with the supply of electricity in a reliable<sup>1</sup> and affordable<sup>2</sup> way across all sectors in Cambodia. Secondly, to strengthen energy security by reducing the dependency on energy imports and maximizing the development of domestic energy resources. And thirdly, to increase the share of clean energy, including renewable<sup>3</sup> and variable renewable energy<sup>4</sup>, and energy efficiency<sup>5</sup>, without compromising the reliability and affordability of supply, to contribute to the achievement of Cambodia's national environmental goals and global commitments to reduce greenhouse gas emissions.

To fulfil the above objectives, the PDP was developed along four primary components: 1) demand forecasts, 2) generation expansion development plans, 3) a high voltage transmission development strategy, and 4) a distribution development strategy. A summary of these components is provided in the sections below and is divided into two parts: 1). A summary report on each component, 2). Annexes that contain tables and figures with the summarized results of the PDP.

## 3. COMPONENT 1: DEMAND FORECASTS

Cambodia's power system has experienced remarkable growth in demand over the past decade. Peak demand has risen from 508 MW in 2012 to 2,026 MW by 2021, averaging an annual growth rate of 19%. Due to the rapid development of power system infrastructure, Cambodia has been ranked one of the fastest electrifying countries in the world<sup>6</sup>, achieving an impressive village electrification rate of 98.27% by the midst of 2022, up from just 34% in 2010.

As a basis for preparing the generation expansion development plan, the PDP has projected the growth of national electricity demand in Cambodia over the 2021-2040 period by benchmarking against regional trends in neighbouring Thailand and Vietnam, and then a regression analysis was applied to decompose

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<sup>1</sup> **Reliable power** refers to the development of adequate generation and transmission capacity to meet demand by minimizing the risks of failure

<sup>2</sup> **Affordable power** means that the power generation mix is determined as the least cost approach to the delivery of reliable power

<sup>3</sup> **Renewable energy (RE)** refers to energy derived from all forms of renewable resources available, including hydro, bioenergy, and variable renewable energy

<sup>4</sup> **Variable renewable energy (VRE)** refers to intermittent renewable sources of energy generation, namely Solar PV and wind

<sup>5</sup> **Energy efficiency (EE)** refers to consuming less energy to perform the exact same energy-related activity with a given energy input (thereby reducing energy waste)

<sup>6</sup> Refer to IEA, World Bank and IRENA, 2020, SDG7 Tracking Energy Progress Report: <https://www.irena.org/publications/2020/May/Tracking-SDG7-The-Energy-Progress-Report-2020>

the growth against gross domestic product of Cambodia by sector. The final step involved reconciling projections for three growth cases: 1) Low Demand Growth, 2) Medium Demand Growth, and 3) High Demand Growth.

The Medium Demand Growth case for Cambodia's electricity sector projects demand to reach 24 TWh by 2025, 36 TWh by 2030, 50 TWh by 2035, and up to 66 TWh by 2040. The National Energy Efficiency Policy (NEEP) proposes to increase the efficient use of energy in Cambodia by targeting 20% energy savings for the Industrial sector, 17% in the residential sector, 25% in the commercial sector, and 17% in the electricity supply from rural electricity enterprises (REEs) by 2030. By implementing the NEEP, Cambodia's electricity demand under the Medium Demand Growth case is projected to 30 TWh by 2030, 42 TWh by 2035, and 55 TWh by 2040.

The figures on energy demand (both power and electricity) under the Medium Demand Growth scenario and energy savings to be achieved by implementing the NEEP are presented in Annex 1.

#### **4. COMPONENT 2: GENERATION EXPANSION DEVELOPMENT PLAN**

The objectives of the preparation of generation expansion development plan for 2022-2040 is to meet growing electricity demand while at the same time ensuring the security, reliability, and affordability of energy supply, encouraging the utilization of domestic energy resources, and maximising the deployment of clean energy (renewable energy and energy efficiency) in order to support the implementation of Cambodia's Nationally Determined Contributions (NDC) and Long-Term Strategy on Carbon Neutrality as part of the Country's global commitments to the United Nations Framework Convention on Climate Change.

To achieve this objective, the generation plan in the PDP involved the assessment of five planning scenarios as follows. Scenario 1: a conventional Coal and Hydro mix; Scenario 2: follows the first scenario but includes the development of Liquefied Natural Gas-fired power plants; Scenario 3: follows the second scenario but increases the uptake of variable renewable energy; Scenario 4: follows the third scenario but includes the NEEP's energy savings in the demand forecast; and Scenario 5: features a contingency variation of scenario 4 that was formulated to establish an alternative generation expansion strategy in the case of unforeseen delays in the commissioning of planned large power plants. This component of the PDP includes a list of power plants for development over the 2022-2040 period, which is provided in Annex 2 of this report.

All generation planning scenarios have been evaluated to satisfy system adequacy and reliability requirements, which includes maintaining a minimum 20% reserve margin of capacity supply relative to projected peak demand in the dry season. This reserve criterion was set to ensure that system planners have a safeguard in place to react to any unforeseen changes throughout the 2022 to 2040 PDP period. An extensive list of factors was analysed in depth to compare the generation planning outcomes of each scenario. Key considerations included capacity and generation supply outlook, annual power system costs and levelized cost of energy (LCOE), investment needs, the role of variable renewable and domestic energy resources, dry and wet season reserve margins, emissions and carbon prices, and take-or-pay requirements of power purchase agreements. A sensitivity analysis on low and high demand



projections as well as variations on pricing for fuels, carbon emissions, and take-or-pay violations was carried out to analyse the impact of some key variables on each scenario.

Scenario 4 was selected as the final generation expansion development plan for 2022-2040 as it provides a balanced strategy for Cambodia's power sector to meet its primary objectives of meeting demand in an affordable, reliable, and secure manner, while adhering to national and global commitments on the climate and the environment, maximizing the deployment of domestic renewable energy resources and energy efficiency measures, and excluding the development of additional coal plants and hydro dams on the mainstream Mekong River. Low-carbon energy alternatives to uncommitted projects in Scenario 4 will be evaluated and considered in the future, including emerging technologies such as Carbon Capture Utilization and Storage (CCUS) and hydrogen.

Under scenario 4, the domestic installed capacity supply mix in 2030 will be comprised of 2,266 MW of Coal (40.4%), 1,558 MW of Hydro (27.7%), 490 MW of Fuel Oil (8.7%), 1,005 MW of Solar PV (17.9%), 200 MW of Battery Energy Storage System (BESS) (3.6%), 98 MW of Biomass (1.7%), 3,095 MW of power imports from Laos, 700 MW of power imports from Thailand, and the equivalent of 1,215 MW of capacity saved through the adoption of energy efficiency measures.

By 2040, the domestic installed capacity mix will rise to 2,266 MW of Coal (21.4%), 2,973 MW of Hydro (21.4%), 490 MW of Fuel Oil (4.6%), 900 MW of natural gas (8.5%), 3,155 MW of Solar PV (29.8%), 420 MW of BESS (5.8%), 198 MW of Biomass (1.9%), 3,095 MW of power imports from Laos, 1,000 MW of power imports from Thailand, and the equivalent of 2,205 MW of capacity saved through the adoption of energy efficiency measures.

Cambodia's Power Development Plan 2022-2040 will require a total of US \$9,228 million of investment to expand domestic generation capacity. Of this total, US \$2,539 million has been already committed over the 2022-25 period, primarily for projects that are currently under development. Investment requirements from 2026 to 2031 are low due to the full uptake of scheduled power imports from Laos and advancements in energy efficiency measures. From 2032 onwards, the remaining \$6,689 million is allocated to planned hydro dams (non-mainstream Mekong River), solar PV plants, and BESS projects.

The PDP provides Cambodia with an optimal strategy for transitioning the power system towards a cleaner grid while maintaining existing government agreements. It takes an effective approach to reduce emissions through the deployment of renewable energy, the implementation of energy efficiency upgrades, and leveraging interconnections to import power from neighbouring systems.

Scenario 5 has been selected as a contingency plan that would be triggered if there are unforeseen delays in the commissioning of planned large power plants (both domestic and power imports). One of the key implications from this scenario is that planned hydro projects and other domestic renewable resources under Scenario 4 would need to be deployed earlier, which will require greater investments in new generation supply capacity for Cambodia's system.

## **5. COMPONENT 3: TRANSMISSION DEVELOPMENT PLAN FOR THE HIGH VOLTAGE NETWORK**

The aim of this component of the PDP is to establish a nationwide interconnected high-voltage (HV) transmission network that can transmit electricity generated from all sources to supply large consumers and grid sub-stations, and subsequently to high, medium and low-voltage consumers.

Prior to 2010, Cambodia had two isolated HV transmission systems. The first system was located in the South-Eastern part of the country, cover Phnom Penh, Kadal and Takeo Provinces and interconnected to Vietnam's grid. The second system was located in the North-Western part of the country, cover Battambang, Banteay Meanchey and Siem Reap provinces and interconnected to Thailand's grid. By 2015, the two systems were connected with the development of transmission lines in adjacent provinces, and by 2021 evolved into a fully integrated National Grid that extends across the Country.

The preparation of the Transmission Development Plan under Cambodia's PDP 2022-2040 involved modelling and analysing the development of Cambodia's power system and network in snapshot years of 2025, 2030, 2035, and 2040, and establishing the augmentations required to deliver energy consistent with demand and generation plans. The analysis was based on generation planning Scenario 4 with the objective of ensuring the development of an efficient, reliable and operable power system. Power flow and dynamic stability assessments were carried out to ensure grid reliability during the wet and dry seasons from 2022-2040 across the country. This component of the PDP includes a list and map of transmission infrastructure investments for development of the HV network over the 2022-2040 period, which are provided in Annex 3.

The PDP's transmission development plan will require a total of US \$1,796 million in expanding HV network infrastructure over 2022-2040. Of this total, \$816 million is committed by 2025 as priority projects for development, and from 2022-2040 an additional \$980 million in planned HV network infrastructure is needed for installing 230 kV and 500 kV lines, transformers, reactive plants, series capacitors, and resilience upgrades. A breakdown of these investment figures by type of network infrastructure is provided in Annex 3.

Cambodia's 2022-2040 PDP features a transmission development plan that is both secure and reliable and provides a cost-effective strategy for expanding the HV network to meet forecasted demands with incremental power supply, while supporting the transmission of energy throughout the entire Country. The PDP provides Cambodia with a comprehensive network development strategy for accommodating new sources of generation and power imports, delivering power to growing domestic loads, managing interconnections and synchronizations with neighbouring countries, ensuring the security of supply, and minimising cost throughout the 2022-2040 planning period.

## **6. COMPONENT 4: POWER DISTRIBUTION DEVELOPMENT PLAN**

Power distribution development in Cambodia involves two aspects, which are: 1) The development of sub-transmission lines, and 2) The development of distribution lines. The first concerns the expansion of primary medium-voltage lines dedicated to transmitting bulk electricity from HV grid sub-stations to

a specific set of locations for further distribution. The second involves the expansion of medium-voltage lines, transformers, and low-voltage lines, which are required to step-down voltage and distribute electricity for end-use consumption. From 2022 the development of sub-transmission lines is the responsibility of EDC, while the development of distribution lines is the responsibility of the electricity licensee of each location, who are either EDC or private licensees.

This component of the PDP sets out key strategies for the development of both sub-transmission and distribution lines, including approaches for areas that currently have no access to electricity. The existing sub-transmission distribution network has enabled Cambodia to achieve a village electrification rate of 98.27% by 2022. There remain only 245 villages (1.73% of total existing villages) beyond the reach of the distribution network, which includes villages that are excessively remote without road access, located in islands on lakes or rivers, permanently flooded during the rainy season, or naturally floating on bodies of water. Accordingly, the strategies formulated in Cambodia's PDP for further developing sub-transmission and distribution lines are as follows:

- 1) To develop and enhance the capacity of existing sub-transmission and distribution infrastructure in order to supply the final consumption of electricity according to projected demand growth.
- 2) Promote the development of last-mile electrification options to the remaining 245 unconnected villages.
- 3) Identify potential solutions to construct small single lines coupled with solar power and BESS to supply electricity to a subset of those remaining unconnected villages.
- 4) In case the deployment of small single lines coupled with solar power and BESS turn out to be cost-inefficient, other approaches will be considered in order to provide a temporary step-up in affordability and quality of electricity access to those remaining villages, including Solar Home Systems (SHS) and solar-powered battery charging stations at the village level.

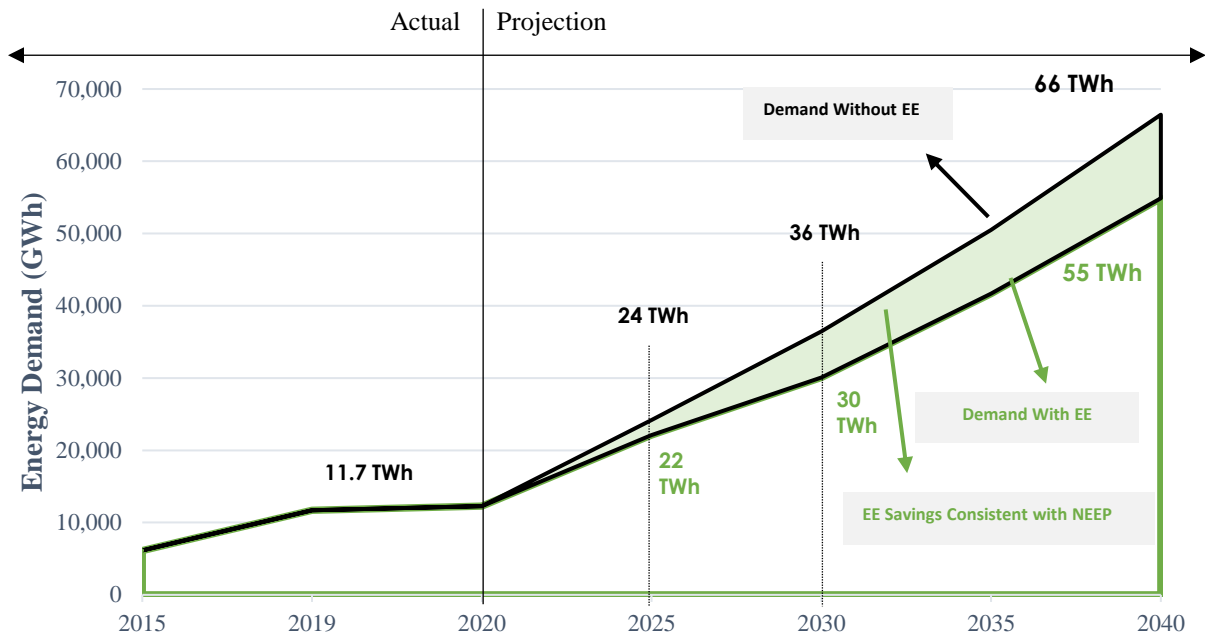
## **7. COMPONENT 5: CONCLUSION**

The PDP was developed to fulfil the vision of the Royal Government of Cambodia of providing energy to consumers in an affordable, reliable, and stable manner across all sectors in Cambodia while at the same time strengthening the security of supply and an efficient use of energy, prioritizing the development of Renewable Energy (RE) resources, minimizing environmental impacts associated with developments in the power sector, and step up decarbonization efforts in line with the goals of the Paris Climate Agreement and Cambodia's Long-Term Strategy for Carbon Neutrality.



**ANNEX 1:  
Demand Forecast 2021-2040**

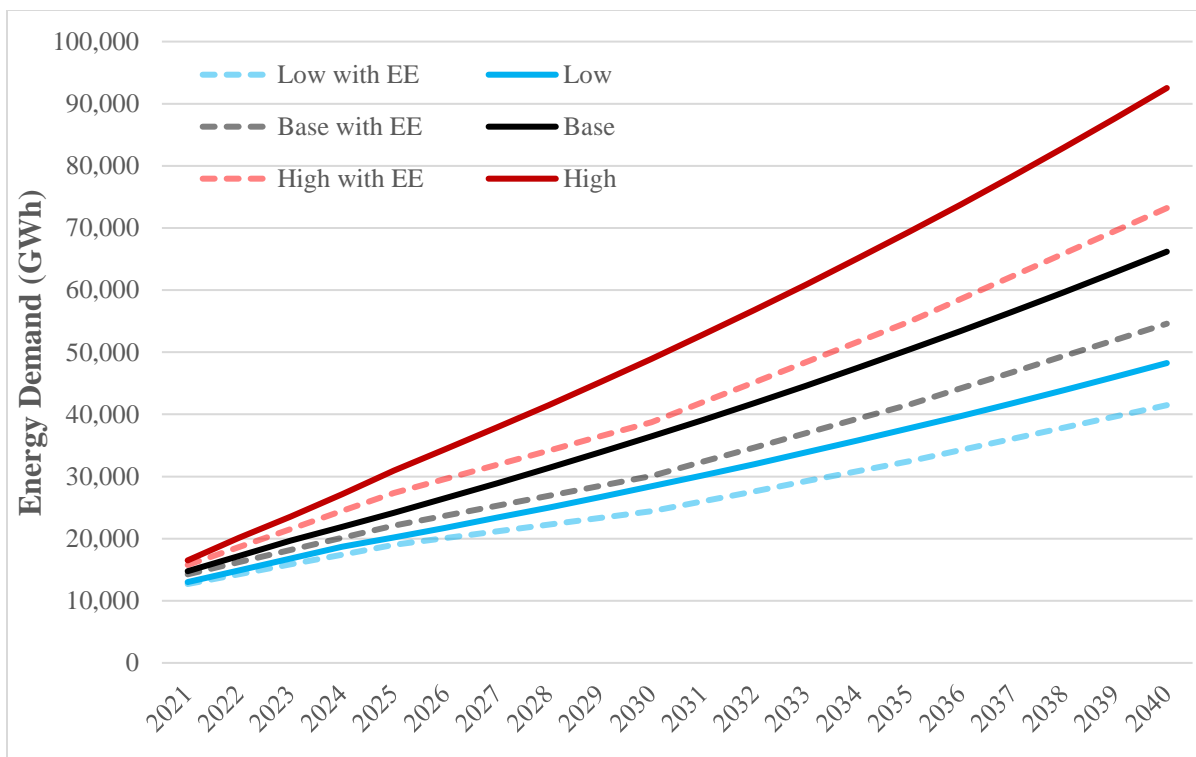
**Figure 1 Cambodia PDP Energy Demand Forecast (GWh/TWh)**



**Table 1 Energy Demand Forecast (GWh) and average annual growth rates (%)**

GWh	Actual		Projection					Average Annual Growth Rate (%)				
	2015	2019	2020	2025	2030	2035	2040	2019/2015	2023/2019	2025/2019	2030/2019	2040/2019
Base (without EE)	6,144	11,705	12,290	24,184	36,465	50,405	66,187	17.50%	13.90%	12.90%	11.5%	8.8%
Base (with EE)	6,144	11,705	12,290	22,108	30,080	41,579	54,597	17.50%	9.40%	9.50%	9.4%	7.7%

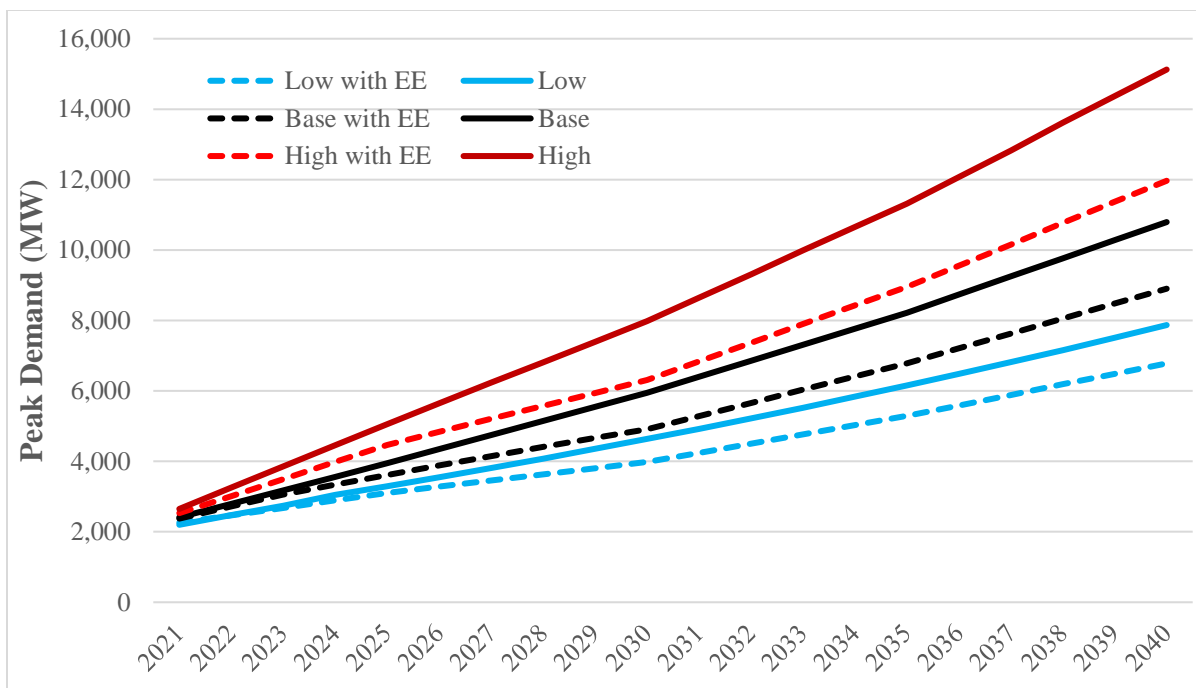
**Figure 2 Energy Demand Forecast (GWh) – All Cases**



**Table 2 Energy Demand Forecast (GWh) – All Cases**

Year	Low		Med/Base		High	
	With EE	No EE	With EE	No EE	With EE	No EE
2021	12,697	13,009	14,254	14,762	15,770	16,502
2022	14,274	14,899	16,217	17,233	18,664	20,128
2023	15,851	16,788	18,181	19,704	21,558	23,546
2024	17,428	18,678	20,144	21,915	24,453	27,163
2025	19,004	20,200	22,108	24,184	27,347	30,985
2026	20,090	21,761	23,702	26,513	29,624	34,391
2027	21,176	23,368	25,296	28,911	31,902	37,898
2028	22,261	25,011	26,891	31,364	34,179	41,489
2029	23,347	26,696	28,485	33,882	36,456	45,174
2030	24,432	28,424	30,080	36,465	38,734	48,956
2031	26,033	30,196	32,380	39,114	41,966	52,836
2032	27,634	32,012	34,679	41,831	45,197	56,816
2033	29,235	33,874	36,979	44,618	48,429	60,898
2034	30,837	35,782	39,279	47,475	51,661	65,086
2035	32,438	37,737	41,579	50,405	54,892	69,379
2036	34,247	39,741	44,183	53,408	58,555	73,782
2037	36,056	41,794	46,786	56,486	62,218	78,296
2038	37,865	43,898	49,390	59,641	65,881	82,923
2039	39,674	46,052	51,994	62,874	69,544	87,666
2040	41,483	48,260	54,597	66,187	73,207	92,527

**Figure 3 Peak Demand Forecast (MW) – All Cases**

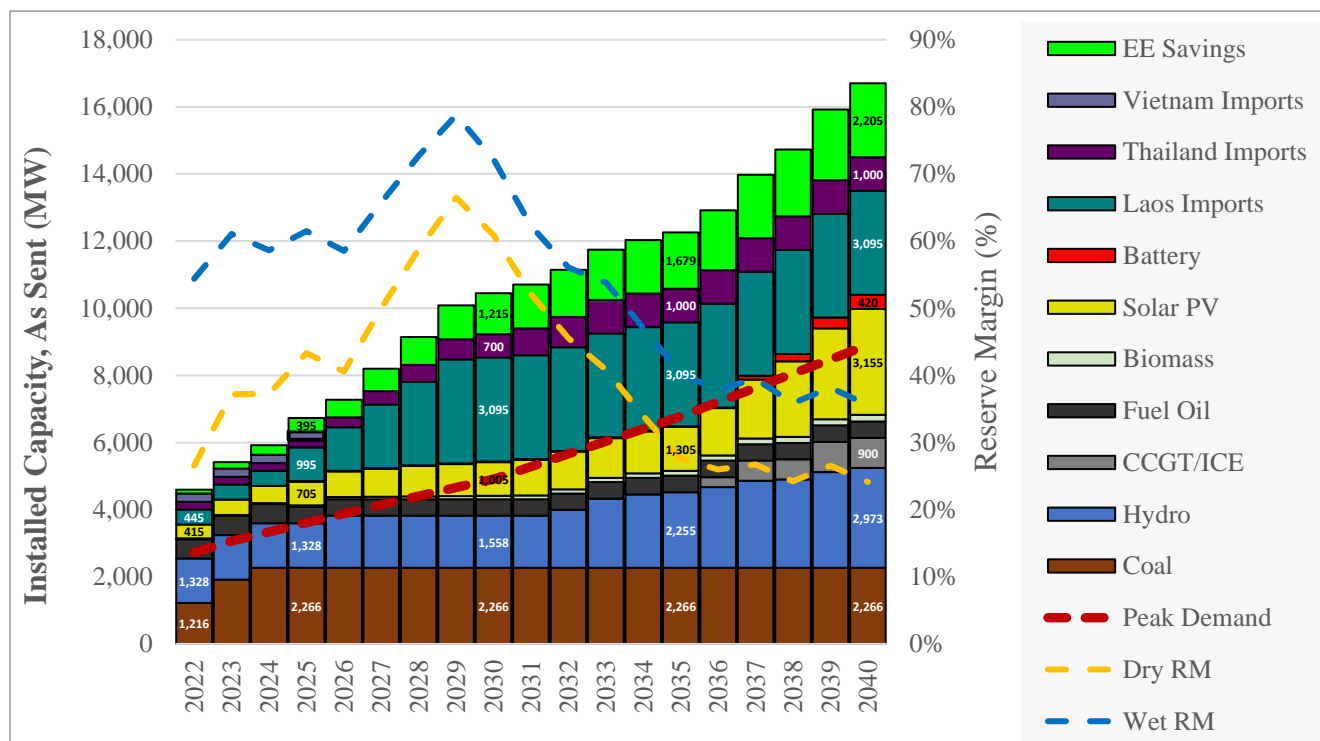


**Table 3 Peak Demand Forecast (MW) – All Cases**

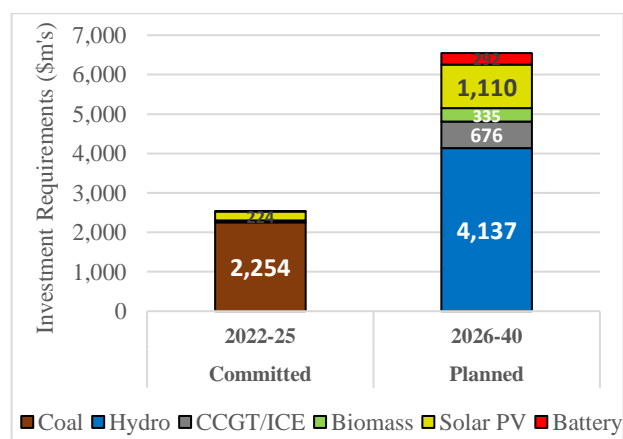
Year	Low		Med/Base		High	
	With EE	No EE	With EE	No EE	With EE	No EE
2021	2,259	2,199	2,375	2,412	2,531	2,650
2022	2,471	2,473	2,723	2,795	3,016	3,251
2023	2,680	2,738	3,056	3,178	3,497	3,840
2024	2,892	3,046	3,336	3,561	3,981	4,430
2025	3,104	3,294	3,612	3,944	4,466	5,053
2026	3,281	3,549	3,883	4,345	4,838	5,609
2027	3,458	3,811	4,149	4,745	5,210	6,180
2028	3,628	4,079	4,409	5,146	5,571	6,766
2029	3,805	4,354	4,663	5,546	5,942	7,367
2030	3,982	4,635	4,910	5,947	6,313	7,984
2031	4,243	4,924	5,285	6,402	6,840	8,616
2032	4,504	5,220	5,659	6,856	7,366	9,265
2033	4,770	5,524	6,034	7,311	7,901	9,931
2034	5,031	5,835	6,408	7,765	8,428	10,614
2035	5,292	6,154	6,783	8,220	8,955	11,314
2036	5,587	6,481	7,207	8,735	9,553	12,032
2037	5,882	6,816	7,631	9,250	10,151	12,768
2038	6,190	7,159	8,055	9,764	10,770	13,523
2039	6,485	7,510	8,479	10,279	11,368	14,296
2040	6,781	7,870	8,903	10,794	11,967	15,089

## ANNEX 2: Generation Expansion Development Plan 2022-2040

**Figure 4 Cambodia's PDP Generation Plan / Installed Power Capacity (2022-2040)**



**Figure 5 Generation Plan Cumulative Investment Requirements (\$millions USD<sup>7</sup>)**



(\$million USD)	Committed	Planned	Total
	2022-25	2026-40	2022-40
Coal	2,254	0	2,254
Hydro	0	4,137	4,137
CCGT/ICE	0	676	676
Biomass	50	335	385
Solar PV	224	1,110	1,333
Battery	12	292	304
<b>Total</b>	<b>2,539</b>	<b>6,550</b>	<b>9,089</b>

<sup>7</sup> All currency is on a Real 2019 USD basis.

**Table 4 PDP List of Generation and Power Imports (Scenario 4)**

Year Online	Project Name	Technology	Capacity (MW)	Province
2022	Han Seng Phase 1 & 2	Coal	130	Oddar Meanchey
2022	Han Seng Phase 3	Coal	130	Oddar Meanchey
2022	CIIDG 2 – Phase 1	Coal	350	Sihanoukville
2022	KCN Solar-Phase-1	Solar PV	60	Kampong Chhnang
2023	CIIDG 2 – Phase 2	Coal	350	Sihanoukville
2023	Royal Group Coal – Phase 1	Coal	350	Koh Kong
2023	KCN_Solar-Phase-2	Solar PV	40	Kampong Chhnang
2024	Royal Group Coal – Phase 2	Coal	350	Koh Kong
2024	Generic Solar -1 KCN	Solar PV	60	Kampong Chhnang
2025	Import Laos PPA (500 MW)	Laos Imports	250	Stung Treng
2025	Import Laos PPA (600 MW) – Phase 1	Laos Imports	300	Stung Treng
2025	KPS Solar	Solar PV	100	Kampong Speu
2025	Generic Solar -1 PST	Solar PV	90	Pursat
2025	Battery Energy Storage Plant (BESS)	BESS	20	To be determined
2025	Biomass Plant	Biomass	22	Phnom Penh
2026	Stung Pursat 1	Hydro	80	Pursat
2026	Upper Tatay	Hydro	150	Koh Kong
2026	Import Laos PPA (600 MW) – Phase 2	Laos Imports	300	Stung Treng
2026	Import Thailand 500 kV – Phase 1	Thailand Imports	300	Banteay Meanchey
2026	Generic Solar -2 PST	Solar PV	60	Pursat
2026	Biomass Plant	Biomass	10	Phnom Penh
2027	Import Laos PPA (1800 MW) – Phase 1	Laos Imports	300	Stung Treng
2027	Import Laos PPA (1800 MW) – Phase 2	Laos Imports	300	Stung Treng
2027	Import Thailand 500 kV – Phase 2	Thailand Imports	100	Banteay Meanchey
2027	Generic Solar -1 SVR	Solar PV	30	Svay Rieng
2027	Generic Solar -1 PV	Solar PV	40	Prey Veng
2027	Biomass Plant	Biomass	10	Phnom Penh
2028	Import Laos PPA (1800 MW) – Phase 3	Laos Imports	300	Stung Treng
2028	Import Laos PPA (1800 MW) – Phase 4	Laos Imports	300	Stung Treng
2028	Import Thailand 500 kV – Phase 3	Thailand Imports	100	Banteay Meanchey
2028	Generic Solar – 2 SVR	Solar PV	30	Svay Rieng
2028	Generic Solar -2 PV	Solar PV	40	Prey Veng
2028	Biomass Plant	Biomass	10	Phnom Penh
2029	Import Laos PPA (1800 MW) – Phase 5	Laos Imports	300	Stung Treng
2029	Import Laos PPA (1800 MW) – Phase 6	Laos Imports	300	Stung Treng
2029	Import Thailand 500 kV – Phase 4	Thailand Imports	100	Banteay Meanchey
2029	Generic Solar – 2 KCN	Solar PV	50	Kampong Chhnang
2029	Biomass Plant	Biomass	10	Phnom Penh
2030	Import Thailand 500 kV – Phase 5	Thailand Imports	100	Banteay Meanchey
2030	Generic Solar – 3 KCN	Solar PV	50	Kampong Chhnang
2030	Biomass Plant	Biomass	10	Phnom Penh
2031	Import Thailand 500 kV – Phase 6	Thailand Imports	100	Banteay Meanchey
2031	Generic Solar – 3 KCN	Solar PV	60	Kampong Chhnang
2031	Biomass Plant	Biomass	10	Phnom Penh
2032	Middle Stung Russei Chrum	Hydro	70	Koh Kong
2032	Stung Veal Thmor Kambot	Hydro	100	Koh Kong
2032	Import Thailand 500 kV – Phase 7	Thailand Imports	100	Banteay Meanchey



Year Online	Project Name	Technology	Capacity (MW)	Province
2032	Generic Solar – 1 KPS	Solar PV	60	Kampong Speu
2032	Biomass Plant	Biomass	10	Phnom Penh
2033	Lower Srepok 3A	Hydro	270	Stung Treng
2033	Lower Srepok 3B	Hydro	68	Stung Treng
2033	Import Thailand 500 kV – Phase 8	Thailand Imports	100	Banteay Meanchey
2033	Generic Solar – 4 KCN	Solar PV	60	Kampong Chhnang
2033	Biomass Plant	Biomass	10	Phnom Penh
2034	Lower Srepok 4	Hydro	48	Stung Treng
2034	Prek Liang	Hydro	75	Ratanakiri
2034	Generic Solar – 1 KPT	Solar PV	60	Kampong Thom
2034	Biomass Plant	Biomass	10	Phnom Penh
2035	Prek Liang – 2	Hydro	66	Ratanakiri
2035	Generic Solar – 1 PP	Solar PV	60	Phnom Penh
2035	Biomass Plant	Biomass	10	Phnom Penh
2036	Stung Meteuk 1	Hydro	58	Pursat
2036	Stung Meteuk 2	Hydro	90	Pursat
2036	CCGT 1 / ICE 1	CCGT/ICE <sup>8</sup>	300	Sihanoukville
2036	Generic Solar – 5 KCN	Solar PV	100	Kampong Chhnang
2036	Biomass Plant	Biomass	10	Phnom Penh
2037	Lower Sekong	Hydro	190	Stung Treng
2037	CCGT 2 / ICE 2	CCGT/ICE <sup>9</sup>	300	Sihanoukville
2037	Generic Solar – 1 KCM	Solar PV	100	Kampong Cham
2037	Generic Solar – 2 KPS	Solar PV	100	Kampong Speu
2037	Generic Solar – 2 KPT	Solar PV	100	Kampong Thom
2037	Generic Solar – 2 PP	Solar PV	50	Phnom Penh
2037	Battery Energy Storage Plant (BESS) – 1	BESS	100	To be determined
2037	Biomass Plant	Biomass	10	Phnom Penh
2038	Battambang 2	Hydro	40	Battambang
2038	Generic Solar – 3 SVR	Solar PV	50	Svay Rieng
2038	Generic Solar – 2 KCM	Solar PV	50	Kampong Cham
2038	Generic Solar – 6 KCN	Solar PV	50	Kampong Chhnang
2038	Generic Solar – 3 KPS	Solar PV	50	Kampong Speu
2038	Generic Solar – 3 KPT	Solar PV	100	Kampong Thom
2038	Generic Solar – 3 PP	Solar PV	100	Phnom Penh
2038	Generic Solar – 3 PST	Solar PV	50	Pursat
2038	Generic Solar – 1 SR	Solar PV	50	Siem Reap
2038	Battery Energy Storage Plant (BESS) – 2	BESS	100	To be determined
2038	Biomass Plant	Biomass	10	Phnom Penh
2039	Lower Sesan 3	Hydro	220	Ratanakiri
2039	CCGT 3 / ICE 3	CCGT/ICE <sup>10</sup>	300	Sihanoukville
2039	Generic Solar – 1 BMC	Solar PV	50	Banteay Meanchey
2039	Generic Solar – 1 BTB	Solar PV	50	Battambang
2039	Generic Solar – 3 KCM	Solar PV	50	Kampong Cham
2039	Generic Solar – 4 KPS	Solar PV	50	Kampong Speu
2039	Generic Solar – 4 KPT	Solar PV	100	Kampong Thom
2039	Generic Solar – 4 PP	Solar PV	50	Phnom Penh

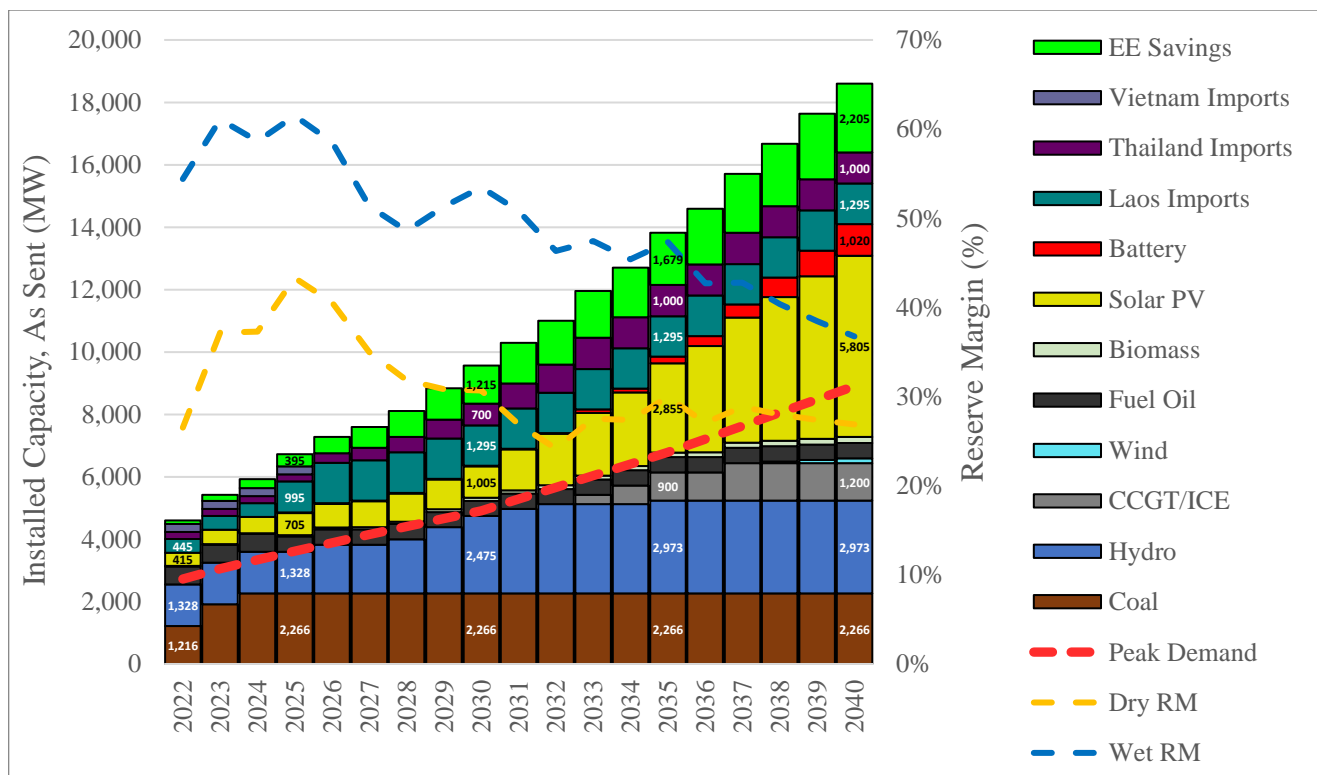
<sup>8</sup> Technology to be decided

<sup>9</sup> Ibid.

<sup>10</sup> Ibid.

Year Online	Project Name	Technology	Capacity (MW)	Province
2039	Generic Solar – 4 PST	Solar PV	50	Pursat
2039	Generic Solar – 2 SR	Solar PV	50	Siem Reap
2039	Battery Energy Storage Plant (BESS) – 3	BESS	100	To be determined
2039	Biomass Plant	Biomass	10	Phnom Penh
2040	Lower Stung Touch	Hydro	50	Stung Treng
2040	Upper Stung Touch	Hydro	70	Stung Treng
2040	Generic Solar – 2 BMC	Solar PV	50	Banteay Meanchey
2040	Generic Solar – 2 BTB	Solar PV	50	Battambang
2040	Generic Solar – 4 KCM	Solar PV	100	Kampong Cham
2040	Generic Solar – 5 KPS	Solar PV	50	Kampong Speu
2040	Generic Solar – 5 KPT	Solar PV	100	Kampong Thom
2040	Generic Solar – 5 PST	Solar PV	100	Pursat
2040	Battery Energy Storage Plant (BESS) – 4	BESS	100	To be determined
2040	Biomass Plant	Biomass	10	Phnom Penh

**Figure 6 Contingency Generation Plan / Installed Power Capacity (2022-2040)**



**Table 5 PDP Contingency List of Generation and Power Imports (Scenario 5)**

Year Online	Project Name	Technology	Capacity (MW)	Province
2022	Han Seng Phase 1 & 2	Coal	130	Oddar Meanchey
2022	Han Seng Phase 3	Coal	130	Oddar Meanchey
2022	CIIDG 2 – Phase 1	Coal	350	Sihanoukville
2022	KCN_Solar-Phase-1	Solar PV	60	Kampong Chhnang
2023	CIIDG 2 – Phase 2	Coal	350	Sihanoukville
2023	Royal Group Coal – Phase 1	Coal	350	Koh Kong
2023	KCN_Solar-Phase-2	Solar PV	40	Kampong Chhnang
2024	Royal Group Coal – Phase 2	Coal	350	Koh Kong
2024	Generic Solar -1 KCN	Solar PV	60	Kampong Chhnang
2025	Import Laos PPA (500 MW)	Laos Imports	250	Stung Treng
2025	Import Laos PPA (600 MW) – Phase 1	Laos Imports	300	Stung Treng
2025	KPS_Solar	Solar PV	100	Kampong Speu
2025	Generic Solar -1 PST	Solar PV	90	Pursat
2025	Battery Energy Storage Plant (BESS)	BESS	20	To be Determined
2025	Biomass Plant	Biomass	22	Phnom Penh
2026	Stung Pursat 1	Hydro	80	Pursat
2026	Upper Tatay	Hydro	150	Koh Kong
2026	Import Laos PPA (600 MW) – Phase 2	Laos Imports	300	Stung Treng
2026	Import Thailand 500 kV – Phase 1	Thailand Imports	300	Banteay Meanchey
2026	Generic Solar -2 PST	Solar PV	60	Pursat
2026	Biomass Plant	Biomass	10	Phnom Penh
2027	Import Thailand 500 kV – Phase 2	Thailand Imports	100	Banteay Meanchey
2027	Generic Solar -1 SVR	Solar PV	30	Svay Rieng
2027	Generic Solar -1 PV	Solar PV	40	Prey Veng
2027	Biomass Plant	Biomass	10	Phnom Penh
2028	Middle Stung Russei Chrum	Hydro	70	Koh Kong
2028	Stung Veal Thmor Kambot	Hydro	100	Koh Kong
2028	Import Thailand 500 kV – Phase 3	Thailand Imports	100	Banteay Meanchey
2028	Generic Solar – 2 SVR	Solar PV	30	Svay Rieng
2028	Generic Solar -2 PV	Solar PV	40	Prey Veng
2028	Biomass Plant	Biomass	10	Phnom Penh
2029	Lower Srepok 3A	Hydro	270	Stung Treng
2029	Lower Srepok 3B	Hydro	68	Stung Treng
2029	Lower Srepok 4	Hydro	48	Stung Treng
2029	Import Thailand 500 kV – Phase 4	Thailand Imports	100	Banteay Meanchey
2029	Generic Solar – 2 KCN	Solar PV	50	Kampong Chhnang
2029	Biomass Plant	Biomass	10	Phnom Penh
2030	Prek Liang	Hydro	75	Ratanakiri
2030	Prek Liang – 2	Hydro	66	Ratanakiri
2030	Lower Sesan 3	Hydro	220	Ratanakiri
2030	Import Thailand 500 kV – Phase 5	Thailand Imports	100	Banteay Meanchey
2030	Generic Solar – 3 KCN	Solar PV	50	Kampong Chhnang
2030	Biomass Plant	Biomass	10	Phnom Penh
2031	Lower Sekong	Hydro	190	Stung Treng
2031	Battambang 2	Hydro	40	Battambang
2031	Import Thailand 500 kV – Phase 6	Thailand Imports	100	Banteay Meanchey
2031	Generic Solar – 3 KCN	Solar PV	120	Kampong Chhnang

Year Online	Project Name	Technology	Capacity (MW)	Province
2031	Generic Solar – 1 KPS	Solar PV	60	Kampong Speu
2031	Generic Solar – 1 KPT	Solar PV	60	Kampong Thom
2031	Generic Solar – 1 PP	Solar PV	60	Phnom Penh
2031	Biomass Plant	Biomass	10	Phnom Penh
2032	Stung Meteuk 1	Hydro	58	Pursat
2032	Stung Meteuk 2	Hydro	90	Pursat
2032	Import Thailand 500 kV – Phase 7	Thailand Imports	100	Banteay Meanchey
2032	Generic Solar – 4 KCN	Solar PV	100	Kampong Chhnang
2032	Generic Solar – 2 KPS	Solar PV	100	Kampong Speu
2032	Generic Solar – 2 KPT	Solar PV	100	Kampong Thom
2032	Generic Solar – 2 PP	Solar PV	50	Phnom Penh
2032	Biomass Plant	Biomass	10	Phnom Penh
2033	CCGT 1 / ICE 1	CCGT/ICE <sup>11</sup>	300	Sihanoukville
2033	Import Thailand 500 kV – Phase 8	Thailand Imports	100	Banteay Meanchey
2033	Generic Solar – 1 KCM	Solar PV	100	Kampong Cham
2033	Generic Solar – 5 KCN	Solar PV	50	Kampong Chhnang
2033	Generic Solar – 3 KPS	Solar PV	50	Kampong Speu
2033	Generic Solar – 3 KPT	Solar PV	100	Kampong Thom
2033	Generic Solar – 3 PST	Solar PV	50	Pursat
2033	Battery Energy Storage Plant (BESS) – 1	BESS	100	To be Determined
2033	Biomass Plant	Biomass	10	Phnom Penh
2034	CCGT 2 / ICE 2	CCGT/ICE <sup>12</sup>	300	Sihanoukville
2034	Generic Solar – 3 SVR	Solar PV	50	Svay Rieng
2034	Generic Solar – 2 KCM	Solar PV	50	Kampong Cham
2034	Generic Solar – 4 KPS	Solar PV	50	Kampong Speu
2034	Generic Solar – 3 PP	Solar PV	100	Phnom Penh
2034	Generic Solar – 3 PST	Solar PV	50	Pursat
2034	Generic Solar – 1 SR	Solar PV	50	Siem Reap
2034	Biomass Plant	Biomass	10	Phnom Penh
2035	CCGT 3 / ICE 3	CCGT/ICE <sup>13</sup>	300	Sihanoukville
2035	Lower Stung Touch	Hydro	50	Stung Treng
2035	Upper Stung Touch	Hydro	70	Stung Treng
2035	Generic Solar – 1 BMC	Solar PV	50	Banteay Meanchey
2035	Generic Solar – 1 BTB	Solar PV	50	Battambang
2035	Generic Solar – 3 KCM	Solar PV	50	Kampong Cham
2035	Generic Solar – 5 KPS	Solar PV	50	Kampong Speu
2035	Generic Solar – 4 KPT	Solar PV	100	Kampong Thom
2035	Generic Solar – 4 PP	Solar PV	50	Phnom Penh
2035	Generic Solar – 4 PST	Solar PV	100	Pursat
2035	Generic Solar – 2 SR	Solar PV	50	Siem Reap
2035	Battery Energy Storage Plant (BESS) – 2	BESS	100	To be Determined
2035	Biomass Plant	Biomass	10	Phnom Penh
2036	Generic Solar – 2 BMC	Solar PV	50	Banteay Meanchey
2036	Generic Solar – 2 BTB	Solar PV	50	Battambang
2036	Generic Solar – 4 KCM	Solar PV	150	Kampong Cham
2036	Generic Solar – 5 KPT	Solar PV	150	Kampong Thom

<sup>11</sup> Technology to be decided

<sup>12</sup> Ibid.

<sup>13</sup> Ibid.

Year Online	Project Name	Technology	Capacity (MW)	Province
2036	Generic Solar – 4 PST	Solar PV	150	Pursat
2036	Battery Energy Storage Plant (BESS) – 3	BESS	100	To be Determined
2036	Biomass Plant	Biomass	10	Phnom Penh
2037	CCGT 4 / ICE 4	CCGT/ICE <sup>14</sup>	300	Sihanoukville
2037	Generic Solar – 3 BMC	Solar PV	50	Banteay Meanchey
2037	Generic Solar – 3 BTB	Solar PV	100	Battambang
2037	Generic Solar – 5 KCM	Solar PV	50	Kampong Cham
2037	Generic Solar – 6 KCM	Solar PV	100	Kampong Chhnang
2037	Generic Solar – 5 KPS	Solar PV	150	Kampong Speu
2037	Generic Solar - 6 KPT	Solar PV	50	Kampong Thom
2037	Generic Solar – 5 PST	Solar PV	50	Pursat
2037	Generic Solar – 3 SR	Solar PV	50	Siem Reap
2037	Battery Energy Storage Plant (BESS) – 4	BESS	100	To be Determined
2037	Biomass Plant	Biomass	10	Phnom Penh
2038	Generic Solar – 4 BTB	Solar PV	50	Battambang
2038	Generic Solar – 6 KCM	Solar PV	100	Kampong Cham
2038	Generic Solar – 7 KCM	Solar PV	50	Kampong Chhnang
2038	Generic Solar – 6 KPS	Solar PV	100	Kampong Speu
2038	Generic Solar – 1 KTE	Solar PV	50	Kratie
2038	Generic Solar - 7 KPT	Solar PV	100	Kampong Thom
2038	Generic Solar – 6 PST	Solar PV	100	Pursat
2038	Generic Solar – 4 SR	Solar PV	50	Siem Reap
2038	Generic Wind – 1 MDK	Wind	50	Mondulkiri
2038	Battery Energy Storage Plant (BESS) – 5	BESS	200	To be Determined
2038	Biomass Plant	Biomass	10	Phnom Penh
2039	Generic Solar – 4 SVR	Solar PV	50	Svay Rieng
2039	Generic Solar – 7 KCM	Solar PV	100	Kampong Cham
2039	Generic Solar – 8 KCM	Solar PV	50	Kampong Chhnang
2039	Generic Solar – 7 KPS	Solar PV	100	Kampong Speu
2039	Generic Solar – 2 KTE	Solar PV	50	Kratie
2039	Generic Solar - 8 KPT	Solar PV	100	Kampong Thom
2039	Generic Solar – 3 PV	Solar PV	100	Prey Veng
2039	Generic Solar – 5 SR	Solar PV	50	Siem Reap
2039	Generic Wind – 1 KPT	Wind	50	Kampot
2039	Battery Energy Storage Plant (BESS) – 6	BESS	200	To be Determined
2039	Biomass Plant	Biomass	10	Phnom Penh
2040	Generic Solar – 5 SVR	Solar PV	50	Svay Rieng
2040	Generic Solar – 8 KCM	Solar PV	100	Kampong Cham
2040	Generic Solar – 7 KPS	Solar PV	150	Kampong Speu
2040	Generic Solar – 3 KTE	Solar PV	150	Kratie
2040	Generic Solar - 9 KPT	Solar PV	50	Kampong Thom
2040	Generic Solar – 4 PV	Solar PV	50	Prey Veng
2040	Generic Solar – 6 SR	Solar PV	50	Siem Reap
2040	Battery Energy Storage Plant (BESS) – 7	BESS	200	To be Determined
2040	Generic Wind – 2 MDK	Wind	50	Mondulkiri
2040	Biomass Plant	Biomass	10	Phnom Penh

<sup>14</sup> Technology to be decided.

**ANNEX 3:**  
**Transmission Development Plan for HV Network**

**Table 6 Transmission Plan: Table of Additional Investments from 2024**

Year /Period	Project ID	Asset	Location	Transmission asset
2024	1	New substation	CHP	230/22 kV 50 MVA transformation
2024	1	New substation	P.PCH	230/115 kV 200 MVA transformation
2024	1	New substation	SNL	115/22 kV 50 MVA transformation
2024	1	Transmission	CHP to P.PCH	230 kV DCST, twin 630 mm2 30 km
2024	1	Transmission	P.PCH to SNL	115 kV DCST, single conductor 400 mm 2 30 km
2024	1	Transmission	T-STR to CHP	230 kV DCST, twin 630 mm2 72 km
2024	16	New substation	CAP	115/22 kV 75 MVA transformation
2024	16	Transmission	CAP-CAP tee	115 kV 1000 mm2 Cable 1.5 km, 115kV DCST plain area, one 630mm2 3 km
2024	17	New substation	BTI	230/115/22 kV 160 MVA transformation
2024	18	New substation	BTP	115/22 kV 75 MVA transformation
2024	20	New substation	SMD	115/22 kV 50 MVA transformation
2024	20	Transmission	RM-SMD	115 kV SCST, single conductor 400 mm 2 11 km
2024	21	New substation	SVR	115/22 kV 75 MVA transformation
2024	21	Transmission	GS7-KSG	115 kV SCST, twin conductor 240 mm2 63 km
2024	21	Transmission	KSG-SVR	115 kV SCST, single conductor 400 mm 2 45 km
2024	21	Transmission	SVR-CMT	115 kV SCST, single conductor 400 mm 2 37 km
2025	2	New substation	KTE	230/115 kV 300 MVA transformation
2025	2	Transmission	PPS to KTE	115 kV SCST, single conductor 400 mm 2 30 km
2025	3	Transmission	KPT to BTM	115 kV DCST, single conductor 400 mm 2 50 km
2025	4	New substation	SR3 GIS	115/22 kV 75 MVA transformation
2025	4	Transmission	SR3-SR3 GIS	115 kV DCST, twin 400 mm 2 4 km
2025	4	Transmission	SR3-SR3 GIS	115 kV 1000 mm2 Cable 1.5 km
2025	5	New substation	New Krokor	2 x 230/115/22 kV 125 MVA transformation
2025	5	New substation	KCN2	230/22 kV 50 MVA transformation
2025	5	New substation	KTL	230/22 kV 50 MVA transformation
2025	5	Transmission	PST to New Krokor	230 kV DCST, twin 630 mm2 29 km
2025	5	Transmission	KCN to KCN2	230 kV DCST, twin 630 mm2 13 km
2025	5	Transmission	KCN2 to KTL	230 kV DCST mountain area, single conductor 630 mm2 29 km
2025	5	Transmission	New Krokor to KCN2	230 kV DCST, twin 630 mm2 65 km
2025	5	Transmission	KTL to GS6	230 kV DCST, twin 630 mm2 30 km
2025	6	Transmission	BH to KHK	500 kV DCST mountain area, quad 590 mm2 300 km
2025	8	Transmission	BTB-Thailand	500 kV DCST mountain area, quad 590 mm2 107 km
2025	9	Transformer	SAT	230/115 kV 200 MVA transformation
2025	9	Transmission	LVA to SAT	230 kV double circuit 630 mm2 single conductor 40 km
2025	14	New substation	VRH	230/115/22 kV 240 MVA transformation
2025	15	New substation	KSV	230/22 kV 75 MVA transformation
2025	19	New substation	TKK	115/22 kV 150 MVA transformation
2025	19	New substation	TLB	115/22 kV 150 MVA transformation
2025	19	Transmission	TKK-GS11	115 kV 800 mm2 Cable 2.2 km
2025	22	New substation	MGR	230/22 kV 75 MVA transformation
2025	23	New substation	BVT	115/22 kV 50 MVA transformation
2025	23	Transmission	CMT-BVT	115 kV DCST single 400 mm2 20 km
2025	24	New substation	VEV	230/22 kV 75 MVA transformation
2025	25	New substation	STO	115/22 kV 50 MVA transformation
2025	26	New substation	PNSR	115/22 kV 75 MVA transformation

Year / Period	Project ID	Asset	Location	Transmission asset
2025	27	Transformer	KPS	2 x 115/22 kV 50 MVA
2025	28	New substation	CHT	115/22 kV 75 MVA transformation
2025	28	Transmission	GS7-CHT	115 kV SCST single 400 mm2 60 km
2025	29	New substation	CPR	230/22 kV 75 MVA transformation
2025	30	New substation	KRL	115/22 kV 50 MVA transformation
2025	31	New substation	RSK	115/22 kV 75 MVA transformation
2025	31	New substation	SSK	230/115/22 kV 360 MVA transformation
2025	31	Transmission	GS5-GS12	230 kV double circuit low loss 1029 mm2 double conductor 10 km
2025	31	Transmission	GS5-SSK	230 kV double circuit 630 mm2 single conductor approx. 3.6 km and 230 kV double circuit 1000 mm2 cable 3 km
2025	31	Transmission	SSK-RSK	115 kV double circuit 400 mm2 single conductor 2 km
2025	31	Transmission	RSK-GS1	115 kV double circuit 1000 mm2 cable 3.4 km
2025	32	New substation	DNK	2 x 230/115/22 kV 240 MVA transformation
2025	32	Transmission	GS4-DNK	Upgrade to 230 kV double circuit 630 mm2 single conductor 11 km
2025	32	Transmission	DNK-GS10	115 kV single circuit 240 mm2 double conductor 2 km
2025	32	Transmission	GS8-DNK	115 kV single circuit 240 mm2 double conductor 13 km
2025	33	New substation	PTM	115/22 kV 75 MVA transformer
2025	33	New substation	IDB	115/22 kV 75 MVA transformer
2025	33	Transmission	SHV1-PTM	115 kV double circuit 630 mm2 single conductor 4 km
2025	33	Transmission	STH-PTM	115 kV double circuit 630 mm2 double conductor 13 km
2025	33	Transmission	PTM-IDB	115 kV double circuit 400 mm2 single conductor 2.5 km + , 115 kV double circuit 800 mm2 cable 2.5 km
2025	33	Transmission	IDB-SHV3	115 kV double circuit 800 mm2 cable 2.2 km
2025	34	Transformation	BTR	230/115/22 kV 360 MVA transformer
2025	34	Transmission	STH-BTR	upgrade 115 kV to 230 kV 16 km
2025	35	Transmission	KKG-GS12	230 kV double circuit 630 mm2 double conductor 214 km
2025	36	Transmission	THS-BSK	230 kV double circuit 630 mm2 quad conductor 36 km
2025	37	Transmission	ALV-SR2	230 kV single circuit 630 mm2 single conductor 140 km
2025	39	Transmission	CIIDG2-CKL	230 kV DCST, twin 630 mm2 25 km
2025	41	Transformation	NCC	2 x 230/115 kV 300 MVA transformers
2025	41	Transmission	GS5-NCC	230 kV double circuit 1000 mm2 cable 9.2 km
2025	42	New substation	SR3	115/22 kV 50 MVA transformer
2025	42	Transmission	SR1-SR3	115 kV double circuit 400 mm2 single conductor 17 km
2025	42	Transmission	SR2-SR3	115 kV double circuit 400 mm2 single conductor 10 km
2025		Shunt capacitor	GS12-1	230 kV, 300 MVA
2025		Shunt capacitor	GS4 3	230 kV, 300 MVA
2025		Shunt capacitor	KRL-1	115 kV, 100 MVA
2025		Shunt capacitor	LSSII-1	230 kV, 250 MVA
2025		Shunt capacitor	RTM-1	115 kV, 50 MVA
2025		Transformer	BTB-CPG	230/115/22 kV 90 MVA transformer
2025		Transformer	BTB-CPG	230/115/22 kV 90 MVA transformer
2025		Transformer	BH	230/115/22 kV 90 MVA transformer
2025		Transformer	SR2	230/115 kV 300 MVA transformer
2025		Transformer	CIIDG-1	230/15 kV 170 MVA transformer
2025		Transformer	GIS TLB-1	115/22 kV 75 MVA transformer
2025		Transformer	GS10-1	115/22 kV 30 MVA transformer
2025		Transformer	GS11-1	115/22 kV 75 MVA transformer
2025		Transformer	GS12-1	230/22 kV 50 MVA transformer
2025		Transformer	GS1-2	22/13 kV 15 MVA transformer
2025		Transformer	GS1-4	13.8/11 kV 6.3 MVA transformer
2025		Transformer	GS2-1	115/22 kV 50 MVA transformer
2025		Transformer	GS2-1	115/22 kV 50 MVA transformer

Year /Period	Project ID	Asset	Location	Transmission asset
2025		Transformer	GS4-1	115/22 kV 50 MVA transformer
2025		Transformer	GS4-1	115/22 kV 50 MVA transformer
2025		Transformer	GS4-1	115/22 kV 50 MVA transformer
2025		Transformer	GS4-1	115/22 kV 75 MVA transformer
2025		Transformer	GS7-2	115/22 kV 50 MVA transformer
2025		Transformer	GS7-1	230/22 kV 75 MVA transformer
2025		Transformer	GS8-1	115/22 kV 50 MVA transformer
2025		Transformer	GS8-1	115/22 kV 50 MVA transformer
2025		Transformer	KHK-1	230/22 kV 75 MVA transformer
2025		Transformer	KPS-1	115/22 kV 50 MVA transformer
2025		Transformer	KPS-1	115/22 kV 50 MVA transformer
2025		Transformer	KSG-1	115/22 kV 50 MVA transformer
2025		Transformer	LSRC-3	22/10.5 kV 10 MVA transformer
2025		Transformer	PST-1	230/22 kV 25 MVA transformer
2025		Transformer	RTM-1	115/10.5 kV 80 MVA transformer
2025		Transformer	SR1-1	115/22 kV 50 MVA transformer
2025		Transformer	SR2-1	115/22 kV 50 MVA transformer
2025		Transformer	STG-1	115/22 kV 50 MVA transformer
2025		Transformer	STH-3	230/10.5 kV 72 MVA transformer
2025		Transformer	TKK 1	115/22 kV 75 MVA transformer
2025		Transformer	TKO-1	230/22 kV 50 MVA transformer
2026	10	New substation	BRY	115/22 kV 75 MVA transformation
2026	10	Transmission	BRY-STG	115 kV SCST, single conductor 400 mm <sup>2</sup> 55 km
2026	12	New substation	MMT	230/22 kV 50 MVA transformation
2026	12	Transmission	TKM-MMT	230 kV DCST, twin 630 mm <sup>2</sup> 55 km
2026	12	Transmission	P.PCH-MMT	230 kV DCST, twin 630 mm <sup>2</sup> 53 km
2027	8	Transmission	SGK-PST	230 kV DCST, twin 630 mm <sup>2</sup> 102 km
2027	16	New substation	KNR	115/22 kV 75 MVA transformation
2027	16	Transmission	GS9-KNR	115 kV DCST, 1,000 mm <sup>2</sup> cable 4.4 km
2027	16	Transmission	KNR-CAP	115 kV DCST, 1,000 mm <sup>2</sup> cable 5.6 km
2027	16	Transformer	KSV	230/115/22 kV 240 MVA transformation
2027	16	Transmission	KSV-CAP	115 kV DCST, single conductor 630 mm <sup>2</sup> 15 km
2027	31	New substation	CCV1	115/22 kV 75 MVA transformation
2027	31	New substation	CCV2	115/22 kV 75 MVA transformation
2027	31	New substation	KDC	115/22 kV 75 MVA transformation
2027	31	Transmission	RSK-CCV1	115 kV DCST, 1,000 mm <sup>2</sup> cable 2 km
2027	31	Transmission	CCV1-CCV2	115 kV DCST, single conductor 630 mm <sup>2</sup> 2 km
2027	31	Transmission	CCV2-NST	115 kV DCST, single conductor 630 mm <sup>2</sup> 7 km
2027	31	Transmission	NST-KDC	115 kV DCST, single conductor 630 mm <sup>2</sup> 5 km
2027-30	40	Transmission	GS3-NCC	115 kV 1000 mm <sup>2</sup> Cable 0.45 km
2027-30	41	Transmission	GS5-NCC	115 kV 1000 mm <sup>2</sup> Cable 9.2 km
2027-30	42	Transmission	SR2-SR3	115 kV 1000 mm <sup>2</sup> Cable 10 km
2029	9	New substation	ARK	115/22 kV 75 MVA transformer
2029	9	New substation	CCV3	115/22 kV 75 MVA transformer
2029	9	Transformer	LVA	230/115/22 kV 240 MVA transformer
2029	9	Transmission	LVA-ARK	115 kV DCST, single conductor 630 mm <sup>2</sup> 14 km
2029	9	Transmission	ARK-CCV3	115 kV DCST, 1,000 mm <sup>2</sup> cable 3 km
2029	9	Transmission	CCV3-WPM	115 kV DCST, 1,000 mm <sup>2</sup> cable 1.5 km
2029	9	Transmission	CCV3-CCV1	115 kV DCST, 1,000 mm <sup>2</sup> cable 3 km and 115kV DCST, single conductor 630 mm <sup>2</sup> 3km
2027-30		Shunt capacitor	RTM-1	115 kV, +50 MVA
2027-30		Shunt capacitor	LVA-2	15 kV, 400 MVA
2027-30		Shunt capacitor	KCM-1	115 kV, 250 MVA
2027-30		Shunt capacitor	IE-1	115 kV, 200 MVA
2027-30		Shunt capacitor	GS7-1	230 kV, 250 MVA



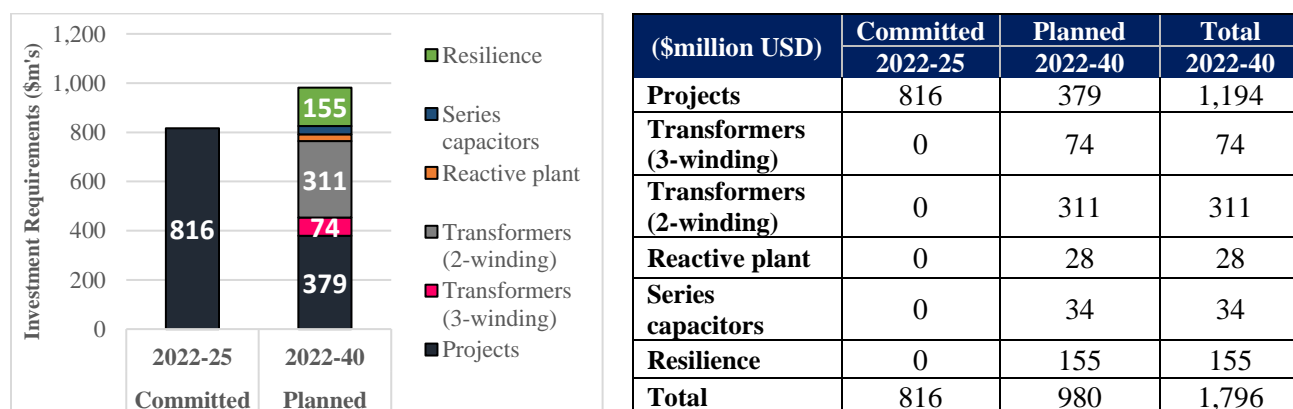
Year / Period	Project ID	Asset	Location	Transmission asset
2027-30		Shunt capacitor	BRY 1	230 kV, 100 MVA
2027-30		Transformer	BTB-CPG-1	230/115/22 kV 90 MVA transformer
2027-30		Transformer	DNK-3	230/115/22 kV 240 MVA transformer
2027-30		Transformer	GS2-1	115/22 kV 50 MVA transformer
2027-30		Transformer	GS2-1	115/22 kV 50 MVA transformer
2027-30		Transformer	GS7-2	115/22 kV 50 MVA transformer
2027-30		Transformer	GS8-1	115/22 kV 50 MVA transformer
2027-30		Transformer	GS8-1	115/22 kV 50 MVA transformer
2027-30		Transformer	KCM-1	115/22 kV 50 MVA transformer
2027-30		Transformer	KCM-1	115/22 kV 50 MVA transformer
2027-30		Transformer	SR2-3	230/115 kV 300 MVA transformer
2027-30		Transformer	SR2-1	115/22 kV 50 MVA transformer
2027-30		Transformer	TKM-1	230/115 kV 300 MVA transformer
2027-30		Transformer	CKR-1	230/22 kV 16 MVA transformer
2027-30		Transformer	CMG-1	115/6.3 kV 50 MVA transformer
2027-30		Transformer	GIS BTP-1	115/22 kV 75 MVA transformer
2027-30		Transformer	GS10-1	115/22 kV 30 MVA transformer
2027-30		Transformer	GS10-1	115/22 kV 75 MVA transformer
2027-30		Transformer	GS12-1	230/22 kV 50 MVA transformer
2027-30		Transformer	GS1-1	115/22 kV 75 MVA transformer
2027-30		Transformer	GS3 -1	115/22 kV 50 MVA transformer
2027-30		Transformer	GS6-1	115/22 kV 50 MVA transformer
2027-30		Transformer	GS7-1	230/22 kV 75 MVA transformer
2027-30		Transformer	KCN-1	230/22 kV 25 MVA transformer
2027-30		Transformer	KKP-1	230/22 kV 50 MVA transformer
2027-30		Transformer	KRL-1	115/22 kV 75 MVA transformer
2027-30		Transformer	KSA-1	115/22 kV 50 MVA transformer
2027-30		Transformer	KSA-1	115/22 kV 50 MVA transformer
2027-30		Transformer	LSRC-3	22/10.5 kV 10 MVA transformer
2027-30		Transformer	PCT-1	115/22 kV 75 MVA transformer
2031-35	6	Transmission	BH to KHK	series compensation - 500 kV
2031+	7	Transmission	TKM-KHK	500 kV DCST mountain area, quad 590 mm2 90 km
2031+	7	Transmission	STR-TKM	500 kV DCST mountain area, quad 590 mm2 205 km
2031-35	R2	New substation	ORL	-
2031-35	13	New substation	SRP Solar	-
2031-35	R2	Transmission	BSK-ORL	500 kV DCST, quad 590 mm2 110 km
2031-35	R2	Transmission	ORL-SRP Solar	500 kV DCST, quad 590 mm2 37 km
2031-35	13	Transmission	SRP Solar-GS6	500 kV DCST, quad 590 mm2 38 km
2031-35	42	Transmission	SR3-SR1	115 kV 1000 mm2 Cable 17 km
2031-35	43	Transmission	GS4-GS12	230 kV SCST, twin 630 mm2 23 km
2031-35	44	Transmission	BMC-KRL	115 kV SCST, single conductor 400 mm 2 45 km
2031-35	45	Transmission	GS5-PPT	115kV SCST, twin 630 mm2 2.8 km
2031-35	45	Transmission	PPT-TKK	115kV DCST, twin 630 mm2 3.2 km
2031-35	45	Transmission	TKK-GS11	115 kV 1000 mm2 Cable 2.2 km
2031-35	45	Transmission	TKK-TLB	115 kV 1000 mm2 Cable 3.2 km
2031-35	45	Transmission	TKK-TLB	115 kV 1000 mm2 Cable 3.2 km
2031-35	R1	Existing substation	TKM	500/230/115kV 1500 MVA transformation
2031-35	R1	Existing substation	KHK	500/230/115kV 3000 MVA transformation
2031-35	R1	Existing substation	STR	500/230/115kV 1500 MVA transformation
2031-35	R1	Existing substation	BH	500/230/115kV 1500 MVA transformation
2031-35		Shunt capacitor	CKL-1	230 kV, 300 MVA
2031-35		Shunt capacitor	CMT-1	115 kV, 100 MVA
2031-35		Shunt capacitor	KSG-1	115 kV, 250 MVA

Year /Period	Project ID	Asset	Location	Transmission asset
2031-35		Shunt capacitor	SR1-1	115 kV, 200 MVA
2031-35		Shunt capacitor	SRT-1	115 kV, 250 MVA
2031-35		Shunt capacitor	SVR-1	115 kV, 100 MVA
2031-35		Shunt capacitor	TKM-1	230 kV, 350 MVA
2031-35		Shunt capacitor	CPR 1	230 kV, 200 MVA
2031-35		Shunt capacitor	GIS SSK-1	230 kV, 250 MVA
2031-35		Transformer	BH-2	230/115/22 kV 90 MVA transformer
2031-35		Transformer	BTB-CPG-1	230/115/22 kV 90 MVA transformer
2031-35		Transformer	CHK-1	230/115/22 kV 100 MVA transformer
2031-35		Transformer	CHK-1	230/115/22 kV 100 MVA transformer
2031-35		Transformer	CKL-1	230/115/22 kV 100 MVA transformer
2031-35		Transformer	DNK-3	230/115/22 kV 240 MVA transformer
2031-35		Transformer	DNK-3	230/115/22 kV 240 MVA transformer
2031-35		Transformer	GS3 -1	115/22/15 kV 50 MVA transformer
2031-35		Transformer	KSS-1	230/115/22 kV 100 MVA transformer
2031-35		Transformer	SR2-3	230/115/22 kV 200 MVA transformer
2031-35		Transformer	TKM-1	230/115/22 kV 240 MVA transformer
2031-35		Transformer	TKM-1	230/115/22 kV 240 MVA transformer
2031-35		Transformer	CKL-1	230/115/22 kV 100 MVA transformer
2031-35		Transformer	GS3 -1	115/22/15 kV 50 MVA transformer
2031-35		Transformer	TKM-1	230/115/22 kV 240 MVA transformer
2031-35		Transformer	BTB-CPG-1	230/115 kV 300 MVA transformer
2031-35		Transformer	GS4 3	230/115 kV 200 MVA transformer
2031-35		Transformer	KPT-1	230/115 kV 200 MVA transformer
2031-35		Transformer	MKP-1	230/115 kV 240 MVA transformer
2031-35		Transformer	CS5-5	230/115 kV 300 MVA transformer
2031-35		Transformer	KCN-1	230/22 kV 100 MVA transformer
2031-35		Transformer	BMC-1	115/22 kV 50 MVA transformer
2031-35		Transformer	CMT-1	115/22 kV 50 MVA transformer
2031-35		Transformer	CMT-1	115/22 kV 50 MVA transformer
2031-35		Transformer	GIS TLB-1	115/22 kV 75 MVA transformer
2031-35		Transformer	GS11-1	115/22 kV 75 MVA transformer
2031-35		Transformer	GS12-1	230/22 kV 50 MVA transformer
2031-35		Transformer	GS1-1	115/22 kV 75 MVA transformer
2031-35		Transformer	GS1-1	115/22 kV 75 MVA transformer
2031-35		Transformer	GS2-1	115/22 kV 50 MVA transformer
2031-35		Transformer	GS2-1	115/22 kV 50 MVA transformer
2031-35		Transformer	GS4-1	115/22 kV 75 MVA transformer
2031-35		Transformer	GS5-1	115/22 kV 50 MVA transformer
2031-35		Transformer	GS5-1	115/22 kV 50 MVA transformer
2031-35		Transformer	GS6-1	115/22 kV 50 MVA transformer
2031-35		Transformer	GS6-1	115/22 kV 50 MVA transformer
2031-35		Transformer	GS7-1	230/22 kV 75 MVA transformer
2031-35		Transformer	GS8-1	115/22 kV 50 MVA transformer
2031-35		Transformer	GS8-1	115/22 kV 50 MVA transformer
2031-35		Transformer	IE-1	115/22 kV 50 MVA transformer
2031-35		Transformer	IE-1	115/22 kV 50 MVA transformer
2031-35		Transformer	KCM-1	115/22 kV 50 MVA transformer
2031-35		Transformer	KCM-1	115/22 kV 50 MVA transformer
2031-35		Transformer	KRL-1	115/22 kV 75 MVA transformer
2031-35		Transformer	KPS-1	115/22 kV 50 MVA transformer
2031-35		Transformer	KPS-1	115/22 kV 50 MVA transformer
2031-35		Transformer	KSG-1	115/22 kV 50 MVA transformer
2031-35		Transformer	MDK 1	230/13.8 kV 8 MVA transformer
2031-35		Transformer	MKP2-1	115/22 kV 50 MVA transformer

Year /Period	Project ID	Asset	Location	Transmission asset
2031-35		Transformer	SR1-1	115/22 kV 50 MVA transformer
2031-35		Transformer	SR1-1	115/22 kV 25 MVA transformer
2031-35		Transformer	SR2-1	115/22 kV 50 MVA transformer
2031-35		Transformer	SRT-1	115/22 kV 50 MVA transformer
2031-35		Transformer	STR-1	230/22 kV 50 MVA transformer
2031-35		Transformer	SVR-1	115/22 kV 75 MVA transformer
2031-35		Transformer	TKK 1	115/22 kV 75 MVA transformer
2036-40	38	New substation	Koh Thmei / LNG	-
2036-40	38	Transmission	CKL-KME	500 kV DCST, quad 590 mm <sup>2</sup> 70 km
2036-40	46	Existing substation	PCT	230/115 kV 240 MVA transformation
2036-40	46	Existing substation	GS8	230/115 kV 240 MVA transformation
2036-40	46	Transmission	NCC-PCT	230 kV 1000 mm <sup>2</sup> Cable DCCT 1.2 km
2036-40	46	Transmission	GS8-PCT	115kV SCST, twin 240 mm <sup>2</sup> 3 km
2036-40	46	Transmission	GS8-PCT	115 kV 800 mm <sup>2</sup> Cable 1.8 km
2036-40	46	Transmission	PCT-GS3	115 kV 800 mm <sup>2</sup> Cable 3.6 km
2036-40	47	Transmission	GS12-GS5	230 kV SCST, twin 630 mm <sup>2</sup> 10 km
2036-40	48	Transmission	BTM-CMIC	115 kV SCST, single conductor 400 mm 2 6.5 km
2036-40	49	Transmission	KPS-GS5	115 kV SCST, single conductor 400 mm 2 38 km
2036-40	50	Transmission	SSK-GS1	230 kV SCST, twin 630 mm <sup>2</sup> 3.5 km
2036-40	51	Transmission	STH-SHV	230 kV DCST, twin 630 mm <sup>2</sup> 12 km
2036-40		Shunt capacitor	BTB-CPG-1	230 kV, 200 MVA
2036-40		Shunt capacitor	GS12-1	230 kV, +200 MVA
2036-40		Shunt capacitor	GS2-1	115 kV, 150 MVA
2036-40		Shunt capacitor	GS4 3	230 kV, +300 MVA
2036-40		Shunt capacitor	KHK-1	230 kV, 600 MVA
2036-40		Shunt capacitor	GS1-1	115 kV, 50 MVA
2036-40		Shunt capacitor	GS10-1	115 kV, 100 MVA
2036-40		Shunt capacitor	GS5-1	115 kV, 100 MVA
2036-40		Series compensation	GS12 - CKL	230 kV line
2036-40		Series compensation	GS12 - CKL	230 kV line
2036-40		Transformer	CHK-1	230/115/22 kV 100 MVA transformer
2036-40		Transformer	SR2-3	230/115/22 kV 200 MVA transformer
2036-40		Transformer	CHK-1	230/115/22 kV 100 MVA transformer
2036-40		Transformer	CKL-1	230/115/22 kV 100 MVA transformer
2036-40		Transformer	DNK-3	230/115/22 kV 240 MVA transformer
2036-40		Transformer	DNK-3	230/115/22 kV 240 MVA transformer
2036-40		Transformer	GS3 -1	115/22/15 kV 50 MVA transformer
2036-40		Transformer	KSS-1	230/115/22 kV 100 MVA transformer
2036-40		Transformer	KCM 4	230/115 kV 300 MVA transformer
2036-40		Transformer	CS5-5	230/115 kV 300 MVA transformer
2036-40		Transformer	TKM-1	230/115 kV 300 MVA transformer
2036-40		Transformer	SVR	115/22 kV 75 MVA transformer
2036-40		Transformer	SR3	115/22 kV 50 MVA transformer
2036-40		Transformer	TLB	115/22 kV 75 MVA transformer
2036-40		Transformer	KCN-1	230/22 kV 100 MVA transformer
2036-40		Transformer	BMC-1	115/22 kV 50 MVA transformer
2036-40		Transformer	BTB4-2	115/22 kV 75 MVA transformer
2036-40		Transformer	BVT-1	115/22 kV 50 MVA transformer
2036-40		Transformer	CKR-1	230/22 kV 16 MVA transformer
2036-40		Transformer	GS9-1	115/22 kV 75 MVA transformer
2036-40		Transformer	GS9-1	115/22 kV 75 MVA transformer
2036-40		Transformer	GIS TLB-1	115/22 kV 75 MVA transformer
2036-40		Transformer	GS10-1	115/22 kV 75 MVA transformer
2036-40		Transformer	GS11-1	115/22 kV 75 MVA transformer

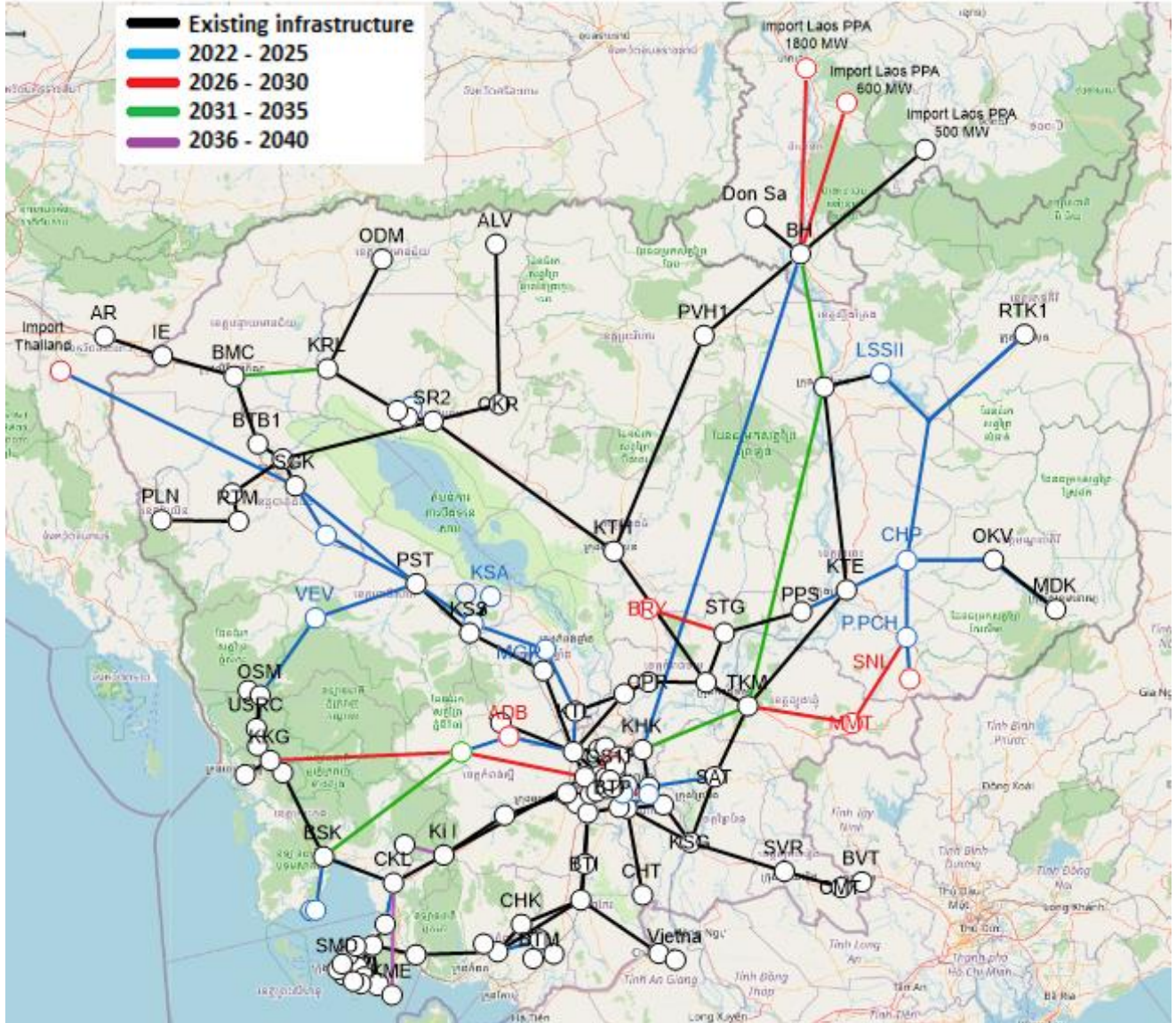
Year /Period	Project ID	Asset	Location	Transmission asset
2036-40		Transformer	GS12-1	230/22 kV 50 MVA transformer
2036-40		Transformer	GS1-1	115/22 kV 75 MVA transformer
2036-40		Transformer	GS1-1	115/22 kV 75 MVA transformer
2036-40		Transformer	GS2-1	115/22 kV 50 MVA transformer
2036-40		Transformer	GS2-1	115/22 kV 50 MVA transformer
2036-40		Transformer	GS3 -1	115/22 kV 50 MVA transformer
2036-40		Transformer	GS3 -1	115/22 kV 50 MVA transformer
2036-40		Transformer	GS4-1	115/22 kV 50 MVA transformer
2036-40		Transformer	GS4-1	115/22 kV 50 MVA transformer
2036-40		Transformer	GS4-1	115/22 kV 50 MVA transformer
2036-40		Transformer	GS4-1	115/22 kV 75 MVA transformer
2036-40		Transformer	GS5-1	115/22 kV 50 MVA transformer
2036-40		Transformer	GS5-1	115/22 kV 50 MVA transformer
2036-40		Transformer	GS5-1	115/22 kV 50 MVA transformer
2036-40		Transformer	GS7-1	230/22 kV 75 MVA transformer
2036-40		Transformer	GS8-1	115/22 kV 50 MVA transformer
2036-40		Transformer	GS8-1	115/22 kV 50 MVA transformer
2036-40		Transformer	BTM-1	115/15 kV 150 MVA transformer
2036-40		Transformer	KCM-1	115/22 kV 50 MVA transformer
2036-40		Transformer	KCM-1	115/22 kV 50 MVA transformer
2036-40		Transformer	KHK-1	230/22 kV 75 MVA transformer
2036-40		Transformer	KSA-1	115/22 kV 50 MVA transformer
2036-40		Transformer	KSA-1	115/22 kV 50 MVA transformer
2036-40		Transformer	KPS-1	115/22 kV 50 MVA transformer
2036-40		Transformer	KPS-1	115/22 kV 50 MVA transformer
2036-40		Transformer	KTE-1	230/22 kV 50 MVA transformer
2036-40		Transformer	KTH-1	115/22 kV 75 MVA transformer
2036-40		Transformer	MDK 1	230/13 kV 100 MVA transformer
2036-40		Transformer	MDK 1	230/13 kV 100 MVA transformer
2036-40		Transformer	PST-1	230/22 kV 25 MVA transformer
2036-40		Transformer	RTK-1	230/22 kV 50 MVA transformer
2036-40		Transformer	SR2-1	115/22 kV 50 MVA transformer
2036-40		Transformer	STR-1	230/22 kV 50 MVA transformer
2036-40		Transformer	TKK 1	115/22 kV 75 MVA transformer
2036-40		Transformer	Upper Stung Tatay	230/15 kV 186 MVA transformer
2040+	10	New substation	BRY	230/115 kV 200 MVA transformation

**Figure 7 HV Network Plan Cumulative Investment Requirements (\$millions USD<sup>15</sup>)**



<sup>15</sup> All currency is on a Real 2019 USD basis.

**Figure 8 Cambodia's PDP Transmission Plan / Map of HV Network to Year 2040**





## Cambodia Power Development Master Plan 2022-2040

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