

WORLD SMALL HYDROPOWER DEVELOPMENT REPORT 2013

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CAMBODIA



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Recommended citation:

Liu, H., Masera, D. and Esser, L., eds. (2013). *World Small Hydropower Development Report 2013*. United Nations Industrial Development Organization; International Center on Small Hydro Power. Available from www.smallhydroworld.org.

3 Asia

3.4 South-Eastern Asia

3.4.1 Cambodia

Lara Esser, International Center on Small Hydro Power

Key facts

Population	14,952,665 ¹
Area	181,035 km ²
Climate	Tropical and rainy, with little seasonal temperature variation
Topography	Mostly low, flat plains; there are mountains in the southwest and north.
Rain pattern	The monsoon season is from May to November, the dry season is from December to April.

Electricity sector overview

According to the Cambodian Ministry of Energy and Mines, the country has an installed capacity of 537 MW. However, it remains heavily dependent on imported electricity from Vietnam and Thailand as well as on fossil fuel imports for electricity generation (figure 1). Électricité du Cambodge is a fully state-owned limited liability company.

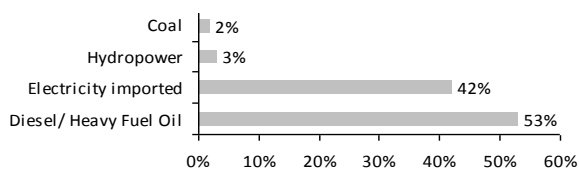


Figure 1 Electricity generation in Cambodia

Source: Ministry of Industry and Mines and Energy²

The national electrification rate in 2010 was 29 per cent.² Urban areas are 100 per cent electrified, as compared to only 12.3 per cent in the rural areas.² Approximately 11.3 million people had no access to electricity in 2009. Four per cent of the population is served by off-grid sources, including mini grids or household systems. The Royal Government of Cambodia has formulated a Rural Electrification Strategy with the target to provide 70 per cent of rural households with electricity by 2030. Electricity shortage facing the remaining rural households (30 per cent) is expected to be solved by a Renewable Energy Development Program which will provide quality renewable energy services in remote regions mostly via solar applications (solar lanterns, solar home systems -SHS). The main components of the Rural Electrification Strategy are as follows: expansion of the existing grids, up-scaling of power generation (hydro, oil, coal) and cross border power supply from neighboring countries (Thailand, Vietnam and Lao People's Democratic Republic), creation of mini grids (diesel, biomass especially gasification,

micro hydropower and battery lighting with solar and wind).³

Small hydropower sector overview and potential

See table 1 for the classification of small hydropower in Cambodia.

Table 1

Classification of small hydropower in Cambodia (Megawatt)

Definition	Installed capacity
Small	not applicable
Mini	>0.5–10
Micro	≤ 0.5

Sources: Association of Southeast Asian Nations³, Cambodia Ministry of Industry, Mines and Energy⁴

The present installed capacity of mini and pico hydropower is 1.87 MW. There is one mini hydropower plant with a 1-MW installed capacity and two micro hydropower plants with a combined capacity of 370 kW under the responsibility of Provincial Electricity Unit of Électricité Du Cambodge.

There are also privately-owned micro- and pico-hydropower plants imported from Viet Nam or China located in the Northern provinces with an installed capacity ranging between 1 kW to 30 kW.⁴ The theoretical potential of mini-, micro- and pico-hydropower has been assessed at around 300 MW (figure 2), and 30 possible small hydropower sites have been identified (table 2).⁴

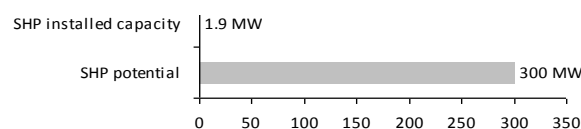


Figure 2 Small hydropower capacities in Cambodia

The Government's small hydropower promotion involves:

- An aim to scale up electricity access in rural areas in order to tackle poverty and foster economic development.
- Private sector participation and encouragement.
- Identifying technical assistance and financial support.
- Making electricity affordable in rural areas.
- Reduction or exception on import tax.

Renewable energy policy

The country targets to achieve 15 per cent of electricity generation from renewable sources by 2015.³ The Cambodian Government has set in its Renewable Electricity Action Plan (REAP, 2002-2012) the objective of providing cost-effective and reliable electricity to rural Cambodia through the use of renewable energy technologies.⁴

Table 2

List of mini and micro hydropower projects to be developed in Cambodia

<i>Project name</i>	<i>Capacity (MW)</i>	<i>Location</i>	<i>Remark</i>
O'Chum II	1.0	Ratanakiri Province	Completed in 1993
O'Mleng	185.0	Mondul Kiry	Completed in 2008, Japan Grand Aid
O'Rimis	185.0	Mondul Kiry	Completed in 2008, Japan Grand Aid
Stung Sva Slap	3.8		On the list of priority mini hydropower projects
Upper St. Siem Reap	0.6.0	-	On the list of priority mini hydropower projects
Lower St. Siem Reap	1.5.0	-	On the list of priority mini hydropower projects
Upper O Sla	2.0	-	On the list of priority mini hydropower projects
Lower O Sla	4.5.0	-	On the list of priority mini hydropower projects
Sre Cheng (St. Daunpe)	130.0	-	On the list of priority mini hydropower projects
O Samrel	33.0	-	On the list of priority mini hydropower projects
Ta Taok (O Chum)	38.0	-	On the list of priority mini hydropower projects
Kompong Lpov (O Doeum Chek)	32.0	-	On the list of priority mini hydropower projects
Bu Sra (O Por)	56.0	-	On the list of priority mini hydropower projects
Bey Srok (O Sien Ler)	78.0	-	On the list of priority mini hydropower projects
Ta Ang (O Cheng)	10.0	-	On the list of priority mini hydropower projects
Dakdeur/Romis	0.2	-	On the list of priority mini hydropower projects
O'Turou Trao	1.1	Kampot	Desk Study
Stung Siem Reap 3	1.7	Siem Rap	Desk Study
O'Katieng	1.0	Rattanak Kiry	Desk Study
O'Sla Up Stream	1.9	Koh Kong	Desk Study
Stung Chikreng	0.8	Siem Reap	Desk Study
Stung Kep	4.1	Kep City	Desk Study
O'Phlai	3.4	Mondul Kiry	Desk Study
Prek Por	4.8	Mondul Kiry	Desk Study

Sources: Cambodia Ministry of Industry, Mines and Energy⁴, Lor⁵

In 2007, the Rural Electrification Fund created as per the Royal Decree of the Kingdom of Cambodia (NS/RKT/1204/048) came into existence. Not under jurisdiction of any specific Ministry, it has relations with the Ministry of Industry, Mines and Energy, the Ministry of Economy and Finance and the Electricity Authority of Cambodia. The grants available under the scheme target private rural operators (Rural Electrification Enterprises, REE). Out of the 200 REEs active in Cambodia, 178 are off-grid enterprises.⁶

Barriers to small hydropower development

- High associated costs for distribution networks connecting mountainous areas, where most economically viable small hydropower sites are located, to consumption areas.
- Lack of small hydropower-related capacities and field expertise.
- Lack of finance for plant development.⁴

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