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Renewable Energy Integration in Nepal Brief Overview

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Energy Consumption Pattern in Nepal





Electricity Access Situation

S.N.	Institution	Access
1	NEA (on grid)	89%
2	AEPC (off-grid)	4%
3	Yet to have access to electricity	7%

Total No. of HHs : 62,00,000 (6.2 million)

Pre-electrified by AEPC: 12,30,539 (1.23 million)

Percentage : 20%

Overlapped by NEA : 16%

Remaining operational off grid MHP and SMG : 4%

AEPC and RE Promotion

- Established: 3rd Nov 1996 (18 Kartik 2053)
- Under the purview of Ministry of Energy, Water Resources and Irrigation
- Governing Board led by Hon. Minister with public, private, financial & civil society sector membership
- Focal agency of GoN for promotion and development of RETs
- Mandated for Energy Efficiency
- Accredited as Direct Access Entity to Green Climate Fund
- Working with Provincial & Local Governments, DPs, private sector, GOs, I/NGOs





AEPC - Cumulative physical progress in RE promotion

Cumulative physical achievement till date (1996 to 2021)S.N.TechnologyUnitCapacityHHs1Mini and micro hydrokW35,986247,9302Improved Water MillNo11,022275,610

		NO	11,022	275,010
3 Solar Home System		No	961,925	961,925
4 Instit	tional Solar Home System	No	2,808	2,808
5 Solar	Minigird, Solar/wind hybrid	kW	1,262	7,537
6 Rooft	op Solar	kW	10,081	13,147
7 Solar	Dryer and Cooker	No	2,457	2,457
8 PVPS	(Drinking water and irrigation	No	2,446	2,446
9 Rocke	et Stove	No	16,015	16,015
10 Metta	alic Improved Cooking Stove	No	103,387	103,387
11 Insitu	tional Gasifier	No	33	33
12 Electr	ic Stove	No	14,349	14,349
13 House	ehold Biogas	No	433,173	433,173
14 Impro	oved Mud Stove	No	1,423,242	1,423,242
15 Urbar	n and Commercial Biogas Plant	No	344	344
16 Produ	uctive Energy Use (MSMEs)	No	1,697	1,697
17 Solar Street Light		No	3,309	3,309
18 Solar energy for religious place and home stay		No	3,966	3,966
	Total			3,513,375



Existing Policies, Strategies and Guidelines

- Rural Energy Policy, 2006
- Renewable Energy Subsidy Policy, 2016
- Renewable Energy Subsidy Delivery Mechanism, 2016
- Minigrid Special Programme Operation Regulation, 2019
- Central Renewable Energy Fund Operation Manual, 2013
- Biomass Energy Strategy, 2017
- National Energy Efficiency Strategy, 2018
- Nationally Determined Contributions, 2016
- National Climate Change Policy, 2019
- Financial Act, 2019: VAT & tax exemption for RE systems
- Guidelines for standardization, quality assurance & monitoring (e.g., Nepal Photovoltaic Quality Assurance, 2015; Nepal Interim Benchmark for solid biomass Cookstoves, 2016)

Existing Plan on RE Sector

15th Periodic Plan (2019/20- 2023/24)

- Long term vision: Sustainable development of modern energy through RE Promotion, expansion and efficiency.
- **Goals:** Ensure access to clean energy by increasing the production and use of alternative/renewable energy and contribute to energy security.
- Strategies:
 - RE as mainstream energy supply
 - Coordination with 3 level governments for promotion of RE and ensure GESI
 - Innovative, sustainable and energy efficient technology promotion
 - Private sector investment in RE sector and carbon market development
 - RE in Agriculture and Environment.
- Target:
 - Mini micro hydro 13 MW
 - Solar Energy 125.4 MW
 - Wind Energy 10 MW
 - Domestic Biogas Plants No. 200,000
 - Improved Cooking Stove No. 500,000
 - Waste to Energy/Large Biogas No. 500
 - MSME No. 2,000
 - Carbon Project Development No. 2

Scaling up RE interventions

- Large Biogas and Waste to Energy: 40 Municipalities working, 5 big projects (5500 m3the largest one) commissioned; 20 such big projects are under construction.
- Minigrids sizes (Minihydro-1 MW; Solar -200 kWp) are under constructions
- Capacity Building of PGs and LGs for DRE and Last-mile electrification
- Establishment of CREF, SECF for PPP DRE project
- Activities on Fuel transition and E-cooking and E- Mobility.
- Grid Interconnection of off grid projects Technical standard,

Master Plan ready (5 projects are already connected).

Carbon Revenue mobilization – CDM : NPR 3 Billion,

GCF : CCS-NPR 6 Billion

Energy Mix for grid Reliability and Quality

On-grid solar & storage systems can enhance reliability at loads or substations,

- Manage peak loads through dispatch ability of stored energy (from day-time solar or night-time hydropower)
- Provide capacity and reduce line loss
- Voltage regulation and stability
- Replacement of captive diesel generators resulting into GHG emission reduction
- Reliable electricity for industries and commercial complex
- Increased economic opportunities and jobs



Renewable Energy Fuel Transition

- Electric Cooking 1 million HHs can use 800 MW and 2 GWh/day (NPR 9.3 billion saving)
- Electric Mobility Electrification of 25% vehicles may consume 5.5 GWh/day (NPR 35 billion saving)
- Pumped Irrigation 450 MW to irrigate 300,000 ha. of agricultural land (NPR 20 billion saving)
- Industries Replace coal in process heat and boiler (60% energy) 1500 MW (6,600 GWh)
- Energy Storage Systems; Battery, Pumped Hydropower and Green Hydrogen to Ammonia









THANK YOU