

Policies and the Master Plan for Renewable Energy

By

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PROGRAMMMES & STRATEGIES FOR RE

1. Programmes to Diversify National Energy Mix

- i. Renewable Energy Programme
- ii. Nuclear Power Development Programme
- iii. Clean Coal Development Programme

2. Strategies

a. Increase RE Installed Capacity & Access to Electricity

- i. Utility Scale Renewable Energy
- ii. Scale-Up Renewable Energy
- iii. Mini-grid Electrification
- iv. Off-grid Electrification

b. Minimize Environmental Impact of Energy Supply

- i. Programme for Enhancing Access to Sustainable Cooking Fuels
- ii. Programme for Energy Efficiency and Conservation

c. Strengthen Institutional and Human Resource Capacity for the Sector

- i. Programme for Capacity Development in Renewable Energy

RENEWABLE ENERGY POLICY FRAMEWORKS

1. Renewable Energy Act 2011 (Act 831)

- i. Grid Code for utility scale RE grid interconnection
- ii. Net metering Code
- iii. Guidelines on Renewable Energy Purchase Obligation (REPO)
- iv. Licensing framework developed
- v. Feed-in-Tariff Scheme in place since Oct 2013
- vi. Competitive Bidding for Solar with impressive results

2. Mini-grid Policy

- i. MGs mainstreamed into national electrification scheme and aligned with the pro-poor policy on rural electrification
- ii. Public sector-led Business Model: ownership (part of NES-GoG)
- iii. Management of mini-grid installations
 - VRA responsible for O&M of RE generation assets
 - ECG and NEDCo responsible for O&M of distribution within their respective territories.
- iv. ZERO connection fee charge for RE-based mini-grid customers.
- v. Tariff: the existing Uniform Tariff Policy (UTP) applies to RE-based mini-grid customers. e.g. lifeline consumption which is equivalent to 50kWh/month
 - PURC includes MGs in the National Electricity Tariff Rate Setting Methodology (rate of MG deployment)

3. Nuclear and Clean Coal Draft Policy

- i. Promote and support research and development programmes related to nuclear and Clean Coal energy.
- ii. Support the development of manpower and research capacity for nuclear science and technology.
- iii. Promote public support for nuclear energy and encourage private investment in the development of nuclear power technology.
- iv. Generate electricity from coal and nuclear in the medium to long term

4. Draft Bioenergy Policy

RENEWABLE ENERGY POLICY FRAMEWORKS..CONT'

- Hydropower development
 - VRA
 - BPA
- Tendering of RE Project
- Price Cap (tariffs not above US\$10cent/kWh)
- Solar for public establishments

RENEWABLE ENERGY MASTER PLAN (REMP)

- Investment-focussed framework to promote and develop REs for sustainable economic growth, and contribute to improved social life and reduction of adverse climate change effects.
- Provides long term perspective to RE development in the country (up to 2030)
- Aligned and mainstreamed into NIP of the 40 year development plan

Provides clear and attainable targets for the RE sector.

HIGHLIGHTS OF REMP TARGETS

- Increase RE installed capacity from current 38MW (2015) to 2561MW (2030);
- Reduce the overreliance on biomass as fuel for cooking and other thermal applications;
- Contribute to universal access goal through deployment of decentralized RE electrification in over 1000 communities;
- Promote local content and participation in RE industry;

The Broad Strategies for REMP Implementation

- Boost and sustain local assembly and manufacturing of RETs using smart incentives
- Implement preferential procurement regime (LC&P) for locally manufactured RETs, particularly, public financed projects
- Innovative financing supports for private sector
- Institutionalized tendering of major RE projects to achieve VFM.
- Capacity and awareness
- Support Research, Development, Demonstration and Scale-ups
- Develop and enforce LIs and regulatory frameworks to sustain RE development, etc.

RE TARGETS

RET	Ref	COMMULATIVE INSTALLED CAPACITY [MW]												
		Cycle I			Cycle II					Cycle III				
		2015	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029
Large Hydro	1,580	1,580	1,580	1,580	1,580	1,580	1,580	1,580	1,580	1,580	1,580	1,580	1,580	1,580
Small Hydro	6	-	-	6	6	54	54	114	114	114	201	251	291	346
Waste-to-energy	-	-	2	2.00	2	2	2	2	5	5	5	10	10	10
Biomass	-	-	8.5	68.5	68.5	68.5	120	120	175	200	200	250	250	300
LFGTE/Biogas	-	0.10	0.1	1.5	4	4	7	7	10	13	13	17	17	20
Wave	-	-	5	10	10	10	15	20	25	45	80	80	100	115
Wind	-	-	-	125	125	270	270	350	400	450	500	550	600	650
Solar PV	23	88	176	313	373.4	433.8	494.2	554.6	615	706.6	798.2	889.8	981.4	1,073
Total (Incl. L Hydro)	1,609	1,668.1	1,771.6	2,106	2,168.9	2,422.3	2,542.2	2,747.6	2,924	3,113.6	3,377.2	3,627.8	3,829.4	4,094
Total (Exc. L Hydro)	29	88.1	191.6	526	588.9	842.3	962.2	1,167.6	1,344	1,533.6	1,797.2	2,047.8	2,249.4	2,514

Project installed RE capacity (excl. large hydro) is about 2,514MW

The expected investment (excl. large hydro) over the three implementation cycle is US\$7.2b

Implementation plan

- The REMP is proposed to be implemented in three (3) cycles
 - First cycle (or transition phase) running from 2018 to 2020.
 - Second cycle will run from 2021 to 2025 and
 - Third Cycle will run 2026 to 2030 respectively (see Table E1).
- Each cycle will be reviewed in the last year of implementation and the outcome used to improve the implementation of the next cycle.

THANK YOU