National Workshop to prepare BPDP and DPDP

Ministry of New and Renewable Energy

Government of India

5 January 2023

India – Renewable Energy targets

- Under Paris Agreement India declared its NDCs inter-alia including
  - Achieving 40% of electric installed capacity from non-fossil sources by 2030
  - Reducing carbon intensity of GDP by 33-35% from 2005 level by 2030
- In 2015 the National Solar Mission targets enhanced five times
  - Initial target of 20 GW by 2022 increased to 100 GW
- Total RE capacity to reach 175 GW by 2022
  - Over 166 GW RE capacity (including large hydro) already achieved
- NDC of 40% electric installed capacity from non-fossil sources achieved 9 years ahead in November 2021
- At COP26 Prime Minister of India announced “Panch-Amrit” including reaching 500 GW non-fossil energy capacity by 2030 and Net-Zero by 2070.

Initiatives taken by MNRE for Rural Areas

- Support for solarization of agriculture pumps for 35 lakh farmers under PM-KUSUM
- Support for installation of solar power plants up to 2 MW capacity on farmer's/ Panchayat's land
- Support for installation of solar rooftop systems to rural households
- Installation of off-grid applications: solar street lights and off-grid solar power plants, biogas plants
- Decentralized Renewable Energy (DRE) Livelihood Applications

PM-KUSUM – Scheme

- The Scheme consists of three components:
  - **Component A:** 10,000 MW of Grid Connected Solar Plants up to 2 MW capacity
  - **Component B:** 20 lakh standalone Solar Ag Pumps for off-grid areas
  - **Component C:** Solarisation of 15 lakh grid-connected Ag Pumps including feeder level solarisation
- Total 30.8 GW capacity to be created by the year 2026 with Central Financial Support of Rs. 34000 Cr
- Subsidy upto 50% from Central and 30% from State Government for Components B and C
- Over 84 MW capacity solar plants installed and 1.7 lakh pumps solarised

Role of Panchayats in PM-KUSUM

- Under Component-A, Panchayats can have solar power plants installed on panchayat land
- Under feeder level solarization (Component-C), Panchayats can pool in their funds to help the Discoms to solarize the feeders.
- Community level solar irrigation projects can be installed under Component-B with support from both Central & State Government
- Panchayats can also help in increasing awareness for larger participation of farmers in the Scheme

Snapshot of work under PM-KUSUM

Rooftop Solar Programme Ph-II

- Subsidy only for Residential sector – target 4 GW
  - @ 40% for capacity up to 3 kWp and thereafter 20% up to total 10 kWp capacity
  - @ 20% for GHS/RWA capacity up to 500 kWp
- Allocated over 3.4 GW to 66 DISCOMs
  - Achieved 1.5 GW
- Process simplified and a National Portal launched

Role of Panchayats in Rooftop Solar

- Inspire households to install rooftop solar systems
- Help in aggregating demand for community level systems with net-metering facility under RTS Scheme
- Those not having strong roofs can also take benefit of rooftop solar programme with Virtual Net Metering (VNM) wherein the electricity produced from the Solar plant is allocated to multiple customers' bills.
- Increase awareness for larger participation of households in the Scheme
- Facilitating in uptake of the Scheme GPs can also improve their ratings for National Panchayat Awards

Limitation of Net Metering for Rooftop Solar plants

If premises of the Consumers does not have adequate

- **roof area/roof right**
- **roof strength for installation of RTS**
- **shadow free roof**

Then, it is not possible to set up RTS plant and avail the benefits of Net Metering

Solution – Virtual Net Metering

Virtual Net Metering

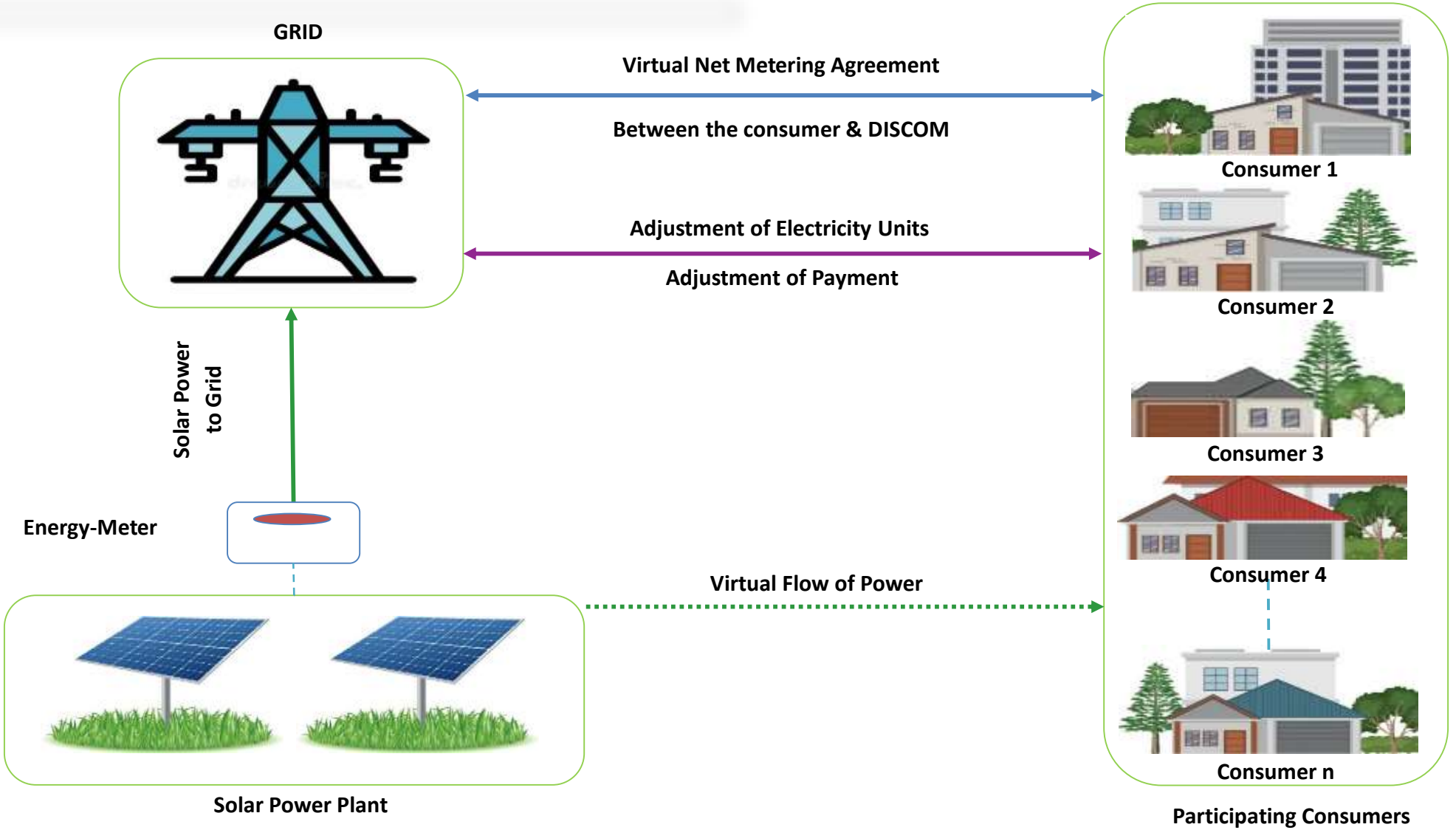
- A group of consumers set up a Renewable Energy System (RES). Unutilized areas like Lakes , Raw water tanks, Parking Areas and seasonal rivulets can be used to install Solar Power Plants

- The entire energy generated/injected is exported to the grid through an energy meter.

- The energy exported is adjusted in more than one electricity service connection(s) of participating consumers.

- The group of consumers electricity service connection(s) and RES Should be within same distribution licensee’s area of supply

Virtual Net Metering



Advantages of Virtual Net Metering

Apart from the advantages of Net Meter, VNM has following advantages:

- ✓ Instead of individual RTS plants, a single large plant has the benefit of economies of scale.
- ✓ Easier O&M with reduced cost and higher generation.
- ✓ Solution of Roof Right Problem in Group housing societies: In Group housing societies, single large SPV Power Plant can be installed and benefits of energy generation can be shared among residents.

To install solar plants under VNM & avail its benefits in a State/UT, the State/UT regulator has to notify VNM regulations

Regulators and States/UTs having VNM

- **DERC**, **JERC for Goa and UTs** (Andaman & Nicobar, Lakshadweep, Dadra & Nagar Haveli and Daman & Diu, Chandigarh, and Puducherry)
- **JERC for Jammu & Kashmir and Ladakh** have adopted the regulations of JERC for Goa and UTs.
- After follow up from the MNRE, **OERC** has also issued VNM regulations.
- In total, **10 States and UTs** have issued VNM regulations.
- The **Solar Policy of Jharkhand** also allows VNM.
- Ministry has already requested **Forum of Regulators** and **pursuing with other SERCs** to notify the regulations for allowing VNM.

SPV Plant of 500kWp at Dhanas Lake, Chandigarh

The power generated from the above SPV Power Plant is being off-setted with 14 nos. diff. buildings of Forest Deptt, Chandigarh along with Additional Deluxe Building of U.T. Secretariat, Chandigarh

Off-grid Solar Programme

- Under the Programme, support is provided for installation of off-grid solar applications:
  - Solar Street Lights
  - Off-grid Solar Power Plants for public institutions
  - Solar Study Lamps
- Phase-III of the Programme recently closed
- Proposal for continuation of Programme under consideration
- Provision for solarizing public institutions such as PHC, Anganwadi centers, Schools, Panchayat Bhawans, CSCs, etc. being considered

Snapshot of Work under Offgrid Solar Programme

Other RE Sources

- Apart from solar there are other RE sources locally available
- Mini, Micro and Small Hydel Plants in hilly regions can provide electrical/mechanical power
- Biomass gasifiers in major agriculture states can provide reliable electricity supply
- Biogas plants can be used for cooking and electricity generation
- Wind turbines can be installed in wind potential areas
- Other technologies like Geo-thermal, tidal energy, wave energy can also be explored wherever possible

Smart Villages

- Similar to Smart Cities concept **Smart Villages** can be developed
- Role of States in promoting Smart Villages
  - Help the panchayats in creating energy eco-system of a village
  - Develop new & innovative models sensitive to local needs
  - Focus on agriculture, healthcare, education and skilling
  - Enable energy security through community participation
- AREAS, NRDC and SEWA have developed **Hariyali Gram** concept to provide
  - energy security for rural communities
  - scale up off-grid clean energy solutions
  - enhanced education and livelihood opportunities

- MNRE and MoPR can provide Technical Assistance and Financial Support

Clean Energy Solutions

Lighting

Expand the use of LED bulbs, LED tubelights, and solar lamps to improve efficiency of electricity consumption and reduce expense

Cooling

Expand the use of efficient fans and cool roofs to increase thermal comfort, improve efficiency of electricity consumption, and reduce expense

Irrigation

Advance the use of solar pumps – to reduce costs and air pollution – and micro-irrigation practices to improve water use efficiency

Household Cooking and Key Livelihood Opportunities

Cleaner cooking options to reduce indoor air pollution and drudgery; and for livelihoods – promote electric three-wheelers and solar-based appliaces such as driers and milk chillers

Community-Level Interventions

Install solar street lights and develop green schools and green health care centres (multiple appliances) to provide reliable and clean energy services and build awareness

Decentralised Renewable Energy (DRE) Livelihood Applications

11.9 crore
Farmers

3.4 crore
Micro enterprises

Clean energy innovations for livelihoods worth
INR 3.5 lakh crore
market in rural India

Increase income and reduce drudgery

Mechanisation through DRE – reduce drudgery and time poverty, improve productivity and increase income.

Supplement grid supply and reduce reliance on diesel

Successful pilots and business models of DRE livelihood applications have been tested at the field level and have the potential to be replicated in larger quantities.

Many clean energy based livelihood applications are already available

Details available at https://thecleannetwork.org/off-grid-portal.php

Ministries/Departments support DRE livelihood applications in different ways

There is need to promote DRE in an organized manner

Solar Spinning Mills

Solar-powered vertical fodder growing units

Solar dryers

Solar refrigerators and deep freezers

Framework for promoting (DRE) Livelihood Applications - Provisions

- **Scale-up**
- **Support Innovation and R&D**
- **Skill Development & Capacity Building**
- **Standardisation and Quality Control**
- **Public Information and Awareness**
- **Access to Finance**
- **Converge Schemes of other Ministries**

MNRE is in the process of formulating a scheme to provide financial support for promotion of DRE Livelihood applications

- Higher capital subsidy upto 50% will be available for certain applications
- Apart form capital subsidy, support will be provided for access to finance through interest subvention and credit guarantee mechanism
- Support will also be available for R&D, IEC activities, monitoring and evaluation, etc.

Biogas Programme - Objectives

- To provide clean gaseous fuel mainly for cooking and lighting purposes for individual households by setting up of small biogas plants in the capacity range from 1 m^3 to 25 m^3
- To promote setting up of biogas based power generation (off-grid) projects for power generation in the capacity range (3 kW to 250 kW) and thermal energy from the biogas produced from Biogas plants of size greater than 25 m^3 up to 2500 m^3 size
- To mitigate drudgery of rural women and reduce pressure on forests;
- Creation of a pool of skilled manpower for all developmental activities for biogas technology and entrepreneurial ventures.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SHOT ON OPPO

Biogas – A Clean Cooking Solution

Subsidy in Biogas Programme (1 to 25 m^3)

S. No.	Category	CFA (in ₹ Thousand) for Biogas Plant					
		1m^3	2-4 m^3	6 m^3	8-10 m^3	15 m^3	20-25 m^3
A1	**NER States / Hilly States / Special Category States and SC/ST of all states**	**17**	**22**	**29.2**	**34.5**	**63.25**	**70.4**
A2	All other States (**General Category**)	**9.8**	**14.35**	**22.7**	**23**	**37.95**	**52.8**
B1	CFA for **linking with sanitary toilets**	**1.6**	**1.6**	**1.6**	**1.6**	**Nil**	**Nil**
B2	CFA for biogas plant linked with **biogas slurry filter unit**	**1.6**	**1.6**	**1.6**	**1.6**	**1.6**	**1.6**
C.	**Turn-Key Job Fee** for construction, of biogas plants	• ₹ 3,000/- plant fixed dome design from 1 to 10 m^3 and • ₹ 5,000/- per plant for 15 to 25 m^3					
D.	**Adm Charges**– to State PIA	(Amount in ₹)					
1	**100 - 1999** nos. Plants.	**1,00,000**					
2	**2,000 - 5,000** nos plants	**10,50,000**					
3	**Above 5,000** nos. plants	**24,50,000**					

Subsidy in Biogas Programme (1 to 25 m^3)

E	Support for Training courses	
1	**Users Course**	**4,000**
2	**Staff Course**	**10,000**
3	**Construction-cum Maintenance / Refresher Course**	**50,000**
4	**Turn-key Workers & Management Course/ Skill Development**	**75,000**
F	Incentive for **saving fossil fuels** by using 100% biogas in **Biogas engines**.	**₹ 10000/- per Biogas** based Generator set / Biogas engine water Pumping System (BPS) for plants of **10 to 25 m^3 would** be provided.

Subsidy in Biogas Programme (>25 to 25000 m^3)

Power Gen. Capacity (kW)	CFA		Adm Charges for PIA	
	Power Generation	Thermal Application	Power Generation	Thermal application
3 KW – 50 kW	₹45,000 per kW	₹ 22,500 per kWeq thermal/ cooling	10% of the CFA	5% of the CFA
>50 KW –200 kW	₹40,000 per kW	₹ 20,000/- per kWeq thermal/ cooling	₹2,00,000/- (fixed)	₹1,00,000/- (fixed)
>200 kW – 250 kW	₹35,000 per kW	₹17,500/- per kWeq thermal/ cooling	₹2,50,000/- (fixed)	₹1,00,000/- (fixed)

- Administrative Charges towards Supervision, DPR & Inspection
- 20% additional CFA for SC/ST, NER, Island & Registered Gaushalas

Physical Targets / Budget under Biogas Programme

S N	Year	Proposed Physical Targets (Nos. Of Biogas Plants) (in numbers)		Proposed financial outlay as per the physical goals (₹ in Crores)
		Small size biogas plants	Medium size ($>25m^3$ to 2500 m^3)	
1	2022-23	22,500	22	42.50 + 5.50 = 48.0
3	2023-24	46,000	22	89.50 + 5.50 = 95.0
4	2024-25	48,000	25	94.00 + 6.25= 100.25
5	2025-26	50,000	25	99.00+6.25 = 105.25
Total		1,66,500	94	325+23.50= 348.50

Biogas Implementing Organizations and Strategy

- State Government/ Union Territories Departments (Agriculture & Rural Development)
- State Government/ Union Territories Agencies
- Khadi and Village Industries Commission (KVIC)
- National Dairy Development Board (NDDB)
- Biogas Development and Training Centres (BDTCs)
- Implementation following cluster of Villages/ Blocks/Districts.
- Implementation approach through entrepreneurs mode.
- Implementation activities monitored through Monthly and Quarterly Progress Reports.
- CFA will be released to PIA based on actual achievements (quarterly)

MNRE Portal:

https://biourja.mnre.gov.in

https://biogas.mnre.gov.in

Email us:

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www.mnre.gov.in

Thank You!