03

STANDING COMMITTEE ON ENERGY

(2019-20)

SEVENTEENTH LOK SABHA

MINISTRY OF NEW AND RENEWABLE ENERGY

DEMANDS FOR GRANTS
(2020-21)

THIRD REPORT

LOK SABHA SECRETARIAT
NEW DELHI

March, 2020/Phalguna, 1941 (Saka)

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Presented to the Lok Sabha on 12.03.2020

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REPORT

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1.	Shri R.C. Tiwari	Joint Secretary
2.	Shri N.K. Pandey	Director
3.	Ms. Deepika	Committee Officer

INTRODUCTION

I, the Chairperson, Standing Committee on Energy, having been authorized by the Committee to present the Report on their behalf, present this Third Report of the Committee on 'Demands for Grants of the Ministry of New and Renewable Energy for the year 2020-21'.

2. The Committee took evidence of the representatives of the Ministry of New and Renewable Energy on 18th February, 2020. The Committee wish to express their thanks to the representatives of the Ministry for appearing before the Committee for evidence and furnishing the desired information in connection with examination of Demands for Grants (2020-21).

3. The Report was adopted by the Committee at their sitting held on 27th February, 2020.

4. The Committee place on record their appreciation for the assistance rendered to them by the officials of the Lok Sabha Secretariat attached to the Committee.

5. For the facility of reference and convenience, the observations and recommendations of the Committee have been printed in bold letters in Part-II of the Report.

NEW DELHI
March 06, 2020
Phalguna 16, 1941 (Saka)

SHRI RAJIV RANJAN SINGH
alias LALAN SINGH
Chairperson,
Standing Committee on Energy

REPORT

PART I
NARRATION ANALYSIS

CHAPTER I
INTRODUCTORY

1.1 In India, Renewable Energy has started playing an increasingly important role in the augmentation of Grid Power, providing energy access, reducing the consumption of fossil fuels and helping India pursue its low carbon development path. In its Intended Nationally Determined Contribution (INDC), India has made a pledge to increase its share of non-fossil-based installed power capacity to 40 % by 2030 and it also commits to reduce its Green House Gas emissions intensity per unit GDP by 33 to 35 % below 2005 levels. India's INDC builds on its goal of installing 175 GW of Renewable Power Capacity by 2022 and it is committed to further increase its Renewable Energy Capacity addition target to 450 GW as a part of a stronger climate action plan.

1.2 India is endowed with vast Renewable Energy Potential. The estimated potential for renewable energy in the country from solar, wind, small hydro and biomass is given below:

S. No	Resource	Estimated Potential (In GW)
1.	Solar Power	748.99
2.	Wind Power	302.251 *[at 100 m. height]*
3.	Small Hydro Power (up to 25 MW)	211.33
4.	Biomass Power	17.53
5.	Cogeneration - Bagasse	5
6.	Waste to Energy	2.55
Total		**1097.46**

1.3 Given below is the share of Renewable Energy capacity in total installed power capacity (as on 31.01.2020):

Sector	Installed Capacity	% Share
Thermal Power	230.19 GW	62.43 %
Nuclear Power	6.78 GW	1.84 %
Large Hydro Power	45.40 GW	12.31 %
Renewable Energy	86.32 GW	23.42 %
Total	**368.69 GW**	**(100%)**

1.4 The Ministry of New and Renewable Energy (MNRE) is the nodal Ministry of the Government of India for all matters relating to renewable energy resources. Under the Allocation of Business Rules, the MNRE has been assigned the following specific items:

- Research and development of biogas and programmes relating to biogas units;
- Commission for Additional Sources of Energy (CASE);
- Solar Energy including Solar Photovoltaic (SPV) devices and their development, production and applications;
- All matters relating to small/mini/micro hydel projects of, and below, 25 MW capacity,
- Programmes relating to improved chulhas and research and development thereof;
- Indian Renewable Energy Development Agency;
- Research and development of other non-conventional/renewable Sources of energy and programmes relating thereto;
- Tidal Energy;
- Integrated Rural Energy Programme (IREP);
- Geothermal Energy.

CHAPTER II

DEMANDS FOR GRANTS OF THE MINISTRY FOR 2020-21

2.1 The Ministry of New and Renewable Energy presented Demand No. 70 to the Parliament for the financial year 2020-21 on 6th February, 2020. The Charged and Voted provisions made in the Revenue and the Capital Heads of the Budget are as under:

(Rs. in crore)

	Revenue	Capital	Total
Charged	---	---	---
Voted	5701.00	52.00	5753.00

2.2 A statement showing the details of the Budget Estimates for the year 2020-21 *vis-à-vis* that of Budget Estimates/Revised Estimates (BE/RE) of 2019-20 and Actuals of 2018-19 is given at ***Annexure-I*****.**

2.3 The Plan Outlay of the Ministry of New and Renewable Energy during the year 2019-20 and for the year 2020-21, as furnished by the Ministry, is given below:

(Rs. in crore)

Components of Plan Outlay of MNRE	**2019 -20**		**2020-21**
	BE	**RE**	**BE**
Budgetary Support	5254.83	3891.74	5753.00
IEBR	12353.81	12466.32	13726.74
Total	**17608.64**	**16358.06**	**19479.74**

2.4 On a query regarding the allocations sought for the year 2020-21 and the amount actually sanctioned by the Ministry of Finance, the Ministry stated that:

> "An allocation of Rs. 9523.04 crores was sought for the year 2020-21. Rs. 5753.00 crores have been allocated by the Ministry of Finance (scheme component plus non-scheme component) for the year 2020-21 as given below":

S. No	Name of Scheme	BE 2020-21 proposed By Min/Dep	Actual BE 2020-21 allocated by MoF
1	Grid Interactive Renewable Power	6677.35	4350.00
2	Off-Grid/Distributed and Decentralized Renewable Power	2417.00	1184.20
3	Research and Development	60.00	20.00
4	Supporting Programmes	131.85	92.30
Total of Central Sector Schemes		**9286.20**	**5646.50**
5	Secretariat Economic Services	49.49	46.50
6	Autonomous Bodies (ABs)	54.00	8.00
7	Office Buildings	133.35	52.00
Total of Non-Scheme		**236.84**	**106.50**
Total Outlay on Ministry of New and Renewable Energy		**9523.04**	**5753.00**

2.5 When asked about the reasons for hike/reduction in Central Plan Outlay for the year 2020-21 as compared to the last year, the Ministry stated that:

> "For the year 2020-21, BE is Rs. 5753 crores and BE and RE for the year 2018-19 was Rs. 5254.83 crores and Rs. 3891.74 crores respectively. During the year 2020-21, there is an increase of Rs. 498.17 crores over the BE of 2019-20 which is an increase of only about 9.48 %. However the demand projected by the Ministry was Rs. 9523.04 crores."

2.6 When asked if the allocation made for the year 2020-21 would be sufficient to achieve the physical targets, the Ministry stated that additional funds required, if any, would be sought at RE stage.

2.7 The Financial Allocations & Physical Targets for various schemes/programmes for 2020-21, as furnished by the Ministry, are given below:

Grid Interactive Renewable power	BE (Rs. in crores)	Physical Target
Wind Power	1299.35	3000 MW
Hydro power	100.00	100 MW
Bio Power*	75.00	280 MW
Solar power	2149.65	9000 MW
KUSUM	300.00	3000 MW small scale solar plants and solarization of 3 lakhs agricultural pumps

Green energy Corridors	300.00	8000 cKm (cumulative)
EAP	1.00	NA
Interest Bonds	125.00	NA

Off-Grid/Distributed and Decentralized Renewable power	**BE (Rs. in crores)**	**Physical Target**
Wind Power	3.01	Program discontinued. Budget provision likely for catering pending liabilities.
Hydro power	2.00	Program discontinued. Budget provision likely for catering pending liabilities.
Bio Power	53.00	Target included in Grid Bio Power target of 280 MW
Solar power	366.14	1200 MWeq.
KUSUM	700.00	437500 stand alone Solar Pumps
Biogas Programme	60.00	100000 Nos.
Other Renewable Energy Applications	0.05	NA

* Including Off grid bio power

2.8 Given below is the Output-Outcome Framework (2020-21) for the Schemes/Programmes of the Ministry of New and Renewable Energy:

Wind Power-Grid Interactive Renewable Power (CS)						
Financial Outlay	**Outputs 2020-21**			**Outcomes 2020-21**		
2020-21	**Outputs**	**Indicators**	**Target**	**Outputs**	**Indicators**	**Target**
Rs. 1299.35 crores	Commissioning of Wind Power Generation Capacity (MW)	Generation Capacity Commissioned in Wind Power	3000	Electricity Generation from Wind Energy Projects	Generation in BU	70

Solar Power-Grid Interactive Renewable Power (CS)						
Financial Outlay	**Outputs 2020-21**			**Outcomes 2020-21**		
2020-21	**Outputs**	**Indicators**	**Target**	**Outputs**	**Indicators**	**Target**
Rs. 2449.65 Crores (includes Rs. 300 crores under PM-KUSUM)	Commissioning of Solar Power (Ground Mounted/Roof-top) Generation Capacity in the Country(MW)	Generation Capacity Commissioned in Solar Power	9000	Electricity Generation from Solar Power	Generation in BU	52

Solar Power-Off Grid/ Distributed and Decentralized Renewable Power (CS)						
Financial Outlay	**Outputs 2020-21**			**Outcomes 2020-21**		
2020-21	**Outputs**	**Indicators**	**Target**	**Outputs**	**Indicators**	**Target**
Rs. 1066.14 Crores (includes Rs. 700 crores under PM-KUSUM)	Installation of Off-Grid and Decentralized Solar Power Generation Capacity	Capacity Commissioned in Off-Grid & Decentralized Solar Power (MW eq)	1200	Installation of Off-Grid and decentralized Solar Power Generation	No. of Solar Street Lights Installed	3,00,000
					No. of Solar Pumps Installed	1,00,000
					Capacity of Off-Grid Solar Power Packs Installed (MW)	10
					No. of Solar Study Lamps Distributed	15,00,000
					No. of Agricultural Pumps Solarised	25,000
					Capacity of Grid connected Solar Power Plants upto 2 MW	500

CHAPTER III

REVIEW OF PAST PERFORMANCE OF THE MINISTRY

I. BUDGET ALLOCATION AND UTILIZATION

3.1 The details of the year-wise allocation (BE/RE) along with expenditure for the years 2017-18, 2018-19 and 2019-20 are given below:

(Rs. in Crore)

	2017-18			2018-19			2019-20		
	BE	**RE**	**Actual Exp.**	**BE**	**RE**	**Actual Exp**	**BE**	**RE**	**Actual Exp as on 31.01.2020**
GBS+ NCEF*	5472.84	4080.00	3768.37	5146.63	5146.63	4476.20	5254.83	3891.74	3152.88
IEBR	8293.73	9515.70	10541.27	10316.84	10835.14	10459.15	12353.81	12466.32	7284.09
Total	13766.57	13595.70	14309.64	15463.47	15981.77	14935.35	17608.64	16358.06	10436.97

*NCEF support was only upto 2017-18.

3.2 When asked about the reasons for variations in the BE/RE and actual expenditure during last three years, the Ministry stated that:

> "2017-18 and 2018-19: The expenditure during 2017-18 was 92.37% and during 2018-19 was 86.97%. These shortfalls were due to not receiving adequate proposals from any of North Eastern states under various schemes. Research and development projects are continuous efforts in nature with duration generally three to four years. Funds are released after completion of various milestones achieved and proper evaluation of the ongoing projects. As a result there was a shortfall in the actual expenditure as some of the milestones/evaluation could not be completed in time.
>
> Shortfall in expenditure during 2018-19 was due to delay in launch of PM-KUSUM Scheme and AJAY Phase-II Scheme. Further due to non-working PFMS on 30-31.03.2019 many bills were returned.
>
> 2019-20: The RE 2019-20 is likely to be fully utilized."

3.3 Quarter-wise utilization of Budget allocations during the last three years, as submitted by the Ministry, is given below:

FY	BE	RE	Actual exp.	Quarter			
				1st	2nd	3rd	4th
2017-18	5472.84	4080.00	3768.37	1522.13	1065.32	124.32	1207.14
2018-19	5146.63	5146.63	4476.20	940.52	1156.56	775.08	896.21

2019-20	5254.83	3891.74	3152.88 (As on 31.01.2020)	875.74	1861.40	320.29	95.45 (as on 31.01.2020)

3.4 When asked about the reasons for such uneven expenditure in each quarter and if the quarterly expenditure during these years was as per the plan and norms, the Ministry stated that:

> "Quarterly expenditure is broadly in line with the Ministry of Finance norms. A periodical monitoring mechanism is already in place to ensure that phasing of expenditure is as per the norms prescribed by the Ministry of Finance."

II EXTERNAL FINANCIAL ASSISTANCE

3.5 When asked about the projects which are being run with the external financial assistance, the Ministry stated as under:

> "MNRE – UNDP/GEF project titled "Scale Up of Access to Clean Energy (ACE) for Rural Productive Uses" is an initiative to enhance the use of reliable and affordable renewable energy for rural productive uses/livelihoods in un-served and under-served areas in states of Assam, Madhya Pradesh and Odisha for strengthening rural livelihoods, improving income generation and reduce use of fossil fuels. The objective of project is to scale up access to clean energy for livelihoods in rural areas for reducing GHG emissions.
>
> The duration of the project is 5 years w.e.f. 23rd August, 2015 (extended till 30 June 2020). The estimated total project cost of this scheme is about US $ 23.04 Million (equivalent Rs. 148 Cr.), with Rs. 70 crores being the contribution of GoI, Rs. 31 crore contribution from GEF and UNDP and Rs. 47 crores to be mobilized through sources such as State Govt. funds, CSR, beneficiary contribution, etc.
>
> **Project component**
>
> - Development and deployment of key Renewable Energy-rural livelihood application packages.
> - Supply chain for Renewable Energy technology supply and service providers for enhancing rural livelihoods.
> - Policy and regulatory support for Renewable Energy-rural livelihoods applications.
> - Financial support for decentralised Renewable Energy-rural livelihoods applications."

3.6 On being asked about the details regarding external assistance received and utilized in the above mentioned project, the Ministry stated that:

"The sources of such external assistance are Global Environment Facility (GEF) and UNDP funding. Assistance available is mainly for providing technical support in the form of conducting feasibility study, preparation of DPR, capacity building, creating awareness, demonstration of projects, etc. External Financial Assistance received from GEF is as follows":

International Financial Assistance received during the year 2019-20	
Budget Support	Rs 40 crores
External Aid through Budget	Rs. 30 crores
Fund Utilized in 2019	Rs 19,77,169

3.7 The Ministry stated that the external financial assistance received has not been sufficient so as to fully or partly finance any scheme/programme of the Renewable Energy Sector.

III EFFECT OF GST ON RENEWABLE ENERGY SECTOR

3.8 When asked about the effect of GST on Renewable Energy Sector, the Ministry in its reply stated that:

"Prior to implementation of GST, the goods/equipment/material required for initial setting up of Solar Power Generating Systems were exempt from payment of Central Excise Duty & were attracting a concessional rate of 5% for Basic Customs Duty on issuance of an end-use certificate from MNRE. Further, Solar PV modules which constitute more than 50% of the cost of the solar power generating systems, were not attracting any duty. Subsequently, as per the notified GST rates, 'Renewable energy devices and spare parts for their manufacture', both under Chapter 84 (Mechanical Devices) and Chapter 85 (Electrical Devices), have been kept in 5% GST slab as follows:

Renewable energy devices and spare parts for their manufacture	**GST Rate: 5%**
a. Bio-gas plant b. Solar power based devices c. Solar power generating system d. Wind mills and wind operated electricity generator e. Waste to energy plants/ devices f. Solar lantern/ solar lamp g. Ocean waves/tidal waves energy devices/plants h. Photo voltaic cells, whether or not assembled in modules or made up into panels	

3.9 Further explaining the disputes/ambiguity regarding applicable rate of GST on Solar power Generating System, the Ministry stated that:

> "With respect to Solar Power Generating System, there were disputes/ambiguity regarding applicable rate of GST. In order to resolve the disputes regarding the applicable rate of GST, Ministry of Finance vide its Notification No. 25/2018-Integrated Tax (Rate) dated 31.12.2018, has clarified the goods–to–services ratio for "Solar Power Generating System" as 70:30, with goods comprising 70% of value - taxable @5%, and services comprising balance value - taxable @ 18%. As the resultant effective rate of GST for "Solar Power Generating System" became 8.9 % *[(70% x 5%) + (30% x 18%)],* which is far more higher than the intended rate of 5% GST.
>
> Central Electricity Regulatory Commission (CERC) has issued Orders acknowledging "Imposition of GST" as "Change in Law" and directing Procurers for payment of compensation to developers, due to "Change in Law" event of "Imposition of GST", as one-time payment or mutually agreed annuity basis payment. However, it is understood that the payment of compensation is stuck due to poor financial health of the Dicsoms and lack of mutual agreement reg. annuity basis payments."

3.10 On being asked about the steps that had been taken to ensure that the Renewable Energy Sector does not get adversely affected by GST, the Ministry stated as under:

> "(a) MNRE has requested Ministry of Finance to review its decision to keep the goods–to–services ratio for "Solar Power Generating System" as 70:30, so that the effective rate of GST on "Solar power generating system", is as close to 5% as possible.
> (b) MNRE has already requested Ministry of Finance to make an amount of Rs 4,000 crore available to MNRE, for providing compensation for the financial impact of imposition of GST on solar projects.
> (c) Further, MNRE has directed Solar Energy Corporation of India Limited (SECI) & NTPC Limited to file appeals against orders of Central Electricity Regulatory Commission (CERC) on GST Compensation, requesting CERC to announce a standard mechanism/formula for conversion of GST compensation amount into a certain increase in PPA tariff, spread over the balance PPA period."

IV PHYSICAL TARGETS AND ACHIEVEMENTS

3.11 In response to a query about the physical achievement *vis-a-vis* targets during 2016-17, 2017-18, 2018-19 and 2019-20, the Ministry furnished:

PHYSICAL TARGETS AND ACHIEVEMENT DURING 2016-17, 2017-18, 2018-19 and 2019-20									
S. No.	Programme/ System	2016-17		2017-18		2018-19		2019-20 (Upto 31.01.2020)	
		Target	Ach.	Target	Ach.	Target	Ach.	Target	Ach.
GRID POWER (Capacities in MW)									
1	Wind Power	4000	5502.37	4000	1865.23	4000	1480.97	3000	1981.73
2	Small Hydro	150	105.9	100	105.95	100	107.35	100	83.40
3	Bio Mass	400	162	340	519	250	402	250	83
4	Waste to Power (Indstl./Urban)	10	23.50	5	24.00	5	0	2	1.50
5	Solar Power	12000	5525.98	10000	9362.64	11000	6529.20	8500	5855.01
OFF – GRID/DECENTRALISED POWER (Capacities in MWeq)									
6	Waste to Power	15	11.5	20	5.50	15	6.58	10	12.41
7	Biomass Gasifiers(Rural)	10	2.80	7.5	1.015	1	3.15	1	4.8
8	SPV Systems	100	155.50	150	216.63	200	244.20	400	30.15
OTHER RENEWABLE ENERGY SYSTEMS									
9	Family Type Biogas Plants (No. in lakh)	1.00	0.55	1.1	0.44	1.00	0.30	0.76	0.15

3.12 Status of Renewable Energy projects as on 31st January, 2020 is given below:

Sector	Target (GW)	Installed capacity (GW) as on 31.01.2020	Under Implementation (GW)	Tendered (GW)	Total Installed/ Pipeline (GW)
Solar Power	100	34.03	23.88	39.47	87.38
Wind power	60	37.61	9.25	2.20	49.06
Bio Energy	10	10.00	0.00	0.00	10.00
Small Hydro	5	4.68	0.52	0.00	5.20
Wind Solar Hybrid	0	0	1.44	1.20	2.64
Round the clock (RTC) Power	0	0	0	1.60	1.60
Total	**175**	**86.32**	**35.09**	**34.47**	**155.88**

V GREEN ENERGY CORRIDOR

3.13 In its Annual Report (2019-20), the Ministry stated that in order to facilitate integration of large scale renewable generation capacity addition, the creation of Intra-state Transmission System has been approved in the states of Andhra Pradesh, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh,

Maharashtra, Rajasthan and Tamil Nadu, where large capacity renewable power projects are planned, at an estimated cost of Rs. 10,141.68 crore with Government of India contribution of Rs. 4056.67 crore and loan of EUR 500 Million from Kfw. As on 31.12.2019, a total of approx Rs. 2000 crores have been disbursed to the States from the Government of India contribution. The creation of Intra-State Transmission System will facilitate the evacuation of over 20 GW of power from Renewable Energy generation stations to load centres.

3.14 The Ministry furnished that as on 15.01.2020, out of total revised target of approx. 9700 ckm transmission lines, about 6258 ckm has been constructed, and out of total revised target of approx. 22600 MVA capacity substations, 6812 MVA has been commissioned. The following works, as submitted by the Ministry, have been completed during the year 2019-20:

> "a) **Gujarat**: (i) 160 MVA transformer commissioned in 220 KV Moti Gop substation in Jamnagar district, (ii) 400 KV Hadala – Shapar line, (iii) 220 KV D/C Chorania – Salejada line.
> b) **Karnataka**: (i) 400/220 kV S/s in Jagalur (Hiremallanahole), Davanagere district, (ii) 400 kV DC line from Rampura limits (400 kV MC line from BPS) upto Anchor point 39/0 near proposed 400/220 kV S/s at Jagalur (Hiremallanahole), (iii) 220/66 kV and 66/11kV substation at Shivanasamudra, Malavalli taluk, Mandya district, (iv) 220 kV Double DC line on MC towers tapping from existing 220 kV DC T.K.Halli-Madhuvanahally line to the sub-station at Shivanasamudra.
> c) **Madhya Pradesh**: (i) 220kV Double Circuit Double Strung line from Betul 220kV S/s to Gudgaon 220kV S/s, (ii) 132kV Interconnector between Gudgaon 220kV S/s and Gudgaon 132kV S/s.
> d) **Tamil Nadu:** (i) 400 kV SS at Thennampatti, (ii) 400 KV Thenampatti - Kayathar line.
> e) **Maharashta:** (i) 2nd ckt. stringing of 132 kV Shevgaon - Bhenda D/C line with bays, (ii) 2nd ckt. stringing of 132 kV Manmad - Yeola SCDC line with bays, (iii) 132 kV Kavthemahankal - Savlaj SCDC line with bays.
> f) **Himachal Pradesh**: (i) Providing additional 400/220 kV, 1x315 MVA transformer in the 400/220 kV substation at Gumma in Shimla district, (ii) 220 kV Snail-Hatkoti line."

3.15 Further, the Ministry furnished that an Inter State Transmission System (ISTS) project is also being implemented. The total project cost is Rs 11,369 crore with funding mechanism consisting of 30% equity investment by PGCIL, loan of EUR 500 Million from KfW and remaining Rs. 2500 crore from ADB. ISTS project includes 3200 cKm of transmission lines and sub-stations of aggregate transformation capacity of 17000 MVA, to be commissioned by 2019-20.

3.16 With respect to the Inter State Transmission System Project, it is submitted by the Ministry that EUR 483 Million have been disbursed to PGCIL by KfW till December, 2019. As on 31.12.2019, out of total target of 3200 circuit kilometres (ckm) transmission lines, about 3068 ckm has been constructed, and out of total revised target of 17000 Mega Volt Amperes (MVA) capacity substations (2x500 MVA, 400/220kV transformer was cancelled due to non-receipt of LTA in Banaskantha substation), 14000 MVA has been commissioned.

3.17 When asked about the reasons for delay in completion of Green Energy Corridor as it was originally supposed to be completed by March 2020, the Ministry stated as under:

> "The Intra-State Green Energy Corridor (GEC) project is implemented by the State Transmission Utilities (STUs) of the respective States and has been divided into total 84 packages by the States. Of these 84 packages, 20 have been commissioned as on 31.12.2019. The GEC project has been delayed in all the States due to various reasons such as Right of Way (RoW) issues, delay in issuing tenders caused by delay in land acquisition, delay in award of works due to low bid turnout in various projects which resulted in retendering several times, court cases, etc. The commissioning schedule of GEC project has been extended till 31.12.2020 upon the requests from the State Governments."

CHAPTER IV

POWER FROM RENEWABLES:
GRID INTERACTIVE AND OFF-GRID RENEWABLE POWER

4.1 An allocation of Rs. 4350.00 crores for the Grid Interactive Renewable Power and Rs. 1184.20 crores for Off-Grid/Distributed and Decentralized Renewable Power have been made for the year 2020-21.

4.2 When asked about the details of financial utilization vis-à-vis allocation during the previous years under Grid-interactive and Off-Grid Renewable Power, the Ministry furnished as given below:

Grid-interactive Renewable Power			
Year	**BE**	**RE**	**Actual Expenditure**
2017-18	4034.50	2574.32	2505.52
2018-19	3762.50	3963.14	3621.72
2019-20	4272.15	3088.45	2661.48 (as on 31.01.2020)
Off-Grid Renewable Power			
2017-18	904.00	1084.26	986.27
2018-19	1025.48	937.31	669.45
2019-20	683.00	550.09	291.30

I. WIND ENERGY

4.3 When asked about the State-wise wind power potential, the Ministry stated that the assessment conducted by National Institute of Wind Energy (NIWE) indicates a gross wind power potential of 695GW at 120 meter and 302 GW at 100 meter above ground level in the country. Most of the wind potential exists in seven windy States as given below:

S. No.	State	Wind Power Potential (GW) at 100 mtr.	Wind Power Potential (GW) at 120 mtr.
1	Andhra Pradesh	44.23	74.90
2	Gujarat	84.43	142.56
3	Karnataka	55.86	124.15
4	Madhya Pradesh	10.48	15.40
5	Maharashtra	45.39	98.21
6	Rajasthan	18.77	127.75
7	Tamil Nadu	33.80	68.75

Sub Total	**292.97**	**651.72**
Other States	9.28	43.78
All India Total	**302.25**	**695.50**

4.4 Given below is the State-wise installed Wind Power Capacity as on 31.01.2020, as furnished by the Ministry:

STATE	**Wind power capacity as on 31.01.2020 (MW)**
Andhra Pradesh	4092.45
Gujarat	7460.02
Karnataka	4754.90
Kerala	62.50
Madhya Pradesh	2519.89
Maharashtra	5000.33
Rajasthan	4299.72
Tamil Nadu	9285.49
Telangana	128.10
Others	4.30
Total	**37607.70**

4.5 The status of wind power projects in the country, as on 31.01.2020, as furnished by the Ministry, is given below:

Cumulative commissioned capacity	37.60 GW
Projects under implementation	9.25 GW
Ongoing bids	2.20 GW
Total	**49.05 GW**

4.6 On being asked about Wind Power capacity addition targets and achievements for the last three years, the Ministry furnished:

Year	**Target (in MW)**	**Achievements (in MW)**
2017-18	4000	1865
2018-19	4000	1481
2019-20	3000	1981.71 (till 31.01.2020)

4.7 When asked to explain the reasons for non-achievement of targets, the Ministry stated that:

> "The capacity additions till 2017 (i.e. 32.27 GW) were through Feed in Tariff (FiT) mechanism. Subsequently, the tariff regime has been shifted from Feed-in-Tariff (FiT) to bidding route, which has slightly disrupted the installation of projects."

4.8 On a query about the fund utilization *vis-à-vis* allocation during the last three years, the Ministry furnished:

Year	Funds allocated (in Crores)	Funds utilized (in Crores)
2017-18	750	750
2018-19	950	950
2019-20	920	920

4.9 Regarding physical target and financial allocation for the year 2020-21, the Committee were informed that the physical target for wind power projects is 3000 MW and an amount of Rs. 1299.35 Crores has been allocated for disbursal of claims under wind Generation Based Incentive (GBI) Scheme.

4.10 In reply to a query, the Ministry stated that the issuance of bids of 10 GW Wind Power Capacity has been proposed to be undertaken during the year 2020-21.

4.11 When asked about the provisions of fiscal and financial incentives provided by the Government for Wind Energy Sector, the Ministry stated:

> "The Government is promoting wind power projects in entire country through private sector investment by providing various fiscal and financial incentives such as Accelerated Depreciation benefit; concessional custom duty exemption on certain components of wind electric generators. Besides, Generation Based Incentive (GBI) Scheme was available for the wind projects commissioned before 31 March 2017. In addition, the inter-state transmission charges and losses have been waived off for wind and solar projects to be commissioned by March, 2022 so as to facilitate inter-state sale of wind and solar power."

4.12 Regarding Manufacturing Base in Wind Energy Sector, it was stated during the evidence that the annual production capacity of wind turbines is about 10 GW and all the major global WTG manufacturers have manufacturing units in the country. Around 70-80% indigenization has been achieved with strong domestic manufacturing in the wind sector.

4.13 Regarding initiatives taken in the field of Off-shore Wind, the Ministry stated that:

> Offshore wind power refers to generation of grid quality electrical power from wind resources available over the sea. Wind velocity over sea surface area is significantly higher in comparison to wind speed available on land mass, so generation capacity of offshore wind turbine is higher.
>
> Govt. of India has notified the National offshore wind energy policy on October, 2015 to exploit the vast offshore wind energy potential that exists within the EEZ along the long coast line of nearly 7600 kms. Ministry of New & Renewable Energy has initiated various pre-project development activities such as (A) Identification of feasible sites, (B) Validation of wind resource potential through actual measurement of wind data through LiDARs, (C) Investigation of geophysical & Geotechnical characteristics of an offshore wind site, (D) Met-Ocean studies within a site, (E) Environmental impact assessment studies, (F) Framing of an offshore wind energy lease rules for allocation of offshore wind blocks to the developers, (G) Guidelines for Offshore Wind Power Assessment Studies and Surveys."

4.14 When asked about the progress made with respect to the assessment and harnessing of Off-Shore Wind Energy, the Ministry stated that:

> "Post notification of National Offshore Wind Energy Policy, various studies have been conducted for assessment of offshore wind potential and coast of Gujarat and Tamil Nadu have been identified as potential offshore wind energy sites. Further NIWE has derived an indicative Offshore Wind Speed map at 100m amsl (up to Exclusive Economic Zone). The preliminary assessment the offshore wind energy potential off the coast of Gujarat and Tamil Nadu is estimated to be 70 GW at 100mt height above sea level. Government of India had indicated trajectory to install 5 GW of offshore wind energy by 2022 and 30 GW by 2030 in order to attract investors in this sector.
>
> (A) **Wind Resource Assessment in Gulf Of Khambhat For 1st Offshore Project of 1 GW Capacity**;
>
> A Light Detection and Ranging (LiDAR) has been successfully commissioned to measure the wind profile at Gulf of Khambhat (Zone B) at a distance of about 23km from the Jafrabad coast. The measurements are underway since November 2017. Two years LiDAR data report has been uploaded in NIWE website along with the time series data for the benefit of the stakeholders. Data analysis shows the annual average wind speed of about 7.52 m/s at 104m height.

(B) **Clearances for 1st Offshore Wind project of 1 GW capacity**;

All necessary stage-I clearances as per national offshore wind energy policy have been obtained by NIWE for the proposed first 1 (one) GW offshore wind energy project. Stage-II clearance to be obtained by the developer selected through a competitive bidding.

(C) **Proposed VGF scheme for 1st Offshore Wind Energy project**;

The anticipated tariff for 1st offshore wind energy would be higher than the assured procurement of power by Govt. of Gujarat at APPC tariff of Rs. 3.49/kWh. Therefore the Ministry has submitted a proposal to provide up front Central Financial Assistance as viability gap funding (VGF) to Ministry of Finance to make the project commercially viable. The proposal is under consideration of MOF, Dept. of Expenditure.

(D) **Geophysical Investigation**;

Geophysical Investigation is carried out to understand the orography and topology of the sea-bed surface, which helps in designing the optimized wind farm layout. The studies & survey covering the entire area 365 sq.km required for the installation/commissioning of 1GW offshore project has been completed. Bathymetric map of survey area depicts a gradual variation of the seafloor depth ranging from 8m in the north-east corner to the 17.5m in the south-west corner over a spatial distance of 20km.

(E) **Geotechnical Investigation**;

Geotechnical investigations were done at the LiDAR platform location up to a depth of 30m under the sea bed. Based on the Geo-physical Investigation, NIOT/NIO has identified the five more representative Geo-technical bore hole locations within the identified zone A (one location for a LiDAR) and Zone-B (one for additional LiDAR and 3 for proposed one GW project) and the geotechnical investigation has been completed. The draft report is under examination.

(F) **Rapid Environmental Impact Assessment:**

Rapid EIA study for the proposed first 1 (one) GW capacity offshore wind farm of the coast of Gujarat was carried out through NIO, Goa to facilitate the process of access to international funding of the project. The report has been finalised by NIO and submitted to Ministry.

(G) **National Offshore Research & Test Facility**;

NIWE has identified and earmarked the 75 acres of land in Tamilnadu. The proposed 75 acres of land has already been allotted under alienation basis by Govt. of Tamil Nadu. The DPR preparation is under progress by NIWE.

(H) **Guidelines for Offshore Wind Power Assessment Studies and Surveys;**

With a view to encourage private participation in studies and surveys for offshore wind power, the offshore wind power assessment study and survey guidelines has been issued by the Ministry in August, 2018.

(I) **Offshore Wind Energy Lease Rules**;

In order to regulate the allocation of offshore wind blocks within the EEZ to developers, Ministry is in the process of drafting an offshore wind energy lease rules under the Territorial Waters, Continental Shelf, Exclusive Economic Zones and Other Maritime Zones Act, 1976."

4.15 Regarding Wind–Solar Hybrid Projects, the Ministry stated that 1440 MW capacity of wind solar hybrid projects have been awarded through e-reverse auction, as detailed below:

Sr. No	Bidder's Name	Project Capacity (MW)	Tariff (INR/kWh)	Project Location	Scheduled Commissioning Date
1	Mahoba Solar (UP) Private Limited	390	2.69	Rajasthan	03.12.2020
2	SBE Renewables Ten Private Limited	450	2.67	Tamil Nadu	03.12.2020
3	Adani Renewable Energy (Park) Gujarat Ltd.	600	2.69	Rajasthan	17.02.2021
Total		**1440**			
In addition to this, SECI has also issued a tender to install 160 MW capacity of wind-solar-battery hybrid project in Ramagiri, Andhra Pradesh					
Hero Future Energies has commissioned wind solar hybrid project by adding 28.8 MW of solar project to an existing 50 MW wind project (Total 78.8 MW hybrid project) in Raichur district, Karnataka.					

II. SOLAR ENERGY

4.16 Against the total Solar Power Potential of about 750 GW, the state-wise details of installed capacity (as on 31.01.2020) as furnished by the Ministry, are given below:

S. No.	State/UT	Cumulative Capacity till 31-03-2019 (MW)	Capacity added in 2019-20 till 31-01-2020 (MW)	Cumulative Capacity till 31-01-2020 (MW)
1	Andaman & Nicobar	11.73	0.46	12.19
2	Andhra Pradesh	3085.68	473.34	3559.02
3	Arunachal Pradesh	5.39	0.22	5.61
4	Assam	22.40	18.83	41.23
5	Bihar	142.45	9.12	151.57
6	Chandigarh	34.71	2.28	36.99
7	Chhattisgarh	231.35	0.00	231.35

8	Dadar &Nagar	5.46	0.00	5.46
9	Daman & Diu	14.47	2.09	16.56
10	Delhi	126.89	29.23	156.12
11	Goa	3.89	0.89	4.78
12	Gujarat	2440.13	352.32	2792.45
13	Haryana	224.52	27.62	252.14
14	Himachal Pradesh	22.68	10.25	32.93
15	Jammu & Kashmir	14.83	4.47	19.30
16	Jharkhand	34.95	3.45	38.40
17	Karnataka	6095.55	1179.37	7274.92
18	Kerala	138.59	3.64	142.23
19	Lakshadweep	0.75	0.00	0.75
20	Madhya Pradesh	1840.16	417.10	2257.25
21	Maharashtra	1633.54	33.32	1666.86
22	Manipur	3.44	1.72	5.16
23	Meghalaya	0.12	0.00	0.12
24	Mizoram	0.50	1.02	1.52
25	Nagaland	1.00	0.00	1.00
26	Odisha	394.73	3.11	397.84
27	Pondicherry	3.14	2.37	5.51
28	Punjab	905.62	41.48	947.10
29	Rajasthan	3226.79	1808.29	5035.08
30	Sikkim	0.01	0.06	0.07
31	Tamil Nadu	2575.22	1213.29	3788.51
32	Telangana	3592.09	28.66	3620.75
33	Tripura	5.09	4.32	9.41
34	Uttar Pradesh	960.10	135.00	1095.10
35	Uttarakhand	306.75	9.15	315.90
36	West Bengal	75.95	38.51	114.46
Total		**28180.66**	**5854.97**	**34035.63**

4.17 On being asked about Action Plan of the Ministry to harness the available potential of Solar Energy, the Ministry stated that:

"In order to promote and harness solar energy in the country, the Government has launched the following schemes:

i. Solar Park Scheme for setting up of over 50 Solar Parks and Ultra Mega Solar Power Projects targeting over 40,000 MW of solar power projects.

ii. Scheme for setting up 12000 MW of Grid-Connected Solar PV Power Projects by the Central Public Sector Undertakings (CPSUs) (Phase-II) and the Government organizations with Viability Gap Funding (VGF).

iii. VGF Scheme for setting up of 2000 MW of Grid Connected Solar PV Power Projects through SECI.

iv. VGF Scheme for setting up of 5000 MW of Grid Connected Solar PV Power Projects through SECI.
v. Installation of Grid Connected Solar Rooftop Power Plants.
vi. Off-Grid Solar PV Scheme.
vii. Pradhan Mantri-Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM-KUSUM)."

4.18 On being asked about the per MW efficacy of solar power as compared to thermal and hydro power, the Ministry stated that:

"Through 1 MWp solar power plant, the annual power units generated ranges from 1.5 to 1.7 million units depending upon several factor e.g. location, solar irradiance, orientation of the solar panel and its efficiency, ambient temperature etc. While through thermal power of 1 MW, power generated is approx. 6 million Units and it depends upon quality of coal and technology deployed in the plant. Through 1 MW of Hydro plant, approx. 5.25 million units are generated. This is because availability of solar energy is limited to certain hours in a day, whereas thermal power stations and Hydro stations can be operated on 24x7 basis depending upon other related issues.

The Capital expenditure for setting up of 1 MW of solar project comes to about Rs. 4 Crores, while it is Rs. 5 crores for thermal project and Rs. 10 Crores for small hydro power plants."

4.19 When asked if Solar can be an alternative to conventional Power, the Ministry submitted that:

"Solar power may be made an alternative to conventional power through application of new emerging technologies by way of grid integration, battery storage, pumped storage etc. These are in nascent stage and Government has planned one such project namely 160 MW Solar Wind Hybrid Project with BESS by SECI Ltd in Ramagiri and Muthavakuntla village, Ananthapuramu District of Andhra Pradesh on standalone basis through World Bank assistance."

4.20 When the Committee desired to know about the year-wise budgetary allocation and actual expenditure for National Solar Mission, the Ministry furnished:

(in Rs. Crore)

Year	BE	RE	Actual Expenditure
2010-11	349.40	349.40	349.40
2011-12	492	652.30	652.06

2012-13	572.88	638.64	598.77
2013-14	566.77	779.97	692.28
2014-15	1587.50	1158.50	1158.19
2015-16	1947.00	3147.00	3146.24
2016-17	3140.00	2866.70	2590.59
2017-18	3361.00	2102.10	1889.93
2018-19	2893.75	2970.25	2524.65
2019-20	3004.90	2280.51	1751.07 (as on 31.01.2020)

4.21 When the Committee desired to know about the reasons for non-utilization of allocated funds, the Ministry stated that:

> "Adequate proposals were not received from North East states under various schemes of grid-connected solar power programmes. Therefore, there is substantial savings under the head. It is also to be mentioned that a new scheme for supporting NE states to put up RE power projects in their states has been introduced. The scheme has provision of back-ended financial support i.e. financial support will be provided after commissioning of the project. Therefore, it is expected that NE budget will be suitably spent this year through re-appropriation. Further, the Ministry is taking up with Ministry of DoNER and Ministry of Finance to exempt this Ministry from utilization of 10% NE Funds and allocate the same to those which have potential to utilize."

4.22 When asked about the physical achievements vis-a-vis targets with respect to the National Solar Mission, the Ministry furnished that against the target of 100 GW by 2022, the year-wise achievements are as under:

S. No	Year	Capacity added during year (MW)	Cumulative capacity (MW)
1.	Upto 2010	--	11 MW
2.	2010-11	25 MW	36 MW
3.	2011-12	994 MW	1030 MW
4.	2012-13	656 MW	1686 MW
5.	2013-14	945.9 MW	2631.9 MW
6.	2014-15	1112.07 MW	3743.97 MW
7.	2015-16	3018.883 MW	6762.853 MW
8.	2016-17	5525.98 MW	12288.83 MW
9.	2017-18	9362.67 MW	21651.46 MW
10.	2018-19	6529.20 MW	28180.66 MW
11.	2019-20	5854.97 MW	34035.63 MW (as on 31.01.2020)

4.23 In reply to a query about the shortfall in achievements of physical targets, the Ministry stated that:

> "There is no shortfall in achievement of target. However, major constraints being faced by the developers in commissioning of solar are land acquisition, evacuation infrastructure and non-conducive state policy for development of solar and business environment such as unwillingness of DISCOMS to purchase solar power. Ministry is making concerted efforts to sort out issues with the help of all stakeholders."

4.24 When asked about the physical target and financial allocation for Solar Energy for the year 2020-21, the Ministry furnished that:

> "A capacity of 9000 MW is likely to be commissioned in the year 2020-21. The budgetary allocation is made for granting Central Financial Assistance in order to encourage the solar developers for installation of projects. A budgetary allocation of Rs. 2149.65 crore has been made for promotion of grid connected solar energy projects in the country."

4.25 On being asked if the budgetary allocation will be sufficient to achieve the physical target set with respect to Solar Sector for the year 2020-21, the Ministry stated that the budgetary allocation would be sufficient to achieve the desired level of target.

4.26 When asked if the Ministry is confident of achieving the target of 100 GW of Solar Power by 2022, the Ministry replied in affirmative and stated that:

> "The Ministry is confident of achieving the target by 2022 and has created a complete visibility/plan of achieving 100 GW of Solar Power as per following":-

Solar projects commissioned (as on 31.01.20)	34.036 GW
LOIs issued but not commissioned	23.879 GW
Tender issued but LOI not issued	29.467 GW
Tenders to be issued in next two years	20.00 GW
Total	**107.382 GW**

4.27 The details of the Subsidies/support in terms of Central Financial Assistance (CFA) given by the Government for installation of Solar Projects, as furnished by the Ministry, are given at ***Annexure II***.

II.A GROUND MOUNTED SOLAR

4.28 Explaining about the present status regarding Large Ground Mounted Solar Projects, the Ministry stated that against the target of 60 GW, 31659 MW of ground mounted projects have been set up in the country as on 31.01.2020.

4.29 Explaining about the status of Solar Park Scheme, the Ministry during the evidence stated that the target under Solar Park Scheme was enhanced from 20 GW to 40 GW in 2017. Upto December, 2019, 39 Solar Parks in 17 States with aggregate capacity of 22879 MW have been approved. A capacity of 7835 MW has already been commissioned in various solar parks as on 31.01.2020. A list of approved Solar Parks is given at ***Annexure - III***.

4.30 Regarding installation of land mounted Solar Projects on barren land, the Ministry stated that:

> "Government is encouraging use of waste land for installation of solar power plants. Setting up of Solar parks is a step in that direction, where waste/barren land is given priority. Under the scheme of 'Development of Solar Parks and Ultra Mega Solar Power Projects', 39 solar parks of aggregate capacity 22,879 MW has been approved to 17 States up to Dec 2019. These solar parks are at different stage of development for which over 1,31,000 acres of land has been identified for various solar parks out of which over 82,600 acres have been acquired."

4.31 The Ministry furnished the following major challenges in achieving the targets regarding Large Ground Mounted Solar Projects:

- unavailability of good Solar irradiance in the State,
- unavailability of conducive State policy for solar,
- unavailability of land,
- high cost of financing,
- lack of conducive business environment such as unwillingness of DISCOMS to purchase the solar power,
- lack of power evacuation infrastructure etc.

4.32 When asked why the Ministry is not pushing for canal-top and floating Solar in order to overcome land availability issue, the Ministry stated as under:

"**Canal-Top and Canal-Bank**

- MNRE through its *"Pilot-cum-demonstration project for development of grid connected solar PV power plants on canal banks and canal tops"* has set up 50 MW Canal-bank and 44 MW canal-top, solar PV power projects in the country.

Floating Solar PV Power

- SECI, through competitive bidding, has awarded 150 MW capacity of floating solar PV power projects, for setting up at Rihand Dam, Uttar Pradesh. These projects are under implementation.
- Further, SECI is co-ordinating with different State Governments and various organisations/ agencies for development of around 2000-2500 MW of floating solar PV power projects in various parts of the country, including Andaman & Nicobar Islands and Lakshadweep Islands.
- In January, 2020, SECI has issued Request for Selection (RfS) document for selection of solar power developer for setting up of 4 MW grid connected floating solar PV power project with 2 MW /1 MWh Battery Energy Storage System (BESS) at Kalpong Dam, Diglipur, North Andaman, Andaman & Nicobar Islands."

II.B ROOF-TOP SOLAR

4.33 In response to a query, the Ministry stated that in 2014, an assessment on potential SPV capacity in India was undertaken by the National Institute of Solar Energy (NISE) which estimated a rooftop SPV potential of 42.8 GW.

4.34 Given below is the revised target of phase II of the rooftop solar programme as furnished by the Ministry:

Year	Capacity to be Commissioned (MW)	Capacity Commissioned (MW)
2019-20	3000	580.15 (upto 31.01.2020)
2020-21	6000	-
2021-22	12000	-
01.04.2022 to 31.12.2022	17000	-
Total	**38000***	**580.15**
* about 1426MW has been commissioned as on 31.03.2019		

4.35 The year-wise cumulative installation details as reported by the Ministry, are as follows:

Upto 31.03.2015	Upto 31.03.2016	Upto 31.03.2017	Upto 31.03.2018	Upto 31.03.2019	Upto 31.12.2019
41MW	241MW	656 MW	1063MW	1436 MW	1889 MW

4.36 In response to a query regarding the reasons for slow progress of Rooftop Solar Programme, the Ministry stated:

- "Involvement of multiple stakeholder viz. State Nodal Agencies, DISCOMs, Public Sector Undertakings, Developers etc.
- Reluctance of DISCOMs due to revenue loss; non-availability of net-meter; CEIG inspection for smaller plants etc.
- Lack of mandatory notification/ Lack of State policies.
- Lack of uniform regulations.
- Lack of finance.
- Lack of awareness."

4.37 On being asked about the status of actual implementation of the Net-Metering in the country, the Ministry stated:

> "All the State/Joint Electricity Regulatory Commissions have issued net metering regulation/tariff orders. However, implementation of the same is different in various DISCOMs. The revenue erosion due to adoption of solar by high electricity tariff paying customer, availability of solar power during day time when there is less electricity demand by users and non-availability of solar power during peak demand time (say in evening) etc. are few of the concerns of the DISCOMs. From the users point of view the limitation of maximum capacity for installation of solar rooftop plants w.r.t. connected load of the consumer/DT capacity, availability of net meters, time taken for net metering connections by DISCOMs, inspection by Chief Electrical Inspectors to Government (CEIG) inspection, not allowing RESCO mode for net-metering, limiting net metering for certain sectors of consumers etc. are few concerns."

4.38 Explaining about the issues faced in proper implementation of Net-Metering, the Ministry stated as under:

> "Although, all the State/Joint Electricity Regulatory Commissions have issued net metering regulation/tariff orders, but there are various diverse parameters in terms of capacity allowed for net metering based on minimum capacity/maximum capacity/% of connected load, % of DT capacity, payment for excess exported solar electricity /category

allowed for net –metering etc. Ministry has requested Forum of regulator to develop model regulations for this which States may adopt. As far as DISCOMs are concerned issues like the revenue erosion due to adoption of solar by high electricity tariff paying customer, availability of solar power during day time when there is less electricity demand by users and non-availability of solar power during peak demand time (say in evening) etc. are few of the concerns of the DISCOMs . As far as consumer is concerned the concerns are lack of awareness, i.e. what is the benefits/how much they can install/how much it will cost/how to get the system installed through vendor to avail subsidy (if any)/where to submit the application of subsidy /net metering /gross meeting/ whether financing is available from the banks etc.

Unanimity may be arrived through combined efforts of all relevant stakeholders in terms of uniform regulations /model operating procedures/ online unified portals /massive IEC activities/low cost financing in addition to financial CFA and incentives."

4.39 When asked about the steps taken to tackle the problem of reluctance of Discoms to support Solar Roof-top Projects and Net-Metering, the Ministry furnished that:

"Generally in most of the States there is no payment mechanism for excess units exported to the grid. These exported units are generally adjusted in the electricity bill itself. Further, model PPA has also been developed for Govt. sector rooftop projects. Further, about 515.96 MW has been sanctioned recently to 57 DISCOMs/Electricity Departments of 27 States under the phase II of the rooftop solar programme for residential sectors wherein DISCOMS have been made implementing agencies. Ministry in RPM meeting held on 11-12th October 2019 has also requested States to notify model operating procedure for installation of rooftop solar projects. Further, under technical assistance programme of multilateral /bilateral agencies, Ministry is also assisting the DISCOMs for development of online portals. Further, few States have also initiated various business models (e.g. on-bill financing model of Andhra Pradesh Eastern Power Distribution Company, Utility led non-subsidized model of Kerala State Electricity Board, Group/Virtual Net Metering by BSES Rajdhani Delhi, RESCO model for residential sector project by Chandigarh Electricity Dept., Demand Aggregation model of Madhya Pradesh Urja Vikas Nigam Ltd. for Govt. sector buildings, online demand aggregation of residential sector in Gujarat etc.). These business models are also being shared with the other States for adoption as per their local conditions. DISCOMs have also been requested to nominate nodal officers at sub-divisional level for rooftop solar programme. States are also requested

to issue necessary instruction for installation of Solar Rooftop Projects in Govt. buildings. Further, States have also been requested to issue necessary bye laws for installation of solar rooftop systems for buildings above certain plot area. Ministry has also requested States to exempt small RTS systems from CEIG inspection.

Ministry is also proving financial support to DISCOMs. Performance based incentives will be provided to DISCOMs based on RTS capacity achieved in a financial year (i.e. 1st April to 31st March every year till the duration of the scheme) over and above the base capacity i.e. cumulative capacity achieved at the end of previous financial year."

4.40 Elaborating the remedial steps taken by the Government for promotion of Roof-top Projects in the country, the Ministry furnished:

- Under phase II of the programme DISCOMs have been made as implementing agencies and CFA is available for residential sector only. Incentives for the DISCOMs for achievement of additional capacity above baseline has also been provided for.
- Requesting States to notify model operating procedure for RTS/exemption from CEIG inspection for smaller plants/issue of mandatory notification/provision in building bye laws.
- Assisting States in development of online portal/demand aggregation.
- Prepared model MoU, PPA and Capex Agreement for expeditious implementation of RTS projects in Govt. Sector.
- Allocate Ministry-wise expert PSUs for handholding and support in implementation of RTS projects in various Ministries/ Departments.
- Creation of SPIN-an online platform for expediting project approval, report submission and monitoring progress of implementation of RTS projects.
- Facilitated availability of concessional loans from World Bank and Asian Development Bank (ADB) through SBI and PNB respectively, for disbursal of loans to industrial and commercial sectors, where CFA/incentive is not being provided by the Ministry. In addition, initiatives have also been taken for providing financing of residential sector projects through funding of World Bank.
- Initiated IEC activities.
- Initiated a proposal for mandating installation of Rooftop solar in all Central Government buildings by 2022 with the approval of Cabinet."

4.41 On being asked if any assessment has been done with regard to the cost of roof top Solar, the Ministry stated that:

"The benchmark cost for grid connected rooftop solar projects has been arrived with based on cost details received from different agencies including State Nodal Agencies, Solar Energy Corporation of India, system integrators etc. The present benchmark cost for FY 2019-20 is as follows":

Capacity	Benchmark cost (Rs/Wp) other than Special Category States	Benchmark cost (Rs/Wp) for Special category States*
Above 1 kW and upto 10 kW	54	59
Above 10 kW and upto 100 kW	48	53
Above 100 kW and upto 500 kW	45	50

*includes North Eastern States, Hilly States of Uttarakhand, Himachal Pradesh, J&K and UTs of Andaman & Nicobar Islands and Lakshadweep.

4.42 The Ministry furnished that the Solar Roof-tops are remunerative and the average payback period of such projects varies from 5-6 years and the expected life is upto 25 years.

4.43 In reply to a query about high capital investment requirement and maintenance cost of Solar Roof-tops, the Ministry furnished that:

"The cost of solar rooftop plants is decreasing and Ministry has also increased the subsidy amount to 40 % in comparison to earlier 30 % for capacity upto 3 kW. Consumer need to invest only 60 % of the cost of the system discovered by the DISCOM through bidding process. Recently discovered rates of few States are as follows:

- Gujarat: Rs. 36,000per kW to Rs. 46,827 per kW for varying capacity from 1-100 kW
- UP:- Rs. 32,000 per kW to Rs. 38000 per kW for varying capacity from 1-100 kW
- Uttarakhand:- Rs. 42000 per kW to Rs. 53,800 per kW for varying capacity from 1-100 kW
- Chandigarh:- Rs. 47000 per kW

For sectors other than residential the solar tariff has become quite competitive as compared to the tariff for the conventional electricity. So these systems have become cost competitive. Further, other business models such as RESCO model, utility model, on bill financing models etc. have also been evolved by various stakeholders. Even with 22-24 %

panel efficiency, these systems can reduce significant amount of electricity billing amount for the consumers."

II.C OFF-GRID/DECENTRALIZED SOLAR

4.44 Given below are the physical achievements *vis-a-vis* targets with respect to off-grid applications as furnished by the Ministry:

S. No	Applications	Target 2017-18	Ach 2017-18	Target 2018-19	Ach 2018-19	Target 2019-20	Ach 2019-20*
1	SPV Systems (MW)	150	217	200	120	400	8
2	Solar Lights	100000	441668	100000	125229	300000	26683
3	Solar Pumps	40000	56350	50000	65892	75000	8954
4	Solar Power Packs	10	9	10	2	5	0
5	Study lamps	2000000	1070052	5000000	3445950	3000000	1602821

*Achievement of 2019-20 till 31.12.2019

4.45 When asked about the actual expenditure vis-a-vis allocation regarding the major off-Grid/decentralized schemes, the Ministry furnished the following:

(Rs. in crores)

Year	B.E	Actual Expenditure
2017-18	685.00	884.25
2018-19	848.50	603.93
2019-20	525.00	256.00 (till 31.01.2020)

4.46 On being asked about the reasons for non-utilization of allocated funds, the Ministry stated that:

"Shortfall in expenditure during 2018-19 was due to delay in launch of PM-KUSUM Scheme and AJAY Phase-II Scheme. Further due to non-working PFMS on 30-31.03.2019 many bills were returned."

4.47 Regarding the PM KUSUM (Pradhan Mantri Kisan Urja Suraksha evam Utthaan Mahabhiyan) Scheme, the Ministry furnished that a total capacity of 25,750 MW is to be created under the scheme by the year 2022 with Central Financial Support of Rs. 34,422 crores. The Scheme consists of following three components:

Component A	10,000 MW of Grid connected Solar or any other Renewable Energy plants of individual plant size upto 2 MW.
Component B	17.50 Lakh stand-alone Solar water Pumps of individual capacity upto 7.5 HP.
Component C	Solarization of 10 Lakh Grid-connected Agriculture Pumps of individual capacity upto 7.5 HP.
Component-A and C to be implemented on pilot mode for 1 GW and one lakh pumps respectively and Component-B on full-fledged basis	

II.D SOLAR MANUFACTURING

4.48 Regarding status of Domestic Manufacturing in the Solar Sector, the Ministry furnished:

> "Currently, India has installed solar PV manufacturing capacity of around 3 GW for solar PV Cells and around 10 GW for solar PV modules and there is no commercial production in India for upstream stages of solar PV manufacturing like wafers, ingots and polysilicon.
>
> Further, recently, SECI has concluded bidding for one tender for setting up solar PV manufacturing capacities linked to setting up of Solar PV Power plants, under which new additional manufacturing capacities of 3 GW of solar PV cells & 3 GW of solar PV modules will be set up. 12 GW capacity of solar PV power plants will also be set up under this initiative."

4.49 In response to a query about import of Solar PV Cells/Modules etc, the Ministry furnished the following:

> "Based on the information available on the website of Department of Commerce, the details of import of solar PV cells and panels/ modules under the CTH 85414011, are as follows":

(in Million US $)

Financial Year		**2013-14**	**2014-15**	**2015-16**	**2016-17**	**2017-18**	**2018-19**	**2019-20 [till Dec. 2019]**
Value of Solar PV cells / modules imported in India under CTH 85414011 Total import	From China	597	603	1960	2817	3419	1694	1180
	From Germany	11	1	3	2	27	20	4
	From Malaysia	21	83	189	210	180	15	4
	From Taiwan	35	36	45	59	122	66	19
	From U.S.A	4	10	23	10	2	8	3
	From Other Countries	43	88	125	99	88	357	316
	Total import	**711**	**821**	**2345**	**3197**	**3838**	**2160**	**1526**

4.50 Regarding steps taken to support domestic manufacturing, the Ministry stated that:

> "Based on the final findings of Directorate General of Trade Remedies (DGTR) in investigations concerning imposition of Safeguard Duty on import of solar cells/ modules, the Government, through notification no. 01/2018-Customs (SG) dated 30th July, 2018, have imposed Safeguard duty on import of solar cells whether or not assembled in modules or panels, as follows:
>
> - twenty five percent. ad valorem minus anti-dumping duty payable, if any, when imported during the period from 30th July, 2018 to 29th July, 2019 (both days inclusive);
> - twenty percent. ad valorem minus anti-dumping duty payable, if any, when imported during the period from 30th July, 2019 to 29th January, 2020 (both days inclusive);
> - fifteen percent. ad valorem minus anti-dumping duty payable, if any, when imported during the period from 30th January, 2020 to 29th July, 2020 (both days inclusive);
>
> Nothing contained in the notification dated 30th July, 2018, mentioned above shall apply to imports of subject goods from countries notified as developing countries vide notification no. 19/2016-Customs (N.T.) dated 5th February, 2016, except China PR, and Malaysia.
>
> As can be seen from the year-wise import data of solar cells and modules, there has been a decline in import of solar PV cells and modules, after the imposition of safeguard duty.
>
> To safeguard the interest of the Indian manufacturers/ developers, the government has increased tariff rate of Basic Custom Duty (BCD) from NIL to 20%. However, at present current BCD is NIL vide entry at sl. no. 23 of the notification no.24/2005-customs dated 1st march 2005 which will continue uptil Govt. of India decides to impose BCD to further safeguard the interest of Indian manufacturers."

4.51 On being asked about the mechanism adopted by the Ministry to ensure the quality of material being used in solar projects, the Ministry stated:

- "In August 2017, Ministry of New & Renewable Energy has got notified, “Guidelines for Tariff Based Competitive Bidding Process for Procurement of Power from Grid Connected Solar PV Power Projects”, which clearly specifies the Technical Requirements for Grid Connected Solar PV Power Plants, thereby ensuring the quality of material/ equipment being used in solar PV projects.

- In order to further ensure quality of material/ equipment being used in solar PV projects, MNRE, on 05.09.2017, has brought out a Quality Control Order titled "Solar Photovoltaics, systems, Devices and Components Goods (Requirement for Compulsory Registration) Order 2017", thereby making BIS applicable for the Solar Sector.
- With the objective of ensuring reliability of Solar PV manufacturers and to protect the consumer interests and ensure larger energy security of the country, Ministry of New & Renewable Energy (MNRE), on 02.01.2019, has issued "Approved Models and Manufacturers of Solar Photovoltaic Modules (Requirements for Compulsory Registration) Order, 2019". The order provides for enlistment of eligible models and manufacturers of solar PV cells and modules complying with the BIS Standards and publish the same in a list called the "Approved List of Models and Manufacturers" (ALMM). Subsequent to March 2020, for all the projects bid out after 02.02.2019, only the models and manufacturers included in this list will be eligible for use in Government/ Government assisted Projects/ Projects under Government Schemes & Programmes, installed in the country, including Projects set-up for sale of electricity to Government under "Guidelines for Tariff Based Competitive Bidding Process for Procurement of Power from Grid Connected Solar PV Power Projects dated 3rd Aug' 2017 and the amendments thereof".

4.52 When asked about the challenges being faced in Domestic Manufacturing in the Solar Sector, the Ministry stated that:

- "The country does not have a manufacturing base for Poly-silicon, Ingots/wafers, the upstream stages of solar PV manufacturing chain, which is a very energy intensive process.
- Lack of integrated set up, economies of scale & modern technology resulting in higher cost of production.
- Price of solar equipment produced in the country is not competitive as compared to that of foreign manufacturers, especially Chinese manufacturers.
- The domestic manufactures have to borrow at higher interest rates, compared to foreign manufacturers, pushing up their cost of production.
- As per industry's views, some of the reasons for poor manufacturing capacity are high cost of land/ electricity, low capacity utilization, high cost of financing, and lack of skilled workforce."

4.53 Regarding support provided to encourage domestic manufacturing, the Ministry stated that:

"M-SIPS Scheme of Ministry of Electronics & Information Technology:

- 20-25% subsidy for investments in capital expenditure for setting up of electronic manufacturing facility.
- Reimbursement of Countervailing Duty (CVD)/ Excise Duty for capital equipment for the units outside Special Economic Zone (SEZ).

Government Producer Scheme for setting up Solar PV Power plants using domestically manufactured SPV cells & modules

Government has approved a Scheme for setting up of solar PV power plants by Government Producers (CPSUs/ State PSUs/ Govt. Organisations, etc.), in a WTO compliant manner, using domestically manufactured solar PV cells and modules to encourage Make in India in Solar PV Manufacturing sector.

Domestic Content Requirement**:**

Other than CPSU Scheme Phase-II mentioned above, solar PV power projects being implemented under MNRE's other Schemes like PM-KUSUM, Solar rooftop phase II, etc. are also mandated to source their requirement from domestic sources, in a WTO compliant manner. "

II.E FINANCIAL DEMAND AND VIABILITY OF SOLAR SECTOR

4.54 When asked if the financial demand of the Solar Sector has been aggregated with a view to arrange the finances for the sector, the Ministry stated:

"Most solar power projects come in the country with private sector investment. For installation of an additional capacity around 66 GW, financing of around Rs. 2,64,000 Crores (@ Rs. 4 Cr/MW) will be required. All the nationalized banks and NBFCs, including IREDA, provide funding to solar power projects. The major policy initiatives taken by the Government to mobilize long term financing for renewable energy projects, inter alia, include financing of renewable energy projects through National Clean Energy Fund (NCEF) as per its norms, increasing the authorized capital of Indian Renewable Energy Development Agency and extending new lines of credit to enable it to enhance its concessional loan to RE projects, mobilizing project based concessional loans through multi-lateral and bi-lateral agencies i.e. World Bank, Asian Development Bank, KfW-Germany; inclusion of Renewable Energy Projects in Priority Sector Lending of Banks; and approval for issuance of tax free infrastructure bonds for funding renewable energy projects. Government is promoting development of solar energy in the country by providing various fiscal and promotional incentives such as capital subsidy, accelerated depreciation, waiver of Inter State Transmission System (ISTS) charges and losses, viability gap funding (VGF), financing solar rooftop systems as part of home loan,

preferential tariff for power generation through renewables, and permitting Foreign Direct Investment up to 100 per cent under the automatic route."

4.55 In response to a query about investment attracted so far in the Solar Sector, the Ministry furnished that:

Year	FDI (in US$ Million)
2014-15	615.95
2015-16	776.51
2016-17	783.57
2017-18	1204.46
2018-19	1446.16
Total	**4826.65**

4.56 In a rush to build market share in the sector, some players have become very aggressive in competitive auction process and are bidding very low tariff. There is a fear that some of these projects would become unviable because developers may find it difficult to raise funds and contain high project costs. On being asked to explain this situation along with remedial measures, the Ministry stated that:

"The tariff is discovered through biddings held in open and transparent manner which results low tariff. It also depends upon market forces. In order to win a bid, developers may be playing with their margin of profit as well. As all this information remains with project developers, no definite reason can be correctly attributed. Further, reduction in solar power tariffs depends upon several factors like solar irradiance, cost of capital, logistics, Internal Rate of Return (IRR), guaranteed off-take and conducive government policies for promotion of solar energy and it is upto the project developers to bid for the projects keeping in view various factors including viability of projects."

4.57 In response to a query about NPAs in the Power Sector and its impact on the Renewable Energy Sector, the Ministry stated as under:

"It is a fact that within the banking system both conventional power and Renewable Energy sector are clubbed within the power sector exposure norms. Power sector has increased NPAs with most of the banks and therefore the banks find it difficult to provide loan to Renewable Energy Sector also. MNRE had written to Reserve Bank of India that the exposure limit for Renewable Energy sector may be set

separately so that the impact of NPAs of power sector do not affect adversely lending to the sector. It has been informed by RBI that RBI does not fix the limit and the said sector-wise exposures are fixed by respective banks. Accordingly, MNRE has taken up this with the major banks to carve out a limit for Renewable Energy Sector separately."

III. BIOMASS POWER AND BAGASSE CO-GENERATION PROGRAMME

4.58 State –wise Potential (as per Biomass Resource Atlas prepared by IISc in 2010-11) for Biomass/Bagasse Co-generation power, as furnished by the Ministry, is given below:

Sr. No.	State	Power Potential (MW)	
		Biomass	Bagasse
1	Punjab	3177.6	160
2	Maharashtra	1969.7	2200
3	Uttar Pradesh	1764.9	2000
4	Madhya Pradesh	1386.2	
5	Haryana	1375.1	100
6	Gujarat	1226.1	50
7	Karnataka	1222.1	1400
8	Tamil Nadu	1163.9	700
9	Rajasthan	1121.9	10
10	Kerala	864.4	
11	Andhra Pradesh	738.3	250
12	Bihar	645.9	200
13	West Bengal	529.2	
14	Orissa	432.7	
15	Assam	278.7	
16	Chhattisgarh	245.6	10
17	Himachal Pradesh	142.2	
18	Jharkhand	107.0	
19	Uttarakhand	88.3	80
20	Jammu & Kashmir	42.7	
21	Goa	26.1	
22	Manipur	15.3	
23	Meghalaya	11.4	
24	Nagaland	10.2	
25	Arunachal	9.3	
26	Tripura	3.0	
27	Sikkim	2.4	
28	Mizoram	1.2	
29	Telangana		100
Total		**18601.5**	**7260**

4.59 When asked about the State-wise installed capacity of Biomass/Bagasse Co-generation power, the Ministry furnished:

State	Cumulative (in MW) as on 31.01.2020	
	Biomass Power + Bagasse Cogeneration	Biomass (Non-Bagasse) Cogeneration
Andhra Pradesh	378.2	98.98
Bihar	113	8.20
Chhattisgarh	228	2.50
Gujarat	65.3	12
Haryana	121.4	84.26
Karnataka	1866.6	15.20
Madhya Pradesh	93	12.35
Maharashtra	2499.7	16.40
Telangana	158.1	1
Punjab	194	123.10
Rajasthan	119.3	2.00
Tamilnadu	969	28.55
Uttarakhand	73	57.50
Uttar Pradesh	1957.5	158.01
West Bengal	300	19.92
Odisha	50.4	8.82
Meghalaya	0	13.80
Kerala	0	0.72
Jharkhand	0	4.30
Himachal Pradesh	0	7.20
Total	**9186.50**	**674.81**

4.60 When asked about the physical achievements *vis-à-vis* targets under Biomass Power/Bagasse Cogeneration Programme during the previous years, the Ministry furnished:

Year	Target (MW)	Achievement (MW)
2016-17	400	162
2017-18	340	519
2018-19	250 (including both Bagasse and non-bagasse cogeneration)	402
2019-20	250 (including both Bagasse and non-bagasse cogeneration)	83 (as on 31.01.2020)

4.61 Regarding reasons for non-achievement of the physical targets, the Ministry stated that the Biomass Power/Bagasse Cogeneration sector was facing problems such as non-signing of PPAs by DISCOMs, lack of working capital and non-availability of biomass which resulted in slow progress.

4.62 On a query regarding the budgetary allocation *vis-à-vis* utilization for the previous years under Biomass Power/Bagasse Cogeneration Programme, the Ministry furnished:

Year	Allocation (R.E.) (in Rs Crores)	Utilization (in Rs Crores)
2016-17	17	10.30
2017-18	9	7.79
2018-19	8.50	6.83
2019-20	10.71 (including allocation for Waste to Energy Programme)	0.97* (as on 31.01.2020)

4.63 When asked about the reasons for non-utilization of funds in the previous years, the Ministry stated:

> "Non-receipt of complete requisite documents as per the guidelines from the developers results in delay in project sanction resulting in non- utilization of funds."

4.64 Regarding physical targets and budgetary allocation for the year 2020-21, the Ministry stated:

Physical Target	Budgetary Allocation
280 MW (including bagasse cogeneration in sugar mills and non-bagasse cogeneration in other industries & waste to energy)	75 Crores – Grid (including bagasse and non-bagasse co-generation and WTE)
	53 Crores – Off Grid (including bagasse and non-bagasse co-generation and WTE)

4.65 On being asked if the allocation would be sufficient to meet the target set, the Ministry stated that the Budget allocation would be sufficient.

4.66 When asked about the activities/projects proposed to be undertaken during 2020-21, the Ministry replied that a fresh study is being conducted for biomass resource assessment in the country.

4.67 Regarding the provisions of fiscal and financial incentives provided by the Government in Biomass/Bagasse Co-generation Sector, the Ministry furnished:

Project Type	CFA
Bagasse Co-generation by sugar mills	Rs 25 Lakhs / MW of surplus exportable power
Biomass (Non-Bagasse) co-generation in other industries	Rs 50 Lakhs /MW of installed capacity.

4.68 In response to a query about NPAs in Biomass/Bagasse Co-generation Sector, the Ministry stated that:

> "The NPAs in Biomass/Cogeneration Sector financed by IREDA which have become non-performing assets as on 30.09.2019 are as under:

Sector	Total Loan O/s (Rs. Cr.)	NPA Loan O/s as on 30.09.2019 (Rs. Cr.)	% of NPA to total O/s loan
Biomass Power	153.35	144.96	94.53%
Cogeneration	1324.62	659.67	49.80%
Total	**1477.97**	**804.63**	-

4.69 When asked about steps taken to solve the problem of NPAs, the Ministry stated that:

> "MNRE has provided an amount of Rs.200 crore from National Clean Energy Fund (NCEF) as grant to IREDA for formulating a scheme for revival of projects in the biomass and small hydro sectors. As per the scheme, 30% of the total loan outstanding with any bank/institution can be converted into a soft loan @ 2%, which is to be repaid in 10 years and balance loan continues at the commercial rate of the banks. The scheme has been formulated and utilized for revival of Small Hydro and Biomass power projects and has been availed by Andhra Bank, SBI, IDFC Bank, including IREDA.
>
> Further, a scheme has been formulated and is under consideration at MNRE for providing working capital to biomass power projects at soft rate."

IV. SMALL HYDRO PROGRAMME

4.70 In response to a query, the Ministry stated that the identified potential of Small Hydro Power generation capacity in the country is 21133.62 MW from 7133 identified sites. Installed Small Hydro Power capacity as on 31.01.2020 is 4676.56 MW. State wise details are given below:

Sl. No	State	Total Potential		Projects Installed						Projects under Implementation	
		Nos	Total Capacity (MW)	Upto 2018-19		2019-20		Total		Nos.	Capacity (MW)
				Nos.	Capacity (MW)	Nos.	Capacity (MW)	Nos.	Capacity (MW)		
1	Andhra Pradesh	359	409.32	44	162.11	0	0	44	162.11	0	0
2	Arunachal Pradesh	800	2064.92	156	131.11	0	0	156	131.11	10	7.05
3	Assam	106	201.99	6	34.11	0	0	6	34.11	1	2.00
4	Bihar	139	526.98	29	70.70	0	0	29	70.70	0	0
5	Chhattisgarh	199	1098.20	10	76.00	0	0	10	76.00	0	0
6	Goa	7	4.70	1	0.05	0	0	1	0.05	0	0
7	Gujarat	292	201.97	12	61.30	1	1.05	13	62.35	9	48.81
8	Haryana	33	107.40	9	73.50	0	0	9	73.50	0	0
9	Himachal Pradesh	1049	3460.34	189	860.61	7	50.90	196	911.51	17	174.60
10	Jammu & Kashmir	302	1707.45	44	179.03	2	1.45	46	180.48	16	47.10
11	Jharkhand	121	227.96	6	4.05	0	0	6	4.05	0	0
12	Karnataka	618	3726.49	168	1254.73	2	26.00	170	1280.73	3	13.00
13	Kerala	238	647.15	34	222.02	0	0	34	222.02	8	80.50
14	Madhya Pradesh	299	820.44	12	95.91	0	0	12	95.91	2	7.60
15	Maharashtra	270	786.46	69	375.58	1	4.00	70	379.58	9	10.40
16	Manipur	110	99.95	8	5.45	0	0	8	5.45	0	0
17	Meghalaya	97	230.05	5	32.53	0	0	5	32.53	2	25.50
18	Mizoram	72	168.90	18	36.47	0	0	18	36.47	4	8.70
19	Nagaland	98	182.18	12	30.67	0	0	12	30.67	1	1.00
20	Odisha	220	286.22	10	64.63	0	0	10	64.63	3	57.00
21	Punjab	375	578.28	56	173.55	0	0	56	173.55	7	4.90
22	Rajasthan	64	51.67	10	23.85	0	0	10	23.85	0	0
23	Sikkim	88	266.64	17	52.11	0	0	17	52.11	1	3.00
24	Tamil Nadu	191	604.46	21	123.05	0	0	21	123.05	0	0
25	Telangana	94	102.25	30	90.87	0	0	30	90.87	0	0
26	Tripura	13	46.86	3	16.01	0	0	3	16.01	0	0
27	A&N Islands	7	7.27	1	5.25	0	0	1	5.25	0	0
28	Uttar Pradesh	251	460.75	9	25.10	0	0	9	25.10	2	25.50
29	Uttarakhand	442	1664.31	102	214.32	0	0	102	214.32	13	7.58
30	West Bengal	179	392.06	24	98.50	0	0	24	98.50	0	0
Total		**7133**	**21133.62**	**1115**	**4593.16**	**13**	**83.40**	**1128**	**4676.56**	**108**	**524.24**

4.71 On being asked about the physical targets and achievements under SHP programme during the previous years, the Ministry furnished:

S.No.	Year	Target (MW)	Achievement (MW)
1	2016-17	150	105.90
2	2017-18	100	105.96
3	2018-19	100	107.35

4.72 When the Committee queried about the non-achievements of target in 2016-17, the Ministry replied:

> "During 2016-17, the achievement was short of 44.10 MW. This shortfall pertains to actual commissioning of under construction SHP projects, as the projects got delayed due to cost overrun, change in design and other technical issues. The other reasons for the non-achievement of target are the difficult locations of SHP projects, short working season in hilly areas and natural calamities such as flash floods."

4.73 Details regarding Utilization of funds *vis-a-vis* allocation for the previous years under SHP, as furnished by the Ministry, are given below:

S. No	Year	Financial support (in Rs. Crore)		
		BE	RE	Expenditure
1	2016-17	125	125.00	124.70 +54.987 (from IREDA Bond Money) = 179.687
2	2017-18	138	123.50	123.92+23.57 (from IREDA Bond Money) =147.49
3	2018-19	218.50	218.50	137.36

4.74 In reply to a question about reasons for non-utilization of allocated budget, the Ministry stated that:

> "As may be seen above during the year 2016-17 and 2017-18, the actual expenditure is more than the budget made available at RE stage. In the year 2018-19, allocation of Rs 90 crore was towards NE States, where neither new projects could be generated nor sanctioned since continuation of SHP scheme from 1st April 2017 to 31st March 2020 (commensurate with the duration of 14th Finance Commission) is yet under consideration of the CCEA, resulting non-utilization of Rs. 75.46 crore from NER head. Only old liability, created for projects commenced prior to 31st March 2017, is being cleared from the budget allocation. As the gestation period of an SHP is about four to five years, the old liability will continue to be serviced by March 2022."

4.75 Explaining about the monitoring/evaluation of the Small Hydro Projects, the Ministry stated that the Small Hydro Programme, as implemented during 12th Plan period, was evaluated by M/S Deloitte. The main findings of the evaluation are as follows:

- "MNRE to support States to develop annual actionable SHP Plan.
- Cluster based power evacuation infrastructure development for regions having high SHP potential.
- Continuation of financial incentives with suitable modifications.
- Exploring possibility to transfer subsidy disbursement work to SNAs or IREDA as per the guidelines developed by the Ministry.
- Fixing the project completion cycle for eligibility of availing financial incentives.
- Evolving incentive scheme for SNAs to motivate them to harness full potential in their respective States.
- Institutional strengthening.

Subsequently, the Economic Advisory Council of the Prime Minister also appraised the scheme on a reference from the PMO. The EAC to PM after due appraisal of the scheme, recommended for continuation of SHP scheme as a Central Sector Scheme for another 10-15 years. Based on the recommendations of the EAC to the PM, a new scheme for continuing the SHP programme upto the year 2024 (aligning it with the duration of 15th Finance Commission) is under preparation."

4.76 When asked about the physical target and budgetary allocation for SHP Programme for the year 2020-21, the Ministry stated that the Physical target is commissioning of 100 MW SHP projects where work was commenced prior to 31st March 2017 and budgetary allocation is Rs. 102.00 crore mainly to service the old liabilities.

4.77 On being asked if the allocation would be sufficient to achieve the target, the Ministry stated that:

> "The budget allocation of Rs 102.00 crore will not be sufficient to meet liabilities created from previous year and also if new sanctions are issued on continuation of the SHP Scheme (which is under consideration)."

4.78 Major activities/projects proposed to be undertaken under SHP Programme during 2020-21, as stated by the Ministry are given below:

- "Formulation of new scheme for implementation of Small Hydro Program in the country subject to approval of the EFC Memorandum and approval of the Cabinet.
- Achievement of 100 MW Capacity additions through Small Hydro during 2020-21.
- Launch of the online application process subject to approval of the EFC Memorandum and approval of the Cabinet."

4.79 Regarding the provisions of fiscal/financial incentives provided by the Government, the Ministry stated that it has been providing Subsidies/Grants for following activities for the projects commenced on/before 31st March 2017:

- "Resource assessment, Detailed Survey and Investigation, DPR Preparation and Perspective Plans for States,
- Capital Subsidy to State Sector Project,
- Subsidy for Private Sector Projects,
- Renovation and Modernization of old SHP projects (State sector),
- Water Mills and Micro-hydel projects,
- Research and development, capacity building."

4.80 In response to a query about NPAs in Small Hydro Sector, the Ministry stated that:

Sector	Total Loan O/s (Rs. Cr.)	NPA Loan O/s as on 30.09.2019 (Rs. Cr.)	% of NPA to total O/s loan
Small Hydro	2381.84	414.68	17.41%

4.81 Challenges faced in the SHP, as furnished by the Ministry, are given below:

- "Long time taken for clearances
- Rise in project cost
  - Benchmark cost recommended by AHEC for 2016 is Rs11.11cr/ MW.
  - Against 2005 Benchmark cost of Rs. 7.45cr/MW
- Short working season in hilly areas - Resulting to cost and time overrun
- Risk factor in financing - Long project cycle

- Unwillingness of DISCOMs to sign PPAs with higher tariffs SHP projects (In range of Rs. 5 to 6/kWh)
- Levy of Interstate Charges; unlike Solar & Wind where ISTS is waived
- Non-availability of Trained Manpower for O & M -at local level."

V. RENEWABLE PURCHASE OBLIGATION (RPO)

4.82 Given below is the long term RPO Trajectory, as submitted by the Ministry:

Long Term Trajectory	2019-20	2020-21	2021-22
Non-Solar	**10.25 %**	**10.25 %**	**10.50 %**
Solar	**7.25 %**	**8.75 %**	**10.50 %**
Total	**17.50 %**	**19.00 %**	**21.00 %**

4.83 The Ministry submitted, during the evidence, that for the year 2018-19, only 4 States could achieve 100 % RPO target, another 7 States could achieve more than 60 % of the target and the target achievement of all other States was less than 60 %.

4.84 When asked about the possible steps that should be taken to ensure RPO Compliance, the Ministry stated as under:

> "This Ministry from time to time has been requesting the States/UTs for proactive planning for ensuring RPO compliance. State Electricity Regulatory Commissions (SERCs) have been requested for ensuring RPO compliance and enforcing penal provisions against defaulting Obligated Entities. Ministry has also requested for APTEL's intervention to direct defaulting SERCs to ensure RPO compliance through timely monitoring and invoking penal provisions for non-compliance; aligning RPO trajectory notified by Ministry of power up to the year 2021-22; and not to permit carry forward or waiver of RPO. It has also been proposed to the Fifteenth Finance Commission that RPO compliance may be one of the parameters for resource allocation to states.
>
> Further, in order to facilitate RPO compliance in cost effective manner, Inter-state transmission charges and losses on transmission of electricity from solar and wind projects commissioned till 31 December 2022, have been waived off. These apart, an RPO Cell has been created within the Ministry for monitoring and coordinating RPO compliance

information with States. An online portal for RPO compliance monitoring has also been made operational."

4.85 On being asked about the reasons for non-compliance by State Utilities, the Ministry stated that:

"Some of the States have been falling behind in RPO compliance possibly due to pre-existing long term PPAs with conventional power producers and insufficient increase in electricity demand."

4.86 In response to a query about alternative mechanism available to RPO/REC, the Ministry furnished that:

"RPO coupled with tradable RECs provides the best possible mechanism for increasing the share of renewable energy in the electricity mix. Additionally, the provision for Renewable Generation Obligation (RGO) has been articulated in the National Tariff Policy 2016. In order to promote generation of electricity from renewables, introduction of RGO has been proposed. RGO will mandate thermal power generators to install renewable energy capacity equivalent to certain percentage of their installed thermal power generation capacity."

CHAPTER V

RENEWABLE ENERGY FOR RURAL & URBAN APPLICATIONS

I. RENEWABLE ENERGY FOR RURAL APPLICATIONS

5.1 Given below are the programmes/schemes/projects being undertaken under Renewable Energy for Rural Applications, as furnished by the Ministry:

- "The National Biogas Programme, named as New National Biogas and Organic Manure Programme (NNBOMP) is being implemented w.e.f. 01.04.2018 (2018-19) after the continuation of previous ongoing Scheme, National Biogas and Manure Management Programme (NBMMP). The NNBOMP aims at setting up small biogas plants for meeting cooking energy and lighting needs of mainly rural and semi-urban households of the country.
- Under the Biogas Programmes , the Ministry is also implementing Biogas based Power Generation (Off-Grid) & Thermal energy application Programme (BPGTP) under decentralized Off-Grid Renewable Power Programme with the objective of providing clean energy solutions through biogas production to reduce consumption of diesel, kerosene and electricity by installation of medium size biogas plants of size ranging from 30 M^3 to 2500 M^3 per day with power generation installed capacity range of 3 KW to 250 KW."

5.2 When asked about the budgetary allocation and actual expenditure under Renewable Energy for Rural Applications during the previous years, the Ministry furnished:

"The details for the previous three years in respect of the National Biogas and Manure Management Programme, New National Biogas and Organic Manure Programme (NNBOMP) and Biogas Power Generation (Off- Grid) & Thermal energy application Programme (BPGTP) are given as under:

(Rs. in crore)

Sl. No.	Years	BE	RE	Actual Expenditure
1	2016-17	142.00	100.00	78.697
2	2017-18	134.00	94.00	67.693
3	2018-19	135.00	78.00	42.720
4.	2019-20	100.00	51.00	26.96 (upto 31.01.2020)
Total		**511.00**	**323.00**	**216.07**

5.3 On being asked about the physical achievements *vis-à-vis* targets during the previous years, the Ministry furnished:

Biogas Programme	Yr. 2016-17		Yr. 2017-18		Yr. 2018-19		Yr. 2019-20	
	Target No of Biogas plants	Achievement	Target	Achievement	Target	Achievement	Target	Achievement Upto 30.09.2019
Bio-Gas Programme (NBMMP/NNBOMP)	100000	54969	65180	43887	100000	26980	76000	16815
Biogas Power Generation BPGP/BPGTP	-	40	-	20	-	14	-	-

5.4 Details regarding Biogas Power Generation (Off-grid) and Thermal application Programme, as furnished by the Ministry, are given below:

Targets set for the year 2019-20	50 projects
Proposals received upto date	39
Projects under processing	15
Project proposals not found appropriate	05
Project sanctioned (upto 31.01.2020)	19
Total biogas generation capacity sanctioned	6760 m^3
Cumulative power generation	821 kW
Total Cumulative achievements (upto 31.01.2020)	316 projects
Equivalent total power generation capacity	7.207MW
Equivalent total Biogas generation capacity	69381 m^3

5.5 When asked about the reasons for continuous non-achievement of targets, the Ministry stated that:

"The major reasons for shortfall of physical targets under the National Biogas and Manure Management Programme and New National Biogas and Organic Management Programme are:

- Low priority to the scheme at the state/UT level.
- Impact of Ujjwala Scheme.
- Almost no lending facilities for meeting the upfront cost for installation of Biogas Plants.
- Back-ended subsidy/CFA support & problem faced in DBT mode of Scheme implementation.
- The NNBOMP was launched w.e.f. 01.04.2018 by designating all the States/UTs Rural Development Departments (RDDs) as new implementing agencies considering that their wide ground network will help in upscaling the numbers, but many of Rural Development Departments of the States and UTs did not start the implementation during the year 2018-19.

- Most of the newly designated State Programme Implementing Agencies mainly the State Rural Development Departments could not initiate the implementation during 2019-20."

5.6 In response to a query about corrective steps taken by the Ministry so as to achieve the desired results, the Ministry stated:

"The Ministry has modified the old scheme, National Biogas and Manure Management Programme (NBMMP) and lanched New National Biogas and Organic Manure Programme (NNBOMP) so that the end users/farmers do not consider the biogas plant as only a means of cooking gas but also accept the biogas plants as household avenue to generate Organic-Manure/Fertilizer from biogas plants taking it as unit of organic Bio -manure/ fertilizer and save his bills on account of LPG and Chemical fertilizers. Keeping in view the importance of improving crop yield and sustaining the soil health and enhanced production of crops and improved environment and sanitation, the capacity of biogas plant under the New National Programme, NNBOMP enhanced from 6 M3 to 25 M3. The NNBOMP since its launch on 01.04.2018 has been reviewed with the States/UTs by holding National Level meetings during 2018-19. The outcomes of the meetings helped in initiating the implementation during 2018-19.

Where those States who could not start implementation and based on the progress review and recommendations of the States the old implementing agencies/SNAs were taken back on the role of the designated PIAs and targets for the year 2018-19 re-allocated to them, but considerable time of the year lost in the exercise, resulting in setting up about 27000 plants ."

5.7 Explaining the remedial measures taken into consideration by the Ministry during the year 2019-20, the Ministry stated that:

- "Keeping in view the quantum of the budget allocated for the programme, the potential and past years' performance of the States/UTs, the State/ UT-wise annual targets were set at 76000 small biogas plants and 50 projects of medium size biogas plants for biogas based power generation (Off -grid) and thermal/ cooling applications.
- Accordingly, the State-wise and programme implementing State Nodal Department/Agency-wise targets for setting up small biogas plants were communicated on 10.07.2019 to all the States for implementation of the NNBOMP during the year 2019-20.

- New draft publicity scheme for dissemination of exclusively for Biogas Porgramme has been proposed to be implemented aggressively during the year for enhancing the rate of installation of biogas plants."

5.8 On being queried about the details of targets (physical and financial) of different Programmes/Schemes for the year 2020-21, the Ministry stated:

Programme /Scheme Biogas under Off-Grid/ Distributed and Decentralized Renewable Power	**Allocation 2020-21** (Rs. in crores)	**Physical Target**
New National Biogas and Organic Manure Programme (NNBOMP)	₹ 60.00	80000 Nos. of small biogas Plants
Biogas based Power Generation (Off Grid) and Thermal Energy application Programme (BPGTP)		50 Nos. projects of medium size biogas plants (3 KWe to 250 KWe)

II. RENEWABLE ENERGY FOR URBAN, INDUSTRIAL AND COMMERCIAL APPLICATIONS

5.9 The programmes being implemented under Renewable Energy for Urban, Industrial and Commercial Applications, as furnished by the Ministry, are given below:

- "The Ministry has a scheme to support biomass based cogeneration in sugar mills and other industries (up to March 2020). The scheme supports biomass based cogeneration, projects with Central Financial Assistance (CFA) @ Rs 25 Lakhs / MW of surplus exportable capacity and Rs 50 Lakhs / MW of installed capacity depending on the type of fuel used.
- The Ministry is implementing the Programme on Energy from Urban, Industrial and Agricultural Wastes / Residues. The main objective of the programme is to promote setting up of projects for recovery of energy from urban, industrial and agricultural wastes and to create conducive conditions and environment, with fiscal and financial regime to develop, demonstrate and disseminate utilization of wastes and residues for recovery of energy. The scheme provides for Central Financial Assistance (CFA) in the form of capital subsidy and Grants-in-Aid in respect of the Biogas production from Industrial waste; Power generation or production of bio-CNG from biogas produced from sewage and industrial wastes or from Urban and Agricultural wastes through biomethanation, combustion, gasification, pyrolysis or a combination thereof are being supported which are proven and are environmentally benign technologies."

5.10 The Ministry furnished that as of now, 201 waste-to-energy plants based on Municipal Solid Waste (MSW), Urban, Industrial and agricultural waste/residues for generation of power, biogas and Bio-CNG to meet thermal and electrical energy needs of industries and for production of Bio-CNG for transportation as well as cooking fuel etc have been installed in India. These plants have been established involving industries and private sector following Public Private Partnership (PPP) model. State-wise details of waste-to-energy plants with installed capacity and number of plants set up, as on 31.01.2020, are as follows:

	State/UT	**Off-grid**			**Grid Power**		**Total Power**	**Total**
		Biogas (A)	**BioCNG (B)**	**Power (C)**	**Non-MSW (D)**	**MSW (E)**	**F (C+D+E)**	**(A+B+F)**
		m^3/day (No. of plants)	***Kg/day (No. of plants)***	***MW (No. of plants)***	***MW (No. of plants)***	***MW (No. of plants)***	***MW (No. of plants)***	***MWeq***
1	Andhra Pradesh	90,540 *(7)*	-	17.66 *(11)*	23.16 (4)	-	40.82 (15)	48.365 (22)
2	Bihar	12,000 (1)	-	-	-	-	-	1.00 (1)
3	Chhattisgarh	-	-	0.33 (1)	-	-	0.33 (1)	0.33 (1)
4	Delhi	-	-	-	-	52.00 (3)	52.00 (3)	52.00 (3)
5	Gujarat	24,800 (4)	28338 (5)	11.275 (10)	-	-	11.275 (10)	19.25 (19)
6	Haryana	-	4250 (3)	4.0 (2)	-	-	4.0 (2)	4.89 (5)
7	Himachal Pradesh	12,000 (1)	-	-	-	-	-	1.00 (1)
8	Karnataka	58,060 (3)	9521 (3)	6.8 (*4*)	1.00 (1)	-	7.8(5)	14.62 (11)
9	Kerala	2,760 (1)	-	-	-	-	-	0.23 (1)
10	Madhya Pradesh	27,014 (5)	1,200 (1)	-	3.9 (2)	11.5 (1)	15.4 (3)	17.90 (9)
11	Maharashtra	1,09636 (10)	27,723 (4)	16.13 (11)	9.59 (3)	3.00 (1)	28.713 (15)	43.63 (29)
12	Punjab	34796 (5)	1,847 (1)	4.17 (3)	10.75 (4)	-	14.92(7)	18.20 (13)
13	Rajasthan	-	4,000 (2)	3.0 (1)	-	-	3.0 (1)	3.83 (3)
14	Tamil Nadu	1,50218 *(28)*	-	4.05 *(3)*	6.4 (3)	-	10.45(6)	22.97 (34)
15	Telangana	37,100 (5)	-	1.0 (1)	18.5 (3)	-	19.5(4)	22.59 (9)
16	Uttar Pradesh	62,320 (6)	2,000 (1)	44.63 (22)	-	-	44.63 (22)	50.24 (29)
17	Uttarakhand	67,260 (5)	5,880 (2)	1.89 (2)	-	-	1.89 (2)	8.72 (9)
18	West Bengal	14,000(2)	-	-	-	-	-	1.17 (2)
Total		**7,02,508 (83)**	**84,759 (22)**	**114.93 (71)***	**73.3 (20)**	**66.5 (5)**	**254.73 (96)**	**330.93 (201)**
		58.54 MWeq	**17.66 MWeq**	**254.73MW**				
191.13 MWeq (176)					**139.8 MW (25)**			

5.11 When asked about the physical achievements *vis-à-vis* targets under Urban, Industrial and Commercial Applications during last three years, the Ministry furnished the following about Waste to Energy Programme:

Year	Physical Targets (MWeq)			Physical Achievement (MWeq)		
	Grid	Off-grid	Total	Grid	Off-grid	Total
2017-18	5	20	25	24	5.50	29.50*
2018-19	5	15	20	0	6.58	6.58
2019-20	2	10	12	1.5	12.41	13.91

* physical achievement as reported by developers

5.12 In response to a query about financial achievements vis-a-vis targets during last three years under Waste to Energy programme, the Ministry furnished as under:

Year	Financial allocation (Rs. in crore)			Financial Achievement (Rs. in crore)		
	Grid	Off-Grid	Total	Grid	Off-Grid	Total
2017-18	12.5	16	28.5	5.5	9.57	15.07
2018-19	10	12	22	0	0	00
2019-20 (including allocation for Biomass cogneration scheme)	4.68	6.03	10.71	0	0.97	0.97

5.13 When asked about non-achievement of target and low utilization of funds, the Ministry stated that:

> "**Non-Bagasse Cogeneration**: There is no specific target for co-generation power plants in Industrial/Commercial sector. However, Ministry supports Programme on Energy from Urban, Industrial and Agricultural Wastes/Residues. The targets cover entire range of Industrial/Commercial and Urban applications such as MSW. There is no specific target for each sector. Ministry provides support to captive power plants through co-generation in Industrial/Commercial sector.
> All activities of co-generation have been brought under a single scheme namely Scheme to support biomass based co-generation in sugar mills and other industries (up to March 2020).
> **Waste to Energy:** The utilization of funds are dependent upon timely submission of statuary clearances by Project Developers from various agencies (like NOC from State Pollution Control Board), Appraisal Note from the bank, signing of PPA, Approval for filling & storage of CBG from Petroleum and Explosives Safety Organization (PESO), Analysis Report

of Effluent quantity and characteristics from accredited lab) and Performance report for generation, Inspection report of the Project by Executive Engineer of SNAs which are mandatory for releasing central financial assistance."

5.14 When asked to furnish the budgetary allocation along with physical targets for schemes/technologies under Renewable Energy for Urban, Industrial and Commercial Applications for the year 2020-21, the Ministry stated:

Physical Target	**Budgetary Allocation**
280 MW (including bagasse cogeneration in sugar mills and non-bagasse cogeneration in other industries & waste to energy)	75 Crores – Grid (including bagasse and non-bagasse co-generation and WTE)
	53 Crores – Off Grid (including bagasse and non-bagasse co-generation and WTE)

CHAPTER VI

RENEWABLE ENERGY FOR NORTH-EASTERN REGION AND ANDAMAN & NICOBAR ISLANDS

6.1 When asked about the programmes being implemented by the Ministry in North-Eastern States, the Ministry furnished as under:

> "Ministry is implementing various programmes/schemes for promoting deployment of grid connected solar, bio-power and small hydro power plants and off-grid/decentralized solar PV systems, biogas plants, etc. in the North-Eastern region and A&N Islands."

6.2 On being asked about the programmes being implemented by the Ministry in Andaman & Nicobar Islands, the Ministry furnished as under:

> "MNRE, on 05.04.2016 has issued the Administrative Approval for Implementation of a scheme for setting up distributed Grid-Connected Solar PV Power Projects of an aggregate capacity of 40 MW (now increased to 52 MW) in Andaman & Nicobar (A&N) and Lakshadweep Islands with an estimated Central Financial Assistance (CFA) of Rs. 192.20 crore.
>
> The objective of the scheme is to develop carbon free islands by phasing out use of diesel for generation of electricity and to contribute to the National Action Plan on Climate Change. The initiative will also help in reduction in cost of electricity generation.
>
> The Scheme supports setting up of standalone Solar PV Power Project, standalone Battery Energy Storage System (BESS), Solar PV plant with Battery Energy Storage System (BESS), Transmission System for Solar PV Power Plant and Floating Solar PV power plants (with or without Battery Energy Storage System) in Andaman & Nicobar Islands and Lakshadweep Islands."

6.3 In response to a query about financial achievements vis-a-vis targets during the previous years in the North-Eastern States, the Ministry furnished as under:

(in Rs Cr)

Year	**B.E.**	**R.E.**	**Re appropriation**
2016-17	496	413	204.93
2017-18	525	394	167.99
2018-19	504.53	504.53	122.41

6.4 When asked about the physical achievements *vis-à-vis* targets during the previous years in the North-Eastern States, the Ministry furnished the following:

Renewable Energy Capacity addition during the last three years in NE region			
Grid Connected (in MW)			
FY	**2016-17**	**2017-18**	**2018-19**
Solar power	12.41	6.44	13.74
Small Hydro Power	5	0	28.0
Off-grid/Decentralized (in No.)			
FY	**2016-17**	**2017-18**	**2018-19**
Home lighting systems	-	65895	23150
Solar Pumps	4	-	-
Solar Street lights	6949	20547	6132
Solar Study Lamps	-	55427	466910
Biogas Plants	8842	6784	441

6.5 In response to a query about financial achievements vis-a-vis targets during the previous years in the Andaman & Nicobar Islands, the Ministry furnished as under:

"Details of year-wise Funds Released under 'Scheme for Setting up of Distributed Grid-Connected Solar PV Power Projects in Andaman &Nicobar and Lakshadweep Islands with Capital Subsidy from MNRE:

Financial Year	**Funds Released by MNRE (Cr. Rs.)**
FY 16-17	0
FY 17-18	0
FY 2018-19	0
FY 2019-20 (till 31.12.2019) (funds released to NLC India Limited for NLCIL's Project in the UT of Andaman & Nicobar Islands)	6.77
Total	**6.77**

6.6 When asked about the physical achievements *vis-à-vis* targets during the previous years in the Andaman & Nicobar Islands, the Ministry furnished the following:

"• Ground Mounted Project with MW Scale Battery Storage: A 20 MW SPV Plant with 8 MWh Battery Energy Storage System (BESS) at Attampahad & Dollygunj in UT of Andaman & Nicobar Islands is under

advanced stage of implementation and 2.5 MW SPV capacity of this project has been commissioned.

- Floating Solar PV Project: On 13.01.2020, SECI has issued a tender for setting up of 4 MW Grid Connected Floating Solar PV Power Plant with 2 MW, 1 MWh Battery Energy Storage System (BESS) at Kalpong Dam, Diglipur, North Andaman, Andaman & Nicobar Islands."

6.7 When the Committee wanted to know the reasons for non-achievement of targets and low utilization of fund in North-Eastern States and Andaman & Nicobar Islands, the Ministry stated that:

"• The potential for solar & wind energy in North-eastern region and A&N islands is much less in comparison to other states, thus making solar & wind power produced in these areas non-remunerative. This has resulted in reluctance of state governments as well as private sector for setting up of solar 7 wind power projects in this region.

- Due to low solar insolation and wind power density, the output of such projects is less and cost is relatively high due to remoteness, etc. This results in higher tariff and it becomes unviable for DISCOMs to purchase. Even scheme with subsidy and VGF specially designed for these region find few takers as it is cheaper for utilities to purchase cheaper power from other states than to produce in their own state.
- Both wind & solar power projects are land intensive requiring large flat tracts of shadow free contiguous land with accessibility which is difficult to find in north eastern region and A&N islands.
- Non-receipt of adequate number of proposals from state governments for setting up of grid connected solar & wind power projects in these regions make achievements of targets much difficult."

6.8 When asked to furnish the budgetary allocation along with physical targets for schemes/programmes in North-Eastern States and Andaman & Nicobar Islands for the year 2020-21, the Ministry stated:

"Special attention is being given to the development of renewable energy in the entire North Eastern region through a separate budgetary allocation of 10% under various renewable energy programs for deployment of grid & off-grid solar energy systems, wind energy systems, small hydro projects, bio-gas plants, etc. in the region. An amount of Rs. 565 Cr has been allocated at BE stage for development of Renewable Energy in North Eastern region.

No separate physical targets are set for various programmes/ schemes being implemented in the North-Eastern region and A&N Islands for the development of Renewable Energy."

CHAPTER VII

RESEARCH, DESIGN, DEVELOPMENT AND DEMONSTRATION IN RENEWABLE ENERGY SECTOR

7.1 When asked about the budgetary allocation and the actual expenditure incurred on RD&D in New & Renewable Energy during the last three years, the Ministry furnished:

Year	BE	RE	Expenditure
2016-17	90.00	60.00	45.44
2017-18	144.00	81.00	52.98
2018-19	94.00	43.00	25.43
2019-20	60.00	15.00	9.35

7.2 On a query regarding non achievement of targets and low utilization of funds during the previous years, the Ministry stated that:

> "R&D projects are continuous in nature with duration of generally three to four years. Funds are released after completion of various mile stones and proper evaluation of the ongoing projects."

7.3 Given below are the major Programme/Research undertaken and achievements made during the last three years, as furnished by the Ministry:

> "Major programmes were supported in the area of Solar Photovoltaic, Solar Thermal, hydrogen, fuel cells and wind-solar hybrid systems. In solar, high efficiency crystalline silicon solar cells of 19.4% efficiency was achieved in lab scale under a project at IIT, Bombay. Support for developing solar cells using other materials, storage and power electronic system was provided to R&D/academic institutions. Indigenous Silicon ingot has been prepared at SSN College of Engineering in Tamil Nadu and cost effective reliable Solar-powered Clean Drinking Water Systems suitable for various locations are installed in the different part of the country. Support for developing solar thermal system and component was provided for technology development and demonstration for utilizing solar energy for thermal and power generation applications. One such project, 1MWe Solar Thermal Power Plant with 16 hours thermal storage has set up at Mount Abu by World Renewable Spiritual Trust (WRST), Mumbai which is running successfully. IISc Bangalore has developed a supercritical CO2 Turbomachinery along with high efficiency receiver for solar thermal power plants which would be the next step for closed loop CO2

cycle waterless solar thermal power plant. Research and Development supported in hydrogen and fuel cells focused on technology development and demonstration for hydrogen production and storage for stationary and transport applications.

R&D in hydrogen and fuel cells will focus on production of hydrogen through renewable resources in cost-effective manner, its safe and efficient storage, development of efficient, indigenous and affordable fuel cells for stationary and transport applications, and demonstration of hydrogen and fuel cell technologies in various niche applications."

7.4 Regarding the Budgetary Allocation for the year 2020-21, the Ministry informed that budgetary allocation for the year 2020-21 is Rs. 20.00 crores.

7.5 When the Committee desired to know about the thrust areas identified for R&D support for the year 2020-21, the Ministry informed:

"Support will be provided for development, demonstration, testing, standardization, and validation of technologies/ systems/ components with emphasis on application oriented R&D, improving efficiency, reliability and cost effective for indigenous development and manufacture. Industry association will be encouraged. In solar thermal, the thrust areas include development of solar thermal technology for power generation and industrial process/heat, storage systems, hybridization, etc. In SPV, thrust is on improving Si PV efficiency, reducing the cost, developing new material solar cells, making Si material from sand, improving modules quality and reliability, development of standard designs for support structure for SPV systems, materials and fabrication technology for solar cells and modules, inverters, power conditioning units, grid integration, etc. In addition, focus would be on storage solutions. The thrust areas in biogas included development of efficient and cost effective designs of biogas plants, standardization of multiple designs of biogas plants, standardization of biogas slurry based bio-fertilizer, bio-manure up-gradation, development of biogas purification systems, development of efficient biogas engine for power generation. In wind, the thrust areas include wind turbine system design, integration, off-shore technology and wind solar hybrid system. In SHP, thrust areas include development of ultra-low head turbines (below 3m), generators, monitoring systems, pumped storage systems, etc. R&D in hydrogen and fuel cells will focus on hydrogen production from various feedstock, technology for storage and development of efficient and cost effective fuel cells for stationary, transport applications."

7.6 On being asked about the steps taken up by the Government, specifically with regard to facilitating research, design and development for technological advancements in Renewable Energy Sector, the Ministry replied:

> "The Ministry supported projects to various R&D/academic institutes/industries to strengthen them for pursuing advanced research for technology development and demonstration in the area of solar, wind, bio-energy, hydrogen and fuel cells.
>
> The Ministry has recently issued a comprehensive RD&D Programme for implementation during the period 2017-18 to 2019-20 with emphasis on integrating technology development with innovation and start-ups for promoting indigenous development and manufacture of New & Renewable Energy Systems/devices/components for various applications. The scheme is implemented in form of projects with identified deliverables. The project proposals are invited in line with thrust areas of MNRE in place of normal submission of project proposals by investigators, which are done through hosting the expression of interest on the Ministry's website/national dailies from time to time. The proposals for consideration for sanction are supported with proper appraisal by a Project Appraisal Committee taking into consideration the assessment for scalability with commercial potential."

7.7 Detailing the Research and Development (R&D) activities being undertaken at the Solar Energy Corporation of India (SECI)/National Institute of Solar Energy (NISE) for intensive harnessing of Solar Energy potential in the country, the Ministry informed:

> **"**<u>R&D activities carried out by NISE</u>
>
> - National Primary Standard Facility for Solar Cell Calibration with NPL, Delhi and NISE Gurugram.
> - Development of high efficiency (21%/ 19%) PERC type of c-Si/mc-Si solar cells.
> - Development and field testing of Solar powered clean drinking water systems for communities without piped water line and electricity with collaboration with Industry. Successful prototypes have been developed and being install at various location in the Country.
> - Development of Modular Central Receiver Concentrated Solar Power Plant for Decentralized Power Generation.
> - Setting Up of a Centre of Excellence on Hydrogen Energy at National Institute of Solar Energy (NISE), Gwal Pahari, Haryana

R&D activities carried out by SECI

- To study the technical feasibility of Lithium Titanium Oxide (LTO) Battery for energy storage in PV Power Plants to be deployed in the environmental conditions prevailing at Siachin Glacier."

7.8 Regarding the technological up gradation undergoing with regard to solar PV and Solar Thermal, the Ministry stated:

"In solar PV, R&D efforts are directed towards developing higher efficiency solar cells up to 22% and beyond, high efficiently inverters and other power electronic devices, high energy density battery storage systems, etc. In solar thermal, R&D efforts are directed towards technology development and demonstration of utilizing solar thermal energy for industrial process heating applications, power generation, developing solar thermal storage systems, etc."

CHAPTER VIII

PSUs/INSTITUTIONS UNDER THE MINISTRY OF NEW AND RENEWABLE ENERGY

8.1 To support this Ministry, there are five institutions i.e. two Public Sector Undertakings - Indian Renewable Energy Development Agency (IREDA) and Solar Energy Corporation of India (SECI) and three autonomous bodies- National Institute of Solar Energy (NISE), National Institute of Wind Energy (NIWE), and National Institute of Bio Energy (NIBE). NISE is located at Gwal Pahari in district Gurugram, Haryana and serves as the technical focal point for solar energy research & development. NIWE has been established in Chennai, Tamil Nadu and serve as the technical focal point for wind power research & development. NIBE is located in district Kapurthala, Punjab and is focusing on research & development in Bio energy. IREDA is a Non-Banking Financial Institution located in New Delhi, under the administrative control of this Ministry, provides term-loans for renewable energy and energy efficiency projects. SECI is a section 3 company under the Companies Act situated in New Delhi. It assists the Ministry and functions as the implementing and executing arm for the Jawaharlal Nehru National Solar Mission.

8.2 Details regarding PSUs/Institutions under MNRE, as furnished by the Ministry, are given below:

S.No.	Institution	Objective/Focus Areas	BE 2020-21 (Rs crores)
1	Solar Energy Corporation of India	Facilitating Implementation of Renewable Energy Programmes	-
2	Indian Renewable Energy Development Agency (IREDA)	Term-loans for RE and EE Projects	-
3	National Institute of Solar Energy (NISE)	Solar Energy Development	5
4	Sardar Swaran Singh National Institute of Renewable Energy (SSS-NIRE)	Bio-energy Development.	1.5
5	National institute of Wind Energy (NIWE)	Wind Energy	1.5

I INDIAN RENEWABLE ENERGY DEVELOPMENT AGENCY (IREDA)

8.3 On being asked about the financial allocation vis-à-vis utilization during the previous years, the Ministry stated that since IREDA is a Mini Ratna, Category –I PSU, it has not received any allocation in terms of equity from the Government of India. However the Company raises resources and funds for disbursements through Internal and raised resources. The major budgeted resource raising for FY 20-21, as furnished by the Ministry, is given below:

1.	Repayment by Borrowers	Rs. 7800 Cr
2.	Foreign lines of credit	Rs. 591 Cr
3.	Bonds	Rs. 4555 Cr
Total		**Rs. 12946 Cr**

8.4 When asked about the performance of IREDA during the previous years, the Ministry furnished:

Operations	**FY 16-17**	**FY 17-18**	**FY 18-19**
Sanctions	10199.01	12130.01	11941.87
Disbursements	6593.49	8328.38	9385.37
Total Income	1481.67	1813.18	2022.79
Profit Before Tax	528.18	538.97	311.30
Profit After Tax	365.02	370.44	244.13
Dividend for the year	125.50	126.84	128.19
MoU Ratings	Excellent	Excellent	Expected to be Very Good

Note : Ireda has applied Ind AS from FY 18-19 and RBI has withdrawn exemptions which were available to Government Companies w.r.t. the prudential norms vide RBI circular dated 31.05.19.

8.5 IREDA's physical targets for the year 2020-21, as furnished by the Ministry, are as under:

Operations	**FY 20-21**
Sanctions	16500
Disbursements	12305
Total Income	2658
Profit Before Tax	539
Profit After Tax	409

8.6 In reply to a query regarding the major activities/projects proposed to be undertaken by IREDA during 2020-21, the Ministry stated as under:

"Ireda estimated (in its RE 2019-20) IPO in the FY 2019-20, raising equity of approx. 450 Cr. through public subscription. DRHP has been filed and in-principal approval obtained from SEBI. However, market conditions are not conducive so as to receive good value for shares offered. Accordingly, in order to increase the capital base so as to continue on the expected growth trajectory, both in terms of lending operation and raising resources, Ireda vide letter dated 01.01.2020 has also requested MNRE for enhancing the capital base of ireda either through fresh equity/equity infusion by other CPSUs/Strategic investment route through NIFM .

The Board also approved a new scheme "Short Term Loan Facility to Govt. Bodies/Discoms/Transcoms/State Owned Trading Companies" to meet the short term capital needs of state owned DISCOMs to meet their Renewable Energy purchase obligation (RPO)/Procurement of RE power / Payment to RE generators/ setting up RE infrastructure. The Board has also approved a scheme for Loan against securitization of the future GBI receivables for grid connected wind and solar projects."

II SOLAR ENERGY CORPORATION OF INDIA (SECI)

8.7 On being asked about the financial allocation vis-à-vis utilization during the previous years, the Ministry furnished the following details:

Equity support received from MNRE		
Year	Allocation	Utilization
FY 2017-18	Rs. 50 Cr.	the funds received have been utilized for CAPEX activities & to meet the working capital requirements.
FY 2018-19	NIL	
FY 2019-20	NIL	

8.8 When inquired about the financial allocation for the year 2020-21, the Ministry stated that SECI did not seek any equity support from the Ministry for the year 2020-21, as the activities will be carried out from the internal resources of the company and external borrowings.

8.9 In reply to a query regarding the major activities/projects proposed to be undertaken by SECI during 2020-21, the Ministry stated as under:

S. No.	Major Activities planned in FY 2020-21	Current Status
1	Issue of LoA for Renewable Energy projects of aggregate capacity 13500 MW	

2	160 MW solar-wind hybrid project in Andhra Pradesh in CAPEX mode	Awaiting PPA confirmation from Andhra Pradesh
3	100 MW solar with storage project in Chhattisgarh in CAPEX mode	Under Govt. investment approval
4	25 MW solarization project in UT of Lakshadweep in CAPEX mode	Under technical and environmental assessment
5	200 MW floating solar project in Uttarakhand in CAPEX mode	DPR is under preparation
6	150 MW floating solar project in Jharkhand in CAPEX mode	DPR is under preparation
7	100 MW battery storage project in Delhi in CAPEX mode	Under technical assessment
8	10 MW solar project in DRDO Hyderabad	Under technical assessment
9	Project Management Consultancy (PMC) assignments of over 350 MW capacity	Under different stages of implementation

III NATIONAL INSTITUTE OF SOLAR ENERGY (NISE)

8.10 When asked about the performance of NISE during 2019-20, the Ministry stated that all the targets and tasks set for NISE were achieved and furnished the following:

- "Obtained NABL/BIS certification for PID testing of PV modules.
- Up-gradation of Inverter testing facilities from 50 kWp to 100 kWp capacity.
- Up-gradation of Battery testing facilities as per IS 16270:2014 & obtained BIS accreditation.
- Up-gradation of Concentrated Solar Thermal (CST) lab testing facility.
- Installation of 5 water ATM machine in different location under solar powered drinking water ATM project funded by MNRE.
- Patent filed on Method of de-sulphate lead acid battery electrodes in a solar powered charging circuit – 201911037857.
- Under Skill Development the following trainings is organized

Sl. No.	Type of Training	Training Programmes Organized (Nos.)	Participants Trained (Nos.)
1.	Suryamitra Skill Development Programme (31.12.2019)	426	11646
2.	National Trainings on Solar Energy	11	256
3.	International Trainings on Solar Energy (ITEC, IAFS etc.)	05	156
4.	Six months Advanced Solar Professionals Course	01 batch	20

8.11 On being asked about the financial allocation vis-à-vis utilization during the previous years, the Ministry furnished the following details:

Year	Financial Allocation (Rs. in Crore)	Actual Utilization (Rs. in Crore)
2016-17	20.00	13.70
2017-18	18.00	15.21
2018-19	18.00	18.11
2019-20	19.63	13.65 (upto 31.01.2020)

8.12 In response to a query regarding reasons for non-utilization of the allocated funds, the Ministry stated that during FY 2016-17 and 2017-18 due to partial filling of regular posts in newly established institute and delay in procurement of capital equipment, the full Grant under Salary and Capital Heads could not be utilized.

8.13 When inquired about the financial allocation for the year 2020-21, the Ministry stated that Rs 5.00 crores have been approved.

8.14 On being asked if the allocated funds will be sufficient to meet the target set, the Ministry stated that:

> "The fund will not be sufficient under Capital and General Head. The request for supplementary enhancement under Capital Head will be submitted separately. The requirement for 125% is estimated under Capital Head during 2020-21."

IV NATIONAL INSTITUTE OF WIND ENERGY (NIWE)

8.15 When asked about the performance of NIWE during the previous years, the Ministry furnished:

- "Wind Resource assessment in uncovered/ new areas using wind mast/ telecom towers in Chhattisgarh, Telangana, Kerala and North Eastern states of the country.
- Wind potential map of the country at 120 meter above ground level has been prepared, which indicates an estimated 695 GW wind potential.
- NIWE has started 'Central of Excellence in Variable Generation (Wind & Solar) forecasting'. Wind power forecasting service is provided to Tamil Nadu for the last three years. Pilot forecasting are being provided to

Gujarat, Karnataka, Andhra Pradesh and Maharashtra. Wind & solar forecasting for CTU connected wind and solar plants in the Southern Region are provided to SRLDC. The forecasting services would assist SLDCs & SRLDCs in integrating Wind & Solar resource based energy into the Grid.

- The draft document of the holistic certification scheme viz., Indian Wind Turbine Certification Scheme (IWTCS) which covers the entire spectrum of wind turbine life cycle has been prepared.
- First offshore wind measurement was carried out using LiDAR installed at Gulf of Khambhat and one-year data collection completed.
- The Geo-tagging portal of wind turbines has been prepared.
- 20 training courses (16 international and 4 national) have been successfully conducted during the last three financial years including a conference and workshop.
- Pan India Research Network Meeting- Industry and Academia Amalgamation was initiated for deliberations and brainstorming on the Research & Development needs of the Indian wind energy sector that would facilitate the Indian wind industry march to become the global leader in all the facets of the wind energy technology. The event was held in Chennai during 2018 and at Jaipur in 2019.
- Consultancy projects focused on various wind farm developmental needs, such as, micro siting, technical due diligence, installation and commissioning of wind monitoring stations, wind power density map, power curve guarantee test, and pre-feasibility study were undertaken for a variety of clients from public/ government/ private sector. In the last three years, 289 projects were completed."

8.16 On being asked about financial allocation vis-à-vis utilization during the previous years, the Ministry furnished the following details:

(Rs. in lakhs**)**

Particulars	**2016-17**	**2017-18**	**2018-19**	**2019-20**
Grant Carry Forward	1361.00	2364.21	2978.55	-
Grant Received during the year	2525.00	2300.00	-	1700
Interest earned & other receipts	165.49	118.04	157.20	-
Fund available	**4051.49**	**4782.25**	**3135.75**	**1700**
Grant Utilized	1687.27	1803.70	3157.57	1700

Note: Unspent amount with interest earned at the end of 2018-19 was refunded to Ministry.

8.17 When inquired about the financial allocation for the year 2020-21, the Ministry stated that a sum of Rs. 1.5 crores has been allocated.

8.18 When queried about the major activities/projects proposed to be undertaken during 2020-21, the Ministry furnished:

- "Preparation of 150 m wind potential atlas and Wind-Solar Hybrid map.
- Preparation of interactive web portal for 120 m wind potential atlas.
- Wind Turbine Testing Program: Building Quality Assurance & Capacity.
- Offshore wind measurement will be carried out using LiDAR installed at Gulf of Mannar.
- Small Wind Turbine hub Facility for Design and Component Testing at the Renewable Demonstration Lab in WTRS, Kayathar.
- Development of Long-term Wind Speed Forecasting Using Hybrid Model.
- IoT Based Smart wind farm to enable the real-time remote monitoring and control.
- To obtain accreditation for the type certification services as per ISO/IEC 17065 standard."

V NATIONAL INSTITUTE OF BIO ENERGY (NIBE)

8.19 When asked about the performance of NIBE during the previous years, the Ministry furnished:

Objectives		**Performance**		
		2017-18	**2018-19**	**2019-20**
To carry out and facilitate research, design, development, testing, standardization and technology demonstration eventually leading to commercialization of RD&D output	Formulation and submission of R&D projects for funding	1 no. of project	02 nos. of projects	03 nos. Of projects
	Execution of R&D projects	3 nos. of projects	3 nos. of projects	02 nos. Of projects
	Proposal submission for setting up R&D-cum-Technology Demonstration plants	1 no.	02 nos. of projects	03 nos.
	Research paper/ Book chapter/ Book Publications	12 nos.	11 nos.	06 nos.
To undertake and facilitate human resource development and training including doctoral and post-doctoral research in the area of bio-energy	Project Training to Masters & Ph.D. students from other Institutions/ Universities	06 nos.		06 nos.
	Outsourced manpower for carrying out R&D and Administrative activities	14 nos.	14 nos.	14 nos.
	Organization of Conference/ Workshop/Training programmes	01 no.	01 no.	02 nos.
	Formulation of M Tech Program in Renewable Energy in collaboration Dr B R Ambedkar NIT Jalandhar	--	01 In the final stage of approval at NIT Jalandhar, and academic program will start from June 2020	

To create facilities for operationalization of the Institute	Repair and maintenance of civil/electrical work	Done as and when required	Done as and when required	Done as and when required
	Recruitment of 10 new scientists (B, C, D, E &F)	--	Under process of advertisement	
	AMC/CMC laboratory equipment for proper functioning	--	--	In progress
	Setting-up of NKN connectivity	--	--	Done
	MoU with other Institutions/Universities	05	05	05

8.20 In response to a query about non-achievement of physical targets, the Ministry stated that the physical targets could not be achieved due to acute shortage of manpower at the institute. Further the research projects under physical targets are submitted for approval and are under process.

8.21 On being asked about the financial allocation vis-à-vis utilization during the previous years, the Ministry furnished the following details:

Year	Grant Carry Forwarded from last year (Rs in lakhs)	Grant Received (Rs in lakhs)	Grant Utilized (Rs in lakhs)	Remarks
2017-18	531.02	100.00	204.04	-
2018-19	426.98	100.00	285.11	Interest (Rs 40.69) and balance amount totalling to Rs 282.56 lakh surrendered to Govt.
2019-20 (till Jan 31, 2020)	NIL	66.00	139.61	The interest accrued is being utilized

8.22 On being asked about financial allocation for the year 2020-21, the Ministry stated that the budget allocation for FY 2020-21 is Rs 1.5 crore, which would not be sufficient to meet the targets. The proposal to utilize the interest accrued on Corpus Fund to meet the deficit is under consideration.

8.23 When queried about the major activities/projects proposed to be undertaken during 2020-21, the Ministry furnished:

- "Biogas demonstration plant for co-digestion of paddy straw with kitchen waste.
- Densification and co-firing of agro-waste for power generation through gasification."

PART –II

OBSERVATIONS/RECOMMENDATIONS OF THE COMMITTEE

DEMANDS FOR GRANTS OF THE MINISTRY FOR 2020-21

1. The Committee note that an allocation of Rs. 9523.04 crores was sought by the Ministry for the year 2020-21, but Rs. 5753.00 crores have actually been sanctioned i.e. Rs. 3770.04 crores less than the required amount. In view of the gigantic targets assigned to the Ministry, allocation of 40% less funds as compared to the amount sought seems unjustifiable. The Ministry has suffered cuts in all the major heads against its projected expenditure for the year 2020-21. However, there is an increase of Rs 498.17 crores in BE (2020-21) as compared to the BE (2019-20) i.e. an increase of less than 10% and an increase of Rs 1861.26 crores in BE (2020-21) as compared to RE (2019-20) i.e. an increase of about 48%. But at the same time, if the allocation of Rs 1000 crores for expansion of KUSUM Scheme and increased corresponding physical targets are taken into account, the Ministry has not got any real increment. Further, in BE (2019-20), the Ministry was given a target of 8500 MW of Grid Interactive Solar Power with an allocation of Rs. 2479.90 crores. However, in BE (2020-21), a target of 9000 MW of Grid connected Solar Power has been given with an allocation of Rs 2149.65 crores. There seems to be a mismatch between the financial allocation and the given physical target as the allocation has been decreased while the physical target has been increased for the year 2020-21 as compared to the previous year.

Keeping in view the allocation of less than required amount and the increased targets assigned to the Ministry, the Committee recommend that additional funds should be provided to the Ministry at RE stage.

BUDGET ALLOCATION AND UTILIZATION

2. The Committee note that Gross Budgetary Support to the Ministry was substantially decreased at the RE stage for the year 2017-18 and 2019-20, while it remained the same during the year 2018-19. For both the years, the allocation was reduced by more than 25%. However, the Committee appreciate the Ministry for its efforts in mobilizing extra funds through IEBR which forms a major part of expenditure in the Renewable Energy Sector. The Committee observe that the Ministry has not been able to fully utilize even the decreased allocations during the previous years. It could utilize 92.37%, 86.97% and 81.02% of revised budgetary allocations during the years 2017-18, 2018-19 and 2019-20 (upto January, 2020) respectively. Reasons cited for non-utilization of allocated funds involve lack of adequate proposals from North-Eastern States, shortfall in expenditure on Research and Development Projects, etc. The Committee feel that the Ministry should find the way out for the reasons cited as soon as possible as it can not afford to simply ignore the development of Renewable Energy in North-Eastern States.

The Committee are of the opinion that decrease in budgetary allocation at RE stage and low utilization of even the decreased allocated amount are symptomatic of the poor financial planning by the Ministry. The Committee, therefore, recommend that the Ministry should focus on proper and exhaustive utilization of allocated funds and take remedial measures against factors responsible for low utilization as continuous shortfall in utilization of the allocated funds has a negative impact on budgetary allocation for the subsequent years.

PHYSICAL TARGETS AND ACHIEVEMENTS

3. The Committee are concerned to note that the Ministry has continuously failed to achieve its yearly physical targets. For the years 2017-18 and 2018-19, against the Grid connected Renewable Energy

target of 14,445 MW and 15,355 MW, the Ministry could achieve 11,876.82 MW and 8519.52 MW respectively. There was shortfall of about 18 % and 45 % during these years. Similarly, during the year 2019-20 (upto January, 2020), 8,004.64 MW could be installed against the target of 11,852 MW. Physical achievement with respect to Family type Biogas Plants is also poor as the Ministry could not achieve the target in any of the year from 2016-17 onwards. Given the time bound target of 175 GW by 2022, such performances are disappointing.

The Committee feel that with continuous non-achievement of the assigned yearly physical targets, the Ministry may find it difficult to achieve 175 GW by 2022. The Committee are highly dissatisfied with the performance of the Ministry and expect the Ministry to improve its target achievement in the coming year. The Committee, therefore, recommend that:

a) The Ministry should identify the weak areas on the basis of its performance during the previous years and take corrective actions without any further delay.

b) It should also ensure continuous monitoring of the implementing agencies.

GREEN ENERGY CORRIDOR

4. The Committee note that under Green Energy Corridor Project, creation of Intra-State Transmission System has been approved with a target of establishment of Grid sub-stations with aggregate transmission capacity of approx. 22600 MVA (Mega Volt Ampere) and installation of 9700 ckt-kms (Circuit kilometres) of transmission lines in the states of Andhra Pradesh, Gujarat, Himachal Pradesh, Karnataka, Madhya Pradesh, Maharashtra, Rajasthan and Tamil Nadu. The project was supposed to be completed by March 2020, but commissioning schedule has been extended till December, 2020. The Committee also note that as

on January 15, 2020, 6258 ckt-kms of transmission lines have been constructed and 6812 MVA capacity substations have been commissioned. The Committee observe that to meet the given target, 3442 ckt-kms of transmission lines have to be installed and grid substations of aggregate capacity of 15788 MVA have to be established upto December 2020 so as to meet the extended deadline, which seems highly unlikely seeing the past performance of the Ministry. The Committee note that the yearly allocation and the physical targets with respect to the Green Energy Corridor do not correspond with each other. Successively increasing physical targets and reducing financial allocations reflect poorly on the planning and execution of the project as well as the seriousness of the Ministry. The Ministry should eschew playing ducks and drakes with an important project like Green Energy Corridor.

The Committee are aware that for 2018-19, the Ministry was provided Rs. 600 crore (BE) for Green Energy Corridor with a physical target of 3000 ckt-kms (cumulative) and for 2019-20, an allocation of Rs. 500 crore (BE) has been made with a physical target of 6000 ckt-kms (cumulative). For 2020-21, Rs. 300 crores have been allocated with a physical target of 8000 ckt-kms (cumulative). The cumulative target of 8000 ckt- kms for 2020-21 is beyond logic when the Ministry has the target to install 9700 ckt-kms (cumulative) by December, 2020. It shows the unrealistic assessment of physical targets set by the Ministry.

The Committee, therefore, recommend that the Ministry should work on mission mode to get the Green Energy Corridor ready within the reasonable time frame in order to avoid grid congestion and to facilitate integration and evacuation of large scale renewable power capacity.

WIND ENERGY

5. The Committee note that against the target of 60 GW of installed Wind Power by the year 2022, a total capacity of 37.61 GW has been installed as on January 31, 2020. The Committee are informed that besides the commissioned capacity of 37.60 GW, a capacity of 9.25 GW is under implementation and bids are undergoing for another 2.20 GW.

The Committee observe that the Ministry remained miserably short of its targets during the years 2017-18 and 2018-19, where against the target of 4000 MW each, the Ministry could achieve only 1865 MW and 1481 MW with shortfall of 53% and 63% respectively. For the year 2019-20, against the reduced target of 3000 MW, the Ministry has been able to achieve 1981.71 MW till January 31, 2020. The budget allocated for each of the three years i.e. 2017-18, 2018-19 and 2019-20 have reportedly been fully utilized. The Committee feel that the Ministry was clearly not able to keep up the momentum it acquired in the initial years as its performance during last few years is highly frustrating.

The Committee observe that capacity additions till 2017 were through Feed-in-Tariff mechanism and subsequently, the tariff regime has been shifted from Feed-in-Tariff to bidding route which has disrupted the installation of projects. The Committee feel that the Ministry should avoid those unnecessary changes that have the potential to send a well functioning Sector into a downward spiral.

The Committee are informed that for the year 2020-21, a physical target of 3000 MW has been set with a budgetary allocation of Rs. 1299.35 crores which includes disbursal under Generation Based Incentive Scheme. The Committee hope that the Ministry will achieve its target for the coming year unlike the previous years as the budgetary allocation for the Wind Energy Sector for 2020-21 has been increased. The Committee, therefore, recommend that:

i) The Ministry should look into the reasons responsible for non-achievement of the physical targets in 2017-18 and 2018-19 and take corrective measures for the same. The Committee may be apprised of the reasons and corrective measures taken in this regard.

ii) The Ministry should avoid bringing in any sudden and disruptive shift like change in tariff regime without proper consultations with the stakeholders.

SOLAR ENERGY

6. The Committee note that a target of 100 GW of Solar Capacity has been set to be achieved by 2022. As on January 31, 2020, a capacity of 34,035.63 MW has already been installed. The Committee feel that the Ministry have a huge task to commission remaining 65,964.37 MW of Solar Energy Capacity in just about two and a half years so as to meet the stipulated target of 1,00,000 MW Solar Energy Capacity by 2022, with an average of more than 26,000 MW per year. Although the Ministry has given assurance to the Committee about time bound achievement of target but the Committee are skeptical about this assurance.

The Committee observe that for the year 2017-18 and 2018-19, against the targets of 10000 MW and 11000 MW of Grid-connected Solar Power, the Ministry had been able to achieve 9362.67 MW and 6529.20 GW with utilization of Rs. 1889.93 crores and Rs 2524.65 crores respectively. It means the target achievement was 94% and 60% in the respective years. The Committee find that there is no co-relation between the achievement of financial and physical targets, as there is higher physical achievement with lesser financial utilization and lesser physical achievement with higher financial utilization. For the year 2019-20, against the target of 8500 MW, the Ministry has achieved

5855.01 MW as on January 31, 2020 with utilization of Rs 1751.07 crores.

The Committee are concerned about the performance of the Ministry in Solar Energy Sector as the Ministry has continuously been missing on its yearly Solar Energy capacity addition targets. The Committee, therefore, recommend that:

i) The Ministry should work hard so as to achieve the target of 9000 MW set for the year 2020-21.

ii) The Ministry should make sustained efforts to find solutions for the constraints being faced in the commissioning of Solar Projects in consultation with other agencies concerned in a time bound manner.

7. The Committee note that NISE has estimated a Roof-top SPV potential of 42.80 GW. Accordingly, a target of 40 GW of installed Roof-top Solar Power by 2022 has been set by the Government. Against the target of 3000 MW of RTS in 2019-20, only 580.15 MW have been installed as on January 31, 2020. The Committee are highly distressed with the dismal performance of the Ministry in this Sector.

The Committee feel that Roof-top Systems are not attractive for the consumers due to high maintenance cost and complicated procedures of disbursement of subsidy. The Committee are of the opinion that given the performance of the Ministry in this Sector till date, the Roof-top Solar target of 40 GW by 2022 is highly unlikely to be achieved. The Committee are of the considered view that the Ministry should focus on this programme on a Mission Mode so as to give it a fillip. The Committee, therefore, recommend that:

i) The process of subsidy disbursement should be made simpler and faster and the Ministry should widely advertise the benefits of having a Roof-top Solar Projects and the incentives

provided by the Government for the same so as to spread awareness among the masses.

ii) Proper implementation of Net-Metering should be ensured.

iii) The Ministry should have regular review meetings with the implementing agencies.

8. The Committee note that for installation of an additional 66 GW, financing of about Rs. 2,64,000 Crores (@ Rs. 4 Cr/MW) will be required and to fulfil the commitment to increase the Renewable Energy Capacity addition target to 450 GW as a part of a stronger climate action plan, there is a need to make available huge amount of capital. During the year 2018-19, US $ 1446.16 Million was attracted as FDI. However, the Committee observe that the Renewable Energy Sector is finding it difficult to get loans from the banks as for the Banking System, both Conventional Power Sector and Renewable Energy Sector are clubbed within the same Power Sector Exposure Norms and Conventional Power Sector has NPAs with most of the banks. The Committee are not able to understand that if the Ministry is finding it difficult to raise funds for achievement of 175 GW, how it will achieve the enhanced target of 450 GW. The Committee find that while Small Hydro and Biomass Sector have NPAs, Wind and Solar Sector do not have any NPA till date. But, the Committee are informed that if the States/DISCOMs do not pay back their outstanding dues, many of the solar and wind projects may also turn into NPAs. The Committee feel that the Renewable Energy Sector also has its own share of problems which hamper the investment in this Sector like imposition of safeguard and custom duties, impact of GST, change of tariff regime in Wind Energy Sector, renegotiation/ cancellation of PPAs etc. which cause inconsistency and uncertainty. The Committee, therefore, recommend that:

i) The exposure limit for Renewable Energy Sector may be set separate so that the NPAs of Power Sector do not impact the Renewable Energy Sector adversely.

ii) The Ministry should hold discussions with the State Governments and come up with guidelines/directives so as to ensure timely payment from DISCOMs.

iii) Inconsistency and uncertainty with respect to the applicable policies should be avoided as far as possible.

BIOMASS POWER AND BAGASSE CO-GENERATION PROGRAMME

9. The Committee note that the estimated potential for power generation from Biomass/Bagasse Co-generation in the country is about 26 GW. Against this, a cumulative capacity of 9861.31 MW has reportedly been installed in the country (as on January 31, 2020). The Committee observe that for the year 2017-18 and 2018-19, against the targets of 340 MW and 250 MW, capacity addition of 519 MW and 402 MW respectively have been achieved. However, the amount allocated for these two years could not be fully utilized. During the year 2019-20, against the physical target of 250 MW, the achievement is only 83 MW as on January 31, 2020.

The Committee also note that Biomass Power/Bagasse Cogeneration Sector has been facing problems such as non-signing of PPAs by DISCOMs, lack of working capital and non-availability of biomass and this Sector also has Non-Performing Assets. Out of the total loan of Rs 153.35 crores given to this Sector by IREDA, 94.53 % has turned out to be NPAs. The Committee, therefore, recommend that:

i) The Ministry should take steps to alleviate its problems such as non-signing of PPAs by DISCOMs, lack of working capital and non-availability of biomass and help this Sector to come out of financial stress.

ii) The Ministry should work toward use of agricultural/crop residues for decentralized power generation so as to help farmers and alleviate the problem of air pollution in the country.

SMALL HYDRO POWER

10. The Committee note that the identified potential for power generation from Small Hydro Projects (upto 25 MW capacity) is around 21,133.62 MW from 7133 identified sites all over the country. Against this estimated potential, a cumulative capacity of 4676.56 MW has been installed (as on January 31, 2020). The Committee observe that during 2016-17, 2017-18 and 2018-19, against the target of 150 MW, 100 MW and 100 MW, a capacity addition of 105.90 MW, 105.96 MW, and 107.35 MW respectively have been installed and the expenditure during this period have been more than the allocated amount except in 2018-19. However, it may be said that instead of striving to achieve the yearly target of 250 MW that was there before 2016-17, the Ministry has lowered its target from 250 MW in 2014-15 and 2015-16 to 100 MW 2017-18 onwards. The Committee observe that for the year 2019-20, the budgetary allocation was Rs. 190.90 crore with a physical target of 100 MW, however the Ministry has not furnished the physical/financial achievement data for this year.

The Committee are apprised that in North Eastern States, new projects could not be sanctioned as the scheme related to continuation of Small Hydro Programme from 1st April 2017 to 31st March 2020 is still under consideration. The Committee feel that such inordinate delay in finalizing a Scheme speaks volume about the casual approach of the Government towards North-Eastern States as well as the Small Hydro Sector. The Committee find that Small Hydro is one of Sectors which has NPAs. The Committee, therefore, recommend that:

i) The Ministry should formulate new scheme for implementation of Small Hydro Projects as soon as possible so as to revamp the small hydro sector in the country especially in North Eastern Region.

ii) The Ministry should make efforts to ensure that the interstate charges/cess are not levied on Small Hydro Sector.

RENEWABLE PURCHASE OBLIGATION (RPO)

11. The Committee note that a long term RPO Trajectory has been issued to promote the Renewable Energy sector. For the year 2018-19, only 4 States could achieve 100 % RPO target, another 7 States could achieve more than 60 % of the target and the target achievement of all other States was less than 60 %. The Committee feel that most of the States do not follow the mandated trajectory and SERCs have defined their own respective RPO Regulations which have a off-putting effect on RPO compliance. The Committee observe that some of the States have been falling behind in RPO compliance possibly due to pre-existing long term PPAs with conventional power producers and insufficient increase in electricity demand. However, the Committee are of the opinion that carry forward or waiver of RPO should not be permitted. The Committee, therefore, recommend that the Ministry should ensure RPO compliance and may enforce penal provisions against the defaulting Obligated Entities.

RENEWABLE ENERGY FOR RURAL APPLICATIONS

12. The Committee note that Renewable Energy for Rural Applications includes the New National Bio-Gas and Organic Manure Programme (NNBOMP) and Bio-Gas based Power Generation (0ff-Grid) & Thermal Energy Application Programme. NNBOMP aims at setting up small biogas plants for meeting cooking and lighting needs of mainly rural and semi-urban households of the country, while Bio-gas based Power Generation

Programme provides clean energy solution to reduce consumption of diesel and kerosene by installation of medium size biogas plants.

The Committee observe that from the year 2016-17 to 2019-20, allocation for this Sector has been considerably reduced and the Ministry has consistently failed to achieve the physical targets and utilize even the reduced financial allocation. During the year 2017-18 and 2018-19, against the Financial Allocation (RE) of Rs. 94 crores and Rs. 78 crores, only Rs. 67.69 crores (72 %) and Rs. 42.72 crores (56 %) could be utilized respectively. Against the physical target of 65180 and 1 lakh Bio-Gas Plants during the year 2017-18 and 2018-19, the Ministry has been able to set up only 43887 (67 %) and 26980 (~27 %) such plants respectively. During the year 2019-20, the Ministry has been able to set up only 16185 Bio-Gas Plants against the target of 76000 as on September 30, 2019. Regarding Biogas Power Generation (Off-grid) and Thermal application Programme, the performance of the Ministry is equally disappointing where against the target of setting up of 50 Projects during 2019-20, the Ministry has sanctioned only 19 projects till January 31, 2020. The Committee feel that the performance of the Ministry in this sector is not up to the mark. The Committee are informed that the non-achievement of Bio-Gas targets is due to low priority given to this scheme at the State level, impact of Ujjwala Scheme and almost no lending facility.

The Committee are of the view that apart from electricity generation, Bio-Gas Plants help rural people by meeting their cooking and other energy requirements. The Committee, therefore, recommend that:

i) The Ministry should work towards providing lending facilities for meeting the upfront cost for installation of Bio-Gas Plants.

ii) The Ministry should encourage the State authorities to give due priority to this scheme.

RENEWABLE ENERGY FOR NORTH EASTERN REGION

13. The Committee note that a separate budgetary allocation of 10% is earmarked under various renewable energy programs for deployment of grid & off-grid solar energy systems, wind energy systems, small hydro projects, bio-gas plants, etc. in the entire North Eastern Region. However, no separate physical targets are set for various programmes/schemes being implemented in the region. But, the Committee have been informed time and again that adequate proposals have not been received from North-East States, due to which there is substantial shortfall in fund utilization. It is also submitted that the potential for solar & wind energy in North-Eastern Region is much less in comparison to other states and due to low solar insolation and wind power density, the output of such projects is less and cost is relatively high thus making solar & wind power produced in these areas non-remunerative. The Committee find it difficult to agree that potential of Solar and Wind Energy North-Eastern Region is much less as compared to other States. Solar insolation may not be of comparable intensity but Wind Energy at high mast can definitely be harnessed in the Region.

Further, the Committee have been informed that the Ministry is taking up with Ministry of DoNER and Ministry of Finance to exempt it from utilization of 10% NE Funds and allocate the same to those which have potential to utilize. The Committee do not concur with the views of the Ministry with respect to taking exemption from utilization of 10 % funds in the North-Eastern States and recommend that the Ministry should come up with dedicated scheme for the North-Eastern States in consultation with the concerned State Governments so as utilize the available Renewable Energy Potential in that region.

RESEARCH, DESIGN, DEMONSTRATION AND DEVELOPMENT IN RENEWABLE ENERGY SECTOR

14. The Committee note that Budgetary Allocation under RDD&D for the years 2017-18, 2018-19 and 2019-20 were drastically reduced at RE stage i.e. in 2017-18, BE of Rs. 144 crores was reduced to Rs. 81 crores, in 2018-19, BE of Rs 94 crores was reduced to 43 crores and in 2019-20, BE of Rs 60 crores was reduced to 15 crores at RE stage. The Committee find that even the reduced amount could not be fully utilized. Keeping in view the fact that there are three institutions dedicated to research in Renewable Energy Sector namely NISE, NIWE and NIBE, the Committee are not able to understand this inability of the Ministry to utilize the allocated amount, especially when the Budgetary allocation for these institutions is meagre.

The Committee note that an amount of Rs. 20.00 crores has been allocated under RDD&D for the year 2020-21 with thrust on improving efficiency, reliability and cost effectiveness of indigenous manufacture, development of solar thermal technology, developing new material solar cells, storage solutions, development of efficient and cost effective designs of biogas plants, off-shore technology and wind solar hybrid systems, pumped storage systems, etc. The Committee feel that despite having such diverse thrust areas for research, the inability of the Ministry to utilize the allocated amount is noteworthy. The Committee, therefore recommend that:

i) The Ministry should focus on maximum utilization of allocated funds so that Research, Design, Demonstration and Development in Renewable Energy Sector do not suffer.

ii) The Ministry should allocate funds for research in Small Wind Sector.

PSUs/INSTITUTIONS UNDER THE MINISTRY

15. The Committee note that IREDA's total income has been increasing for the last three years but its profit after tax is declining. It has also paid dividend of Rs. 125.50 crores, Rs. 126.84 crores and Rs. 128.19 crores for the years 2016-17, 2017-18 and 2019-20. The Committee also note that it had NPA of 3.74 % during 2018-19 which is a cause for concern. Keeping in view the not so conducive market conditions, liquidity problem and reluctance of commercial banks to provide loans to Renewable Energy Sector, IREDA being the only non-banking financial institution exclusively engaged in promoting, developing and extending financial support for setting up projects relating to renewable energy and energy efficiency/conservation, should shoulder the extra responsibility. The Committee, therefore recommend that:

i) The capital base of IREDA should be increased through fresh equity/equity infusion by other CPSUs so that it continues on the expected growth trajectory, both in terms of lending operation and raising resources.

ii) IREDA should work towards reducing its NPA in accordance with Norms of the RBI.

iii) Keeping in view the emphasis of the Government on Renewable Energy Sector and IREDA being the major lending agency, it should be ensured that Renewable Energy Sector does not face the financial/lending problems as is happening with the Conventional Power Sector. To achieve this, all possible steps including intervention by the RBI to expand and broad-base the equity framework of the IREDA should be taken in the right earnest.

16. The Committee note that National Institute of Solar Energy could not fully utilize the allocated amount, especially during 2016-17 and

2017-18. However, it overspent in 2018-19. The Committee also note that for 2019-20, an amount of Rs. 19.63 Crores was allocated to NISE, out of which Rs 13.55 crores have been utilized upto January, 2020. The Committee observe that the financial allocation has been drastically reduced for the year 2020-21, as only Rs 5 crores have been given to NISE for the upcoming year. It is submitted that the allocated funds will not be sufficient.

Similarly, a meagre amount of Rs. 1.5 crore each has been allocated to National Institute of Wind Energy and National Institute of Bio Energy. It has been submitted that there is acute shortage of manpower at NIBE. The Committee are concerned about such pathetic condition of these National Institutes and feel that, let alone National Institutions, no institute can be effectively run through allocation of a token amount and acute shortage of manpower. The Committee, therefore, recommend that:

i) More funds should be provided to NISE, NIWE and NIBE so that their proposed activities/projects may be carried out as planned.

ii) The Ministry should take steps to solve the problem of acute shortage of technical and scientific manpower at NIBE through recruitment/deputation as soon as possible.

NEW DELHI
March 06, 2020
Phalguna 16, 1941 (Saka)

SHRI RAJIV RANJAN SINGH
alias LALAN SINGH
Chairperson,
STANDING COMMITTEE ON ENERGY

ANNEXURE-I

Details of the Budget Estimates for the year 2020-21 vis-à-vis BE/RE of 2019-20 and Actuals of 2018-19

MINISTRY OF NEW AND RENEWABLE ENERGY

DEMAND NO. 70

Ministry of New and Renewable Energy

(In ₹ crores)

	Actual 2018-2019			Budget 2019-2020			Revised 2019-2020			Budget 2020-2021		
	Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total
Gross	4460.41	17.39	4477.80	5209.83	45.00	5254.83	3820.74	71.00	3891.74	5701.00	52.00	5753.00
Recoveries	-253.18	...	-253.18	...	...	...	...	...	...	...	...	...
Receipts	...	...	...	...	...	...	...	...	...	...	...	...
Net	**4207.23**	**17.39**	**4224.62**	**5209.83**	**45.00**	**5254.83**	**3820.74**	**71.00**	**3891.74**	**5701.00**	**52.00**	**5753.00**
A. The Budget allocations, net of recoveries, are given below:												
CENTRE'S EXPENDITURE												
Establishment Expenditure of the Centre												
1. Secretariat	37.60	...	37.60	43.38	...	43.38	40.34	...	40.34	46.50	...	46.50
2. Office Buildings	...	17.39	17.39	...	45.00	45.00	...	71.00	71.00	...	52.00	52.00
Total-Establishment Expenditure of the Centre	**37.60**	**17.39**	**54.99**	**43.38**	**45.00**	**88.38**	**40.34**	**71.00**	**111.34**	**46.50**	**52.00**	**98.50**
Central Sector Schemes/Projects												
Grid Interactive Renewable Power												
3. Wind Power	950.00	...	950.00	920.00	...	920.00	1026.00	...	1026.00	1299.35	...	1299.35
4. Small Hydro Power	136.75	...	136.75	182.90	...	182.90	92.10	...	92.10	100.00	...	100.00
5. Bio Power	6.83	...	6.83	25.00	...	25.00	4.68	...	4.68	75.00	...	75.00
6. Solar Power	1903.74	...	1903.74	2479.90	...	2479.90	1789.49	...	1789.49	2149.65	...	2149.65
7. Kisan Urja Suraksha evam Utthaan Mahabhiyan (KUSUM)	...	...	...	...	...	...	...	...	...	300.00	...	300.00
8. Green Energy Corridors	500.00	...	500.00	500.00	...	500.00	52.61	...	52.61	300.00	...	300.00
9. Externally Aided Project (EAP) - Component	...	...	...	40.00	...	40.00	0.41	...	0.41	1.00	...	1.00
10. Interest Payment and Issuing Expenses on the Bonds	124.39	...	124.39	124.35	...	124.35	124.35	...	124.35	125.00	...	125.00
Total-Grid Interactive Renewable Power	**3621.71**	**...**	**3621.71**	**4272.15**	**...**	**4272.15**	**3089.64**	**...**	**3089.64**	**4350.00**	**...**	**4350.00**
Off-Grid/Distributed and Decentralized Renewable Power												
11. Wind Power	1.60	...	1.60	...	...	...	...	...	...	3.01	...	3.01
12. Small Hydro Power	0.92	...	0.92	8.00	...	8.00	2.04	...	2.04	2.00	...	2.00
13. Bio Power	3.35	...	3.35	50.00	...	50.00	6.03	...	6.03	53.00	...	53.00
14. Solar Power	620.89	...	620.89	525.00	...	525.00	491.02	...	491.02	366.14	...	366.14
15. Kisan Urja Suraksha evam Utthaan	...	...	...	...	...	...	...	...	...	700.00	...	700.00

(In ₹ crores)

	Actual 2018-2019			Budget 2019-2020			Revised 2019-2020			Budget 2020-2021		
	Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total
Mahabhiyan(KUSUM)												
16. Biogas Programme	42.72	...	42.72	100.00	...	100.00	51.00	...	51.00	60.00	...	60.00
17. Other Renewable Energy Applications (Solar Cities, Green Buildings, Support to States, Demonstration of Renewable Energy Applications, Cookstoves, etc.)	0.11	...	0.11	5.00	...	5.00	0.27	...	0.27	0.05	...	0.05
Total-Off-Grid/Distributed and Decentralized Renewable Power	**669.59**	**...**	**669.59**	**688.00**	**...**	**688.00**	**550.36**	**...**	**550.36**	**1184.20**	**...**	**1184.20**
Research, Development and International Cooperation												
18. Research and Development	25.43	...	25.43	60.00	...	60.00	15.01	...	15.01	20.00	...	20.00
Supporting Programmes												
19. Monitoring/Evaluation and Other Studies	0.07	...	0.07	0.30	...	0.30	0.03	...	0.03	0.30	...	0.30
20. Information Technology/e-Governance and other Initiatives	0.10	...	0.10	1.00	...	1.00	0.55	...	0.55	...	...	...
21. Information, Education and Communications	5.15	...	5.15	10.00	...	10.00	7.21	...	7.21	10.00	...	10.00
22. International Relations - International Co-operation including Investment Promotion and Assistance to International Solar Alliance	24.37	...	24.37	30.00	...	30.00	16.90	...	16.90	22.00	...	22.00
23. Human Resources Development and Training	57.39	...	57.39	70.00	...	70.00	64.00	...	64.00	60.00	...	60.00
Total-Supporting Programmes	**87.08**	**...**	**87.08**	**111.30**	**...**	**111.30**	**88.69**	**...**	**88.69**	**92.30**	**...**	**92.30**
Total-Central Sector Schemes/Projects	**4403.81**	**...**	**4403.81**	**5131.45**	**...**	**5131.45**	**3743.70**	**...**	**3743.70**	**5646.50**	**...**	**5646.50**
Other Central Sector Expenditure												
Autonomous Bodies												
24. National Institute of Wind Energy	...	...	...	17.00	...	17.00	23.00	...	23.00	1.50	...	1.50
25. National Institute of Bio Energy	1.00	...	1.00	3.00	...	3.00	0.70	...	0.70	1.50	...	1.50
26. National Institute of Solar Energy	18.00	...	18.00	15.00	...	15.00	13.00	...	13.00	5.00	...	5.00
Total-Autonomous Bodies	**19.00**	**...**	**19.00**	**35.00**	**...**	**35.00**	**36.70**	**...**	**36.70**	**8.00**	**...**	**8.00**
Others												
27. Deduct Recovery of over Payment	-253.18	...	-253.18	...	...	...	...	...	...	...	...	...
Total-Other Central Sector Expenditure	**-234.18**	**...**	**-234.18**	**35.00**	**...**	**35.00**	**36.70**	**...**	**36.70**	**8.00**	**...**	**8.00**
Grand Total	***4207.23***	***17.39***	***4224.62***	***5209.83***	***45.00***	***5254.83***	***3820.74***	***71.00***	***3891.74***	***5701.00***	***52.00***	***5753.00***
B. Developmental Heads												
Economic Services												
1. New and Renewable Energy	4169.63	...	4169.63	4653.45	...	4653.45	3405.40	...	3405.40	5089.50	...	5089.50
2. Secretariat-Economic Services	37.60	...	37.60	43.38	...	43.38	40.34	...	40.34	46.50	...	46.50
3. Capital Outlay on New and Renewable Energy	...	17.39	17.39	...	45.00	45.00	...	71.00	71.00	...	52.00	52.00
Total-Economic Services	**4207.23**	**17.39**	**4224.62**	**4696.83**	**45.00**	**4741.83**	**3445.74**	**71.00**	**3516.74**	**5136.00**	**52.00**	**5188.00**
Others												

(In ₹ crores)

	Actual 2018-2019			Budget 2019-2020			Revised 2019-2020			Budget 2020-2021		
	Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total	Revenue	Capital	Total
4. North Eastern Areas	...	...	...	513.00	...	513.00	375.00	...	375.00	565.00	...	565.00
Total-Others	...	...	...	**513.00**	...	**513.00**	**375.00**	...	**375.00**	**565.00**	...	**565.00**
Grand Total	**4207.23**	**17.39**	**4224.62**	**5209.83**	**45.00**	**5254.83**	**3820.74**	**71.00**	**3891.74**	**5701.00**	**52.00**	**5753.00**

	Budget Support	IEBR	Total	Budget Support	IEBR	Total	Budget Support	IEBR	Total	Budget Support	IEBR	Total
C. Investment in Public Enterprises												
1. Indian Renewable Energy Development Agency	...	10119.37	10119.37	...	12053.57	12053.57	...	12084.08	12084.08	...	13351.85	13351.85
2. Solar Energy Corporation of India	...	339.78	339.78	...	300.24	300.24	...	382.24	382.24	...	374.89	374.89
Total	**...**	**10459.15**	**10459.16**	**...**	**12353.81**	**12353.81**	**...**	**12466.32**	**12466.32**	**...**	**13726.74**	**13726.74**

1. **Secretariat:** Provision is for Secretariat expenditure.

2. **Office Buildings:** Provision is for Major Works Construction of Office Building: Atal Akshay Urja Bhawan.

3. **Wind Power:** This Generation Based Incentive Scheme for Capacity of 4 GW Wind Power will be commissioned in 2020-21.

4. **Small Hydro Power:** Capacity of 0.1 GW hydro power will be commissioned 2020-21.

5. **Bio Power:** Central Financial Assistance for capacity addition of 0.3 GW Bio Power in 2020-21.

6. **Solar Power:** Central Financial Assistance for capacity addition of 7500 MW Solar Power in 2020-21.

7. **Kisan Urja Suraksha evam Utthaan Mahabhiyan (KUSUM):** The Ministry has formulated a new scheme Kisan Urja Suraksha evam Utthaan Mahabhiyan (KUSUM) for setting up Decentralized Ground Mounted Grid Connected Solar Power Plants, installation of Stand alone Solar Water Pumps for agriculture and Solarisation of existing Grid Connected Agriculture Pumps with the objective of providing financial and water security to farmers. State Government/DISCOMs will be encouraged to put in place a mechanism through which surplus solar power could be purchased by the distribution companies at a tariff determined by the States.

8. **Green Energy Corridors:** Green Energy Corridor: Provision of CFA will be utilised for capacity addition of Cumulative 6000ckmtransmission infrastructure under intra state Green Energy Corridorproject in 2020-21.

9. **Externally Aided Project (EAP) - Component:** Promotion of two projects namely:

(i) UNDP/GEF project on scale up of Access to Clean Energy for Rural productive uses: project Activities related to access to energy for increasing livelihood of the poor in remote villages in UNDAF states.

(ii) IGEN- Access under Indo-German Bilateral Program: project activities related to development of conducive environment and removing market barriers for rural energy enterprises to prosper and provide energy and energy products/services.

10. **Interest Payment and Issuing Expenses on the Bonds:** Interest Payments and Issuing Expenses: Payment of interest towards bonds issued/to be issued by IREDA for Implementation of RE Projects.

11. **Wind Power:** Central Financial Assistance for Wind Power project activities related to development of conducive environment and clean energy.

12. **Small Hydro Power:** Central Financial Assistance for Small Hydro Power project activities related to development of conducive environment and clean energy.

13. **Bio Power:** Central Financial Assistance for capacity addition of 30 MWeq off-Grid/Distributed Bio Power in 2020-21.

14. **Solar Power:** Implementation of Ph-III of the off-grid solar PV programme, which covers installation of 3 lakh solar street lights, distribution of 25 lakh solar study lamps and installation of solar power packs of total aggregated capacity of 100 MWp. In addition, under AJAY Ph-II over 3 lakh solar street lights would be installed. Further 20MWeq Projects of Concentrated Solar Thermal (CST) will be undertaken.

15. **Kisan Urja Suraksha evam Utthaan Mahabhiyan(KUSUM):** The Ministry has formulated a new scheme Kisan Urja Suraksha evam Utthaan Mahabhiyan (KUSUM) for setting up Decentralized Ground Mounted Grid Connected Solar Power Plants, installation of Stand-alone Solar Water Pumps for agriculture and Solarisation of existing Grid Connected Agriculture Pumps with the objective of providing financial and water security to farmers. State Government / DISCOMs will be encouraged to put in place a mechanism through which surplus solar power could be purchased by the distribution companies at a tariff determined by the States.

16. **Biogas Programme:** To install one lakh bio gas plants for providing alternate cooking fuel solutions.

17. **Other Renewable Energy Applications (Solar Cities, Green Buildings, Support to States, Demonstration of Renewable Energy Applications, Cookstoves, etc.):** Other Renewable Energy Application (Solar cities Green Buildings etc. including Support to states,Demonstration of Renewable Energy Application, Cook-Stove etc.): To support States for creation of suitable Framework for promoting energy efficiency and conservation & Accessibility to clean Energy for domestic usage.

18. **Research and Development:** R&D Projects are continuous in nature. Projects in different RE sectors will be undertaken in each year up to 2021.

19. **Monitoring/Evaluation and Other Studies:** To Carry out Evaluation and other Studies in Renewable Energy Sector.

21. **Information, Education and Communications:** Demonstration of RE applications, Information to Public and education institutions for creating awareness among the public.

22. **International Relations - International Co-operation including Investment Promotion and Assistance to International Solar Alliance:** International cooperation including investment promotion and assistance to international Soar Alliance Building and Secretariat Establishment.

23. **Human Resources Development and Training:** Support for short term training Programmes including Suryamitra, National Renewable Energy Science fellowship, Nation Renewable Energy Science fellowship, up gradation of labs,library facilities, development of course modules etc.

25. **National Institute of Wind Energy:** NIWE carries out research and development in Wind Energy.

26. **National Institute of Bio Energy:** NIBE carries out research and development in Bio Energy.

27. **National Institute of Solar Energy:** NISE carries out research and development in Solar Energy.

ANNEXURE-II

Subsidies/support in terms of Central Financial Assistance (CFA) given by the Government for installation of Solar Projects

GRID-INTERACTIVE RENEWABLE POWER PROGRAMMES:

1. Solar Power Projects.		
a) Solar PV Power projects under Jawaharlal Nehru National Solar Mission (JNNSM) Phase-II, Batch-I of total 750 MW with Viability Gap Funding (VGF) support from National Clean Energy Fund (NCEF).	Minimum Project Capacity 10 MW Maximum Project Capacity 50 MW	VGF support up to 30% of Project Cost limited or maximum of Rs.2.50 Cr/MW whichever is less, based on reverse bidding process for power producers.
b) Grid Connected Rooftop Solar PV Power Projects in residential, institutional and social sector	Benchmark of Rs 60 to 70 per watt depending upon the capacity.	Central Financial Assistance (CFA) up to 30% of benchmark cost for the General Category States/UTs and up to 70% of benchmark cost for Special Category States/UTs, i.e. North Eastern States including Sikkim, Uttarakhand, Himachal Pradesh, Jammu & Kashmir and Lakshadweep, Andaman & Nicobar Islands is provided to consumers for installation of grid connected solar rooftop projects. Incentives are also provided for promotion of roof top SPV power in Government sector. No subsidy is provided for commercial and industrial establishments in private sector.
c) Grid connected Solar PV Power Projects by Central Public Sector Undertakings (CPSUs).	Total size of the scheme 1000MW.	VGF support to the CPSUs/Govt. Of India Organisations at a fixed rate of Rs.1 crore/MW for projects where domestically produced cells and modules are used and Rs. 0.50 crores/MW in cases where domestically produced modules are used.
d) Grid-connected Solar PV Power plants on Canal Banks and Canal Tops	1 MW to 10 MW	Rs 1.5 Crore/MW for Canal Bank and Rs 3.0 Crore/MW for Canal Top Projects, subject to 30% of the project cost in both the cases.
e) Solar Park Scheme	--	25 lakh per Solar park for preparation of Detailed Project Report(DPRs). 20 Lkah per MW or 30% of the project cost including Grid-connectivity cost, whichever is lower.
f) Solar PV scheme for Defence Establishments	--	Tender issued before 17/02/2017- VGF support is 2.50 cr/MW Tender issued after 17/02/2017- Rs 1.1 crore / MW for all capacities.

<table>
<tr>
<td>g) Pradhan Mantri- Kisan Urja Suraksha evam Utthaan Mahabhiyan (PM- KUSUM)</td>
<td>Component A: Setting up of 10,000 MW of Decentralized Ground/Stilt Mounted Grid Connected Solar or other Renewable Energy based Power Plants

Component B: Installation of 17.50 Lakh Stand-alone Solar Pumps

Component C: Solarisation of 10 Lakh Grid Connected Agriculture Pumps</td>
<td>Procurement Based Incentive (PBI) to the DISCOMs @ 40 paise/kWh or Rs.6.60 lakhs/MW/year, whichever is lower, for buying solar/ other renewable power under this scheme. The PBI will be given to the DISCOMs for a period of five years from the Commercial Operation Date of the plant. Therefore, the total PBI that shall be payable to DISCOMs will be Rs. 33 Lakh per MW.

CFA of 30% of the benchmark cost or the tender cost, whichever is lower, of the stand-alone solar Agriculture pump will be provided.
However, in North Eastern States, Sikkim, Jammu & Kashmir, Himachal Pradesh and Uttarakhand, Lakshadweep and A&N Islands, CFA of 50% of the benchmark cost or the tender cost, whichever is lower, of the stand-alone solar pump will be provided.

CFA of 30% of the benchmark cost or the tender cost, whichever is lower, of the solar PV component will be provided. However, in North Eastern States, Sikkim, Jammu & Kashmir, Himachal Pradesh and Uttarakhand, Lakshadweep and A&N Islands, CFA of 50% of the benchmark cost or the tender cost, whichever is lower, of the solar PV component will be provided.</td>
</tr>
<tr>
<td>h) Concentrated Solar Thermal (CST)</td>
<td></td>
<td>Subsidy rate: @ 20% of the bench mark cost or actual cost whichever is less to all beneficiaries in all states
b. @ 40% of the bench mark cost or actual cost whichever is less to Non-profit making bodies and institutions in special category states, viz., NE states, Sikkim, J&K, Himachal Pradesh, Uttarakhand and islands.
The benchmark cost of the different CST technologies is given in table below:
<table>
<tr><td>Type of Solar Collector</td><td>Benchmark Cost of Collector Area(Rs/m2)</td></tr>
<tr><td>Concentrator with manual tracking (dish solar cookers)</td><td>7000</td></tr>
<tr><td>Solar collector systems for</td><td>12000</td></tr>
</table>
</td>
</tr>
</table>

		direct heating and drying and non-imagine/ Compound Parabolic Concentrators (NIC/CPC)	
		CSTs with single axis tracking (including Scheffler dish)	15000
		CSTs with single axis tracking, solar grade mirror, reflector and evacuated tube collectors	18000
		CST based on double axis tracking	20000

OFF-GRID SCHEME:

Scheme	**Coverage with target**	**Benefit available**
i) Off-grid Solar PV Schemes	a) 3 lakh Solar Street Lights / 100 MW aggregate capacity solar power packs under off-grid Ph-III programme	CFA up to 30% and 90% of the project cost for general category and special category States respectively.
	b) 25 lakh Solar Study lamps under off-grid Ph-III programme	CFA up to 85% of the lamp cost.
	c) Solar Study lamps under 70 lakh Solar Study lamps scheme	Student contribution Rs 100/- per lamp and balance to be paid as CFA.
	d) 3.04 lakh Solar Street light under AJAY Ph-II Scheme	CFA up to 75% of the project cost.
ii) Off-Grid and Decentralized Solar Thermal Applications Scheme	Concentrating Solar Thermal Technology for Community Cooking, Process Heat and Space Heating & Cooling Applications in Industrial, Institutional and Commercial Establishments target to achieve 90,000 m^2 of collector area	20% /40% of the project cost.

ANNEXURE –III

LIST OF APPROVED SOLAR PARKS AS ON 31-12-2019

Sl. No.	State	Solar Park	Capacity (MW)	Land identified at
1	Andhra Pradesh	Ananthapuramu-I Solar Park	1500	NP Kunta of Anantpuramu & Galiveedu of Kadapa Districts
2		Kurnool Solar Park	1000	Gani and Sakunala Village of Kurnool District
3		Kadapa Solar Park	1000	Vaddirala, Thalamanchi, Pannampalli, Ramachandrayapalli, Konna Ananthapuram and Dhidium villages in Mylavaram Madal, Kadapa district
4		Ananthapuramu-II Solar Park	500	Talaricheruvu & Aluru Villages, Tadipathri Mandal, Anathapuramu District of Andhra Pradesh
5		Hybrid Solar Wind Park	160	Kanaganapalli Mandal, Ananthapuramu District
6	Arunachal Pradesh	Lohit Solar Park	30	Tezu township in Lohit district
7	Gujarat	Radhnesada Solar Park	700	Radhnesada, Vav, Distt. Banaskantha
8		Harsad Solar Park	500	Villages-Harsad, Madhpura, Suigam and Navapara, Taluka-Suigam, District-Banaskatha
9		Dholera Solar Park Ph-I	1000	Dholera Special Investment Region (SIR), Taluka- Dholera, District-Ahmedabad, Gujarat
10		Dholera Solar Park Ph-II	4000	Dholera Special Investment Region (SIR), Taluka- Dholera, District-Ahmedabad, Gujarat
11	Jharkhand	Floating Solar Park	150	Getalsud and Dhurwa dam, Jharkhand
12	Karnataka	Pavagada Solar Park	2000	Villages- Valluru, Rayacharlu, Balasamudra, Kyathaganacharlu, Thirumani of Pavagada Taluk, Tumkur dist.
13	Kerala	Kasargod Solar Park	105	Paivalike, Meenja, Kinanoor, Kraindalam & Ambalathara villages of Kasargode district
14	Madhya Pradesh	Rewa Solar Park	750	Gurh tehsil, District Rewa, MP
15		Neemuch-Mandsaur Solar Park	750	Neemuch site: Villages Badi, Kawai and Bardwada in Singoli Tehsil; and Mandsaur site: Runija and Gujjarkhedi villages in Suwasra Tehsil, Mandsaur district
16		Agar Solar Park	550	Susner & Agar tehsil of Agar District
17		Shajapur Solar Park	450	Moman Badodiya tehsil & Shajapur tehsil of Shajapur District

Sl. No.	State	Solar Park	Capacity (MW)	Land identified at
18		Morena (Chambal) Solar Park	250	Morena
19	Maharashtra	Sai Guru Solar Park (Pragat)	500	Taluka-Sakri, Dhule District
20		Patoda Solar Park (Paramount)	500	Villages Tambarajuri and Wadzari, Taluka Patoda, Dist. Beed.
21		Dondaicha Solar Park	500	Villages- Vikhran & Methi, Taluka-Dondaicha, district Dhule, Maharashtra
22	Manipur	Bukpi Solar Park	20	Bukpi Village, Pherzawl District in Manipur
23	Meghalaya	Solar park in Meghalaya	20	Thamar, West Jaintia Hills & Suchen, East Jaintia Hills districts
24	Mizoram	Vankal Solar Park	20	Vankal, Khawzal RD Block Chmaphai Dist, Mizoram
25	Nagaland	Solar Park in Nagaland	23	Ganeshnagar (12 MW) of Dimapur dist. and Jalukie (11 MW) of Peren districts
26	Odisha	Solar Park in Odisha	275	Sambalpur and Boudh districts
27		Solar Park by NHPC	100	Landeihil Village, Jagannath Prasad Tehsil, Ganjam District, Odisha
28	Rajasthan	Bhadla-II Solar Park	680	Village-Bhadla, Jodhpur Dist, Rajasthan
29		Bhadla-III Solar Park	1000	Village-Bhadla, Jodhpur Dist, Rajasthan
30		Bhadla-IV Solar Park	500	Village-Bhadla, Jodhpur Dist, Rajasthan
31		Phalodi-Pokaran Solar Park	750	Villages Ugraas, Nagnechinagar & Dandhu, tehsil Phalodi, dist Jodhpur (450 MW) and villages Lavan & Purohitsar, tehsil Pokaran, dist Jaisalmer (300 MW)
32		Fatehgarh Phase-1B Solar Park	421	Fatehgarh & Pokaran, Jaisalmer, Rajasthan
33		Nokh Solar Park	980	Village-Nokh, Pokaran, Jaisalmer, Rajasthan
34	Tamil Nadu	Kadaladi Solar Park	500	Narippaiyur and nearby villages, Kadaladi Taluk in Ramanathapuram District
35	Uttar Pradesh	Solar Park in UP	440	Orai & kalpi Tehsils of Jalaun, Meja tehsil of Allahabad, Chaanbe tehsil of Mirzapur and Akbarpur tehsil in Kanpur Dehat districts
36		UP Kanpur Dehat Solar Park	50	Village Leharapur, Tehsil-Akbarpur, Dist. Kanpur Dehat
37		UP Jalaun Solar Park	50	Village-Mirzapur Jagir, Tehsil-Madhogarh, Dist. Jalaun
38		UP Kanpur Nagar Solar Park	30	Village Katar, Tehsil-Ghatampur, Dist. Kanpur Nagar
39	West Bengal	Solar park in West Bengal	125	Dadanpatrabar, Maina and Dakshin Purusottampur, Purba Medinipur, District
TOTAL (17 States)			**22,879**	

ANNEXURE - IV

STANDING COMMITTEE ON ENERGY

MINUTES OF TWELFTH SITTING OF THE STANDING COMMITTEE ON ENERGY (2019-20) HELD ON 18th FEBRUARY, 2020, IN COMMITTEE ROOM 'G-074', PARLIAMENT LIBRARY BUILDING, NEW DELHI

The Committee met from 1400 hrs to 1600 hrs

LOK SABHA

Shri Rajiv Ranjan Singh alias Lalan Singh - Chairperson

2. Smt. Sajda Ahmed
3. Shri Gurjeet Singh Aujla
4. Shri Chandra Shekhar Bellana
5. Shri Thomas Chazhikadan
6. Dr. A. Chellakumar
7. Shri Harish Dwivedi
8. Shri Kishan Kapoor
9. Km. Shobha Karandlaje
10. Shri Ramesh Chander Kaushik
11. Shri Praveen Kumar Nishad
12. Smt. Anupriya Patel
13. Shri Jai Prakash
14. Shri N. Uttam Kumar Reddy
15. Shri Naba Kumar Sarania
16. Shri Shivkumar Chanabasappa Udasi

RAJYA SABHA

17. Shri T.K.S. Elangovan
18. Shri B.K. Hariprasad
19. Shri Javed Ali Khan
20. Dr. Prabhakar Kore
21. Dr. C.P. Thakur

SECRETARIAT

1. Shri R.C. Tiwari - Joint Secretary
2. Shri N.K. Pandey - Director
3. Dr. Vatsala Joshi - Director

WITNESSES

MINISTRY OF NEW AND RENEWABLE ENERGY

1.	Shri Anand Kumar	Secretary
2.	Shri Jatindra Nath Swain	CMD, SECI
3.	Shri Amitesh Kumar Sinha	Joint Secretary
4.	Shri Bhanu Pratap Yadav	Joint Secretary & CMD (IREDA)
5.	Shri Dinesh Dayanand Jagdale	Joint Secretary
6.	Ms. Sutapa Majumdar	Economic Advisor
7.	Sh. Vimalendra Anand Patwardhan	Joint Secretary & Financial Adviser
8.	Dr. K. Balaraman	DG, NIWE
9.	Dr. A.K. Tripathi	DG, NISE
10.	Shri Arvind Kumar	CCA
11.	Shri Dilip Nigam	Scientist - G
12.	Dr. P.C. Maithani	Scientist - G
13.	Shri G.L. Meena	Scientist - G

2. At the outset, the Hon'ble Chairperson welcomed the Members of the Committee and the representatives of the Ministry of New and Renewable Energy to the sitting and informed that the sitting had been called to discuss the Demands for Grants of the Ministry for the year 2020-21. The Chairperson also apprised them about the provisions of Directions 55(1) and 58 of the Directions by the Speaker.

3. During the discussion, a power-point presentation was made on the subject "Examination of Demands for Grants of the Ministry of New and Renewable Energy for the year 2020-21" which, *inter-alia,* covered Renewable Energy Capacity Addition in the last decade, Position of India in the World in Renewable Sector, Share of RE Capacity in Total Installed Capacity, Renewable Energy Installed Capacity source wise, Comparative Expansion of Conventional *v/s* Renewal, Generation from various Renewable Energy Sources during the last five years, RE Capacity Addition in 2019-20, Financial

Progress of the Ministry during the last three years & current year, Head Wise Allocation for the Schemes of the Ministry for 2020-21, Financial and Physical Targets for 2020-21, Mission 175 GW by 2022, Renewable Energy Potential in India, Sector wise Achievement against Target as on 31.01.2020, RPO Requirement and Compliance, Annual Addition to Solar Power Installed Capacity, State-wise Solar Power Installed Capacity, Decreasing Trend of Solar Tariff, Road Map for 100 GW Solar by 2022, Solar Park Scheme, Domestic Solar PV Manufacturing, Effect of GST on Solar Sector, Solar Rooftop Phase - II, PM - KUSUM, Off-Grid/ Distributed and Decentralized Renewal Power, Atal Jyoti Yojana (AJAY), Solar Study Lamps Scheme, Annual Addition to Wind Power Installed Capacity, State-wise Wind Power Installed Capacity, Manufacturing of Wind Turbines, Status of Wind Bids, Off-Shore Wind, Wind-Solar Hybrid Projects, Present Status of Small Hydro, Challenges in Small Hydro Programme, Major Activities proposed to be undertaken during 2020-21 in SHP, Biomass Power, Waste to Energy, New National Biogas and Organic Manure Programme, Green Energy Corridor, PSUs/Institutions of MNRE, etc.

4. The Committee, *inter-alia,* deliberated upon the following points with representatives of the Ministry of New and Renewable Energy:

(i) Need to ensure active participation of DISCOMs in Solar Roof-top Sector and for promotion of Net -Metering;

(ii) Need to spread awareness about subsidies offered by the Government is Solar Roof-top Sector and streamline the procedure of Subsidy disbursement.

(iii) Issues related to cancellation/renegotiation of PPAs.

(iv) Need to ensure proper implementation of RECs/RPOs;

(v) Need to encourage storage based energy solutions so as to ensure round the clock power supply from Solar Energy;

(vi) Issues related to inconsistency and uncertainty with respect to policies in Renewable Energy Sector;

(vii) Details regarding PM-KUSUM Scheme;

(viii) Need to ensure durability and quality of Solar Lights/Solar Pumps/Solar Heaters;

(ix) Need for Research to increase the efficiency of Solar Cells and in the small wind systems;

(x) Reasons for shortfall in financial achievement during the previous years;

(xi) Achievements *vis-à-vis* targets under various programmes during 2018-19 and 2019-20;

(xii) Reasons for non-utilization of funds allocated for North-Eastern Region;

(xiii) Financial requirement and allocation for 2020-21 *vis-à-vis* physical targets;

(xiv) Various issues relating to Solar, Wind, Small Hydro, Biomass sector;

(xv) Performance of PSUs/Institutions under the Ministry;

(xvi) Need to increase the equity of IREDA;

(xvii) Need to utilize agricultural residues and stubble for generation of Power.

5. The Members also sought clarifications on various other issues relating to the subject and the representatives of the Ministry responded to the same. The Committee directed the representatives of Ministry of New and Renewable Energy to furnish written replies to those queries which could not be readily responded to by them.

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ANNEXURE - V

STANDING COMMITTEE ON ENERGY

MINUTES OF THIRTEENTH SITTING OF THE STANDING COMMITTEE ON ENERGY (2019-20) HELD ON 27TH FEBRUARY, 2020 IN COMMITTEE ROOM '3', PARLIAMENT HOUSE ANNEXE EXTENTION, NEW DELHI

The Committee met from 1500 hrs. to 1600 hrs.

PRESENT

LOK SABHA

Shri Rajiv Ranjan Singh *alias* Lalan Singh- Chairperson

2. Shri Thomas Chazhikadan
3. Dr. A. Chellakumar
4. Shri Ramesh Chander Kaushik
5. Shri Ashok Mahadeorao Nete
6. Shri Praveen Kumar Nishad
7. Shri Jai Prakash
8. Shri N. Uttam Kumar Reddy

RAJYA SABHA

9. Shri B.K. Hariprasad
10. Shri Javed Ali Khan

SECRETARIAT

1.	Shri R.C. Tiwari	-	Joint Secretary
2.	Shri N.K. Pandey	-	Director
3.	Smt. L. Nemjalhing Haokip	-	Deputy Secretary

2. At the outset, the Chairperson welcomed the Members and apprised them about the agenda of the sitting. The Committee then took up the following draft Reports for consideration and adoption:-

1) Draft Report on Demands for Grants of the Ministry of Power for the year 2020-21.
2) Draft Report on Demands for Grants of the Ministry of New and Renewable Energy for the year 2020-21.
3) Action Taken Report on the recommendations contained in the Thirty- Ninth Report of the Committee on Demands for Grants (2018-19) of the Ministry of New and Renewable Energy.

3. After discussing the contents of the Reports, the Committee adopted the aforementioned draft Reports with minor amendments. The Committee also authorized the Chairperson to finalize the above-mentioned Reports and present the same to both the Houses of Parliament in the current Budget Session.

The Committee then adjourned.

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