

## Chapter - VI

# Biomass Power

### 1. Introduction

Biomass is an important source of RE because it is widely available, carbon-neutral, capable of providing firm energy and generating significant employment in the rural areas. About 32 *per cent* of the total primary energy used in the country is still derived from biomass and more than 70 *per cent* of the country's population depends upon it for its energy needs. Biomass is the most commonly used energy source for several small-scale industries and is used as fuel for independent power plants. Biomass materials used for power generation include sugarcane bagasse and other non bagasse materials like rice husk, straw, cotton stalk, coconut shells, soya bean husk, de-oiled cakes, coffee waste, jute waste, groundnut shells, saw dust etc.

### 2. Biomass resource assessment

As per MNRE biomass resource assessment conducted between 2002 and 2004, the availability of biomass in India was estimated at about 500 Million Metric Tonnes (MMT) per year. The surplus biomass availability was estimated at about 120-150 MMT per annum covering agricultural and forestry residues, corresponding to a potential of about 18,000 MW. As per MNRE, this potential can be increased significantly by exploring the opportunity of high yield varieties and energy plantations in the wastelands. This apart, about 5,000 MW additional power could be generated through bagasse based cogeneration in the country's 550 sugar mills, if these sugar mills were to adopt technically and economically optimal levels of cogeneration for extracting power from the bagasse produced by them.

#### 2.1. Variation in potential assessment done by MNRE and the States

The installed capacity of grid interactive Biomass power in the country at the beginning of the 11<sup>th</sup> Plan period was 1,184 MW. It rose to 4,123 MW by March 2014, which was 23 *per cent* of the country's Biomass potential of 17,981 MW. Of the 24 test checked States, 16 undertook Biomass energy potential assessment independent of MNRE. The comparative position of the biomass potential as assessed by MNRE and the State Nodal Agencies (SNAs) is given in Table 24.

**Table 24: Biomass power potential as assessed by MNRE and SNAs**

(in MW)

S. No.	State	Potential estimated by MNRE	Potential estimated by SNA	Variation
1	Andhra Pradesh	150.20	448.50	-298.30
2	Arunachal Pradesh	Not assessed	Not assessed	Not assessed
3	Assam	165.50	Not assessed	Not assessed
4	Bihar	530.30	Not assessed	Not assessed
5	Chhattisgarh	220.90	1,000	-779.10
6	Gujarat	1,014.10	900	114.10

S. No.	State	Potential estimated by MNRE	Potential estimated by SNA	Variation
7	Haryana	1,261	1,150	111
8	Himachal Pradesh	128	Not assessed	Not assessed
9	Jammu & Kashmir	31.80	Not assessed	Not assessed
10	Jharkhand	66.80	90	-23.20
11	Karnataka	843.40	2,500	-1,656.60
12	Kerala	762.30	1,044	-281.70
13	Madhya Pradesh	1,065.40	Not assessed	Not assessed
14	Maharashtra	1,585	2,281	-696
15	Meghalaya	1.10	165.30	-164.20
16	Mizoram	Not assessed	Not assessed	Not assessed
17	Nagaland	3.10	Not assessed	Not assessed
18	Odisha	147.30	240	-92.70
19	Punjab	2,674.60	1,100	1,574.60
20	Rajasthan	4,595	1,039	3,556
21	Tamil Nadu	863.70	1,671	-807.30
22	Uttar Pradesh	1,477.90	3,757	-2,279.10
23	Uttarakhand	6.60	262.31	-255.71
24	West Bengal	368.30	6,663	-6,294.70

Source: MNRE and SNAs.

Analysis of the data in the above table brings out that:

- i. There were variations in the biomass potential assessed by MNRE and the SNAs in 16 States that undertook such study.
- ii. The potential assessment was done by MNRE in 2002-04, and no efforts were made by MNRE to reconcile their potential assessment with that of the SNAs so that efforts could be made to concentrate on the States having high potential. In Rajasthan, this difference was more than 3,500 MW.
- iii. Eight SNAs had not done any potential assessment, significant among them was the SNA of Madhya Pradesh, which ranked sixth in terms of potential assessed by MNRE.

A comprehensive mapping of biomass resource is required to be carried out in order to estimate the realistic achievable biomass power potential. MNRE had initiated various studies and has undertaken the launch of Bio energy mission in the 12<sup>th</sup> plan period.

MNRE stated (July 2015) that there was no co-relation between potential assessed by IISc<sup>1</sup> and SNAs. The variation might be due to dynamic nature of crops, year of survey and assumptions used in the survey. However, the reply needs to be viewed in light of the fact that there were large variations indicating that the assumptions used in the survey were not correct and scientific.

<sup>1</sup> Indian Institute of Science, Bangalore.

### 3. Target and achievements

#### 3.1. Targets and achievement

The targets and achievements of MNRE under the 11<sup>th</sup> Five Year Plan (FYP) and 12<sup>th</sup> FYP upto 2014 are given in the following table:

**Table 25: Targets and achievement under 11<sup>th</sup> and 12<sup>th</sup> FYP**

S. No.	Year	Target	Achievement	
<b>11<sup>th</sup> Five Year Plan Period (2007-12)</b>				
			Bio power <sup>@</sup>	Bagasse
1	2007-08	250	81	185
2	2008-09	300	97	248
3	2009-10	400	151	297
4	2010-11	455	144	322
5	2011-12	450	153	317.70
	Total	1,855	626	1,369.70
<b>12<sup>th</sup> Five Year Plan Period (upto 2014)</b>				
		Bio power <sup>@</sup>	Bagasse	
6	2012-13	105	350	114.70
7	2013-14	105	300	101.60
	Total	210	650	216.30
	<b>Grand Total</b>	<b>2,715</b>	<b>2,875.12<sup>2</sup></b>	

Source: MNRE.

@ Other than bagasse

As per MNRE, as against the target of 2,715 MW the capacity created was 2,875.12 MW during 2007-14. In addition to above installed capacity, projects of 1,150 MW capacity were in pipe line (May 2015).

#### 3.2. Variation in achievement as reported by MNRE and SNAs

MNRE had not fixed any State wise targets. Data collected from 24 test checked States of their targets and achievements juxtaposed against the achievements reported by MNRE is given in Table 26.

<sup>2</sup> However, the State wise installed capacity as per MNRE was 4,013.55 MW.

**Table 26: Targets and achievements reported by SNAs and MNRE in creation of installed capacity as on 31 March 2014**

(in MW)

S. No.	State	As per SNA			As per MNRE	Variation ( <i>per cent</i> )
		Targets	Achievement	Variation (-) shortfall ( <i>percent</i> )	Achievement	
(i)	(ii)	(iii)	(iv)	(v)	(vi)	vii (iv-vi)
1	Andhra Pradesh <sup>3</sup>	No targets	467.98		380.75	87.23 (19)
2	Arunachal Pradesh	No targets	Nil		Nil	Nil
3	Assam	No targets	Nil		Nil	Nil
4	Bihar	10.02	8.12	-1.90 (-19)	43.42	-35.30 (-435)
5	Chhattisgarh	No targets	260		264.90	-4.90 (-2)
6	Gujarat	No targets	31.20		43.90	-12.70 (-41)
7	Haryana	242	60.90	-181.10 (-75)	45.30	15.60 (26)
8	Himachal Pradesh	No targets	Nil		Nil	Nil
9	Jammu & Kashmir	No targets	Nil		Nil	Nil
10	Jharkhand	No targets	Nil		Nil	Nil
11	Karnataka	581	613	32 (6)	603.28	9.72 (2)
12	Kerala	No targets	Nil		Nil	Nil
13	Madhya Pradesh	296.85	12	-284.85 (-96)	26	-14 (-117)
14	Maharashtra	1,605	1,245.45	359.55 (22)	940.40	305.05 (24)
15	Meghalaya	No targets	Nil		Nil	Nil
16	Mizoram	No targets	Nil		Nil	Nil
17	Nagaland	No targets	Nil		Nil	Nil
18	Odisha	No targets	20		20	0
19	Punjab	1,100	105	-995 (-90)	140.50	-35.50 (-34)
20	Rajasthan	322	70	-252 (-90)	101.30	-31.30 (-45)
21	Tamil Nadu	No targets	870		571.30	298.70 (34)
22	Uttar Pradesh	No targets	1,142		776.50	365.50 (32)
23	Uttarakhand	No targets	52		30	22 (42)
24	West Bengal	595	85	-510 (-86)	26	-59 (-69)

Source: MNRE and SNAs.

From the Table 26 it can be seen that

- i. Sixteen States had not fixed any targets for exploitation of biomass potential during 2007-14. However, seven of these 16 States still reported capacity creation and in the case of Uttar Pradesh and Tamil Nadu it was substantial.
- ii. Of the eight States which had fixed targets for themselves, in six there was shortfall in achieving the targets. The shortfalls were as high as 96 *per cent* in Madhya Pradesh, 86 *per cent* in West Bengal and 90 *per cent* in Punjab and Rajasthan. Karnataka and Maharashtra were able to exceed their targets.

<sup>3</sup> Figures refer to the position before bifurcation into separate States of Andhra Pradesh and Telangana.

- iii. There was variation in the achievement reported by MNRE and SNAs. No efforts were made by MNRE to reconcile these differences, even though it is the nodal Ministry for the implementation of biomass programme.

MNRE stated (July 2015) that the variation was due to difference in capacity addition of sugar mills of the States, biomass availability, financial tie up, interest rate, State Government policies and tariff announced by State Electricity Regulatory Commission (SERC). The reply is not tenable as the audit observation is on variation in reporting of targets and achievement by MNRE and States, which should have been reconciled.

### 3.3. State wise analysis

Based on the biomass energy potential assessed in Table 26, Audit identified that seven States with a potential of over 1,000 MW accounted for nearly 76 *per cent* of the biomass potential in the country. In order to tap the biomass energy it was necessary to focus on these States.

**Table 27: Estimated potential and achievement (Grid connected) for the States endowed with 76 *per cent* of country's Biomass potential, as of March 2014**

(in MW)

S. No.	State	Potential	Achievement	Exploitation (in <i>per cent</i> )
1	Rajasthan	4,595	101.30	2
2	Punjab	2,674.60	140.50	5
3	Maharashtra	1,585	940.40	59
4	Uttar Pradesh	1,477.90	776.50	53
5	Haryana	1,261	45.30	4
6	Madhya Pradesh	1,065.40	26.00	2
7	Gujarat	1,014.10	43.90	4
	<b>Total</b>	<b>13,673</b>	<b>2,073.90</b>	<b>15</b>

Source: MNRE.

These States were able to exploit only 15 *per cent* of their estimated potential. The installed capacity varied from two to 59 *per cent* of the potential assessed by MNRE in these States. Maharashtra had the highest exploitation of biomass potential followed by Uttar Pradesh.

More significantly still, of these seven States, five i.e. Gujarat, Haryana, Madhya Pradesh, Punjab and Rajasthan had very low rates of exploitation of biomass potential ranging from two to five *per cent*. MNRE and the State Governments of these high potential States need to prioritise exploitation and development of the biomass energy in these areas.

MNRE stated (July 2015) that the State wise targets were not fixed and the projects were set up by private developers.

### 3.4. Policies of MNRE for promotion of Biomass Energy

MNRE promoted grid interactive biomass power and bagasse cogeneration in sugar mills. MNRE was also promoting biomass cogeneration based power plants for producing electricity using locally available surplus biomass resources such as small wood chips, rice husk, arhar stalks, cotton stalks and other agro-residues to meet the unmet demand of electricity. MNRE's support to developers was given in the form of Central Financial Assistance (CFA) determined on the parameters like gas pressure, type of project and category of the State.

The proposals for biomass projects were sent directly by the developer to MNRE and not through the SNAs. It was vetted at the Ministry and CFA released directly to the developers. The concerned SNAs and MNRE were to closely monitor the execution of the project and ensure their timely completion.

Out of 24 test checked States it was found that only three States i.e. Rajasthan, Maharashtra and Madhya Pradesh had framed their biomass policy.

## 4. Non maintenance of records by the States

In the 24 States selected for Audit, it was observed that no data of the projects executed was maintained in the States of Bihar, Jharkhand, Madhya Pradesh, Maharashtra, Rajasthan, Uttarakhand and Uttar Pradesh. According to the database provided by West Bengal Renewable Energy Development Agency (WBREDA) in West Bengal, 145 plants of different capacity (total capacity 61.207 MW) based on biomass were commissioned in the State between 2001 and 2014. Audit scrutiny revealed that out of 145 plants installed, location of 24 plants was not available with the WBREDA and files in connection with 21 plants were only available with WBREDA. The CFA was released directly by MNRE to the developer and no agency was monitoring the operations of the plants. WBREDA had not maintained any data of power generated from biomass plants, in absence of which the status of plants could not be ascertained in audit.

## 5. Implementation

Subject to scope limitation reported in Para 8 of Chapter I of this report, the audit findings based on examination of 19 files of bagasse cogeneration and 17 files of non-bagasse projects produced to Audit are given below.

### 5.1. Biomass Bagasse Cogeneration

#### 5.1.1. Plants not installed even after taking first advance installment of CFA

It was observed in audit that four projects were not commissioned after release of first advance installment of CFA as detailed in Table 28.

**Table 28: projects were not commissioned after release of first advance installment of CFA**  
(₹ in crore)

S. No.	Name of Project and Capacity(In MW)	Capacity (in MW)	Date of sanction	CFA sanctioned	CFA released	Balance CFA
1	Boot Model Cogen Project in 12 Cooperative Sugar Mills by TANGEDCO, Tamil Nadu	116	28.03.2012	58.25	29.12	29.13
2	Kukadi S.S.K. , Ahmednagar, Maharashtra	6.62	08.12.2011	1.32	0.66	0.66
3	Bhima S.S.K.,Daund Pune, Maharashtra	11.40	08.09.2012	2.08	1.04	1.04
4	Kumbhi Kasari S.S.K. Ltd., Kolhapur, Maharashtra	NA	15.03.2014	3.60	1.80	1.80
	<b>Total</b>			<b>65.25</b>	<b>32.62</b>	<b>32.63</b>

Note: NA – Not Available.

The first installment of CFA was to be released only after placing of order of equipment and after furnishing the details of the equity and promoters share etc. by the developer. However, in these cases first installment was released in advance without obtaining the required documents.

MNRE stated (July 2015) that performance assessment of the projects at serial number 2 and 3 was under way for release of final installment of CFA. Regarding project at serial number 4, it stated that the performance assessment had been completed in March 2014 and the final release of CFA was under way. Further the project at serial number 1 was under progress. However, the fact remains that the first installment was released without complying with the requirements of the guidelines.

#### 5.1.2. CFA released by MNRE without following scheme guidelines and verifying facts

Maharashtra State Cooperative Bank Ltd (MSCBL) forwarded to MNRE (September 2010) application for grant of capital subsidy to M/s Vasantrao Dada Patil SSK. Ltd Vithewadi, Nasik, Maharashtra for a 17 MW (11 MW surplus power over and above the captive consumption) Bagasse Cogeneration power project. MNRE sanctioned (December 2010) the capital subsidy of ₹ 6.60 crore and released 50 *per cent* of the capital subsidy to MSCBL.

Audit scrutiny revealed the following deficiencies:

- i. Fifty *per cent* CFA was to be released after successful commissioning and performance testing of the project which *inter alia* implied operation of the project for three months including at least 72 hours continuous operation at minimum 80 *per cent* of rated capacity. Audit observed that CFA of ₹ 3.30 crore was released without certificate of performance testing by the designated agency. Interestingly, the balance CFA was neither demanded by Financial Institutions (FI)/ sugar mill nor was it looked into by MNRE.
- ii. The developer was to provide month wise generation data on half yearly basis to MNRE but MNRE never asked the developer to furnish the same.

- iii. It was also revealed that during the crushing season 2007-09 the sugar mill's licensed crushing capacity was 2,500 Tonnes Crushed per Day (TCD). The cane crushed daily was between 2,560 TCD to 3,000 TCD and number of days cane crushed in these years was 239 in 2007-08, 111 in 2008-09 and 153 in the year 2009-10. It is pertinent to mention here that per day cane crushed was on a decreasing trend which indicate changing crop pattern. In this context, MNRE assumption of 3,500 TCD per day for calculating surplus power indicates distortion of facts towards higher side for calculating surplus power.

MNRE stated (July 2015) that the commercial operation of the cogeneration plant was started in February 2012 but due to scarcity of water, the performance test was postponed, and the SNA had been asked to monitor and submit the status report.

### 5.1.3. Delay in implementation of cogeneration plants in co-operative sugar mills

Based on the approval (February 2008) of Tamil Nadu Government for setting up of cogeneration plants in co-operative and public sector sugar mills in the State, TANGEDCO executed (February 2010) an agreement with M/s Walchandnagar Industries to establish 12 cogeneration plants in the sugar mills on Engineering, Procurement and Commissioning (EPC) basis. The estimated cost of the project, with a total capacity of 183 MW, was ₹ 1,241.15 crore. As per the scheme, the sugar mills would make the sites available to Tamil Nadu Generation and Distribution Corporation Limited (TANGEDCO) for setting up the cogeneration plants. TANGEDCO would raise upto 90 *per cent* of the funds required for the project through institutional loans and the balance would be met by the sugarcane growers of the respective mills. The plants after commissioning would be run by the sugar mills and the surplus power over and above the captive consumption would be exported to the TANGEDCO grid. MNRE released ₹ 29.12 crore, being 50 *per cent* of the capital subsidy, for the project during 2012-13 with the balance subsidy to be disbursed only after commissioning.

Though the 12 plants were scheduled to be commissioned in September 2011 as per the scheme, the project suffered due to delays committed by the EPC contractor in mobilization of men and materials, non-synchronisation of materials and erection activities, lapse of excise exemption certificate resulting in six months delay on account of revalidation etc. Consequently, the project suffered time over run (36 months as of September 2014) and was expected to be completed only by March 2015.

Due to the delay in commissioning of the plants, power generation capacity of 183 MW including exportable power of 123 MW did not accrue to the State during the years 2012-13 and 2013-14 as envisaged.

MNRE (July 2015) accepted the audit observations and stated that the delay was due to non performance of contractual obligations by the owners and non availability of sand for completion of civil works. The reply is not correct as these issues should have been settled mutually in advance at planning stage.

## 5.2. Biomass power generation

The MNRE guidelines (December 2006, August 2008 and April 2010) for grid interactive power generation projects required the developers to provide data on electricity generation on a six monthly basis for a period of 10 years (5 years for the projects sanctioned after 1 April 2010) after commencement of commercial generation by the plant.

Audit scrutiny of the 12<sup>4</sup> cases at MNRE, revealed that none of the developers had furnished the generation data to MNRE after the commencement of commercial generation of electricity. In absence of generation data, the current status of the projects, whether they are in working condition or closed could not be ascertained in audit.

MNRE stated (July 2015) that emphasis was laid on SNAs to provide generation data on quarterly basis and the data was recorded by the State Utilities. However, the fact remained that the developers did not furnish their generation data to MNRE as per the requirements of the scheme guidelines.

## 6. Findings from audit of State Nodal Agencies

Audit observed instances of non traceable biomass plants, inoperative plants, plants working at lower capacities, plants installed with different specifications than approved and plants using non-permitted fuels. None of the developers had furnished the generation data to MNRE after the commencement of commercial generation of electricity. The cases are highlighted below:

### 6.1. Missing Biomass plants

Test check of records of SNAs and physical verification by Audit team revealed the following:

#### Andhra Pradesh

Audit team conducted Physical Verification of the biomass plant of M/s. Sainath Power at Bandarupalli village, Warangal District along with NREDCAP<sup>5</sup> representative and found that there was no power plant in the village which was endorsed by the Gram Sarpanch.

#### Bihar

Test check by Audit revealed that one biomass plant of 32 kW at Churahi, West Champaran was not in existence.

<sup>4</sup> M/s Shri Dyaneshwar SSK Ltd, Dnyaneshwarnagar Ahmedabad, Gujarat, M/s Amreli Power Project Ltd, Village Amereli, Gujarat, M/s Junagadh Power Project Pvt Ltd Khokhareda Village Vanthali, Taluk Junagarh, Gujarat, M/s Maharishi Shankarrao Mohite SSK Ltd, Solapur, Maharashtra, M/s Yashwant Rao Mohite Krishna SSK Ltd, Satara, Maharashtra, M/s Purna SSK, Hingali, Maharashtra, M/s Samarth SSK Ankushnagar, Jalna, Maharashtra, M/s Bhimashankar Sahakari Sakhar Karkhana (SSK) Ltd, Dattatryangar Pargaon Awasari Pune, Maharashtra, M/s Someshwar SSK Ltd, Baramati, Pune, Maharashtra, M/s Chambal Power Ltd, Village Rangur, Kota, Rajasthan, M/s Dee Development Engineers Pvt Ltd Village Gadda Dhob, Abhor, Firozepur, Punjab, M/s ETA Power Generation Pvt Ltd, Sattur, Virudhungan, Tamil Nadu.

<sup>5</sup> New and Renewable Energy Development Corporation of Andhra Pradesh Ltd.

## 6.2. Biomass plants not working or working at lesser capacity

Test check of records of SNAs for assessing the actual working of the plants that had received CFA revealed the following:

### Andhra Pradesh

MNRE sanctioned CFA of ₹ 7.02 lakh and Indian Renewable Energy Development Agency (IREDA) sanctioned loan of ₹ 131.90 lakh for one MW plant at Siddipet, Medak to Harsha Power Projects (P) Ltd. The plant was commissioned (March 1999) but stopped generation (August 2000) due to ban on third party sales of the power produced by Andhra Pradesh Electricity Regulatory Commission (APERC) and malfunctioning of generator sets installed.

### Bihar

Test check of records of 28 projects, which had availed CFA, revealed that 10 projects were closed and in one project, the developer had sold the plant after five years of commissioning without prior permission of MNRE.

### Haryana

Four plants<sup>6</sup> for which CFA of ₹ 1.40 crore was released were not working since installation. MNRE stated (May 2015) that CFA was released after verification of generation data for three months by SNA. MNRE further stated that two plants (M/s REI Agro Limited and M/s Satyam Industries Pvt. Ltd) were not operational because of financial issues with the banks and the other two plants (M/s RP Basmati Rice Ltd and M/s Kayem Foods Industries Pvt. Ltd) were closed due to maintenance problems.

### Karnataka

Eleven projects totaling 83 MW had been commissioned upto 2005-06 and four projects for 20 MW had been commissioned thereafter. Out of the 11 projects commissioned upto 2005-06, five projects had stopped working and another three were working only intermittently. The reason for not working was attributed to un-remunerative tariff.

### Maharashtra

M/s Ind Bharat Energies Limited was to generate 126.72 MUs per year but the actual generation was only 11.86 to 45.74 *per cent* during 2009-14 due to non-availability of biomass.

### Mizoram

Two biomass gasifier power plants with 200 kW capacity commissioned (March 2003) for ₹79.10 lakh were not operating since middle of 2003 and a large number of essential parts were missing. Zoram Energy Development Agency (January 2015) stated the machines remained idle for long period due to lack of manpower.

<sup>6</sup> M/s RP Basmati Rice Ltd, Karnal; M/s REI Agro Ltd, Rewari; M/s Kayem Food Industries Ltd, Panipat and M/s Satyam Ind. Pvt. Ltd, Pardhana, Panipat.

**Punjab**

During 2007-12, M/s Rana Sugars Limited, Amritsar, a grid connected bagasse based project, generated 947.204 lakh units, of which, it exported 781.452 lakh units to the grid valued at ₹ 28.59 crore, but it did not supply any power during 2012-14 in spite of the commitment in the PPA for supply of 10.20 MW power to Punjab State Power Corporation Ltd (PSPCL) every year and there was no penalty clause in the PPA for such default. PSPCL stated (February 2015) that the project stopped generation due to litigation/ pending resolution of dispute regarding re-determination of tariff.

**Rajasthan**

MNRE released (January 2013) a CFA of ₹ 40 lakh to M/s Sharda Solvent Limited, Mundla power plant which was not in operation since September 2011. From the log book of the plant, it was observed that MNRE officials did not verify the operations.

MNRE stated (May 2015) that the plant was in working condition as it had released the CFA after verification of three months generation by SNA. The reply is not tenable because the log books of the plant did not depict the working of plant.

**6.3. Biomass plant not installed or not installed as per specification approved**

Test check of records of SNAs revealed inconsistencies in the capacities installed in the following cases.

**Bihar**

- i. MNRE sanctioned (November 2006) six plants with capacity of 50 to 100 kW for ₹ 2.01 crore with CFA of ₹ 57.80 lakh but only four plants of lesser capacity were installed. Bihar Renewable Energy Development Agency (BREDA) did not take any action against the firm/developer. MNRE stated (May 2015) that it had not released the entire funds to BREDA but only 70 *per cent* CFA was released and that BREDA had been requested to verify the installations and release only eligible CFA. The reply is not tenable because the project was sanctioned in 2006 and MNRE had not ensured the finalization of the project till date.
- ii. MNRE sanctioned (February 2007) one unit of 120 kW biomass gasifier with 100 *per cent* producer gas engine at Garkha, Saran for ₹ 0.70 crore including CFA of ₹ 18.12 lakh, of which ₹ 12.60 lakh had been released to the developer. Audit observed that dual fuel mode biomass gasifier engine was installed which could be run on non permitted fuels. But no action was taken by BREDA.

**Chhattisgarh**

Fourteen developers were given permission (2006 to 2011) to install biomass plants, with a capacity 128 MW, but even after lapse of more than 3-8 years only one project of 15 MW was commissioned.

**Rajasthan**

- i. In a 15 MW plant (January 2009) of M/s Orient Green Power Company only eight MW was installed because of delay in providing evacuation infrastructure and the remaining capacity allocation was cancelled. The excess 50 acres land allotted for seven MW was not returned by the developer to the State Government.
- ii. M/s Transtech Green Power Private Limited registered (March 2011) a project for six MW capacity but failed to finalise land, power evacuation plan and availability of water within four months of registration. RRECL did not cancel the project.

**West Bengal**

MNRE sanctioned (December 2008) a plant at Chikisabrati Udyog for ₹ 13.68 crore, which was installed (December 2009) but not commissioned because they were not able to sell their entire power to the grid.

**6.4. Biomass plants using non-permitted fuel after availing CFA**

One of the parameters for determining the amount of CFA to be released was the fuel proposed to be used. In Andhra Pradesh audit scrutiny revealed three instances where the power producers were not using the approved RE fuel for generation.

- i. MNRE sanctioned (October 2005) a 20 MW plant to M/s NCS Sugars Ltd with CFA of ₹ 78.65 lakh and the fuel to be used was bagasse, cane trash and cane tops only. Audit observed that the plant was using non-permitted fuel.
- ii. In respect of M/s Nava Bharat Ventures Ltd, in a 20 MW plant, the developer started using coal instead of bagasse.
- iii. A plant of 5.5 MW of M/s. Sri Rayalaseema Green Energy Ltd., commissioned (February 2001), was not using rice husk, ground nut and farm waste as fuel instead used woody biomass derived from exempted and non exempted species after paying penalties to the Forest Department.

Thus, the project set up to work on RE were actually not complying with the basic conditions.

MNRE stated (July 2015) that the issue of utilization of non renewable fuel by the projects was not reported by SNAs to the Ministry. However, the fact remained the MNRE was not monitoring the projects.

**7. Conclusion**

MNRE assessed the total potential from biomass to be 17,981 MW. During the 11<sup>th</sup> FYP period, a target of capacity creation of 1,855 MW through Biomass was set against which MNRE achieved 1,995.70 MW. In the first two years of the 12<sup>th</sup> Five Year Plan, MNRE set a target of 860 MW against which 879.42 MW was achieved. As such, overall target for the period 2007-08 to 2013-14 were achieved. MNRE had not fixed any State wise targets for Biomass power.

State wise analysis showed that most of the States did not set targets for biomass capacity. Of the eight States that did set targets, the same were achieved in two States only, with the remaining States showing a deficit of 19 to 96 *per cent*. Seven States having 76 *per cent* of the country's potential in biomass energy were able to exploit only 15 *per cent* of their estimated potential. Further, 21 States did not frame a biomass policy for promotion for biomass energy.

Audit scrutiny of implementation of biomass projects showed cases of project not installed even after release of assistance, irregular release of assistance by MNRE, inoperative plants, plants working at lower capacities, plants installed with different specifications than what was approved and plants working on coal rather than bagasse. Audit also observed instances of biomass plants not being traceable at the places where they were reported to be installed.

Audit observed that none of the developers had furnished the generation data to MNRE/ State Nodal Agency after the commencement of commercial generation of electricity.

## 8. Recommendations

- *MNRE must ensure that the Central Financial Assistance is released only after compliance with conditions and thereafter the implementation of the sanctioned biomass projects should be closely monitored.*
- *MNRE must review the power generation from the sanctioned biomass projects to ensure that these are operating as per specifications and use approved RE fuel.*