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A Review on Biomass Potential, Policies and Scope in India

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Abstract: Biomass is a wide term, which is utilized to portray material of natural beginning that can be utilized as a wellspring of vitality. Surrender biomass vitality assets are accessible on the planet. Distinctive kinds of biomass created from different sources. These biomasses are utilized as crude material of vitality. In this paper biomass vitality asset, potential, vitality change and approach for advancement actualized by Government of India are talked about. The aggregate introduced limit with regards to power age in India is 2666.64 GW as on 31st March 2016. Sustainable power source is contributed 10.5% of aggregate age out of which 12.83% power is being produced utilizing biomass. India has surplus horticultural and woodland region which involves around 500 million metric huge amounts of biomass accessibility every year. Legislature of India has concentrated on the arrangement and advancement biomass vitality segment with vital strategy and program which is striking segment of this audit paper.

Keywords: Biomass energy, Renewable Energy, Biodiesel, Boiler etc.

I. INTRODUCTION

Many developed and developing countries has promoted biomass energy generation through instrumented policies and financial incentives. Many governments introduced feed in tariff schemes as a policy mechanism to accelerate investment in renewable energy sector. India is a fast developing country; with high economic and industrial growth energy demand is also growing. The major source fulfill the energy requirement of India are Oil and coal. In this paper, state wise biomass potential of India is identified. The various category of biomass in India and their conversion processes are also presented briefly. This paper has discussed the scope, potential and scenario of implementation biomass power in India. Policy regarding providing the subsidies for biomass power in India is mentioned. Administration of India has concentrated on the arrangement and advancement biomass vitality area with vital approach and program.

II. BIOMASS POTENTIAL IN INDIA

The present accessibility of biomass in India is assessed at 500 million metric tons for each year. Studies supported by the Ministry has evaluated surplus biomass accessibility at around 120 – 150 million metric tons for every annum covering agrarian and ranger service buildups comparing to a capability of around 18,000 MW. This separated, around 7000 MW extra power could be created through bagasse based cogeneration in the nation's 550 Sugar plants, if these sugar factories were to receive actually and monetarily ideal levels of cogeneration for removing power from the bagasse delivered by them. Biomass has dependably been a critical vitality hotspot for the nation considering the advantages it offers. It is sustainable, generally accessible, carbon-impartial and can possibly give critical work in the country territories. Biomass is additionally fit for giving firm vitality. Around 32% of the aggregate essential vitality use in the nation is as yet gotten from biomass and over 70% of the nation's populace relies on it for its vitality needs. Service of New and Renewable Energy has understood the potential and part of biomass vitality in the Indian setting and subsequently has started various projects for advancement of productive innovations for its utilization in different divisions of the economy to guarantee induction of most extreme advantages Biomass control age in India is an industry that draws in ventures of over Rs.600 crores consistently, creating more than 5000 million units of power and yearly work of more than 10 million man-days in the rustic territories. For productive usage of biomass, bagasse based cogeneration in sugar plants and biomass control age have been taken up under biomass power and cogeneration program.

III. BIOMASS POWER & COGENERATION

Biomass control and cogeneration program is executed with the fundamental target of advancing innovations for ideal utilization of nation's biomass assets for framework control age. Biomass materials utilized for control age incorporate bagasse, rice husk, straw, cotton stalk, coconut shells, soya husk, de-oiled cakes, espresso squander, jute squanders, groundnut shells, saw tidy and so forth.

A. Technology

1) *Combustion:* The thermos compound procedures for transformation of biomass to helpful items include burning, gasification or pyrolysis. The most regularly utilized course is ignition. The favorable position is that the innovation utilized is like that of a warm plant in view of coal, with the exception of the boiler. The cycle utilized is the ordinary positioning cycle with biomass being signed in high weight boiler to produce steam and working a turbine with created steam.

10 MW Grid Connected Biomass Power Plant at Thimmapur Village, Dist. Haveri

2) *Cogeneration in Sugar Mills:* Sugar industry has been customarily honing cogeneration by utilizing bagasse as a fuel. With the progression in the innovation for age and use of steam at high temperature and weight, sugar industry can create power and steam for their own particular prerequisites. It can likewise create huge surplus power available to be purchased to the lattice utilizing same amount of bagasse. For instance, if steam age temperature/weight is raised from 400oC/33 bar to 485oC/66 bar, more than 80 KWh of extra power can be created for every ton of stick smashed. The offer of surplus power produced through ideal cogeneration would enable a sugar to factory to enhance its suitability, aside from adding to the power age limit of the nation.

30 MW Cogen Power Plant at Sahakarmaharshi Bhausaheb Thorat Sahakari Sakhar Karkhana Ltd., Sangamner, Maharashtra

B. Deployment

The MNRE has been actualizing biomass control/co-age program since mid-nineties. A sum of roughly 500 biomass power and cogeneration ventures collecting to 4760 MW limit have been introduced in the nation for sustaining energy to the framework. Furthermore, around 30 biomass control ventures accumulating to around 350 MW are under different phases of execution. Around 70 Cogeneration ventures are under execution with surplus limit collecting to 800 MW.

C. Manufacturing Base

Assembling capacity exists in the nation for the hardware/apparatus required for setting up Biomass Projects. With the exception of some basic control gear, the greater part of the types of gear can be secured from indigenous sources.
there is an entrenched ability and limit with regards to fabricate of related gear for utilization of biomass for vitality including gatherers, balers, briquetting gear, dealing with and terminating hardware, contamination control frameworks and so forth. Numerous multinational organizations have set up assembling offices in the nation for such hardware.

IV. PROMOTIONAL POLICIES

Other than the Central Financial Assistance specified in para 8, monetary motivations, concessional import obligation, extract obligation, charge occasion for a long time, bank credits of up to RS 15 crore for biomass-based power generators will be considered piece of PSL and so forth., are accessible for Biomass control ventures. The advantage of concessional custom obligation and extract obligation exception are accessible on types of gear required for starting setting up of biomass ventures in light of confirmation by Ministry. Also, State Electricity Regulatory Commissions have decided special levies and Renewable Purchase Standards (RPS). Indian Renewable Energy Development Agency (IREDA) provides loan for setting up biomass power and bagasse cogeneration projects.

A. Central Financial Assistance And Fiscal Incentives

CFA for Biomass Power Project and Bagasse Cogeneration Projects by Private/Joint/Coop./Public Sector Sugar Mills

	Special Category States(NE Region, Sikkim, J&K, HP & Uttaranchal)	Other States
Project Type	Capital Subsidy	Capital Subsidy
Biomass Power projects	Rs.25 lakh X(C MW) (Maximum support of Rs. 1.5 Crores per project)	Rs.20 lakh X (C MW) (Maximum support of Rs. 1.5 Crores per project)
Bagasse Co-generation by Private sugar mills	Rs.18 lakh X(C MW) (Maximum support of Rs. 1.5 Crores per project)	Rs.15 lakh X (C MW) (Maximum support of Rs. 1.5 Crores per project)
Bagasse Co-generation projects by cooperative/ public sector sugar mills 40 bar & above 60 bar & above 80 bar & above	Rs.40 lakh * Rs.50 lakh * Rs.60 lakh * Per MW of surplus power[@] (maximum support Rs. 6.0 crore per project)	Rs.40 lakh * Rs.50 lakh * Rs.60 lakh * Per MW of surplus power[@] (maximum support Rs. 6.0 crore per project)

B. Fiscal Incentives for Biomass Power Generation

Item	Description
Income Tax Holiday	Ten years tax holidays.
Customs / Excise Duty	Concessional customs and excise duty exemption for machinery and components for initial setting up of Biomass power projects.
General Sales Tax	Exemption is available in certain States

V. BIOMASS POTENTIAL AND INSTALLED CAPACITY IN KEY INDIAN STATES

Table: Biomass Potential and Installed Capacity in Key Indian States

State	Power Potential (MWe)	Installed Capacity (by 2011)	Tariff
Punjab	2413.2	74.5	@ Rs 5.25 per unit, (2010-11)
Uttar Pradesh	1594.3	592.5	@ Rs 4.70
Haryana	1120.8	35.8	@Rs 5.24 per unit
Rajasthan	1093.5	73.3	@ Rs 4.72/unit water cooled (2010-11)
Maharashtra	1014.2	403	@ Rs 4.98 (2010-11)
Madhya Pradesh	841.7	1.0	@ Rs 3.33 to 5.14/unit paise for 20 years with escalation of 3-8 paise
Karnataka	631.9	365.18	@ Rs 3.66 per unit (PPA signing date) Rs 4.13 (10th year)
Andhra Pradesh	625	363.25	@ Rs 4.28 per unit (2010-11)
Gujarat	457.7	0.5	@ Rs 4.40 per unit (with accelerated depreciation)
Chhattisgarh	248.5	231.9	@Rs 3.93 per unit (2010-11)
Kerala	195.9	–	@ Rs 2.80 per unit escalated at 5% for five years (2000-01

Eminent STATE BIO_POTENTIAL YEAR-WISE LIST OF COMMISSINED BIOMASS POWER/COGENERATION PROJECTS (AS ON 01.04.2016) (IN MW)

State	Upto 31.03.2012	2012-13	2013-14	2014-15	2015-16	Total
Gujarat	20.5	10	13.4	12.4		56.3
Karnataka	441.18	50	112	111	158	872.18
Madhya Pradesh	8.5	7.5	10	9		35
Maharashtra	603.7	151.2	185.5	184	96.38	1220.78
Punjab	90.5	34	16	15		155.5
Rajasthan	83.3	10	8	7		108.3
Tamil Nadu	532.7	6	32.6	31.6	39	626.9
Uttarakhand	10		20	20	13	50
Total	1790.38	268.7	397.5	390	293.38	3159.96

III. CONCLUSION

A vigorous investigation of the assets and capability of biomass has been displayed. It can be inferred that tremendous potential exist for investigation of accessible biomass in India to change over it to vitality. Different assets in wide assortment and diverse type of biomass are accessible in India. Various sources are there to get squander biomass e.g. farming waste, nourishment squanders, modern wastewaters created in expansive volumes which implies the propensity to change over to non-customary wellspring of vitality. Organizations and enterprises are honing the change of various waste biomass to vitality in India and revealed profits by these. MNRE appeared the tremendous potential information of introduced limit and surplus biomass.

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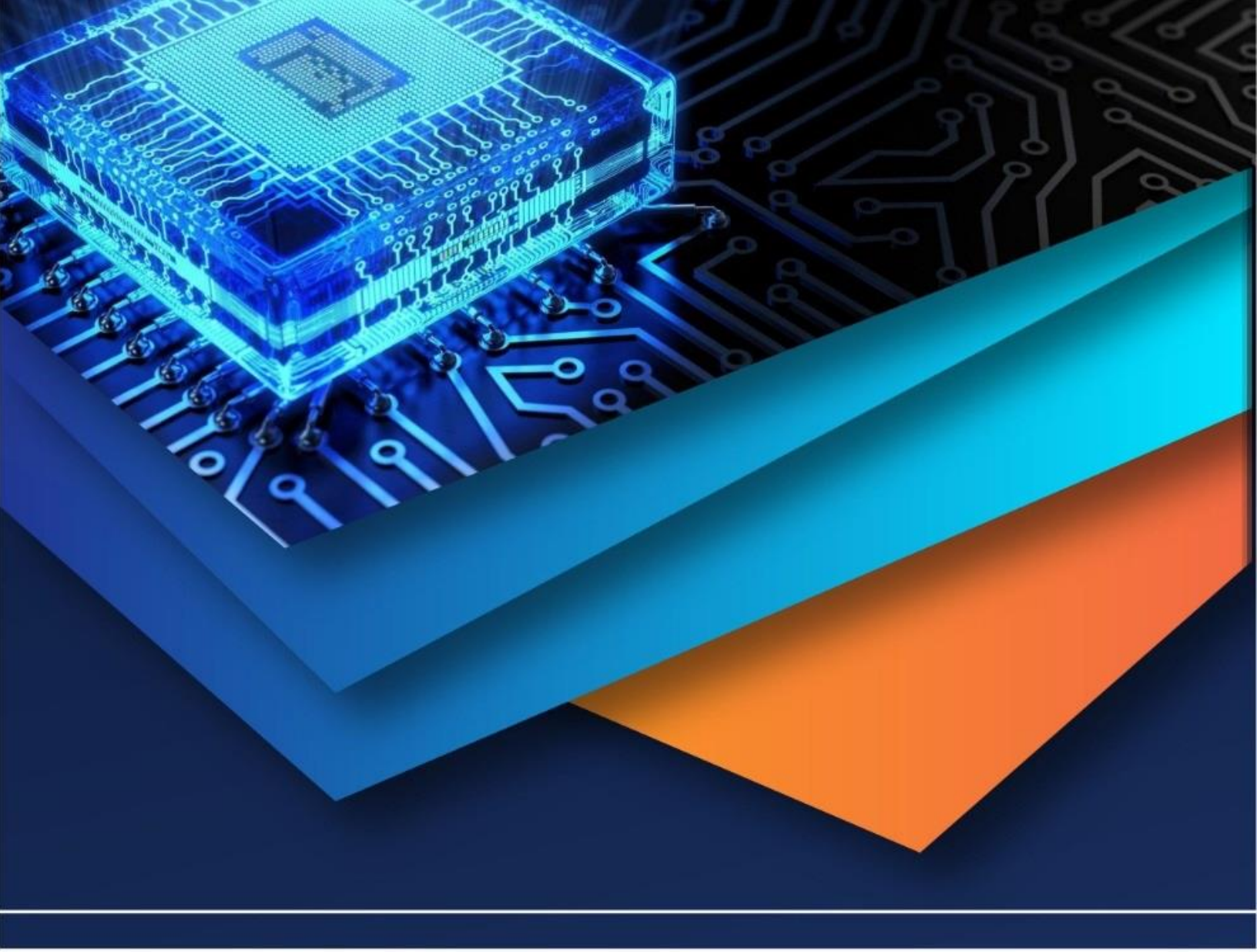

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