



PUNJAB RENEWABLE ENERGY SYSTEMS PRIVATE LIMITED

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PRESPL/MNRE/DEC/01

Shri Anjani Nandan Sharan, IFS
Joint secretary (Biomass)
MNRE
Govt of India
New Delhi

Sub: Rice Straw Based Biomass Power Projects in North India

Dear Sir,

Greetings of the day from PRESPL!

1. We would like to thank you for sparing the valuable time and extended courtesy during the meeting with our MD Lt Col Monish Ahuja (Retd) on 01st Dec 2017 at MNRE office –New Delhi. We had a fruitful and meaningful long discussion on tariff of paddy straw based biomass based power project in the state of North India and viable solutions to the rice straw stubble burning issues causing undesired pollution in Northern India & special focus on Delhi-NCR.
2. During the meeting various points have been discussed to expedite the Paddy based power projects, which are listed below:
 - a. **Implementation of Paddy straw based biomass IPP in phases**
 - i. It has been noticed that during every winter season rice straw is being burnt in the surrounding states of Delhi-NCR mainly Punjab, Haryana, Western UP and Rajasthan and these states have been facing thick smog formation due to stubble burning in that region.
 - ii. It is estimated that approx. 20-25 Million MT in Punjab, 8-10 Million MT in Haryana & 15-20 million MT in west UP, hence cumulatively approx. 40-45 million MT rice straws remains unutilized in Northern states post harvesting and there is no way to utilize this huge quantum in a commercially economical way. Globally, it is a general practice of farmers to burn down the dried paddy straw right in the fields for various reasons including economic factors.
 - iii. However, same qty of rice straw can be utilized to convert useful energy through a capacity addition of 4000 MW paddy straw based power project in the Northern states.
 - iv. **Thumb rule basis 1 MW requires 10,000 MT of rice straw per annum and hence 40 Million MT has a power generation potential of 4000MW.**



- v. The power so generated can be purchased by the states of Punjab, Haryana, UP, Rajasthan and Delhi. This power can be sold as bundled power along with the other power and hence the net fiscal impact will be only around 4-5 paise per unit.
- vi. Since this will be decentralized distributive generation of power, there will be less T&D losses and there will be an inherent saving to the discom, which can be calculated.

b. Policy Support from MNRE

- i. MNRE will need to play a key nodal role in mobilizing the various stakeholders to include the key decision makers in the Govt of India, states of Punjab, Haryana, UP, Rajasthan and Delhi.
- ii. A high power committee under PMO or MNRE or NITI Aayog may be constituted with the stakeholders to arrive at a time bound decision making process. This is to also have necessary representation from the Ministry of Finance, MoEF&CC, Ministry of Agriculture, Ministry of Science and Technology and Ministry of Power with a stipulated time for the committee recommendations to be finalized.
- iii. There is a scope to come up with a policy framework for multiple paddy straw based biomass project which can be installed in the states in phased manner say (1000MW x 4 Phases) to utilize this paddy straw waste to generate decentralized energy to convert in green energy through putting up paddy straw based power projects.
- iv. We can take a leaf out of the book from Haryana state HAREDA's example wherein they have come out with tenders for paddy straw biomass based IPP in state of Haryana (60MW), wherein one had to reverse bid for the projects. This has brought a competitive edge as far as tariff is concerned for the first time in biomass sector in India.
- v. The Haryana tender has budget support for the difference between the bid price and the APPC of the state and hence it makes it viable for the discom to sign long term PPA for such power produced from rice straw and the state govt is funding for the environment and health cost of its citizens.

c. Average power purchase cost.

- i. As there is an APPC rate for states which is about 4.50 Rs/KWh for northern states, hence to buy the power at more than this rate is a major challenge to the distribution companies (DISCOM). In the recent HAREDA bid, project developer has come forward through reverse bidding as L1 of Rs 7.55 /KWH tariff with a discount of Rs 0.70 per KWH. So for the first time in India reverse bidding on rice straw based biomass power project has been successful.
- ii. To match the higher tariff it's suggested the difference cost may be equally borne by both state & central govt which needs to be worked out based on sharing formula, some part to be borne by the state & some to be borne by the center. This is to be decided by the high powered committee (like the GST committee). **This will be the cost towards environment protection and health of the citizens of North India.**
- iii. This will need a high level committee of central and state power ministers /secretary level to work together to come up with a workable solutions.



3. Steps to be taken to ensure lowering of bid tariff

a. Standardization of power project size

- i. The biomass power projects can be standardized to 10MW per plant. These plants will have "must run" status. As the plan will involve setting up of 4000 MW (400 rice straw biomass based power plants x 10MW each), economies of scale will come into the play and can bring down the cost of the projects substantially.
- ii. Since the projects will be standardized under the bid conditions, the project can source its major equipment like boilers, turbines from reliable and established OEM suppliers of global and Indian origin like BWE/Dragon Power Cleantech/CNIM/Areva/Boccard/Thermax/Cheema boiler/IJT, etc. As the plan is to set up 400 power plants and ordering the equipment in bulk, one can negotiate a competitive price from these OEMs. This would bring down the project cost substantially.

b. Fuel Collection Equipment

- i. Further, each rice straw biomass plant requires fuel collection equipment like balers/cutters/rakers/trolleys/tractors. Again these have to be ordered in bulk. MNRE can set up a nodal agency / NABARD / IREDA can be tasked to acquire these equipments in bulk and provide the same to the biomass IPPs / Farmer Producer groups/ Biomass supply chain management companies which will be bound to ensure to stop burning of the rice straw in the open fields and collect, store and supply the rice straw to the biomass IPPs. Obviously, one can negotiate a competitive price for such bulk orders. These steps will bring down the project cost in turn bringing down the bid tariffs.

c. Borrowing Cost

- i. As the power projects are capital intensive the IPPs need to borrow the money from financial institutions. Presently, borrowing cost range between 12 to 14%.
- ii. If MNRE can devise a mechanism through which funds are made available at the G-Sec rates, say at 6%, the tariff can come down drastically. For e.g. a reduction in borrowing cost from 12% to 6% can bring down the tariff by Rs 0.30 per unit.

4. The fiscal incentives to be cleared by the high powered committee, duly agreed & approved by cabinet and then notified as a GR. Further competitive tender bidding to be taken up in lots of 50 projects X 10 MW each, thus enabling price reduction. This is the similar model as was followed in the solar/wind reverse bidding.

5. Financial Working

- a. If we assume that the power tariff with the measures to be taken up will come to Rs 6.50 per KWh and the APPC is assumed to be Rs 4.50 per KWh, then the gap to be bridged is Rs 2.00 per KWh.
- b. Taking the power generation of 4000 MW which is equal to 4000x1000 KW per hour which is 4 Million units per hour.
- c. Taking 300 days of working as 8000 hours of continuous operations of the power plants to ensure no open field burning of the rice straw, then the financial gap to be bridged is equal to 4 Million units per hour x Rs 2 x 8000 hours = Rs 64,000 Million per year which is equal to Rs 6400 Crores per year.



- d. The cost of APPC for the 4000 MW will be borne by the state discoms and they will not be able to get cheaper power than this rate in any case, so there is no additional burden on the state discoms.
- e. **The amount of Rs 6400 Crores has to be shared and borne between the Centre and the states of Punjab, Haryana, UP, Rajasthan and Delhi.**
- 6. **Make in India**
 - a. Capacity addition in the MSME sector for the power plant equipments to be manufactured and produced in India which at Rs 5 Crore per MW of equipment cost will translate into Rs 20,000 Crores of domestic demand for the power plant equipments.
 - b. Since this is a global issue of rice straw burning, India will become the major technology exporter to the global markets, especially the rice growing countries of South East Asia and the neighboring SAARC nations.
- 7. **Skill Development & Rural Entrepreneurship**
 - a. As per the mandate of the Govt of India, there will be a huge capacity addition and push towards the skill development and rural entrepreneurship as these power projects will be in rural India and it will open up huge employment (direct 100 per 10 MW project and indirect 500 per 10 MW project).
 - b. **The total skilled and unskilled jobs which this will generate for the 4000 MW will be approx 200,000 jobs in the rural economy.**
- 8. **Increase in Farmer Income by 2022**
 - a. The Govt of India mandate to increase farmers income to double by 2022 can be easily achieved for more than 2 Lakh families in North India by the successful implementation of this 4000 MW of rice straw based power projects.
- 9. **Technology for Rice Straw Power Plants**
 - a. **Mr Vini Ahuja, Chairman Bermaco Group along with IL&FS Energy as financial investor partners** have successfully demonstrated the technology development for the first time in the world by successfully operating a 100% rice straw fired biomass power plant of size 12 MW under the JV SPV Punjab Biomass Power Limited (PBPL) which is successfully in operations since 2010.
 - b. **This technology is truly MAKE IN INDIA and the necessary push for a global scale up requires the necessary hand holding support of Govt of India.**
 - c. PBPL project has been the basis for the technology development within India and globally and its successful operations for more than 7xYears has demonstrated to the world the capability of Indian home grown technology and innovation.
- 10. **Regulatory Provisions**
 - a. India is the only country in the world which has a specific tariff for rice straw based power plants as notified by CERC and state discoms of various states.
 - b. These regulations were notified by CERC in May 2014 after the present Govt of India came into power and it was to showcase the strong regulatory regime in India.
- 11. **Bio-Economy / Biomass Supply Chain Management**
 - a. PRESPL is the only organized biomass supply chain management company presently in India which was established in March 2011.
 - b. **This is a new line of business model from the agri-waste stream which has successfully got established in India by first time entrepreneur Lt Col Monish Ahuja (Retd) with suitable support from Impact PE fund responsAbility which is Zurich based.**
 - c. Many such companies in the waste stream supply chain management will come up in India and pave the way for a new waste to wealth stream in the rural economy and this needs support from the financial institutions like NABARD, etc.



- d. Development of this robust agri-waste supply chain management network across rural India will open new doors of working in villages and support the development of a Bio-economy which will result in the development of projects in the field of Bio-ethanol, Bio-CNG, Bio-fertilizers, Bio-chemicals, etc.
- e. Pellets / Briquettes: Development of supply chain management will also support for the development of production of pellets / briquettes (densification of agri-residue biomass) which in turn is a replacement for Pet-Coke and Furnace oil, the usage of which has been banned in the NCR by Hon'ble Supreme Court owing to environment pollution issues.

12. Final Recommendations/Suggestions

- a. Formulation of high powered committee under the Chairmanship of PMO or NITI Aayog with active participation of states of Punjab, Haryana, UP, Rajasthan & Delhi and secretarial support of MNRE.
 - b. Set up of a Bio-energy Mission under MNRE.
 - c. Set up process and protocols for tender bids and it is to be done like it has been taken up for the projects in solar mission through the central agency like SECI or NTPC.
 - d. Approval of debt at G-Sec rate of 6% to be made available to successful bidder and this is to be part of the tender, thus enabling a more competitive price bid for rice straw based biomass power projects.
 - e. Generation based preferential tariff to be provided as per the bid with confirmed PPA for 20xYears time and security of the payment.
 - f. Tender bid for 100% rice straw based power projects for 4000 MW in a phased manner which will ensure the reduction on the power tariff.
13. Please do feel free to get in touch with the undersigned for any support or clarifications which may be needed for the successful implementation of this suggested proposal, if it is found suitable to be taken up for implementation.

Thanking You,

Yours Sincerely,

For Punjab Renewable Energy Systems Private Limited.,


Lt.Col. Monish Ahuja (Retd)
Managing Director



Copy to:

1. Shri Amitabh Kant, IAS : For information please with respect to the meeting which was
CEO NITI Aayog attended by me on your invitation for the solutions to the rice straw
open field burning in states of North India.
2. Shri Anand Kumar, IAS : For your perusal please and request your time to look into this crucial
Secretary, MNRE aspect of development of a biomass based rural economy and develop
biomass power plants based on 100% rice straw as the solution.