DSM SUGAR ASMOLI

(A UNIT OF THE DHAMPUR SUGAR MILLS LTD.)
241, OKHLA INDUSTRIAL ESTATE PHASE-III
NEW DELHI-110 020 PH : 41612456, 30881806
FAX: 91-11-26935697 E-MAIL:dsugar@vsnl.com

RESPONSE TOWARDS REQUEST FOR REVIEW OF 1148 DSM – ASMOLI BAGASSE COGENERATION PROJECT

Project participants thank the CDM Executive Board and the Secretariat for giving us the opportunity to clarify about DSM Asmoli Baggasse Cogeneration CDM project. In response to the request for review for the above mentioned project, we hereby furnish our response.

Sr.No	Review Comment	Project Participant Response
1	The PP shall further demonstrate the additionality of the project activity	DSM management has simultaneously undertaken to implement CDM projects in their plants at Dhampur and Asmoli with similar configuration. Both project activities face the similar barriers. The DSM management has undertaken higher risk by implementing these projects. The management strongly feels that by pioneering these projects, the sugar industry will stand benefited by use of high efficiency technology. The PP will share its learnings and this will be path breaking effort which will promote sustainability in industry. It is the CDM that has acted as the stimulus for DSM to undertake these projects and CER revenue will be a buffer to help mitigate the risks from these investment which uses new high pressure technology that has not before been implemented in a sugar factory in India. Additionality has been demonstrated through following barriers: **Technical barriers** 1. The proposed project activity involves the installation of a boiler with 105 kg/cm2 pressure and 540 deg C temperature rating, which is the first of its kind to be installed adjacent to a sugar unit in India. A boiler of such a large size, 170 TPH, 105 kg/cm2 and 540 deg C, as the project activity has its own set of technical barriers, namely: 2. Bagasse handling and feeding system 3. The project activity involves handling of large volume of bagasse as compared to a presently installed systems and conventional fossil fuel based power generation system in particular. 4. Attainment of high super heat steam temperature of 540 deg C In bagasse fired boilers the maximum temperature achieved till date is 510 deg C. Due to inherent high moisture content in bagasse, around 50%, the attainment of temperature above 510 deg C is debated by experts. 5. Design and Metallurgy of equipments The silica solubility in steam increases with increase of pressure. The water treatment facility as well as steam drum internals required more demanding design approach to prevent silica carry over with steam, which can cause failure of super heater, turbine etc. Metallurgy required for design critical components of plant, namely boiler steam drum, super heater, steam piping and turbine hot section had to be carefully selected particularly considering operational fluctuation encountered in firing biomass (bagasse) compared to the more compatible fossil fuel. 6. Electrical protection & safety system Despite improvement in the stability of grid difficulties are still being encountered due to fluctuation in voltage & frequency. Such fluctuations often result in tripping of system. Frequent tripping of the system is extremely harmful to the material, particularly in high pressure & high temperature region due to fluctuating stress level. The protection system has been designed to avoid the tripping of turbine even though the electrical load may be thrown off during grid fluctuation. This helps in avoidance of cyclical stress.

WORKS
ASMOLI, TEHSIL SAMBHAL, DISTT. MORADABAD-244 304 (UTTAR PRADESH)
PHONE & FAX : 0591-2316355
Website: www.dhampur.com

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7. The condenser water treatment system

The stability of operational efficiency of system also depends on maintenance of quality of circulating water through condenser. Stricter cooling water conditioning system is installed to maintain vacuum under steady load and fluctuating conditions. This also helps reduce the stress.

The technology adopted for the project activity has low market penetration. Hence it has other inherent barriers associated with it:

- Availability of skilled manpower to operate plant continuously and efficiently: Since this project activity is being taken for first time in India, there are no trained operators and as such the project is heavily dependent on job training of the manpower and a risk is seen in equipment safety and achieving the rated output besides the question of efficiently operating the plant on continuous basis.
- Availability of spare parts: since the critical components are long delivery and costly, the project risk includes the availability in case the need arises and a loss of production can happen.

Bagasse availability

The cropping pattern by farmers in Uttar Pradesh has shown significant fluctuations from cane planting to the cultivation of other commercially lucrative crops. This has resulted from the significant price fluctuations[1] in agriculture markets over the recent years in the state and due to this the continuous availability of cane for the sugar industry is a risk that the project will face. Any shortfall in the availability of cane will have an immediate impact on the export of electricity and hence the returns of the project. It is evident from the table given below that any shortfall in the availability of cane effects the number of working days that will have an immediate impact on the export of electricity and hence the returns of the project

	2001-02	**2002-03**	**2003-04**	**2004-05**	**2005-06**	**Mea**
Cane Production in the Region (T)	922000	1169700	1123900	1276000	1606900	1219
Crushing in plant (T)	617700	658400	660000	641300	717700	6590
No. of working days	149	151	132	143	149	144.

There is often diversion of cane from sugar mill to khandsaris and ghur manufactures. These manufacturers offer higher prices as they operate in unorganised sector and have no quality assurance plans. These diversions put a constraint on cane availability and hence bagasse which again may impact the viability of the project activity.

The uncertainty in weather conditions also plays an important role in determining the cane availability in the region. With less than 50% of the land under irrigation in Moradabad District area[2], there is weather related risk for cane under rain fed cultivation conditions. DSM is in the process of extending the irrigation facilities in the region and educating farmers on water

[1] http://agricoop.nic.in/farmprices/MSP.pdf

[2] http://irrigation.up.nic.in/canals_tubewells.htm

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		harvesting but these investments will take time and hence weather related factors may impact the project. It should be stressed that bagasse availability is not a risk which faces the baseline. This is because if less sugar is crushed, less steam and electricity will be required for process operations at the factory. It is only the CDM project investment which relies of exports electricity to the grid and which will be impacted by reduced cane availability. **Institutional risks and barriers** Frequently changing policy, reduction in the energy purchase rate and no policy framework for third party sale of electricity are the major threats to the project activity. The viability of non-conventional power projects exporting to grid depends mainly on the purchase tariff of the distribution company (UPPCL). UPCCL will be the primary off taker of the electric energy generated from the project activity but that too has led to constraint because of the uncertainty of the Power Purchase Agreement (PPA) with UPPCL. The power tariff rate defined by UPCCL is Rs 2.86 per kWh for base year 2006-07 and is expected to increase up to a level of 3.02 Rs/kWh in 2010-11 but the rate effective after 2010-11 is not as yet undefined. Although the Government's emphasis on biomass-based power generation has led to increased awareness of the potential for biomass residue based power, the push to exploit these underutilized energy resources is complicated by the complex array of policies and regulations found in the Indian power sector. Although the national Government makes recommendations on power sector restructuring and pricing policies; the exact details of the application of these regulations and policies must be implemented at the state level. While some state governments have advanced policies, including buyback, wheeling and banking of electricity generated by the State Electricity Boards, others including UP have yet to adopt them. These aspects have created a negative impact for bagasse based electricity generation project in the region. However, DSM-Asmoli has implemented this project activity considering that the additional CDM revenue will offset these risks.
2	The additionality section of the validation report states that "the most economically attractive alternative among the alternatives mentioned above has been selected as the baseline scenario". However no economic analysis has been provided or referenced to support this	The response will be given by the validation team

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	statement.	
3	Further confirmation is required regarding how the barriers presented in the PDD have been validated and how it has been concluded that they would prevent the implementation of this specific project activity.	The barriers presented in the PDD are technological and institutional barriers Technological Barriers: 1. The project activity involves the installation of a 170 TPH boiler with 105 kg/cm^2 pressure and 540 deg C temperature rating, which is the first of its kind to be installed adjacent to a sugar unit in India. This is supported by the document submitted by the boiler manufacturer M/s Thermax Babcock & Wilcox 2. Uncertainty in the availability of bagasse:- The cropping pattern by farmers in Uttar Pradesh has shown significant fluctuations from cane planting to the cultivation of other commercially lucrative crops. This has resulted from the significant price fluctuations in agriculture markets over the recent years in the state and due to this the continuous availability of cane for the sugar industry is a risk that the project will face. This is evident from the table in the PDD which shows the shortfall in the availability of cane. Refer page 13-14 of the PDD Institutional Barrier: Frequently changing policy, reduction in the energy purchase rate and no policy framework for third party sale of electricity are the major threats to the project activity. The power tariff rate defined by UPCCL is Rs 2.86 per kWh for base year 2006-07 and is expected to increase up to a level of 3.02 Rs/kWh in 2010-11 but the rate effective after 2010-11 is not as yet undefined. This is evident from the Power Purchase Agreement (PPA)
4	Scenario 12 of the approved methodology requires that "biomass residues would in the absence of the project activity be used for heat generation in boilers at the project site". Further conformation of how this requirement has been complied with is required. In particular it should be confirmed whether the new equipment will be used to supply heat demand at the	Yes, the biomass in the absence of project activity would be used for heat generation at the project site (as has been the case todate). The present system is suitable to meet the heat demand for 9000 TCD except for a small surplus (about 2.5%)which has been substantiated by a bagasse balance for both Baseline and project activity provided to the validator. Yes, the new equipment will be used to meet part of the heat requirement for the process. However under the baseline scenario, the existing system would be used as explained above. As regards biomass usage in the baseline, please refer to the explanation given above and the bagasse balance for the baseline and project activity submitted to the validators. The existing equipment will continue to operate along with the proposed project activity. Under the baseline, large quantity of steam (both high pressure and low pressure) would be fed through a PRDS to the project site, but under the project scenario this steam is partially generated from the new boiler and fed back to the plant as turbine extraction. This would eliminate use of low pressure steam from the PRDS.

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	project site, what would have happened to the biomass used in the project activity in the baseline, and the effect of this on the Operation of the existing equipment.	

We hope that the above explanation provides all the necessary information to register the project.

Signed on behalf of The Dhampur Sugar Mills Ltd

Name: Gautam Goel
Title: Managing Director
Date: October 30, 2007

Signed on behalf of Agrinergy Ltd.

Name: Ben Atkinson
Title: Director
Date: October 30, 2007

Signed on behalf of DSCL Energy Services Company Ltd.

Name: Charu Gupta
Title: Associate Consultant
Date: October 30, 2007