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Att: CDM Executive Board

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CDM Ref 1109	ETEL/KCHA	26 July 2007

Response to request for review

M/S. Kothari Sugars and Chemicals Ltd (KSCL)'s Bagasse Based Co-generation Project, at Perambalur district, Tamil Nadu, India (1109)

Dear Members of the CDM Executive Board,

We refer to the issues raised in the requests for review by three Board members concerning DNV's request for registration of the "M/S. Kothari Sugars and Chemicals Ltd (KSCL)'s Bagasse Based Co-generation Project, at Perambalur district, Tamil Nadu, India" (1109) and would like to provide the following clarifications for your perusal and review.

The points raised and our response to the same are indicated below.

Comment 1:
The guidelines for completing section B.5 of the PDD requires, "If the starting date of the project activity is before the date of validation, provide evidence that the incentive from the CDM was seriously considered in the decision to proceed with the project activity. This evidence shall be based on (preferably official, legal and/or other corporate) documentation that was available at, or prior to, the start of the project activity." This requirement has not been satisfied.

DNV Response:
In response to the comment raised, the following is clarified as under:

- The starting date of the project activity is 22 September 2005. This is the date of placing the order for the boiler and was verified by DNV during the project validation.
- The fact that the project proponent seriously considered the incentive from the CDM in the decision to proceed with the project activity (i.e., new sugar plants with bagasse based cogeneration and power export), prior to the project activity was verified through the corporate documentation of Kothari i.e., '*minutes of the board of directors'* (dated 15 September 2005/ point No 22). This document, containing the extract of the '*minutes of the board of directors'*, allocates responsibility of the CDM project activity and addresses that the project activity can benefit from CDM revenues. Documentation is provided in the response from the Project Proponent, attached as ***Annex-1***.

From the above it is clear that Kothari indeed seriously considered the incentive from the CDM in the decision to proceed with the project activity.

Comment 2:
The list of alternatives does not include the possibility of a low pressure cogeneration system designed to meet the captive needs of the sugar plant.

DNV Response:
We acknowledge that version 04 of ACM0006 (Page 3-5) stipulates the following:
"Project participants shall identify the most plausible baseline scenario among all realistic and credible alternatives(s) including: P2: The proposed project activity (installation of a power plant), fired with the same type of biomass residues but with a lower efficiency of electrical generation (e.g. an efficiency that is common practice in the relevant industry sector) and H2: The proposed project activity (installation of a cogeneration power plant), fired with the same type of biomass residues but with a different efficiency of heat generation (e.g. an efficiency that is common practice in the relevant industry sector)."

The alternatives P2 and H2 are nothing but a low pressure cogeneration system designed to meet the captive needs of the sugar plant. From the list of alternatives (P2 and H2) as in step 1 in section B.5 of the PDD, it is clarified that the possibility of a low pressure cogeneration system designed to meet the captive needs of the sugar plant is discussed. However, this alternative of using a low pressure cogeneration system is ruled out based on presence of various barriers (applicable to both low and high pressure cogeneration), such as:

- The cost of establishing a cogeneration plant is equivalent or more than the costs related to establish a sugar plant. At present, the high interest cost of capital from both banking and non-banking financial institutions makes the co-generation less attractive for sugar mills (Point 25: http://dacnet.nic.in/cacp/sugar-final.htm);

- The requirement to have an initially signed power purchase agreement (PPA) (not a normal practice at loan approval stage) by financial institutions leads to delays and uncertainties and absence of provision of escrow account facilities with the Tamil Nadu Electricity Board (TNEB), which is insisted upon by financial institutions (as verified by DNV from: *Indian Bank: Letter dated 06 February 2006* and *SREI: Letter No. SREIIPF: HO:KSCL:05-06-057 dated 9th March 2006*). As the financial status of TNEB (the PPA counterparty) is deemed vulnerable the initially agreed PPA could be at risk (Page 85: http://powermin.nic.in/indian_electricity_scenario/Final_Report_Rating.pdf).

- Biomass availability is a significant barrier to the project activity during off-season as mobilising the required quantity of biomass is deemed challenging in the absence of any organised biomass fuel market in Tamil Nadu. With no organized biomass residue market in the region, a cogeneration project is susceptible to inflation on biomass residues prices.

- Kothari is not required by law to establish a cogeneration unit in its sugar mill. No mandate from the Central Pollution Control Board (CPCB) is given for disposal of bagasse to the cogeneration plant (CPCB: http://www.cpcb.nic.in/Environmental%20Standards/Effluent/standard56.html ; http://www.cpcb.nic.in/Environmental%20Standards/Emission/standard4.html ; http://www.cpcb.nic.in/Environmental%20Standards/Emission/standard32.html).

- DNV confirms that the latest data available on bagasse-based cogeneration from the Sugar Technologists' Association of India *("List of Cane Sugar Factories and Distilleries in India"*,

Published by The Sugar Technologists Association of India season 2005-06) lists 16 out of 38 sugar mills that have established cogeneration plants in the State of Tamil Nadu. Some of these projects are also considering CDM benefits. Moreover, there are 517 sugar mills in India, of which 22 have bagasse cogeneration capacities greater than 22 MW. These represent only 4% of penetration of the potential in terms of the number of sugar mills employing co-generation systems. Out of an estimated 3500 MW bagasse based cogeneration potential in India, about 300 MW is currently exploited (Page 1: http://www.pi.energy.gov/documents/EWSLindia.pdf). This fact indicates that the project activity is not representing any prevailing common practice. DNV confirms that the prevailing practice among sugar manufacturers is to install less technologically challenging project activities – lower efficiency boilers generating just sufficient steam to meet captive needs only, and that this is representing the common practice in Tamil Nadu.

- From DNV's response to comment 3, it is evident that high pressure cogeneration (the project activity) has a financial barrier. Considering the fact that high pressure cogeneration is always more efficient than low pressure cogeneration (as high pressure cogeneration would consume less quantity of biomass to deliver the same amount of steam and power for a similar cogeneration capacity), the high pressure cogeneration will definitely be more economical than low pressure cogeneration in terms of biomass fuel costs. For a similar capacity of cogeneration, the cash outflow will be more due to high biomass costs and thus lead to comparatively higher financial barrier in case of low pressure cogeneration. It becomes evident that the low pressure cogeneration has a comparatively greater financial barrier than high pressure cogeneration.

On account of the existence of the above barriers, a low pressure cogeneration system is not considered as a realistic alternative for selection of the most plausible baseline scenario. Instead, the baseline scenario would be that (i) Kothari would use bagasse for generation of process heat in low pressure boilers, (ii) no power would be generated on site, and (iii) power would be drawn from the grid for meeting the needs of the sugar mill, which leads to scenario 3.

Comment 3:
Further evidence is requested to confirm that the barriers presented prevent the implementation of the project activity. If barriers only affect the financial viability of the project it should be confirmed that the project is not financially viable with these constraints.

DNV Response:
The evidence to confirm that the barriers presented (in the PDD) prevent the implementation of the project activity are detailed and provided in our response to comment 2.

While some of the barriers impact the financial viability of the project, other barriers exist and prevent the implementation of these alternatives. The investment analysis presented by the project participant in their response has now provided the IRR analysis, in addition to the barrier analysis, aimed to also assess the financial attractiveness of the project activity. Two benchmarks have also been determined by the project proponent, i.e. (a) a Prime Lending Rate (PLR) at 12.5% from Indian banks (Source: http://www.indianbank.in/interest.htm) and (b) a WACC at 9.46%. PLR is the current rate at which commercial banks lend money. The WACC is based on the weighted average costs of capital and calculated (as in ***Annex 2***) from the expected return on equity used by the Tamil Nadu Electricity Regulatory Commission as 16% (on page 90: http://tnerc.tn.nic.in/orders/nces%20order%20-approved%20order%20host%20copy.pdf), the actual loan rate from the Indian Bank as 10% (***Annex 4***) and the preferential rate loan form the Sugar Development Fund as 4% (Page 5 and point 12 ***Annex 9*** and para 105 of

http://rbi.org.in/scripts/NotificationUser.aspx?Id=3445&Mode=0#partIpartI). Kothari has opted for the benchmark represented by a WACC at 9.46% for comparing the project IRR. The evidence for PLR at 12.5% and WACC at 9.46% has been verified by DNV and is deemed appropriate.

The following evidences for assumptions and data used in the IRR calculations have been verified by DNV:

For Cash Inflow:

- the price of electricity is Rs 3.15/kWh for season and Rs 3.01/kWh for off-season in line with the tariff in PPA (on page 5: ***Annex 7*** and ***Annex 8***) with 5% escalation after every 5 years,
- the price of steam sold to adjacent sugar mill is based on Rs 260/ Ton (***Annex 6***) with 5% escalation after every 5 years.

For Cash Outflow:

- the investment cost is Rs 877.5 million as certified by a chartered accountant (***Annex 3***),
- the price of bagasse is Rs 575/mt form the adjacent sugar plant with 5% escalation yearly (on page 81: http://tnerc.tn.nic.in/orders/nces%20order%20-approved%20order%20host%20copy.pdf),
- the price for purchased bagasse is Rs 1400/mt (***Annex 3 & 5***) with 5% escalation every year (on page 81: http://tnerc.tn.nic.in/orders/nces%20order%20-approved%20order%20host%20copy.pdf).

DNV is able to verify that the assumptions used (as above) in the determination of IRR are conservatively applied and sourced from the appropriate industrial standards or are the realistic figures.

The IRR of the project activity without CDM revenues is estimated at 8.13% which is lower than the benchmark of 9.46%. The IRR improves to 15.27 % with CDM revenues**.** This is evident from the attached detailed IRR calculations (***Annex 2***). Thus it is evident that the project activity is not financially viable without the CDM.

So, it is evident that financial and other barriers prevent the implementation of the project activity.

Comment 4:
More information should be provided to confirm that scenario 4 of the approved methodology is not more applicable to this greenfield project than scenario 3.

DNV Response:
We acknowledge that scenario 3 (P4, B1 or B2 or B3 and B4, H4) describes a situation where the project baseline is heat generation from the same biomass (B4, H4) – or less conservatively dumping of the biomass without energy recovery (B1 or B2 or B3) – and electricity from the grid (P4) and scenario 4 (P2 and P4, B4, H2) describes the situation where the project baseline would be heat and power generation (low pressure cogeneration) using the same biomass resources (P2, B4, H2), but at a lower efficiency than the proposed project activity; some additional electricity may be imported from the grid (P4).

We refer to our response to comment 2, where low-pressure cogeneration (scenario 4) was ruled out as an alternative to identify and select the baseline scenario and low pressure heat (steam) generation with power supply from the grid (scenario 3) was identified and selected as a most creditable baseline scenario. This explains in fact why scenario 3 is a baseline scenario and not

scenario 4. This in turn explains why scenario 4 of the approved methodology is not more applicable to this greenfield project than scenario 3.

Comment 5:
Section B7 of the PDD must contain information on how all parameters required by the methodology, including fossil fuel consumption and electrical output, will be monitored.

DNV Response:
The revised PDD (attached along with this response) and the project proponent's response now contains information on how all parameters required by the methodology, including electrical output, will be monitored. However, it is also clarified that the information on the monitoring of fossil fuel consumption is already provided in the PDD (on page 34-35) submitted during the request for registration and which is currently available on the UNFCCC website.

DNV is able to confirm that the attached revised PDD (under section B.7.1 and in Annex 4) now includes the above mentioned requirement.

We sincerely hope that the Board accepts our aforementioned explanations and we look forward to the registration of the project activity.

Yours faithfully
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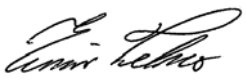

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