



Validation opinion

Notification / Requesting approval of changes from the project activity as described in the registered project design document

Title of project activity:				
Tongcheng Kaidi Biomass Power Project				
CDM reference number:		DNV project No.:		
3061		PRJC-359752-2012-CCS-CHN		
Type of request:	<input checked="" type="checkbox"/> Notification of changes from project activity as described in the registered PDD (i.e. changes do <u>not</u> raise any concerns with regard to i) additionality, ii) the scale of CDM project activity and/or iii) the applicability and application of baseline methodology <input type="checkbox"/> Request for approval of changes from project activity as described in the registered PDD			
Date	Work carried out by:	Work verified by:	Approved by:	
15 April 2012	Hou Baojun Lin Wu <i>Hou Baojun Lin Wu</i>	Krishnan Namboodiri <i>Krishnan</i>	Edwin Aalders <i>Edwin Aalders</i>	

1 Description of the changes as compared to the description in the registered PDD

The project applied the approved consolidated baseline methodology ACM0006 (version 9) “*Consolidated methodology for electricity generation from biomass residues*”. The change requested to the registered PDD is mainly regarding the biomass residue utilized:

It was stated in the registered PDD that “The biomass residues utilized in this proposed project will be mainly rice husk, rice straw, cotton straw and oil seed rape straw”. However, by checking the daily operating log, DNV was able to confirm that rice husk was used from the start of proposed project implementation. Also, the bamboo crumb, branch, barks, sawdust and wood chips were seen utilized since December 2010 (bamboo crumb, branch, barks, sawdust and wood chips here are defined as residues and by-product from the forestry). Thus, the main biomass residues utilized for the project are rice husk, bamboo crumb, branch, bark, sawdust and wood chips.

In addition, while revising the PDD with regard to the changes in the project design, the PDD was also revised in section A.3 to reflect that Camco International Limited was authorized by Switzerland to participate in this project. The request to add Switzerland as Party involved in the project has been accepted by the UNFCCC on 5 May 2011 (<http://cdm.unfccc.int/Projects/DB/TUEV-RHEIN1256208994.65/view>).

2 Assessment of the changes

Assessment of when the changes occurred

The change occurred since December 2010, subsequent to start of the project operation in December 2009.

Assessment of the reasons for these changes taking place

After the project was put into operation from December 2009, the project owner was compelled to seek other alternatives as the project owner realized that the seasonal production of biomass residues affected the biomass fuel supply, whereas the biomass types in Tongcheng County the project is located were much more diverse than predicted and various types of biomass residues supply can guarantee the continuous operation of power plant^{*} The reason about the utilized biomass type changed from biomass straws (rice straw, cotton straw and oil seed rape straw) to forestry residues (bamboo crumb, branch, barks, sawdust and wood chips) has been indicated in “*The clarification for the biomass type change in Tongcheng County issued by Wuhan Kaidi Power Engineering Co., Ltd*” as following: In the FSR preparation, due to the insufficiency experience of utilizing the forestry residues in the biomass power project, the forestry residues have not been considered for the proposed project. However, when the project was put into operation, the forestry residues surrounding the project site were collected to the proposed project. Through the test of the forestry residues for the boilers, the proposed project can also use the forestry residues normally. On the other hand, the biomass straws were spread around to farmers. The collection for the biomass straws is difficult and the biomass straws available are also varied with the season. So the biomass straws supply cannot guarantee the continuous operation of power plant. Hence, the forestry residues were changed to be the utilized biomass from the biomass straws.

Assessment of whether the changes would have been known to the project participants prior to registration of the project activity

The changes occurred since December 2010[†] which was prior to the registration as the CDM project activity on 6 January 2011, but it was later than the final validation report completed on 25 October 2010 (version 03).

Assessment of how the changes may impact the overall operation/ability of the project activity to deliver emission reductions as stated in the PDD

For ACM0006 (version 09), possible leakages due to competing use of biomass have to be considered. When the types of used biomass residues are changed, the leakage has to be reconsidered. This was done as follows:

In the registered PDD, according to the applied methodology ACM0006 (version 09), the approach L₂ for estimate the leakage is utilized in the proposed project for demonstrating that the quantity of available biomass residue of each type in the region is at least 25% larger than the quantity of residues utilized. In response to the new type of biomass residues utilized in the project, an investigation of the new biomass residue types was carried out by Wuhan Kaidi Electric Power Engineering Co., Ltd[‡] and its effect on the leakage was re-assessed as summarised below.

^{*} The clarification for the biomass type change in Tongcheng County issued by Wuhan Kaidi Power Engineering Co., Ltd on 10 March 2012

[†] The biomass change can be verified by the daily log from December 2009

[‡] Investigation report for the biomass supply/demand for year 2010 in Tongcheng County issued by Wuhan Kaidi Power Engineering Co., Ltd in November 2011

Biomass resources in 60 km radius from the plant

Biomass Type	Rice husk (10 ⁴ tonnes)	Forestry residues* (10 ⁴ tonnes)
Total biomass generation in the region	32.95	55.0
Biomass loss	14.43	11.0
Available biomass in the region	18.52	44.0
Biomass utilised out of the project	3.70	6.6
Biomass utilised by the project**	8.00	15.80
Total biomass utilised, including the project	11.70	22.40
(Available biomass/Total biomass utilised) -100%	58%	96%

* Forestry residues include bamboo crumbs, sawdust, branch, bark and wood chips

** Biomass utilised by the project is sourced from the assessment on all type of biomass residues used by the project issued by the FSR designer

The total rice husk generation in the region is 15.90×10^4 tonnes as per the estimate in the FSR. The availability of rice husk as per the re-assessment is 32.95×10^4 tonnes. From the clarification from the FSR author (Wuhan Kaidi Electric Power Engineering Co., Ltd), the rice husk in the FSR is sourced from the rice process plant and it is enough to meet the proposed project consumption (8.79×10^4 tonnes). In the investigation in the 2011, the rice husk investigation was based on the rice cultivation area. All of the total produced rice cannot be sold to rice process plant. Therefore, the total rice husk generation in the region was increased compared to that estimated in the FSR.

The investigation of the biomass residues utilized shows that the quantity of available residues of the above mentioned biomass types in 60 km away from the project plant are all over 25% larger than the quantity of biomass type that are utilized. The conclusion is that the project will not influence the present biomass utilisation and it will not create any leakage. This is in compliance with ACM0006 (version 09).

However, due to the change of biomass residues type, the biomass quantity consumed by the project has been re-assessed. The project participant commissioned the FSR's designer to assess the quantity of biomass residues consumed by the project, which is based on the same operation output. In the assessment, it was stated that the applicability of the boilers selected is good enough for various types of biomass residues (also including rice husk, bamboo crumbs, branch, bark, sawdust and wood chip), and the proportion of each biomass residue can be adjusted as per actual operation. In the FSR, the total energy consumed by two boilers was estimated to be 2 142.3 TJ, assuming that the boiler only consume the rice husk of moisture content 6% and NCV of 12.964GJ/t. Considering the nature and availability of each biomass residue, the new energy balance was conducted as below:

Biomass type	Rice husk	Bamboo crumb	Branch	Bark	Sawdust	Wood chip
Wet weight (10 ³ t)	80	15	10	63	40	30
Moisture (%)	14.27	29.42	34.60	33.81	29.83	29.66
Dry weight (10 ³ t)	68.58	10.59	6.54	41.70	28.07	21.10
NCV (GJ/t)	13.15	11.96	11.21	11.05	11.74	11.90
Energy (TJ)	901.88	126.62	73.31	460.78	329.52	251.11
Total energy (TJ)	2 143.23					

(1) Moistures are sourced from the daily actual measurement

(2) NCV results were issued by reputed laboratory

By checking relevant documents/evidences*, DNV was able to confirm that the quantity of all types of biomass residues used by the project activity was reasonable and can meet the requirement of project implementation and operation. Hence, the updated quantity and nature of each biomass residue are applied in the calculation of baseline emissions and project emissions. Furthermore, due to the change of total quantity of biomass residues, the number of truck trips for the transportation of biomass residues and on-site electricity consumption attributable to the project activity has also been updated in the calculation. DNV has verified the calculating process in the spread sheet along with updated PDD and confirmed that the annual estimated baseline emission and project emission are changed from 119 069 tCO₂ and 12 495 tCO₂ to 119 938 tCO₂ and 13 629 tCO₂ respectively. Accordingly, the estimated emission reductions are changed from 106 573 tCO₂ to 106 308 tCO₂, which reflected to the actual project implementation and operation.

3 Assessment of the impact of the changes

<i>Do the changes raise concerns with regard to any of the following aspects?</i>	<input type="checkbox"/> Additionality <input type="checkbox"/> Scale of CDM project activity <input type="checkbox"/> Applicability and application of baseline methodology <input checked="" type="checkbox"/> Not applicable (the changes do not raise any concerns)
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Assessment of impacts of the changes on additionality

The change of biomass impacts the project's additionality as an investment analysis was used to demonstrate the additionality of the project and with a change of biomass residue types, the prices are different. However, no concerns are raised with respect to additionality. A notification for change of project design is therefore submitted.

On the basis of information sourced from the biomass fuel invoices[†], and the data of the net calorific values for biomass residues used in the project activity from a reputed laboratory[‡], DNV could verify that all the prices for the biomass residues utilized by the project are higher on an energy basis than those used in the registered PDD. The project IRR considering actual biomass residue prices is therefore lower than the one anticipated in the registered PDD.

Data source	Rice husk	Bamboo crumbs	Sawdust	Bark	Branch	Wood chip
Average prices from invoice (RMB/t)	340	290	260	275	275	290
NCV(GJ/t) from the reputed laboratory	13.15	11.96	11.74	11.05	11.21	11.90
Prices of biomass residues utilized on energy basis , (RMB/GJ)	25.86	24.25	22.15	24.89	24.53	24.37

* Records and summary of biomass residues purchased for the period December 2009 to June 2011
 Investigation report of the biomass supply/demand situation in Tongcheng, dated November 2011

[†] The invoices for biomass fuel from December 2010 to December 2011

[‡] NCV of biomass residues test result issued by Luoyang City Coal Quality Test Centre in December 2011

Registered PDD	18.25 RMB/GJ (highest NCV of the rice husk is conservatively used)
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Therefore, using other biomass residue types does not impact the conclusion in the registered PDD of the proposed project that the project is additional. Therefore, a notification for change of project design is submitted.

Assessment of impacts of the changes on the scale of the CDM project activity

The capacity of the project is not changed significantly by the change of biomass residue and the project is already a large scale project.

Assessment of impacts of the changes on the applicability and application of baseline methodology

The project applied the approved consolidated baseline methodology ACM0006 (version 09) “*Consolidated methodology electricity generation from biomass residues*”, which is applicable to the project activity as:

- Other than risk husk which has been identified as biomass residues in the registered PDD, additional five types of biomass residue were used in the project activity confirmed by DNV through site visit. As stated in the investigation report of local biomass resource issued by the accredited third party, bamboo crumbs, sawdust, barks, branches and wood chips are residues and by-product from the forestry, which are considered as renewable biomass residues. Hence, no other biomass types than biomass residues, as defined in ACM0006 (version 09), are the predominant fuel used in the project activity and there was no fossil fuels co-fired, which can be verified by the purchase and operating records of biomass residues as well as from the on-site visit.
- The biomass residues abundantly available within the boundary of the project covering radius of 60 km are surplus as compared to the biomass consumption of the project. The biomass residues utilized are procured from agriculture and forestry residues, not the product of any production process. Therefore, the implementation of the project activity will not increase the biomass production in the identified region, which can be verified by the investigation report of local biomass resource by the accredited third party.
- Due to the volatility and deterioration of biomass residues, the performance of the power plant equipment will be affected by the calorific value decreasing. Therefore, the biomass residues used in the proposed project will not be stored for more than 1 year. The biomass fuels will be consumed on a first-come first-burn basis.
- There is no significant energy quantities except from transportation and mechanical treatment of the biomass residues required. The project activity will consume a small quantity of diesel for start-ups and transportation and mechanical treatment of the biomass residues.

The methodology is hence still applicable for the project after the change of project design.

Baseline determination of biomass residues used and determination of scenario:

The alternative B2 is not realistic as the practice of land filling and other planned dumping of biomass residues in anaerobic conditions in rural area is not a common practice and highly impractical in China. Because there is no power generation or cogeneration project using biomass residues as fuel close to proposed project, alternative B5 is eliminated. B6 also is excluded since there are no biomass fired boilers using biomass residues as fuel close to proposed project. There is no project using the surplus biomass residues for other energy purposes at the project site, which can be confirmed by DNV through review the investigation report of local biomass resource issued by the accredited third party. Thus B7 is not eligible.

As state in the investigation report of local biomass resource, there is a small amount of biomass residues that has been used as fertilizer or firewood around the project site. But the biomass residues consumption by the proposed project activity is derived from local surplus biomass residues within the identified boundary, which will not affect use of small amount of biomass residues as fertilizer. Thus, B8 is eliminated.

In conclusion, the baseline for all the biomass residues is B1/B3 and the baseline for cogeneration is unchanged. Hence, the baseline of the project after the change of project design is still Scenario 2 of the methodology.

4 Validation opinion

DNV's verification activity for the project revealed the inconsistency in the project design of the registered PDD. But considering the assessment presented above, DNV was able to confirm that the change in biomass residue types of the project would not impact the additionality of project activity negatively, would not change the scale of CDM project activity, would not change the applicability of ACM0006 (version 09). Since the quantity and nature of each biomass residue used in the calculation of emission reductions in the registered PDD are changed due to the change of biomass residue types, the annual estimated emission reductions have been updated from 106 573 tCO₂ to 106 308 tCO₂, to reflect to the actual project implementation and operation.

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