



Validation opinion for post registration changes

Title of project activity:		
Wangjiang Kaidi Biomass Power Project		
CDM reference number:	DNV project No.:	
3069	PRJC-359757-2012-CCS-CHN	
Date:	Validation of the changes were conducted:	
2 August 2012	<input type="checkbox"/> Prior to the commencement of a verification of the project activity <input checked="" type="checkbox"/> When performing a verification of the project activity	
Work carried out by:	Work verified by:	Approved by:
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		Michael Lehmann

1 Overview of post registration changes

Type of post registration change	Is prior approval by CDM EB required? (refer to Appendix 1 of CDM Project Standard)	
Temporary deviations from the registered monitoring plan and/or monitoring methodology (refer to section 2)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not applicable	
Corrections (refer to section 3)	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not applicable	
Changes to the start date of the crediting period (refer to section 0) <i>Prior approval by the CDM EB is not required in case of (a) bringing forward the start date up to one year earlier or (b) postponing the start date by up to one year (by up to two years for project activities in LDCs).</i>	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not applicable	
Permanent changes from the registered monitoring plan or applied methodology (refer to section 0)	<input type="checkbox"/> Proposed revision only includes the request by the CDM EB <input type="checkbox"/> Proposed revision includes not only the request by the CDM EB but also additional revisions proposed by the PP/DOE <input type="checkbox"/> Proposed revision includes revisions proposed by the PP/DOE	<input type="checkbox"/> Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Not applicable
Changes to the project design of a registered project activity (refer to section 0)	<input 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	<input type="checkbox"/> Yes <input checked="" type="checkbox"/> No <input type="checkbox"/> Not applicable

	<input type="checkbox"/> application of baseline methodology <input type="checkbox"/> Request for approval of changes from project activity as described in the registered PDD	
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2 Temporary deviations from the registered monitoring plan and/or monitoring methodology

Not applicable

3 Corrections

Not applicable

4 Changes to the start date of the crediting period

Not applicable

5 Permanent changes from the registered monitoring plan or applied methodology

Not applicable

6 Changes to the project design of a registered project activity

6.1 Description of the changes as compared to the description in the registered PDD and description of the changes to the monitoring plan

The project applied the approved consolidated baseline methodology ACM0006 (version 09) “*Consolidated methodology 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, oil seed rape straw, cotton straw”. However, by checking the daily operating log during physical site visit, DNV was able to confirm that rice husk and cotton straw were used from the start of proposed project implementation, and the branch, stump and wood chips were utilized since December 2010 (branch, stump and wood chips here are defined as forestry residues). Thus, the main biomass residues utilized for the project are rice husk, branch, stump, wood chips and cotton straw.

In addition, to revising the PDD with regard to the changes in the type of the biomass residue, 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 also add Switzerland as Party involved in the project has been accepted by the UNFCCC on 5 May 2011.

6.2 Assessment of the changes to the project design

Assessment of when the changes occurred

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

Assessment of the reasons for these changes taking place

After the project was put into operation from April 2010, the project owner was compelled to seek other alternatives as the project owner realized that the seasonal production of types

biomass residues, as mentioned in the registered PDD dated 31 March 2010, affected the biomass fuel supply, whereas the biomass types in Wangjiang County where 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.

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

From the validation report (version 03, dated 25 October 2010), the available biomass residues are rice husk, rice straw, cotton straw and oil seed rape straw during the validation stage. The available biomass residue, as envisaged, during the validation stage has been verified from Biomass Availability Report (dated July 2008) prepared by the FSR author (Wuhan Kaidi Electric Power Engineering Co., Ltd.). The changes occurred since December 2010, which was later than the final validation report completed on 25 October 2010 (version 03). But it was prior to the registration as the CDM project activity on 13 January 2011.

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

As per 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 Power Engineering Co., Ltd* and its effect on the leakage was re-assessed.

Biomass resources in 60 km radius from the plant

Biomass Type	Rice husk (10 ⁴ tonnes)	Cotton straw (10 ⁴ tonnes)	Forestry residues* (10 ⁴ tonnes)
Total biomass generation in the region	26.77	97.23	60.00
Biomass loss	11.10	41.94	6.00
Available biomass in the region	15.67	55.29	54.00
Biomass utilised out of the project	3.13	11.06	10.80
Biomass utilised by the project**	6.00	1.30	14.80
Total biomass utilised, including the project	9.13	12.36	25.60
Available biomass/Total biomass utilised	72%	347%	111%

* Forestry residues include branch, stump 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 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 available of biomass type that are utilized. The

* Investigation report for the biomass supply/demand for year 2010 in Wangjiang County issued by Wuhan Kaidi Power Engineering Co., Ltd in August 2011

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, cotton straw, branches, stumps 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 2 142.72 TJ. Considering the nature and availability of each biomass residue, the new energy balance was conducted as below:

Biomass type	Rice husk	Cotton straw	Branch	Stump	Wood chip
Wet weight (10 ³ t)	60	130	70	80	70
Moisture (%)	13.82	29.80	22.83	28.54	27.88
Dry weight (10 ³ t)	51.708	9.126	54.018	5.717	50.486
NCV (GJ/t)	13.08	12.91	11.44	14.23	12.86
Energy (TJ)	676.34	117.81	617.96	81.35	649.25
Total energy (TJ)	2 142.72				

(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 emissions and project emissions are changed from 119 013 tCO₂ and 13 813 tCO₂ to 119 709 tCO₂ and 14 309 tCO₂ respectively. So the estimated emission reductions are changed from 105 200 tCO₂ to 105 400 tCO₂, which reflected to the actual project implementation and operation.

6.3 Assessment of the impact of the changes to the project design

Do the changes adversely affect the conclusions of the validation report of the registered PDD with regard to any of the following?

- ☐ Additionality
- ☐ Scale of CDM project activity
- ☐ Applicability and application of approved baseline methodology under which the project activity has been registered or the later version of the applied methodology
- ☐ The compliance of the monitoring plan with applied monitoring methodology (*refer as applicable to section 3 for the assessment of revisions to the monitoring resulting from the change of the project design*)
- ☐ The level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan (*refer as applicable to section 3 for the assessment*)

of revisions to the monitoring resulting from the change of the project design)

- ☒ The changes do not adversely impact i) the applicability and application of the applied methodology, ii) the additionality of the project activity and iii) the scale of the project activity

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	Cotton straw	Branches	Stumps	Wood chips
Average prices from invoice (RMB/t)	350	300	320	290	280
NCV from the reputed laboratory (GJ/t)	13.08	12.91	11.44	14.23	12.86
Prices of biomass residues utilized on energy basis (RMB/GJ)	26.76	23.24	27.97	20.38	21.77
Registered PDD	16.87RMB/GJ (highest NCV of the stump is conservatively used)				

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 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:

^{*} The invoices for biomass fuel in 2011

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

- Other than risk husk and cotton straw which have been identified as biomass residues in the registered PDD, additional three types of biomass residue were used in the project activity confirmed by DNV through site visit. As state in the investigation report of local biomass resource issued by the accredited third party, branch, stump and wood chips are forestry residues, 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 are no fossil fuels was co-fired, which can be verified by the purchase and operating records of biomass residues as well as 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 few liters 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. B5 is eliminated as there is no generation or cogeneration project using biomass residues as fuel close to proposed project. B6 also is excluded since there are no biomass 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 little 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 inappropriate the 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.

Assessment of impacts of the changes on the compliance of the monitoring plan with the applied monitoring methodology

The biomass type change does not involve the change of the monitoring plan with the applied monitoring methodology.

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Assessment of impacts of the changes on level of accuracy of the monitoring compared with the requirements contained in the registered monitoring plan

The biomass type change does not involve the change compared with the registered monitoring plan.

7 Validation opinion

DNV's verification activity for the project revealed the inconsistency in the type of the used biomass residue of the registered PDD. But considering the assessment presented above, DNV was able to confirm that the biomass changes for 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 to reflect to the actual project implementation and operation.

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