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TÜV®

## CDM Executive Board

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Date  
21.01.2010

### Request for Review

"Hunan Tongdao Yaolaitan 5.55MW Hydro Power Project" (2933)

Dear Sir/Madam,

Please find below the response of the TÜV NORD JI/CDM Certification Program to the request for review for the above mentioned project No. 2933.

If you have any questions do not hesitate to contact us.

Yours sincerely,

TÜV NORD JI/CDM Certification Program



Rainer Winter

Request for Review 1	
Issue raised by EB Members / DNA	<i>The DOE is requested to further explain how the proposed tariff for the project activity has been determined, as with the application of the highest tariffs issued for similar projects in the province, which is 0.32 RMB/kWh as reflected in the validation report, the IRR crosses the benchmark..</i>
Response of PP	<p>The proposed 0.25RMB/kWh tariff adopted in the PDD is derived from the approved Preliminary Design Report (PDR) which was compiled in May 2005 by a professional design institute, the Hunan Province Huaihua City Water and Electricity Design Institute. When compiling the PDR in 2005, the Price Bureau of Huaihua City issued an official tariff document for hydropower documents in Tongdao County in February 2005<sup>1</sup>. This document lists very low tariffs for similar existing hydropower projects. This document further indicates that for newly operated hydropower projects in Tongdao County, project owners should expect an average tariff of above 0.24 RMB/kWh. Therefore, the project owner anticipated a tariff around this level when producing the PDR, as they had no guarantee of receiving a substantially higher tariff than 0.24RMB/kWh from their project<sup>2</sup>. Their expectation was reinforced in 2007 by the tariff survey published by the neighbouring Hongjiang county government which found that tariffs in Tongdao County were set at 0.2466RMB/kWh<sup>3</sup>.</p> <p>Two additional pieces of evidence give us confidence of the applicability of the 0.25RMB/kWh expected tariff and the additionality of the project:</p> <p>First, the lower tariff for this hydro project is in line with other projects of its size in Hunan Province. Unlike in other regions of China, Hunan Province determines feed-in tariffs based on project size. Larger projects, particularly those over 10MW, can normally enjoy tariffs of over 0.30RMB/kWh. However, smaller projects, particularly those below 6MW, receive tariffs that are substantially lower. Small hydropower projects, including the Yaolaitan Hydropower project, tend to receive a tariff close to the</p>

1 Tariff approval of hydropower projects in Tongdao County issued by the Price Bureau of Huaihua City [Huanshijia(2005)No.22]. Tongbao County is located within the administrative region of Huaihua city.

2 It is worth noting that Tongdao County is located in a poor part of China. Huaihua city is the third poorest (of 14) in Hunan, which itself is one of China's poorer provinces. Given China's decentralized fiscal system, which leads to richer areas having greater spending power, local governments in poor regions, are often severely stretched financially and would be unable to afford increasing the tariff beyond the required level. In 2007, per capita GDP in Huaihua city stood at only US\$1,193.

3 Survey on tariff for hydropower projects on county level of Hunan Province, refer to <http://www.hjs12358.com/>

0.25RMB/kWh used in the Yaolaitan PDD. We can demonstrate this most clearly in the following two tables, Table 1.1 and Table 1.2<sup>4</sup>, which outline the tariffs used in Registered CDM projects in the region.

Table 1.1 is a list of all projects under 6 MW<sup>5</sup> in Hunan Province that have been registered with the EB. As can be seen, all of these projects expected a tariff of no more than 0.258RMB/kWh.

**Table 1.1**

CDM Projects in Hunan Province					
Ref.	Project Name	Registration date	Capacity	Tariff VAT incl. (RMB/KWh)	Tariff Data source
1772	China Tuanjie Small Bundled Hydropower project	04/12/2008	6.6MW (1+4+1.6)	0.25 for each individual project	Supplementary Feasibility Study Report
1773	China Chuandongxia Small Hydropower Project	16/01/2009	5.09MW (1.89+3.2)	0.258 for each individual project	Power Purchase Agreement & Electricity Transmission Line Renting Agreement
2175	Xinning County Dalong Small-scale Hydropower Bundled Project	09/03/2009	6.6MW (1.6+5)	0.215 for each individual project	Grid Connection agreement for the whole Dalong Plant and the Price Document for the existing Dalong 4 <sup>th</sup> Plant

Table 1.2 (below) shows a list of larger hydro projects (>7MW and <15MW) registered under CDM in Hunan Province. As can be seen, these larger projects do indeed benefit from substantially higher tariffs in the range referenced in the Request for Review. However, no projects of Yaolaitan's size have been able to secure these tariff rates.

**Table 1.2**

4 Data for these tables is derived from the relevant project's Project Design Document

5 We also include the bundled project with individual projects whose installed capacity is under 6 MW

6 Refer to [http://www.priceonline.gov.cn/priceGOV/jgzc/content\\_119175.html](http://www.priceonline.gov.cn/priceGOV/jgzc/content_119175.html)

7 Notification on formal electricity tariff for Yaolaitan project issued by Price Bureau of Tongdao County [Tongjia (2009)No.39]

CDM projects in Hunan Province					
Ref.	Project Name	Registered	Capacity	Tariff VAT incl. (RMB/KWh)	Tariff Data source
1376	China Shangbao Small Hydropower Project	09/12/2007	14.1MW	0.32	Document from local Price Bureau
1391	Yuliangwan Small Hydroelectric Project, Hunan Province, China	06/01/2008	8 MW	0.3	Power Purchase Agreement
1555	China Zhijiang Peace Small Hydropower Project	13/04/2008	13.5MW	0.32	Power Purchase Agreement
2145	Hunan Yangmingshan Three Level Hydropower Project	23/11/2008	8.2 MW	0.28	Power Purchase Agreement in line with Electricity Tariff Note from Hunan Province Price Bureau
2024	Hunan Lizitang 9.6MW Hydropower Project of China	03/01/2009	9.6 MW	0.3	Feasibility Study Report
2081	China Hunan Gaoyongdong Small Hydropower Project	03/03/2009	8.8 MW	0.3	PDR, the data is in line with Xiangjiazhong[2004] No.114
2121	China Hunan Yuzitang Small Hydropower Project	31/03/2009	9.6 MW	0.278	PDR, which is in line with Dongjifazi[2004] No.102
1864	Hunan Jinjiagou Small Hydropower Project	24/08/2009	15 MW	0.316	Preliminary Design Report
1813	China Tumusi Small Hydropower Project	09/09/2008	14.6MW	0.3	Preliminary Design Report
1782	China Tuojiang Small Hydropower Project	17/08/2008	10MW	0.3	Supplementary Feasibility Study Report
1763	China Xinhuang Xinchun Small Hydropower Project	08/08/2008	7.4MW	0.3	Feasibility Study Report
2182	Jishou Huanglianxi 8MW Hydropower Project	05/01/2009	8MW	0.3	Preliminary Design Report

Second, even more recent information, which emerged well after the project owner's investment decision, indicates that the Yaolaitan project can only secure a tariff of 0.29RMB/kWh, a rate at which the project's IRR will still not reach the industry benchmark. Information on the current tariffs in Hunan province can be found in the Hunan Notification to further adjust and regulate the electricity tariff of Hunan Power Grid, Price Bureau of Hunan Province, [Xiangjiadian (2008) No.158]<sup>6</sup>. We have summarized this guidance document in Table 1.3 (below).

**Table 1.3**

Category	Installed capacity	Guidance Tariff (RMB/kWh)
1 <sup>a</sup>	Below 1000KW <sup>a</sup>	0.25 <sup>a</sup>
2 <sup>a</sup>	1000-6000KW <sup>a</sup>	0.29 <sup>a</sup>
3 <sup>a</sup>	6000-15000KW <sup>a</sup>	0.305 <sup>a</sup>
4 <sup>a</sup>	15000- 25000KW <sup>a</sup>	0.316 <sup>a</sup>
5 <sup>a</sup>	over 25000KW <sup>a</sup>	0.326 <sup>a</sup>

As can be seen, in accordance with state guidance, smaller hydropower projects continue to receive a substantially lower tariff than their larger peers. The Hunan Tongdao Yaolaitan 5.55MW Hydro Power Project has installed capacity of 5.55MW and thus belongs to category 2. The project started operation in late 2008, and receives an electricity tariff of 0.29RMB/kWh in accordance the local Price Bureau<sup>7</sup> which obeys the provincial policy of Hunan [Xiangjiadian (2008) No.158]. Indeed, even today, Yaolaitan cannot secure a tariff greater than 0.29 RMB/kWh. At this rate, the Yaolaitan project

	<div>Certification</div> <p>continues to have an IRR that falls under the industry benchmark and is dependent upon CDM revenues.</p> <p>In light of formal government guidances at the time of PDR writing, industry norms reflected in Registered CDM projects in the region, and reinforced expectations from tariff guidances issued well after investment decisions were taken, we feel confident in the use of 0.25RMB/kWh as an appropriate tariff for use in that PDR and in the continued additionality of the project. In addition, when applying the actual price of 0.29RMB/kWh, the IRR will not reach the industry benchmark.</p>																		
Response of DOE	<p>In order to response to the Request for Review 1, the DOE would like to explain to EB as following:</p> <p><b>- Assessed on the Data’s Validity and Applicability</b></p> <p>According to the Para 54 c) of the 38<sup>th</sup> EB Meeting Report, the tariff of the proposed project activity is derived from the approved preliminary design report (PDR) and assessed to be valid and applicable at the time of the investment decision.</p> <p>The preliminary design report was compiled in May 2005 by Hunan Province Huaihua City Water and Electricity Design Institution, which is a national authorized institution. The tariff of the proposed project activity was estimated on the basis of the official tariff approval<sup>1</sup> which was issued by the Price Bureau of Huaihua City, dated on 2005-02-21. It’s noted that the average tariff of newly-built hydropower projects after January 1<sup>st</sup>, 2002 in Tongdao county was set to be 0.24 RMB/kWh. Hence, based on the design institution’s expert experiences, the tariff was estimated to be 0.25 RMB/kWh which is the value to make the investment decision of the proposed project activity. Furthermore, the interval between the PDR and the investment decision is sufficiently short (no more than one month). Therefore, it fulfils the requirement of the input values for the PDR to be valid and applicable at the time of the investment decision.</p> <p><b>- Assessed on the Stability of the Tariff</b></p> <p>According to the notification<sup>5</sup> which was issued by the price bureau of Hunan province, the tariff of electricity was classified into five categories based on the project’s installed capacity. And the notification effected from 2008-07-01.</p> <p><b>Table. 1</b></p> <table><tr><th>Category</th><th>Installed Capacity</th><th>Tariff</th></tr><tr><td>I</td><td>Below 1MW</td><td>0.25</td></tr><tr><td>II</td><td>1-6MW</td><td>0.29</td></tr><tr><td>III</td><td>6-15MW</td><td>0.305</td></tr><tr><td>IV</td><td>15- 25MW</td><td>0.316</td></tr><tr><td>V</td><td>over 25MW</td><td>0.326</td></tr></table> <p>The current tariff of the proposed project activity is 0.29 RMB/kWh. It’s cross-checked against the documentation from Tongdao County Price Bureau regarding to the</p>	Category	Installed Capacity	Tariff	I	Below 1MW	0.25	II	1-6MW	0.29	III	6-15MW	0.305	IV	15- 25MW	0.316	V	over 25MW	0.326
Category	Installed Capacity	Tariff																	
I	Below 1MW	0.25																	
II	1-6MW	0.29																	
III	6-15MW	0.305																	
IV	15- 25MW	0.316																	
V	over 25MW	0.326																	

1 Tariff Approval which was issued by the Price Bureau of Huaihua City, dated on 2005-02-21.

2 [http://www.priceonline.gov.cn/priceGOV/jgzq/content\\_119175.html](http://www.priceonline.gov.cn/priceGOV/jgzq/content_119175.html)

electricity tariff of the proposed project activity on 2008-11-11. It's double confirmed by checking against the tariff documentation<sup>1</sup> which was issued by Tongdao County Price Bureau on 2009-11-12 to ensure that the current tariff is set to be as 0.29 RMB/kWh.

In addition, the installed capacity of the proposed project activity is 5.55MW which falls into category II . According to the notification, the tariff which is higher than 0.3 RMB/kWh is out of the range of the category II .

**- Compared with other Registered Projects.**

The registered small-scale CDM projects whose tariffs in the PDD are higher than 0.30 RMB/kWh have been compared with the proposed project as following:

**Table. 2**

Reference No.	Installed Capacity (MW)	Tariff (RMB/kWh)	Registration Date
1376	14.1	0.32	2007.12.09
1391	8	0.3	2008.01.06
1555	13.5	0.32	2008.04.13
1763	7.4	0.3	2008.08.08
1782	12.8	0.3	2008.08.17
1766	15	0.315	2008.08.29
1813	14.6	0.3	2008.09.09
1811	14.6	0.3	2008.12.16
2024	9.6	0.3	2009.01.03
2182	8	0.3	2009.01.05
1764	8.29	0.3	2009.02.06
2081	8.8	0.3	2009.03.03
1805	13.5	0.327	2009.03.16
1864	15	0.316	2009.08.24

The installed capacities of all these projects are from 7.4MW to 15MW which fall into category III but not category II in table. 1 as comparing to the proposed project activity (5.55MW). Thus, the tariffs of these projects are out of the range of the proposed project activity according to the official notification issued by the price bureau of Hunan province.

Furthermore, only if the tariff of the proposed project activity increased up to 0.302 RMB/kWh, the IRR would have reached the benchmark. However, this is unlikely to happen for the reason that only the tariff in category II fits for the proposed project activity according to the above mentioned official notification.

In conclusion, according to VVM para 111, the DOE assessed that the tariff (0.25RMB/kWh) which was used in the investment analysis of the proposed project is valid and appropriate.

If this information is not sufficient to close the request for review, we appoint Mr. Li Yong Jun as our contact person:

Mr. Li Yong Jun  
CDM project manager China  
Room 11C, East Ocean Centre II,

<sup>1</sup> Notification on Electricity Tariff for Yaolaitan Project issued by Price Bureau of Tongdao County [Tongjia (2009)No.39], dated on 2009-11-12.

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## Request for Review 2

Issue raised by EB Members / DNA	<i>The DOE is requested to explain and substantiate with quantitative data whether the incentive of the project has been negatively affected (partly or in whole) by the lower tariff and explain to which extend cost reductions of this project, compared to similar projects in the province, can justify the lower tariff.</i>
Response of PP	<p><b>2.1 Whether the incentive of the project has been negatively affected (partly or in whole) by the lower tariff</b></p> <p>In January 2004, the tariff of the hydropower projects starting operation after 2003 in Tongdao County where the proposed project is located was set as no lower than 0.18 RMB/kWh, by the notification by Tongdao Power Grid which was approved by Tongdao Price Bureau. Almost one year later, in February 2005, the Price Bureau of Huaihua City issued a price document [Huaishijia (2005) No.22] requiring that the electricity tariff for the hydropower projects in Tongdao County that are built after 1 January 2002 to follow an average tariff of above 0.24 RMB/kWh. The project investment decision was made in May 2005 and a tariff of 0.25 RMB/kWh was proposed by considering these two tariff regulations which indicate a slight increase of the tariff from 2004 till 2005 in Tongdao County. A tariff of 0.29 RMB/kWh was formally issued in 2008 in accordance with both provincial electricity tariff policy [Xiangjiadian (2008) No.158] and local electricity tariff document [Tongjia (2009) No.39].</p> <p>Therefore, since the tariff has been slightly raised in the project area prior to the project decision-making, the project decision was not negatively affected by this small increase.</p> <p><b>2.2 To which extend cost reductions of this project, compared to similar projects in the province, can justify the lower tariff.</b></p> <p>The unit investment cost of the Yaolaitan project was compared with similar-scale registered CDM hydro projects (under 6MW) in Hunan province, and the results of this survey are listed in Table 2.1 (below).</p> <p><b>Table 2.1</b></p>



CDM projects in Hunan Province					
Ref.	Project Name	Registered	Total Capacity (MW)	Total Investment Cost (10 <sup>4</sup> RMB)	Unit Investment Cost (RMB/kW)
1772	China Tuanjie Small Bundled Hydropower project	04/12/2008	6.6	3,383	5,216
1773	China Chuandongxia Small Hydropower Project	16/01/2009	5.09	3,761	7,389
2175	Xinning County Dalong Small-scale Hydropower Bundled Project	09/03/2009	6.6	3,901	5,911
2933	Hunan Tongdao Yaolaitan 5.55MW Hydro Power Project	N/A	5.55	3,481	6,274

The unit investment cost of the proposed project (6,274 RMB/kW) is within the unit investment cost range for similar projects (5,216~7,389 RMB/kW) as shown in the above table. Thus the total investment cost for the proposed project can be concluded as typical and comparable to similar projects in the same region.

Furthermore, the suitability of the investment cost used in the PDR can also be justified by comparing this figure with the actual investment cost. An audit statement on the total project investment cost was released in September 2009 by an independent entity, the Hunan Yuhui Water Resource & Hydropower Engineering Supervision Co., Ltd. The statement showed that the actual investment cost was 15% higher than that estimated in the PDR, due to the increasing prices of raw materials, labor, and equipments during the construction period. Table 2.2 (below) shows a comparison of the actual investment cost compared to the investment cost stated in the Preliminary Design Report:

**Table 2.2**

Comparison of estimated and actual investment cost		
Investment Cost Stated in PDR (10 <sup>4</sup> RMB)	Actual Investment (10 <sup>4</sup> RMB)	Increase of the Total Investment (%)
3,481.8	4,027.2	15.6%

As table 2.2 demonstrates, the investment cost stated in the PDD was in fact significantly lower than the actual investment cost, as confirmed by the independently verified statement on investment cost. Therefore it suggests that in recent years there have been no significant cost reductions for hydro projects in Hunan Province.

Response of DOE In order to response to the Request for Review 2, the DOE would like to explain to EB as following:



According to the information from other SSC similar registered projects<sup>1</sup> whose tariffs in the PDD range between 0.215 and 0.327 RMB/kWh and unit investment values fall in the range from 4,720 to 13,910 RMB/kW, the DOE confirmed that the project's tariff of 0.25 RMB/kWh and the project's unit investment of 6,247 RMB/kW are in the acceptable range.

In the table 1 below, a list of registered projects whose tariff is lower than 0.3 RMB/kWh has been included for comparison:

**Table. 1**

Reference No.	Tariff (RMB/kWh)	Unit investment cost (RMB/kW)	Registration Time
695	0.27	7343	2007.02.16
1791	0.258	4720	2008.08.11
2145	0.28	5731	2008.11.23
1772	0.25	5129	2008.12.04
1773	0.26	7029	2009.01.16
2175	0.215	5913	2009.03.09
2121	0.278	6351	2009.03.31

From the above it can be seen, that the unit investment cost of the proposed project (6.247 RMB/kW) is relatively high. The unit investment cost, along with the tariff, is one of the main influencing factors at the investment decision. When comparing the proposed project, for instance, with registered project (1772) with the same tariff value, the unit investment cost of the first is 23% higher than the registered one. Therefore, the tariff is not the primary factor to have a negative impact on the incentive of the project.

Furthermore, the construction of the proposed project activity was finalized in 2008 and the actual investment<sup>2</sup> (40,272,583 RMB/kWh) which is 15.7% higher than the estimated one (34,818,600 RMB/kWh) in the PDR. The incentive of the project hasn't been negatively impacted.

And the trend of the tariff of the proposed project activity has been to increase slightly to a certain level but not going down. According to the official tariff approval<sup>3</sup>, the tariff of hydropower projects has been increasing from 0.18 to 0.24 RMB/kWh for the projects which start operation after 2003 in Tongdao county, Huahua city. Since then, the electricity tariff has slightly increased up to 0.29 RMB/kWh according to the official notification<sup>4</sup>. It has been cross-checked against the local county level Price Bureau<sup>5</sup>. Therefore, we cannot identify any lower tariff which could negatively affect the incentive of the project.

In conclusion, the additionality which relates to the incentive of the project is not mainly influenced by tariff. The tariff of the proposed project activity does reasonably

1 Reference No.: 695, 1376, 1391, 1555, 1763, 1764, 1766, 1772, 1773, 1782, 1791, 1805, 1811, 1813, 1864, 2024, 2081, 2121, 2145, 2175, 2182

2 Investment Auditing Report by Hunan Province Yuhui Water Resources and Hydropower Engineering Supervision Co., Ltd, dated on 2009-09-08.

3 -.Tariff Approval which was issued by the Price Bureau of Tongdao County, dated on 2004-01-05

- Tariff Approval which was issued by the Price Bureau of Huaihua City, dated on 2005-02-21

4 [http://www.priceonline.gov.cn/priceGOV/jgzc/content\\_119175.html](http://www.priceonline.gov.cn/priceGOV/jgzc/content_119175.html)

5 Notification on Electricity Tariff for Yaolaitan Project issued by Price Bureau of Tongdao County [Tongjia (2009)No.39], dated on 2009-11-12.

	<p>correspond to the investment per capacity unit, and the incentive of the project hasn't been negatively affected.</p> <p>If this information is not sufficient to close the request for review, we appoint Mr. Li Yong Jun as our contact person:</p> <p>Mr. Li Yong Jun CDM project manager China Room 11C, East Ocean Centre II, No. 618 Yan An Rd. (E), Huangpu District, Shanghai China 200001 Tel: +86 (0)21 53855353-259 Fax: +86 (0)21 53855369</p>
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