



# VALIDATION REPORT

CLIMATE BRIDGE LIMITED

METHANE RECOVERY AND POWER  
GENERATION PROJECT IN HIGH-  
CONCENTRATED ORGANIC WASTEWATER  
TREATMENT IN HUBEI, CHINA

**Report No: QT-SHE-0308/09 - 09/121**

**Date: 2010-11-03**

TÜV NORD CERT GmbH  
JI/CDM Certification Program  
Langemarckstraße, 20  
45141 Essen, Germany  
Phone: +49-201-825-3335  
Fax: +49-201-825-3290  
[www.tuev-nord.de](http://www.tuev-nord.de)  
[www.global-warming.de](http://www.global-warming.de)



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Client:  <b>Climate Bridge Limited</b>	Client ref.:  <b>Alex Wyatt</b>
Summary:	<input checked="" type="checkbox"/> positive validation opinion <input type="checkbox"/> negative validation opinion
<p>Climate Bridge Limited has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project: Methane Recovery and Power Generation Project in High-concentrated Organic Wastewater Treatment in Hubei, China" with regard to the relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria include article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakech Accords) and the relevant decisions by COP/MOP and CDM Executive Board</p> <p>In the course of the pre-validation 8 Corrective Action Requests (CARs) and 5 Clarification Requests (CLs) were raised, by the time of this version submitted there are 8 CARs and 5 CLs are successfully closed.</p> <p>The review of the project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.</p> <p>In detail the conclusions can be summarised as follows:</p> <ul style="list-style-type: none"> <li>- The project is in line with all relevant host country criteria (China) and all relevant UNFCCC requirements for CDM. Project activity approval has been obtained from DNA of China. Please vide the Host Country Approval on 2009-04-09, English version No.1930. LOA for Climate Bridge Limited from DNA of UK dated 2009-07-20.</li> <li>- The UK DNA will only issue the Letter of Approval (LoA) for Noble Carbon Credits Limited on the basis of this positive validation opinion by the validator of the project. Thus the LoA could not be considered at the present validation stage.</li> <li>- The project additionality is sufficiently justified in the PDD.</li> <li>- The monitoring plan is transparent and adequate.</li> <li>- The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 457,820 tCO<sub>2</sub>e are most likely to be achieved within the 1<sup>st</sup> renewable crediting period (2010-05-01~2020-04-30).</li> </ul>	

Report No.: <b>QT-SHE-0308/09 – 09/121</b>	Subject Group: <b>Climate Protection</b>
Report title:  <b>Methane Recovery and Power Generation Project in High-concentrated Organic Wastewater Treatment in Hubei, China</b>	
Work carried out by:  <b>YU, Wei Ming DING, Zhi Ji Ullrich Walter</b>	
Final technical review by:  <b>Jochen Schubert</b>	Local technical review by:  <b>LI, Yong Jun</b>
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#### Indexing terms

Climate protection  
Kyoto Protocol  
CDM  
Validation

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## Abbreviations

<b>BAU</b>	Business as usual
<b>CA</b>	Corrective Action / Clarification Action
<b>CAR</b>	Corrective Action Request
<b>CDM</b>	Clean Development Mechanism
<b>CER</b>	Certified Emission Reduction
<b>CL</b>	Clarification Request
<b>CO<sub>2</sub></b>	Carbon dioxide
<b>CO<sub>2e</sub></b>	Carbon dioxide equivalent
<b>CP</b>	Certification Program
<b>CSTR</b>	Continuous Stirred-Tank Reactor
<b>DNA</b>	Designated National Authority
<b>EB</b>	CDM Executive Board
<b>EGSB</b>	Expanded Granular Sludge Bed
<b>EIA</b>	Environmental Impact Assessment
<b>EIC</b>	Erratic Inner Circulation
<b>ER</b>	Emission Reduction
<b>FAR</b>	Forward Action Request
<b>GHG</b>	Greenhouse gas(es)
<b>IC</b>	Inner Circulation
<b>IPCC</b>	Intergovernmental Panel on Climate Change
<b>NDRC</b>	National Development and Reform Commission
<b>PDD</b>	Project Design Document
<b>QC/QA</b>	Quality control/Quality assurance
<b>UASB</b>	Up-flow Anaerobic Sludge Bed
<b>UNFCCC</b>	United Nations Framework Convention on Climate Change
<b>VVM</b>	Validation and Verification Manual
<b>WWT</b>	Waste Water Treatment

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## 1 OBJECTIVE / SCOPE

The purpose of a validation is to have an independent third party assess the project design. In particular the project's baseline, the monitoring plan (MP), and the project's compliance with

- the requirements of Article 12 of the Kyoto Protocol;
- the CDM modalities and procedures as agreed in the Marrakech Accords under decision 3/CMP.1
- the annex to the decision;
- subsequent decisions made by COP/MOP & CDM Executive Board and
- other relevant rules, including the host country legislation and sustainability criteria

are validated in order to confirm that the project design as documented is sound and reasonable and meets the stated requirements and identified criteria. Validation is seen as necessary to provide assurance to stakeholders on the quality of the project and its intended generation of certified emission reductions (CERs).

The validation scope is given as a thorough independent and objective assessment of the project design including especially: the correct application of the methodology, the project's baseline study, additionality justification, local stakeholder commenting process, environmental impacts and monitoring plan, which are included in the PDD and other relevant supporting documents, to ensure that the proposed CDM project activity meets all relevant and applicable CDM criteria.

The information included in the PDD and the supporting documents were reviewed against the requirements as set out by the UNFCCC. The validation team has, based on the requirements in the Validation and Verification Manual<sup>VVM</sup>, carried out a full assessment of all evidences to assess the compliance of the project with the key areas as outlined in section V.E. and V.F. of the VVM (version 1.1, EB 51).

The validation is based on the information made available to TÜV NORD JI/CDM CP and on the contract conditions. TÜV NORD JI/CDM CP can not be held liable by any entity for making its validation opinion based on any false or misleading information supplied to it during the course of validation.

The validation is not meant to provide any consulting to the project participants. However, stated requests for clarifications and/or corrective actions may provide input for improvement of the project design.

## 2 GHG PROJECT DESCRIPTION

### 2.1 Project Characteristics

Essential data of the project is presented in the following Table 2-1.

**Table 2-1:** Project Characteristics

Item	Data
Project title	Methane Recovery and Power Generation Project in High-concentrated Organic Wastewater Treatment in Hubei, China
Project size	<input type="checkbox"/> Large Scale <input checked="" type="checkbox"/> Small Scale
Project Scope (according to UNFCCC sectoral scope numbers for CDM)	<input checked="" type="checkbox"/> 1 Energy Industries (renewable- /non-renewable sources)
	<input type="checkbox"/> 2 Energy distribution
	<input type="checkbox"/> 3 Energy demand
	<input type="checkbox"/> 4 Manufacturing industries
	<input type="checkbox"/> 5 Chemical industry
	<input type="checkbox"/> 6 Construction
	<input type="checkbox"/> 7 Transport
	<input type="checkbox"/> 8 Mining/Mineral production
	<input type="checkbox"/> 9 Metal production
	<input type="checkbox"/> 10 Fugitive emissions from fuels (solid, oil and gas)
	<input type="checkbox"/> 11 Fugitive emissions from production and consumption of halocarbons and hexafluoride
	<input type="checkbox"/> 12 Solvents use
	<input checked="" type="checkbox"/> 13 Waste handling and disposal
	<input type="checkbox"/> 14 Afforestation and Reforestation
	<input type="checkbox"/> 15 Agriculture
Applied Methodology	AMS-I.C. ver. 14 Thermal energy production with or without electricity AMS-III.H. ver. 12 Methane Recovery in Wastewater Treatment
Crediting period	<input type="checkbox"/> Renewable Crediting Period (7 y) <input checked="" type="checkbox"/> Fixed Crediting Period (10 y)
Start of crediting period	2010-05-01 or the date of registration whichever is later

### 2.2 Involved Parties and Project Participants

The following parties to the Kyoto Protocol and project participants are involved in this project activity (Table 2-2).

**Table 2-2:** Project Parties and project participants

Characteristic	Party	Project Participant
Host party	People's Republic of China	Huangshi Xinghua Biochemical Ltd.
Other involved party/ies	UK	Climate Bridge Ltd.
Other involved party/ies	UK	Noble Carbon Credits Limited

## 2.3 Project Location

The details of the project location are given in table 2-3:

**Table 2-3:** Project Location

No.	Project Location
Host Country	P. R. China
Region:	Hubei province
Project location address:	Xisaishan District, Huangshi city
Latitude:	30°14'55" N
Longitude:	115°03'54" E

## 2.4 Technical Project Description

The technical key data are provided in table 2-4 below

**Table 2-4a:** Technical data of the EIC system<sup>/PDD/, /TCE/</sup>

Parameter	Unit	Value
Manufacturer	-	E'zhou Changjiang Container & Machinery Co., Ltd
Quantity	-	1 <sup>a</sup>
Volume	m <sup>3</sup>	2500
Operation temperature	°C	30~45
Efficiency	%	85

<sup>a</sup>: the project is designed to have two sets of EICs, while during validation, one set has not been purchased yet.

**Table 2-4b:** Technical data of the biogas generator sets<sup>/PDD/, /FSR/, /TCE/</sup>

Parameter	Unit	Value		
Type	-	500GF-NK	500GF-NK1	Unavailable
Quantity	-	1	3	2
Manufacturer	-	Jinan Diesel Engine Co., Ltd.		
Rated speed	r/min	1000		
Rated voltage	V	400		
Rated power	kW	500		
Power factor	-	0.8		

**Table 2-4c:** Technical data of the waste heat boiler<sup>/PDD/, /TCE/</sup>

Parameter	Unit	Value
Type	-	Q27/550-3.8-1.25
Manufacturer	-	Wuxi Zhongzheng Boiler Co.,Ltd.
Quantity	-	1
Rated power	t/h	3.8
Steam pressure	MPa	1.25
Steam temperature	°C	194

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Parameter	Unit	Value
Designed heat efficiency	-	80%



### 3 METHODOLOGY AND VALIDATION SEQUENCE

#### 3.1 Validation Steps

The validation of the project consisted of the following steps:

- Contract review
- Appointment of team members and technical reviewers
- Publication of the project design document (PDD)
- A desk review of the PDD<sup>/PDD/</sup> submitted by the client and additional supporting documents with the use of customised validation protocol<sup>/CPM/</sup> according to the Validation and Verification Manual<sup>/VVM/</sup>,
- Validation planning,
- On-Site assessment,
- Background investigation and follow-up interviews with personnel of the project developer and its contractors,
- Draft validation reporting
- Resolution of corrective actions (if any)
- Final validation reporting
- Technical review
- Final approval of the validation.

The sequence of the validation is given in the table 3.1 below:

**Table 3.1:** Validation sequence

Topic	Time
Assignment of validation	2009-03-23
Submission of PDD for global stakeholder commenting process	2009-04-10
On-site visit	2009-06-16 ~ 2009-06-17
Draft reporting finalised	2009-07-01
Final reporting finalised	2009-12-31
Technical review on final reporting finalised	2010-02-08
Correction according to review requirement	2010-11-03

## 3.2 Contract review

To assure that

- the project falls within the scopes for which accreditation is held,
- the necessary competences to carry out the verification can be provided,
- Impartiality issues are clear and in line with the CDM accreditation requirements

a contract review was carried out before the contract was signed.

## 3.3 Appointment of team members and technical reviewers

On the basis of a competence analysis and individual availabilities a validation team, consistent of one team leader and 3 additional team members, were appointed. Furthermore also the personnel for the technical review and the final approval were determined.

The list of involved personnel, the tasks assigned and the qualification status are summarized in the table 3-2 below.

**Table 3-2:** Involved Personnel

	Name	Company	Function <sup>1)</sup>	Qualification Status <sup>2)</sup>	Scheme competence	Technical competence <sup>4)</sup>	Host country Competence	Team Leading competence
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	LI, Yong Jun	TUV NORD China, Shanghai	TL	SA	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>
<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	YU, Wei Ming	TUV NORD China, Shanghai	TM	E	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	DING, Zhi Ji	TUV NORD China, Shanghai	-	T	<input type="checkbox"/>		<input checked="" type="checkbox"/>	<input type="checkbox"/>
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Walter, Ullrich	TÜV NORD Cert	TM	T	<input type="checkbox"/>	AD,U	<input type="checkbox"/>	<input type="checkbox"/>
<input type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Jochen Schubert	TÜV NORD Cert	TR <sup>3)</sup>	E	<input checked="" type="checkbox"/>	AD,U	<input type="checkbox"/>	<input type="checkbox"/>

	Name	Company	Function <sup>1)</sup>	Qualification Status <sup>2)</sup>	Scheme competence	Technical competence <sup>4)</sup>	Host country Competence	Team Leading competence
<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms.	Rainer Winter	TÜV NORD Cert	FA	SA	<input checked="" type="checkbox"/>		<input type="checkbox"/>	<input checked="" type="checkbox"/>

<sup>1)</sup> TL: Team Leader; TM: Team Member, TR: Technical review; FA: Final approval

<sup>2)</sup> GHG Auditor Status: A: Assessor; E: Expert; SA: Senior Assessor; T: Trainee; TE: Technical Expert

<sup>3)</sup> No team member

<sup>4)</sup> As per S01-MU03 or S01-VA070 A2 (such as A, B, C.....)

<sup>1)</sup> TL : Team Leader; TM : Team Member, TR: Technical review; FA: Final approval

<sup>2)</sup> GHG Auditor Status: A : Assessor; E : Expert; SA: Senior Assessor; T : Trainee; TE Technical Expert

Certificates of appointment for the above mentioned team members are enclosed in annex 6 of this report.

### 3.4 Consideration of Public Stakeholder Comments

According to the modalities and procedures the draft PDD, as received from the project participants, has been made publicly available on the UNFCCC's website <http://cdm.unfccc.int/Projects/Validation/DB/VEGPI6ENXVA7HRCHCBOH0BF2CKXZ3U/view.html>. Comments on the PDD were invited within 30 days, i.e. 2009-04-10 to 2009-05-09.

There is no comment received. In case comments would have been received, they would have also been made publicly available on this web site and they would be taken into account during the validation process. The comments and the discussion of the same are documented in annex 5 of this report.

### 3.5 Validation Protocol

In order to ensure consideration of all relevant assessment criteria, a validation protocol is used. The protocol shows, in a transparent manner, criteria and requirements, means of validation and the results from pre-validating the identified criteria. The validation protocol reflects the generic CDM requirements each CDM project has to meet as well as project specific issues as applicable. The validation protocol serves the following purposes:

- It organises, details and clarifies the requirements that a CDM project is expected to meet;
- It ensures a transparent validation process where the validating entity will document how a particular requirement has been validated and the result of the determination.

The validation protocol as described in Figure 1.

<b>Validation Protocol Table A-1: Requirement checklist</b>				
<b>Checklist Item</b>	<b>Validation Team Comment</b>	<b>Reference</b>	<b>Draft Conclusion</b>	<b>Final Conclusion</b>
<i>The checklist items in Table A-1 are linked to the various requirements the project should meet. The checklist is organised in various sections. Each section is then further sub-divided as per the requirements of the topic and the individual project activity.</i>	<i>The section is used to elaborate and discuss the checklist item in detail. It includes the assessment of the validation team and how the assessment was carried out. The reporting requirements of the VVM shall be covered in this section.</i>	<i>Gives reference to the information source on which the assessment is based on</i>	<i>Assessment based on evidence provided if the criterion is fulfilled (OK), or a CAR, CL or FAR (see below) is raised. The assessment refers to the draft validation stage.</i>	<i>In case a corrective action or a clarification the final assessment at the final validation stage is given.</i>

**Figure 1:** Validation protocol tables

The completed validation protocol is enclosed in Annex 1 to this report.

### 3.6 Review of Documents

The published PDD (version 1) and supporting background documents related to the project design and baseline were reviewed.

Furthermore, the validation team used additional documentation by third parties like host party legislation, technical reports referring to the project design or to the basic conditions and technical data.

### 3.7 Follow-up Interviews

From 16<sup>th</sup> to 17<sup>th</sup> Jun. 2009, the TÜV NORD JI/CDM CP performed the on-site validation with the general manager of the project proponent, project developer, and checked the document to confirm selected information and to resolve issues identified in the document review.

The validation team has carried out interviews in order to assess the information included in the project documentation and to gain additional information regarding the compliance of the project with the relevant criteria applicable for CDM.

During validation the validation team has performed interviews to confirm selected information and to resolve issues identified in the document review. The main topics of the interviews are summarized in table 3-3.

**Table 3-3:** Interviewed persons and interview topics

Interviewed Persons / Entities	Interview topics
Project proponent representatives <b>/IM01/</b>	<ul style="list-style-type: none"> <li>- Chronological description of the project activity</li> <li>- Technical details of the project realisation</li> <li>- Host Government Approval</li> <li>- Approval procedures and status</li> <li>- Quality management system</li> <li>- Monitoring and measurement equipment</li> <li>- Crediting period and its starting date</li> <li>- Project activity starting date</li> <li>- Power purchase agreement</li> <li>- Sustainable development issues</li> <li>- Reactor technology survey</li> <li>- Analysis of local stakeholder consultation</li> <li>- Operational data – technical specification (EIC, Boiler, Generator), waste water availability, plant load factor.</li> <li>- Training &amp; competency of the staff members w.r.t project management, monitoring and reporting</li> </ul>
Project Developer <b>/IM02/</b>	<ul style="list-style-type: none"> <li>- Editorial aspects of PDD</li> <li>- Procedural aspects</li> <li>- Baseline study and additionality</li> <li>- Details of emissions reduction calculation</li> </ul>
Stakeholder <b>/IM03/</b>	<ul style="list-style-type: none"> <li>- Environmental impacts</li> <li>- Sustainable development benefits</li> </ul>
Supplier <b>/IM04/</b>	<ul style="list-style-type: none"> <li>- Advantage of the technology (EIC, Biogas generator)</li> <li>- CDM role in loan application</li> </ul>

A comprehensive list of all interviewed persons is part of section 7 'References'.

### 3.8 Project comparison

The validation team has compared the proposed CDM project activity with similar projects or technology that have similar or comparable characteristics and with similar projects in the host country in order to achieve additional information esp. regarding:

- Project technology
- Additionality issues
- Reasons for reviews, requests for reviews and rejections within the CDM registration process.

### 3.9 Resolution of Clarification and Corrective Action Requests

#### 3.9.1 Definition

A **Corrective Action Request (CAR)** will be established where:

- mistakes have been made in assumptions, application of the methodology or the project documentation which will have a direct influence the project results,
- the requirements deemed relevant for validation of the project with certain characteristics have not been met or
- there is a risk that the project would not be registered by the UNFCCC or that emission reductions would not be able to be verified and certified.

A **Clarification Request (CL)** will be issued where information is insufficient, unclear or not transparent enough to establish whether a requirement is met.

A **Forward Action Request (FAR)** will be issued when certain issues related to project implementation should be reviewed during the first verification.

#### 3.9.2 Draft Validation

After reviewing all relevant documents and taken all other relevant information into account, the validation team issues all findings in the course of a draft validation report and hands this report over to the project proponent in order to respond on the issues raised and to revise the project documentation accordingly.

### **3.9.3 Final Validation**

The final validation starts after issuance of the proposed corrective action (CA) of the CARs, CLs and FARs by the project proponent. The project proponent has to reply on those and the requests are “closed out” by the validation team in case the response is assessed as sufficient. In case of raised FARs the project proponent has to respond on this, identifying the necessary actions to ensure that the topics raised in this finding are likely to be resolved at the latest during the first verification. The validation team has to assess whether the proposed action is adequate or not.

In case the findings from CARs and CLs cannot be resolved by the project proponent or the proposed action related to the FARs raised cannot be assessed as adequate, no positive validation opinion can be issued by the validation team.

The CAR(s) / CL(s) / FAR(s) are documented in chapter 4.

### **3.10 Technical review**

Before submission of the final validation report a technical review of the whole validation procedure is carried out. The technical reviewer is a competent GHG auditor being appointed for the scope this project falls under. The technical reviewer is not considered to be part of the verification team and thus not involved in the decision making process up to the technical review.

As a result of the technical review process the validation opinion and the topic specific assessments as prepared by the validation team leader may be confirmed or revised. Furthermore reporting improvements might be achieved.

### **3.11 Final approval**

After successful technical review of the final report an overall (esp. procedural) assessment of the complete validation will be carried out by a senior assessor located in the accredited premises of TÜV NORD.

Only after this step the request for registration can be started (in case of a positive validation opinion).

## 4 VALIDATION FINDINGS

In the following table the findings from the desk review of the published PDD, visits, interviews and supporting documents are summarised:

**Table 4-1:** Summary of CARs, CLs and FARs issued

Validation topic <sup>1)</sup>	No. of CAR	No. of CL	No. of FAR
General description of project activity (A) - Project specification - Technical project description - Participation - Contribution to sustainable development - PDD editorial aspects - Technology to be employed	2	1	-
Project Baseline, Additionality and Monitoring Plan (B) - Application of the Methodology - Project Boundary - Baseline identification - Calculation of GHG emission reductions Project emissions Baseline emissions Leakage - Additionality determination - Monitoring Methodology - Monitoring Plan - Project management planning	6	2	-
Duration of the Project / Crediting Period (C)	-	2	-
Environmental impacts (D)	-	-	-
Stakeholder Comments (E)	-	-	-
<b>SUM</b>	<b>8</b>	<b>5</b>	<b>-</b>

<sup>1)</sup> The letters in brackets refer to the validation protocol

The following tables include all raised CARs, CLs and FARs. For an in depth evaluation of all validation items it should be referred to the validation protocols (see Annex 1).



The findings of validation process are summarized in the tables below.

Finding	A1		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	At the time of the pre-validation the letters of approval from Annex I country are not available.		
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The LoA for Climate Bridge Limited is available.		
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>One letter of approval (hereafter refer to LOA) from UK<sup>/LOA/</sup> has been issued on 2009-07-20. It confirms that the participation of Climate Bridge Limited is voluntary. By means of LOA review it can be confirmed that</p> <p>However, CAR A1 can not be closed yet, due to the LOA for Noble Carbon Credits Limited depends on positive opinion of this report.</p>		
<b>Corrective Action #2</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	The LoA for Noble Carbon Credits Limited were provided.		
<b>DOE Assessment #2</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>The letter of approval from UK<sup>/LOA/</sup> for Carbon Credits Limited has been issued on 20010-02-09.</p> <p>The approval is issued from Department of Energy &amp; Climate Change UK which is listed as a DNA on the UNFCCC CDM website. It confirms that the participation of Climate Bridge Limited is voluntary. The LOA refers to the precise project title in the PDD submitted for registration and is unconditional with regard to A.1.3 to A.1.6 in Annex1.</p> <p>The authenticity of the LOA has been confirmed by means of checking the database of the UK DNA using following links:</p> <p><a href="http://www.decc.gov.uk/en/content/cms/what_we_do/change_energy/tackling_clima/intl_strat/mechanisms/clean_developm/clean_developm.aspx">http://www.decc.gov.uk/en/content/cms/what_we_do/change_energy/tackling_clima/intl_strat/mechanisms/clean_developm/clean_developm.aspx</a></p>		
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements		

Finding	A2		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR

Finding	A2
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>The following aspects should be clarified in Section A.2 and A.4:</p> <ul style="list-style-type: none"> <li>- Description of the project activity should be revised as per the practice, e.g. the design and usage of the biogas output from the UASB reactor, the process of energy generation;</li> <li>- The main information of the equipment involved in the project or affected by the project should be provided in more detail in Section A.4.2.</li> </ul>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The information on the design and usage of the biogas output from the UASB reactor and the process of cogeneration has been included in Section A.2 and A.4.2 in the revised PDD;</p> <p>The whole process including the equipment involved in the project and some basic information are provided in Section A.4.2 in the revised PDD.</p>
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>1. OK, in the revised PDD, the description of the project activity is revised to be clear and transparent. In detail, the biogas from EIC will be collected and used for power generation and heat boiler. Meanwhile, since the UASB was the sequenced reactor after EIC, the biogas production from UASB is less than EIC, so as the pressure, thus the biogas delivering system for UASB and EIC are separated, as the result, the biogas from UASB will be combusted. The revised description in PDD section A.2 and Figure 2 in PDD section B.7 is consistent with the information from site visiting.</p> <p>2. Not yet OK. Information of the main equipment in PDD section A.4 is insufficient, e.g. volume load and efficiency of the EIC reactors, parameter of 3.8t/h boiler &amp; biogas generator and information of measuring equipment are unclear.</p>
<b>Corrective Action #2</b>	<p>2. Information on EIC reactors including specification volume (2500m<sup>3</sup>), operation temperature (30-45°C) are included, there are still one EIC not purchased yet.</p> <p>Information on biogas generators including model and corresponding qualities are provided, there are still two generators not purchased yet.</p> <p>Information on 3.8t/h boiler including rated power, pressure, temperature and efficiency are provided.</p> <p>Measuring equipment includes liquid and gas flow meters, electricity meters, gas analyzer and COD analysis instrument. See details in PDD Section B.7.2</p>

Finding	A2
<b>DOE Assessment #2</b>	<p>OK, regarding to issue 2, cross-checked with technical agreement of generator set, boiler and EIC<sup>/SD/</sup>, the technical parameters are correct. The generators type being changed from 1FC6 456-6LA42 (generator type in GSP PDD) into 500GF-NK (1) (generator set type in final PDD) is appropriate.</p> <p>The footnote 2 for Table A-1 is consistent with on-site information. Right now there are only three working generator sets and one backup, the other two generator sets will be purchased and equipped when the second EIC is constructed, and then there are five generator sets and one backup.</p> <p>It is concluded that the description of the project is accurate and complete, which is in accordance with the real situation. Thus checklist A.4.1 and A.4.2 can be closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements

Finding	A3
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	As per the description in PDD section B.5 the operation of EIC is not stable. Whether it will cause any environmental impact or not should be justified.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	As the wastewater treatment system includes UASB process and aeration process besides EIC process, it will cause little environmental impact. The operation of EIC is not stable as it has potential sludge problems at the time of decision making (report provided by PO) and which has been evidenced by PO in research with extra money (evidence provided by PO).
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>OK. The PO research record shows the unstable issue has been controlled<sup>/RSP/</sup>. Thus the project won't create other environmental impact. Besides, the emergency plan of wastewater treatment has been provided during site interview<sup>/EWT/</sup>, and relevant training records are checked<sup>/PT/</sup>.</p> <p>Considering the booking time of main facilities, project design and construction, the validation team confirms that the project design engineering reflects good practices.</p> <p>Thus CL A3 in checklist A.4.4 can be closed.</p>

Finding	A3
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding	B1
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	During the validation it was observed that the version 12 of the methodology AMS III.H is available. To ensure a more appropriate approach of the validation the most recent methodology should be used.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Methodology AMS III.H version 12 is applied.
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	OK, CAR B1 in checklist B.1.1 can be closed. The methodology is applicable and valid and the applied CDM methodology AMS III.H version 12 is identical with the version available on UNFCCC website. This was checked by means of document (methodology and PDD) review
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements

Finding	B2
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	Please demonstrate why the methodological "Tool to determine project emissions from flaring gases containing methane" is not applicable.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	Flare is not used in the proposed project, there will be two biogas containers in the project site when in full operation, in case technical failure of the gas generators or regular maintenance or other emergency occurs, the biogas can be stored in the two biogas containers temporarily. If the shutdown period lasts a long time (e.g. several days or weeks), the biogas would be emitted into the atmosphere and during this period, emission reductions will not be claimed.

Finding	B2
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>OK. No flare has been found during the site visit, if the generator sets fell into failure, the production will be stopped, and the biogas will be stored in the containers temporarily<sup>/IM01/</sup>, and by interviewing the local authorities<sup>/IM03/</sup>, the biogas vented is not forbidden by local regulation. Besides, as indicated in final PDD, no emission will be claimed during generator malfunction period, therefore the clarification is assessed to be appropriate.</p> <p>As the biogas from the UASB reactor was emitted to the air, a boiler was also designed to use the biogas from the UASB reactor (FSR) after the implementation of the project activity. These "combustion" of the biogas respectively destroying of methane via boiler is not considered for emission reduction.</p> <p>The methodology and tool used in PDD is assessed to be correct and sufficient, and the project is in accordance to every applicability criteria and other stipulation or requirement mentioned in all sections of the methodology.</p> <p>CL B2 opened in checklist B.1.3 and B.1.4 can be closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Appropriate action was taken <input type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding	B3
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>As per AMS-III.H., the excluded sections or components of the system, e.g. sludge treatment facility followed EIC reactor, aeration tank, etc. should be justified.</p> <p>Besides, whether the applicability of small scale methodology will be influenced without exclusion should be justified.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>Please refer to section B.3 for the exclusion of sections or components of the system in revised PDD, i.e. the aeration system operates in the project scenario under the same operational conditions as in the baseline scenario.</p> <p>Besides, emission reductions from heat or power generation lie in category type I not category type III.</p>

Finding	B3
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>OK, the project's spatial boundaries (geographical) are clearly defined. The argument on emission reduction count is reasonable.</p> <p>By means of document review it can be confirmed that the sludge treatment and aeration system in the baseline scenario is similar to the treatment in the project scenario. According to the methodology AMS III H these emission do not have to be accounted for.</p> <p>The excluded section won't contribute to type III emission reduction, i.e. the emission reduction will be still less than 60k tCO<sub>2</sub> equivalent annually. Thus methodology AMS-III H is applicable.</p> <p>All sources and GHGs are included in the project boundary as required in the applied methodology.</p> <p>Thus CL B3 in checklist B.1.4 and B.2 can be closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Appropriate action was taken <input type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding	B4
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>Justification of baseline is requested (GSP PDD Section B.4):</p> <ul style="list-style-type: none"> <li>- Which criteria is used to identify the baseline;</li> <li>- Whether the baseline determined is compliance with local policy or regulation;</li> <li>- Parameter COD<sub>removed</sub>, UASB, y is not transparent, please refer to table B-2.</li> <li>- Please demonstrate the baseline by considering that the projected increase in citric acid processing capacity.</li> </ul>



Finding	B4
<p><b>Corrective Action #1</b></p> <p><i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<ul style="list-style-type: none"> <li>- “The combined tool to identify the baseline scenario and demonstrate additionality” is adopted to identify the baseline;</li> <li>- Parameter COD<sub>removed, UASB, y</sub> is the average data from the historical record (provided by PO), to be clear, it is revised as COD<sub>removed, UASB, BL, y</sub>.</li> <li>- Prior to the proposed project, the processing capacity of the citric acid facility was 30,000ton/yr. The project owner planned to increase capacity to 60,000ton/yr. The existing two UASB reactors were only able to treat wastewater from a facility with capacity under 30,000ton/yr, and thus the capacity of the wastewater treatment facility needed to be increased. The project therefore involves a capacity increase.</li> </ul> <p>The baseline scenario for the proposed project includes two components, one is the baseline scenario for the replaced capacity, and the other is the baseline scenario for the additional capacity. Each alternative scenario for wastewater treatment and electricity generation has been identified separately and the realistic combinations have been considered as possible alternative scenarios, through presentation of the relevant barriers (technical, investment and lack of prevailing practice).</p> <p>The baseline scenario for the additional capacity is identified as using UASB technology without methane recovery and electricity is imported from the grid, This baseline is the same as the baseline of the methodology AMS-III.H (version 12) and AMS I.C. (version 14). The lifetime of UASB is longer than 30 years as documented on the basis of common practice in the sector and the country. The two existing UASB reactors were both constructed in 2003 , and each has a remaining lifetime of about 23 years.</p> <p>The proposed project complies with the requirements in the General Guidance for SSC methodologies (Refer to Section B.4 for details).</p>
<p><b>DOE Assessment #1</b></p> <p><i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<ul style="list-style-type: none"> <li>- It is not OK. Please justify the elimination of IC technology.</li> <li>- The revision is clear. COD<sub>removed, UASB, BL, y</sub> is used to calculate BE<sub>ww, treatment, y</sub>, the baseline treatment system (UASB) is different from that of the project scenario (EIC), as per methodology, it should be calculated by COD<sub>inflow, monitored, ex post</sub> minus COD<sub>outflow, baseline, ex ante</sub>, therefore, the estimated value from average history data of UASB is appropriate<sup>/WTR/</sup>.</li> <li>- OK. The project activity involves an increase in citric acid processing capacity. Its baseline determination is incorporated in the revised PDD B.4. The most plausible baseline scenario was defined for both the replaced and the additional capacity, and the elimination of the alternatives was appropriate. Please refer to annex A-2 for details.</li> </ul>
<p><b>Corrective Action #2</b></p>	<p>Quotation on IC technology was submitted within the responds folder of this round.</p>

Finding	B4
<b>DOE Assessment #2</b>	<p>OK. By comparing the investment on IC technology and total investment of the proposed project<sup>/QIT/, /FSR/</sup>, the DOE assess that the IC technology should be eliminated for its high cost. Besides, according to documentation of bank loan, the biogas utilization is considered to be a critical barrier for loaning. To sum up, the demonstration was assessed to be reasonable. Please refer to Annex 2 of this protocol, the possible scenarios are considered in the revised PDD. All plausible alternative scenarios listed in the approved methodology have been considered. It is concluded that the baseline scenario has been determined using conservative assumptions. Relevant national policy, i.e. the capacity limitation on newly-built fuel-fired power plant has been considered.</p> <p>Value of COD<sub>removed, UASB, BL, y</sub> in PDD table B-2 is sourced from the average data from year 2004 to 2005 records<sup>/WTR/</sup>.</p> <p>It is assessed to compliance with the requirement of General Guidance for SSC methodologies<sup>/GGS/</sup> and methodology AMS-III.H<sup>/AMS III.H/</sup>, thus it is appropriate.</p> <p>CAR B4 raised in checklist B.3.1 to B.3.7 can be closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements

Finding	B5
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>Demonstration in PDD section B.5 is not convincing:</p> <ul style="list-style-type: none"> <li>- Please give more evidences to support that CDM plays the key role in applying bank loan to overcome the financial barrier, e.g. whether its guarantees required by financial institutions to project finance;</li> <li>- Please give more evidences on the validity of technical barrier, especially the instability of EIC and lack of knowledge of CHP system, and the evidence of the project owner has recruited and retained suitably qualified personnel;</li> <li>- The criteria of "first-of-its-kind" should be clarified, e.g. choice of Hubei Province as the region where first-of-its-kind technology took place should be justified.</li> <li>- The barriers due to the prevailing practice, in particular, whether there are industries with similar or comparable technologies to the project activity that have installed similar technologies in the country/region and how the application of the technology differs between such industries and the citric sector.</li> </ul>



Finding	B5
<p><b>Corrective Action #1</b></p> <p><i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<ul style="list-style-type: none"> <li>- The most important indexes for the bank to release the loan or not are liability-asset ratio and the future of the enterprise, which are all not positive to the PO. The only revenue of the project is from the electricity saving. As the project owner are not experienced with biogas generator, the bank loan was rejected by Huangshi City Commercial Bank. In April 2005, the project owner got a loan intent letter from the local Communication Bank, which indicated that the bank would issue a loan as long as CDM revenue was used for loan repayment. Jan. 2006 after the project owner decided to develop the project into CDM project activity, the bank loan of RMB 3 million for biogas to power generation project was signed with Bank of Communications Huangshi Yegang Branch under the premise that the CDM finance would be used as repayment. In May 2006, another bank loan of RMB 6 million for biogas to power generation project was signed with the same bank and under the same condition that CDM finance would be guaranteed for repayment. Without CDM finance the project owner would not have received a loan from the bank, and the proposed project would not have occurred. It is concluded that the CDM finance is vital for getting the loan.</li> <li>- Sludge research for EIC technology and cost evidence on CHP system (evidence provided by PO). As the technology of CHP is new, the qualified personnel are not available for the PO. The maintenance personnel are required by the PO from the manufacturer if serious problems occur.</li> <li>- Due to different local policies related to project implementation, the project spatial boundary is in Hubei province. As the documents from the third party, using EIC technology is the "first of its kind" in Hubei province. The whole project, using EIC and biogas used for electricity generation in the citric acid sector is the "first of its kind" in China.</li> <li>- EIC is a patent based on IC, and both of them are not prevailing practice in the citric acid or other sectors. Other technologies, such as UASB, are more developed in China. As well as being less mature technologies EIC &amp; IC have far higher volume loads than UASB lies. Please refer to PDD.</li> </ul>
<p><b>DOE Assessment #1</b></p> <p><i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<p>OK.</p> <p>1. The rejection letter<sup>BL-1/</sup> from local commercial bank (dated 2005-03-09) indicates that the project owner has no experience on utilizing biogas for power generation projects and the project owner's enterprise has a high liability-asset ratio, which leads to no assurance in repayment of loans. As per the on-site interview, the WWT project complied with environmental protection requirements, and thus loan rejection was not caused by the project-specific legal or environment aspects but due to two factors: 1) the PP's poor financial situation; and 2) PP lacks experience of EIC utilization and</p>

Finding	B5
	<p>methane recovery. According to board decision record<sup>/CDM-1/</sup> and PP's explanation<sup>/IM01/</sup>, the CDM was considered necessary due to financing difficulty and technology risk of EIC and biogas utilization. As per on-site interview of bank staff<sup>/IM04/</sup>, the local communication bank was aware of CDM and agree to take CDM revenue as guarantee of payment. The loan intent letter<sup>/BL-2/</sup> also indicated that PP could contract the loan within 24 months. It is confirmed that the PP started the real action (EIC service agreement was signed on 2005-05-09) with its own deposit in order to reduce the loan interest<sup>/SD-1/</sup>. Within 24 months, the PP did sign two loan contracts in Jan. and May 2006 respectively<sup>/BL-2, 3/</sup>, both of which presented that the CDM revenue should be used for loan repayment firstly, the DOE therefore concluded that CDM plays an important role in overcoming the financial barrier;</p> <p>2. It is evidenced that the project owner has seriously considered the technical barrier before investment decision making:</p> <ul style="list-style-type: none"> <li>- A group of technical investigation was conducted by project owner in year 2004, which presented that the EIC was able to treat waste water from citric acid production, but a few improvements were needed<sup>/RSP/</sup>. The research on sludge of EIC was implemented from year 2005 to year 2007<sup>/RSP/</sup>, which indicated that the PP realized risk of technology and took action to reduce the loss from EIC technology uncertainties;</li> <li>- It was confirmed through on-site validation and background checks that the main business of the PP was citric acid production, and its wastewater used to be treated by UASB. The PP had neither related experience in biogas collection from WWT nor in electricity generation, therefore the technology was considered as a barrier during CDM consideration;</li> <li>- It is confirmed that the project owner lacks corresponding skill personnel. According to logs, the generator was maintained and repaired many times by the facility supplier during 2.5 operational years<sup>/GMR/</sup>, which resulted in a low annual operation hour. To improve the implementation, it was contracted in the equipment service agreement that the manufacture should help operator to be familiar with EIC<sup>/TS/</sup>, and both of EIC and biogas generator manufacturers should respond to malfunction and send skill person to the project company<sup>/IM04/</sup>.</li> <li>- To ensure the normal operation, the training of staffs of the project owner company was planned and implemented continuously<sup>/PT/</sup>. However, training cost was not the key factor that has impact on the financial return. The operating hours of the project was directly impacted by the frequent maintenance and shutdown due to the immaturity of the biogas generators. The financial return was not calculated during CDM decision making due to technology uncertainties.</li> </ul> <p>3. Justification of PP is reasonable. It is acceptable to compare the projects in the boundary of province in China. According to</p>

Finding	B5																					
	<p>notification from equipment supplier<sup>/NFK/</sup>, either EIC or biogas generator sets are the first application in the Hubei province.</p> <p>Besides, the DOE has inquired citric acid industry association, who also confirmed that the combine of the EIC and biogas generator is the first attempt in citric acid industry in China<sup>/NFK/</sup>.</p> <p>It is concluded that there are no similar project activities in the applicable geographical area when the project activity has started (May. 2005) and as per CDM Meth Panel 34<sup>th</sup> meeting annex 10, it is appropriate to be defined as “first of this kind”.</p> <p>4. The supplemented justification in PDD was checked and confirmed to be appropriate. According to thesis of Mr. Shen Zhenhuan, the senior engineer at the Environmental Protection Institute of the Light Industry Department, there was a small number of organic waste water plants that used anaerobic reactor technology in Oct 2003 (around 4% of national wide)<sup>/RP-7, 9/, /nw/</sup>, within which more than 80% applied UASB and CSTR (please refer to technology comparison in table followed). According to research of engineer from Heilongjiang Science Research centre by year 2007, less than 3% of recovered biogas was used to generate power through national wide<sup>/RP-8/</sup>, it is concluded that the third anaerobic treatment and methane recovery for utilization is not the prevailing practice in China.</p> <p>Specific project-by-project information is not available from public data sources, except for projects that have applied for CDM. According to information from the UNFCCC, there are 30 Chinese methane recovery projects, within which only one is from Hubei province, i.e. the proposed project<sup>/unfccc/</sup>. Thus it indicated that the proposed project is not a prevailing practice.</p> <p>The 30 CDM projects refer to various ferment industries, including brewing (e.g. alcohol, beer, ethanol), starch, paper&amp; pulp, swine slaughter, maize and soybean, pentaerythritol, citric acid etc. is treated by kinds of anaerobic technology, where 18 of UASB, 5 of EGSB (incl. 1 combined with UASB), 2 of IC (incl. 1 with UASB), 1 of EIC (the proposed project) and 6 of others.</p> <p>The index of similar WWT technologies used in fermentation industry<sup>/nw/</sup>.</p> <table><tr><th>Gener- ation</th><th>Abbr.</th><th>Type</th><th>Allowed SS<sup>a)</sup>[g/l]</th><th>Since year</th><th>Load [kg COD/m<sup>3</sup>·d]</th><th>HRT<sup>b)</sup> [d]</th></tr><tr><td>1st</td><td>CSTR</td><td>Continuous Stirred- Tank Reactor</td><td>&lt;50</td><td>N/A</td><td>5~10</td><td>4~10</td></tr><tr><td>2nd</td><td>UASB</td><td>Up-flow Anaerobic Sludge Blanket</td><td>&lt;4</td><td>1981</td><td>8~15</td><td>1~10</td></tr></table>	Gener- ation	Abbr.	Type	Allowed SS <sup>a)</sup> [g/l]	Since year	Load [kg COD/m <sup>3</sup> ·d]	HRT <sup>b)</sup> [d]	1st	CSTR	Continuous Stirred- Tank Reactor	<50	N/A	5~10	4~10	2nd	UASB	Up-flow Anaerobic Sludge Blanket	<4	1981	8~15	1~10
Gener- ation	Abbr.	Type	Allowed SS <sup>a)</sup> [g/l]	Since year	Load [kg COD/m <sup>3</sup> ·d]	HRT <sup>b)</sup> [d]																
1st	CSTR	Continuous Stirred- Tank Reactor	<50	N/A	5~10	4~10																
2nd	UASB	Up-flow Anaerobic Sludge Blanket	<4	1981	8~15	1~10																

Finding	B5						
	3rd	EGSB	Expanded Granular Sludge Bed	<1.5	N/A	15~30	0.5~4
	3rd	IC	Inner Circulation	<1.5	1996	15~30	0.5~4
	3rd	EIC <sup>c)</sup>	Erratic Inner Circulation	N/A	2004	15~20	1
			Other	<50	N/A	<3.0	15
<p>a) SS: Suspended Solid; b) HRT: Hydraulic Retention Time; c) patent of EIC was applied in May 2004 and approved in May 2005, the load range was defined in service contract and HRT of 1 day was based on PP operational experience.</p> <p>From table above, the technologies of so called 3<sup>rd</sup> generation technology has a higher COD volume load and shorter HRT. According to quotation of the comparable project<sup>/QIT/</sup>, EGSB costs twice of the proposed project and IC costs even higher, therefore both of them were not applied.</p> <p>To sum up, the justification and evidence of barrier are real and appropriate. According to VVM version 01.1 the barriers are substantiated by independent sources<sup>/RP//FRH/</sup>.</p> <p>CAR B5 opened in checklist B.4.5.2 and B.4.5.3 can be closed.</p>							
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input checked="" type="checkbox"/> Appropriate action was taken <input type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements						

Finding	B6		
<b>Classification</b>	<input checked="" type="checkbox"/> CAR	<input type="checkbox"/> CL	<input type="checkbox"/> FAR

Finding	B6
<p><b>Description of finding</b>  <i>Describe the finding in unambiguous style; address the context (e.g. section)</i></p>	<p>According to methodology AMS-III.H. The following issues are detected in the baseline emission calculation in PDD section B.6.:</p> <ol style="list-style-type: none"> <li>1 Demonstration of equation 15 in AMS-III.H is not convincing, i.e. explanation of calculation for <math>ER_{y, \text{ex-post}}</math> is insufficient, the monitoring method is not defined for <math>BE_{y, \text{ex-post}}</math>;</li> <li>2 Please provide the situation of flaring/ combustion <math>MD_y</math>;</li> <li>3 Please justify the data chosen for MCF and <math>COD_{\text{removed}, i, y}</math> in GSP PDD section B.6.2, e.g. what kind of MCF should be defined;</li> <li>4 Please justify the data listed in table B-4, especially, please justify whether the concentration of <math>COD_{\text{discharge}}</math> as 300 mg/L is in line with local regulation;</li> <li>5 The calculation method of Emission Reduction is not clear, please explain why there is different between PDD page 17 and page 23.</li> <li>6 Since the project affected the sludge process, justify why the baseline emission from sludge process is not considered. Evidence of sludge treatment keeps the same way prior and during project should be provided;</li> <li>7 Some parameters are not clear described or calculated: <math>EG_{BL}</math>, <math>EF_{ww, \text{discharge}, y}</math>, <math>Q_{ww, i, y}</math>, <math>COD_{ww, \text{discharge}, BL, y}</math>, <math>W_{CH4, y}</math>;</li> <li>8 Source of parameters listed in table B-4 is not clear, further demonstration is requested.</li> </ol>
<p><b>Corrective Action #1</b>  <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<ol style="list-style-type: none"> <li>1. Every parameter used for <math>ER_y</math> calculation has been noted below the formula. As described in the methodology, <math>BE_{y, \text{ex-post}}</math> is calculated as per paragraph 16 (equation 1) using ex post monitored values, the monitored parameters and monitoring method are listed in B.7.1 and B.7.2.;</li> <li>2. The equipment involved for <math>MD_y</math> is the power generator, and FE is regarded as 1;</li> <li>3. <math>MCF_{ww, \text{treatment}, BL, i}</math> UASB treatment in baseline can be regarded as type of <i>anaerobic reactor without methane recovery</i>, whose MCF value is 0.8. IPCC default value, refer to Table III.H.1 in AMS-III.H (version 12), <math>MCF_{s, \text{treatment}, PJ, j}</math> EIC treatment in project scenario can be regarded as type of <i>anaerobic digester for sludge without methane recovery</i>, whose MCF value is 0.8. IPCC default value, refer to Table III.H.1 in AMS-III.H (version 12).</li> </ol>

Finding	B6
<p><b>Corrective Action #1</b></p> <p><i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i></p>	<p>4. The data listed in table B-4 is cited from FSR, the COD discharged from the whole wastewater treatment system is 300 mg/L and then mixed with other wastewater such as surplus cooling water generated through citric acid production to reach a COD concentration below 150 mg/l and finally discharged;</p> <p>5. The calculation method of Emission Reduction is revised to be consistent;</p> <p>6. The sludge from UASB process in the baseline scenario and the sludge from UASB process in the project scenario are treated in the same way, the emissions from sludge treatment are considered as the same in the baseline and project scenario conservatively<sup>1</sup>;</p> <p>7. The parameters mentioned are re-described;</p> <p>8. FSR and historic operation data are the source for the parameters.</p>
<p><b>DOE Assessment #1</b></p> <p><i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i></p>	<p>OK. Revision is appropriate.</p> <p>1. Supplement note for <math>ER_y</math> is appropriate. <math>BE_{y, \text{ex-post}}</math> in formula 22 equals <math>BE_y</math> in formula 13, it sums up of <math>BE_{\text{power}, y}</math> and <math>BE_{\text{ww}, \text{treatment}, y}</math>, whose ex ante parameters, including EG, <math>Q_{\text{ww}, i, y}</math>, <math>COD_{\text{removed}, i, y}</math>, etc., are listed in monitoring section;</p> <p>2. It is appropriate to assume FE as 1, because the methane is destroyed by generation, which is approved by ACM0001;</p> <p>3. The type of MCF has been defined appropriately, historic records as data source of <math>COD_{\text{removed}, i, y}</math> have been reviewed;</p> <p>4. It is reconfirmed by interviewing the project owner that the cooling water will be used in mix out flow when the COD is not below 150 mg/L<sup>/IM01/</sup>. Besides, since the COD concentration of citric acid waste water is extremely high, the mix discharge is in line with national regulation<sup>/GB/</sup>;</p> <p>5. Calculation of Emission Reduction has been revised to be consistent, as a result, the <math>PE_{\text{power}, y}</math> has been considered in calculation and <math>ER_{y, \text{ex ante}}</math> has been changed into 45,782 tCO<sub>2e</sub>;</p> <p>6. Sludge from EIC has been considered, while sludge from UASB process could be ignored as per EB 22 annex 2 "Guidance regarding methodological issues";</p> <p>7. Parameters related to discharge are deleted;</p> <p>8. Data source has been added, most of data are sourced from FSR, and other from public available literature, both of which has been checked<sup>/AFSR/, /FSR/, /Is/</sup>.</p>

<sup>1</sup> as per EB 22 annex 2 "Guidance regarding methodological issues" section E,



Finding	B6
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>To sum up, the equations are applied correctly according to the applied approved methodology. All data and parameters which remain fixed throughout the crediting period are correct, applicable to the project and will lead to a conservative estimation of emission reductions. All ex-ante calculation values for monitoring parameters (as defined as per chapter B.7.1) are reasonable<sup>/XLS/</sup>.</p> <p>It can be confirmed that the equations applied correctly according to the applied approved methodology. The parameter are conservative and lead to conservative emission reduction..</p> <p>Furthermore the ex-ante calculation values for monitoring parameter are reasonable after revision.</p> <p>CAR B6 opened in checklist B.5.1, B.5.3 ~ B.5.5 can be closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Appropriate action was taken <input checked="" type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input type="checkbox"/> The project complies with the requirements

Finding	B7
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>In PDD section B.7. several issues are raised:</p> <ul style="list-style-type: none"> <li>- Description of Figure 2 is not clear, the monitoring equipment mentioned in table followed is confusing, please define the objective or parameter to be monitored, its corresponding measure equipment, as well as its location, accuracy, function and maintenance plan;</li> <li>- Description of the monitoring procedure and responsible person is not sufficient.</li> </ul>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>A paragraph named "monitoring instruments" is added in the monitoring plan to describe the location, precision and calibration period of the measurement equipment (including liquid flow meter, gas flow meter, electricity meters, gas analyzer and analysis instruments, etc.)</p> <p>The first item in QA/QC procedures describes backup system and validity of the monitored data.</p>

Finding	B7
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>OK.</p> <ul style="list-style-type: none"> <li>- Figure 2 in PDD has been revised, the location of measure equipment is clear, including electricity meter, gas flow meter, gas analyser and temperature meter. However, since the project has not completed during validation, except electricity meter, the accuracy of temperature meter and pressure meter, gas analyser is not available.</li> <li>- Monitoring procedure and corresponding personnel have been defined in more details.</li> </ul> <p>To sum up, all parameters contained in monitoring plan are appropriately described and in compliance with the requirements of the methodology.</p> <p>CAR B7 opened in checklist B.6.2 and B.6.3 can be closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input type="checkbox"/> Appropriate action was taken</p> <p><input checked="" type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input type="checkbox"/> The project complies with the requirements</p>

Finding	B8
<b>Classification</b>	<input checked="" type="checkbox"/> CAR <input type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	<p>The monitoring system in PDD is not in compliance with information from site visit. E.g. The arrangement of meters used for net electricity record; meanwhile description of cross check method and emergency backup system are insufficient.</p> <p>Revision of PDD section B.7 is necessary.</p>
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The information of measurement equipment has been included in PDD and backup system for electricity meters is clarified.</p>
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>OK. The monitoring plan described in revised PDD is sufficient and realistic, which makes monitoring plan be consistent with the introduction description from project owner during on-site interview. Besides, the emergency preparedness is added and assessed to be appropriate<sup>/IM01/</sup>.</p> <p>Therefore, it is assumed to be implemented in the context of the project activity. CAR B8 opened in checklist B.6.4 can be closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p><input type="checkbox"/> To be checked during the first periodic verification</p> <p><input type="checkbox"/> Appropriate action was taken</p> <p><input checked="" type="checkbox"/> Project documentation was corrected correspondingly</p> <p><input type="checkbox"/> Additional action should be taken</p> <p><input type="checkbox"/> The project complies with the requirements</p>



Finding	C1
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The project lifetime has been defined as 10 years. Evidence of its applicability should be submitted.
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The lifespan for the UASB in the project is longer than 30 years and for EIC is longer than 10 years. Please refer to <a href="http://www.chinaep.net/feishui_shili/102/feishui_shili-468.htm">http://www.chinaep.net/feishui_shili/102/feishui_shili-468.htm</a></p>
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>OK. The project lifetime is suggested by FSR, which is finalized by authorized design institute<sup>/FSR/</sup>.</p> <p>The information from the internet above shows that the lifetime of UASB is longer than 30 years. Besides, according to construction agreement, it is built in year 2003, thus the UASB still used in the project activity could work during the estimated crediting period<sup>/ESC/</sup>.</p> <p>By interviewing the contact person from EIC manufacture, the lifetime of EIC is designed as 15 years<sup>/IM04/</sup>. It is also in line with the website above.</p> <p>Besides, the "Chemical project investment method and parameter" suggests that the project lifetime of generator and heating facilities should be 12 ~ 20 years<sup>/CIM/</sup>.</p> <p>To sum up, the project lifetime of 10 years is conservative and appropriate. The fixed crediting period is designed as 10 years, and as per EB50 annex 15, remaining lifetimes of the main facilities including UASB and EIC is longer than that, thus the operation could cover the whole crediting period. CLC1 opened in checklist C2 can be closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<input type="checkbox"/> To be checked during the first periodic verification <input type="checkbox"/> Appropriate action was taken <input type="checkbox"/> Project documentation was corrected correspondingly <input type="checkbox"/> Additional action should be taken <input checked="" type="checkbox"/> The project complies with the requirements

Finding	C2
<b>Classification</b>	<input type="checkbox"/> CAR <input checked="" type="checkbox"/> CL <input type="checkbox"/> FAR
<b>Description of finding</b> <i>Describe the finding in unambiguous style; address the context (e.g. section)</i>	The main equipment is not completed yet during site visit, i.e. the construction of the second set of EIC is not started. Whether the project will be completed by the estimated crediting period (01/01/2010) should be clarified.

Finding	C2
<b>Corrective Action #1</b> <i>This section shall be filled by the PP. It shall address the corrective action taken in details.</i>	<p>The future plan might be changed according to the real situation, the actual emission reductions will be calculated ex-post, whether the project will be fully completed or not upon 01/01/2010 will have no influence on the calculation of actual emission reductions.</p> <p>Nevertheless, the first day of crediting period is re-estimated as 2010-05-01 based on the normal timeline for DOE validation and EB registration.</p>
<b>DOE Assessment #1</b> <i>The assessment shall encompass all open issues in annex A-1. In case of non-closure, additional corrective action and DOE assessments (#2, #3, etc.) shall be added.</i>	<p>OK, the start of the crediting period is clearly defined and reasonable. CL C2 in checklist C.3 can be closed.</p>
<b>Conclusion</b> <i>Tick the appropriate checkbox</i>	<p> <input type="checkbox"/> To be checked during the first periodic verification  <input type="checkbox"/> Appropriate action was taken  <input checked="" type="checkbox"/> Project documentation was corrected correspondingly  <input type="checkbox"/> Additional action should be taken  <input type="checkbox"/> The project complies with the requirements         </p>

## 5 VALIDATION ASSESSMENT SUMMARY

### 5.1 General Description of the Project Activity

#### 5.1.1 Participation

##### LOA

Letter of Approval for Methane Recovery and Power Generation Project in High-concentrated Organic Wastewater Treatment in Hubei, China as Clean Development Mechanism Project is issued by National Development and Reform Commission of the People's Republic of China (NDRC). NDRC is China's DNA. The project complies with the permission requirements and assists China in achieving sustainable development.

Letter of Approval from Chinese DNA dated 2009-04-09 confirms that China is a party to the Kyoto Protocol. The LoA from UK's DNA dated 2009-07-20 confirms that the UK is a party to the Kyoto Protocol<sup>/LOA/</sup>.

The precise title of the project is: Methane Recovery and Power Generation Project in High-concentrated Organic Wastewater Treatment in Hubei, China.

##### Project Participants

The project participants are Huangshi Xinghua Biochemical Ltd. authorized as China's Participant and Climate Bridge Ltd. authorized by the Government of UK that are consistent in PDD and LOA. Furthermore Noble Carbon Credits Limited is indicated as a project participant.

The authenticity of the LOAs has been confirmed by means of checking the database of the DNAs of UK and China using following links:

[http://www.decc.gov.uk/en/content/cms/what\\_we\\_do/change\\_energy/tackling\\_climate/strategy/mechanisms/clean\\_developm/clean\\_developm.aspx](http://www.decc.gov.uk/en/content/cms/what_we_do/change_energy/tackling_climate/strategy/mechanisms/clean_developm/clean_developm.aspx)

<http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2205.pdf>

The UK DNA will only issue the Letter of Approval (LoA) for Noble Carbon Credits Limited on the basis of this positive validation opinion by the validator of the project. Thus the LoA could not be considered at the present validation stage. (please refer to CAR A1)

#### 5.1.2 Contribution to Sustainable Development

The Chinese DNA approves that the project complies with the permission requirements provided for in the measures for operation and management of CDM project and assists China in achieving sustainable development<sup>/HCA/</sup>.

### 5.1.3 PDD editorial Aspects

The project design document's version is 03 and compliances with the latest PDD template and guideline<sup>/GCP/, /PDD-T/</sup>.

### 5.1.4 Technology to be employed

Since the project owner planned to double its capacity of citric acid production in the near future, the project is designed to insert a EIC facility in the old wastewater treatment (hereafter refer to "WWT") process and install a heat and power cogeneration facilities by using biogas from anaerobic WWT system. The parameters of the key equipment indicated in Table A.2 of PDD are consistent with those in technical part of EIC system, biogas generators and boiler purchase agreement. Since the project is a methane recovery and power generation project, the technology employed is environmentally safe and sound.

For an in depth evaluation of these topics, please refer to section 2.4 and section A.4 of the ANNEX 1 Table A-1 in this protocol. This section also contains the CARs, CLs and FARs related to this topic.

### 5.1.5 Small Scale Projects

The project activity qualifies as a small-scale project activity and is within the thresholds of the possible types of small-scale CDM project activities.

The maximum annual CO<sub>2</sub> ER from CH<sub>4</sub> recovery of the project are estimated to be 45,782 tCO<sub>2e</sub>, which is less than the stipulated 60,000 tCO<sub>2e</sub>, thus it applies the approved small-scale categories AMS-III.H (version 12) "Methane Recovery in Wastewater Treatment".

The project activity includes ER from both the thermal and electrical energy components, and as a renewable project activity, its total generators' capacity of the proposed project will be 3.0 MW (2.5MW for normal use and 0.5MW as backup) and doesn't exceed the limit of 15 MW, and though no ER from thermal will be claimed, it meets the application requirement in para 5 (a) of AMS I.C (version 14) "Thermal energy production with or without electricity".

The small-scale methodologies is applied in conjunction with the general guidance to the methodologies that provides guidance on equipment capacity, equipment performance, sampling and other monitoring related issues.

The project is not a debundled component of a large scale project in accordance with the rules defined in appendix C of Annex II to Decision 4/CMP.1.

## 5.2 Project Baseline, Additionality and Monitoring Plan

### 5.2.1 Application of the Methodology

Approved consolidated baseline and monitoring methodologies AMS-III.H. “Methane Recovery in Wastewater Treatment” (version 12) and AMS-I.C. “Thermal energy production with or without electricity” (version 14) are applied. As assessed in B.1.1, it is appropriate.

“Combined tool to identify the baseline scenario and demonstrate additionality” (version 02.2) shall be used.

The project applies a valid version of a CDM Methodology approved by the board /unfccc/. The methodology and tools are available at:

<http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html>

By means of document review, it can be confirmed that the choice of the methodology is justified within section B.2 of the PDD. According to the PDD “the project activity utilizes biogas for power generation to displace the electricity imported from the grid by adopting EIC technology and biogas CHP generation technology in the existing UASB system”. Here the UASB system describes the existing anaerobic waste water treatment system without methane recovery. The relevant applicability criteria of the methodologies are discussed by the PP and it is shown that the applicability criteria are met. Furthermore, by means of site visit it can be confirmed that the project activity is not expected to result in significant emissions, related both to project and leakage, other than those listed in the methodology.

Summarized it is assessed that the project applies a valid version of an approved CDM methodology and the methodology is applicable to the project. For an in depth evaluation of these topics, please refer to section B.1 of the ANNEX 1 Table A-1 in this protocol. This section also contains the CARs, CLs and FARs related to this topic.

### 5.2.2 Project Boundary

The PDD correctly describes the project boundary including the physical delineation of the project activity, i.e. according to AMS-I.C. (version 14), the project boundary encompasses the physical and geographical sites of the renewable energy generation and according to AMS-III.H (version 12), the project boundary is the physical, geographical site where the wastewater and sludge treatment takes place in baseline and project situation. It covers all facilities affected by the project activity including sites where the processing, transportation and application or disposal of waste products as well as biogas takes place.

For an in depth evaluation of these topics, please refer to section B.2 of the ANNEX 1 Table A-1 in this protocol. This section also contains the CARs, CLs and FARs related to this topic.

### 5.2.3 Baseline Identification

The description of baseline identification in the PDD is transparent and verifiable. The baseline scenario is as following:

- The procedure to identify the most plausible baseline scenario has been applied correctly and is transparently and sufficiently documented in the PDD.
- The electricity delivered to the grid by the project activity would otherwise be generated by the operation of grid-connected power plant and by the addition of new generation sources in CCPG to meet electricity demand, as reflected in the combined margin (CM) calculations described in the “Tool to calculate the emission factor for an electricity system”<sup>/TEF/</sup>.

The project activity involves installing EIC equipment, which results in a capacity addition of the wastewater treatment system compared to the designed capacity of the baseline treatment system. However, the replaced capacity and increased capacity share one baseline scenario.

According to on-site information, the heat generated by coal was replaced by biogas, however, the emission reductions from the heat source replacement was not claimed. For reasons of conservativeness, the baseline of heat consumption is defined as the project scenario, i.e. heat supplied by biogas. According to research of biogas utilization<sup>/RP-7, 8/</sup>, it is the least emission in potential alternatives. As a result, the heat source and utilization is not demonstrated in baseline analysis.

As a result, the baseline was defined as “Using UASB without methane recovery, electricity is imported from the grid”. Please refer to Table A-2 in annex 2 of this report. It is concluded that the baseline meets the requirement of AMS-III.H<sup>/AMS III.H/</sup>, AMS I.C<sup>/AMS I.C/</sup>, the “General Guidance for SSC methodologies”<sup>/SSG/</sup> as well as “The combined tool to identify the baseline scenario and demonstrate additionality”<sup>/TBI/</sup>.

To sum up, it can be assessed that the identified baseline scenario reasonably represents what would occur in the absence of the proposed project activity and the approved methodology used is applicable to the identified baseline scenario.

For an in depth evaluation of these topics, please refer to section B.3 of ANNEX 1 Table A-1 and ANNEX 2 in this protocol. This section also contains the CARs, CLs and FARs related to this topic.

### 5.2.4 Calculation of GHG Emission Reductions

The calculation is done as per applied methodology.



The PDD applies steps and equations to calculate project emissions, baseline emissions, project emission as per the requirements of the methodology. For the calculation of the GHG emission reductions the correct equations have been used reflecting the methodological choices<sup>/AMS I.C./, /AMS III.H./, /PDD/, /XLS/</sup>.

Furthermore all equations are applied correctly. For the data and parameters not to be monitored throughout the crediting period (i.e. they are determined only once and thus remain fixed throughout the crediting period), it is assessed that all data sources, assumptions and calculations are correct, applicable to the project and contribute to a conservative estimate of the emission reductions. The combined baseline emission factor of the project was calculated from the data available at the time that the project was sent to validators for GSP<sup>/CEPY/, /CESY/</sup>. In accordance with the "Tool to calculate the emission factor for an electricity system" weight factors of  $w_{OM} = w_{BM} = 0.5$  have been used<sup>/TEF/</sup> and the resultant grid emission factor ( $EF_{CM, y}$ ) works out as 0.9735 tCO<sub>2</sub>e/MWh, the DOE has confirmed the value by checking the public value from NDRC right before GSP (Apr 2009). For the data and parameters subject to monitoring it is confirmed that the emission reduction estimates provided in the PDD are reasonable and conservative.

Based on the ex-ante parameter and estimated parameter to be monitored during crediting period, the project activity reduces emissions was calculated to be 45,782 tCO<sub>2</sub>e/yr and 457,820 tCO<sub>2</sub>e over the fix crediting period (10 years).

For an in depth evaluation of these topics, please refer to section B.5 of ANNEX 1 Table A-1 in this protocol. This section also contains the CARs, CLs and FARs related to this topic.

## 5.2.5 Additionality Determination

### Consideration of CDM in decision making

The starting date given in the PDD is before validation start. It is confirmed that this date has been reported in accordance with the CDM glossary of terms.

The DOE confirms that project participant's CDM prior consideration<sup>/CDM/</sup> meets following requirements of Guidance on the Demonstration and Assessment of Prior Consideration of the CDM (EB41, Annex 46):

- a) The decision by the Board of Directors as evidence indicates the awareness of the CDM prior to the project activity start date, and the decision was made by authorized person;
- b) The benefits of the CDM were a decisive factor in the decision to proceed with the project. The incentive of the CDM was considered by the PP within the decision making process to go forward with the project.
- c) Evidences such as the local support letter and ERPA are transparently described in the PDD, which indicate that continuing and real actions has been taken to secure CDM status for the project in parallel with its implementation.

Based on the evidence of validation, the CDM consideration can be assessed as serious, it is concluded that project activity would not be undertaken without the incentive of the CDM.

## Application of methodology / methodological tools

The additionality was justified in accordance with the requirements derived from the applied approved CDM methodology and the applied methodological tools referred to therein.

## Alternatives

The PDD contains a complete list of all realistic alternatives to the project scenario, please refer to ANNEX 2 in this protocol.

## Barrier analysis

Financial barrier<sup>/FRH/</sup>, Technology barrier<sup>/RP/</sup> and Barriers due to prevailing practice<sup>/NFK3-4/</sup> are demonstrated in the PDD<sup>/PDD-3/</sup>. By means of review of independent sources like including bank loan contract<sup>/BL/</sup>, research on the technology<sup>/RSP/</sup>, industry notification<sup>/NFK1-2/</sup> it can be assessed that the barriers are real. The justification that the barriers prevent the implementation of the project activity is given in Annex 4 respectively Annex 1 section B.4.5.1-4.5.4. Independent surveys and articles substantiate the existence of the barriers. Furthermore,, according to the Guidelines for Objective Demonstration and Assessment of Barriers (EB 50, Annex 13), information on the nature of the company and financial information<sup>/FRH/</sup> are provided. .The barriers given will not prevent the implementation of the possible alternative W1+P1. Here the electricity consumption from the grid doesn't face the financial barrier, as no additional investment is necessary.

## Common practice

According to the requirements of a small-scale project, a common practice analysis is not mandatory. To substantiate the application of the technical barrier and to show that the technology is not a common practice in the citric acid sector a survey was conducted. The survey is based on the common practice analysis and takes into account geographical boundaries.

The project located in Huangshi Xinghua Biochemical Ltd. (hereafter short for XHB), Xisaishan district, Huangshi City, Hubei Province, XHB is the one of the top ten citric acid producers in China. There is no similar waste water producer in Hubei Province.

According to the requirements of common practice, the projects with similar conditions, such as investment conditions and natural conditions (including geographical conditions, climate conditions, development conditions and so on), are necessary to be analyzed. Projects located in different provinces in China have different investment conditions and natural conditions. Therefore, the PDD selects Hubei Province as the appropriate geographical area for the common practice analysis.



The EIC technology has applied for patent on 2004-05-28 and been approved as patent on 2005-05-18<sup>/PET/</sup>. According to the patent granted in the State Intellectual Property Office, the EIC reactor technology was practical and advanced.

In conclusion, the geographical region chosen is appropriate, the technology is rare used in the region, thus it assessed that the project is not common practice.

## Summary

The baseline settled is appropriate, the project owner has justified motivation of CDM application, who also pursuing CDM continuously. The project is not common practice, which meets the barriers preventing its implementation.

For an in depth evaluation of these topics, please refer to section B.4 of the ANNEX 1 Table A-1 in this protocol. This section also contains the CARs, CLs and FARs related to this topic.

## 5.2.6 Monitoring Methodology

The monitoring plan is in compliance with the applied methodologies AMS-I.C.: “Thermal energy production with or without electricity” (version 14) and AMS-III.H.: “Methane Recovery in Wastewater Treatment” (version 12).

## 5.2.7 Monitoring Plan

According to the applied methodology and tool, all monitoring parameters required by the applied tool are contained in the monitoring plan. They are:

- The wastewater treated by the proposed project;
- The electricity generated by the proposed project;
- The electricity consumed in the WWT system and electricity generation system by the proposed project;
- The COD of the wastewater to be treated by the proposed project, in the inlet & outlet of EIC process by the proposed project, in the outlet of UASB process, which therefore could be used in the COD removed by EIC & UASB system in the project scenario could be calculated by the parameters
- The amount of dry matter in the sludge generated through EIC process and then used by other anaerobic digestion facilities
- The amount of biogas and methane concentration into the gas generators;
- The temperature and pressure of the captured biogas.

The procedures for installation, registration and maintenance of monitoring equipments, procedures related to QA/QC and the responsibilities of personnel are

clearly mentioned in section B.7 of the PDD. The monitoring plan can be implemented and all the monitoring arrangements are feasible within the project design.

### **5.2.8 Project Management Planning**

Management structure of the monitoring plan is defined in Section B.7.2. The whole structure is divided into three teams, including biogas monitoring team, wastewater monitoring team and electricity monitoring team.

The biogas monitoring team is responsible for the measurement and record of the data including the amount of biogas to gas generator, methane concentration, pressure and temperature;

The wastewater monitoring team is responsible for the measurement and record of the data including the amount of wastewater to be treated by the proposed project, COD in each process, sludge production amount, etc;

The electricity monitoring team is responsible for the measurement and record of the data including electricity generation by the gas generators and project electricity consumption.

### **5.2.9 Crediting Period**

The project's 1<sup>st</sup> crediting period is from 2010-05-01 to 2020-04-30, which is assessed to be appropriate.

### **5.2.10 Environmental Impacts**

In China, *Environmental Impacts Assessment*<sup>/EIA/</sup> is required according to Chinese legislation. The EIA report of the project has been approved by local government<sup>/AEIA/</sup>. The analysis of the environmental impacts of the project activity is sufficiently described. According to the EIA, there is no trans-boundary environmental impact created by the project activity.

### **5.2.11 Comments by Local Stakeholders**

Based on the on-site validation investigation, all relevant local stakeholders have been invited to comment on the project and a summary of comments is available in the PDD section E.2. And since all comments from local stakeholders were not negative, no any corrective requirements were taken into account.

## 6 VALIDATION OPINION

Climate Bridge Limited. has commissioned the TÜV NORD JI/CDM Certification Program (CP) to validate the project: "Methane Recovery and Power Generation Project in High-concentrated Organic Wastewater Treatment in Hubei, China" with regard to the relevant requirements of the UNFCCC for CDM project activities, as well as criteria for consistent project operations, monitoring and reporting. UNFCCC criteria include article 12 of the Kyoto Protocol, the modalities and procedures for CDM (Marrakech Accords) and the relevant decisions by COP/MOP and CDM Executive Board

In the course of the pre-validation 8 Corrective Action Requests (CARs) and 5 Clarification Requests (CLs) were raised, by the time of this version submitted there are 8 CARs and 5 CLs are successfully closed.

The review of the project design documentation and additional documents related to baseline and monitoring methodology; the subsequent background investigation, follow-up interviews and review of comments by parties, stakeholders and NGOs have provided TÜV NORD JI/CDM CP with sufficient evidence to validate the fulfilment of the stated criteria.

In detail the conclusions can be summarised as follows:

- The project is in line with all relevant host country criteria (China) and all relevant UNFCCC requirements for CDM. Project activity approval has been obtained from DNA of China. Please vide the Host Country Approval on 2009-04-09, English version No.1930. LOA for Climate Bridge Limited from DNA of UK dated 2009-07-20.
- The UK DNA will only issue the Letter of Approval (LoA) for Noble Carbon Credits Limited on the basis of this positive validation opinion by the validator of the project. Thus the LoA could not be considered at the present validation stage.
- The project additionality is sufficiently justified in the PDD.
- The monitoring plan is transparent and adequate.

The calculation of the project emission reductions is carried out in a transparent and conservative manner, so that the calculated emission reductions of 457,820 tCO<sub>2</sub>e are most likely to be achieved within the 1st renewable crediting period (2010-05-01~2020-04-30).

Shanghai, 2010-11-03



Li Yong Jun

TÜV NORD JI/CDM CP

Validation Team Leader

Essen, 2010-11-03



Rainer Winter

TÜV NORD JI/CDM CP

Final Approval

## 7 REFERENCES

**Table 7-1:** Documents provided by the project participant

Reference	Document
<b>/AEIA/</b>	Approval of EIA issued by Huangshi Environmental Bureau: Huang Huan Fa [2004] 39, on 2004-06-01
<b>/AWD/</b>	Approval of Waste Discharge issued by Huangshi Environmental Bureau: Huang Huan Xu Zi [2008]0009, on 2008-12-20
<b>/AFSR/</b>	Approval of FSR issued by Huangshi Economic Committee: Huang Jing Ke Ji [2004] 122, on 2004-12-04
<b>/AECG/</b>	Approval of Electrical Connection to Grid issued by Hubei Electrical Power Co., Ltd: E Dian Si Fa Zhan [2008] 83, on 2008-03-26.
<b>/BL/</b>	<ol style="list-style-type: none"> <li>1. Loan rejection letter issued by Huangshi City Commercial Bank on 2005-03-09;</li> <li>2. Official loan intent letter was issued by Huangshi Bank of Communication on 2005-04-25;</li> <li>3. Bank loan contract with Huangshi Bank of Communication indicating CDM revenue on 2006-01-14;</li> <li>4. Bank loan contract with Huangshi Bank of Communication indicating CDM revenue on 2006-05-05.</li> </ol>
<b>/CDM/</b>	<p>CDM consideration evidences</p> <ol style="list-style-type: none"> <li>1. Board resolution with decision of implementation CDM activity on 2005-04-28;</li> <li>2. CDM consultation agreement on 2006-10-26;</li> <li>3. Emissions reduction purchase agreement with Carbon Asset Management Sweden AB on 2007-01-26;</li> <li>4. Letter delivered by Carbon Asset Management to terminate the ERPA and resign all rights to the project on 2007-10-25;</li> <li>5. Emissions reduction purchase agreement with Climate Bridge Ltd. on 2008-06-18.</li> </ol>
<b>/EIA/</b>	Environment Impact Assessment by Huangshi Environmental Protection Research Institute in May 2004
<b>/ESC/</b>	Evidence Submitted for Comparison UASB Construction Agreement signed on 2003-06-05.
<b>/EWT/</b>	Emergency plan of Wastewater Treatment
<b>/FRH/</b>	Financial audit Report by Huangshi Daxin Zhengxin Accountant Firm.

Reference	Document
<b>/FSR/</b>	Feasibility Study Report by Hubei Chemical Industry Research & Design Institute in Nov. 2004. The certification (issued by NDRC) shows that the FSR institute belongs to A level, which indicated that the institute has the necessary experts in the certain area.
<b>/GAB/</b>	Guidelines for objective Demonstration and Assessment of Barriers version 01, EB 50 Annex 13
<b>/GMR/</b>	Sample of Generator Maintenance Records.
<b>/HCA/</b>	Host Country Approval from Chinese DNA English version issued in April 2009, with refer No.1930. And the Chinese version dated 2009-04-09 with No [2009]950.
<b>/LOA/</b>	Letter of Approval from UK DNA 1. LOA released on 2009-07-20. It confirms that the participation of Climate Bridge Limited is voluntary 2. LOA issued on 2010-02-09 confirms that the participation of Noble Carbon Credits Limited is voluntary
<b>/MOC/</b>	Modalities of Communication signed on 2009-12-08 by project owner and two buyers.
<b>/NFK/</b>	Notification for "First of this kind" 1. First methane generator in Hubei province notified by Jinan Diesel Engine Co., Ltd. on 2008-09-28; 2. First EIC technology application in Hubei province notified by Jiangxi Keneng Technology Development Co., Ltd. on 2008-09-25; 3. First EIC technology applied in Hubei province notified by China Fermentation Industry Association on 2009-02-20; 4. First combine of the EIC and biogas generator in citric acid industry in China notified by China Fermentation Industry Association on 2009-07-24.
<b>/PDD/</b>	Project Design Document titled "Methane Recovery and Power Generation Project in High-concentrated Organic Wastewater Treatment in Hubei, China" 1. Version 01, dated 2009-04-07 (hosted for public comments during 10/04/2009 to 09/05/2009); 2. Version 03, dated 2010-02-05; 3. Version 04, dated 2010-05-28; 4. Version 05, dated 2010-11-03.
<b>/PET/</b>	Patent of EIC technology 1. Apply for patent on 2004-05-28 2. Approved as patent by State Intellectual Property Office of P.R.C. refer to Patent No. ZL200420023281.4. 3. Apply patent for WWT process on 2006-12-09.

Reference	Document
<b>/PG/</b>	Project Graphs: 1. Methane generation and process flow drawing; 2. Waste water treatment process flow drawing.
<b>/PT/</b>	Personal Training evidences 1. Chemical analysis training in waste water treatment on 2005-10-21; 2. EIC safe operation training on 2005-10-28; 3. Biogas generator safe operation training in Jun. 2006; 4. Chemical analysis and safe operation training No. 1, on 2006-08-28; 5. Chemical analysis and safe operation training No. 2, on 2007-06-25; 6. Biogas generator safe operation training No. 1 in Aug. 2007; 7. Biogas generator safe operation training No. 2 in May. 2008; 8. Safe operation and chemical analysis training in waste water treatment on 2008-05-23.
<b>/QIT/</b>	Quotation on IC Technology provided by PAQUES dated on 2004-05-18. Quotation on EGSB Technology to a comparable project available since 2009-04-20: <a href="http://www.czhbkj.com/E_ReadNews.asp?NewsID=372">http://www.czhbkj.com/E_ReadNews.asp?NewsID=372</a>
<b>/RP/</b>	Reference Paper 1. Xie Xin, Zhang Zhen-lin etc. „Status in Quo of Citric Acid Industrial Wastewater Treatment”. <i>Industrial Water Treatment</i> 2004 24 (1):8-11; 2. Tian Zhi-hai, Wang Zeng-zhang. Study on the treatment of citric acid wastewater. <i>Shanxi Architecture</i> Vol.33 No.35 Dec.2007 Page 19; 3. <a href="http://hnnh.haagri.gov.cn/asp/showdetail.asp?id=35868">http://hnnh.haagri.gov.cn/asp/showdetail.asp?id=35868</a> Ran Guo-wei, Zhang Ru-kun etc “ The Analysis of Present Situation of Methane Electricity Generation and its Discussion of Developing Direction” <i>Agricultural Engineering Study</i> 2006 3 (3):189-191; 4. Gao Chun-mei “Power Generated by Methane and Heat Recycling” <i>Municipal Administration and Technology</i> 2005, 7 (5):217-219. 5. Chen Xie, “Research on UASB retrofit and EIC”, published on <a href="http://www.paper.edu.cn">http://www.paper.edu.cn</a> 6. Guo Qing-wei et al. “Development and Application of Internal Circulation reactor, College of Environmental Science and Engineering of Hunan Agriculture University, Hunan Changsha 410128, China, <a href="http://cqvip.com">http://cqvip.com</a> 7. Shen Zhen-huan “ Current situation, problems and suggestions on the organic wastewater middle/large biogas projects in China” <i>China Biogas</i> 2005,23; 8. Wang Gang, Liu Wei etc. “Current Status and Prospect of Biogas Technology in China”, <i>Application Energy Technology</i> , 2007(12): P33; 9. Gu Shu-hua “Biogas Resource and Development Utilization in China”, 09/2005, <i>China Renewable Energy Development Strategy Workshop</i> .
<b>/RSP/</b>	Research & Survey Proof 1. Research on the EIC Sludge Production by Huangshi Xinghua Biochemical Ltd., the research was titled as “Research on clean energy and commercial anaerobic activated sludge”. 2. Survey on biogas utilization status of Citric Acid Industry whose capacity



Reference	Document
	comparable to the proposed project in year 2005, the notification is issued by China Fermentation Industry Association dated 2010-02-01. 3. Investigation Report on Application of EIC technology by Huangshi Xinghua Biochemical Ltd. on 2004-12-10.
<b>/SD/</b>	Starting Date evidence 1. EIC service agreement was signed on 2005-05-09; 2. EIC Equipment Manufacturing agreement was signed on 2005-06-03; 3. Biogas generator purchase agreement was signed on 2005-12-07; 4. Powerhouse construction agreement was signed on 2006-01-10.
<b>/SCPI/</b>	Stakeholder Consultation Process evidences: Questionnaires
<b>/TS/</b>	Technical Specification 1. EIC technical parameter indicated in EIC service agreement; 2. Boiler technical parameter was certified recognized local inspection institute on 2006-05-09; 3. Biogas generator set technical parameter was provided by equipment manufactory.
<b>/WMR/</b>	Wastewater monitoring report by Huangshi Environmental Monitoring Station: Huang Huan Jian Shui Zi [2008] 163, on 2008-05-28.
<b>/WTR/</b>	Wastewater Treatment Records
<b>/XLS/</b>	Emission reduction calculation spreadsheet

**Table 7-2:** Background investigation and assessment documents

Reference	Document
<b>/AMS I.C./</b>	Thermal energy production with or without electricity (Version 14) EB 46
<b>/AMS III.H./</b>	Methane Recovery in Wastewater Treatment (Version 12) EB 47
<b>/CIM/</b>	Chemical project Investment Method and Parameter published by National Petroleum and Chemical Bureau in year 2000 and still valid in the chemical industry.
<b>/CPM/</b>	TÜV Nord JI / CDM CP Manual (incl. CP procedures and forms)
<b>/CEPY/</b>	China Electric Power Yearbook 2005-2007



Reference	Document
<b>/CESY/</b>	China Energy Statistics Yearbook 2005-2007
<b>/GB/</b>	GB19430-2008 issued by National Environment Protection Bureau Effluent standard of pollutants for citric acid industry
<b>/GCP/</b>	UNFCCC: Guidelines for completing the simplified project design document (CDM-SSC-PDD) and the form for submissions on methodologies for small-scale CDM project activities (F-CDM-SSC-Subm)
<b>/GGS/</b>	General Guidance for SSC methodologies, version 12 (EB 41, Annex 20)
<b>/GEF/</b>	Official data sources for Grid Emission Factor (Central China Power Grid) published by the Chinese DNA.
<b>/IPCC-GP/</b>	IPCC Good Practice Guidance & Uncertainty Management in National Greenhouse Gas Inventories, 2000
<b>/IPCC-RM/</b>	Revised 2006 IPCC Guidelines for National Greenhouse Gas Inventories: Reference Manual
<b>/KP/</b>	Kyoto Protocol (1997)
<b>/MA/</b>	Decision 17/CP. 7 (Marrakesh – Accords & Annex to decision 17/CP.7)
<b>/NSC/</b>	Notice of the general office of the State Council concerning the Strict Prohibition of the Construction of Thermal Power Units with a Capacity of 135MW or below, issued by the General Office of the State Council [2002] 6.
<b>/PDD-T/</b>	Project Design Document Form (CDM PDD) - Version 03
<b>/SMP/</b>	Simplified modalities and procedures for small-scale clean development mechanism project activities (Annex II to Decision 21/CP.18)
<b>/SSG/</b>	Small Scale project guidance: General Guidance for SSC methodologies, version 12 (EB 41, Annex 20)
<b>/TBI/</b>	Tool applied for Baseline Identification Combined tool to identify the baseline scenario and demonstrate additionality (version 02.2)
<b>/TEF/</b>	Tool to calculate the emission factor for an electricity system (Version 2)
<b>/VVM/</b>	CDM Validation and Verification Manual (Version as per EB 51)

**Table 7-3: Websites used**

Reference	Link	Organisation
/cfia/	<a href="http://www.cfia.org.cn/">http://www.cfia.org.cn/</a>	China Fermentation Industry Association
/dna/	<a href="http://cdm.ccchina.gov.cn/english/index.asp">http://cdm.ccchina.gov.cn/english/index.asp</a>	National Development and Reform Commission (DNA of China)
/hcdm/	<a href="http://www.cdm.hb.cn/index.asp">http://www.cdm.hb.cn/index.asp</a>	Hubei CDM service centre
/ipcc/	<a href="http://www.ipcc-nggip.iges.or.jp">www.ipcc-nggip.iges.or.jp</a>	IPCC publications
/ls/	<a href="http://www.iwatertech.com">http://www.iwatertech.com</a> <a href="http://wenda.tianya.cn">http://wenda.tianya.cn</a>	Literature Search
/nw/	<a href="http://www.newenergy.org.cn/html/0068/2006817_11465.html">http://www.newenergy.org.cn/html/0068/2006817_11465.html</a>	New energy web : Research of biogas resource and utilization, available since 2006-08-17
/unfccc/	<a href="http://cdm.unfccc.int">http://cdm.unfccc.int</a>	UNFCCC

**Table 7-4: List of interviewed persons**

Reference	Mol <sup>1</sup>		Name	Organisation / Function
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	SANG, Zai Hua	Huangshi Xinghua Biochemical Ltd. / General Manager
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	YIN, Qing Nian	Huangshi Xinghua Biochemical Ltd. / Environment Department
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	YE, Wen Jin	Huangshi Xinghua Biochemical Ltd. / Bio-Chemistry Department
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	WANG, Zai Ming	Huangshi Xinghua Biochemical Ltd. / Bio-Chemistry Department
/IM01/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms	LI, Ling	Huangshi Xinghua Biochemical Ltd. / Bio-Chemistry Department

Reference	Mol <sup>1</sup>		Name	Organisation / Function
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	XIONG, You Pu	Huangshi Xinghua Biochemical Ltd. / No.1 Power Workshop
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	CHEN, Shui Ping	Huangshi Xinghua Biochemical Ltd. / No.1 Power Workshop
/IM01/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	ZHANG, Chang Ming	Huangshi Xinghua Biochemical Ltd. / No.2 Power Workshop
/IM02/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	HU, Li Jiao	Climate Bridge Ltd.
/IM02/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	WANG, Xiao Xi	Hubei CDM Center
/IM03/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	SHEN, Kai Ni	Majiazui Community
/IM03/	V	<input type="checkbox"/> Mr. <input checked="" type="checkbox"/> Ms.	LIU, Yan	Majiazui Community
/IM03/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	PENG, Yu Cheng	Huangshi City Environment Protection Bureau
/IM03/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	TIAN, Wen Bin	Huangshi City Development and Reform Commission
/IM03/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	CHEN, Wen	Xisai District Economic and Development Department
/IM04/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	SANG, De Quan	Jinan Diesel Engine Co., Ltd
/IM04/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	WU, Jiu Jiu	Jiangxi Keneng Technology Development Co., Ltd.
/IM04/	V	<input checked="" type="checkbox"/> Mr. <input type="checkbox"/> Ms	ZHANG, Le Qun	Bank of Communication

<sup>1)</sup> Means of Interview: (Telephone, E-Mail, Visit)

# ANNEX

- A1:** Validation Protocol
- A2:** Assessment of Baseline Identification
- A3:** Assessment of Financial Parameters
- A4:** Assessment of Barrier analysis
- A5:** Outcome of the GSCP
- A6:** Appointment certificates of the team members

## ANNEX 1: VALIDATION PROTOCOL

**Table A-1: Requirements Checklist**

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<b>A. General Description of Project Activity</b>				
<b>A.1. Approval</b> <i>The written approval of the parties involved is a mandatory requirement</i>				
A.1.1. Has the project provided written approvals of all parties involved? (EB 51 Annex 3 §44) <i>Indicate whether a letter of approval has been received, with a clear reference to the supporting documentation.</i> <i>Indicate whether this letter was provided to the DOE by the project participants or directly by the DNA</i>	Host country approval (hereafter refer to HCA) is submitted, its English version is No.1930, and Chinese version is NDRC [2009]950 dated 2009-04-09.  However, at the time of the pre-validation the letter of approval from Annex I country is not available.	/HCA/	CAR A1	OK
A.1.2. Are the approvals issued from organisations listed as DNAs on the UNFCCC CDM website?  (EB 51 Annex 3 §§ 44, 47, 48, 49 (b), 49 (c), 53)	DNA of host country (China) is National Development and Reform Commission, which is listed on the UNFCCC CDM website.  However, at the time of the pre-validation the letter of approval from Annex I country is not available. Therefore the	/HCA/	CAR A1	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<i>Indicate the means of validation employed to assess the authenticity</i>	situation of DNA is unclear.			
A.1.3. Do the written approvals confirm that the corresponding party is a Party to the Kyoto Protocol? (EB 51 Annex 3 §45, (a))	HCA confirms China as a party involved in the Kyoto Protocol.  However, at the time of the pre-validation the letter of approval from Annex I country is not available. Therefore, this issue is open.	/HCA/ /LOA/	CAR A1	OK
A.1.4. Do the written approvals confirm that the participation is voluntary? (EB 51 Annex 3 §45, (b))	HCA confirms China is a voluntary participation.  However, at the time of the pre-validation the letter of approval from Annex I country is not available. Therefore, this issue is open.	/HCA/	CAR A1	OK
A.1.5. Does the written approval from the host country confirm that the project contributes to the sustainable development in the country? (EB 51 Annex 3 §45, (c))	By means of document review, the HCA confirms that the project contributes to the sustainable development in the country.	/HCA/	OK	OK
A.1.6. Do the written approvals refer to the precise project title in the PDD submitted for registration? (EB 51 Annex 3 §45 (d), 50)	HCA indicates the project as Methane Recovery and Power Generation Project in High-concentrated Organic Wastewater Treatment in Hubei, China, and which is the same title of the PDD for the GSP.  However, at the time of the pre-validation the letter of approval from Annex I country is not available. Therefore, this issue is open.	/HCA/	CAR A1	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
A.1.7. Are the written approvals unconditional with regard to A.1.3 to A.1.6? (EB 51 Annex 3 §46)	Please refer to the issues raised above.		<del>CAR</del> A1	OK
A.1.8. Is the information regarding the project participants listed in section A3 and in Annex 1 of the PDD internally consistent to each other? (EB 51 Annex 3, § 51)	Yes, the information regarding project participants listed in section A3 and in Annex 1 of PDD is consistent with each other.	/PDD/	OK	OK
A.1.9. Are all project participants listed in the PDD approved at least by one Party involved? <i>Indicate whether the participation of the project participant(s) has been approved by a Party to the Kyoto Protocol.</i> <i>Describe the means of validation employed to draw this conclusion.</i>	HCA approves Huangshi Xinghua Biochemical Ltd. as participant from Host Country.  However, at the time of the pre-validation the letter of approval from Annex I country is not available. Therefore, this issue is open.	/HCA/	<del>CAR</del> A1	OK
A.1.10. Are any other project participants approved but not listed in the PDD? (EB 51 Annex 3, § 51)	No. There are no other project participants approved but not listed in the PDD	/HCA/ /PDD/	OK	OK
A.1.11. Does the DoE have a direct contractual relationship with the PP? (EB 51 Annex 3, §51 and EB 50, Annex 48, §§ 7-9) <i>Check whether the PPs listed in the published PDD are still listed in the PDD going to be submitted to request for registration.</i>	The DoE has a direct contractual agreement with the PP. The contract was reviewed in the database.			OK



Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<b>A.2. Contribution to Sustainable Development</b>  <i>The project's contribution to sustainable development is assessed.</i>				
A.2.1. Has the host country confirmed that the project assists it in achieving sustainable development? (EB 51 Annex 3, §§ 123 – 125) <i>Contain a statement confirming whether the letter of approval by the DNA of the host party confirmed the contribution of the project to the sustainable development of the Host Party.</i>	Yes, HCA confirmed the contribution of the project to the sustainable development of the Host Party.	/HCA/	OK	OK
A.2.2. Will the project create other environmental or social benefits than GHG emission reductions? (EB 51 Annex 3, §§ 123 – 125) <i>Describe the other positive aspects not related to GHG emission reduction on the environment</i>	Besides the GHG emission reduction, the project will reduce odour emissions and create local employment opportunity.	/PDD/ (A.2)	OK	OK
<b>A.3. PDD editorial aspects</b>  <i>The PDD used as a basis for validation shall be prepared in accordance with the latest template and guidance from the CDM Executive Board available on the UNFCCC CDM website.</i>				
A.3.1. Has the latest version of the PDD form been applied? (EB 51 Annex 3, § 55)	Yes, the latest version CDM-SSC-PDD 03 of the PDD form has been applied.	/PDD/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
A.3.2. Has the PDD been duly filled in accordance with the latest guidance(s)? (EB 51 Annex 3, §§ 56, 57)	The PDD form was in accordance with the latest Guidelines for Completing the Simplified Project Design Document (CDM-SSC-PDD) and the form for Proposed for Proposed New Small Scale Methodologies (CDM-SSC-NM) Ver05.	/PDD/ /GPDD/	OK	OK
<b>A.4. Technology to be employed</b> <i>Validation of project technology focuses on the project engineering, choice of technology and competence/maintenance needs. The DOE should ensure that environmentally safe and sound technology and know-how is used.</i>				
A.4.1. Does the PDD contain a clear, accurate and complete project description? (EB 51 Annex 3, §§ 58, 59)	No, project description is not clear, accurate and complete The following aspects should be clarified in Section A.2:  Description of the project activity should be revised as per practice, e.g. the design and usage of the biogas output from	/PDD/ (A.4.2.)  /FPA/	<del>CAR</del> A2	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<p><i>The PDD shall contain a clear description of the project activity which provides the reader with a clear understanding of the precise nature of the project activity and the technical aspects of its implementation.</i></p> <p><i>Pl. consider esp. chapters A.2, A.4.2 and A.4.3 (in case of LSC PDD) for assessment.</i></p> <p><i>Describe the process undertaken to validate the accuracy and completeness of the project description.</i></p> <p><i>Contain the DOE's opinion on the accuracy and completeness of the project description.</i></p>	<p>the UASB reactor;</p> <p>The main information of the equipment involved in the project should be provided in more detail in Section A.4.2. E.g. boiler, gas container, cooling facility and measuring equipment.</p>			
A.4.2. Is this description in accordance with the real situation or (in case of greenfield projects) is it most likely that the project will be implemented acc to the project description	No. please refers to the issues raised in A.4.1.	/PDD/ /TGP/	CAR A2	OK
<p>A.4.3. In case the project involves alteration of the existing installation or process, is a clear description available regarding the differences between the project and the pre-project situation? (EB 51 Annex 3, §§63, 64)</p> <p><i>Describe the steps taken to validate this issue.</i></p>	Not applicable. By means of document review it can be confirmed that the project does not involve alteration of the existing installation or process.	/PDD/ /IM01/ /FSR/ /TGP/	OK	OK
<p>A.4.4. Does the project design engineering reflect current good practices?</p> <p><i>Consider the equipment specifications, literature (e.g. EU</i></p>	Yes, an Erratic Inner Circulation (EIC) reactor has been booked for the aerobic aeration process on 2005-05-09, and a biogas generator has been introduced into cogeneration	/PDD/ (A.4.3.)	CL A3	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (Means and results of assessment)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<i>BREF papers) and professional experiences. Describe the process undertaken to assess the engineering.</i>	<p>process 2005-12-07, both of which are advanced technical during the project planning stage (year 2005), the information has been confirmed by interviewing contractors during validation.</p> <p>The emission reductions result from the displacement of the grid based power.</p> <p>However, as per the description In PDD section B.5. the operation of EIC is not stable. Whether it will cause any environmental impact or not should be justified.</p>	(B.5.) /SD/ /IM01/ /IM03/		
<p>A.4.5. Does the project use state of the art technology or would the technology result in a significantly better performance than any commonly used technologies in the host country?</p> <p><i>Describe the process undertaken to assess the state of the art technology.</i></p>	<p>Yes. The project uses state-of-the-art technology. The verification is based on the sectoral knowledge of the validation team</p>	/PDD/ (A.4.3.) /IM01/ /FSR/	OK	OK
<p>A.4.6. Does the project make provisions for meeting training and maintenance needs?</p> <p><i>Describe the process undertaken to assess the maintenance and training needs.</i></p>	<p>Training and maintenance needs for the monitoring staff and operators are provided. This was confirmed during interview.</p>	/PDD/ (B.7.2.) /IM01/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<b>A.5. Small scale project activity</b> <i>It is assessed whether the project qualifies as small-scale CDM project activity</i>				
A.5.1. Does the project qualify as a small scale CDM project activity as defined in decision 4 / CMP.1 annex II? (EB 51 Annex 3, § 135 (a)) <i>Describe the steps taken to validate this issue.</i>	Yes, the project is a newly built Methane Recovery and Power Generation Project, its aggregate emission less than 60kt CO2 equivalent annually from all type III components of the project activity. And its installed generator capacity of 3MW, which is less than 15MW, therefore it is a small scale CDM project activity.	/PDD/ /AMS-III.H./ /AMS-I.C./	OK	OK
A.5.2. Does the project apply one of the approved small scale categories and any methodology and tool referred therein? (EB 51 Annex 3, § 135 (b)) <i>Check, if applicable the expiry dates of the applied methodology. Further, take into consideration the general guidance to the methodologies<sup>2</sup>, which provide guidance on equipment capacity, equipment performance, sampling and other monitoring related issues.</i>	Yes, the project applies the approved methodologies AMS-III.H. ver. 12 and AMS-I.C. ver. 14.  This was checked on the UNFCCC webpage.	/PDD/ /unfccc/	OK	OK
A.5.3. Is the small scale project activity not a debundled component of a larger project activity? (EB 51 Annex 3, § 135 (c)) <i>Describe the steps taken to validate this issue. PI refer to</i>	The project owner has not developed other small scale projects whose project boundary is within 1km of the project boundary of the specific project at the closest point.	/PDD/ (A.4.5) /IM01/	OK	OK

<sup>2</sup> <http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<i>the Compendium of guidance on debundling (EB 36, Annex 27).</i>				
A.5.4. Is an assessment of the environmental impacts of the proposed SSC CDM project activity required by the host Party? (EB 51 Annex 3, § 135 (d))	In China, an Environmental Impacts Assessment /EIA/ is required according to Chinese legislation. The EIA report of the project has been approved by local government /AEIA/.  The EIA and approval of the EIA was reviewed and assessed as reliable.			
<b>B. Project Baseline, Additionality and Monitoring Plan</b>				
<b>B.1. Application of the Methodology</b>				
B.1.1. Does the project apply an approved and applicable CDM methodology and a valid version thereof? (EB 51 Annex 3, §65) <i>Describe the steps taken to validate this issue.</i>	The project applies baseline methodology AMS-III.H. ver. 11 "Methane Recovery in Wastewater Treatment" and AMS-I.C. ver. 14 "Thermal energy production with or without electricity".  During the validation, it was observed that the version 12 of the methodology AMS III.H was available on the UNFCCC webpage. To ensure a more appropriate approach of the validation the most recent methodology should be used.  After checking with unfccc website, the validation team confirmed that the methodologies are approved and applicable. The methodology AMS I.C version 14 is valid.	/PDD/ (B.1., B.4.)  /AMS- III.H./  /AMS- I.C./	<del>CAR</del> B1	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (Means and results of assessment)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>B.1.2. Is the applied CDM methodology identical with the version available on the UNFCCC website? (EB 51 Annex 3, §§65, 69)</p> <p><i>Describe the steps taken to validate this issue.</i></p>	<p>Yes, the applied CDM methodology AMS I.C version 14 is identical with the version available on UNFCCC website.</p> <p>Please refer to CAR B1.</p> <p><a href="http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html">http://cdm.unfccc.int/methodologies/SSCmethodologies/approved.html</a></p>	<p>/PDD/ /AMS-III.H./ /AMS-I.C./ /unfccc/</p>	<p><del>CAR</del> B1</p>	<p>OK</p>
<p>B.1.3. Are all applicability criteria in the methodology, the applied tools or any other methodology component referred to therein fulfilled?</p> <p>(EB 51 Annex 3, §§66 (a), 66 (b), 68, 70, 75)</p> <p><i>Describe for <u>each</u> applicability criterion listed in the selected approved methodology the steps taken to assess the information contained in the PDD.</i></p>	<p>As describe in the PDD of the project, all applicability criteria are fulfilled as follows:</p> <p>In AMS III.H the items below has been considered:</p> <ul style="list-style-type: none"> <li>- 1. (iv) Introduction of biogas recovery and combustion to an existing anaerobic wastewater treatment system;</li> <li>- 1. (vi) The existing anaerobic wastewater treatment system without biogas recovery;</li> <li>- 2. (a) The recovered biogas may also be utilized for thermal or electrical energy generation directly in stead of combustion/flaring.</li> <li>- 3. If the recovered biogas is used for the project activities covered under paragraph 2(a), that component of the project activity can use a corresponding methodology under type I;</li> <li>- 12. Measures are limited to those that result in aggregate emission reductions of less than or equal to 60k tCO<sub>2</sub> equivalent annually from all type III components of the project activity.</li> </ul>	<p>/PDD/ (B.2.) /AMS-III.H./ /AMS-I.C./</p>		<p>OK</p>



Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	<p>In AMS I.C. the items below has been considered:</p> <ul style="list-style-type: none"> <li>- 1. Renewable energy technologies that supply users with thermal energy that displaces fossil fuel use.</li> <li>- 2. Biomass-based co-generating systems that produce heat and electricity;</li> <li>- 5. (c) If the emission reductions of the cogeneration project activity are solely on account of electrical energy production (i.e. no emission reductions accrue from thermal energy component), the total installed electrical energy generation capacity of the project equipment of the cogeneration unit shall not exceed 15 MW.</li> </ul> <p>However, CL B2 is raised: please demonstrate why the methodological “Tool to determine project emissions from flaring gases containing methane” is not applicable.</p> <p>Please demonstrate the baseline considering the projected increase in citric acid processing capacity. Please refer to CAR B4.</p>		<p>CL B2</p> <p>CAR B4</p>	

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<p>B.1.4. In case one or more applicability criteria have not been met, has the validation team requested clarification to, revision of or deviation from the methodology in accordance with the latest guidelines? (EB 51 Annex 3, §§ 71 -74)</p>	<p>By means of document and site visit it can be confirmed that all applicability criteria have been met. Please also refer to section B1.3.</p> <p>:</p>		OK	
<p>B.1.5. Is the project in accordance to every other stipulation or requirement mentioned in all sections of the methodology? (EB 51 Annex 3, §70)</p> <p><i>Describe the steps taken to check whether the proposed project activity meets all the other possible stipulations and /or limitations mentioned in all sections of the approved methodology selected.</i></p>	<p>The stipulations or requirements of the methodologies like i.e location of the treatment plant shall be uniquely defined were reviewed. It can be confirmed that the project is in accordance to every stipulation and requirement of the methodology.</p> <p>Nevertheless, please refer to B.1.3., the exclusion of the tool is insufficient.</p> <p>Please refer to B.2.1., the exclusion of the sections or components is not clear, thus the applicability of small scale methodology is not convincing.</p> <p>Furthermore, by means of site visit it can be confirmed that the project activity is not expected to result in significant emissions, related both to project and leakage, other than those listed in the methodology.</p>	<p>/PDD/ /AMS-III.H./ /AMS-I.C./</p>	<p>CL B2 CL B3</p>	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<b>B.2. Project Boundaries</b> <i>Project Boundaries are the limits and borders defining the GHG emission reduction project</i>				
<p>B.2.1. Are the project's spatial boundaries (geographical) clearly defined?</p> <p>(EB 51 Annex 3, §§67 (a), 77 – 79)</p> <p><i>Provide information on how the validation of the geographical boundary has been performed either based on reviewed documented evidence or by describing what was observed/viewed during a site visit.</i></p>	<p>The project activity is located in Huangshi Xinghua Biochemical Ltd., Huangshi City, Hubei province, P. R. China.</p> <p>The geographic coordinates is east longitude 115° 03' 54" and north latitude 30° 14' 55" .</p> <p>The project boundary includes physical, geographical site where the wastewater and sludge treatment takes place in baseline and project situation. It covers all facilities affected by the project activity including sites where the processing, transportation and application or disposal of waste products as well as biogas takes place.</p> <p>As per AMS-III.H., the excluded sections or components of the system, e.g. sludge treatment facility followed EIC reactor, aeration tank, etc. should be justified.</p>	<p>/PDD/ (A.4.1.4.)  /PG/</p>	<p>CL B3</p>	<p>OK</p>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<p>B.2.2. Are all sources and GHGs included in the project boundary as required in the applied methodology?</p> <p>(EB 51 Annex 3, §§67 (a), 77 – 79)</p> <p><i>Provide information on how the validation of the GHGs and sources has been performed either based on reviewed documented evidence or by describing what was observed/viewed during a site visit.</i></p>	<p>The methodology identifies sources and GHGs needed to be calculated, including baseline methane emission and project electricity consumption and methane release, e.g. in AMS-III.H para 16, formula 1, the calculation of the baseline methane emission from electricity consumption, the WWT system, decay of sludge etc.</p> <p>However, the project boundary should be justified, please refer to B.2.1.</p> <p>By means of site visit and document review it can be confirmed that all sources and GHGs are included.</p>	/AMS-III.H./	CL B3	OK
<p>B.2.3. In case the methodology allows to choose whether a source and/or gas is to be included, is the choice sufficiently explained and justified? (EB 51 Annex 3, §§67 (a), 77 – 79)</p> <p><i>Confirm if the justification provided by the PPs is reasonable, based on assessment of supporting documented evidence provided by the PPs or by onsite observations.</i></p>	Please refer to CL B3.	/AMS-III.H./	CL B3	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<b>B.3. Baseline Identification</b> <i>The choice of the baseline scenario will be validated with focus on whether the baseline is a likely scenario, and whether the methodology to define the baseline scenario has been followed in a complete and transparent manner.</i>				
B.3.1. What possible baseline scenarios have been considered? (EB 51 Annex 3, §§ 67 (b), 82) <i>Fill in all alternatives in table A-2.</i>	<p>Three options have been identified as possible baseline scenarios:</p> <ol style="list-style-type: none"> <li>1) Increase the treatment capacity of UASB without biogas recovery;</li> <li>2) Adopt EIC technology without biogas recovery;</li> <li>3) Adopt EIC technology, recovery of the biogas from EIC and UASB for CHP generation, but not developed as CDM project.</li> </ol> <p>However, information of the baseline determination is insufficient, issues followed are raised:</p> <ul style="list-style-type: none"> <li>- Which criteria is used to identify the baseline;</li> <li>- Whether the baseline determined is compliance with local policy or regulation;</li> <li>- Parameter COD<sub>removed, UASB, y</sub> is not transparent, please refer to table B-2.</li> <li>- Please demonstrate the baseline by considering the projected increase in citric acid processing capacity.</li> </ul>	/PDD/ (B.4)	CAR B4	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	Please also refer to table A-2.			
<p>B.3.2. Is the list of alternatives complete? (EB 51 Annex 3, §§67 (b), 82)</p> <p><i>Describe how it was validated that all alternatives are plausible and no plausible alternative is excluded from the consideration</i></p>	<p><input type="checkbox"/> All plausible alternative scenarios listed in the approved methodology have been considered. In the course of document review and site visit, it has been validated that no other alternatives which supply comparable outputs and / or services are to be taken into consideration. Thus no plausible scenario has been omitted.</p> <p><input checked="" type="checkbox"/> The following alternative scenarios/options have been omitted. Corresponding CAR(s)/CL(s) has /have been issued</p> <p>Please refer to B.3.1., justification is requested.</p>	/PDD/ (B.4)	CAR B4	OK
<p>B.3.3. What has been identified as the baseline scenario? (EB 51 Annex 3, §§80, 81, 85)</p> <p><i>Describe the chosen BL scenario</i></p>	<p>The baseline of the project is <i>the treatment of the wastewater with UASB reactor, biogas from UASB would be emitted to the atmosphere, and electricity is imported from the grid.</i></p>	/PDD/ (B.4)	OK	OK
<p>B.3.4. Has the baseline scenario been determined according to the methodology? (EB 51 Annex 3, §§81, 86 (e))</p>	<p>For details of the assessment regarding the evaluation of the baseline scenario pl. refer to table A-2.</p> <p><input type="checkbox"/> The determination has been carried out as per the applied methodology.</p> <p><input checked="" type="checkbox"/> The following CARs / CLs have been identified with respect to the selection of the baseline scenario:</p> <p>Refer to B.3.1., justification is requested.</p>	/PDD/ (B.4)	CAR B4	OK
<p>B.3.5. Has any plausible alternative scenario been excluded? (EB 51 Annex 3, § 82)</p>	<p>For details of the assessment regarding the evaluation of the baseline scenario pl. refer to table A-2.</p>	/PDD/ (B.4)	CAR B4	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<i>Describe how it is validated that no plausible alternative scenario has been excluded.</i>	<input type="checkbox"/> No plausible baseline scenario has been excluded. <input checked="" type="checkbox"/> The following plausible baseline scenarios have been excluded though no adequate justification has been provided for elimination. The following CARs / CLs have been issued:  Please refer to B.3.1., criteria used to identify the baseline is not clear.			
B.3.6. Has the baseline scenario been determined using conservative assumptions where possible?  (EB 51 Annex 3, §§ 83 - 86(a)-(c))  <i>Describe whether the choice of the identified baseline scenario is reasonable by validating the <u>key assumptions, calculations and rationales</u> used in the PDD. Describe whether these are <u>conservatively interpreted</u> in the PDD.</i>	<input type="checkbox"/> The baseline scenario has been determined using conservative assumptions where possible. Please refer to comments in table A-2 and sections B.3.2 to B.3.5 above. <input checked="" type="checkbox"/> The following CARs / CLs have been issued because assumptions used in the baseline determination have been assessed to be not conservative  The determination of the baseline scenario is not convincing, the conclusion will given until the issue raised in checklist B.3.2 to B.3.5 above has been closed.	/PDD/ (B.4.)	CAR B4	OK
B.3.7. Does the baseline scenario sufficiently take into account relevant national and/or sectoral policies, macro-economic trends and political aspirations?  (EB 51 Annex 3, §§ 84, 86(d))  <i>Describe whether the PP has shown that all relevant policies and circumstances have been identified and correctly considered in the PDD in accordance with the guidance by the Board. Pl. consider the guidance EB 22 annex 3</i>	Please refer to checklist B.3.1 the information is not available.	/PDD/ (B.4.)	CAR B4	OK



Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
(regarding E+ and E- policies).				
<p>B.3.8. Is the baseline scenario determination compatible with the available data and are all literature and sources clearly referenced?</p> <p>(EB 51 Annex 3, § 86 (a) – (c))</p> <p><i>Describe whether the documents and sources referred to in the PDD are correctly quoted and clearly referenced.</i></p>	Please refer to comments in B.3.6.	/PDD/ (B.4.)	CAR B4	OK
<p>B.3.9. Does the PDD contain a <i>verifiable</i> description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed CDM project activity.</p> <p>(EB 51, Annex 3, §85)</p>	Please refer to CAR B4.		CAR B4	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<b>B.4. Additionality Determination</b> <i>The assessment of additionality will be validated with focus on whether the project itself is not a likely baseline scenario.</i>				
<b>B.4.1. Methodology</b>				
<p>B.4.1.1. Does the PDD describe how the project is additional and does the additionality justification follow the requirements of the applied methodology and/or methodological tools?</p> <p>(EB 51 Annex 3, §§67 (d), 93, 94)</p> <p><i>Describe how it is validated that additionality justification is carried out in accordance with the applied methodology and/or applied methodological tools. Further focus your assessment on the reliability and credibility of data, rationales and assumptions, justifications and documentations provided by the PP.</i></p>	<p>In section B5 of the PDD the additionality of the project is described. The additionality justification was compared with the Guidelines for Completing the simplified Project Design Document respectively Attachment A to Annex B of the simplified modalities and procedures for small scale project activities. Furthermore, for verification the Guidelines for objective Demonstration and Assessment of Barriers version 01, EB 50 Annex 13 were taken into account for objective demonstration and assessment of barriers.</p> <p>The PDD describes an explanation to show that the project activity would not have occurred anyway due to the following barriers: Investment barrier, Technological barrier, Barrier due to prevailing practice.</p> <p>According to the Guidelines for objective Demonstration and Assessment of Barriers the nature of the company as well financial information were indicated in the PDD. Relevant documents like Financial Audit Report by Huangshi Daxin Zhengxin Accountant Firm was provided to the DOE and verified. Furthermore to demonstrate specific barrier relevant,</p>	<p>/PDD/ (B.5.) /SMP/ /GAB/ /NFK/</p>	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	technology studies were indicated in the PDD as well reviewed. ,  It can be confirmed that the justification follows the requirements.			
<b>B.4.2. Consideration of CDM before project start</b>				
B.4.2.1. Is the project starting date reported in accordance with the CDM glossary of terms? (EB 51, Annex 3, §103 (a))	Yes, the project start date in Section C.1.1 is 09/05/2005, when the EIC service agreement was signed. By checking the evidence of project activity timeline, including main equipment service agreement, purchase agreement, building construction agreement, etc., the project starting date is in accordance with the CDM glossary and is consistent with the timeline listed in PDD Section B.5.	/PDD/ (B.5.) (C.1.1.) /SD/	OK	OK
B.4.2.2. In case the project start date is on or after 2 <sup>nd</sup> August 2008 has the PP informed the DNA and UNFCCC about the intension to seek CDM status?  (EB 51 Annex 3, §§ 98, 99, 100) <i>Describe whether such a notification has been provided by the project participants within six months of the project activity start date; if NOT it shall be determined that the CDM was not seriously considered.</i>	Please refer to B.4.2.3		OK	
B.4.2.3. In case the project start date is before	The timeline is listed in B.5., which indicates that the EIC	/PDD/	OK	OK

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (Means and results of assessment)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>commencing of validation and 2<sup>nd</sup> August 2008, was the incentive from the CDM seriously considered and are details given in the PDD?</p> <p>(EB 51 Annex 3, §§ 99, 101)</p> <p><i>Describe whether the evidence to support such consideration is adequately and transparently described in the PDD.</i></p>	<p>Service Agreement and equipment purchase agreement were signed in year 2005, while the validation was started in year 2009, it is concluded that the starting date of the project activity is before the date of the validation.</p> <p>According to evidence checked during validation, the incentive from the CDM was seriously considered, as detailed given in the PDD, the continuous action in pursue the CDM was listed below:</p> <ol style="list-style-type: none"> <li>1. Board Resolution with decision of implementation CDM activity was determined on 2005-04-18;</li> <li>2. the project owner signed the CDM consultation agreement with Hubei CDM Service centre on 2006-10-26;</li> <li>3. Emissions Reduction Purchase Agreement (hereafter refer to ERPA) with Carbon Asset Management Sweden AB on 2007-01-26, but it is terminated on 2007-10-25;</li> <li>4. ERPA resigned between the project owner and Climate Bridge Ltd. on 2008-06-18;</li> <li>5. Submission of PDD for global stakeholder commenting process on 2009-04-01.</li> </ol> <p>Furthermore taken into account the "Guidance on the demonstration and assessment of prior consideration of the CDM (version 03)" from EB49 (Annex 22) it can be confirmed that the incentive from the CDM was seriously considered.</p>	<p>(B.5.) /CDM/ /ERPA/ /unfccc/</p>		
<p>B.4.2.4. How and when was the decision to</p>	<p>During site validation interview, it is confirmed that the project</p>	<p>/CDM/</p>	<p>OK</p>	<p>OK</p>

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<p>proceed with the project taken? <i>Describe the steps taken to validate the starting date.</i></p>	<p>owner has visited many waste water treatment facilities manufactory and cogeneration generator producer, and finally the project owner made a decision of using EIC reactor and Generator set 500GF-NK(1) (including Motor of Jichai 1FC6 456-6LA42).</p> <p>Meanwhile, due to technology is unfamiliar and immature; the Board decided to implement CDM activity on 18/04/2005.</p> <p>The CDM consideration is focus on the risk of technology. It is practice and reasonable.</p>	/IM01/		
<p>B.4.2.5. Is the project start date consistent with the available evidences? (EB 51 Annex 3, §101)</p> <p><i>Describe the evidence assessed regarding the prior consideration of the CDM (if necessary). Describe whether the evidence to support such consideration is adequately and transparently described in the PDD.</i></p>	<p>Yes, the project start date defined as 09/05/2005, is the date when the EIC service agreement was signed. The Agreement was provided to the DOE and assessed as reliable. Please refer to the B.4.2.1 and B.4.2.2, besides, the evidence of timeline is described adequately and transparently in the PDD.</p>	/PDD/ (B.5.) /SD/	OK	OK
<p>B.4.2.6. Was the decision to proceed with the project taken by a person which has the authority to do so? (EB 51 Annex 3, §100 (a))</p> <p><i>Describe the steps taken to validate this issue.</i></p>	<p>Yes, the chairman of board and board members have signed in meeting records, which confirms the decision to proceed with the project was taken by the board, who have the authority to do so.</p>	/PDD/ /CDM-1/	OK	OK
<p>B.4.2.7. How was the CDM involved in the decision making process?</p>	<p>Considering of the potential technical risks, CDM was defined as necessary in the project development.</p>	/PDD/ (B.5.)	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
(EB 51 Annex 3, § 101) <i>Describe the steps taken to validate this issue.</i>		/IM01/		
B.4.2.8. Do the evidences provided doubtlessly prove that continuous and real actions were taken in order to secure the CDM status?  (EB 51 Annex 3, § 101; EB 49 Annex 22, §7)	Please refer to B.2.4 as the evidences were verified to prove that continuous and real action were taken in order to secure the CDM status.	/CDM/ /PDD/	OK	OK
B.4.2.9. Is the gap of documented evidences to secure the CDM status less than 3 years and are the evidences relevant for substantiating the action taken, credible, reliable and complete?  (EB 49 Annex 22, §8)	The gap of documented evidences is less than 3 years and the evidences are relevant to substantiating the action taken.  Please refer to B. 4.2.3; the evidences were verified and assessed as reliable.	/CDM/ /IM01/	OK	
B.4.2.10. Did implementation of the project ceased after its commencement and did implementation recommence after consideration of the CDM?  (EB 51 Annex 58, §7)  <i>Describe the reasons for ceasing the project and explain why the incentive from CDM was necessary to recommence the implementation.</i>	Not applicable		OK	
B.4.2.11. Can the CDM involvement in the decision	Please refer to B.4.2.4, a serial action has been taken followed CDM decision making. By means of document	/PDD/ (B.5.)	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
assessed as serious? <i>Describe whether or not the project would have been undertaken without the incentive of the CDM.</i>  (EB 51 Annex 3, § 103 (b) – (c))	review the CDM involvement in the decision can be assessed as serious.  Besides, as per site interview, the project owner will not construct the project without considering CDM.	/CDM/ /IM01/		
<b>B.4.3. Identification of alternatives Step 1</b> (in case of SSC projects pl. skip steps 1 and 2)				
B.4.3.1. Have all realistic alternatives been identified to the project? <i>Describe whether the list of alternatives is complete. Describe how it is validated that the alternatives are realistic.</i>	Not applicable.		N/A	N/A
B.4.3.2. Contains the list of alternatives at least the status-quo situation and the project not undertaken as a CDM project? <i>Describe the steps taken to validate this issue.</i>	Not applicable.		N/A	N/A
B.4.3.3. Do all identified alternatives comply with applicable regulation? <i>Describe the steps taken to validate this issue. Refer to the regulations.</i>	Not applicable.		N/A	N/A
<b>B.4.4. Investment analysis Step 2</b> <i>In case the investment analysis as per step 2 is chosen to justify the additionality Annex 2 "Assessment</i>				



Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<i>of Financial Parameters” has to be used to provide additional details of the the calculation parameters..</i>				
<p>B.4.4.1. Is an appropriate analysis method chosen for the project (simple cost analysis, investment comparison analysis or benchmark analysis)?</p> <p><i>Describe why the selected analysis method is appropriate under consideration of potential revenues and costs, potential project alternatives and potential available benchmark values.</i></p>	Not applicable.		N/A	N/A
<p>B.4.4.2. Is a clear, viewable and unprotected Excel spreadsheet available for the investment calculation?</p> <p><i>Describe the steps taken to validate this issue.</i></p>	Not applicable.		N/A	N/A
<p>B.4.4.3. Does the period chosen for the investment analysis reflect the technical lifetime of the project activity or in case a shorter period is chosen, is the fair value of the project activity's assets at the end of the investment analysis period (as a cash inflow) included?</p> <p><i>Describe how the technical lifetime / period chosen for calculating financial parameter(s) is reviewed and which documents were utilised in the course of review. Describe furthermore the approach used to check the inclusion of a potential fair value.</i></p>	Not applicable.		N/A	N/A

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
B.4.4.4. Is the fair value calculated in accordance with local accounting regulations (where available) or international best practice? <i>State the accounting regulations applied for calculating the fair value and describe why these are applicable under the project specific circumstances. Describe potential mismatches between regulations and the approach applied for calculating the fair value.</i>	Not applicable.		N/A	N/A
B.4.4.5. Is the book value as well as the expectation of the potential profit or loss included in the fair value calculation?	Not applicable.		N/A	N/A
B.4.4.6. Are depreciation and other non-cash related items added back to net profits for the purpose to calculate the financial indicator?	Not applicable.		N/A	N/A
B.4.4.7. Is taxation excluded in the investment analysis or is the benchmark intended for post tax comparisons?	Not applicable.		N/A	N/A
B.4.4.8. Were the input values used in the investment analysis valid and applicable at the time of the investment decision?	Not applicable.		N/A	N/A
B.4.4.9. In case of project IRR: Are the costs of financing expenditures (loan repayments and interests) excluded from the calculation of project IRR?	Not applicable.		N/A	N/A

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
B.4.4.10. In case of equity IRR: Is the part of the investment costs, which is financed by equity considered as net cash outflow and is the part financed by debt excluded in net cash outflow?	Not applicable.		N/A	N/A
B.4.4.11. Is the type of benchmark chosen appropriate for the type of IRR calculated (e.g. local commercial lending rates or weighted average costs of capital for project IRR; required/expected returns on equity for equity IRR)?	Not applicable.		N/A	N/A
B.4.4.12. Is the benchmark value suitable for the project activity?	Not applicable.		N/A	N/A
B.4.4.13. Is it ensured that the project cannot be developed by other developers than the PP?	Not applicable.		N/A	N/A
B.4.4.14. Was the benchmark consistently used in the past for similar projects with similar risks?	Not applicable.		N/A	N/A
<b>B.4.5. Barrier analysis Step 3 or SSC additionality assessment</b>				
B.4.5.1. Are there any barriers given which have a clear and direct impact on the financial returns of the project?	The risk related barriers, that can have a negative effect on the financial performance was not considered. The barrier related to the unavailability of sources if finance will handled under 4.5.3.	/PDD/ (B.5) /SMP/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<p>(EB 51 Annex 3, §§ 114, 133, 136)</p> <p><i>In case of LSC projects those issues cannot be considered as barriers and shall be assessed in the investment analysis. In case of SSC projects the same fundamentals as for LSC projects shall apply, i.e. the assessment of the investment barrier according to EB 51 Annex 58.</i></p>				
<p>B.4.5.2. Are the barriers described risk related (e.g technology failure, other performance related risks)?</p> <p>(EB 51 Annex 3, §§ 115, 133, 136)</p> <p><i>Are there other barriers or barriers due to prevailing practice existent which would have led to higher emissions?</i></p>	<p>The technological barrier is described risk related:</p> <ol style="list-style-type: none"> <li>1. The EIC is an advanced technology, its treatment efficiency is not stable;</li> <li>2. Operation of the domestic biogas generators is not stable..</li> </ol> <p>Please refer to Annex 4.</p>	/Annex4/	OK	OK
<p>B.4.5.3. Has the unavailability of means of finance for the proejct been described and adequately substantiated? Do evidences doubtlessly prove that the financing of the project was assured only due to the benefit of the CDM?</p> <p>(EB 51 Annex 3, §§ 115, 136, EB 50 Annex 13, §9)</p>	<p>According to the financial audit report, issued by Huangshi Daxin Zhengxin Accountant Firm at the beginning of 2005, the liability of Huangshi Xinghua Biochemical Ltd. is 84% of the fix asset. The Financial Audit Report finalized by Huangshi Daxin Zhengxin Accountant Firm employed competent experts. The report authorized by Huangshi Administration for Industry and Commerce was verified and assessed as reliable. According to the FSR prepared by Hubei Chemical Industry Research &amp; Design Institute the investment of the project activity is defined as 19.335 million RMB, The investment includes an investment of the biogas system with more than 50%. The project owner approached a number of banks to secure financing for the project. As of the liability and the high investment, the bank declined the loan requests. This was evidenced with the loan rejection letter</p>	<p>/Annex4/ /BL/ /FSR/ /FRH/</p>	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	<p>from the Huangshi City Commercial Bank on 2005-03-09. The letter was verified and assessed as reliable. On 2005-04-25, a loan intent letter was issued by the Huangshi Bank of Communication, which indicated the loan would be issued within 24 months. On 2006-01-14 the bank loan contract with the Huangshi Bank of Communication was signed. As the letter indicates CDM revenues it can be concluded that the project activity could not access appropriate capital without consideration of the CDM revenues. The loan contract was verified.</p> <p>Taken into account the declined loan approval, the bank loan contracted with the Huangshi Bank of Communication, and the audit report on liability-asset of the company, it can be assessed that the Project owner has the unavailability of means of finance.</p>			
<p>B.4.5.4. How is it justified and evidenced that the barriers given in the PDD are real?</p> <p>(EB 51 Annex 3, § 115 (a))</p>	<p>Please refer to Annex 4 assessment of the barriers analysis.</p> <p>However, since the assessment should be based on more objective evidences, demonstration given in PDD on the barriers is not sufficient. Therefore CAR B5 was issued:</p> <ul style="list-style-type: none"> <li>- Please give more evidences to support that CDM plays the key role in applying bank loan to overcome the financial barrier.</li> <li>- Please give more evidences on the validity of technical barrier, especially the instability of EIC and lack of knowledge of CHP system;</li> </ul>	<p>/PDD/ (B.5) /BL/ /FSR/ /IM01/ /IM03/ /BL/ /FSR/</p>	<p>CAR B5</p>	<p>OK</p>

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (Means and results of assessment)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
	<ul style="list-style-type: none"> <li>- The choice of Hubei Province as the region where first-of-its-kind technology, i.e. EIC and biogas CHP, took place should be justified.</li> <li>- The barriers due to the prevailing practice, in particular, whether there are industries with similar or comparable technologies to the project activity that have installed similar technologies in the country/region and how the application of the technology differs between such industries and the citric sector.</li> </ul>	/FRH/		
<p>B.4.5.5. How is it justified that one or a set of real barriers prevent(s) the implementation of the project activity and do not prevent the implementation of at least one of the alternatives?</p> <p>(EB 51 Annex 3, § 115 (b))</p>	<p>The justification that the barriers prevent the implementation of the project activity is given in Annex 4 respectively B.4.5.1-4.5.4.</p> <p>The barriers given will not prevent the implementation of the possible alternative W1+P1. Here the electricity consumption from the grid doesn't face the financial barrier, as no additional investment is necessary. Furthermore for electricity consumption from the grid no technical barrier is relevant. According to Xie Xin et al. „Status in Quo of Citric Acid Industrial Wastewater Treatment“. Industrial Water Treatment 2004 24 (1):8-11, the UASB reactor is common practice in the citric acid sector to reduce COD.</p> <p>Besides, according to survey on biogas utilization status made by China Fermentation Industry Association on 2010-02-01, it is a common practice that waste water from citric acid sector is treatment by UASB without methane recovery.</p>	/ RP-1/ / RSP-2/ FSR/ / FRH/	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	Therefore for the alternative UASB reactor without methane recovery no technical barrier exists.			
B.4.5.6. Does the review of relevant background information on the nature of the company(ies) and entitiy(ies) involved in the financing and implementation of the project sufficiently justify that the barriers related to the lack of access to capital, technologies and skilled labour are real?  (EB 50 Annex 13, §4)	According to the financial audit report, issued by Huangshi Daxin Zhengxin Accountant Firm at the beginning of 2005, the liability of Huangshi Xinghua Biochemical Ltd. is 84% of the fix asset. The Financial Audit Report finalized by Huangshi Daxin Zhengxin Accountant Firm employed competent experts. The report authorized by Huangshi Administration for Industry and Commerce was verified and assessed as reliable. According to the FSR prepared by Hubei Chemical Industry Research & Design Institute the investment of the project activity is defined as 19.335 million RMB, The investment includes an investment of the biogas system with more than 50%. The project owner approached a number of banks to secure financing for the project. As of the liability and PP's inexperience with methane recovery, the bank declined the loan requests. This was evidenced with the loan rejection letter from the Huangshi City Commercial Bank on 2005-03-09. The letter was verified and assessed as reliable. On 2006-01-14 the bank loan contract with the Huangshi Bank of Communication was signed. As the letter indicates CDM revenues it can be concluded that the project activity could not access appropriate capital without consideration of the CDM revenues. The loan contract was verified.	/BL/ /FSR/ /FRH/	OK	OK



Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	Taken into account the declined loan approval, the bank loan contracted with the Huangshi Bank of Communication, and the audit report on liability-asset of the company, it can be assessed that the lack of access to capital is real.			
B.4.5.7. Has it been demonstrated in an objective way how the CDM alleviates each of the identified barriers to a level that the project is not prevented anymore from occurring by any of the barriers?  (EB 50 Annex 13, §5)	As the letter of the Huangshi Bank of Communication indicates CDM revenues it can be assessed that the project is not prevented anymore from occurring by the financial barrier.  Please refer to Annex 4 and B.4.5.1-B.4.5.6.	/BL/ /FSR/ /FRH/	OK	OK
B.4.5.8. Would provision of additional financial means lead to the mitigation of the barrier(s) demonstrated?  (EB 50 Annex 13, §7) <i>Describe why provision of additional financial means would not lead to mitigation of the barrier(s) demonstrated and hence analysing the project's additionality within the framework of an investment analysis is inappropriate. .</i>	Please refer to B.4.5.7	/BL/ /FSR/ /FRH/	OK	
<b>B.4.6. Common practice analysis Step 4</b> (in case of SSC projects skip this step)				
B.4.6.1. Is the defined region for the common practice analysis appropriate for the technology/industry type?	Not applicable.		N/A	N/A

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
B.4.6.2. To what extent similar projects have been undertaken in the relevant region?	Not applicable.		N/A	N/A
B.4.6.3. In case similar projects are identified, are there any key differences between the proposed project and existing or ongoing projects and what kind of differences are observed?	Not applicable.		N/A	N/A
<b>B.5. Ex-Ante Calculation of GHG Emission Reductions</b>  <i>It is assessed whether the ex-ante calculations of project emissions, baseline emissions, leakage emissions are stated according to the methodology and whether the argumentation for the choice of default factors and values – where applicable – is justified. Furthermore calculation of emission reductions shall be assessed.</i>				
B.5.1. Are the equations applied correctly according to the applied approved methodology? (EB 51 Annex 3 §§67 (c), 88, 89, 91)  <i>Describe clearly the steps taken to assess whether The methodology has been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions.</i>	<input checked="" type="checkbox"/> The equations applied for calculation are correctly applied according to the approved methodology. <input type="checkbox"/> The following mistakes have been identified in this context:  According to methodology AMS-III.H. The following issues are detected in the baseline emission calculation: 1 Demonstration of equation 15 in AMS-III.H is not convincing, i.e. explanation of calculation for $ER_{y, ex-post}$ is insufficient, the monitoring method is not defined for $BE_{y, ex-}$	/PDD/ (B.6)	CAR B6	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
	<p>post;</p> <p>2 Please provide the situation of flaring/ combustion MD<sub>y</sub>;</p> <p>3 Please justify the data chosen for MCF and COD<sub>removed,i,y</sub> in GSP PDD section B.6.2, e.g. what kind of MCF should be defined;</p> <p>4 Please justify the data listed in table B-4, as well as its source, especially, please justify whether the concentration of COD<sub>discharge</sub> as 300 mg/L is in line with local regulation;</p> <p>5 The calculation method of Emission Reduction is not clear, please explain why there is different between PDD page 17 and page 23.</p> <p>6 Since the project affected the sludge process, justify why the baseline emission from sludge process is not considered. Evidence of sludge treatment keeps the same way prior and during project should be provided;</p> <p>7 Some parameters are not clear described or calculated: EG<sub>BL</sub>, EF<sub>ww, discharge, y</sub>, Q<sub>ww, i, y</sub>, COD<sub>ww, discharge, BL, y</sub>, W<sub>CH4,y</sub>;</p> <p>8 Source of parameters listed in table B-4 is not clear, whether it is according to AMS-III.H item 17 or 18 should be demonstrated, e.g. COD<sub>removed, i, y</sub> is not clear.</p>			
B.5.2. In case the methodology allows for different methodological choices, are the equations applied properly justified and have they been	Not applicable, as the methodology doesn't allow for different methodological choices.		N/A	N/A

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (Means and results of assessment)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>used reflecting the other methodological choices (i.e. baseline identification)?</p> <p>(EB 51 Annex 3 §§ 89, 90)</p> <p><i>Describe whether proper justification has been provided (based on the choice of the baseline scenario, context of the project activity and other evidence provided) and whether the correct equations have been used reflecting the relevant methodological choices.</i></p>				
<p>B.5.3. Have conservative assumptions been used when calculating the project emissions?</p> <p>(EB 51 Annex 3 §§ 89, 90)</p> <p><i>Describe clearly the steps taken to assess whether all the assumptions and data used by the PP are listed in the PDD including references and sources and are conservatively interpreted in the PDD.</i></p>	<p>All data and assumptions for the project emission calculation are listed in the PDD and included in the references and sources. To check whether conservative consumptions have been used when calculating the project emission the source of the data and assumption were checked. The data for the emission calculation is based on both default values and measurements. The default values used for calculation are in line with the default values mentioned in the methodology. This was checked with the methodology. The input values, mainly COD values, are based on measurements/FSR/. These documents were reviewed and the appropriateness of these values were checked with literature search.</p> <p>The emission calculation is based on conservative assumptions. Nevertheless, please refer to CAR B.6.</p>	<p>/PDD/ (B.6) /FSR/</p>	<p>CAR B6</p>	<p>OK</p>
<p>B.5.4. Does the implementation of the project activity lead to GHG emissions within the project boundary which are expected to contribute more than 1% of the overall expected average annual emission reductions, which are not</p>	<p>According to the PDD the project activity doesn't lead to GHG emissions, which are not addressed by the methodology within the project boundary. By means of site visit it was verified if the implementation of the project activity leads to unexpected average annual emission more than 1 %. Here</p>		<p>OK</p>	

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (Means and results of assessment)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
addressed by the methodology? (EB 51 Annex 3, §76)	the process of the project activity was assessed and checked with the physical site visit. The assessment is also based on the experiences the validation team in the field of wastewater treatment project.  No additional activities or sources that are not mentioned in the methodology were observed.  By means of site visit and experiences of the validation team in the field of wastewater projects it can be confirmed that no additional GHG emissions arise due to the project activity, which are not addressed by the methodology.			
B.5.4.1. Has a plant load factor (PLF) been defined ex-ante and considered for determination of baseline emissions?  (EB 48 Annex 11, §§ 1, 3, 4) <i>Describe why the PLF is conservative in the framework of calculating emissions reductions and whether the PLF is the same in the framework of demonstrating additionality by applying the investment analysis. Note, in order to be conservative in both cases the PLF may be different.</i>	A plant load factor was not defined ex-ante and considered for determination of baseline emissions.  The conservativeness of calculating emission reduction as well the appropriateness of the demonstration additionality by applying the investment analysis are assessed in the other sections of this report.		OK	
B.5.5. Are all data and parameters which remain fixed throughout the crediting period correct, applicable to the project and will lead to a conservative estimation of emission reductions?  (EB 51 Annex 3, § 90)	Please refer to CAR B6 and B.5.1-B.5.4.	/PDD/ (B.6.2)	CAR B6	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<i>Describe clearly the steps taken to assess whether the values used for the fixed parameters are considered reasonable, correct and applicable in the context of the project activity. Check esp. chapter 6.2 of the PDD.</i>				
<p>B.5.6. Are all ex-ante calculation values for monitoring parameters (as defined as per chapter B.7.1) reasonable?</p> <p><i>Describe clearly the steps taken to assess whether the values used for the monitoring parameters are considered reasonable, applicable and conservative in the context of the project activity</i></p>	<p><input type="checkbox"/> All "Values of data to be applied for the purpose of calculating expected emissions reductions" are considered to be reasonable, applicable and conservative.</p> <p><input checked="" type="checkbox"/> The following mistakes have been identified in this context: Please refer to CAR B6 the comments above and section B.6 of this protocol.</p>	/PDD/ (B.6)	CAR B6	OK
<p>B.5.7. Are the emission reductions real, measurable and give long-term benefits related to the mitigation of climate change.</p> <p><i>Describe the steps taken to validate this issue.</i></p>	<p>The PDD describes how the project activity gives long term benefits related to the mitigation of climate change. By means of site visit the emission reduction can be assessed as real, measurable and gives long terms benefits related to the mitigation. The project activity uses the wastewater to generate CH<sub>4</sub> and use the CH<sub>4</sub> for energy purposes. Therefore the CH<sub>4</sub> is not emitted to the air, but used for energy purposes and destroyed to CO<sub>2</sub>.</p> <p>By means of document review and on-site visit it can be confirmed that the emission reduction real, measurable and give long-term benefits related to the mitigation of climate change.</p>	/PDD/ (B.6)	OK	OK

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<b>B.6. Monitoring of Emission Reductions</b> <i>It is assessed whether the monitoring plan is appropriate for the project activity and in line with the applied methodology.</i>				
<p>B.6.1. Are all monitoring parameters required by the applied methodology contained in the monitoring plan?</p> <p>(EB 51 Annex 3, §§ 67 (e), 120, 122 (a) , 123)</p> <p><i>Assess whether all applicable parameters listed in the methodology are included in the monitoring plan.</i></p> <p><i>Pl. check further whether the selection of parameters not to be monitored (section B.6.2) is appropriate and in line with the applied methodology.</i></p> <p><i>In case of different approaches can be chosen acc. to the methodology assess whether the selection of parameters is justified and correct.</i></p>	<p>Yes, all monitoring parameters required by the applied methodology contained in the monitoring plan.</p> <p>The monitoring parameter Includes COD concentration in the process, wastewater flow amount, sludge amount, character of biogas, electricity generation, etc.</p> <p>The section B.7.1 “data and parameters to be monitored” and section B.6.2 “data and parameters that are available at validation” of the PDD were checked and compared with the methodology.</p> <p>By means of document review it can be confirmed that all applicable parameters are included in the monitoring plan.</p> <p>As the methane emissions from anaerobic decay of the final sludge of the project activity are considered, the end use of the final sludge is not monitored. This is in line with the methodology AMS-III.H para 39.</p>	<p>/PDD/ (B.7) /AMS-III.H./ /AMS-I.C./</p>	OK	OK
<p>B.6.2. Are the means of monitoring of all parameters contained in the monitoring plan in accordance with the requirements of the applied methodology?</p>	<p>No. according to the methodology, more detailed information of the parameters should be provided In PDD section B.7. please refer to the issue detected as the following:</p>	<p>/PDD/ (B.7.2)</p>	<del>CAR</del> B7	OK



<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (Means and results of assessment)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>(EB 51 Annex 3, § 122 (a), 122 (b), 123)</p> <p><i>Assess whether the provided information for all parameters w.r.t.</i></p> <ul style="list-style-type: none"> <li>a) <i>Label (name of the data / parameter)</i></li> <li>b) <i>data unit</i></li> <li>c) <i>description</i></li> <li>d) <i>source of data</i></li> <li>e) <i>measurement equipment / method / procedure</i></li> <li>f) <i>monitoring frequency</i></li> <li>g) <i>QA/QC procedures</i></li> </ul> <p><i>are appropriately described and in compliance with the requirements of the methodology.</i></p>	<ul style="list-style-type: none"> <li>- Description of Figure 2 is not clear, the monitoring equipment mentioned in table followed is confusing, please define the objective or parameter to be monitored, its corresponding measure equipment, as well as its location, accuracy, function and maintenance plan;</li> <li>- Description of the monitoring procedure and responsible person is not sufficient.</li> </ul>			
<p>B.6.3. Have all means of implementing the monitoring plan, e.g. equations necessary for ex-post emission reduction calculation, been described clearly and in line with the methodology? (EB 51 Annex 3 122 (b), 123)</p> <p><i>Check whether all necessary equations have been provided in the PDD. Pl. consider that ex-post and ex-ante calculations might be different.</i></p> <p><i>Please consider that additional equations might be necessary to calculate auxiliary parameters.</i></p>	<p>The PDD and the emission reduction calculation was reviewed to be in line with the methodology.</p> <p>All equations have been provided in the PDD and described clearly. Nevertheless please refer to CAR B8.</p>	<p>/PDD/ /AMS-III.H/</p>	<p>CAR B8</p>	<p>OK</p>

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (Means and results of assessment)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<p>B.6.4. Is it likely that the monitoring arrangements described in the PDD can properly be implemented in the context of the project activity?</p> <p>(EB 51 Annex 3 123 (c))</p> <p><i>Assess whether the described monitoring arrangements are sufficient and realistic to enable a thorough monitoring. Pl. consider also special monitoring conditions, e.g. downtimes of monitoring equipment etc.</i></p>	<p>The monitoring system in PDD is not in compliance with information from site visit. E.g. The arrangement of meters used for net electricity record; description of cross check method and backup system arranged for emergency are insufficient.</p> <p>Revision of PDD section B.7 is necessary.</p>	<p>/PDD/ (B.7) /IM01/ /PG/</p>	<p>CAR B8</p>	<p>OK</p>
<p>B.6.5. Are the QA/QC procedures appropriate sufficient to ensure the emission reductions achieved from the project activity can be reported ex-post and verified?</p> <p>(EB 51 Annex 3 123 (b))</p> <p><i>Please consider the description given in section B.7.2. Describe which QA/QC provisions are considered. Address Quality Management System provisions, calibration and maintenance of equipment. Address further any review procedures.</i></p>	<p>Yes. Management structure of the monitoring plan is defined in Section B.7.2. General Manager will appoint personnel to take charge of CDM (CDM manager), besides, three teams including Biogas monitoring team, Wastewater monitoring team and Electricity monitoring team will support the CDM manager. Three teams are responsible for the measurement and record of the relevant data. The CDM manager will archive the data after cross checking.</p>	<p>/PDD/ (B.7.2) /IM01/</p>	<p>OK</p>	<p>OK</p>
<p>B.6.6. Are procedures identified for data management?</p> <p>(EB 51 Annex 3 123 (b))</p> <p><i>Check whether appropriate provisions are considered for data management including responsibilities, what records to keep, storage area of records and how to process</i></p>	<p>Yes, specific team and staff are appointed for data management, e.g. all the measure meters will be calibrated by a qualified calibration entity, three teams mentioned in B.6.5 will record the data and report to CDM manager.</p> <p>It is clear that all the data monitored will be cross-checked and achieved, and all the archive data will be kept for the</p>	<p>/PDD/ (B.7.2)</p>	<p>OK</p>	<p>OK</p>

<b>Checklist Item</b> (incl. guidance for the validation team)	<b>Validation Team Comments</b> (Means and results of assessment)	<b>Ref.</b>	<b>Draft Concl.</b>	<b>Final Concl.</b>
<i>performance documentation</i>  <i>Check further the data archiving provisions for the project activity and ensure that provisions are made to archive data for the whole crediting period + 2 years.</i>	whole crediting period plus two years.			
<b>C. Duration of the Project/ Crediting Period</b>  <i>It is assessed whether the temporary boundaries of the project are clearly defined.</i>				

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<p>C.1. Is the project's starting date clearly defined and evidenced?</p> <p>(EB 51 Annex 3, §98)</p> <p><i>Check whether the starting date is correct. Apply the definition of the project starting date as per the "Glossary of CDM terms".</i></p>	The project start date in Section C.1.1 is 09/05/2005, which is consistent with timeline listed in Section B.5. Document submitted has been reviewed.	/PDD/ (C.1.)  /IM01/  /SD/	OK	OK
<p>C.2. Is the project's operational lifetime clearly defined and evidenced?</p> <p><i>Check whether the project lifetime is correctly defined. Consider the guidance on the assessment of investment analysis (annex to the additionality tool).</i></p> <p><i>Check in case of phased implementation this has been reflected throughout the whole PDD incl. the financial assessment, if applicable</i></p>	The project lifetime has been defined as 10 years. Whether it is appropriate should be demonstrated, evidence should be provided for the assumption.	/PDD/ (C.1.)  /IM01/	<del>GL</del> G1	OK
<p>C.3. Is the start of the crediting period clearly defined and reasonable?</p> <p><i>Check whether the envisaged starting date of the crediting period is realistic, taking into consideration the times needed for validation and registration.</i></p>	<p>The start of the crediting period is defined as 01/01/2010 or the date of registration whichever is later.</p> <p>However, the main equipment is not built yet during site visit, i.e. second set of EIC is not constructed. Whether the assumption is reasonable should be clarified.</p>	/PDD/ (C.2.)  /IM01/	<del>GL</del> G2	OK
<p><b>D. Environmental Impacts</b></p> <p><i>Documentation on the analysis of the environmental</i></p>				

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<i>impacts will be assessed, and if deemed significant, an EIA should be provided to the DOE.</i>				
D.1.1. Are there any Host Party requirements for an Environmental Impact Assessment (EIA)? <i>Check the host party regulations, regarding EIA.</i>	Yes. In China, EIA was required by Chinese legislation.	/EIA/	OK	OK
D.1.2. In case an Environmental Impact Assessment (EIA) is requested by the host party, has it been carried out and if applicable duly approved? <i>Check the EIA and its approval, if applicable.</i>	Yes. The EIA report has been approved by local government.	/AEIA/ /EIA/	OK	OK
D.1.3. Has an analysis of the environmental impacts of the project activity been sufficiently described and in line with the host party environmental legislation? <i>Check the PDD (section D). Check whether the project will create any adverse environmental effects.</i> <i>Check the relevant national environmental legislation.</i>	Yes, the analysis of the environmental impacts of the project activity has been listed in PDD.	/PDD/ (D) /EIA/	OK	OK
D.1.4. Are transboundary environmental impacts considered in the analysis? <i>Check the documents and local official sources / expertise regarding transboundary environmental impacts.</i>	No. According to the EIA, there is no trans-boundary environmental impact created by the project activity.	/PDD/ (D.1) /EIA/	OK	OK
<b>E. Stakeholder Comments</b>  <i>The DOE should ensure that stakeholder comments</i>				

Checklist Item (incl. guidance for the validation team)	Validation Team Comments (Means and results of assessment)	Ref.	Draft Concl.	Final Concl.
<i>have been invited with appropriate media and that due account has been taken of any comments received.</i>				
<p>E.1. Have relevant local stakeholders been invited to consultation prior to the publication of the PDD?</p> <p><i>Check by means of document review and interviews with local stakeholders if and when a local stakeholder consultation process has been carried out.</i></p>	<p>Yes, the questionnaires were distributed to 30 stakeholders, covered local government officers, local residents. Besides, a stakeholder consultation meeting of the project was organized at meeting room of Huangshi Xinghua Biochemical Ltd. on 26/09/2008.</p>	<p>/PDD/ (E.1.) /IM03/</p>	OK	OK
<p>E.2. Can the local stakeholder consultation process be assessed as adequate?</p> <p><i>Describe what assessment steps have been undertaken to assess the adequacy of the stakeholder consultation process. Give a final opinion on the adequacy.</i></p> <p><i>Please consider the following requirements in this context:</i></p> <p><i>(a) Comments by local stakeholders that can reasonably be considered relevant for the proposed CDM project activity, have been invited;</i></p> <p><i>(b) The summary of the comments received as provided in the PDD is complete;</i></p> <p><i>(c) The project participants have taken due account of any comments received and have described this process in the PDD.</i></p>	<p>Project owner used questionnaire and meeting modalities to invite comments by local stakeholders. It is assessed as adequate.</p> <p>A summary of the comments received is provided in the PDD. It stated as "the impact brought by the project is positive", and all of stakeholders support the construction of this project.</p> <p>There were no due account should be taken according to stakeholder comments received.</p>	<p>/PDD/ (E)</p>	OK	OK

## ANNEX 2: ASSESSMENT OF BASELINE IDENTIFICATION

**Table A-2:** Assessment of Baseline Identification

<input type="checkbox"/>	Baseline is not identified
<input checked="" type="checkbox"/>	Assessment of baseline see below

Baseline Alternatives identified	Inline with the Methodology?	Eliminated	Reasons for elimination / non-elimination from list of alternatives	Evidence used	DOE Assessment	
					Appropriateness of elimination	Assessment of validation team (results and means of assessment)
For baseline alternatives regarding wastewater treatment						
W1 Using UASB without methane recovery	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Adopting UASB is a practice of wastewater treatment in citric acid sector.	/RP-1/ /RSP-2/	<input type="checkbox"/>	According to Xie Xin et al. „Status in Quo of Citric Acid Industrial Wastewater Treatment”. Industrial Water Treatment 2004 24 (1):8-11, the UASB reactor is common practice in the citric acid sector to reduce COD. Besides, according to survey on biogas utilization status made by China Fermentation Industry Association on 2010-02-01, it is a common practice that waste water from citric acid sector is treatment by UASB without methane recovery.



<b>W2</b> Using UASB with methane recovery	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Adopting UASB is common practice of wastewater treatment in citric acid sector.	/RP-1/ /BL-1/	<input checked="" type="checkbox"/>	As mentioned above the UASB reactor without methane recovery is common practice in the citric acid sector to reduce COD. And according to financial analysis, the methane recovery system is every expensive, thus the project owner need loan from the bank. However, by checking the rejection letter, the DOE confirmed that since the project owner had high liability-asset ratio and lacked of biogas reutilization experience etc. the loan application was rejected. Therefore, it is appropriate to eliminate the alternative.
<b>W3</b> Using IC without methane recovery	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	IC technology is an imported technology which is very expensive.	/FRH/ /FSR/ /QIT/ /RP-6/ /SD-1,2/	<input checked="" type="checkbox"/>	According to Guo Qing-wei et al. "Development and Application of Internal Circulation reactor" the IC technology is an expensive technology. Besides, by comparing the total investment of the proposed project and investment for IC (Quotation from PAQUES), the investment on IC technology is almost the same with total investment (including EIC and biogas utilization) based on EIC. As of the liability-asset ratio of the company, the baseline was eliminated. The sources were checked and assessed as applicable to eliminate this baseline. Please also refer to the financial barrier for the liability-asset ratio, which was conducted by an authorized audit institute including registered accountants.
<b>W4</b> Using IC with methane recovery	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	IC technology is an imported technology which is very expensive.	/BL/ /FRH/ /FSR/ /QIT/ /RP-6/ /SD-1,2/	<input checked="" type="checkbox"/>	Please refer above, as the same reasons for the elimination of the IC with methane recovery are applicable.

<b>W5</b> Introducing EIC without methane recovery	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Technological barrier of EIC has been specified in PDD Section B.5.	/RP-1/ /PET/	<input checked="" type="checkbox"/>	By comparing the presented contract on EIC construction and that for UASB signed by PP earlier, the investment of the project activity is much higher than option W1. Besides, a patent of EIC has been approved by State Intellectual Property Office of P.R.C. The EIC technology is quite new and has not been applied widely, the technology barrier has been demonstrated in PDD section B.5. Please refer to assessment in Annex 4 in this report.
<b>W6</b> Introducing EIC with methane recovery, but without being registered as a CDM project activity	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Technological barrier of EIC has been specified in PDD Section B.5. Further investigation and research on EIC technology are expected.	/RP-1/ /PET/	<input checked="" type="checkbox"/>	By comparing the presented contract on EIC construction and that for UASB signed by PP earlier, the investment of the project activity is much higher than option W1. Besides, a patent of EIC has been approved by State Intellectual Property Office of P.R.C. The EIC technology is quite new and has not been applied widely, the technology barrier has been demonstrated in PDD section B.5. For further details about technology barrier, please refer to assessment in Annex 4 in this report.  Besides, according to first loan rejection letter, the project owner lack of the biogas utilization experience, and the second loan contract indicates that the CDM revenue should be used for loan repayment, therefore the elimination of the alternative is appropriate.
According to on-site information, the heat generated by coal was replaced by biogas, however, the emission reductions from the heat source replacement was not claimed. To be conservative, the baseline of heat consumption is defined as the project scenario, i.e. heat supplied by biogas. According to research of biogas utilization <sup>/RP-7, 8/</sup> , it is the least emission in potential alternatives. As a result, the heat source and utilization is not demonstrated in baseline analysis.						
For baseline alternatives regarding electricity generation						
<b>P1</b> Electricity is imported from the grid	<input checked="" type="checkbox"/>	<input type="checkbox"/>	It is common practice of wastewater treatment in citric acid sector.	/AECG/ /IM01/	<input type="checkbox"/>	The project is approved to be connected with grid, thus the electricity imported from the grid is possible. Besides, it is comprehensible and assessed as the baseline scenario as no new technology necessary. In conclusion, P1 is defined as the baseline regarding electricity generation.

<b>P2</b> Electricity is produced in an on-site captive power plant using fossil fuels (with a possibility of export to the grid)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	The installed capacity of power generation units in the proposed project is only 3MW. According to China's regulations, construction of fuel-fired power plants with the installed capacity lower than 135MW is prohibited.	/NSC/	<input checked="" type="checkbox"/>	According to notice from state council, the thermal power plants of less than 135 MW are prohibited. Therefore the exclusion of the baseline is comprehensible.
<b>P3</b> Electricity is produced in an on-site captive power plant using biomass (with a possibility of export to the grid)	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Biomass is not available at the project site, thus P3 could be discarded.	/IM01/	<input checked="" type="checkbox"/>	As per on-site interviewing, it was confirmed that no existed biomass recovered before the project under construction.
<b>P4</b> Electricity is produced in a co-fired system	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Renewable is not available at the project site, thus P4 could be discarded.	/IM01/	<input checked="" type="checkbox"/>	As per on-site interviewing, it was confirmed that no co-fired system existing before the project under construction.
<b>P5</b> Electricity is produced from biogas generators	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Due to the financial and technological barriers specified in Section B.5 for the project activity, without CDM finance.	-	<input checked="" type="checkbox"/>	The argument is appropriate, please refer to Annex 4 of this report for details.
<b>Taken into account the baseline assessment above the baseline is the treatment of the wastewater with UASB reactors without methane recovery, electricity is imported from the grid</b>						
<b>"General Guidance for SSC methodologies"</b> Step 1~3: Identify the various alternatives, test with regulation, test with barrier and consider methodology and least emission scenario for capacity increase						
<b>W1+P1</b> Using UASB without methane recovery, electricity imported from the grid	<input checked="" type="checkbox"/>	<input type="checkbox"/>	Common practice	/RSP/	<input type="checkbox"/>	According to survey from PP and industrial expert, it is common practice that no methane recovery.
<b>W1+P2</b> Using UASB without methane recovery, electricity generated by captive fossil fuel power plant	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Due to step 2 of the guidance, captive fossil fuel plant can't be lower than 135MW.	/NSC/ /SSG/	<input checked="" type="checkbox"/>	According to Notice of prohibition of power units: No. [2002] 6 issued by State council and regulation compliance requirement from guidance of small scale project.

<b>W2+P5</b> Using UASB with methane recovery, and produce electricity from biogas generators, but not registered as CDM project	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Barrier analysis by attachment A to appendix B of simplified modalities and procedures of SSC CDM. The technology of methane recovery from WWT was immature. And it was not PP's main business to collect and utilize methane.	/IM01/ /NFK-1/ /RP-7,8/ /RSP-1/ /SMP/	<input checked="" type="checkbox"/>	By interviewing the project owner during on-site validation, it was confirmed that the main business was citric acid production and neither biogas recovery nor utilization prior to the project activity. According to research from Mr. Shen and Mr. Wang, the engineer from accredit institute, the similar technology was not prevailing through China.
<b>W5+P1</b> Using EIC without methane recovery and electricity imported from the grid	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Barrier analysis by attachment A to appendix B of simplified modalities and procedures of SSC CDM. During CDM consideration, EIC was not prevailing, PP lacked the experience of operating EIC.	/PET/ /RP-7/ /SMP/	<input checked="" type="checkbox"/>	By searching the patent of EIC (Patent No. ZL200420023281.4) in the authorized website. <a href="http://www.sipo.gov.cn/sipo2008/zljs/">http://www.sipo.gov.cn/sipo2008/zljs/</a> It is confirmed that the technology of EIC was a state of art during CDM decision. Besides, according to research from Mr. Shen, the engineer from accredit institute, the similar technology was not prevailing through China.
<b>W5+P2</b> Using EIC without methane recovery and electricity generated by captive fossil fuel power plant	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	Due to step 2 of the guidance, captive fossil fuel plant can't be lower than 135MW.	/NSC/ /SSG/	<input checked="" type="checkbox"/>	According to Notice of prohibition of power units: No. [2002] 6 issued by State council and regulation compliance requirement from guidance of small scale project.
<b>W6+P5</b> Using EIC with methane recovery, and produce electricity from biogas generators, but not registered as CDM project	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	EIC and biogas utilization are not prevailing practice.	/NFK/ /RP-7, 8, 9/	<input checked="" type="checkbox"/>	By means of checking notification issued by facility supplier and industry associations, as well as the study from a third party, the DOE confirms the demonstration in PDD.
<b>It confirms that "W1+P1" is a valid baseline scenario.</b>						

## ANNEX 3: ASSESSMENT OF EMISSION REDUCTION PARAMETERS

**Table A-3:** Assessment of financial Parameters

<input checked="" type="checkbox"/>	No financial parameters are used for additionality justification						
<input type="checkbox"/>	Assessment of all financial parameters see below						
Parameter	Value applied	Unit	Source of Information (please indicate document and page)	Reference	DOE ASSESSMENT		
					Correctness of value applied	Appropriateness of information source	Comment

## ANNEX 4: ASSESSMENT OF BARRIER ANALYSIS

**Table A-4:** Assessment of Barrier Analysis

<input type="checkbox"/>		No barrier parameters are used for additionality justification		
<input checked="" type="checkbox"/>		Assessment of barriers see below		
Kind of Barrier (invest, tech, other)	Description of Barrier	Evidence used	Assessment of validation team	
			Appropriateness of information source	Explanation of final result

Investment barrier	1. Total investment is high for project owner; 2. Bad indicator of asset/liability ratio leads a barrier of financing.	/BL/ /FSR/ /FRH/	<input checked="" type="checkbox"/>	<p>According to the financial audit report, issued by Huangshi Daxin Zhengxin Accountant Firm at the beginning of 2005, the liability of Huangshi Xinghua Biochemical Ltd. is 84% of the fix asset. The Financial Audit Report finalized by Huangshi Daxin Zhengxin Accountant Firm employed competent experts. The report authorized by Huangshi Administration for Industry and Commerce was verified and assessed as reliable. According to the FSR prepared by Hubei Chemical Industry Research &amp; Design Institute the investment of the project activity is defined as 19.335 million RMB, The investment includes an investment of the biogas system with more than 50%. The project owner approached a number of banks to secure financing for the project. As of the liability and the high investment, the bank declined the loan requests. This was evidenced with the loan rejection letter from the Huangshi City Commercial Bank on 2005-03-09. The letter was verified and assessed as reliable. On 2005-04-25, the Huangshi Bank of Communication issued an intent letter, which indicated the bank was aware of CDM and stated the bank's intention to give a loan to the PP within 24 months. On 2006-01-14 the bank loan contract with the Huangshi Bank of Communication was signed. As the letter indicates CDM revenues it can be concluded that the project activity could not access appropriate capital without consideration of the CDM revenues. The loan contract was verified.</p> <p>Taken into account the declined loan approval, the bank loan contracted with the Huangshi Bank of Communication, and the audit report on liability-asset of the company, it can be assessed that the Project owner faces investment barriers.</p>



Technological barrier	<p>1. EIC is an advanced technology, its treatment efficiency is not stable;</p> <p>2. Operation of the domestic biogas generators is not stable.</p>	<p>/FSR/ /PT/ /RP/ /IM01/ /IM03/ /IM04/</p>	<p><input checked="" type="checkbox"/></p>	<p>Following documents dealing with the EIC technology/ waste water treatment were reviewed:</p> <ol style="list-style-type: none"> <li>1. Xie Xin, Zhang Zhenlin etc. „Status in Quo of Citric Acid Industrial Wastewater Treatment”. <i>Industrial Water Treatment</i> 2004 24 (1):8-11;</li> <li>2. Tian Zhihai, Wang Zengzhang. Study on the treatment of citric acid wastewater. <i>Shanxi Architecture</i> Vol.33 No.35 Dec.2007 Page 19;</li> <li>3. <a href="http://hnnh.haagri.gov.cn/asp/showdetail.asp?id=35868">http://hnnh.haagri.gov.cn/asp/showdetail.asp?id=35868</a></li> <li>Ran Guowei, Zhang Rukun etc “ The Analysis of Present Situation of Methane Electricity Generation and its Discussion of Developing Direction” <i>Agricultural Engineering Study</i> 2006 3 (3):189-191;</li> <li>4. Gao Chunmei “Power Generated by Methane and Heat Recycling” <i>Municipal Administration and Technology</i> 2005, 7 (5):217-219.</li> <li>5. Chen Xie, “Research on UASB retrofit and EIC”, published on <a href="http://www.paper.edu.cn">http://www.paper.edu.cn</a></li> <li>6. Guo Qing-wei et al. “Development and Application of Internal Circulation reactor, College of Environmental Science and Engineering of Hunan Agriculture University, Hunan Changsha 410128, China, <a href="http://cqvip.com">http://cqvip.com</a></li> </ol> <p>By means of document review it can be summarized, that the EIC technology was still under a research phase during the CDM consideration. The project owner conducted technical investigations in year 2004, and research on sludge issues of EIC technology was implemented from year 2005 to year 2007. The EIC technology faced sludge problems This was indicated in “Research on clean energy and commercial anaerobic activated sludge issued by Huangshi Xinghua Biochemical Ltd.”<sup>/RSP/</sup></p> <p>As of the lack of technical experts the EIC supplier committed to train the staff of the project owner as per contract. Furthermore it is contracted in the equipment service agreement that the manufacture will help the operator to be familiar with EIC<sup>/TS/</sup> and both of EIC and biogas generator manufacturers should respond to malfunction and send skill person to the project company<sup>/IM04/</sup>.</p> <p>According to repair and maintenance log the project owner faces lack of skill personnel. The project owner should invite the expert from the generator supplier to the company for repair, which results in O&amp;M cost raising unexpectedly. Compared with O&amp;M cost without considering the extra payment for travelling (estimated in FSR), the actual O&amp;M cost will be higher.</p>
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				<p>Besides, due to the immaturity of domestic generators, the frequent maintenance and shutdown were detected by reviewing the logs. These frequent downtime periods lowered operation hours and directly impact the revenue of the project. In addition, the training cost does not have significant direct impact on the investment. However fewer operation hours and more downtimes, etc do have an indirect impact on the profitability of the project. However these risks were not possible for the PP to quantify at the time of investment decision.</p>
Barrier due to prevailing practice	"first-of-its-kind" in Hubei province. In China, the implementation environment is comparable in province level.	/NFK/ /cfia/ /RP/ /RSP/ /unfccc/	<input checked="" type="checkbox"/>	<p>"first-of-its-kind" geographical area is defined as Hubei Province. It is assessed to be appropriate.</p> <p>Notification from China Fermentation Industry Association certified that the project activity is a first case for EIC application in Middle Southern Zone of China, which includes Hubei province. According to the survey, EIC with methane recovery was 'first-of-its-kind' in China at that time.</p> <p>Another certification indicates that the combination of EIC and biogas-generator is the first implementation in Hubei province.</p> <p>Published research from engineers of authorized institutes shows that the third generation anaerobic treatment technologies and methane recovery for utilization is not the prevailing practice in all industry that produce organic wastewater in China. According to information of Chinese methane recovery CDM projects, the proposed project is not the prevailing practice. Please refer to CAR B5 for details.</p> <p>The documents were verified and assessed as reliable. Furthermore the DOE inquires the citric acid industry association, to confirm the statements<sup>/NFK/</sup>.</p>

## ANNEX 5: OUTCOME OF THE GSCP

**Table A-5:** Outcome of the Global Stakeholder Consultation Process

<input checked="" type="checkbox"/>	No comments were received during the global stakeholder consultation period					
<input type="checkbox"/>	Comments were received during the global stakeholder consultation period. The comments (in unedited form) and the consideration/response of the validation team are presented below:					
Comment No.:	Comment by:	Inserted on:	Subject	Comment <sup>*)</sup>	Response validation team <sup>*)</sup>	Conclusion (incl. CARs CLs or FARs)

<sup>\*)</sup> In case clarifications have been requested by the validation team corresponding rows shall be added

## ANNEX 6: APPOINTMENT CERTIFICATES OF TEAM MEMBERS

 <b>CERTIFICATE OF APPOINTMENT</b>  <b>Mr. Dipl.-Ing. Rainer Winter</b> born on 1963-02-21 satisfies the requirements as specified in the TÜV NORD JI/CDM CP directives and is hereby appointed as  <b>TÜV NORD JI/CDM Senior Assessor</b>  The present appointment will terminate on 2010-07-05 Certification registration No. 04 02 154-03  Essen, 2007-07-06   Deputy of TÜV NORD JI/CDM Certification Program of TÜV NORD CERT GmbH	 <b>CERTIFICATE OF APPOINTMENT</b>  <b>Mr. Dr. Jochen Schubert</b> born on 1970-12-24 satisfies the requirements as specified in the TÜV NORD JI/CDM CP directives and is hereby appointed as  <b>TÜV NORD JI/CDM Expert</b>  For the following scopes: 1, 2, 3, 6, 7, 13, 15 The present appointment will terminate on 2011-07-22 Certification registration No. 08 07 02 - 56  Essen, 2008-07-23   Head of TÜV NORD JI/CDM Certification Program of TÜV NORD CERT GmbH	 <b>CERTIFICATE OF APPOINTMENT</b>  <b>Ms. Wei Ming Yu</b> born on 1983-06-13 satisfies the requirements as specified in the TÜV NORD JI/CDM CP directives and is hereby appointed as  <b>TÜV NORD CDM Expert</b>  The present appointment will terminate on 2012-11-19 Certification registration No. 09 11 06 - 69  Essen, 2009-11-20   Head of TÜV NORD JI/CDM Certification Program of TÜV NORD CERT GmbH	 <b>CERTIFICATE OF APPOINTMENT</b>  <b>Mr. Yongjun Li</b> born on 1974-03-03 satisfies the requirements as specified in the TÜV NORD JI/CDM CP directives and is hereby appointed as  <b>TÜV NORD CDM Senior Assessor</b>  The present appointment will terminate on 2012-11-23 Certification registration No. 09 11 09 - 39  Essen, 2009-11-24   Head of TÜV NORD JI/CDM Certification Program of TÜV NORD CERT GmbH
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