

Title of Feasibility Study (FS):

Feasibility Study on Programme CDM to Introduce the High-Performance Tenters to the Dye Works in Zhejiang Province, PR China

Main Implementing Entity:

Kyushu Electric Power Co., Inc.

1. FS Partners

Mizuho Corporate Bank, Ltd.

- Assists with the information analysis necessary for the preparation of the PoA-DD and CPA-DD of this project
- Assists with the drafting of the PoA-DD/CPA-DD

Green Ensign (Beijing) New Energy & Utility Technology Development Co., Ltd

- Supports the communication with the counterparts in the area (China National Textile & Apparel Council (CNTAC), China Dyeing & Printing Association (CDPA), Zhejiang Hangmin Stock Co., Ltd., Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd. and CPA candidates, etc.)
- Supports the hearing with the stakeholders and local governmental agencies, etc.
- Supports the preparation of the PoA-DD/CPA-DD
 - Research regarding environmental impact
 - Research regarding the comments from the stakeholders, etc.
- Research regarding the financing plans

2. Project outline

(1) Description of Project Activity

This project aims to replace existing outdated tenters with high-efficiency tenters in the dye works in Zhejiang Province, China. The Project thus reduces the consumption of coal which is used to heat up the heating medium, and also helps reduce greenhouse gas emissions through less coal burned in the coal-fired power generation plants thanks to reduced electricity use at the works. The project is to promote high-efficiency tenters through a program CDM project (PoA), and plans to register the dye works in Zhejiang Province as a CDM program activity (CPA) under this PoA.

The project assumes Green Ensign (Beijing) New Energy & Utility Technology Development Co., Ltd (private ESCO company) as the Coordinating/Managing Entity of the PoA. Green Ensign (Beijing) New Energy & Utility Technology Development Co., Ltd is the project counterpart in the host country China. There are no capital ties or contractual relationships that might serve as an incentive for implementing the project as a PoA between Green Ensign (Beijing) New Energy & Utility Technology Development Co., Ltd and the dye works within the PoA boundary. This PoA is a voluntary action of the Coordinating/Managing Entity.

Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd. is assumed to be used as the model company for the CPA, and the operation is planned to start in early 2012 for the time being. Based on these assumptions, the average reduction of 10,994t-CO₂/year can be expected. It is our hope to expand the endeavor throughout Zhejiang Province.

(2) Methodology to be applied

Methodology applied:

AMS II.C/version13 “Demand-side energy efficiency activities for specific technologies.”

3. Survey content

(1) Survey tasks

<Task 1: PoA scheme and CPA candidate project selection>

- It is important to secure the cooperation of Green Ensign (Beijing) New Energy & Utility Technology Development Co., Ltd, the Coordinating/Managing Entity, and Zhejiang Dyeing and Printing Association that supervises the dye works within the PoA boundary. To this end, the

communication is encouraged to build a solid cooperation system with the association to build capacities.

- Implement measures for the smooth promotion of the high-efficiency tenters, such as on the criteria for CPA candidate selection and explanations of this PoA to the dye works in Zhejiang Province.

<Task 2: Baseline establishment>

- Replacement to high-efficiency tenters, as well as the inclusion of new installation and expansions shall be considered.
- Investigate the method for evaluating the appropriate time of replacing the existing tenters, using the tool to determine the remaining lifetime of equipment.
- Decide the baseline scenario by combining the plans of replacing multiple tenters that CPA owns.

<Task 3: Demonstration of additionality>

- Additionality shall be demonstrated through investment analysis and common practice analysis.
- For the investment analysis, the evaluation shall be done by comparing the figures with evaluation indexes that are collected from the government agencies and Zhejiang Dyeing and Printing Association, etc. to serve as benchmarks.
- As for the common practice analysis, check for the existence of activities similar to the CPA project under this PoA, and demonstrate that the introduction of high-efficiency tenters is not in progress.

(2) Survey content

<First local survey>

The first local survey was conducted in mid-September, 2010. The summary of the result is shown below. See attached Local Survey Report for details

Schedule	Participants	Discussion and survey contents
Sep. 16	Development and Reform Commission of the Zhejiang Province Government	Collected information on the views towards this PoA and agencies in Zhejiang Province in charge of environment-related issues
	Zhejiang Dyeing and Printing Association	Collected information on siting situation of the dye works in China and within Zhejiang Province, principles in selecting CPA candidate works, and policies regarding investments, etc.
Sep. 17	Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd.	Collected information on tenter introduction situations, heat and electricity supply conditions, etc.
	Green Ensign (Beijing) New Energy & Utility Technology Development Co., Ltd	Explained the role of the Coordinating/Managing Entity, collected information on dye works, and requested the negotiation when communicating with CPA candidate works

<Second local survey>

The second local survey was conducted in mid-November, 2010. The summary of the result is shown below. See attached Local Survey Report for details.

Schedule	Participants	Discussion and survey contents
Nov. 15	Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd.	Confirmed energy unit prices and taxes, etc. needed for financial analysis, and collected information on policies towards tenter selection, and necessity of EIA and FSR upon tenter introduction

Schedule	Participants	Discussion and survey contents
	Zhejiang Dyeing and Printing Association	Collected information on the feasibility and issues of p-CDM projects, and the tender introduction status within Zhejiang Province
Nov. 16	Zhejiang Hangmin Stock Co., Ltd. Printing & Dyeing Branch Company	Collected information on the number of tenters, main products, and production amount, etc.
Nov. 17	Zhejiang San yuan Xinsheng Printing and Dyeing Co., LTD	Collected information on the number of tenters, main products, and production amount, etc.
	Zhejiang San yuan Jimei Printing and Dyeing Co., LTD	Collected information on the number of tenters, main products, and production amount, etc.
Nov. 18	Asia-Pacific Super width Printing & Dyeing Co., LTD	Collected information on the number of tenters, main products, and production amount, etc.
Nov. 19	Changzhou Qiangsheng Printing and Dyeing Co., LTD	Collected information on the number of tenters, main products, production amount, and the existence of agencies in charge of dye works in Jiangsu Province where this plant is located, etc.

<Third local survey>

The third local survey was conducted in late January, 2011. The summary of the result is shown below. See attached Local Survey Report for details.

Schedule	Participants	Discussion and survey contents
Jan. 24	Green Ensign (Beijing) New Energy & Utility Technology Development Co., Ltd	Confirmed the CPA candidate works list and the result of the explanation that Green Ensign gave to dye companies on high-efficiency tenters and p-CDM
Jan. 25	Green Ensign (Beijing) New Energy & Utility Technology Development Co., Ltd	Confirmed the items to be asked to Professor Wei Zhihong of the Tsinghua University (professor of the Institute of Nuclear and New Energy Technology and the Deputy Director of the Global Climate Change Institute of the Tsinghua University)
	Tsinghua University	Confirmed the concepts for the baseline establishment, Coordinating/Managing Entity, PoA · CPA, investment benchmarks and EIA, as well as the status of environmental regulations and p-CDM, etc. in the hearing with experts at CDM executive board of China.

<Investigation result for Task 1: PoA scheme and CPA candidate project selection>

During the local surveys in September and November, 2010, our staff visited Zhejiang Dyeing and the Printing Association that supervises the dye works within the PoA boundary (Zhejiang Province, China), to explain and discuss the PoA scheme and build capacities. Also, Green Ensign (Beijing)

New Energy & Utility Technology Development Co., Ltd, which acts as the Coordinating/Managing entity, had ordered the selection of CPA candidate projects and summarized the results. Thanks to the effort, the conditions for CPA candidates are understood as follows:

- This PoA is a good project, but since it is new, the information must be spread through the dye industry in Zhejiang Province. Thus, the first program CDM case is evaluated as a model.
- For publicity, it might be effective to conduct a demonstration using Japanese products as a model.
- It seems easier to implement the project as a CDM project since Zhejiang Province has a relatively stable economic basis compared to other provinces.
- CPA site should be chosen from the large-scale works.

We confirmed the list of CPA candidate works shown in Table 1 during the first local survey conducted in January, 2011, thanks to the cooperation of the Zhejiang Dyeing and Printing Association, etc. Information on the tenter introduction and other matters was obtained for 18 works. Other works and plants that showed interest in energy saving through high-efficiency tenter introduction and the utilization of p-CDM were listed (total of 40 works and plants).

Additionally, we gained the knowledge below in the hearing with an expert at CDM executive board of China (Professor Wei Zhihong of the Tsinghua University: professor of the Institute of Nuclear and New Energy Technology and the Deputy Director of the Global Climate Change Institute of the Tsinghua University).

- The method that the Coordinating/Managing Entity (CME) receives the revenue from credit sales in the first stage is appropriate.
- Project scale suitable for CPA
 - A few years ago (2004 – 2005), small-scale projects with 15,000 t-CO₂/yr or less were preferred. However, since the number of projects is limited, there is no particular restriction these days.
 - As a rule, any small-scale CDM project (e.g. annual emissions of 60,000 t-CO₂/yr or less) can be a CPA.
 - It seems better to have a small number of CPA candidates at the time of the PoA application.
- Requirements for the Coordinating/Managing Entity (CME)
 - The provisions of the Chinese Administrative Permission Law limit the entities that can be a Coordinating/Managing Entity in China to agencies, organizations and corporations excluding those that are governmental agencies and business units (e.g. industrial associations that receive public funds).
 - In this case, the Dyeing and Printing Association cannot be a Coordinating/Managing Entity, but Green Ensign can since it is a private corporation.
- The stakeholder comments can be invited on the PoA level.
- There are 5,000 - 6,000 tenters in China, and of which 2,000 - 3,000 are in Zhejiang Province. If we assume the same number of tenters per plant as the No.1 CPA candidate Qianjiang, 100 – 200 companies may be CPA candidates, which suggest high potential.
- There are three p-CDM projects approved by the Chinese government, and three that are being prepared for application.
 - The approved projects are those two that allow the use of agricultural biomass at households in Henan Province and a project that replaces transformers in the national grid.
 - The reason for so few approved p-CDM projects is the small number of applications submitted by the business operators, not that the examination by the government is more stringent for p-CDM than for general CDMs.
 - The Chinese government will welcome p-CDM applications as before.

- The reason for the small number of applications is that for CPA, many small-scale projects have to be put together, which takes time to process. In the projects in Henan Province, the business operator have to conclude a contract with 15,000 farmers. It takes enormous work to go through the actual processes, making such projects hard to implement.

Green Ensign explained about energy saving through the introduction of high-efficiency tenters and the CDM in November, 2010 at the 4th Zhejiang Dyeing and Printing Association 3rd council meeting hosted by the Zhejiang Dyeing and Printing Association and at the China Dyeing And Printing Association 2010 national dye and printing industry annual meeting for energy conservation and environmental protection organized by the China Dyeing and Printing Association. The level of knowledge for CDM was low among dye companies in attendance, and the thorough explanation on the mechanism of CDM must be offered in the future. However, many dye companies expressed a high level of interest in high-efficiency tenters and utilization of p-CDM.

Table 1 List of CPA Candidates

CPA List for Programme CDM to Introduce the High-Performance Tenters to the DyeWorks in Zhejiang Province, PR China

Name of the company	Total Number of Tenter	Tenter installed before 2000			Tenter installed from 2001 to 2005			Tenter installed from 2006 to 2010		
		Number of Tenter	Heat source	Manufacturer	Number of Tenter	Heat source	Manufacturer	Number of Tenter	Heat source	Manufacturer
1	21	-	-	-	17	Hot oil	TAIWAN LK&LH/KOREA EHIHA/ KOREA ILSUNG	4	Hot oil	MONFORTS (GERMANY) SHAOYANG (CHINA)
2	8	2	Hot oil	KOREA MEGATEX	4	Hot oil	KOREA MEGATEX	2	Hot oil	KOREA ILSUNG
3	9	-	-	-	6	heat-carrying agent boiler	TAIWAN LIKEN	3	-	TAIWAN LIKEN
4	16	3	Hot oil	KOREA ILSUNG TAIWAN CHENGFU	11	Hot oil	KOREA ILSUNG TAIWAN DONGYANG	2	Hot oil	KOREA ILSUNG
5	6	-	-	-	3	organic heat-carrying agent boiler	CHANGZHOU HAOYANG (KOREA)	3	organic heat-carrying agent boiler	TAIWAN LIKEN
6	1	-	-	-	-	-	-	1	Steam	KOREA EHIHA
7	9	-	-	-	4	Hot oil	KOREA ILSUNG	5	Hot oil	KOREA ILSUNG
8	12	-	-	-	8	Hot oil	KOREA EHIHA	4	Hot oil	KOREA EHIHA/ JIANG SU WEIPENG(CHINA)
9	5	-	-	-	1	Hot oil	ZHONG SHAN HUANGJI (CHINA)	4	Hot oil	ZHONG SHAN HUANGJI (CHINA)
10	5	-	-	-	3	Hot oil	TAIWAN YIGUANG	2	Hot oil	TAIWAN HUANGJI/ DONGYANG(TAIWAN)
11	11	-	-	-	-	-	-	11	Hot oil	TAIWAN LIKEN/ JIANGSU HAOYANG(CHINA)/SHANG HAI
12	19	3	Hot oil	KOREA ILSUNG/ GERMANY BRUCKNER	7	Hot oil	KOREA ILSUNG/KOREA EHIHA/ TAIWAN DONGYANG	9	Hot oil	KOREA ILSUNG/ KOREA EHIHA/ TAIWAN LK&LH/ XINYI (CHINA)/ FEIDA(CHINA)
13	16	2	Hot oil	KOREA ILSUNG/ KOREA MEGATEX	8	Hot oil	KOREA ILSUNG/ KOREA MEGATEX/ TAIWAN LK&LH/WUXI (CHINA)	6	Hot oil	KOREA ILSUNG/ KOREA MEGATEX
14	16	2	Hot oil	KOREA ILSUNG	5	Hot oil	KOREA ILSUNG/ KOREA MEGATEX/WUXI (CHINA)	9	Hot oil	KOREA ILSUNG/ KOREA MEGATEX/ WUXI (CHINA)
15	9	3	Hot oil	KOREA ILSUNG	3	Hot oil	KOREA ILSUNG	3	Hot oil	GERMANY MONFORTS
16	6	-	-	-	6	Hot oil	KOREA ILSUNG/KOREA EHIHA	-	-	-
17	7	4	Hot oil	KOREA EHIHA	3	Hot oil	KOREA EHIHA	-	-	-
18	2	-	-	-	2	Natural gas	SHAOYANG (CHINA)	-	-	-
19	-	-	-	-	-	-	-	-	-	-
20	-	-	-	-	-	-	-	-	-	-
21	-	-	-	-	-	-	-	-	-	-
22	-	-	-	-	-	-	-	-	-	-
23	-	-	-	-	-	-	-	-	-	-
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36	-	-	-	-	-	-	-	-	-	-
37	-	-	-	-	-	-	-	-	-	-
38	-	-	-	-	-	-	-	-	-	-
39	-	-	-	-	-	-	-	-	-	-
40	-	-	-	-	-	-	-	-	-	-

<Investigation result for Task 2: Baseline establishment>

New installation, improvement and replacement

When considering the policies for the dye industry in Zhejiang Province, China, which is the boundary for the respective CPA implemented under this PoA, it is appropriate to limit the activities under this PoA to replacement activities.

Timing of the equipment replacement

The respective CPA contains replacement plans for one or more tenters at the concerned site, and the appropriateness of the plans must be evaluated. The appropriate timing of the tenter replacement shall be decided in the respective CPA-DD, using the latest tool to determine the remaining lifetime of equipment.

When using this tool, it is deemed appropriate for the project participants to determine the remaining lifetime of the equipment by obtaining an evaluation from experts.

Combination of the multiple tenter replacements

The baseline scenario is the combination of the tenters “which would be introduced and operated at the same replacement times in the absence of the project.” Using the said tool, the plans to replace multiple tenters at the respective CPA site are further specified. The remaining life of the tenters is judged for each tenter.

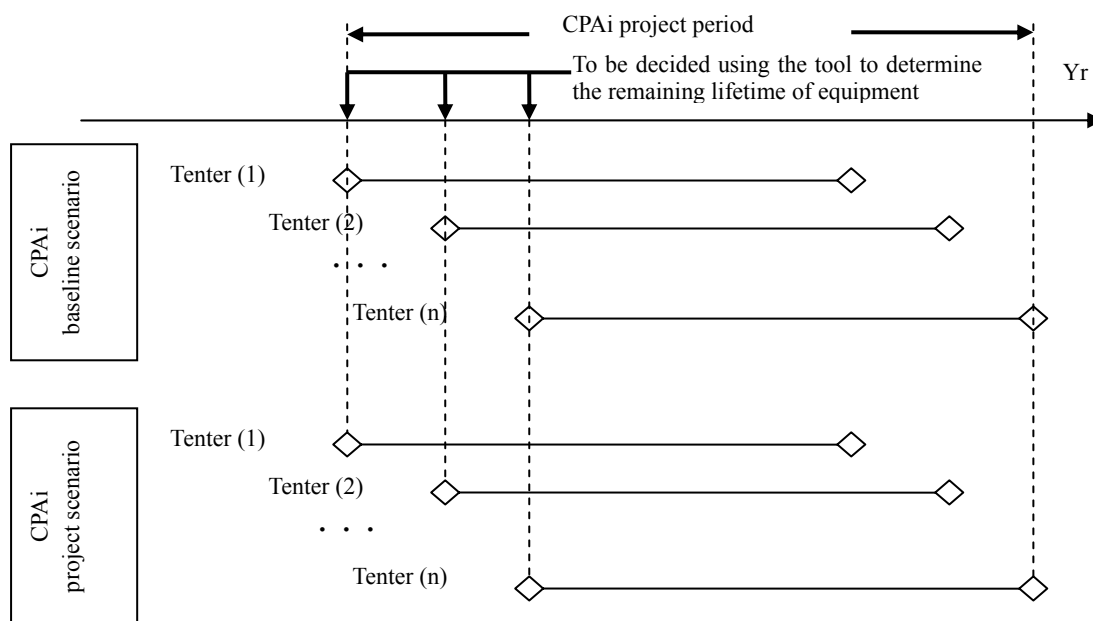


Figure 1 Combinations of multiple tenters

The method above is used for this CPA, which adopts the combination of the replacement timings for the 16 units shown below:

✓	<u>Existing tenters introduced at Qianjiang</u>	<u>Replacement planned</u>	<u>New units to commission</u>
	1999 2 units	2011	2012
	2001 4 units	2011	2012
	2002 5 units	2012	2013
	2006 1 unit	2016	2017
	2007 2 units	2017	2018
	2009 2 units	2019	2020

The project period of this CPA will be 28 years, until the end of the service life (20 years) of the units that will be introduced lastly, as seen in the combination above.

<Investigation results of Task 3: Additionality demonstration>

Investment analysis

In this survey, the investment analysis was conducted through economic analysis of Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd., which is a CPA candidate. IRR of this project is 10.91% without credit and 14.50% with credit.

Table 2 Profitability

	Without credit revenue	With credit revenue
IRR	10.91%	14.50%

The benchmark for Chinese textile industry is 14%, and 10.91% without credit and IRR in the sensitivity analysis are both below the benchmark. Thus, the project has low profitability without CDM and is not deemed attractive enough to investors. On the other hand, 14.50% with credit offers high profitability and can be considered an attractive project.

Common practice analysis

There is no common practice that implements activities similar to the CPA projects under this PoA, nor mandatory law or regulation that promotes the implementation of this PoA. The absence of any common practice can be demonstrated for this CPA, from the aspects of the energy performance and initial investment.

4. Survey result towards CDM project implementation

(1) Establishment of baseline scenario and project boundary

Establishment of baseline scenario

The baseline scenario for the CPA is in accordance with the baseline methodology set in the Methodology AMS II.C. (version 13) "Demand-side energy efficiency activities for specific technologies."

New installation, improvement and replacement

Within the boundary of the CPAs under this PoA, namely, Zhejiang Province, China, the consolidation of medium- and small-sized businesses, concentration of the production and efficiency improvement are promoted in the dye industry. Therefore, for this PoA, it is appropriate to limit the activities to replacements.

Tool to determine the remaining lifetime of equipment

Each CPA contains the future replacement plans for one or more tenters at the concerned site, and the appropriateness of the plans must be evaluated. The appropriate timings of the tenter replacement are determined in the respective CPA-DD, using the latest tool to determine the remaining lifetime of equipment, and based on the "(b) Obtain an expert evaluation" among the following three options offered by the tool.

- (a) Use manufacturer's information on the technical lifetime of equipment and compare to the date of first commissioning;
- (b) Obtain an expert evaluation;
- (c) Use default values

Combination of the multiple tenter replacements

The appropriate timing of the tenter replacement is decided for each CPA under this PoA, using the tool to determine the remaining lifetime of equipment. Thus, the baseline scenario is the combination of the tenters “which would be introduced and operated at the same replacement times in the absence of the project.” Using the said tool, the plans to replace multiple tenters at the respective CPA site are further specified. The remaining life of the tenters is judged for each tenter.

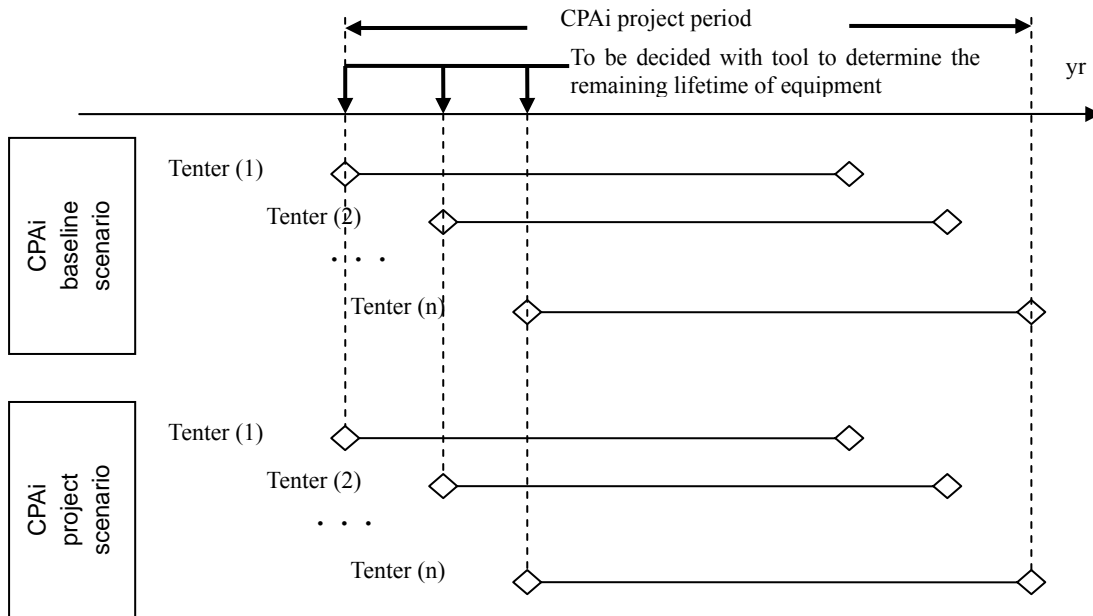


Figure 1 Combinations of multiple tenters

Combination of the replacement times in the CPA

To apply option (b) “Obtain an expert evaluation” provided in the tool to determine the remaining lifetime of equipment for this CPA, an expert of dyeing technology evaluated each of the 16 tenters at the CPA site concerned during the second local survey and concluded as below:

- ✓ Of their main products of rayon and polyester, rayon has weak fibers and generates dust which, when mixed with finishing oil, sticks to the ducts. This causes the performance to deteriorate rapidly as the equipment becomes old. However, it is impossible to stop the equipment for maintenance since 24-hour full operation is assumed.
 - ✓ During rayon/polyester production, fabric passes the tenter many times (three times, twice if polyester 100%), and the tenter is used more than judged based on the production amount.
 - ✓ Thus, based on the equipment use and replacement situation so far at Qianjiang, the interval between equipment replacement is judged to be about 10 years (to be judged for each unit)
 - ✓ On the other hand, in this CPA, the optimal equipment use is instructed based on the preventative maintenance, and the time between replacement is expected to be 20 years.
- | Existing tenters introduced at Qianjiang | Replacement planned | New units to commission |
|--|---------------------|-------------------------|
| 1999 2 units | 2011 | 2012 |
| 2001 4 units | 2011 | 2012 |
| 2002 5 units | 2012 | 2013 |
| 2006 1 unit | 2016 | 2017 |
| 2007 2 units | 2017 | 2018 |
| 2009 2 units | 2019 | 2020 |

The combination of these replacement timings is adopted for the 16 units in this CPA. The project period of this CPA shall be 28 years, until the end of the service life (20 years) of the units that are introduced lastly, as seen in the combination above.

Additionality tool

In order to show that the activities would not have been implemented without this PoA, the latest “Tool for the demonstration and assessment of additionality” is used as the UNFCCC additionality tool.

Step 1. Identification of alternatives to the project activity consistent with current laws and regulation

For respective CPA, alternative activities are identified according to Methodology AMS-II.C. “Demand-side energy efficiency activities for specific technologies.”

Sub-Step 1a: Define the most plausible baseline scenario for the generation of heat and electricity using the following baseline options and combinations.

For respective CPA, alternative scenarios to the project activities are identified as shown below:

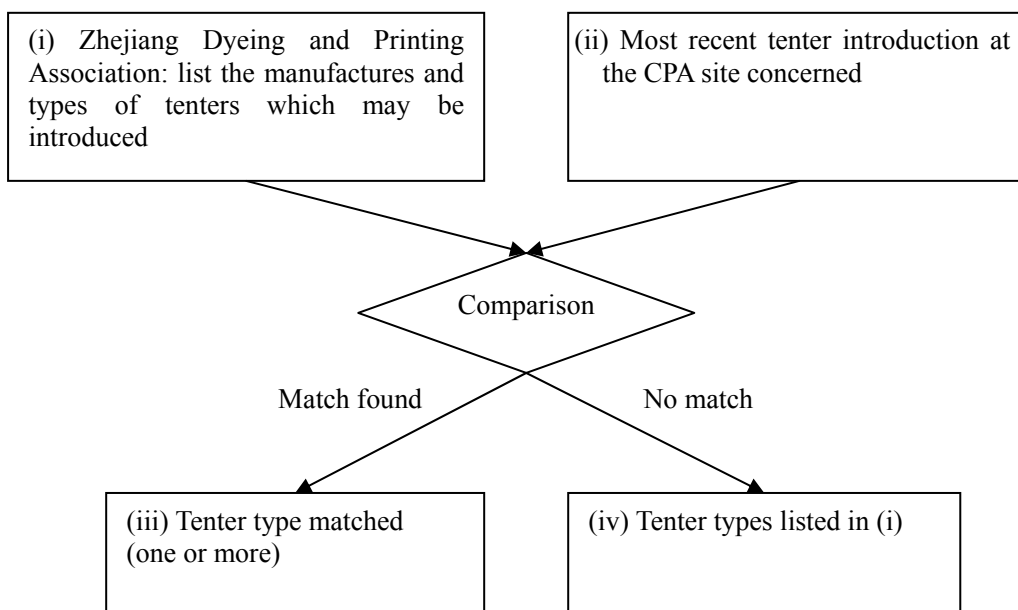


Figure 2 Identification of alternative scenarios to the project activity

- (i) Upon replacement of one or more tenters planned by the CPA, the organization controlling the dye industry in Zhejiang Province (Zhejiang Dyeing and Printing Association) lists the manufacturers and types of tenters that could be introduced based on thorough consideration of the past tenter introductions and market trend.
- (ii) Research the most recent tenter introduction at the CPA site concerned and check it against the list in (i) above. The manufacturers and types of tenters that matched are considered to be the alternative scenarios to the project activity.
- (iii) If there is more than one result from (ii), all of them are considered to be the alternative scenarios to the project activity.
- (iv) If there is no result from (ii), all of those listed in (i) are considered to be the alternative scenarios to the project activity.

Thus, the possible scenarios for tenter introduction in respective CPA are those two shown below:

<p>B1: Proposed project activity (implemented in a form other than as a CDM project)</p> <p>B2: Excluding the tenter types that are introduced in the proposed activity, those identified in (i) - (iv) above (one or more) are introduced.</p>

In absence of this CPA, alternatives shown below are possible:

Alternative scenarios	Conditions met in this CPA
Upon one or more tenter replacement planned by the CPA, the organization supervising the dye industry in Zhejiang Province (Zhejiang Dyeing and Printing Association) lists the manufacturers and types of tenters that could be introduced based on thorough consideration of the past tenter introductions and market trend.	Based on thorough consideration of the past tenter introductions and market trend, the manufacturers and types of tenters that the organization supervising the dye industry in Zhejiang Province (Zhejiang Dyeing and Printing Association) judged to be introducible are those from South Korea, Germany, Chinese Taiwan and China. The ratio of Korean-made tenters in Zhejiang Province is 70%.
Research the most recent tenter introduction at the concerned CPA site, and check them against the list in (i) above. The manufacturers and types of tenters that matched are considered the alternative scenarios to the project activity.	The tenters most recently introduced at this CPA site were Korean products. The existing 16 tenters include 13 Korean, 2 Chinese Taiwanese, and 1 Chinese. No German tenter has been or planned to be installed.
If there is more than one result from (ii), all of them are considered the alternative scenarios to the project activity.	The tenters most recently introduced at this CPA site were Korean products only.
If there is no result from (ii), all of those listed in (i) are considered the alternative scenarios to the project activity.	Since (ii) produces results for this CPA, it is not necessary to consider all of those listed in (i) to be the alternative scenarios to the project activity.

Thus, the possible scenarios for tenter introduction in this CPA are the two below:

- B1: Introduction of high-efficiency tenters developed independently in Japan
However, it is done as a general business not as a CDM project activity.
- B2: Introduction of Korean tenters.

Establishment of the project boundary

The boundary of this PoA is the area within the geographical boundary of Zhejiang Province, China.



Figure 3 PoA boundary

Also, the boundary of each CPA is the tenters that are housed in the same dye works and emissions from the conversion of (fossil fuel and electric) energy supplied to them. For fossil fuels, the target is CO₂ from the combustion at the boilers that heat the oil used for indirect heating at the tenters. For electricity, the target is CO₂ emitted indirectly from the power plants that are connected to the East China Power Grid supplying power to Zhejiang Province.

The boundary of this CPA (CPA No.1) is the 16 tenters owned by Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd. in Zhejiang Province, China (located in Xinnong Bridge Shushan North, Hezhuang Town, Xiaoshan District, Hangzhou City, Zhejiang Province, China) and CO₂ emissions that result from the conversion of energy supplied to them. Fossil fuel in this CPA is coal.

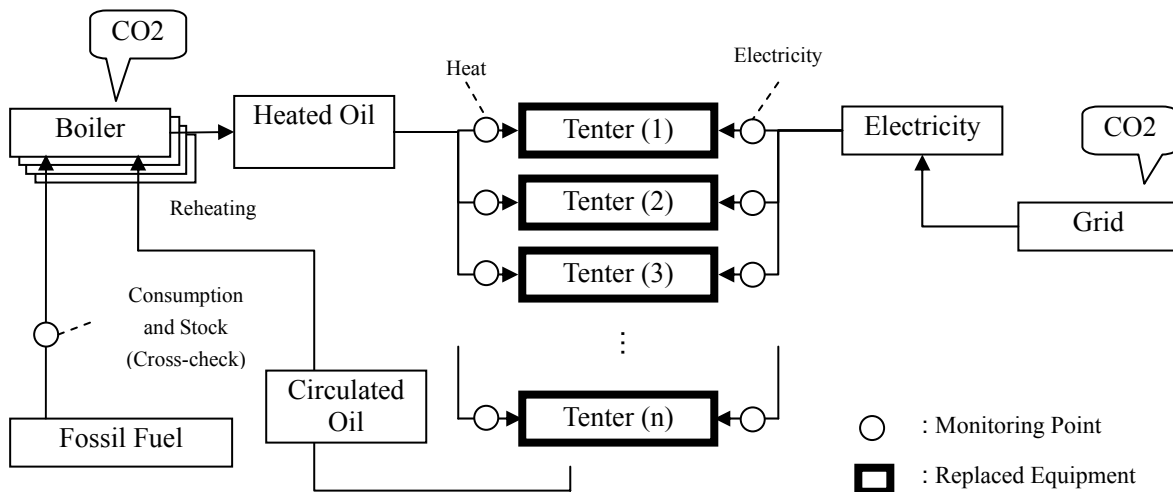


Figure 4 Flow within the boundary of respective CPA

Calculation method for the baseline emissions

The energy to be reduced is in fossil fuel and electricity. The baseline emissions are calculated by determining those attributable to fossil fuel and electricity separately and adding them up.

$$BE_y = BEF_y + BEE_y$$

where,

- BE_y Baseline emissions in year y (tCO₂e)
- BEF_y Baseline emissions from fuel consumption in year y (tCO₂e)
- BEE_y Baseline emissions from electricity consumption in year y (tCO₂e)

Fossil fuel:

For fossil fuel, it is defined in AMS II.C. (version 13) as follows:

If the energy displaced is fossil fuel based, the energy baseline is:

- (a) the existing level of fuel consumption, or
- (b) the amount of fuel that would be used by the technology that would have been implemented otherwise.

For respective CPA, the calculations are done as shown below using (b) above:
For this CPA, coal is used for this purpose.

$$BEF_y = EF_{BL,y} * EF_{CO2,F,y}$$

where,

- BEF_y Baseline emissions from fuel consumption in year y (tCO₂e)
- $EF_{BL,y}$ Fuel consumption in the baseline in year y (t)
- $EF_{CO2,F,y}$ Emission factor of the fuel in year y (tCO₂/t-fuel)

Electricity:

The calculations for electricity are to be done as below, as stipulated in AMS II.C. (version 13) for respective CPA:

$$BEE_y = EE_{BL,y} * EF_{CO_2,F,y} + Q_{ref,BL} * GWP_{ref,BL}$$

where,

BEF_y	Baseline emissions from electricity consumption in year y (tCO ₂ e)
$EE_{BL,y}$	Electricity consumption in the baseline in year y (kWh)
$EF_{CO_2,ELEC,y}$	Emission factor of the fuel in year y calculated in accordance with the provisions in AMS-I.D (tCO ₂ /MWh)
$Q_{ref,BL}$	Average annual quantity of refrigerant used in the baseline to replace the refrigerant that has leaked, which is zero in any CPAs.
$GW_{Pref,BL}$	Global Warming Potential of the baseline refrigerant (t CO ₂ e/t refrigerant)

(2) Project emissions

The Project emissions are calculated by determining those attributable to fossil fuel and electricity separately and adding them up in the same manner as with the baseline emissions.

$$PE_y = PEF_y + PEE_y$$

where,

PE_y	Project emissions in year y (tCO ₂ e)
PEF_y	Project emissions from fuel consumption in year y (tCO ₂ e)
PEE_y	Project emissions from electricity consumption in year y (tCO ₂ e)

Fossil fuel:

For fossil fuel, AMS II.C. (version 13) defines as follows:

For this CPA, coal is used for this purpose.

$$PEF_y = EF_{PJ,y} * EF_{CO_2 FUEL,y}$$

where,

PEF_y	Project emissions from fuel consumption in year y (tCO ₂ e)
$EF_{PJ,y}$	Fuel consumption in project activity in year y. This shall be determined ex post based on monitored values (t)
$EF_{CO_2,FUEL,y}$	Emission factor of the fuel in year y (tCO ₂ /t-fuel)

Electricity:

For electricity, AMS II.C. (version 13) stipulates as shown below:

$$PEE_y = EE_{PJ,y} * EF_{CO_2 ELEC,y}$$

where,

PEE_y	Project emissions from electricity consumption in year y (tCO ₂ e)
$EE_{PJ,y}$	Electricity consumption in project activity in year y. This shall be determined ex post based on monitored values (kWh)
$EF_{CO_2,ELEC,y}$	Emission factor of the fuel in year y calculated in accordance with the provisions in AMS-I.D (tCO ₂ /MWh)

The AMS II.C. (version 13) provides that “If the energy efficiency technology is equipment transferred from another activity, leakage is to be considered,” however, the leakage is zero in this CPA since the replaced equipment will be disposed.

(3) Monitoring plan

<Monitoring plan as PoA>

The Coordinating/Managing Entity is to have DOE conduct verification for each CPA. In respective CPA, the monitoring is done according to the monitoring methodology in the Methodology AMS II.C. (version 13) “Demand-side energy efficiency activities for specific technologies,” and the data is

reported to the Coordinating/Managing Entity periodically after the validity of the data is cross-checked. The Coordinating/Managing Entity prepares monitoring reports encompassing all CPAs within the PoA, so that DOE can carry out verification for each CPA. The monitoring data collected and stored for each CPA for this purpose is reported to the project database that the Coordinating/Managing Entity controls. CERs are then calculated for each CPA and for the entire PoA.

The primary monitoring data is stored by each CPA and the Coordinating/Managing Entity for a certain period of time. The calculation results are kept by the Coordinating/Managing Entity for a set period, and the feedback is given to CPAs after the preparation of the monitoring reports, especially about CERs that the respective CPA is responsible for.

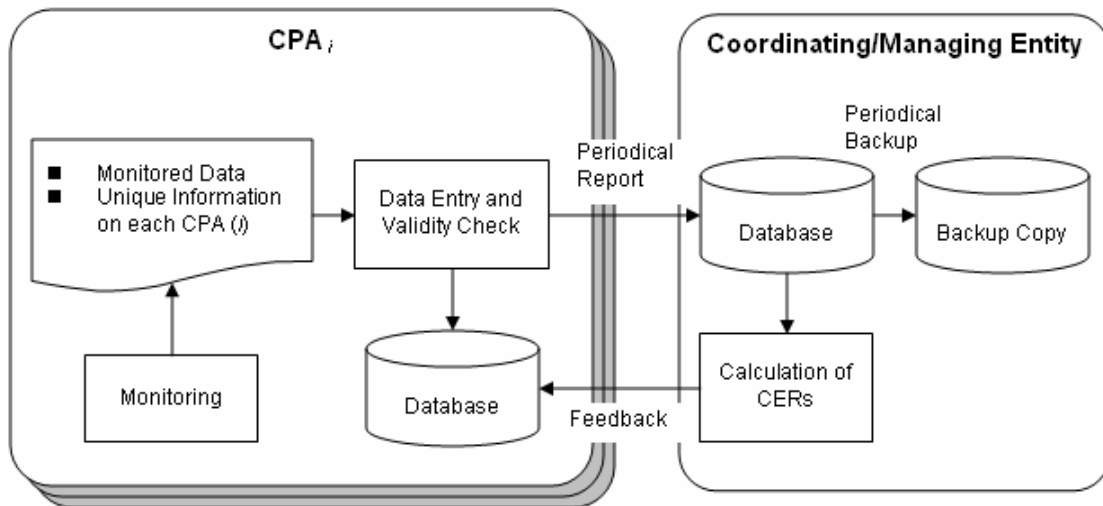


Figure 5 Data collection and storage procedure

<Monitoring plan as a CPA (Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd.) >

The project participants carry out monitoring based on the method below, and use the results for the verification of emissions reduction during the crediting period.

Monitoring method applied to the project

The project aims to reduce greenhouse gas emissions by using less heat and electricity through the utilization of energy-saving equipment. Since the annual energy reduction of 44.28GWh is 60 GWh or less, the project meets the requirements for the small-scale CDM methodology and the provisions set forth in AMS II.C, thus the monitoring method described in AMS II.C. may be applied. Based on the provisions of SSC-PoA-DD, the monitoring plan for Qianjiang Printing and Dyeing Co., LTD in Zhejiang Province, which is CPA, is explained.

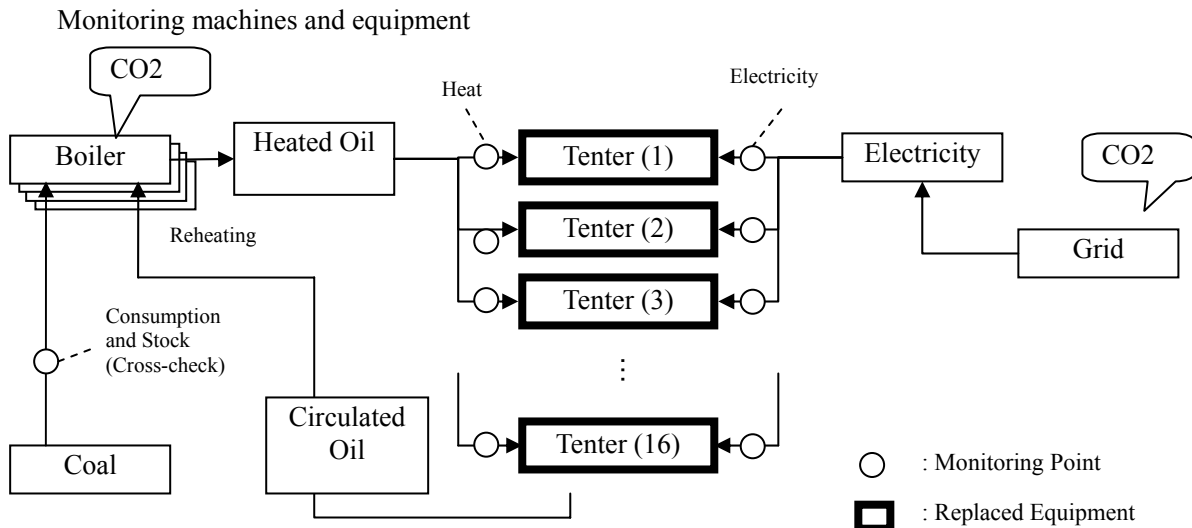
Monitoring organization

The project participants organize a CDM team that deals with data collection, management and verification. The team leader who is in charge receives a technological training and support from CDM experts.

Parameters needed for the monitoring of the project

The project participants carry out monitoring based on the method below, and use the results for the verification of the emissions reduction during the crediting period.

Parameter	Unit	Description	Calculation method	Measurement and calculation method
Parameters necessary for calculating emissions attributable to electricity				
BE_y	tCO2/y	Annual baseline emissions	Calculation	$BE_y = \sum_j E_{j,y}^B$
$E_{j,y}^B$	tCO2/y	Annual baseline emissions from the target equipment "j"	Calculation	$E_{j,y}^B = Q_{j,y}^B * EF_{j,y}^B$
$Q_{j,y}^B$	MWh/y	Annual electricity consumption by the target equipment "j"	Measurement	Measure the electricity consumed by the target equipment in the baseline scenario using wattmeter
PE_y	tCO2/y	Annual project emissions	Calculation	$PE_y = \sum_j E_{j,y}^P$
$E_{j,y}^P$	tCO2/y	Annual project emissions from the target equipment "j"	Calculation	$E_{j,y}^P = Q_{j,y}^P * EF_{j,y}^P$
$Q_{j,y}^P$	MWh/y	Annual electricity consumption by the target equipment	Measurement	Measure the electricity consumed by the target equipment in the baseline scenario using wattmeter
$EF_{j,y}^P$	tCO2/MWh	Emission factor of electricity during project period	Reference	Refer to 2010 emission factors of East China Power Grid (issued by National Development and Reform Commission)
Parameters necessary for calculating emissions attributable to heat				
$BE_{heat,y}$	tCO2/y	Annual baseline emissions	Calculation	$BE_{heat,y} = HG_{j,y}^B * EF_{heat,j,y}$
$HG_{j,y}^B$	TJ	Heat obtained from boilers annually in the baseline	Measurement	Measure all heat consumed using meters such as flowmeter
$PE_{heat,y}$	tCO2/y	Annual project emissions	Calculation	$PE_{heat,y} = HG_{j,y}^P * EF_{heat,j,y}$
$HG_{j,y}^P$	TJ	Heat obtained from boilers annually in the project	Measurement	Measure all heat consumed using meters such as flowmeter
$EF_{heat,j,y}$	tCO2/TJ	CO2 emission factor for heat supplied by boilers	Calculation	$EF_{heat,j,y} = EF_{CO2,j} / \eta_{Boiler,j}$
$EF_{CO2,j}$	tCO2/TJ	CO2 emission factor per unit of energy for fossil fuel used by boilers	Reference	IPCC
$\eta_{Boiler,j}$	%	Boiler efficiency	Reference	Methodology



Quality management and quality assurance

The main items to be monitored in this project are electricity and heat used by the tenters. The procedures for quality management and quality assurance of monitoring are:

1. Monitoring machines - installation of wattmeters and flowmeters, periodical data measurement and recording
2. Inspection and periodical calibration of wattmeters and flowmeters

Data management

The monitoring data obtained and maintained is submitted to the Coordinating/Managing Entity of PoA, and the Coordinating/Managing Entity prepares the monitoring report periodically. Also, the Coordinating/Managing Entity keeps the backup copy of the monitoring data reported from all CPAs (for two years as a rule).

Monitoring method for the tenter expansion, new installation and disposal

When the participants replace tenters, the specifications, serial numbers and the replacement date of the equipment to be disposed shall be recorded at the time of the replacement. The CPA Implementation Agreement shall require that the replaced equipment is not to be disposed until the verification is complete at the presence of the Coordinating/Managing Entity. For expanded or newly installed equipment, the specifications, serial numbers and the replacement date shall be recorded and monitored in the same manner.

(4) Greenhouse gas emissions reduction

Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd. is to replace the 16 tenters it owns with high-efficiency tenters developed independently in Japan, more specifically, 6 units in 2012, 5 units in 2013, 1 unit in 2017, 2 units in 2018 and 2 units in 2020.

For the calculation of the baseline and project emissions, the emissions per tenter are calculated. The emissions reduction is calculated as shown below:

(A) Baseline emissions calculation

The energy to be reduced is fossil fuel and electricity, and the calculation is done separately and the results are added up.

$$\text{○ Fossil fuel: } BEF_y = EF_{BL,y} * EF_{CO2,F,y} = 896\text{t-coal/y} \times 23.7 \text{ TJ/Gg-coal} \times 25.8 \text{ kg-C/GJ} \times 44/12 = 2,008 \text{ t-CO}_2/\text{y}$$

* The heat value of the coal used at the works and emission factor of bituminous coal are assumed

$$\text{○ Electricity: } BEE_y = EE_{BL,y} * EF_{CO2,F,y} + Q_{ref,BL} * GWP_{ref,BL} \\ = 479 \text{ MWh/y} \times 0.7826 \text{ t-CO}_2/\text{MWh} + 0 = 375 \text{ t-CO}_2/\text{y}$$

* CM (Combined Margin) of East China Power Grid, per Chinese government (2009)

○ Total: $BE_y = BEF_y + BEE_y = 2,008 + 375 = 2,383 \text{ t-CO}_2/\text{y}$

(B) Project emissions calculation

The amounts attributable to fossil fuel and electricity are added up to obtain the project emissions in the same manner as with the baseline emissions.

○ Fossil fuel: $PEF_y = EF_{PJ,y} * EF_{CO2 \text{ FUEL},y}$
 $= 480 \text{ t-coal/y} \times 23.7 \text{ TJ/Gg-coal} \times 25.8 \text{ kg-C/GJ} \times 44/12$
 $= 1,076 \text{ t-CO}_2/\text{y}$

○ Electricity: $PEE_y = EE_{PJ,y} * EF_{CO2 \text{ ELEC},y}$
 $= 445 \text{ MWh/y} \times 0.7826 \text{ t-CO}_2/\text{MWh}$
 $= 348 \text{ t-CO}_2/\text{y}$

○ Total: $PE_y = PEF_y + PEE_y = 1,076 + 348 = 1,424 \text{ t-CO}_2/\text{y}$

(C) Leakage

AMS II.C. (version 13) stipulates that “If the energy efficiency technology is equipment transferred from another activity, leakage is to be considered.” However, the leakage is zero in the CPA since the replaced equipment will be disposed.

(D) Emissions reduction calculation

The emissions reduction is calculated as follows according to AMS II.C. (version 13):

$$ER_y = (BE_y - PE_y) - LE_y$$

$$= 2,383 \text{ t-CO}_2/\text{y} - 1,424 \text{ t-CO}_2/\text{y} - 0 \text{ t-CO}_2/\text{y}$$

$$= 959 \text{ t-CO}_2/\text{y}$$

The estimated emissions reduction achieved by the project are as shown in the table.

Table 3 Greenhouse gas emissions reductions

Year	Estimation of project activity emissions (tonnes of CO ₂ e)	Estimation of baseline emissions (tonnes of CO ₂ e)	Estimation of leakage (tonnes of CO ₂ e)	Estimation of overall emission reductions (tonnes of CO ₂ e)
2012	8,544	14,298	0	5,754
2013	15,664	26,213	0	10,549
2014	15,664	26,213	0	10,549
2015	15,664	26,213	0	10,549
2016	15,664	26,213	0	10,549
2017	17,088	28,596	0	11,508
2018	19,936	33,362	0	13,426
2019	19,936	33,362	0	13,426
2020	22,784	38,128	0	15,344
2021	22,784	38,128	0	15,344
2022	22,784	38,128	0	15,344
2023	22,784	38,128	0	15,344
2024	22,784	38,128	0	15,344
2025	22,784	38,128	0	15,344
2026	22,784	38,128	0	15,344
2027	22,784	38,128	0	15,344
2028	22,784	38,128	0	15,344
2029	22,784	38,128	0	15,344
2030	22,784	38,128	0	15,344

Year	Estimation of project activity emissions (tonnes of CO2 e)	Estimation of baseline emissions (tonnes of CO2 e)	Estimation of leakage (tonnes of CO2 e)	Estimation of overall emission reductions (tonnes of CO2 e)
2031	22,784	38,128	0	15,344
2032	14,240	23,830	0	9,590
2033	7,120	11,915	0	4,795
2034	7,120	11,915	0	4,795
2035	7,120	11,915	0	4,795
2036	7,120	11,915	0	4,795
2037	5,696	9,532	0	3,836
2038	2,848	4,766	0	1,918
2039	2,848	4,766	0	1,918
Total (tonnes of CO2 e)	457,104	764,943	0	307,839
	16,325	27,319	0	10,994

(5) Project period and crediting period

< PoA >

Project period: 1/1/2012 - 12/31/2039 (28 years)

This was selected based on the guidance in CDM EB41, considering the start date of this PoA to be the day that the project is registered with CDM EB. The implementation of each CPA becomes a “real action” as defined in the guidance set by CDM EB after the registration. Thus, the registration date is deemed appropriate as the start date of this PoA.

< CPA (Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd.) >

Project period: 1/1/2012 - 12/31/2039 (28 years)

Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd. is to replace the 16 tenters it owns with high-efficiency tenters developed independently in Japan, more specifically, 6 units in 2012, 5 units in 2013, 1 unit in 2017, 2 units in 2018 and 2 units in 2020. The service life of high-efficiency tenters developed independently in Japan is assumed to be 20 years, however, since the tenters are to be brought in at five different years, the project period is 28 years.

Crediting period: 1/1/2012 - 12/31/2021 (10 years)

The fixed crediting period of 10 years is assumed without renewal. The actual start of the crediting period will be the later of 1/1/2012 or the registration date.

(6) Environmental impact and other indirect impact

The standards that relate to the environmental impact of this CPA are shown below:

Table 4 Standards and codes

Standard	Code
Ambient air quality standard	GB3095-1996
Emission standard of air pollutants for boilers	GB13271-2001
Emission standard for industrial enterprises noise at boundary	GB12348-2008
Environmental quality standard for noise for urban areas	GB3096-2008
Integrated wastewater discharge standard	GB8978-1996
Discharge standard for the dyeing and finishing textile industry	GB4287-92

This CPA satisfies all of the environmental standards above.

(7) Comments by the stakeholders

In the host country, the provincial government (or city or county government depending on the scale) controls the project as the authority. It is the same with the central government, in that the Development and Reform Commission manages CDM and Environmental Protection Bureau supervises any environmental impacts.

Development and Reform Commission of Zhejiang Province Government (Sep. 16, 2010)

- Zhejiang Provincial Development and Reform Commission considers the difficulty of monitoring to be the problem since there are few successful program CDM projects.
- It examines the appropriateness of projects with the reduction potential of 10,000 tonnes or more as CPA candidates, and recommends projects with the reduction potential of 30,000 tonnes or more to be implemented as general CDM projects as a rule.
- If this program is to be carried out as a program CDM project, it recommends that the program start as a model with five or six tenters with reduction potential of 2,000 – 3,000 tonnes.

Zhejiang Dyeing and Printing Association (Sep. 16, 2010 and Nov. 15, 2010)

- This PoA is a good project. However, since it is new, the information must be spread throughout the dye industry in Zhejiang Province. The first case of program CDM will be evaluated as a model.
- For publicity, it might be effective to conduct a demonstration using Japanese products as a model.
- It seems easier to implement the project as a CDM project since Zhejiang Province has a relatively stable economic basis compared to other provinces.
- CPA site should be chosen from the large-scale works.
- There are 1,300 tenters in Zhejiang Province, which suggest higher potential.

Green Ensign (Beijing) New Energy & Utility Technology Development Co., Ltd (Sep. 17, 2010)

The role that Green Ensign (Beijing) New Energy & Utility Technology Development Co., Ltd is expected to play was explained again and questions answered. The parties reached an agreement.

Professor Wei Zhihong of Tsinghua University (expert at CDM executive board of China, professor of the Institute of Nuclear and New Energy Technology and the Deputy Director of the Global Climate Change Institute of Tsinghua University) (Jan. 25, 2011)

- Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd.'s concern for the high-efficiency tenters might be about the proof of quality rather than the price. (explained that Qianjiang plans to visit the high-efficiency tenter manufacturer in Japan to check the actual products)
- There are three ways to obtain the data on emissions for the baseline emissions calculations:
 - Past data on the existing equipment: data for the past 3 years is required. If it cannot be submitted, at least the data from the past year is needed. The data does not have to be continuous.
 - Technical data from the specifications: the energy saving effect listed in the specifications is usually higher than the actual figure. Thus, the use of this data is deemed conservative in the calculation of the emissions.
 - Certification by an expert
- The concept behind the baseline establishment is the status quo, and the method of the survey is in accordance with the concept.
- The method that the Coordinating/Managing Entity (CME) receives the revenue from credit sales in the first stage is appropriate.
- The unit price of the flowmeters used in the monitoring for the CPA is 150,000 yuan/unit, which is high. Therefore, the meters don not have to be fixed at all monitoring points; instead, they can be used at several different locations.
- Project scale suitable for CPA
 - A few years ago (2004 – 2005), small-scale projects with 15,000 t-CO₂/yr or less were

- preferred. However, since the number of projects is limited, there is no particular restriction these days.
 - As a rule, any small-scale CDM project (e.g. annual emissions of 60,000 t-CO₂/yr or less) can be a CPA.
 - It seems better to have a small number of CPA candidates at the time of the PoA application.
- Requirements for the Coordinating/Managing Entity (CME)
 - The provisions of Chinese Administrative Permission Law limit the entities that can be a Coordinating/Managing Entity in China to agencies, organizations and corporations excluding those that are governmental agencies and business units (e.g. industrial associations that receive public funds).
 - In this case, the Dyeing and Printing Association cannot be a Coordinating/Managing Entity, but Green Ensign can since it is a private corporation.
- It was ensured that Green Ensign understood the functions of the Coordinating/Managing Entity (CME).
- The stakeholder comments can be invited on the PoA level.
- A CDM application in China requires three governmental approvals below:

Item to be approved	Agency giving approval
Project approval	National Development and Reform Commission (new field), Economic and Trade Commission (technological improvement field) * this project is under the Economic and Trade Commission (technological improvement field)
EIA	Environmental Protection Bureau
Business operator approval	Administration for Industry and Commerce

- EIA (Environmental Impact Assessment)

According to the EIA management category list for construction projects, the environmental impact assessment for investments in China is done under three different management methods:

 - EIA registration form: business operators apply directly to the environmental protection section. The approval takes 15 days and there is no need to hire an environmental assessment company.
 - EIA report form: for medium- to small-scale projects with a certain degree of environmental impact but no pollution. Business operators must hire an environmental assessment company to prepare a report. The approval takes 30 days.
 - EIA report: for projects that cause environmental pollution and impact. Business operators must hire an environmental assessment company to prepare a report. The approval takes about 60 days.

Since this project does not cause environmental pollution or impact due to the replacement of the equipment, the application using the easiest method EIA registration form above seems sufficient. Although the submission of EIA was mandatory for CDM projects, the requirement has been eased. For this project, the approval from the Environmental Protection Bureau of the town that Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd. belongs should suffice.
- Investment benchmarks
 - The (latest) benchmarks currently used in China are in the Economic Evaluation Methods and Parameters for Construction Projects (3rd Edition) issued by the National Development and Reform Commission in 2006.
 - The “methods and parameters” roughly divides Chinese industries into 24 categories, and further divide each category into several smaller subcategories. International standards are expected to be announced in the future, however, all industries are only divided into three categories.
 - The Economic Evaluation Methods and Parameters for Construction Projects (3rd Edition) is sufficiently detailed and has enough basis and authority.
- Leakage
 - There is no regulation regarding waste recycling for industries in China. On the other

- hand, the regulations are in place for five industries such as paper manufacturing and small-scale power generation to eliminate outdated facilities.
- For small-scale projects, the inspection by DOE on leakage is less stringent.
 - There seems to be no problem in proving that the equipment is not recycled and therefore the leakage is zero by obtaining a certificate issued by the recycling contractor of the project.
- There are no energy conservation or environmental regulations imposed on the Chinese industries on the national level. There might be regulations on the province level or below, for which a hearing must be done with each company. There is no related regulation in Zhejiang Province. The dye industry has the “criteria for entrance into the industry” which only applies to new entries into the business, not to existing works.
 - There are 5,000 - 6,000 tenters in China, and of which 2,000 - 3,000 are in Zhejiang Province. If we assume the same number of tenters per plant as the No.1 CPA candidate Qianjiang, 100 – 200 companies may be CPA candidates, which suggest high potential. Of those companies, the CPA candidate list was prepared with the help of the Zhejiang Dyeing and Printing Association, etc. The information on the tenter introduction was obtained for 18 dye works. Meanwhile, the dye works that showed interest in energy saving through the introduction of high-efficiency tenters and the utilization of p-CDM were compiled in a list (total of 40 works).
 - Green Ensign (Beijing) New Energy & Utility Technology Development Co., Ltd described energy saving through the introduction of high-efficiency tenters and the CDM in November, 2010 at the 4th Zhejiang Dyeing and Printing Association 3rd council meeting hosted by the Zhejiang Dyeing and Printing Association and at the China Dyeing And Printing Association 2010 national dye and printing industry annual meeting for energy conservation and environmental protection organized by the China Dyeing And Printing Association.
 - There are three p-CDM projects approved by the Chinese government, and three that are being prepared for application.
 - The approved projects are those two that allow the use of agricultural biomass at households in Henan Province and a project that replaces transformers in the national grid.
 - The reason for so few approved p-CDM projects is the small number of applications submitted by the business operators, not that the examination by the government is more stringent for p-CDM than for general CDMs.
 - The reason for the small number of applications is that for CPA, many small-scale projects have to be put together, which takes time to process. In the projects in Henan Province, the business operator have to conclude a contract with 15,000 farmers. It takes enormous work to go through the actual processes, making such projects hard to implement.
 - The Chinese government will welcome p-CDM applications as before.

(8) Project implementation scheme

The roles of the Coordinating/Managing Entity and CPA are illustrated below:

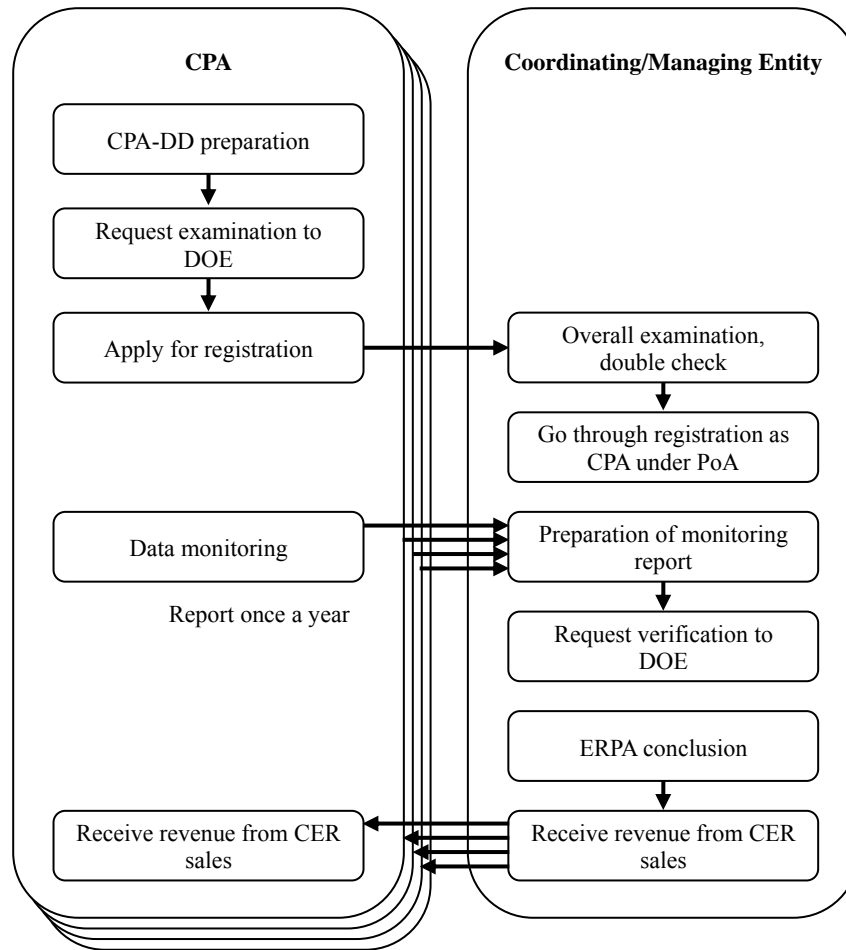


Figure 6 Responsibilities in PoA and CPA operation

(9) Financial plans

The total capital necessary for the project is about 31.2 million yuan, all of which is invested with funds at hand.

(10) Economic analysis

Economic indexes

The main economic indexes for the project are as listed below:

Table 1) Parameters for the calculation of main financial indicators

Initial investment	31.2 million yuan
Electricity unit price	0.6yuan/kwh (excluding VAT)
Electricity saved	540Mwh
Coal unit price	700yuan/t (excluding VAT)
Coal saved	6,653t
Corporation tax	25%
City Maintenance and construction tax	7%
Education surcharge	3%
Project period	28 years ^(note 1)
Crediting period	10 years
Credit price	9Euro/tCO ₂ e (exchange rate of Euro and RMB is 1:10)

Note 1: Qianjiang Printing & Dyeing Chemical Co., Ltd. is to replace the 16 tenters it owns, more specifically, 6 units in 2012, 5 units in 2013, 1 unit in 2017, 2 units in 2018 and 2 units in 2020. The service life of the tenters is assumed to be 20 years.

Project profitability

IRR of this project is 10.91% without credit and 14.50% with credit.

Table 5 Profitability

	With credit revenue	Without credit revenue
IRR	10.91%	14.50%

(11) Additionality demonstration

The flow of demonstration in accordance with the additionality tool is as follow:

For Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd., mainly Step2 (investment analysis) is carried out. The investment analysis shows about Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd., which is CPA, and the common practice analysis the situation in Shanxi province which is the boundary.

Step 2: Investment analysis

Sub-step 2a: Determine the appropriate analysis method

In any CPA, the project activity (tenter replacement and operation) is one of the essential production activities at dye works, and creates added value that lead to dye products. Thus, “Option I. Apply simple cost analysis” cannot be used in any CPA-DD. Also, since the project activity (tenter replacement and operation) is one of the essential production activities at dye works, this portion cannot be outsourced. Thus, the validity of investments cannot be judged based solely on the profitability of the project activity.

In reality, one activity is selected among multiple options (Scenario B1, B2 and project scenario) with regard to necessary production processes that tenters perform.

The “Annex: Guidance on the Assessment of Investment Analysis” (ver. 03) of the “Tool for the demonstration and assessment of Additionality” (ver.05.2) provides the appropriate procedure for selecting between remaining “Option II. Apply investment comparison analysis” and “Option III. Apply benchmark analysis.”¹

The purpose of an investment analysis in the context of the CDM is to determine whether the project is less financially attractive than at least one alternative in which the project participants could have invested. In cases where the alternative requires investment in any way and baseline emissions are based on that alternative, the only means of determining that the project activity is less financially attractive than at least one alternative is to conduct an investment comparison analysis. The benchmark approach is therefore suited to circumstances where the baseline does not require investment or is outside the direct control of the project developer, i.e. cases where the choice of the developer is to invest or not to invest. (paragraph 16)

In CPAs, it seems closer to the actual situation to consider the difference between the project activity and its alternative scenario to be the additional investment, and in which case, no investment is assumed in the baseline. Thus, it is appropriate to use “Option III. Apply benchmark analysis” in CPA-DDs.

¹ http://cdm.unfccc.int/EB/051/eb51_repan58.pdf

Sub-step 2b: Option . Apply benchmark analysis

The benchmark for Chinese textile industry's project IRR is 14%.

Sub-step 2c: Calculation and comparison of financial indicators (only applicable to option2 and3)

Table 6 Profitability (shown previously)

	Without credit revenue	With credit revenue
IRR	10.91%	14.50%

Sub-step 2d: Sensitivity analysis (only applicable to option2 and 3)

In this project, the following indicators are used as uncertainty factors:

- Initial investment
- Annual O&M cost
- Coal unit price
- Coal saved

IRR variation is shown below where the factors fluctuate from -10% to 10%:

Table 7 IRR sensitivity analysis

Indicators	-10%	0%	10%
Initial investment	12.61%	10.91%	9.45%
Annual O&M cost	11.24%	10.91%	10.57%
Coal unit price	9.09%	10.91%	12.65%
Coal saved	9.09%	10.91%	12.65%

Step 4: Common practice analysisSub-step 4a: Analyze other activities similar to the proposed project activity

The types of tenter equipment that are listed in the Sub-step 1a (i) are deemed as “the types that are most economically attractive and reliable of all tenters, excluding those introduced in the proposed project activity” for the dye works in Zhejiang Province. It is appropriate to consider the types of tenters that are narrowed down in the Sub-step 1a (ii) and thereafter for each CPA to be the baseline.

If a type of tenter equipment that is not listed in the Sub-step 1a (i) has been introduced in a dye works in Zhejiang Province, China, such activities are considered as those similar to the CPA project under this PoA.

Sub-step 4b: Discuss any similar option that are occurring

There is no common practice that carries out activities similar to the CPA projects under this PoA, nor mandatory law or regulation that promotes the implementation of this PoA. The absence of common practice must be demonstrated in CPA-DDs, from the two aspects below:

Energy conservation performance:

There is no mandatory law or regulation that promotes activities similar to the CPA projects under this PoA, in terms of energy performance.

Initial investment:

If the initial investment cost of an activity that is similar to the CPA project under the PoA is higher than the initial investment cost of the types of the tenter equipment listed in Sub-step 1a (i), the

investment is (a) for tenter equipment that produces specialized products, or (b) decided based on conditions different from the current ones.

(12) Project Feasibility

Zhejiang Hangmin Stock Co., Ltd., which is the parent company of Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd., Green Ensign (Beijing) New Energy & Utility Technology Development Co., Ltd. and Kyushu Electric have concluded an agreement regarding the examination of energy conservation and modification of the plants, which seems to offer a system suitable for the implementation of the project under the PoA.

Green Ensign which is planned to function as the Coordinating/Managing Entity considers the implementation of the project under the PoA promising, due to following reasons:

The Chinese government welcomes p-CDM applications.

There are only three p-CDM projects approved by the Chinese government at this point. However, the reason is not the examination standards being more stringent for p-CDMs than for general CDMs. It is because of the small number of applications submitted by the business operators since it takes enormous work to put together multiple, small-scale projects.

Great potential

There are 5,000 - 6,000 tenters in China, of which 2,000 - 3,000 are in Zhejiang Province. If we assume the same number of tenters per plant as the No.1 CPA candidate Qianjiang, then 100 – 200 companies may be CPA candidates.

Green Ensign is willing and meets the requirements to be the Coordinating/Managing Entity (CME)

The provisions of Chinese Administrative Permission Law limit the entities that can be a Coordinating/Managing Entity in China to agencies, organizations and corporations excluding those that are governmental agencies and business units (e.g. industrial associations that receive public funds). Green Ensign qualifies to be the CME since it is a private corporation, and understands the functions of the Coordinating/Managing Entity (CME).

Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd. which is planned to be a CPA model site considers the PoA in a positive light due to reasons below:

The high-efficiency tenters developed independently in Japan (hereinafter “high-efficiency tenters”) are technologically reliable.

Qianjiang values the performance of the high-efficiency tenters, and plans to visit Japan in March to further validate the technology of the tenters.

High expectation for economical benefit from implementing the projects under CDM

The price was a concern if the project was to be undertaken as a general project. However, sufficient economical benefit can be expected from the sales of emissions reduction under CDM, which persuaded Qianjiang to be positive about the project.

Qianjiang trusts Green Ensign which will be the Coordinating/Managing Entity (CME), and approves the method where Green Ensign acts as a window dealing with buyers to receive the revenue from the credit sales and distribute it to the companies concerned.

Currently, a negotiation is underway between the PoA Coordinating/Managing Entity and the CPA company about the conclusion of a letter of intent for the introduction of the high-efficiency tenters that are developed independently in Japan. Whether the negotiation leads to the conclusion or not is based on the measurements of energy consumption which is to prove the energy saving effect in comparison to the Korean equipment competing in China and the results of the Japanese dye plant inspection where the high-efficiency tenters are operated. We will emphasize the superiority of the high-efficiency Japanese tenters in comparison to less expensive Korean and other tenters through measures listed below:

Energy saving effect

- To further quantify the energy saving effect by measuring the energy consumed by the high-efficiency tenters and the competing (Korean) tenters in China during operation. With the result, the superior energy saving effect of the high-efficiency tenters will be proven. From the research conducted on energy consumption of the existing Korean tenters at Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd., it was confirmed that approximately 600,000kcal/h of

thermal energy as well as 70kW electric energy are used per tenter. This finding further confirmed that the values of fossil fuel and electricity assumed for baseline emissions calculation were appropriate. Project emissions will be measured and verified when high-efficiency tenters developed independently in Japan are introduced into CPA.

Price

- The high-efficiency tenters are at a disadvantage compared to the competing (Korean) equipment in terms of prices. We will make an appeal that such a price difference can be recovered through the energy cost reduction thanks to the energy saving and revenue from emissions credit sales, and that there are other advantages to be considered other than prices, such as enhanced performance and durability.

Promotion

- To invite CPA companies for the inspection of the high-efficiency tenters that are put to operation in Japan and see for themselves the energy saving effect and superior quality.
- To introduce the high-efficiency tenters in seminars held by the Zhejiang Dyeing and Printing Association or in the trade paper, etc. to increase their recognition.
- To examine showcasing and publicizing the first case of CPA since the information spread very effectively between companies by word of mouth in the dye industry in Zhejiang Province.

Based on the research findings, if CPAs of 200 companies and 2,000 tenters are assumed in Zhejiang Province, greenhouse gas emissions reduction of approximately 2 million t-CO₂/yr and 400,000 t-CO₂/yr could be expected, at this point, from PoA (entire Zhejiang Province) and 40 confirmed CPA candidate companies respectively. The reduction can be achieved through the following;

- Each CPA company owns 10 tenters (2,000 units/200 companies = ten units per company)
- Promotion of high-efficiency tenters among the 40 companies listed in the CPA candidate list (Table 3)
- It is assumed that greenhouse gas emissions of about 1,000 t-CO₂/yr can be reduced per tenter (Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd.: 15,344 t-CO₂/yr / 16 units = 1,000 t-CO₂/yr)
- Based on the foregoing;
 - PoA (entire Zhejiang Province): 200 companies × 10 units × 1,000 t-CO₂/yr = 2,000,000 t-CO₂/yr
 - 40 confirmed CPA candidate companies: 40 companies × 10 units × 1,000 t-CO₂/yr = 400,000 t-CO₂/y

5. Contribution to Sustainable Development in Host Country

(1) Evaluation of the effects such as mitigation measures of environmental pollution in the host country

According to “Manual for Quantitative Evaluation of the Co-Benefits (ver. 1.0),” if an evaluation method in Tier2 or Tier3 is chosen for the evaluation in the area of air quality improvement, it is necessary to obtain data on the fuel consumption and pollutant concentration in the fuel at the source of the air pollutant emissions both for the baseline and the project case. When there is decreased coal consumption as well as indirect reduction of air pollutants, as is case with this PoA, the information from the power grid company (East China Power Grid) must be disclosed since it is the source of such substances. During the survey in 2009, a comment received indicated the lack of such data. Therefore, for the co-benefit evaluation, the indirect effect from using less electricity is estimated by estimating the emissions intensities for SO₂, NO_x and soot and smoke at the power plants, in the same manner as for CO₂ reductions.

Table 8 Emissions intensities of air pollutants from coal-fired power plants [t/GWh] ²

	1996	2000	2002	2005	2007
SO ₂	10.4	8.15	6.11	8.03	4.67
NO _x	5.77 ^(note)	4.21	3.87	6.90	3.11
Soot and smoke	8.21	2.84	2.01	3.35	1.10

Note: 5.77 kg/t-coal, the unit different from others.

Table 9 Emission factors of air pollutants

	OM	BM ^{3,4}	CM
SO ₂	4.67 t/GWh	200 mg/m ³ 0.25 t/GWh	2.46 t/GWh
NO _x	3.11 t/GWh	400 mg/m ³ 0.50 t/GWh	1.81 t/GWh
Soot and smoke	1.10 t/GWh	30 mg/m ³ 0.04 t/GWh	0.57 t/GWh

By multiplying the above emission factors with the electricity saving of 35 MWh/yr for CPA which is

² Source: 1996 figures: air pollutant emissions standard for thermal power plants by Department of Science, Technology and Standards of the Environmental Protection Bureau; 2000 and 2002 figures: current status and development of DeNO_x & DeSO_x technologies for China’s coal-fired power plants (China Association for S&T, 2004, Academic Annual Conference of China Electric motor Engineering Institute of Electricity Branch conference of 2004 Academic Annual conference of Chinese Technology Association); 2005 figures: Calculation of energy saving and reductions for energy saving projects and their value analysis (2009, 5th-term China Energy); 2007 figures: explanation of air pollutant emissions standard system for thermal power plants

³ In the explanation on standards for flue gas from thermal-power plants, 0.516 g/MJ = 1,480 mg/m³ is listed in connection to the description of the emissions standard in the US, the conversion was made with 1 mg/m³ = 1,255,135 mg/GWh based on the data.

⁴ There is data indicating SO₂: 0.256 t/GWh, NO_x: 0.257 t/GWh and soot and smoke: 0.009 t/GWh for Japan’s coal-fired thermal power plants.

the target of this research, the reductions in air pollutants may be evaluated.

(2) Proposal of co-benefit indexes

It is possible to reduce environmental load itself and also the external environmental cost through reduction of environmental load, and this can be a co-benefit index. In this study, the damage reduction due to WTP (Willingness to Pay) to avoid damage from environmental load is calculated tentatively and the effect converted to currency. The calculation is done using Japanese method of impact assessment "LIME: Life-cycle Impact assessment method based on endpoint modeling (issued through cooperation between the National Institute of Advanced Industrial Science and Technology (AIST) and the LCA project by the national government). The value expressed in currency only indicates the level of acceptance in Japan.

The conversion factors of LIME reflect local characteristics of Japan, and are to be used as damage factors in Japan. Thus, if the method is applied to China, we must assume the same value of WTP as in Japan.

Table 10 Weighting factors for currency conversion in LIME

Emissions	Conversion factor (yen/kg)
CO2	1.74
NOx	141.22
SO2	1,014.73

The trial calculation produced about 90,000yen/yr for SO2, about 10,000yen/yr for NOx and about 50,000yen/yr for CO2. When the impact from air pollutants is added to the external environmental cost for CO2, the effect is about tripled, indicating a large contribution made by SO2 reduction.

Table 11 External environmental costs from the project

Emissions	Electricity saved (GWh/yr)	Emissions intensity (t/GWh)	Air pollutant emissions reductions (t/yr)	Conversion factor (yen/kg)	External environmental cost (10,000yen/yr)
SO2	0.035	2.46	0.09	1,014.73	9.1
NOx		1.81	0.06	141.22	0.8
Soot and smoke		0.57	0.02	-	-
CO2		782.6	27.39	1.74	4.8
Total					14.7

FY 2010 CDM/JI Feasibility Study / Feasibility Study for New Flexibility Mechanisms

Local Survey Report (1st)

1. Title of feasibility survey: Feasibility Study on Programme CDM to Introduce the High-Performance Tenters to the Dye Works in Zhejiang Province, PR China
2. Entity conducting the survey: Kyushu Electric Power Co., Inc.
3. Persons sent for the local survey
 [Kyushu Electric Power Co., Inc.]
 [Mizuho Corporate Bank Ltd. (contractor)]
 [Green Ensign (Beijing) New Energy & Utility Technology Development Co., Ltd (contractor)]
4. Local survey schedule

Date	Location	Detail	Place of stay
Sep. 15 (Wed.)	Fukuoka Shanghai Hangzhou	MU518: Fukuoka 14:20→Shanghai (Pudong) 14:55 Railway: Shanghai → Hangzhou	Hangzhou
Sep. 16 (Thu.)	Hangzhou	Meeting with Zhejiang Provincial Development and Reform Commission Meeting with Zhejiang Dyeing and Printing Association	Hangzhou
Sep. 17 (Fri.)	Hangzhou	Plant survey and meeting at Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd. Meeting with Green Ensign (Beijing) New Energy & Utility Technology Development Co., Ltd	Hangzhou
Sep. 18 (Sat.)	Hangzhou Shanghai Fukuoka	Railway: Hangzhou → Shanghai MU531 : Shanghai (Pudong) 18:00 → Fukuoka 20:40	-

5. Survey content based on the date and time

Sep. 16 (Thu.) 10:00 - 12:00 / meeting with Zhejiang Provincial Development and Reform Commission

(1) Visitation site: CDM Resource Room, Zhejiang Provincial Development and Reform Commission

(2) Survey content:

The following are the results of the hearing:

- Under Zhejiang Province government, there are three agencies that supervise the environment-related issues; Zhejiang Provincial Development and Reform Commission in charge of climate change and CDM, etc., Energy Conservation and Emission Reduction Office in charge of emissions reduction through energy conservation, and the Environmental Protection Bureau in charge of pollution issues.
- Zhejiang Provincial Development and Reform Commission considers the difficulty of monitoring to be the problem since there are few successful p-CDM projects.

- The commission is examining the appropriateness of projects with the reduction potential of 10,000 tonnes or more as CPA candidates, and recommends projects with the reduction potential of 30,000 tonnes or more to be implemented as general CDM projects as a rule.
- If this case is to be carried out as a p-CDM project, the commission recommends the program to start as a model with five or six tenters with the reduction potential of 2,000 – 3,000 tonnes.
- According to the provisions by the Chinese government, the minimum CER price for the projects in China is 9 euro/ton at present.
- The Chinese government prefers Japan as a partner in CDM projects for advanced technologies and earnest manner of work, but not UK since UK was not very amicable to China in Copenhagen.
- Among various regulations and criteria that are used to establish standards for CDM and energy conservation measures, the circular of the State Council of the People's Republic of China on the achievement of the energy conservation and emissions reduction targets that are set in the 11th Five-year Plan (No. 12, 2010) has the supremacy.

Sep. 16 (Thu.) 16:00 - 17:00 / meeting with Zhejiang Dyeing and Printing Association

(1) Visitation site: Zhejiang Dyeing and Printing Association

(2) Survey content:

The following are the results of the hearing:

- Among over 2,000 dye companies in China, 197 are located in Zhejiang Province and of which, 58% are in Shaoxing. Also, the manufacture of dye products in Zhejiang Province accounts for 56% of that in China.
- There is a trend to consolidate medium- and small-sized businesses for the purpose of promoting efficiency improvement and concentrating the sources of water pollutants to combat water pollution (it is not a direct policy). In allocating new industrial parks, 50 companies (first phase) and 46 companies (second phase) had been selected, decreasing the number of businesses as the result. The production ability is expected to be reduced by 1 billion m this year and 3 billion m next year from the production ability of 15 billion m of the last year. However, the sales are expected to increase due to a higher level of concentration and efficiency.
- Though this is a good project, the information must be spread throughout the dye industry in Zhejiang Province since it is a novel attempt. The first case of a program CDM project will be evaluated as a model.
- It seems easier to implement it as a CDM project since Zhejiang Province has a relatively stable economic basis compared to other provinces.
- The CPA site should be chosen from the large-scale works (works with the production ability in the order of 100 million m are considered large-scaled, which account for 20% of all the works).
- The boilers that heat the heating medium for the tenters mainly use coal as the energy source. Since a large amount of heat is consumed at the dye works, they often use CHP (combined heat and power) along with electricity. The heat is used directly while electricity is supplied to the grid first and then used.

- Coal is imported mainly from Shanxi province and Inner Mongolia Autonomous Region. High-quality coal is used for tenters.
- Regarding the investments for dye works, IRR of 14% set by the Zhejiang Provincial Development and Reform Commission seems rather high. In reality, there might be investors if IRR is about 10%. However, the situation may vary depending on the content of the projects.
- There is a five-year plan for energy conservation covering the entire nation. However, the plan does not specifically address provinces, industries or works and plants.
- EIA (environmental impact assessment) is not necessary for tenter replacements while it might be required for the construction of new production lines or relocation of works. 17 industries including cement and dye industries are subjected to more stringent inspection and review by the Environmental Protection Bureau, compared to other industries.

Sep. 17 (Fri.) 10:00 - 12:00 / plant survey and meeting at Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd.

(1) Visitation site: Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd.

(2) Survey content:

The following are the results of the hearing:

- Many existing tenters are inexpensive ones such as those made in Korea.
- For all the electricity, CHP (coal-fired) is utilized. Whether the power is supplied to the grid first or not must be rechecked.
- The gasification of coal is unlikely, taking the fuel cost into consideration.
- The coal that fuels tenters is imported from Shanxi province, Inner Mongolia Autonomous Region and Hebei province (Qinhuangdao). The unit price is about 700 yuan/t, and of which, the transportation cost varies from 35 to 90 yuan/t. The heating value of coal is about 5000 kl/t.
- There is no real regulation regarding energy conservation where coal use is concerned.
- EIA is not necessary for tenter replacements.
- Regarding the taxes imposed for the initial investment, customs duties will be imposed on equipment imported from Japan or Taiwan.
- The depreciation must be made within 10 years for personal estates and 20 years for real estates in China.
- Details and more specific information will be researched before the next survey.

Sep. 17 (Fri.) 13:00 - 16:00 / meeting with Green Ensign (Beijing) New Energy & Utility Technology Development Co., Ltd

(1) Visitation site: Grand Metropark Hotel Hangzhou (inside of the hotel stayed)

(2) Survey content:

The parties reached agreement after explaining again the role that Green Ensign (Beijing) New Energy & Utility Technology Development Co., Ltd is required to play and clarifying any questions.

- It is to collect and organize information regarding the trend in the dye industry and each dye works in Zhejiang Province.
- It is to communicate and negotiate with local stakeholders such as Zhejiang Province government, Zhejiang Dyeing and Printing Association and CPA companies.
- It is to function as the coordinating/managing entity.

6. Summary of the survey results

We were able to confirm CDM-related policies and issues upon implementing p-CDM projects with the Zhejiang Province government. Zhejiang Dyeing and Printing Association has acknowledged the quality of this project and offered suggestions as to the direction to take in terms of companies that are promising as the CPA sites. We were able to deepen our ties in order to acquire help in spreading information throughout the dye industry in Zhejiang Province, and getting information on CPA candidates as we promote PoA in the future. With Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd., which is a CPA site, we rechecked the equipment status and obtained a definite promise for the provision of more specific and detailed information in the future.

7. Issues to be noted (e.g. significant problems related to the project feasibility were discovered, grave issues that would prevent the survey work occurred, etc.)

Nothing in particular

8. Other issues (any issues that are less serious than “Issues to be noted” but still need to be resolved in the surveys in the following months, such as a change in survey policies, etc.)

To obtain detailed information that is necessary for the project evaluation from Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd. and Green Ensign (Beijing) New Energy & Utility Technology Development Co., Ltd, and check and analyze the scenarios. To collect information to recognize the CPA candidates within the PoA boundary which is the dye industry in Zhejiang Province.

FY 2010 CDM/JI Feasibility Study / Feasibility Study for New Flexibility Mechanisms

Local Survey Report (2nd)

1. Title of feasibility survey: Feasibility Study on Programme CDM to Introduce the High-Performance Tenters to the Dye Works in Zhejiang Province, PR China
2. Entity conducting the survey: Kyushu Electric Power Co., Inc.
3. Persons sent for the local survey
 [Kyushu Electric Power Co., Inc.]
 [Mizuho Corporate Bank Ltd. (contractor)]
 [Green Ensign (Beijing) New Energy & Utility Technology Development Co., Ltd (contractor)]
 [West Japan Engineering Consultants, Inc. (West JEC)]
 [Japan Textile Consultants Center (JTCC)]
 [HIRANO ENTEC Co., ltd.]
4. Local survey schedule

Date	Location	Detail			Place of stay
		A	B	C	
Nov. 14 (Sun.)	Fukuoka Shanghai Hangzhou	MU518: Fukuoka 14:20 → Shanghai Pudong 15:05 Car: Shanghai → Hangzhou			Hangzhou
Nov. 15 (Mon.)	Hangzhou	Plant survey at Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd. Meeting with Zhejiang Dyeing and Printing Association			
Nov. 16 (Tue.)	Hangzhou	Plant survey at Zhejiang Hangmin Stock Co., Ltd. Printing & Dyeing Branch Company			
Nov. 17 (Wed.)	Hangzhou	Plant survey at Zhejiang Sanyuan Xinsheng Printing & Dyeing Co., LTD Plant survey at Zhejiang Sanyuanjimei Printing & Dyeing Co., LTD		MU518: Fukuoka 14:20 → Shanghai Pudong 15:05 Car: Shanghai → Hangzhou	Hangzhou
Nov. 18 (Thu.)	Hangzhou Changzhou	Plant survey at Zhejiang Yatai special widch printing & Dyeing Co., LTD Car: Hangzhou → Changzhou			Changzhou
Nov. 19 (Fri.)	Changzhou Shanghai	Plant survey at Changzhou Qiangsheng Printing & Dyeing Co., LTD	Plant survey at Changzhou Qiangsheng Printing & Dyeing Co., LTD Car: Changzhou → Shanghai		Changzhou Shanghai
Nov. 20 (Sat.)	Changzhou Shanghai Fukuoka	Car: Changzhou → Shanghai MU531: Shanghai Pudong 18:15 → Fukuoka 20:40		MU517: Shanghai Pudong 11:00 → Fukuoka 13:30	-

5. Survey content based on the date and time

Nov. 15 (Mon.) 9:00 - 14:00/ plant survey and meeting at Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd.

(1) Visitation site: Hangzhou Qianjiang Printing & Dyeing Chemical Co., Ltd.

(2) Survey content:

The following are the results of the survey and hearing:

- The unit price for the electricity purchased from the grid is 0.7yuan/kWh (nighttime 0.5yuan/kWh and daytime 1.2yuan/kWh).
- The taxes on equipment purchased are 10% customs duty and 17% value-added tax (12% of which is refundable).
- The tenters are indispensable in the dyeing processes and this portion cannot be outsourced. Thus, the judgment of tenter investments should be based on the entire dyeing processes in addition to the profitability of the tenters.
- Selecting tenter equipment
 - The judgment is made based on three criteria of price, performance and energy saving effect.
 - Inexpensive equipment is chosen when the financial status is not favorable.
 - When financial status is favorable, equipment may be selected based on the managerial policies and the purpose of use such as the production of high-quality goods.
- Necessity of FSR and EIA in the CDM implementation
 - For CDM, FSR is necessary, but EIA is not.
 - For p-CDM projects, both EIA (registration level) and FSR are required.
 - However, the specifics must be checked with Mr. Uei of Tsinghua University.
- The tenters are used for 10 to 15 years, with 10 years being the most common. However, they may be used only for 5 years to maintain efficiency, depending on the equipment condition. The depreciation is calculated based on 10 years.
- Ways to obtain equipment-related information
 - Advertisements by the manufacturers
 - Equipment reviews by other companies within the industry
- Information on energy unit prices is available for Korean, Chinese and German manufacturers.
- The company owns 16 tenters (13 Korean, 2 Taiwanese and 1 Chinese).
- When the used tenters are disposed of, the raw material must be recycled as a rule. For the equipment disposal, the recycling contractors must collect the equipment and issue a certificate of disposal.

Location	Xiaoshan District, Hangzhou, Zhejiang province	No. of tenters	16
Main products	Synthetic fiber and polyester cotton	Country of manufacture	Korea
Hr. of operation	24 hours	Coal consumption	15,600t/yr.
Annual production	146 million m/yr.	Electricity consumption	40,000,000kWh/yr.

Nov. 15 (Mon.) 15:00 - 17:00 / meeting with Zhejiang Dyeing and Printing Association

(1) Visitation site: Zhejiang Dyeing and Printing Association

(2) Survey content:

- Issues regarding p-CDM implementation
 - Since the equipment is not very old, the merit from replacement is not significant.
 - Japanese tenters were well known in China in the 80's, but they are not recognized very well now since they are not promoted in the Chinese market these days. They offer higher energy saving effect than the German products, but their light weight gives the impression of lesser durability.
 - For publicity, it might be effective to conduct a demonstration using Japanese products as a model.
- Tool for publicity
 - Regular (September every year) and special (held based on the request by manufacturers) meetings of the Dye Industry Association
 - A prior solicitation through local sales networks is necessary to attract attendees for special meetings, since a notice from the association is not enough.
 - The prior solicitation is done via advertisement in the association magazines and the written technological advertisements.
- There are about 400 dye companies in Zhejiang Province, with 200 association member companies. (Green Ensign has joined the association and has access to the information on other member companies of the association)
- With regard to the consolidation and relocation of the works and plants, 50 companies have relocated to the industrial parks, and 46 companies are planned to relocate in the future. Upon relocation, some of the low-performance equipment will be screened out, which will have no impact on the top 40 companies (top 20% of the association member companies, with the production scale of 100 million m or more). Companies must have the production scale of 30 million m or more to move into the industrial parks, for which the top 30% or less of the association member companies can qualify.
- The total number of tenters is 4,000 - 5,000 nationwide, of which 400 - 500 units are assumed to be replaced annually. The production in Guangdong, Fujian, Jiangsu, Shandong and Zhejiang provinces accounts for 91% - 92% of that of the nation. The 70% of the tenters are made by Korean manufacturers.

- Shaoxing county owns more than 50% of all the textile printers in China, and the large portion of the printers is made by the Japanese company Toshin Kogyo Co., Ltd. This is a fine example of the prevalence of Japanese products.
- There are only two dye industry associations in China, namely, Zhejiang Provincial Dye Industry Association and Shanghai Dye Industry Association. However, Shanghai maintains the association, only as a former textile industrial area and the association has little influence.
- In other provinces, dye industry associations belong to the textile associations, since it is difficult to form an association with less than 50 dye manufacturers (member companies).

Nov. 16 (Tue.) 10:00 - 15:00 / plant survey and meeting at Zhejiang Hangmin Printing & Dyeing Branch

(1) Visitation site: Zhejiang Hangmin Printing & Dyeing Branch

(2) Survey content:

The following are the results of the survey and hearing:

Location	Xiaoshan District, Hangzhou, Zhejiang province	No. of tenters	12
Main products	Polyester cotton, polyester rayon	Country of manufacture	Korea and China
Hr. of operation	24 hours	Coal consumption	14,400t/yr.
Annual production	160 million m/yr.	Electricity consumption	Unknown

Nov. 17 (Wed.) 9:00 - 12:00 / plant survey and meeting at Zhejiang Sanyuan Xinsheng Printing & Dyeing Co., LTD

(1) Visitation site: Zhejiang San Yuan Xinsheng Printing & Dyeing Co., LTD

(2) Survey content:

The following are the results of the hearing:

Location	Xiaoshan District, Hangzhou, Zhejiang province	No. of tenters	7 (2 German units being installed)
Main products	Polyester cotton and polyester rayon	Country of manufacture	Korea
Hr. of operation	24 hours	Coal consumption	5,800t/yr.
Annual production	Unknown	Electricity consumption	1,800,000kWh/yr.

Nov. 17 (Wed.) 13:00 - 17:00/ plant survey and meeting at Zhejiang San Yuan Jimei Printing & Dyeing Co., LTD

(1) Visitation site: Zhejiang San Yuan Jimei Printing & Dyeing Co., LTD

(2) Survey content:

The followings are the results of the hearing:

Location	Xiaoshan District, Hangzhou, Zhejiang province	No. of tenters	6
Main products	Cotton	Country of manufacture	Korea and Hong Kong
Hr. of operation	24 hours	Coal consumption	4,780t/yr.
Annual production	60 million m/yr.	Electricity consumption	13,730,000kWh/yr.

Nov. 18 (Thu.) 9:00 - 15:00/ plant survey and meeting at Zhejiang Yatai special widch printing & Dyeing Co., LTD

(1) Visitation site: Zhejiang Yatai special widch printing & Dyeing Co., LTD

(2) Survey content:

The following are the results of the survey and hearing:

Location	Any , Shaoxing County	No. of tenters	7
Main products	Cotton, and cotton/linen blend	Country of manufacture	Korea
Hr. of operation	24 hours	Coal consumption	7,500t/yr.
Annual production	60 million m/yr.	Electricity consumption	9,487,000kWh/yr.

Nov. 19 (Fri.) 9:00 - 17:00 / plant survey and meeting at Changzhou Qiangsheng Printing & Dyeing Co., LTD

(1) Visitation site: Changzhou Qiangsheng Printing & Dyeing Co., LTD

(2) Survey content:

The following are the results of the survey and hearing:

Location	Qingyong Changzhou, Jiangsu province	No. of tenters	2 (direct gas-fired)
Main products	Dyed fabric (spinning, woven fabric, dyeing)	Country of manufacture	China
Hr. of operation	24 hours	Natural gas consumption	879,300 m ³ /yr.
Annual production	18 million m/yr	Electricity consumption	15,560,000kWh/yr.

6. Summary of the survey results

- Information necessary for the preparation of PoA-DD (draft) and CPA-DD (draft) was confirmed.
- We were able to build a cooperative relationship to create a p-CDM project, such as getting information on the CPA candidates from Zhejiang Dyeing and Printing Association which governs the dye works. At the same time, we found out during the hearing with Changzhou Qiangsheng Printing & Dyeing Co., LTD , that in other provinces, there are no organizations that control the dye industry for the entire province as in Zhejiang Province, even in Jiangsu province. Since the cooperation with the organizations supervising the boundary is indispensable for the realization of p-CDM projects, we determined that it is appropriate to establish Zhejiang Province as the boundary.

7. Issues to be noted (e.g. significant problems related to the project feasibility were discovered, grave issues that would prevent the survey work occurred, etc.)

Nothing in particular

8. Other issues (any issues that are less serious than “Issues to be noted” but still need to be resolved in the surveys in the following months, such as a change in survey policies, etc.)

- We received advice and comments from Tsinghua University about the feasibility of a program CDM project during the local survey in January, which will be reflected in the report.

FY 2010 CDM/JI Feasibility Study / Feasibility Study for New Flexibility Mechanisms

Local Survey Report (3rd)

1. Title of feasibility survey: Feasibility Study on Programme CDM to Introduce the High-Performance Tenters to the Dye Works in Zhejiang Province, PR China
2. Entity conducting the survey: Kyushu Electric Power Co., Inc.
3. Persons sent for the local survey
 [Kyushu Electric Power Co., Inc.]
 [Mizuho Corporate Bank Ltd. (contractor)]
 [Green Ensign (Beijing) New Energy & Utility Technology Development Co., Ltd (contractor)]
4. Local survey schedule

Date	Location	Detail	Place of stay
Jan. 23 (Sun.)	Fukuoka Beijing	JL300: Fukuoka 7:05 → Haneda 8:35 JL023: Haneda 9:45 → Beijing 12:50	Beijing
Jan. 24 (Mon.)	Beijing	Meeting with Green Ensign (Beijing) New Energy & Utility Technology Development Co., Ltd	Beijing
Jan. 25 (Tue.)	Beijing	Meeting with Tsinghua University	Beijing
Jan. 26 (Wed.)	Beijing Fukuoka	JL860: Beijing 8:25 → Narita 12:50 JL3053: Narita 14:55 → Fukuoka 17:00	-

5. Survey content based on the date and time

Jan. 24 (Mon.) 10:00 - 16:00 / meeting with Green Ensign (Beijing) New Energy & Utility Technology Development Co., Ltd

(1) Visitation site: Green Ensign (Beijing) New Energy & Utility Technology Development Co., Ltd

(2) Survey content:

The content is explained below:

- Regarding the Global Environment Centre Foundation's p-CDM FS outsourcing, the explanation was given that the report (result) has been verified and the final payment is in process.
- List of CPA candidate works
 - A list of CPA candidate works was prepared thanks to the cooperation of Zhejiang Dyeing and Printing Association, etc. Information on the tenter introduction and other matters was obtained for 18 works. Other works and plants that showed interest in energy saving through high-efficiency tenter introduction and the utilization of p-CDM were listed (total of 40 works

and plants) (ANNEX 1).

- Green Ensign explained about energy saving through the introduction of high-efficiency tenters and the CDM in November, 2010 at the 4th Zhejiang Dyeing and Printing Association 3rd council meeting hosted by the Zhejiang Dyeing and Printing Association and at the China Dyeing And Printing Association 2010 national dye and printing industry annual meeting for energy conservation and environmental protection organized by the China Dyeing and Printing Association. The level of knowledge for CDM was low among dye companies in attendance, and the thorough explanation on the mechanism of CDM must be offered in the future. However, many dye companies expressed a high level of interest in high-efficiency tenters and utilization of p-CDM (ANNEX 2).

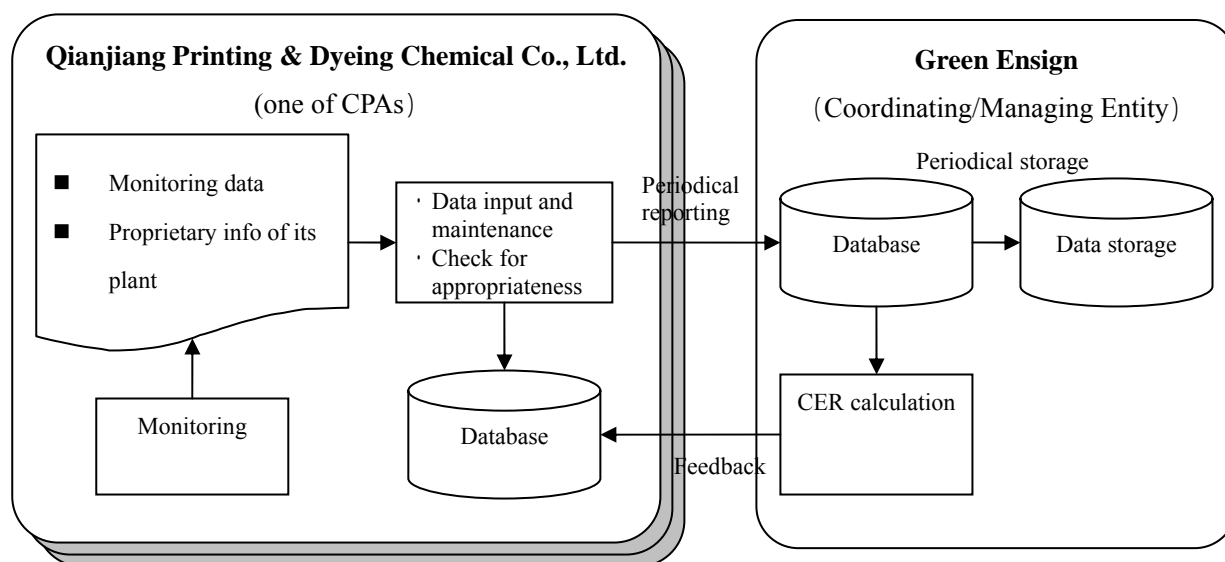
Jan. 25 (Tue.) 9:00 - 12:00 / meeting with Green Ensign (Beijing) New Energy & Utility Technology Development Co., Ltd.

(1) Visitation site: 2nd floor meeting room of the Oriental Garden Hotel

(2) Survey content:

As described below, the matters to be addressed during the hearing with Professor Wei Zhihong of Tsinghua University (professor of the Institute of Nuclear and New Energy Technology and the Deputy Director of the Global Climate Change Institute of Tsinghua University) were confirmed:

- Check the p-CDM approval status in China and if p-CDM is perceived negatively.
- Is there a p-CDM program that has been approved in China at present?
- The scheme below is planned for the PoA implementation. What does the professor think?
Could Green Ensign which will be the Coordinating/Managing Entity be the coordinator for CERs?



【Flow of data collection and management】

Entity	Role expected to play
Green Ensign	<p data-bbox="528 264 836 293"><Function as the window></p> <ul style="list-style-type: none"> <li data-bbox="528 311 1358 340">■ To be the Coordinating/Managing Entity and communicate with UN <li data-bbox="528 358 1422 439">■ To obtain approval from and communicate with the Chinese government (NDRC) for the project <p data-bbox="528 456 1390 486"><Data management, monitoring report preparation, facilitating verification></p> <ul style="list-style-type: none"> <li data-bbox="528 504 1270 533">■ To receive monitoring data from dye companies periodically <li data-bbox="528 551 1422 631">■ To calculate the credits based on the monitoring data and prepare monitoring reports periodically <li data-bbox="528 649 1422 730">■ To backup monitoring data and various documents (evidence) and keep them for 2 years after the issuance of credits <li data-bbox="528 748 1422 828">■ To present and explain about the monitoring reports when DOE comes for verification <p data-bbox="528 846 884 875"><Trading emissions reduction></p> <ul style="list-style-type: none"> <li data-bbox="528 893 1422 974">■ To conclude an Emissions Reduction Purchase Agreement (ERPA) with foreign (Japanese) companies and receive revenue from credit sales <li data-bbox="528 992 1422 1072">■ To distribute the revenue based on the credits generated by each dye company <li data-bbox="528 1090 1190 1120">■ To pay 2% of the revenue to the Chinese government
Dye companies in Zhejiang Province (Qianjiang Printing & Dyeing Chemical Co., Ltd., etc. are assumed)	<p data-bbox="528 1137 1337 1167"><Monitoring, data reporting and management, facilitating verification></p> <ul style="list-style-type: none"> <li data-bbox="528 1184 1198 1214">■ To monitor various data and check its appropriateness <li data-bbox="528 1232 1422 1312">■ To report monitoring data to Green Ensign and submit associated documents (evidence) <li data-bbox="528 1330 1422 1411">■ To backup monitoring data and various documents (evidence) and keep them for 2 years after the issuance of credits <li data-bbox="528 1429 1394 1458">■ To explain about the monitoring data when DOE comes for verification <p data-bbox="528 1476 884 1505"><Trading emissions reduction></p> <ul style="list-style-type: none"> <li data-bbox="528 1523 1422 1603">■ To conclude an agreement with Green Ensign and receive revenue from credit sales

- In this PoA, we plan to handle the environmental impact assessment at the CPA level and to obtain the stakeholder comments at the PoA level. What is the professor's opinion?
- Is an EIA report necessary before the introduction and operation for the case of tenter replacement at a dye works for each CPA?
- Is there an industrial regulation about leakage from equipment disposed of at the time of replacement?
- Is there any data that might serve as a benchmark when businesses in the dye industry make an investment (e.g. IRR, number of years to recover the investment)? The benchmark for Chinese textile industry given by China's Development and Reform Commission was 14%.

Jan. 25 (Tue.) 13:30 - 17:30 / meeting with the CDM expert of Tsinghua University

(1) Visitation site: 2nd floor meeting room of the Oriental Garden Hotel

(2) Survey content: As described below;

- Concern that Qianjiang Printing & Dyeing Chemical Co., Ltd. has for the equipment might be about the quality rather than the price (-> explained that Qianjiang Printing & Dyeing Chemical Co., Ltd. plans to visit HIRANO ENTEC Co., Ltd. in Japan next month to check the actual products)
- There are three ways to obtain the emissions data for the baseline emissions calculations:
 - Past data on the existing equipment: data for the past 3 years is required. If it cannot be submitted, at least the data from the past year is needed. The data does not have to be continuous.
 - Technical data from the specifications: the energy saving effect listed in the specifications is usually higher than the actual figure. Thus, the use of this data is deemed conservative in the calculation of the emissions.
 - Certification by an expert
- The concept behind the baseline establishment is the status quo, and the method of the survey is in accordance with the concept.
- The method that the Coordinating/Managing Entity (CME) receives the revenue from credit sales in the first stage is appropriate.
- The unit price of the flowmeters used in the monitoring for the CPA is 150,000 yuan/unit, which is high. Therefore, the meters don't have to be fixed at all monitoring points, instead, they can be used at several different locations.
- Project scale suitable for CPA
 - A few years ago (2004 – 2005), small-scale projects with 15,000 t-CO₂/yr or less were preferred. However, since the number of projects is limited, there is no particular restriction these days.
 - As a rule, any small-scale CDM project (e.g. annual emissions of 60,000 t-CO₂/yr or less) can be a CPA.
 - It seems better to have a small number of CPA candidates at the time of the PoA application.
- Requirements for the Coordinating/Managing Entity (CME)
 - The provisions of Chinese Administrative Permission Law limit the entities that can be a Coordinating/Managing Entity in China to agencies, organizations and corporations excluding those that are governmental agencies and business units (e.g. industrial associations that receive public funds).
 - In this case, the Dyeing and Printing Association cannot be a Coordinating/Managing Entity, but Green Ensign can since it is a private corporation.
- It was ensured that Green Ensign understood the functions of the Coordinating/Managing Entity (CME).
- The stakeholder comments can be invited on the PoA level.

- A CDM application in China requires three governmental approvals below:

Item to be approved	Agency giving approval
Project approval	National Development and Reform Commission (new field), Economic and Trade Commission (technological improvement field) * this project is under the Economic and Trade Commission (technological improvement field)
EIA	Environmental Protection Bureau
Business operator approval	Administration for Industry and Commerce

- EIA (Environmental Impact Assessment)

According to the EIA management category list for construction projects, the environmental impact assessment for investments in China is done under three different management methods:

EIA registration form: business operators apply directly to the environmental protection section. The approval takes 15 days and there is no need to hire an environmental assessment company.

EIA report form: for medium- to small-scale projects with a certain degree of environmental impact but no pollution. Business operators must hire an environmental assessment company to prepare a report. The approval takes 30 days.

EIA report: for projects that cause environmental pollution and impact. Business operators must hire an environmental assessment company to prepare a report. The approval takes approximately 60 days.

Since this project does not cause environmental pollution or impact due to the replacement of the equipment, the application using the easiest method EIA registration form above seems sufficient. Although the submission of EIA was mandatory for CDM projects, the requirement has been eased. For this project, the approval from the Environmental Protection Bureau of the town that Qianjiang Printing & Dyeing Chemical Co., Ltd. belongs should suffice.

- Investment benchmarks

- The (latest) benchmarks currently used in China are in the Economic Evaluation Methods and Parameters for Construction Projects (3rd Edition) issued by the National Development and Reform Commission in 2006.
- The “methods and parameters” roughly divides Chinese industries into 24 categories, and further divide each category into several smaller subcategories. International standards are expected to be announced in the future, however, all industries are only divided into three categories.
- The Economic Evaluation Methods and Parameters for Construction Project (3rd Edition) is sufficiently detailed and has enough basis and authority.

- Leakage

- There is no regulation regarding waste recycling for industries in China. On the other hand, the regulations are in place for five industries such as paper manufacturing and small-scale power generation to eliminate outdated facilities.
- For small-scale projects, the inspection by DOE on leakage is less stringent.

- There seems to be no problem in proving that the equipment is not recycled and therefore the leakage is zero by obtaining a certificate issued by the recycling contractor of the project.
- There are no energy conservation or environmental regulations imposed on the Chinese industries on the national level. There might be regulations on the province level or below, for which hearing must be done with each company. There is no related regulation in Zhejiang Province. The dye industry has the “criteria for entrance into the industry” which only applies to new entries into the business, not to existing works.
- There are 5,000 - 6,000 tenters in China, and of which 2,000 - 3,000 are in Zhejiang Province. If we assume the same number of tenters per plant as the No.1 CPA candidate Qianjiang Printing & Dyeing Chemical Co., Ltd., 100 – 200 companies may be CPA candidates, which suggest high potential. Of those companies, the CPA candidate list was prepared with the help of the Zhejiang Dyeing and Printing Association, etc. The information on the tenter introduction was obtained for 18 dye works. Meanwhile, the dye works that showed interest in energy saving through the introduction of high-efficiency tenters and the utilization of p-CDM were compiled in a list (total of 40 works) (ANNEX1).
- Green Ensign described energy saving through the introduction of high-efficiency tenters and the CDM in November, 2010 at the 4th Zhejiang Dyeing and Printing Association 3rd council meeting hosted by the Zhejiang Dyeing and Printing Association and at the China Dyeing And Printing Association 2010 national dye and printing industry annual meeting for energy conservation and environmental protection organized by the China Dyeing And Printing Association (ANNEX 2).
- There are three p-CDM projects approved by the Chinese government, and three that are being prepared for application.
 - The approved projects are those two that allow the use of agricultural biomass at households in Henan Province and a project that replace transformers in the national grid.
 - The reason for so few approved p-CDM projects is the small number of applications submitted by the business operators, not that the inspection by the government is more stringent for p-CDM than for general CDMs.
 - The reason for the small number of applications is that for CPA, many small-scale projects have to be put together, which takes time to process. In the projects in Henan Province, the business operator have to conclude a contract with 15,000 farmers. It takes enormous work to go through the actual processes, making such projects hard to implement.
 - The Chinese government will welcome p-CDM applications as before.

6. **Summary of the survey results**

- The list of the CPA candidate works was confirmed.
- During the explanation that Green Ensign gave to dye companies regarding the high-efficiency tenters and p-CDM, a high level of interest was seen among the dye companies which would be the CPA candidates. However, we also learned that even with the help of the Zhejiang Dyeing and Printing Association, it is hard to obtain information on the current tenter introduction status, etc. as seen in the list of CPA candidates.
- We were able to confirm the concepts for the baseline establishment, Coordinating/Managing Entity, PoA·CPA, investment benchmarks and environmental impact assessment, as well as the status of environmental regulations and p-CDM, etc.

7. **Issues to be noted** (e.g. significant problems related to the project feasibility were discovered, grave issues that would prevent the survey work occurred, etc.)

Nothing in particular

8. **Other issues** (any issues that are less serious than “Issues to be noted” but still need to be resolved in the surveys in the following months, such as a change in survey policies, etc.)

- To reflect the findings of this survey in the final report.

4th Zhejiang Dyeing and Printing Association 3rd council meeting

On November 12, 2010, 4th Zhejiang Dyeing and Printing Association 3rd council meeting was held in Jiaying city, Zhejiang Province, China to discuss the subject of “eliminating the outdated equipment to upgrade the industry.” 42 people representing the council member companies attended the meeting, and Ma Zhifang Vice Chairman of the Zhejiang Dyeing and Printing Association announced the “five opinions for eliminating the outdated equipment and improving the technologies.” The details of the opinions are given below:

1. It is important to set the companies’ developmental goals with the eye on the market. The quality, not the quantity, of textile products will be more valued in the future, and the development of new products that meet the international and national environmental protection requirements will be requested.
2. Energy conservation and emissions reduction are the main tasks in the technological improvement of the companies.
 - Before improving energy conservation and emissions reduction technologies, the companies should measure and analyze water and energy consumption and set the integrated policy for energy conservation and emissions reduction based on the results. Some of our member companies such as Green Ensign (Beijing) and Xinhua Finance can offer expert suggestions on energy-saving technologies suitable for each company.
 - During the dyeing process, the rate of heat energy utilization is low, and the large amount of heat energy is released in the form of thermal waste water or steam. Some companies have already started the recovery of thermal energy from the dye waste water, waste steam from the tenters, hot oil boilers and steam cooling water, etc.
 - Break away from the constraints that environmental protection issues impose on the companies, by means of waste water treatment, recovery and utilization in the dyeing processes. According to the criteria for entrance into the dye industry for 2010, the rate of water recovery and utilization must be 35% or higher. The waste water recovery and utilization is a serious issue for the companies.
 - Achieve excellent energy-saving results through technological renovation.
3. The promotion and application of automation and information technology must be accelerated in the dye industry. The automation and information technology is widely used in companies located in developed countries. However, in China, the majority of the companies are still in the early stage. Energy saving and quality improvement can be achieved by enhancing the production efficiency with the use of automation and information technology.
4. The outdated equipment must be eliminated and the use of high-efficiency technology and facilities must be promoted, as appropriate. The adjustment and promotion plan for the textile industry announced by the State Council on March 14, 2009 sets the conditions for eliminating the obsolete facilities. The high-efficiency tenters consume about 30 – 40% less electricity than Korean company Ehwha’s products which are often used at this point. The companies must raise energy conservation and emissions reduction to a new level by bringing in high-efficiency equipment.
5. In upgrading the industry, the corporate management is the foundation and the utilization of human resources is an important factor.

**2010 national dye and printing industry annual meeting
for energy conservation and environmental protection**

The 2010 national dye and printing industry annual meeting for energy conservation and environmental protection was hosted by the China Dyeing and Printing Association from November 9 - 11, 2010, in Xiaoshan, Hangzhou City. The main subjects of the meeting were low-carbon economy and the energy conservation and environmental protection. More than 300 people attended the meeting, representing dye companies from all parts of China, China National Textile & Apparel Council and various industrial associations. During the meeting, it was pointed out that the energy conservation and emissions reduction are the main tasks for the textile industry during the period of the 12th five-year plan.