

**SMALL-SCALE CDM PROGRAMME ACTIVITY DESIGN DOCUMENT FORM  
(CDM-SSC-CPA-DD) - Version 01**



NAME /TITLE OF THE PoA: \_\_\_\_\_



CDM – Executive Board

page 1

**CLEAN DEVELOPMENT MECHANISM  
SMALL-SCALE PROGRAM ACTIVITY DESIGN DOCUMENT FORM (CDM-SSC-CPA-DD)  
Version 01**

**CONTENTS**

- A. General description of CDM programme activity (CPA)
- B. Eligibility of CPA and Estimation of Emission Reductions
- C. Environmental Analysis
- D. Stakeholder comments

**Annexes**

Annex 1: Contact information on entity/individual responsible for the CPA

Annex 2: Information regarding public funding

Annex 3: Baseline information

Annex 4: Monitoring plan

**NOTE:**

- (i) This form is for submission of CPAs that apply a small scale approved methodology using the provision of the proposed small scale CDM PoA.
- (ii) The coordinating/managing entity shall prepare a CDM Small Scale Programme Activity Design Document (CDM-SSC-CPA-DD)<sup>1,2</sup> that is specified to the proposed PoA by using the provisions stated in the SSC PoA DD. At the time of requesting registration the SSC PoA DD must be accompanied by a CDM-SSC CPA-DD form that has been specified for the proposed SSC PoA, as well as by one completed CDM-SSC CPA-DD (using a real case). After the first CPA, every CPA that is added over time to the SSC PoA must submit a completed CDM-SSC CPA-DD.

---

<sup>1</sup> The latest version of the template form CDM-CPA-DD is available on the UNFCCC CDM web site in the reference/document section.

<sup>2</sup> At the time of requesting validation/registration, the coordinating managing entity is required to submit a completed CDM-POA-DD, the PoA specific CDM-CPA-DD, as well as one of such CDM-CPA-DD completed (using a real case).

**SMALL-SCALE CDM PROGRAMME ACTIVITY DESIGN DOCUMENT FORM  
(CDM-SSC-CPA-DD) - Version 01**



**NAME /TITLE OF THE PoA:** \_\_\_\_\_



**CDM – Executive Board**

page 2

**SECTION A. General description of small scale CDM programme activity (CPA)**

**A.1. Title of the small-scale CPA:**

>>

Programme CDM to Introduce the High-Performance Tenters to the Dye Works in Zhejiang Province, PR China - CPA No.01Qianjiang

**Version:** 1

**Date:** \*/01/2011

**A.2. Description of the small-scale CPA:**

>>

The CPA, “Programme CDM to Introduce the High-Performance Tenters to the Dye Works in Zhejiang Province, PR China - CPA No.01Qianjiang”, includes to introduce of the high-performance tenters that are used for drying and heat set in the dye works in Hangzhou Qianjiang Dye Co., Ltd.,and to contribute to reduce energy consumption and CO2 emission.

The company will introduce 6 tenters in2012, 5 tenters in 2013,1 tenter in2017,2 tenters in2018,2 tenters in 2020 to replace16 existing tenters which the company have.

Introduce of the high-performance tenters , the programme reduce the fossil fuels (mainly coal) and electricity use and reduceCO2 emissions by 10,994 tonnes per year.

There are neither mandatory/regulatory requirements to reduce energy consumption targeted the dye works nor mandatory/regulatory requirements to replace the tenters in them, both at the central government level and at the Zhejiang government level. The proposed PoA is a voluntary action by the CME, to promote the introduction of high-efficiency tenters in the dye works, which already have tenters.

Hangzhou Qianjiang Dye Co.,Ltd., CPA No.01, is located in zhushanbeixinnongqiao Village,hezhuang Town,Xiaoshan ku,Zhejiang Province, China.

The company will launch the project on January 1<sup>st</sup> 2012.

**A.3. Entity/individual responsible for the small-scale CPA:**

>> Here the information on the entity/individual responsible of the CPA shall be included, hence forth referred to as CPA implementer(s). CPA implementers can be project participants of the PoA, under which the CPA is submitted, provided their name is included in the registered PoA.

S/N	Name of the CPA implementer	Wish to be Project Participant(Yes/No)
1	Hangzhou Qianjiang Dye Co.,Ltd.	Yes, is the implementater of the project
2	Green ensign (Beijing) New Energy Technology Ltd.	Yes, is the CME of the CPA.

**A.4. Technical description of the small-scale CPA:**

**A.4.1. Identification of the small-scale CPA:**

>>

China Zhejiang Province Hangzhou Qianjiang Dye Co.,Ltd., - CPA No.1

**A.4.1.1. Host Party:**



>>

PR China

**A.4.1.2. Geographic reference or other means of identification allowing the unique identification of the small-scale CPA (maximum one page):**

>>Geographic reference or other means of identification<sup>3</sup>, Name/contact details of the entity/individual responsible for the CPA, e.g. in case of stationary CPA geographic reference, in case of mobile CPAs means such as registration number, GPS devices.

The project located in zhushanbeixinnongqiao Village,hezhuang Town,Xiaosha ku,Zhejiang Province, China.

Plant (Project Activity)	Name of The Company/ Organization	City/ Town/ Village	Latitude	Longitude	Commissioning Date
001	Zhejiang Province Hangzhou Qianjiang Dye Co.,Ltd.,	Hangzhou City/ Xiaosha ku/ hezhuang Town	30.298	120.467	***



Figure 1. Location of Hangzhou City, Zhejiang

Figure 2. Location of the Project Activity site in Hangzhou City

<sup>3</sup> E.g. in case of stationary CPA geographic reference, in case of mobile CPAs means such as registration number, GPS devices.

**SMALL-SCALE CDM PROGRAMME ACTIVITY DESIGN DOCUMENT FORM  
(CDM-SSC-CPA-DD) - Version 01**



NAME /TITLE OF THE PoA: \_\_\_\_\_



CDM – Executive Board

page 4

**A.4.2. Duration of the small-scale CPA:**

**A.4.2.1. Starting date of the small-scale CPA:**

>>

January 1<sup>st</sup> 2012.

**A.4.2.2. Expected operational lifetime of the small-scale CPA:**

>>

28years.

The facility of Japan Hirano Entec tenter's life time assumes 20 years, but it divides 5 time to introduce ,so the lifetime of the CPA is 28years.

**A.4.3. Choice of the crediting period and related information:**

Fixed Crediting period

**A.4.3.1. Starting date of the crediting period:**

>>

01/01/2012or the date of registration, whichever is later.

**A.4.3.2. Length of the crediting period, first crediting period if the choice is renewable CP:**

>>

NOTE: Please note that the duration of crediting period of any CPA shall be limited to the end date of the PoA regardless of when the CPA was added.

**A.4.4. Estimated amount of emission reductions over the chosen crediting period:**

>>

10-year fixed crediting period is applied to this project. The estimated amount of emission reductions are show in Table A-4

Table A-4 Estimation of emission reduction in the total crediting period

Years	Estimation of annual emission reductions in tones of tCO <sub>2</sub> e
2012	5,754
2013	10,549
2014	10,549
2015	10,549
2016	10,549
2017	11,508
2018	13,426
2019	13,426
2020	15,344
2021	15,344
Total estimated reductions (t CO <sub>2</sub> e)	116,998
Total number of crediting years	10
Annual average over the crediting period of estimated reductions(t CO <sub>2</sub> e)	11,700



**A.4.5. Public funding of the CPA:**

>>

No public funding is used to implement this CDM Programme of Activity(CPA)

**A.4.6. Information to confirm that the proposed small-scale CPA is not a de-bundled component**

>>

1. For the purposes of registration of a Programme of Activities (PoA)<sup>4</sup> a proposed small-scale CPA of a PoA shall be deemed to be a de-bundled component of a large scale activity if there is already an activity<sup>5</sup>, which:
  - (a) Has the same activity implementer as the proposed small scale CPA or has a coordinating or managing entity, which also manages a large scale PoA of the same sectoral scope, and;
  - (b) The boundary is within 1 km of the boundary of the proposed small-scale CPA, at the closest point.
2. If a proposed small-scale CPA of a PoA is deemed to be a debundled component in accordance with paragraph 2 above, but the total size of such a CPA combined with a registered small-scale CPA of a PoA or a registered CDM project activity does not exceed the limits for small-scale CDM and small-scale A/R project activities as set out in Annex II of the decision 4/CMP.1 and 5/CMP.1 respectively, the CPA of a PoA can qualify to use simplified modalities and procedures for small-scale CDM and small-scale A/R CDM project activities.

The small-scale CPA is not a de-bundled component of a large scale activity.

- a. The same activity implementer- Hangzhou Qianjiang Dye Co.,Ltd. and the coordinating or managing entity- Green Ensign (Beijing) New Energy Technology Ltd. Not manages a large scale PoA of the same sectoral scope.
- b. There are no CDM activities within 1 km of the boundary of the proposed small-scale CPA, at the closest point.

**A.4.7. Confirmation that small-scale CPA is neither registered as an individual CDM project activity or is part of another Registered PoA:**

>>

The CPA is neither registered as an individual CDM project activity nor part of another registered PoA. Name of the company/organization, location, the GPS points of the CPA are specified in Section A.4.1.2 and can be compared with any other registered PoA or an individual CDM project. Moreover, as there is no registered PoA in Zhejiang Province, this project cannot be a part to constitute any other PoAs.

<sup>4</sup> Only those POAs need to be considered in determining de-bundling that are: (i) in the same geographical area; and (ii) use the same methodology; as the POA to which proposed CPA is being added

<sup>5</sup> Which may be a (i) registered small-scale CPA of a PoA, (ii) an application to register another small-scale CPA of a PoA or (iii) another registered CDM project activity

**SMALL-SCALE CDM PROGRAMME ACTIVITY DESIGN DOCUMENT FORM  
(CDM-SSC-CPA-DD) - Version 01**



NAME /TITLE OF THE PoA: \_\_\_\_\_



CDM – Executive Board

page 6

**SECTION B. Eligibility of small-scale CPA and Estimation of emissions reductions**

**B.1. Title and reference of the Registered PoA to which small-scale CPA is added:**

>>

Programme CDM to Introduce the High-Performance Tenters to the Dye Works in Zhejiang Province, PR China - CPA No.01Qianjiang

**B.2. Justification of the why the small-scale CPA is eligible to be included in the Registered PoA :**

>>

This CPA satisfies each eligibility requirements in Table A4.2.2. of PoA-DD.

TableB.2.1

NO	Eligibility requirements of POA-DD	Condition conformity in this CPA
	Each CPA will involve introduction of the high-performance type of the tenter replacing all or part of the existing tenters in the dye works within the boundary of the PoA.	The CPA will involve introduction of the high-performance type of the Hirano Entec tenter replacing 16of the existing tenters in the dye works within the boundary of the PoA-zhejiang Province.
	Each CPA will implement the Baseline and Monitoring Methodology AMS II.C/version 13 “Demand-side energy efficiency activities for specific technologies”.	The CPA will implement the Baseline and Monitoring Methodology AMS II.C/version 13 “Demand-side energy efficiency activities for specific technologies”.
	Each CPA must be approved by the CME and DOE prior to its incorporation into the PoA.	The CPA is to be approved by the CME and DOE prior to its incorporation into the PoA.
	Each CPA shall be uniquely identified by providing geographical information of the CPA.	The CPA will be uniquely identified by providing geographical information in A.4.1.2.
	The CME will ensure that all CPAs under its PoA are neither registered as an individual CDM project activity nor included in another registered PoA in the same geographical sites.	In zhejiang Province, there are neither CPAs nor an individual CDM project activity are registered.
	Each CPA must satisfy de-bundling rules for PoA.	The CPA satisfy de-bundling rules for PoA in section A.4. 6 .
	Each CPA is to subscribe to the PoA.	The CPA will be to subscribe to the PoA.
	The aggregate energy savings by a single CPA may not exceed the equivalent of 60 GWh per year for electricity and 180 GWh thermal per year in fuel input.	The aggregate energy savings by a single CPA is 44.28GWh/year.

**SMALL-SCALE CDM PROGRAMME ACTIVITY DESIGN DOCUMENT FORM  
(CDM-SSC-CPA-DD) - Version 01**



NAME /TITLE OF THE PoA: \_\_\_\_\_



**CDM – Executive Board**

page 7

	For each replaced tenter the rated capacity or output is not significantly smaller (maximum - 10%) than the baseline or significantly larger (maximum + 50%) than the baseline.	The replaced tenter the rated capacity or output is 30% ,not larger than 50%.
--	---	---

This CPA satisfies each applicability conditions in AMS II.C “Demand-side energy efficiency activities for specific technologies”.

<b>Sr. No.</b>	<b>Requirement for applicability of the methodology</b>	<b>Whether the SSC-CPA complies with the given requirement</b>
1.	The project is to encourage the adoption of energy-efficient equipment/appliance (e.g., lamps, ballasts, refrigerators, motors, fans, air conditioners, pumping systems) at many sites. These technologies may replace existing equipment or be installed at new sites.	The CPA is to encourage the adoption of energy-efficient equipment/appliance (e.g., lamps, ballasts, refrigerators, motors, fans, air conditioners, pumping systems) at many sites. These Japan Hirano Entec high energy-efficient technologies replace existing equipment.
2.	The aggregate energy savings by a single project may not exceed the equivalent of 60 GWh per year for electrical end use energy efficiency technologies. For fossil fuel end use energy efficient technologies, the limit is 180 GWh thermal per year in fuel input.	The aggregate energy savings by a single CPA is 44.28GWh/year.
3.	For each replaced appliance/equipment/system the rated capacity or output or level of service (e.g., light output, water output, room temperature and comfort, the rated output capacity of air-conditioners etc.) is not significantly smaller (maximum - 10%) than the baseline or significantly larger (maximum + 50%) <sup>1</sup> than the baseline.	The replaced tenter the rated capacity or output is 30%, not larger than 50%.
4.	If the energy efficient equipment contains refrigerants, then the refrigerant used in the project case shall be CFC free.	The energy efficient equipment not contain refrigerants.

**B.3. Assessment and demonstration of additionality of the small-scale CPA , as per eligibility criteria listed in the Registered PoA:**

>>

The latest version of “The Tool for the Demonstration and Assessment of Additionality” (Version 05.2), adopted in the 39th meeting of the CDM Executive Board, is applied as the UNFCCC additionality tool.

***Step 1: Identification of alternatives to the project activity consistent with current laws and regulations***



***Sub-step 1a: Define alternatives to the project activity:***

For the CPA, alternatives to the project activity will be identified in accordance with the latest version of the methodology AMS-II.C. “Demand-side energy efficiency activities for specific technologies”.

alternatives to the project activity are as follow.

- ( 1 ) Continuation of the current situation
- ( 2 ) The proposed project activity undertaken without being registered as a CDM project activity;
- ( 3 ) Other realistic and credible alternative scenario(s) to the proposed CDM project activity scenario that deliver outputs services (e.g., cement) or services (e.g. electricity, heat) with comparable quality, properties and application areas, taking into account, where relevant, examples of scenarios identified in the underlying methodology;

For each CPA, the adequate timing to replace the tenters is determined by using the latest version of “Tool to determine the remaining lifetime of equipment”.

**Tool to determine the remaining lifetime of equipment**

For project activities that involve several equipments, project participants can either determine the remaining lifetime for each equipment or determine the remaining lifetime as the most conservative of the individual remaining lifetimes of the equipment by applying any one of the options (a) to (c).

- (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.

For this CPA includes replacements of one tenter or more than one tenters, lifetimes of which may differ each other.

***Option (a): Use manufacturer’s information for the technical lifetime of equipment and compare to the date of first commissioning***

In this option, the remaining lifetime is determined as a difference between the technical lifetime and the operational time.

This option can only be applied if:

- (i) Manufacturer’s information for the technical lifetime of the equipment is available;
- (ii) The project participants can demonstrate that the equipment has been operated and maintained according to the recommendations of the equipment supplier to ensure that the technical lifetime specified by the manufacturer is not reduced; and
- (iii) There are no periodic replacement schedules or scheduled replacement practices specific to the industrial facility, that require early replacement of equipment before the expiry of the technical lifetime;
- (iv) The equipment has no design fault or defect and did not have any industrial accident due to which the equipment can not operate at rated performance levels.

On (i), there is no standardized technical lifetime of tenters and practical lifetime of every tenters differ





significantly by their purpose or situation of use (e.g. operational time or maintenance), so this condition is not met.

On (ii), it depends on each CPA whether this condition is met or not.

On (iii), there are neither periodic replacement schedules nor scheduled replacement practices at the level of the PoA,<sup>6</sup> and at the level of CPAs it depends on each CPA whether there is any periodic replacement schedule.

On (iv), it depends on each CPA whether this condition is met or not.

As shown above, this option (a) cannot be applied because the condition (i) is not met at least.

***Option (b): Obtain an expert evaluation***

In this option, an independent expert having relevant experience in evaluating the remaining lifetime for the type of equipment can be requested to determine the remaining lifetime of the equipment. The information that could be evaluated includes an analysis of

- (i) The operational history of the equipment to identify the past performance, equipment retrofits, failures/accidents, capacity upgrades/degradations, replacements etc.;
- (ii) The current operation and maintenance practices;
- (iii) Documented specific sectoral/industry practices for replacements;
- (iv) Conducting tests on the equipment, such as magnetic particle examinations, ultrasonic testing, metallurgical analysis, etc.

For the proposed PoA and each CPA, this option (b) can be applied by implementing the analysis including among (i), (ii), (iii), or (iv) adequately. However, on the analysis (ii), there are neither operation practices nor maintenance practices at the level of the PoA, and at the level of CPAs it depends on each CPA whether there is any periodic replacement schedule.<sup>7</sup>

***Option (c): Use default values***

In this option, project participants may use the following default values for the technical lifetime and determine the remaining lifetime as the difference of the technical lifetime and the operational time. This option can only be applied if:

- (i) The project participants can demonstrate that the equipment has been operated and maintained according to the recommendations of the equipment supplier;
- (ii) There are no periodic replacement schedules or scheduled replacement practices specific to the industrial facility, that require early replacement of equipment before the expiry of the technical lifetime; and
- (iii) The equipment has no design fault or defect and did not have any industrial accident due to which the equipment can not operate at rated performance levels.

---

<sup>6</sup> 浙江省印染行業協會

<sup>7</sup> 浙江省印染行業協會

**SMALL-SCALE CDM PROGRAMME ACTIVITY DESIGN DOCUMENT FORM  
(CDM-SSC-CPA-DD) - Version 01**



NAME /TITLE OF THE PoA: \_\_\_\_\_



**CDM – Executive Board**

page 10

On (i), it depends on each CPA whether this condition is met or not.

On (ii), there are neither periodic replacement schedules nor scheduled replacement practices at the level of the PoA,<sup>8</sup> and at the level of CPAs it depends on each CPA whether there is any periodic replacement schedule.

On (iii), it depends on each CPA whether this condition is met or not.

Therefore, on every condition from (i) to (iii), it depends on each CPA whether these conditions are met or not. Although until now some default values are applied as shown in Table-1, the tender has not been incorporated.

Project participant may propose a revision to this tool to include the default value of the technical lifetime for the tender with justification and supporting documentation that demonstrate the appropriateness of the proposed value.

**Table-1 Default Values in Option (c)**

Equipment	Default value for Technical lifetime
Boilers	25 years
Steam Turbines	25 years
Gas turbines, upto 50 MW capacity	150,000 hours
Gas turbines, above 50 MW capacity	200,000 hours
Hydro turbines	150,000 hours
Electric Generators, air cooled	25 years
Electric generators, hydrogen cooled or water cooled	30 years
Wind turbines, onshore	25 years
Wind turbines, offshore	20 years
Diesel/oil/gas fired generator sets	50,000 hours
Transformers	30 years
Heaters, chillers, pumps, etc. used in HVAC systems	15 years

As shown above, for the PoA and each CPA, it is adequate to apply Option (b). By the evaluation of the expert, the life time of the existing facilities in this CPA is 10 years and it is necessary to replacing later ten years start operation.

So, the scenario(1) "maintaining the existing state" is impossible.

In the CPA, tenders that would be replaced in the absence of the project activity will be defined along with the following way:

alternatives of the project activity	Condition conformity in this CPA
--------------------------------------	----------------------------------

<sup>8</sup> 浙江省印染行業協會

**SMALL-SCALE CDM PROGRAMME ACTIVITY DESIGN DOCUMENT FORM  
(CDM-SSC-CPA-DD) - Version 01**



NAME /TITLE OF THE PoA: \_\_\_\_\_



**CDM – Executive Board**

page 11

	Prior to the replacement(s) of tenter(s) that is (are) incorporated in the plan of the CPA, the managing entity of the dye industry in Zhejiang Province (浙江省印染行業協會) will make out the list of the tenters' manufacturers and types that are probable to be introduced in the project period, taking into consideration of the introduction history and market of the tenters.	The managing entity of the dye industry in Zhejiang Province taking into consideration of the introduction history and market of the tenters And judged that it is possible to introduce tenters made in korea, German, china Taiwan and china.
	For the CPA site, the manufacturer(s) and type(s) that was (were) introduced in the latest year will be collated with that (those) listed in (i) above. The matched manufacturer(s) and type(s) is (are) regarded as the alternative(s) to the project activity.	For the CPA site, the types introduced in the latest year is made in korea. Among the the exsting tenter, 13 is made in korea,2 is made in china taiwan, 1is made in china.also, there are no experience and plan to install new tenters made in German.
	If there are alternatives more than one as the result of (ii) above, all of alternatives are regarded as the alternatives to the project activity.	Recently, it was a tenter made in Korea introduced in this CPA site.
	If there is no alternative as the result of (ii) above, all of alternative(s) listed in (i) above is (are) regarded as the alternative(s) to the project activity.	There is a alternative as the result of (ii) above. so, it is no Necessity to regarde all of alternatives listed in (i) above are as the alternatives to the project activites.

Therefore two scenarios of alternatives to the proposed PoA have been identified.

- B1: Introduction of the tenters, which made in Japan Hirano Entec.  
But that is not undertaken as the CDM project activity.
- B2: Introduction of the tenters, which made in Korea.

***Sub-step 1b: Consistency with mandatory laws and regulations:***

The proposed PoA is a voluntary coordinated action by the CME, as shown above. In China, there are neither mandatory/regulatory requirements to reduce energy consumption targeted the dye works nor mandatory/regulatory requirements to replace the tenters in them, both at the central government level and at the Zhejiang government level.

In this CPA, there are neither mandatory/regulatory requirements to reduce energy consumption targeted the dye works nor mandatory/regulatory requirements to replace.

***Step 2: Investment analysis***

***Sub-step 2a: Determine appropriate analysis method***

In all of CPAs, project activity (replacement and operation of tenters) is one of the indispensable production processes in dyne works, and generates economic benefit that is linked to dyne products. So for any CPAs the simple cost analysis (Option I) cannot be applied.



Furthermore, project activity (replacement and operation of tenters) cannot be outsourced, and each CPA never judge about whether an investment is valid or not, only by its profit.

Practically company management will select one activity among alternatives (baseline scenario B1 and B2 or project scenario) for the indispensable production processes done by tenters, so it is appropriate to apply the benchmark analysis (Option III) for each CPA, regarding the difference between the project activity and its alternatives as the additional investment.

***Sub-step 2b: Option III. Apply benchmark analysis***

For the benchmark as criteria, 14% of the project IRR for Spinning industry given in China’s “Economic Assessment method and parameter of construction projects by SDPC and MOC”. Currently, for Spinning projects in China, evaluation based on internal rate of return is conducted in general

1) financial indicators

Table1 ) The financial data provided in the Feasibility Study Report of the Project is as follows:

Initial investment	RMB31,200,000yuan
Expected tariff	0.6yuan/kwh(excluding VAT)
Quantity of electricity saving	540Mwh
Coal price	700yuan/t(excluding VAT)
Quantity of Coal saving	6,653t
Income tax rate	25%
Tax rate of city construction	7%
Tax rate of education	3%
Project period	28 years <sup>( 1 )</sup>
Crediting period	10 years
Expected price of CERs	9Euro/tCO2e (exchange rate of Euro and RMB is 1:10)

(1):The company will introduce 6 tenters in2012,5 tenters in 2013,1 tenter in2017,2 tenters in2018,2 tenters in 2020 to replace16 existing tenters which the company have.

The lifetime of the high performance tenter is 20years.

Benchmark analysis is applied in this CPA.

Comparison of IRR for the Project and the financial benchmark

In accordance with the benchmark analysis above, the project IRR would be 10.91%(pre-tax)if no CERS revenue is considered, which is much lower than the benchmark rate of 14%.Therefore,the proposed project will not be considered as financially attractive.

Table2 ) 【 IRR 】

	Without CDM	With CDM
IRR	10.91%	14.50%

Sensitivity analysis

**SMALL-SCALE CDM PROGRAMME ACTIVITY DESIGN DOCUMENT FORM  
(CDM-SSC-CPA-DD) - Version 01**



NAME /TITLE OF THE PoA: \_\_\_\_\_



**CDM – Executive Board**

page 13

For the project, following financial parameters were taken as uncertain factors for sensitive analysis of financial attractiveness:

- Initial investment
- OM cost
- Coal price
- Quantity of Coal saving

In cases that the Initial investment, OM cost, Coal price and Quantity of Coal saving of the project vary from -10% to +10%, IRRs are analyzed table 3.

Table3 ) 【Sensitivity analysis】

Indicators	-10%	0%	10%
Initial investment	12.61%	10.91%	9.45%
OM cost	11.24%	10.91%	10.57%
Coal price	9.09%	10.91%	12.65%
Quantity of Coal saving	9.09%	10.91%	12.65%

As shown in above table , as the factors vary from -10% to 10%, the IRR not higher than benchmark.

**Step 4: Common practice analysis**

**Sub-step 4a: Analyze other activities similar to the proposed project activity:**

There are neither mandatory/regulatory requirements to reduce energy consumption targeted the dye works in Zhejiang Province.

In the Zhejiang Province of China, they have the experience of introduce tenter made in Germany, Korea, China / Taiwan and China, but no experience of introduce tenter made in Japan. The Energy efficiency and Initial Investment of tenter which made in Korea, China / Taiwan and China is highly lower than Japanese Hirano Entec. But the Energy efficiency and Initial Investment of which tenter made in Germany resembles made in Japan Hirano Entec.

In this case, In the Zhejiang Province of China, they have the experience of introduce tenter made in Germany, but it just Gamany brand ,exactly it's made in China.

The Energy efficiency and Initial Investment of tenter is similar with which made in china.

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

Viewing from the aspect of high efficiency or initial cost, there are no experience of introduce tenter similar the Japanese Hirano Entec.

**B.4. Description of the sources and gases included in the project boundary and proof that the small-scale CPA is located within the geographical boundary of the registered PoA.**

>>

	Source	Gas	Included?	Justification
Baseline Emissions	Fossil fuel consumption in boilers that supply heated oil for tenters	CO2	Yes	The main emissions
		CH4	No	Excluded for simplification, it's conservative
		N2O	No	Excluded for simplification, it's conservative

**SMALL-SCALE CDM PROGRAMME ACTIVITY DESIGN DOCUMENT FORM  
(CDM-SSC-CPA-DD) - Version 01**



NAME /TITLE OF THE PoA: \_\_\_\_\_



**CDM – Executive Board**

page 14

Project Emissions	Electricity generation from the grid	CO2	Yes	The main emissions
		CH4	No	Excluded for simplification, it's conservative
		N2O	No	Excluded for simplification, it's conservative
	Fossil fuel consumption in boilers that supply heated oil for tenters	CO2	Yes	The main emissions
		CH4	No	Excluded for simplification, it's conservative
		N2O	No	Excluded for simplification, it's conservative
	Electricity generation from the grid	CO2	Yes	The main emissions
		CH4	No	Excluded for simplification, it's conservative
		N2O	No	Excluded for simplification, it's conservative

**B.5. Emission reductions:**

**B.5.1. Data and parameters that are available at validation:**

>>

<b>Data / Parameter:</b>	<b><math>EF_{BL,y}</math></b>
Data unit:	tonne
Description:	Fuel consumption in the baseline in year y
Source of data used:	Energy baseline in case of fuel consumption is determined based on the analysis data or technical data for tenter type of the alternative to the project activity.
Value applied:	To be determined with respect to each CPA.
Justification of the choice of data or description of measurement methods and procedures actually applied :	The analysis data or technical data are always energy-efficient compared with those in the practical operation; hence the choice of data is regarded as conservative.
Any comment:	

<b>Data / Parameter:</b>	<b><math>EF_{CO2,F,y}</math></b>
Data unit:	tCO2/t-fuel
Description:	Emission factor of the fuel in year y
Source of data used:	Value for bituminous coal
Value applied:	IPCC Values
Justification of the choice of data or description of measurement methods and procedures actually applied :	

**SMALL-SCALE CDM PROGRAMME ACTIVITY DESIGN DOCUMENT FORM  
(CDM-SSC-CPA-DD) - Version 01**



NAME /TITLE OF THE PoA: \_\_\_\_\_



**CDM – Executive Board**

page 15

applied :	
Any comment:	

<b>Data / Parameter:</b>	<b><math>EF_{BL,y}</math></b>
Data unit:	kWh
Description:	Electricity consumption in the baseline in year y
Source of data used:	Energy baseline in case of electricity consumption is determined based on the analysis data or technical data for tender type of the alternative to the project activity.
Value applied:	To be determined with respect to each CPA.
Justification of the choice of data or description of measurement methods and procedures actually applied :	The analysis data or technical data are always energy-efficient compared with those in the practical operation; hence the choice of data is regarded as conservative.
Any comment:	

<b>Data / Parameter:</b>	<b><math>EF_{CO_2,ELEC,y}</math></b>
Data unit:	tCO <sub>2</sub> /MWh
Description:	Emission factor of the fuel in year y calculated in accordance with the provisions in AMS-I.D
Source of data used:	CM (Combined Margin) of the Eastern China Power Grid that is announced by National Development and Reform Commission (NDRC), PR China
Value applied:	0.7826
Justification of the choice of data or description of measurement methods and procedures actually applied :	
Any comment:	It is updated according to China DNA.

<b>Data / Parameter:</b>	<b><math>Q_{ref,BL}</math></b>
Data unit:	tonnes/year
Description:	Average annual quantity of refrigerant used in the baseline to replace the refrigerant that has leaked
Source of data used:	
Value applied:	zero
Justification of the choice of data or description of measurement methods and procedures actually applied :	The CME will ensure that no refrigerant is used each CPA under this PoA.

**SMALL-SCALE CDM PROGRAMME ACTIVITY DESIGN DOCUMENT FORM  
(CDM-SSC-CPA-DD) - Version 01**



NAME /TITLE OF THE PoA: \_\_\_\_\_



**CDM – Executive Board**

page 16

applied :	
Any comment:	

<b>Data / Parameter:</b>	$HG_{i,y}^B$
Data unit:	TJ/y
Description:	Heat supplied by boilers by using fossil fuels in baseline activity in year y
Source of data used:	Keep monitoring
Value applied:	
Justification of the choice of data or description of measurement methods and procedures actually applied :	
Any comment:	

<b>Data / Parameter:</b>	$EF_{PJ,y}$
Data unit:	tonne
Description:	Fuel consumption in project activity in year y. This shall be determined ex post based on monitored values
Source of data used:	Keep monitoring
Value applied:	
Justification of the choice of data or description of measurement methods and procedures actually applied :	
Any comment:	

<b>Data / Parameter:</b>	$EE_{PJ,y}$
Data unit:	kWh
Description:	Electricity consumption in project activity in year y. This shall be determined ex post based on monitored values
Source of data used:	Keep monitoring
Value applied:	
Justification of the choice of data or description of measurement methods and procedures actually applied :	



**SMALL-SCALE CDM PROGRAMME ACTIVITY DESIGN DOCUMENT FORM  
(CDM-SSC-CPA-DD) - Version 01**



NAME /TITLE OF THE PoA: \_\_\_\_\_



**CDM – Executive Board**

page 17

applied :	
Any comment:	

<b>Data / Parameter:</b>	$EF_{PJ,y}$
Data unit:	tonne
Description:	Fuel consumption in project activity in year y. This shall be determined ex post based on monitored values
Source of data to be used:	Keep monitoring
Value of data applied for the purpose of calculating expected emission reductions in section B.5	
Description of measurement methods and procedures to be applied:	In this section the project participants shall provide description of equipment used for measurement, if applicable, and its accuracy class.
QA/QC procedures to be applied:	
Any comment:	

<b>Data / Parameter:</b>	$EE_{PJ,y}$
Data unit:	kWh
Description:	Electricity consumption in project activity in year y. This shall be determined ex post based on monitored values
Source of data to be used:	Keep monitoring
Value of data applied for the purpose of calculating expected emission reductions in section B.5	
Description of measurement methods and procedures to be applied:	In this section the project participants shall provide description of equipment used for measurement, if applicable, and its accuracy class.
QA/QC procedures to be applied:	
Any comment:	

<b>Data / Parameter:</b>	$HG^P_{j,y}$
Data unit:	TJ/y
Description:	Heat supplied by boilers by using fossil fuels in project activity in year y
Source of data to be used:	Keep monitoring
Value of data applied	

**SMALL-SCALE CDM PROGRAMME ACTIVITY DESIGN DOCUMENT FORM  
(CDM-SSC-CPA-DD) - Version 01**



NAME /TITLE OF THE PoA: \_\_\_\_\_



**CDM – Executive Board**

page 18

for the purpose of calculating expected emission reductions in section B.5	
Description of measurement methods and procedures to be applied:	In this section the project participants shall provide description of equipment used for measurement, if applicable, and its accuracy class.
QA/QC procedures to be applied:	
Any comment:	

<b>Data / Parameter:</b>	<i>Boiler, j</i>
Data unit:	%
Description:	Efficiency of generating heat by boilers by using fossil fuels in project activity in year y
Source of data to be used:	Keep monitoring
Value of data applied for the purpose of calculating expected emission reductions in section B.5	
Description of measurement methods and procedures to be applied:	In this section the project participants shall provide description of equipment used for measurement, if applicable, and its accuracy class.
QA/QC procedures to be applied:	
Any comment:	

**B.5.2. Ex-ante calculation of emission reductions:**

>>

The company will introduce 6 tenters in 2012, 5 tenters in 2013, 1 tenter in 2017, 2 tenters in 2018, 2 tenters in 2020 to replace 16 existing tenters which the company have.

We calculate the emission reductions per one tenter in the baseline case and project case. As shown below, emission factor and emission reductions are calculated.

**(A) Calculation of Baseline Emissions**

Types of energy to be reduced are both fossil fuel and electricity, so emissions caused by energy consumption are calculated for fossil fuel and electricity separately, and summed up.

$$BE_y = BEF_y + BEE_y$$



where,

- $BE_y$  Baseline emissions in year y (tCO<sub>2</sub>e)
- $BEF_y$  Baseline emissions from fuel consumption in year y (tCO<sub>2</sub>e)
- $BEF_y$  Baseline emissions from electricity consumption in year y (tCO<sub>2</sub>e)

**Fossil Fuel**

In case that energy to be reduced is fossil fuel, the energy baseline is determined using one of the two following options:

- (a) Existing level of fuel consumption;
- (b) Amount of fuel that would be used by the technology that would have been implemented otherwise.

In each CPA-DD, baseline emissions from fossil fuel consumption are calculated as follows:

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

where,

- $BEF_y$  Baseline emissions from fuel consumption in year y (tCO<sub>2</sub>e)
- $EF_{BL,y}$  Fuel consumption in the baseline in year y (t)
- $EF_{CO2,F,y}$  Emission factor of the fuel in year y (tCO<sub>2</sub>/t-fuel)

**electricity**

In each CPA-DD, baseline emissions from electricity consumption are calculated as follows:

$$BEE_y = EE_{BL,y} * EF_{CO2,F,y} + Q_{ref,BL} * GWP_{ref,BL}$$

where,

- $BEF_y$  Baseline emissions from electricity consumption in year y (tCO<sub>2</sub>e)
- $EF_{BL,y}$  Electricity consumption in the baseline in year y (t)
- $EF_{CO2,ELEC,y}$  Emission factor of the fuel in year y calculated in accordance with the provisions in AMS-I.D (tCO<sub>2</sub>/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<sub>2</sub>e/t refrigerant)

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

electricity  $BEE_y = EE_{BL,y} * EF_{CO2,F,y} + Q_{ref,BL} * GWP_{ref,BL} = 479 \text{ MWh/y} \times 0.7826 \text{ t-CO}_2/\text{MWh} + 0 = 375 \text{ t-CO}_2/\text{y}$   
Chinese goverment ( 2009 ) 、 East China Power Grid CM ( Combined Margin )

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

**(B) Calculation of Project Emissions**

Project emissions caused by energy consumption are calculated for fossil fuel and electricity separately, and summed up, in the same way as baseline emissions.

$$PE_y = PEF_y + PEE_y$$



where,

- $PE_y$  Project emissions in year y (tCO<sub>2</sub>e)
- $PEF_y$  Project emissions from fuel consumption in year y (tCO<sub>2</sub>e)
- $PEE_y$  Project emissions from electricity consumption in year y (tCO<sub>2</sub>e)

**Fossil Fuel**

In each CPA-DD, project emissions from fossil fuel consumption are calculated as follows:

$$PEF_y = EF_{PJ,y} * EF_{CO2 FUEL,y}$$

where,

- $PEF_y$  Project emissions from fuel consumption in year y (tCO<sub>2</sub>e)
- $EF_{PJ,y}$  Fuel consumption in project activity in year y. This shall be determined ex post based on monitored values (t)
- $EF_{CO2,FUEL,y}$  Emission factor of the fuel in year y (tCO<sub>2</sub>/t-fuel)

**electricity**

In each CPA-DD, project emissions from electricity consumption are calculated as follows:

$$PEE_y = EE_{PJ,y} * EF_{CO2 ELEC,y}$$

where,

- $PEE_y$  Project emissions from electricity consumption in year y (tCO<sub>2</sub>e)
- $EE_{PJ,y}$  Electricity consumption in project activity in year y. This shall be determined ex post based on monitored values
- $EF_{CO2,ELEC,y}$  Emission factor of the fuel in year y calculated in accordance with the provisions in AMS-I.D (tCO<sub>2</sub>/MWh)

Fossil Fuel	$PEF_y = EF_{PJ,y} * EF_{CO2 FUEL,y}$ $= 480 \text{ t-coal/y} \times 23.7 \text{ TJ/Gg-coal} \times 25.8 \text{ kg-C/GJ} \times 44/12$ $= 1,076 \text{ t-CO}_2/\text{y}$
electricity	$PEE_y = EE_{PJ,y} * EF_{CO2 ELEC,y}$ $= 445 \text{ MWh/y} \times 0.7826 \text{ t-CO}_2/\text{MWh}$ $= 348 \text{ t-CO}_2/\text{y}$
Total	$PE_y = PEF_y + PEE_y = 1,076 + 348 = 1,424\text{t-CO}_2/\text{y}$

**(C) Leakage**

In the methodology AMS II.C. (version 13), it is decided as follows:

“In case the project activity involves the replacement of equipment, and the leakage effect of the use of the replaced equipment in another activity is neglected

Because in the CPA, the replaced equipment is scrapped,so the leakage effect can be neglected.

**(D) Calculation of Emission Reductions**

The emission reduction achieved by the project activity shall be determined as the difference between the baseline emissions and the project emissions and leakage.

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

where,

**SMALL-SCALE CDM PROGRAMME ACTIVITY DESIGN DOCUMENT FORM  
(CDM-SSC-CPA-DD) - Version 01**



NAME /TITLE OF THE PoA: \_\_\_\_\_



**CDM – Executive Board**

page 21

$ER_y$  Emission reductions in year y (tCO<sub>2</sub>e)  
 $BE_y$  Baseline emissions in year y (tCO<sub>2</sub>e)  
 $PE_y$  Project emissions in year y (tCO<sub>2</sub>e)  
 $LE_y$  Leakage emissions in year y (tCO<sub>2</sub>e)  
 $ER_y = (BE_y - PE_y) - LE_y$   
 $= 2,383 \text{ t-CO}_2/\text{y} - 1,424 \text{ t-CO}_2/\text{y} - 0 \text{ t-CO}_2/\text{y}$   
 $= 956 \text{ t-CO}_2/\text{y}$

**B.5.3. Summary of the ex-ante estimation of emission reductions:**

>>

Estimated emission reductions from this project activity are as shown in the following table.

Year	Estimation of project activity emissions (tonnes of CO <sub>2</sub> e)	Estimation of baseline emissions (tonnes of CO <sub>2</sub> e)	Estimation of leakage (tonnes of CO <sub>2</sub> e)	Estimation of overall emission reductions (tonnes of CO <sub>2</sub> 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
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
<b>Total</b> (tonnes of CO <sub>2</sub> e)	457,104	764,943	0	307,839
	16,325	27,319	0	10,994



**B.6.1. Description of the monitoring plan:**

>>

The project owner will implement monitoring by the following methods and confirm reduction quantity during the credit period.

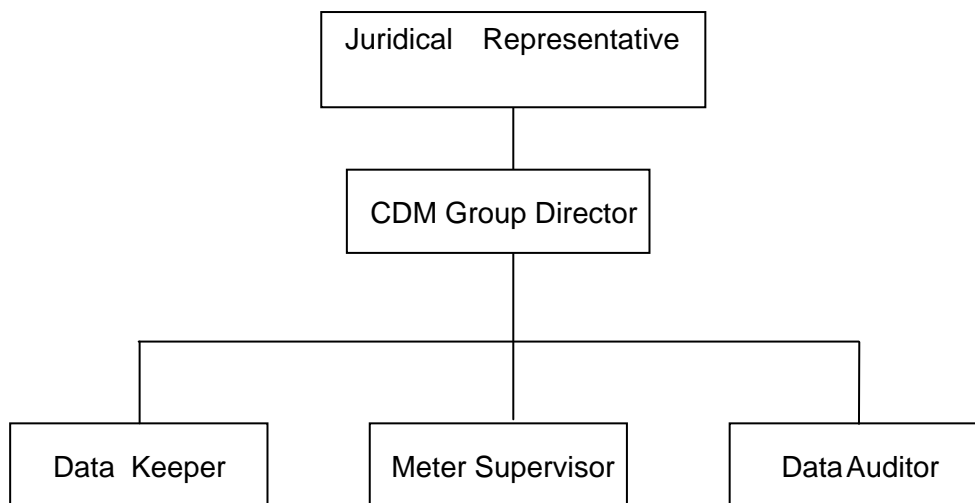
(1) monitoring methodology

The CPA is an activity that encourages the adoption of energy-efficient tenters in order to reduce greenhouse gas emissions by reducing heat and electricity consumption. It can be applied by the small-scale CDM monitoring methodology AMS II.C, because the quantity of energy reduction is 44.28 GWh, lower than 60 GWh.

Based on a rule of SSC-PoA-DD, describe the monitoring plan about Qianjiang Dye Co.,Ltd. .

(2) Monitoring organization

The project owner will set up a special CDM group to be in charge of data recordation, collection, supervision and verification. The group director will be trained and supported of technical issues by CDM consultation, the organization of the monitoring group is planned to be set up as follows:



☒ 1 Monitoring organization

- CDM Group Director: Responsible for developing, operating, monitoring, maintaining and communicating for all the tasks related to the CDM project.
- Data Keeper: Responsible for recording monitored data and to compile periodically.
- Meter Supervisor: Responsible for examination and maintenance of monitored meters, inspection and lead sealing of meters with third party (power grid company).

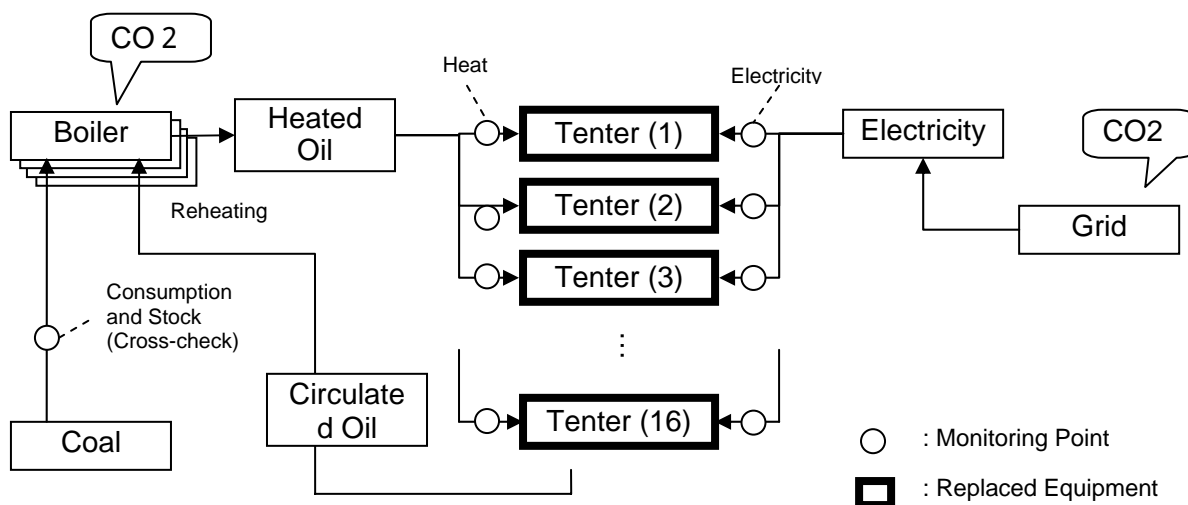


- Data Auditor: Responsible for supervising and verifying monitored data with power grid company.

(3) Description of data required to be monitored

The data and parameters required to be monitored is as B.5.1.

(4) Monitoring equipment and installation



(5) QA/QC

Monitoring parameters in this CPA are mainly electricity and heat consumption in tents. So as to ensure QA/QC (Quality Assurance / Quality Control), the following measures shall be taken:

1. Monitoring equipment: Installation of electricity meters and flow meters, periodical monitoring and recording
2. Inspection: The inspection for the monitoring equipments should be implemented according to related standards/regulations.

(6) Data management

Monitoring data which is taken by CDM group should be kept periodically in the paper and electric devices by oneself. These data are provided periodically to the CME, which makes monitoring reports periodically based on these data. Both the project owner (CPA) and the CME shall keep backup data of monitoring data. All of the data shall be saved after 2 years of crediting period.

(7) Monitoring of scrapping

In order to explain that the leakage effect of the use of the replaced tent in another activity is neglected, an independent monitoring of scrapping of replaced tent needs to be implemented. The monitoring should include recording of the type / serial number/ replaced date of the replaced / introduced tents, and a check if the number of project activity tent introduced by the project and the number of scrapped tent correspond with each other. For the purpose scrapped tent must be stored until such

SMALL-SCALE CDM PROGRAMME ACTIVITY DESIGN DOCUMENT FORM  
(CDM-SSC-CPA-DD) - Version 01



NAME /TITLE OF THE PoA: \_\_\_\_\_



CDM – Executive Board

page 24

correspondence has been checked, which is restricted in the “CPA Agreement”. The scrapping of replaced tender should be documented and independently verified.

**C.1. Please indicate the level at which environmental analysis as per requirements of the CDM modalities and procedures is undertaken. Justify the choice of level at which the environmental analysis is undertaken:**

Environmental analysis shall be done at CPA level.

**C.2. Documentation on the analysis of the environmental impacts, including transboundary impacts:**

>>

Standards and code applied in this CPA is as follow.

Standards and codes

Standard	Code
"Environmental Quality Standard for Air"	GB3095-1996
"Emission Standard of Air Pollutants for Coal-burning Oil-burning Gas-fired Boiler"	GB13271-2001
"Standard for Noise of Industrial Enterprises"	GB12348-2008
"Standard of Environmental Noise in the Urban Area"	GB3096-2008
"Integrated Wastewater Discharge Standards"	GB8978-1996
"Dyeing and finishing of industrial pollutants emission standards"	GB4287-92

**C.3. Please state whether an environmental impact assessment is required for a typical CPA, included in the programme of activities (PoA), in accordance with the host Party laws/regulations:**

>>

This CPA satisfies each environmental standards given in C.2.

**SECTION D. Stakeholders' comments**

>>

**D.1. Please indicate the level at which local stakeholder comments are invited. Justify the choice:**

Stakeholder comments are invited at POA level.

**D.2. Brief description how comments by local stakeholders have been invited and compiled:**

>>

**D.3. Summary of the comments received:**

>>



SMALL-SCALE CDM PROGRAMME ACTIVITY DESIGN DOCUMENT FORM  
(CDM-SSC-CPA-DD) - Version 01



NAME /TITLE OF THE PoA: \_\_\_\_\_



CDM – Executive Board

page 25

**D.4. Report on how due account was taken of any comments received:**

>>

SMALL-SCALE CDM PROGRAMME ACTIVITY DESIGN DOCUMENT FORM  
(CDM-SSC-CPA-DD) - Version 01



NAME /TITLE OF THE PoA: \_\_\_\_\_



CDM – Executive Board

page 26

**Annex 1**

**CONTACT INFORMATION ON ENTITY/INDIVIDUAL RESPONSIBLE FOR THE SMALL-SCALE CPA**

Organization:	Hangzhou Qianjiang Dye Co.,Ltd.
Street/P.O.Box:	
Building:	
City:	Hangzhou city
State/Region:	
Postfix/ZIP:	
Country:	P.R.China
Telephone:	
FAX:	
E-Mail:	
URL:	
Represented by:	
Title:	
Salutation:	
Last Name:	
Middle Name:	
First Name:	
Department:	
Mobile:	
Direct FAX:	
Direct tel:	
Personal E-Mail:	

**Annex 2**

**INFORMATION REGARDING PUBLIC FUNDING**

**Annex 3**

**BASELINE INFORMATION**

**Annex 4**

**MONITORING INFORMATION**

-----