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

CONTENTS

Annexes

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)[1,2] 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.

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

[2] 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).

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

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

Establishment of drain recovery system between Tianjin Binhai Energy & Development Co., Ltd (BHE), TEDA Heat and Power Company (THPC) and PRIVATE COMPANY-A in Tianjin Economic-Technological Development Area (TEDA), Tianjin, China

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

This SSC-SPA aims to construct a functional condensate collection system with the collection line owned by TEDA Heat and Power Company (THPC) between the regional heat supply plant owned by BHE and PRIVATE COMPANY-Ato enhance the efficiency of the boilers at regional heat supply plants owned by Tianjin Binhai Energy& Development Co., Ltd (BHE) thereby reducing the consumption of coal used as fuel.

There are 2 PRIVATE COMPANY-A factories (Factory II and Factory III) in TEDA main area which generate condensate at rates of 15t/hr in summer and 30 t/h in winter each. The pipe is laid by THP between BHE and PRIVATE COMPANY-A for condensate collection. However, for the following reasons, the collected condensate is only used as a water resource and heat wasted.

- Because the flow path at the point where the condensate lines from Factory II and III merge is so small that the condensate from Factory II which has lower pressure than the flow from Factory III is not able to flow past the point therefore condensate from only Factory III can be collected.
- Because of the poor water quality of the condensate from Factory III, it can not be fed back to the boiler. The condensate is treated at BHE and heat is lost during the treatment.

By solving the above technical difficulties, this SSC-CPA aims to construct a system where condensate is collected at high temperature and its heat utilized thereby enhancing the boiler efficiency to reduce the coal consumption which would lead to reduction in the annual CO_2 emission.
This project will contribute to sustainable development of China in the following manners:

- This SSC-CPA contributes to China to achieve 20% reduction in the energy consumption per GDP as in 11^{th} 5 year plan.

- By reducing coal consumption in regional heal supply plants, it contributes to reduction of pollutants such as SOx, NOx and improves atmospheric environment largely as well as contributing to the conservation of coal resource.

- TEDA has poor water resource for its location on the man made coastline. This CPA will collect …tonnes condensate annually to be reused as boiler feed which will help to conserve water as well as energy and other resources used for water treatment. Also, this will reduce the secondary waste created from water treatment.
- This CPA will contribute to the noble means of energy conservation measures for industrial area to spread widely across China.

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.

The participant of this SSC-CPA are Tianjin Binhai Energy & Development Co., Ltd (BHE), a heat and power producer in TEDA main area, TEDA Heat and Power Company, a steam supplier in the same area and Private Company-A, an automotive manufacturer also in the area.

Below in the table shows the SSC-CPA implementers of this project. SSC-CPA implementer of the SSC-CPA under PoA is not considered as one of the project participants.

Table A.3-1 SSC-CPA implementers

Type	Name of SSC-CPA implementer(s)	Private or public	Kindly indicate if the SSC-CPA implementers involved wishes to be considered as project participant (Yes/No)
Steam generator	Tianjin Binhai Energy & Development Co., Ltd (BHE)	Private	No
Steam distributor	TEDA Heat and Power Company (THPC)	Private	No
Steam consumer	Private Company-A	Private	No

The details of the SSC-CPA implementers are shown in Annex 1.

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

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

A.4.1.1. Host Party:

People's Republic of 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[3], 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.

[3] E.g. in case of stationary CPA geographic reference, in case of mobile CPAs means such as registration number, GPS devices.

This SSC-CPA will take place in BHE, THP and PRIVATE COMPANY-A facilities located in the eastern part of the TEDA main area. Details are listed below.

Table A.3-1 SSC-CPA implementers

Type	Name of SSC-CPA implementer(s)	Name of facility covered by the SSC-CPA	Address	Approximate longitude and latitude
Steam generator	Tianjin Binhai Energy & Development Co., Ltd (BHE)	No.5 Generation Plant		39^{O}04’15” N 117^{O}42’22” E
Steam distributor	TEDA Heat and Power Company (THPC)			
Steam consumer	Private Company-A	No.2 and No.3 Manufacturing Plant		39^{O}03’26” N 117^{O}46’23” E

The map is shown below.

Fig. Physical location of the SSC-CPA

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

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

01/05/2008

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

30 years

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

Renewable crediting period; or

Fixed Crediting period

[Delete the one that is not applicable]

A.4.3.1. Starting date of the crediting period:

01/10/2008

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.

10 years

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

Table 4.4-1 Estimated amount of emission reductions

Years	Estimation of annual emission reductions in tonnes of CO_2e
2008	22,876
2009	22,876
2010	22,876
2011	22,876
2012	22,876
2013	22,876
2014	22,876
2015	22,876
2016	22,876
2017	22,876
2018	22,876
Total estimated reductions (tonnes of CO_2e)	228,760
Total number of crediting years	10

Annual average of the estimated reductions over crediting period (tonnes of CO_2e)	22,876

A.4.5. Public funding of the CPA:

No public fund from Annex I Party is involved in this 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)[4] 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[5], 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 de-bundled 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 PoA which this CPA is base upon, is the only PoA proposed in TEDA. According to the website of UNFCCC, there are no registered/ applied for registration SSC-CPA or SSC-CDM involving the same SSC-CPA implementers as this CPA.Therefore, it can be said that this SSC-CPA is not a de-bundled component of a larger project.

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

According to information provided by UNFCCC and the SSC-CPA implementers of this SSC-CPA, this SSC-CPA is not registered as CPA under other PoA or as an individual CDM.

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

[4] 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

[5] 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

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

Establishment of drain recovery system in Tianjin Economic-Technological Development Area (TEDA), Tianjin, China

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

The eligibility conditions for a SSC-CPA to be registered under the PoA," Establishment of drain recovery system in Tianjin Economic-Technological Development Area (TEDA), Tianjin, China" are listed below:

- Part or all of the condensate collected by SSC-CPA is used as feed water for the boiler at the regional heat supply plant.
- Boiler efficiency is enhanced by the use of waste heat of the condensate in the SSC-CPA (This exclude the cases in which condensate is reused simply as a water resource).
- The steam generator, supplier and consumer participated in the SSC-CPA are all located within the TEDA premise.

In this SSC-CPA, condensate collected at PRIVATE COMPANY-A is sent back to BHE and is reused as boiler feed water.
Temperature of condensate collected in the condensate collection system constructed in this project is estimated to be between 70 and 80 degree Celsius. Using water at this temperature range as feed water is expected to improve the boiler efficiency by90%. Furthermore, PRIVATE COMPANY-A Factory II & III, BHE Power plant V and all condensate collection lines are located within TEDA main area.

From above, it can be said that this SSC-CPA is eligible as a SSC-CPA under the PoA, " Establishment of drain recovery system in Tianjin Economic-Technological Development Area (TEDA), Tianjin, China".

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

The PoA under which this SSC-CPA is to be registered, the following barrier must be confirmed for a SSC-CPA to be registered.

Investment barriers

IB1：There are not many condensate collection lines in TEDA and many of the existing collection lines require either repair or replacement due to pipe corrosion.

IB2：All steam generator, supplier and consumer needs to be involved in implementing condensate collection system for the condensate to be collected. Such implementation requires additional investment. TEDA committee directive 119 lowers such investment barrier.

IB3：At TEDA, responsibilities are allocated to different parties for maintenance of the condensate collection piping and management of the regional heat supply plants. In such case, there is no direct economic benefit for the pipe maintenance company from expanding or improving the collection system therefore creates no economic incentive.

IB4：Similarly to IB3, there is no economic benefit for the consumer therefore no economic incentive exists for the consumer.

Technical barriers

TB1：Continuous management of condensate water quality by the steam generator, supplier and consumer is required to make effective use of the heat of the condensate. However, many of those facilities lack of experience in condensate collection. Therefore, construction of a new condensate collection system will involve new personnel and training of operators as well as introducing new technologies and facilities.

TB2：Contaminants in the feed water can cause problems such as scaling, carry-over and corrosion in the boiler which leads to diminished boiler efficiency and can lead to larger problems such as blockage and damage in the steam line and other pipes may cause the boiler to burst. For this, treated water is more suitable as boiler feed and has lower technical risk for the steam generator than collected condensate. However, such option with lower risk causes the heat of the condensate to be wasted and to result in higher CO_2 emission.

Other barriers

OB1：steam generator, supplier and consumer all being different organisations causes a tremendous difficulty in constructing a condensate collection system. For the condensate collection system to work, a frame work is required in which allocations of responsibilities and benefit for each organisation are clearly defined. Also, a system where necessary information is shared among the involved parties is essential to be able to work in cooperation in cases of emergency which has not been done in the past. Furthermore, conflict regarding the ownership of the condensate is observed between the steam generator and the consumer. Taken into consideration that this has been the case for over 20 years, it is almost impossible for the three organisations to work together in cooperation voluntarily for the construction of condensate collection system without support and cooperation from the external party.

Barrier for this CPA under PoA is evaluated in the PoA table below. Evidence will be provided to DOE at validation.

Barrier No.	Key criteria		Barrier existence		Explanation of barrier
IB 1	IB1-KC1	Condensate collection line exists between participating regional heat supplying plant and participating steam consumer.	**Yes**	**To IB1-KC2**	・ There are condensate collection line between PRIVATE COMPANY-A Factory II & III and BHE Power plant V)
			No	No barrier	
	IB1-KC2	Condensate collection line between participating regional heat supplying plant and participating steam consumer is not functional due to problems such as pipe corrosion.	Yes	Barrier exists	・ No corrosion or other problem has been detected in the condensate collection line between PRIVATE COMPANY-A Factory II &III and BHE power plant V.
			No	**No barrier**	
IB2	IB2-KC1	Implementation of additional facilities is required to construct a condensate collection system between participating regional heat supplying plant and participating steam consumer.	**Yes**	**To IB2-KC2**	・ Following needs to be newly installed in execution of this CPA -BHE：condensate flow meter, continuous conductivity meter, condensate filter -PRIVATE COMPANY-A：condensate tank（20m^3×1）, pump for condensate, condensate flow meter, continuous conductivity meter（2）, control panel
			No	No barrier	
	IB2-KC2	IRR of the investment projectto construct a condensate correction system exceeds the benchmark significantly. ※if the investment is partially subsidised (e.g. grant under TEDA committee directive 119), subsidised amount must be deducted from the invested amount.	Yes	No barrier	・ IRR of this SC-CPA is.0% and is below the 10% benchmark . ・ IRR, assumptions, sensitivity analysis are in Annex5.
			No	**Barrier exists**	
IB3	IB3-KC1	Regional heat supply plants and condensate collection lines involved in this SSC-CPA are both managed by one organisation.	Yes	No barrier	・ Regional heat supply plants are managed by BHE and condensate collection lines are managed by THPC.
			No	**To IB3-KC2**	
	IB3-	There is an official agreement and a system to	Yes	No barrier	・ The allocation of benefit from condensate

Barrier No.	Key criteria		Barrier existence		Explanation of barrier
	KC3	allocate the economical benefit the regional heat supply plant gained from condensate collection line recirculating the condensate to the boiler feed.	**No**	**Barrier exists**	collection between BHE and THPC is not clearly defined.
IB4	IB4-KC1	The participating heat supplying plant and the participating steam consumer are managed by one party.	Yes	No barrier	• Regional heat supply plants are managed by BHE and the steam consumer is managed by PRIVATE COMPANY-A.
			No	**To IB4-KC2**	
	IB4-KC3	There is an official agreement and a system to allocate the economical benefit the regional heat supply plant gained from condensate collection line recirculating the condensate to the boiler feed.	Yes	No barrier	• There is no agreement between BHE and PRIVATE COMPANY-A regarding the benefit from condensate collection.
			No	**Barrier exists**	
TB1	TB1-KC1	The participating regional heat supply plant is experienced in collection of condensate for utilisation in boiler feed and has engineers with enough knowledge and experience in the field.	Yes	To TB1-KC2	• Condensate has been collected at BHE Power plant V from PRIVATE COMPANY-A and few other factories however the water quality is too poor to be fed into boilers as feed water. This indicates that BHE is not skilled in this field.
			No	**Barrier exists**	
	TB1-KC2	The participating condensate collection line is experienced in collection of condensate for utilisation in boiler feed and has engineers with enough knowledge and experience in the field.	Yes	To TB1-KC3	
			No	Barrier exists	
	TB1-KC3	The participating steam consumer is experienced in collection of condensate for utilisation in boiler feed and has engineers with enough knowledge and experience in the field.	Yes	No barrier	
			No	Barrier exists	
TB2	TB2-KC1	The participating steam consumer has technical measures for water quality management of the condensate generated (preventing contact with air, preventing other water entering etc.).	Yes	To TB2-KC2	• Water quality of condensate is not currently managed at PRIVATE COMPANY-A.
			No	**Barrier exists**	

Barrier No.	Key criteria		Barrier existence		Explanation of barrier
	TB2-KC2	The participating steam consumer is equipped with continuous monitoring system to detect diversion in the water quality.	Yes	To TB2-KC3	
			No	Barrier exists	
	TB2-KC3	In cases where the participating steam consumer detected diversion in then water quality, there is a system to automatically purge the contaminated condensate to prevent the contaminated condensate to be sent back to the regional steam supply plant.	Yes	TB2-KC4 へ	
			No	Barrier exists	
	TB2-KC4	There is an official agreement and a system for the consumer to compensate for the loss if the steam consumer stops condensate recirculation or contaminated condensate is sent back to the regional heat supply plant.	Yes	No barrier	
			No	Barrier exists	
OB1	OB1-KC1	There is an official agreement between the participating regional steam supply plant and the condensate collection line	Yes	OB1-KC2 へ	・ There is no cooperation between BHE and THPC regarding condensate collection ・ There is no cooperation between BHE and PRIVATE COMPANY-A regarding condensate collection
			No	**Barrier exists**	
	OB1-KC2	There is an official agreement between the participating regional steam supply plant and the steam consumer.	Yes	No barrier	
			No	Barrier exists	

From the analysis above, it is verified that the barriers for this SSC-CPA are IB2, IB3, IB4, TB2, TB2 and OB1. Therefore, this SSC-CPA executed under the PoA " Establishment of drain recovery system in Tianjin Economic-Technological Development Area (TEDA), Tianjin, China" is additional.

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.

"AMS II. B. Supply side energy efficiency improvements – generation (Version 09)", the methodology for small scale CDM employed for this SSC-CPA, states that the project boundary is the physical, geographical site of the fossil fuel fired power station unit affected by the efficiency measures. According to this, the emission sources included in the project boundary of this SSC-CPA are boilers at Factory V of BHE, Factory II &III of PRIVATE COMPANY-A where condensate is generated and the condensate line which connects those. The GHG emitted is CO_2 from the combustion of coal for steam generation by BHE boilers.

Project boundary for this SSC-CPA is shown in the simplified system diagram below.

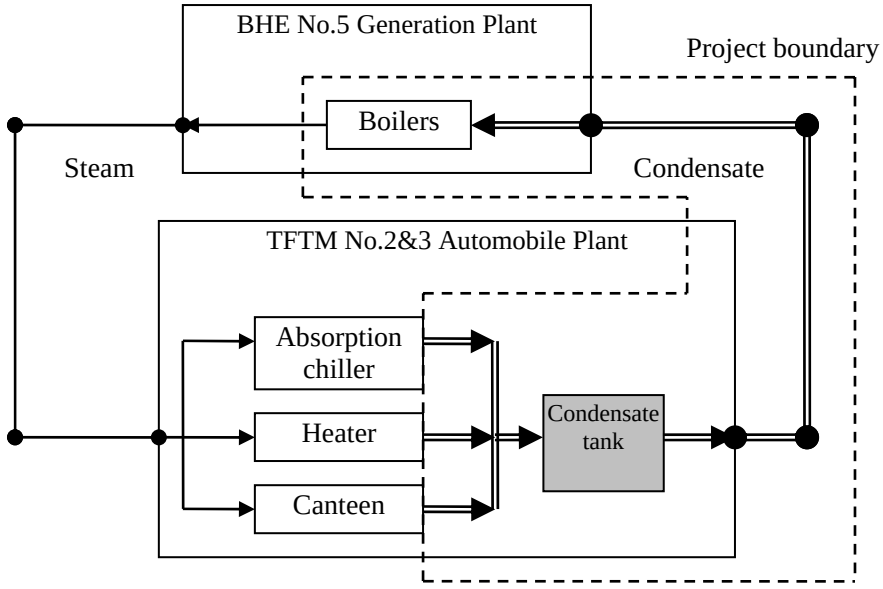

図 System diagram showing the project boundary

B.5. Emission reductions:

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

The following data will be provided for validation.

(Copy this table for each data and parameter)

Data / Parameter:	$EF_{CO2,i}$
Data unit:	tC /TJ
Description:	Carbon emission factor of coal
Source of data used:	*China Energy Statistical Yearbook 2006*
Value applied:	25.8 tC /TJ
Justification of the choice of data or description of measurement methods and procedures actually applied :	Official Statistical Data
Any comment:	Apply the data in latest version of *China Energy Statistical Yearbook* at the time of submission of the CDM-SSC-CPA-PDD to the DOE for validation

Data / Parameter:	η_{BL}
Data unit:	%
Description:	Baseline boiler efficiency
Source of data used:	Determined according to one of the following methods: (1) Calculated value from measurement data of the past 1 year of the boiler whose efficiency is enhanced by the project activity prior to the commencement of the project activity. (2) Maximum efficiency of a boiler with similar specifications to the boiler whose efficiency is enhanced by the project activity. (3) Maximum from the efficiency of boilers with similar specification to the boiler whose efficiency is improved by the project activity, provided by more than 2 suppliers. (4)Maximum value of 100%
Value applied:	See CDM-SSC-CPA-PDDss
Justification of the choice of data or description of measurement methods and procedures actually applied :	
Any comment:	

Data / Parameter:	$HG_{j,y}$
Data unit:	tonne
Description:	Mass of steam generated by boiler j in project activity with collected condensate as the feed in year y.
Source of data used:	Sum of the newest attainable set of one year worth measurement data obtained prior to the commencement of the project activity.

Value applied:	See CDM-SSC-CPA-PDDs
Justification of the choice of data or description of measurement methods and procedures actually applied :	A set of measurement over 1 year with a flow meter that satisfies the specification in the Chinese standard.
Any comment:	

Data / Parameter:	$h_{st,j,i}$
Data unit:	TJ/t
Description:	Specific enthalpy of steam generated in boiler j in year y
Source of data used:	Measured value or value decided according to the boiler specification
Value applied:	See CDM-SSC-CPA-PDDs
Justification of the choice of data or description of measurement methods and procedures actually applied :	1) Determine the specific enthalpy using steam table from a set of measured data of pressure and temperature over a 1 year period before the start of the project activity that is newest attainable. 2) In case 1) is not attainable, determine the enthalpy from stream table at an ambient pressure.
Any comment:	

Data / Parameter:	$h_{fw,j,i}$
Data unit:	TJ/t
Description:	Enthalpy of boiler feed water of boiler j in year y
Source of data used:	Determined based on past measurement data
Value applied:	See CDM-SSC-CPA-PDDs
Justification of the choice of data or description of measurement methods and procedures actually applied :	Determine the specific enthalpy using steam table from the average of the measured temperature over a 1 year period before the start of the project activity.
Any comment:	

Data / Parameter:	$FC_{i.j.y}$
Data unit:	tonne
Description:	Mass of fuel i consumed in boiler j in year y.
Source of data used:	Sum of the newest attainable set of measured data over one year.
Value applied:	See CDM-SSC-CPA-PDDs
Justification of the choice of data or description of measurement methods and procedures actually	A set of measured data over one year that is newest attainable before the start of the project activity, measured directly by flow meter which satisfies the specification of the Chinese standard.

applied :	
Any comment:	Apply the data in latest version of *China Energy Statistical Yearbook* at the time of submission of the CDM-SSC-CPA-PDD to the DOE for validation

Data / Parameter:	$NCV_{i,j,y}$
Data unit:	TJ/t
Description:	Net Calorific Value of fuel i used in boiler j in year y.
Source of data used:	Measured value or value in *China Energy Statistical Yearbook*
Value applied:	See CDM-SSC-CPA-PDDs
Justification of the choice of data or description of measurement methods and procedures actually applied :	1) Average value of the set of measured data taken over a one year period before the start of the project activities that is newest attainable. 2) In case the data set of 1) is not attainable, refer to the value given in *China Energy Statistical Yearbook.*
Any comment:	Apply the data in latest version of *China Energy Statistical Yearbook* at the time of submission of the CDM-SSC-CPA-PDD to the DOE for validation

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

According to the PoA" Establishment of drain recovery system in Tianjin Economic-Technological Development Area (TEDA), Tianjin, China", emission reduction of this SSC-CPA is calculated using the equation below.

$$ER_y = \frac{(h_{dr,y} - h_{fw,y}) * Q_{dr,y}}{\eta_{BL}} * EF_{CO2,i}$$

Where:
ER_y: Total emissions reductions during the year y (tCO_2)
h_{dr}: Enthalpy of condensate（TJ/t）
h_{fw}: Enthalpy of boiler feed water（TJ/t）
$Q_{dr,y}$: Mass of condensate collected（t/yr）
η_{BL}: Baseline boiler efficiency（%）
$EF_{CO2,i}$: CO_2 emission factor for fuel i（CO_2e /TJ）

η_{BL} is calculated by one of the following 4 methods.

(1) Determined from a set of newest attainable measured data taken over a one year before the improvement made by the project activities in the boiler efficiency. This method is applied when measurement data before the commencement of the project activity to calculate the boiler efficiency from is attainable. The equation below is used.

$$\eta_{BL} = \frac{\sum_{j} \eta_{j,y}}{j}$$

Where:

$\eta_{i,j}$: efficiency of boiler j whose feed water is the condensate collected in year y （%）. y is the year that is most recent of which the data can be attained prior to the commencement of the project.

j : number of boilers（unit）

$\eta_{i,j}$ is calculated with the equation below:

$$\eta_{j,y} = \frac{HG_{j,y}(h_{st,j,y} - h_{fw,j,y})}{FC_{i,j,y} * NCV_{i,j,y}}$$

Where:

$HG_{j,y}$: Mass of steam generated from condensate collected in boiler j in year y（t/yr）

$h_{st,j,i}$: Specific enthalpy of steam generated in boiler j in year y.（TJ/t）

$h_{fw,j,i}$: Specific enthalpy of feed water fed into boiler j in year y.（TJ/t）

$FC_{i.j.y}$: Mass of fuel i consumed in boiler j in year y.（t/yr）

$NCV_{i,j,y}$: Net Calorific Value of fuel i used in boiler j in year y.（TJ/t）

(2) Maximum efficiency of a boiler with similar specification to the boiler of whose efficiency is improved by the project activity.

(3) Maximum efficiency of boilers with similar specification to the boiler of whose efficiency is improved by the project activity provided by more than 2 suppliers.

(4) Maximum 100%

The boiler efficiency of this SSC-CPA is 100%

B.5.3. Summary of the ex-ante estimation of emission 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)
2008	0	22,876	0	22,876
2009	0	22,876	0	22,876
2010	0	22,876	0	22,876
2011	0	22,876	0	22,876
2012	0	22,876	0	22,876
2013	0	22,876	0	22,876
2014	0	22,876	0	22,876
2015	0	22,876	0	22,876

2016	0	22,876	0	22,876
2017	0	22,876	0	22,876
Total (tonnes of CO_2 e)				228,760

B.6. Application of the monitoring methodology and description of the monitoring plan:

B.6.1. Description of the monitoring plan:

Monitoring parameters for this SSC-CPA based on the PoA, " Establishment of drain recovery system in Tianjin Economic-Technological Development Area (TEDA), Tianjin, China" are listed below.

(Copy this table for each data and parameter)

Data / Parameter:	h_{dr}
Data unit:	TJ/t
Description:	Enthalpy of condensate
Source of data to be used:	Determined based on the temperature of condensate and steam table
Value of data applied for the purpose of calculating expected emission reductions in section B.5	See CDM-SSC-CPA-PDDs
Monitoring frequency	Once a month
Description of measurement methods and procedures to be applied:	Water temperature is measured with thermometer with precision as specified in the Chinese standard.
QA/QC procedures to be applied:	Calibrated with the method and frequency specified in the Chinese standard.
Any comment:	

Data / Parameter:	h_{fw}
Data unit:	TJ/t
Description:	Enthalpy of the feed water
Source of data to be used:	Determined based on the temperature of condensate and steam table
Value of data applied for the purpose of calculating expected emission reductions in section B.5	See CDM-SSC-CPA-PDDs
Monitoring frequency	Once a month
Description of measurement methods	Water temperature is measured with thermometer with precision as specified in the Chinese standard.

and procedures to be applied:	
QA/QC procedures to be applied:	Calibrated with the method and frequency specified in the Chinese standard.
Any comment:	

Data / Parameter:	$Q_{dr,y}$
Data unit:	tonne
Description:	Mass of condensate collected
Source of data to be used:	Measured value by cumulative flow meter
Value of data applied for the purpose of calculating expected emission reductions in section B.5	See CDM-SSC-CPA-PDDs
Monitoring frequency	Continuous
Description of measurement methods and procedures to be applied:	Measurement is taken with cumulative flow meter. Temperature is measured with thermometer with precision is specified by the Chinese standard.
QA/QC procedures to be applied:	Calibrated with the method and frequency specified in the Chinese standard.
Any comment:	

Data / Parameter:	N_{pe}
Data unit:	Unit
Description:	Number of newly installed energy consuming equipment for the project activity.
Source of data to be used:	Recorded by the SSC-CPA implementers
Value of data applied for the purpose of calculating expected emission reductions in section B.5	N/A
Monitoring frequency	Once when the energy consuming equipment is renewed for the project activity.
Description of measurement methods and procedures to be applied:	SSC-CPA implementers record the number, specifications the serial numbers and the date of installation of the new facilities installed at the installation of those new facilities.
QA/QC procedures to be applied:	Record created and confirmed by more than two persons.
Any comment:	Record is submitted to the coordinating/managing entity without a delay then the facility is inspected by the coordinating/managing entity to verify Npe=Nse. Until the confirmation from the inspection is granted, SSC-CPA implementers must not dispose the facility written off by the renewal.

Data / Parameter:	N_{se}
Data unit:	Unit
Description:	Number of equipment written off by installation of the new equipment by the project activity.
Source of data to be used:	Recorded by the SSC-CPA implementers
Value of data applied for the purpose of calculating expected emission reductions in section B.5	N/A
Monitoring frequency	Once when the equipment is renewed for the project activity
Description of measurement methods and procedures to be applied:	SSC-CPA implementers is to record the number of facilities written off and their specifications, serial numbers as soon as new equipment is installed.
QA/QC procedures to be applied:	Record is created and confirmed by more than two persons
Any comment:	The record is submitted to coordinating/managing entity without a delay and inspected by the coordinating/managing entity to confirm Npe=Nse. Until the confirmation is granted, the SSC-CPA implementers must not dispose of the facilities written off by the renewal.

Monitoring points for this SSC-CPA is shown below in fig …

Measurement data collected by BHE and PRIVATE COMPANY-A is reported to TEDA Environmental management every month according to the PoA.

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:

This information is provided at the PoA level.

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

N/A

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:

N/A

SECTION D. Stakeholders' comments

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

This information is provided at the PoA level.

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

N/A

D.3. Summary of the comments received:

N/A

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

N/A

Annex 1

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

Organization:	
Street/P.O. Box:	
Building:	
City:	
State/Region:	
Postfix/ZIP:	
Country:	
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

There is no public fund from Annex I Party involved in this PoA

Annex 3

BASELINE INFORMATION

Annex 4

MONITORING INFORMATION

Refer to B.6. for the detail of monitoring.

Annex 5

INVESTMENT ANALYSIS

This SSC-CPA

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