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:

>>
Zhongying Changjiang Small-scale Hydropower Programme of Activities-CPA-[XXX]
Version: 02
Date: 30/09/2012
Revision History of the PDD

Version Number	Date	Description and reason of revision
01	18/04/2012	Completed date for GSP version PDD
02	30/09/2012	Updated version based on DVR

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

>>
[XXX] Project (hereafter as "the project" or "the CPA") is developed by [XXX] and located in the [XXX] of [XXX] River, in [XXX] Town, [XXX] City, XXX Province, P.R. China. The total installed capacity of the CPA is [XXX] MW, consists of [XXX] (number) x [XXX] kW (capacity of each turbine). The main structures include:

The purpose of the project is to utilize the local hydropower resource in [XXX] river/stream for electricity generation, hence to contribute to the local economic development.

Prior to the implementation of the CPA the equivalent electricity is provided by the [XXX], which is also the baseline scenario of the CPA. The project activity will achieve green house gas (GHG) emission reductions by displacing equivalent electricity supplied by [XXX]. The expected annual GHG emission reductions are [XXX]t CO_2e.

The total electricity supply to grid from the CPA is [XXX] MWh. The electricity will supply to [XXX] Power Grid ([XXX]).The [XXX] covers [XXX] Province[3] which is dominated by fossil fuel power plants.

As a renewable energy (hydro power) project to produce zero-emission green power to grid, the proposed project can contribute to sustainable development of the local community, the host country and the world by means of:

- To reduce GHG emissions compared with a business-as-usual scenario;
- To alleviate power shortage and stimulate economy development in the local area,;
- To reduce environmental pollutants emissions resulting from power generation industry in [XXX] Power Grid compared with a business-as-usual scenario;
- Creating temporary and/or long-term employment opportunities for local people during the construction and operation periods of the proposed project.

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

>>
CME: Zhongying Changjiang International New Energy Investment Co., Ltd

[3]http://cdm.ccchina.gov.cn/WebSite/CDM/UpFile/File2720.pdf

CPA implementer: [XXX](the detailed information will be filled according to the specific CPA)

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

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

>>

Detailed technology and main equipment information stated herein based on specific CPA-DD.

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):

>>

1) CPA location (village, town, county, city, province, etc.)
2) Geographical Coordinates
3) Maps

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

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

>>

No of CPA-[XXX]	Date	Evidence
HP-[XXX]01		
HP-[XXX]02		
…		
HP-[XXX]		

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

>>

[XXX]

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

Renewable crediting period

A.4.3.1. Starting date of the crediting period:

>>

[XXX], or date of inclusion into PoA, whichever is later.
The duration of the crediting period shall not exceed the end date of the PoA.

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

>>

7 years 0 months

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

>>

The first crediting period (7 years) is adopted and the estimation of the emission reduction in the first crediting period is presented in the table below:

Year	Estimated emission reduction (tCO_2e)
[XXX]	[XXX]
[XXX]	[XXX]
[XXX]	[XXX]
[XXX]	[XXX]
[XXX]	[XXX]
[XXX]	[XXX]
[XXX]	[XXX]
Total estimated emission reduction (tCO_2e)	[XXX]
Total number	**7**
Annual average over the crediting period of estimated reductions (tCO_2e)	[XXX]

A.4.5. Public funding of the CPA:

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There is no public funding from Annex I countries available to the CPA.

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

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The CME does not manage a large scale PoA in the same sectoral scope. In addition, there is no any activity[4] within the same sectoral scope, whose boundary is within 1km of the boundary of the proposed small-scale CPA. Besides this, contract between the CPA implementer and CME will be signed to confirm that each CPA is not a debundled component of a large scale activity. Therefore, it is considered that the CPA is not a de-bundled component of another CDM programme activity (CPA) or CDM project activity.

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

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In order to confirm that no CPA or CDM project activity developed in the proposed project area, ZCNI will check the projects using the same methodology AMS-I.D or the same measure/technology on websites of UNFCCC and Chinese DNA before applying for CDM and implementation of the CPA in [XXX] Province.

Besides this, the proposed CPA implementer will sign a contract with ZCNI to confirm that: a) They are aware of and have agreed that their activity is been subscribed to the PoA; b) They have neither already been registered as a CDM project, nor as a CPA of another PoA.

[4] 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

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:

>>

Zhongying Changjiang Small-scale Hydropower Programme of Activities
Version: 02
Date: 30/09/2012

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

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The CPA is eligible for inclusion in the PoA because it meets all of the criteria outlined in section A.4.2.2 of the SSC-PoA-DD as below:

No.	Eligibility criteria of inclusion of PoA	Justification of CPA-[XXX]
1	All activities under a CPA shall be located in the boundary of the PoA, i.e. within Yunnan, Henan, Hubei or Sichuan Province;	The hydropower project included in the CPA is located in [XXX] County, [XXX] City, [XXX] Province.
2	Measures shall be taken to avoid double counting of emission reductions.	The measures to avoid double counting have been stated in the following criteria 2.1 and 2.2.
2.1	Each CPA under the PoA and each hydropower plant involved in one CPA shall have a unique programme loge, such as CPA-001 for CPA level, HP-00101 for project level in each CPA.	The programme logo is CPA-[XXX] for the CPA and HP-[XXX]01, HP-[XXX]02…HP-[XXX] for the plant(s) under the CPA-XXX, which is made for avoiding double counting of emission reductions.
2.2	The potential individual CPA implementer included in the proposed PoA should sign a contract with the CME to confirm that: a) They are aware of and have agreed that their activity is being subscribed to the PoA. b)They have neither already been registered as a CDM project, nor as a CPA of another PoA;	The owners of the project included in the proposed CPA-[XXX] has signed a contract with the CME to confirm that: a) They are aware of and have agreed that their activity is being subscribed to the PoA. b) The projects have neither already been registered as a CDM project, nor as a CPA of another PoA.
3	The SSC-CPA shall be (a) new hydro power plant(s) with an installed capacity equal or less than 15 MW and must not involve capacity addition,	The proposed CPA-[XXX] only includes new small-scale hydropower plant(s) with a total capacity of [XXX]MW respectively, which is less than 15 MW. No capacity addition,

	retrofitting or modifying of an existing facility for renewable energy generation.	retrofitting or modifying of an existing facility for renewable energy generation was involved in the CPA.
4	The starting date of any CPA is not, or will not be, prior to the commencement of validation of the programme of activities (27/04/2012 for the PoA GSP). Construction contracts or purchase contracts or other documents will be provided to prove the starting date of a CPA;	The starting date of CPA-[XXX] is [XXX] when the construction/main equipment /installation contract was signed, later than the commencement of validation of the programme of activities (27/04/2012 for the PoA GSP). OR: If the CPA has not committed to expenditures/take real actions when the CPA has been on-site validated, the CPA can be automatically met this EC.
5	Hydropower project(s) under each CPA should comply with applicability and other requirements of the applied methodology AMS-I.D (Version 17.0).	The applicability conditions of AMS-I.D. have been fully stated in the following criteria 5.1 to 5.4.
5.1	The project activity under each CPA should be (a) new hydropower plant(s) which use the hydropower and supply electricity to the regional grid.	The hydropower plant(s) involved in CPA-[XXX] is/are (a) Greenfield hydropower plant and supply electricity to CSPG/CCPG.
5.2	No capacity addition, retrofit or replacement of (an) existing plant(s) involved in the proposed PoA.	The hydropower plant(s) involved in CPA-[XXX] is (a) Greenfield hydropower plant(s), without capacity addition, retrofit or replacement of (an) existing plant(s) involved in.
5.3	No co-fired or co-generation units involved in the CPA. Only renewable hydropower units can be eligible of inclusion of the PoA.	The hydropower plant involved in CPA-[XXX] is (a) Greenfield hydropower plant(s). No co-fired or co-generation units involved in the CPA.
5.4	Hydropower project(s) with reservoirs involved in CPAs should satisfy one of the following conditions: a) the project activity involved in each CPA implemented in an existing reservoir with no change of reservoir volume, b) with increase of reservoir volume but	The project activity under CPA-[XXX] is implemented in an existing reservoir with no change in the volume of reservoir; OR The project activity is implemented in

	power density is greater than 4W/m^2, or c) result in a new reservoir with power density greater than 4W/m^2.	an existing reservoir with the increased of the volume with the power density of [XXX] W/m^2, which is greater than 4W/m^2; OR The proposed project under the CPA-[XXX] is implemented in a new reservoir with the power density of [XXX]W/m^2, which is greater than 4W/m^2
6	The additionality for each CPA can be demonstrated by any one of the following approaches: **Approach 1:** Demonstrating additionality according to "Guidelines for demonstrating additonality of microscale project activities" (Version 04.0). In case of Approach 1, the projects included in the CPA should meet relevant requirements in paragraph 2 (a) of "Guidelines for demonstrating additionality of microscale project activities", including: ● The total installed capacityof the project activity is no more than 5MW; ● The geographic location of the project activity is in a special underdeveloped zone (SUZ)of the host country. OR **Approach 2:** Demonstrating addtionality according to "Guidelines on the demonstration of additionality of small-scale project activities" (Version 09.0). In case of Approach 2, the additionality for each CPA will be demonstrated by investment analysis. The IRR of every project included in the CPA should be lower than the selected benchmark, which is indicated in investment decision document (such as FSR).	For the proposed project included in the CPA, Approach 1 or Approach 2 is chosen for additionality demonstration.

7	In the proposed PoA, both the local stakeholder consultations and environmental impact analysis would be done at CPA level.	The local stakeholder consultations and environment impact analysis for CPA-[XXX] has been done and detailed information refers to Section C and Section D for each specific CPA-DD.
8	No public funding from Annex 1 Parties has been involved in each CPA under the proposed PoA.	No public funding from Annex 1 Parties has been involved in CPA-[XXX].
9	Hydropower project(s) involved in each CPA should be newly constructed and the total capacity for each CPA should be no more than 15MW during every year of crediting of the CPA.	The hydropower HP-[XXX]01 of [XXX] MW, HP-[XXX]02 of [XXX] MW…HP-[XXX] of [XXX]MW under CPA-[XXX] are all newly built plant(s), which is no more than 15MW during every year of crediting of the CPA-[XXX].
10	The proposed small-scale CPA is not a debundled component of a large scale activity[5], which satisfies both conditions (a) and (b) below: (a)Has the same activity implementer as the proposed small scale CPA or has coordinating or managing entity, which also manages a large scale PoA of the same technology measure, and; (b) The boundary is within 1 km of the boundary of the proposed small-scale CPA, at the closest point.	According to check the PoA recording system described in section A.4.4.1 (i) of PoA-DD and the list of project activities under-validation or registered at the UNFCCC, the CME and CPA implementer confirm that each plant involved in CPA-[XXX] is/are not a de-bundled component of a large scale activity. Furthermore, the contract/agreement between the CME and CPA implementer can also confirm that each plant involved in the CPA is not a debundled component of a large scale activity.
11	Confirmation on the crediting period of the SSC-CPA which shall not exceed the length of the PoA (28 years) regardless of the time of inclusion of CPA in the PoA.	The crediting period of the CPA is [XXX], which shall not exceed the end of PoA dated 26/04/2040.
12	The SSC-CPA shall be in line with laws and regulations available at the time of inclusion of the CPA into the PoA.	The CPA is a renewable electricity project which is encouraged by the host country. Furthermore, EIA of the CPA has been approved by local EPB as per national regulations.

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

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A CPAassesses additionality based onapproach 1 or approach 2mentioned in Section E.5.1 and Section E.5.2 in the PoA-DD per "Guidelines for demonstrating additionality of microscale project activities"(Version 04.0) or the guidance provided by "Guidelines on the demonstration of additionality of small-scale project activities"(Version 09.0).The additionatlity of each CPA will be assessed according to following steps:

Considering CDM before the construction of the CPA

As per the requirement of the PoA, each CPA starting date must be later that the GSP date of the PoA. The PoA GSP time is 27/04/2012, and the starting date of the proposed CPA will be after this date, therefore, the proposed CPA considers CDM before the construction of CPA. The timeline of the project involved in CPA-[XXX] has been shown as followings:

HP-[XXX]01

Date	Project activity	Evidence

HP-[XXX]02

Date	Project activity	Evidence

…

HP-[XXX]

Date	Project activity	Evidence

Additionality demonstration of the CPA

Based on size and location of a CPA under this SSC PoA, at least one of two following approaches will be used:

Approach 1: Demonstrating addtionality according to "Guidelines for demonstrating additonality of microscale project activities" (Version 04.0).

The additionality criteria of "Microscale Project Activity" related to the CPA could be summarized as follow:

No.	Criteria in the guideline	Real situation of the CPA	Applicable? (Y/N)
1	The total installed capacity of the project activity is no more than 5MW;	The total installed capacity of the project activity is [XXX];	
2	The geographic location of the project activity is in a special underdeveloped zone (SUZ) of the host country.	The project activity/ies in the CPA is/are located in [XXX] County, [XXX] City of[XXX] Province, which is a special underdeveloped zone (SUZ)[6] of the P.R. China.	

If the project activity under the PoA can satisfy the above applicable criteria, it could be deemed as additional directly.

Approach 2: Demonstrating addtionality according to "Guidelines on the demonstration of additionality of small-scale project activities"(Version 09.0).

According to the Guidelines on the demonstration of additionality of small-scale project activities paragraph 1 (a), investment barrier analysis can be applied for each CPA under thePoA. The steps in the "Tool for the demonstration and assessment of additionality" (Ver.06.0.0) will be applied as follow:

Step 1 Determine appropriate analysis method

There are three analysis methods recommended to conduct investment analysis, including simple cost analysis (Option I), investment comparison analysis (Option II) and benchmark analysis (Option III).

The proposed CPA chooses option III, since the alternative to the project activity is the supply of electricity by power grid. This is notto be considered an investment scenario and electricity revenue will be attained. Thus benchmark approach is considered appropriate.

Step 2 Determine the benchmark

The equity/project IRR of [XXX]%, which is indicted in the FSR/PDR as a baseline benchmark for the small hydropower plant in the *national guidance [XXX]*, is selected as the financial benchmark for the CPA. When the equity/project IRR of the CPA is lower than the benchmark, the project is considered not financially attractive.

Step 3 Calculation and comparison of financial indicators

The IRR calculations will be based on a list of economic parameters provided by the CPA implementer that were available at the investment decision. The list of parameters is shown in the following table:

[6]The definition and condition of SUZ is demonstrated in paragraph 2 (a) of "Guidelines for demonstrating additionality of microscale project activities". The relevant requirements will be met if the approach 1 is chosen to demonstrate addtionality.

Table B-1 Parameters for IRR Calculation

Hydro power No	Parameters	Unit	Value	Data Source
HP-[XXX]01	Installed capacity	MW	[XXX]	
	Total investments	Million Yuan	[XXX]	
	Total static investment	Million Yuan	[XXX]	
	Net grid-connected electricity	MWh/year	[XXX]	
	Construction period	Year	[XXX]	
	Operational Life time	Year	[XXX]	
	Electricity Price (incl. VAT)	Yuan/kWh	[XXX]	
	Value Added Tax (VAT)	%	[XXX]	
	City maintenance and construction tax	%	[XXX]	
	Surcharge for education	%	[XXX]	
	Income tax	%	[XXX]	
	Depreciation rate	% per year	[XXX]	
	Rate of residual value	%	[XXX]	
	Annual Operation & Maintenance cost	Million Yuan	[XXX]	
	Expected CER price	Euro	[XXX]	
HP-[XXX]02	Installed capacity	MW	[XXX]	
	Total investments	Million Yuan	[XXX]	
	Total static investment	Million Yuan	[XXX]	
	Net grid-connected electricity	MWh/year	[XXX]	
	Construction period	Year	[XXX]	
	Operational Life time	Year	[XXX]	
	Electricity Price (incl. VAT)	Yuan/kWh	[XXX]	
	Value Added Tax (VAT)	%	[XXX]	
	City maintenance and construction tax	%	[XXX]	
	Surcharge for education	%	[XXX]	
	Income tax	%	[XXX]	

	Depreciation rate	% per year	[XXX]	
	Rate of residual value	%	[XXX]	
	Annual Operation & Maintenance cost	Million Yuan	[XXX]	
	Expected CER price	Euro	[XXX]	
…….	Installed capacity	MW	[XXX]	
	Total investments	Million Yuan	[XXX]	
	Total static investment	Million Yuan	[XXX]	
	Net grid-connected electricity	MWh/year	[XXX]	
	Construction period	Year	[XXX]	
	Operational Life time	Year	[XXX]	
	Electricity Price (incl. VAT)	Yuan/kWh	[XXX]	
	Value Added Tax (VAT)	%	[XXX]	
	City maintenance and construction tax	%	[XXX]	
	Surcharge for education	%	[XXX]	
	Income tax	%	[XXX]	
	Depreciation rate	% per year	[XXX]	
	Rate of residual value	%	[XXX]	
	Annual Operation & Maintenance cost	Million Yuan	[XXX]	
	Expected CER price	Euro	[XXX]	
HP-[XXX]	Installed capacity	MW	[XXX]	
	Total investments	Million Yuan	[XXX]	
	Total static investment	Million Yuan	[XXX]	
	Net grid-connected electricity	MWh/year	[XXX]	
	Construction period	Year	[XXX]	
	Operational Life time	Year	[XXX]	
	Electricity Price (incl. VAT)	Yuan/kWh	[XXX]	
	Value Added Tax (VAT)	%	[XXX]	
	City maintenance and construction tax	%	[XXX]	

	Surcharge for education	%	[XXX]	
	Income tax	%	[XXX]	
	Depreciation rate	% per year	[XXX]	
	Rate of residual value	%	[XXX]	
	Annual Operation & Maintenance cost	Million Yuan	[XXX]	
	Expected CER price	Euro	[XXX]	

Generally values that were applied at the moment of the investment decision shall be used for the analysis above. Mostly, the Feasibility Study/Preliminary Design Report will be the popular source.
A standardized excel worksheet will be used to calculate the IRR.

The IRR with and without CDM revenue are listed in Table B-2. Without the income from CERs, the IRR of the proposed project will be lower than the benchmark, and the project is not financially viable. With the income from CERs, the IRR will be more financially attractive to investors.

Table B-2 Financial Indicators of the CPA

Hydro power No.	**IRR without CER revenue**	**IRR with CER revenue**
HP-[XXX]01		
HP-[XXX]02		
…….		
HP-[XXX]		

Step 4: Sensitivity analysis

A sensitivity analysis will be also conducted using assumptions that are conservative from the point of view of analysing additionality, i.e. the "best-case" conditions for the IRR were assumed by altering the following parameters by +/- 10%:

(1) Total static investment
(2) Annual O&M cost
(3) Net grid-connected electricity
(4) Electricity Price

The full results of each sensitivity analysis will be reported in the respective SSC-CPA-DD using the following Table B-3.

Table B-3: Sensitivity analysis of the IRR

HP-[XXX]01					
Fluctuation Range	-10%	-5%	0%	5%	10%
Net grid-connected electricity	[XXX]%	[XXX]%	[XXX]%	[XXX]%	[XXX]%
Electricity Price	[XXX]%	[XXX]%	[XXX]%	[XXX]%	[XXX]%

Total static investment	[XXX]%	[XXX]%	[XXX]%	[XXX]%	[XXX]%
Annual O&M cost	[XXX]%	[XXX]%	[XXX]%	[XXX]%	[XXX]%
HP-[XXX]02					
Fluctuation Range	-10%	-5%	0%	5%	10%
Net grid-connected electricity	[XXX]%	[XXX]%	[XXX]%	[XXX]%	[XXX]%
Electricity Price	[XXX]%	[XXX]%	[XXX]%	[XXX]%	[XXX]%
Total static investment	[XXX]%	[XXX]%	[XXX]%	[XXX]%	[XXX]%
Annual O&M cost	[XXX]%	[XXX]%	[XXX]%	[XXX]%	[XXX]%
……					
Fluctuation Range	-10%	-5%	0%	5%	10%
Net grid-connected electricity	[XXX]%	[XXX]%	[XXX]%	[XXX]%	[XXX]%
Electricity Price	[XXX]%	[XXX]%	[XXX]%	[XXX]%	[XXX]%
Total static investment	[XXX]%	[XXX]%	[XXX]%	[XXX]%	[XXX]%
Annual O&M cost	[XXX]%	[XXX]%	[XXX]%	[XXX]%	[XXX]%
HP-[XXX]					
Fluctuation Range	-10%	-5%	0%	5%	10%
Net grid-connected electricity	[XXX]%	[XXX]%	[XXX]%	[XXX]%	[XXX]%
Electricity Price	[XXX]%	[XXX]%	[XXX]%	[XXX]%	[XXX]%
Total static investment	[XXX]%	[XXX]%	[XXX]%	[XXX]%	[XXX]%
Annual O&M cost	[XXX]%	[XXX]%	[XXX]%	[XXX]%	[XXX]%

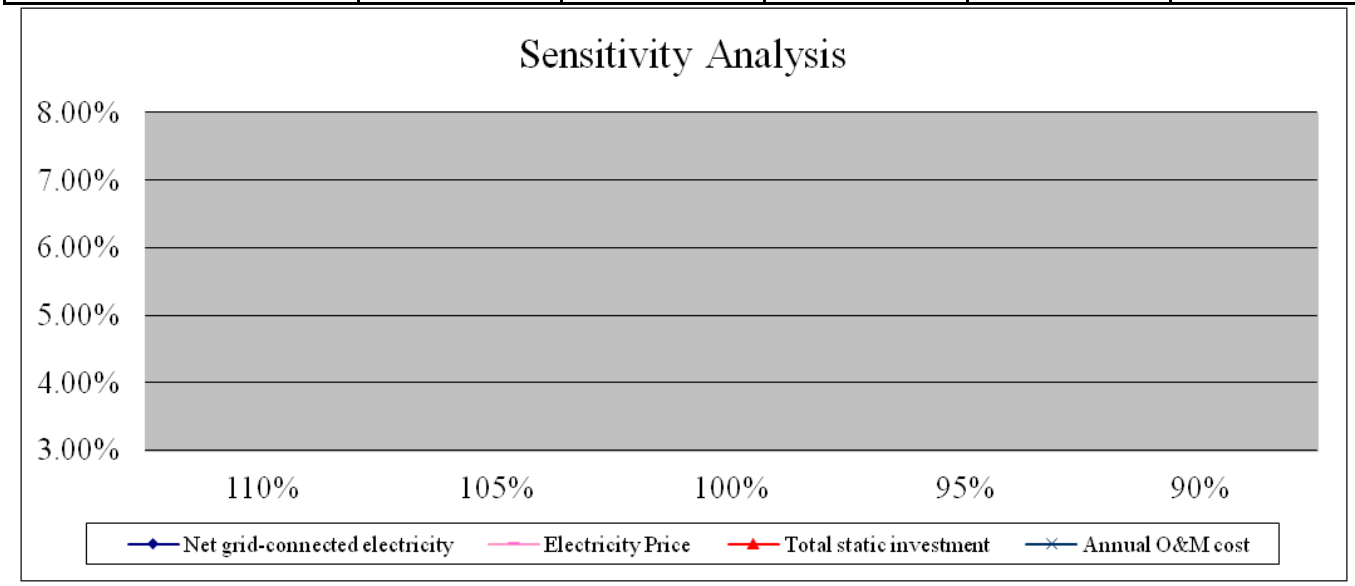

Figure B-1(01) Sensitivity Analysis For HP-[XXX]01

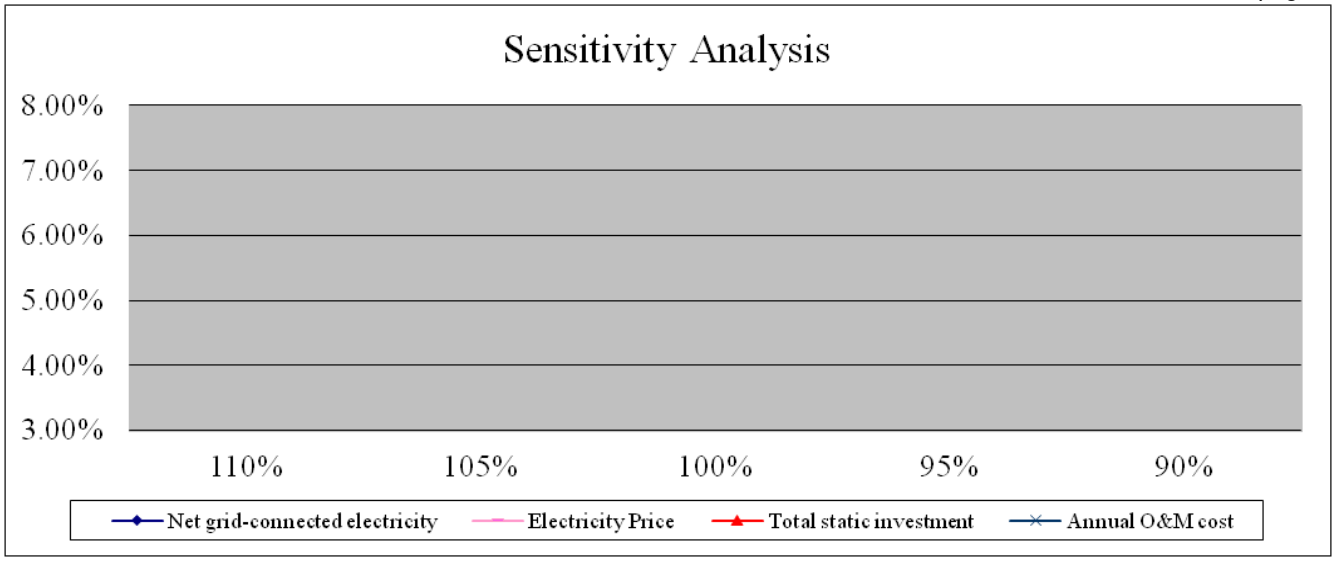

Figure B-1(02)Sensitivity Analysis For HP-[XXX]02

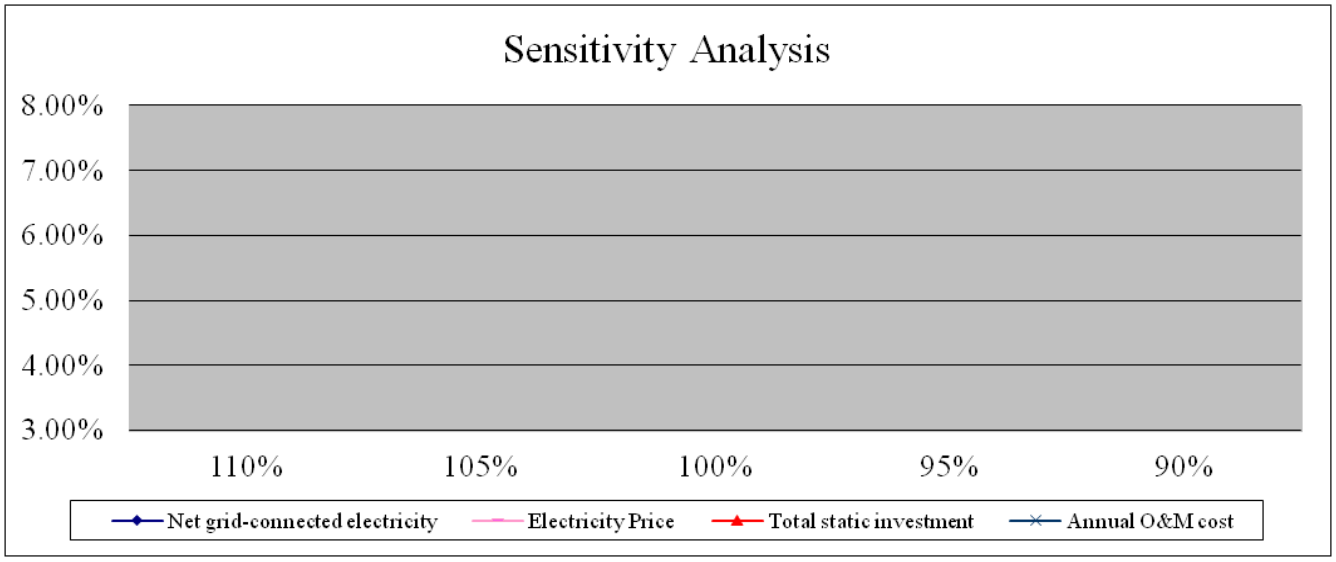

Figure B-1(…) Sensitivity Analysis For …….

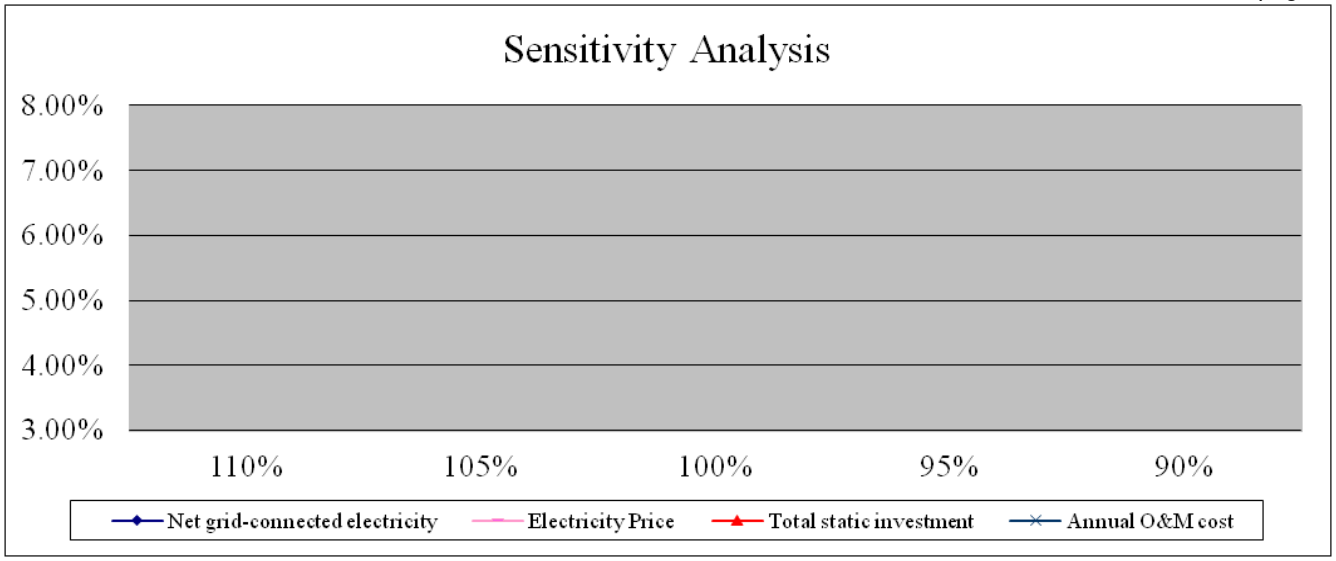

Figure B-1([XXX]) Sensitivity Analysis For HP-[XXX]

If the IRR exceeds the benchmark in one or more of the above scenarios considered for the sensitivity analysis, the PPs shall provide evidences that this is unlikely to happen. If no sufficient proof is provided, the CPA will be considered as non-additional

The critical analysis as follows:

A critical analysis will be carried out to estimate how can the IRR without CERs revenue will exactly reach the benchmark IRR [XXX]% with the change of the above four parameters. At the same time demonstrate whether these parameters can reach the estimated value or not.It can be concluded by the benchmark analysis and sensitivity analysis that without the income from CERs sales, the proposed project activity is unlikely to be financially attractive. However, if the CPA can be successfully registered as a CDM project, the CERs sales revenues will improve the financial factors of the project. In conclusion, the CPAis 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.

>>

The CPA was approved for development in [XXX] province in China. Therefore, the CPA is located within the geographical boundary of the registered PoA.

The spatial extent of the project boundary includes the project power plant and all power plants connected physically to the electricity system that the proposed CPA is connected to.

The proposed project included in the CPA will connect to [XXX] Grid which covers [XXX] (provinces' name) according to the lasted version" *Baseline Emission Factors for Regional Power Grids in China*" published by Chinese DNA[7]. The geographic and boundaries of [XXX] Grid can be clearly identified.

The greenhouse gases and emission sources included in or excluded from the project boundary are shown in the table below.

[7] http://cdm.ccchina.gov.cn/web/index.asp

	Source	Gas	Included?	Justification/ Explanation
Baseline	CO_2 emission from electricity generation in fossil fuel fired power plants that are displaced due to the project activity	CO_2	Yes	Main emission source
		CH_4	No	Minor emission source
		N_2O	No	Minor emission source
Project Activity	Emissions of CH_4 from the reservoir	CO_2	No	Minor emission source
		CH_4	No/Yes	No: If the power density of the project activity is greater than 10W/m^2, minor emission source Yes: If the power density of the project activity is greater than 4 W/m^2 and less than or equal to 10 W/m^2, main emission source.
		N_2O	No	Minor emission source

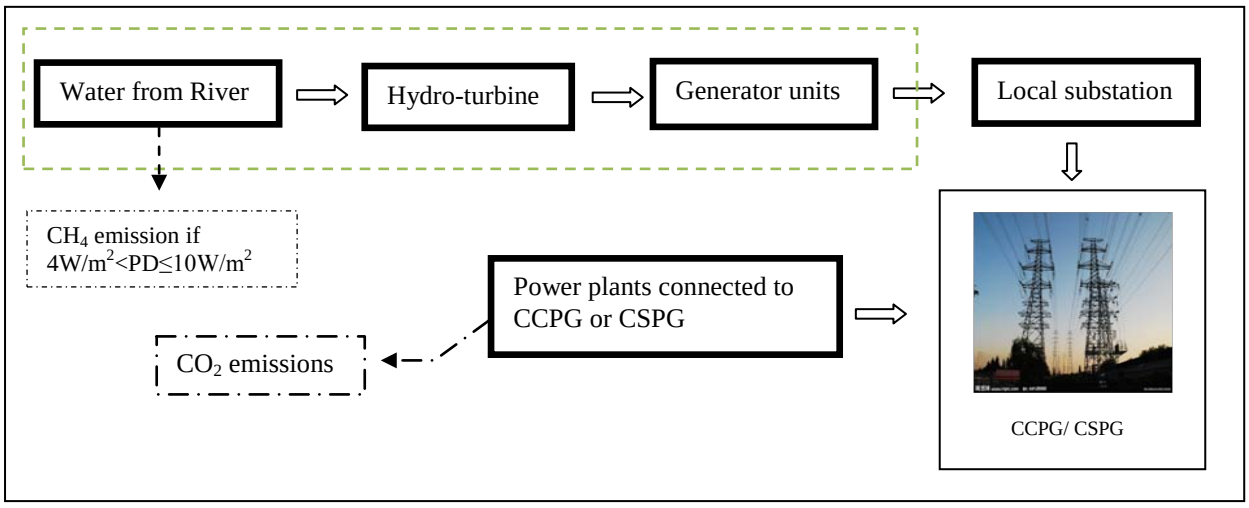

Figure B-2 Project boundary of CPA-[XXX]

B.5. Emission reductions:

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

>>

Data / Parameter:	$EF_{grid,OM,y}$
Data unit:	tCO_2/MWh
Description:	Operating Margin Emission Factor
Source of data used:	Chinese DNA: [XXX] Baseline Emission Factors for Regional Power Grids in China at http://cdm.ccchina.gov.cn
Value applied:	[XXX]
Justification of the choice of data or description of measurement methods and procedures actually applied :	Official and authoritative statistics
Any comment:	

Data / Parameter:	$EF_{grid,BM,y}$
Data unit:	tCO_2/MWh
Description:	Build Margin Emission Factor
Source of data used:	Chinese DNA: [XXX] Baseline Emission Factors for Regional Power Grids in China at http://cdm.ccchina.gov.cn.
Value applied:	[XXX]
Justification of the choice of data or description of measurement methods and procedures actually applied :	Official and authoritative statistics
Any comment:	

Data / Parameter:	EG_y
Data unit:	MWh
Description:	Net electricity generated and delivered to the grid by all power sources serving the system, not including low-cost/must-run power plants/units, in year *y*
Source of data used:	China Electric Power Yearbook
Value applied:	-
Justification of the choice of data or description of measurement methods and procedures actually applied :	Official and authoritative statistics
Any comment:	

Data / Parameter:	$NCV_{i,y}$
Data unit:	GJ/mass or volume unit
Description:	Net calorific value (energy content) of fossil fuel type i in year y
Source of data used:	China Energy Statistical Yearbook

Value applied:	-
Justification of the choice of data or description of measurement methods and procedures actually applied :	Official data
Any comment:	

Data / Parameter:	**$FC_{i,y}$**
Data unit:	Mass or volume unit
Description:	Amount of fossil fuel type *i* consumed in the project electricity system in year *y*
Source of data used:	China Energy Statistics Yearbook
Value applied:	-
Justification of the choice of data or description of measurement methods and procedures actually applied :	Official data
Any comment:	

Data / Parameter:	**$EF_{CO2,i,y}$**
Data unit:	tCO_2e/GJ
Description:	CO_2emission factor of fossil fuel type *i* in year y (tCO_2e/GJ)
Source of data used:	2006 IPCC Guidelines for National Greenhouse Gas Inventories (Volume 2, Energy, Chapter 1, Table 1.4)
Value applied:	-
Justification of the choice of data or description of measurement methods and procedures actually applied :	IPCC Default Value
Any comment:	

Data / Parameter:	$\eta_{i,Adv}$
Data unit:	%
Description:	Best commercial available efficiency of coal, gas, oil fuel power plant
Source of data used:	Chinese DNA: [XXX] Baseline Emission Factors for Regional Power Grids in China at http://cdm.ccchina.gov.cn
Value applied:	-
Justification of the choice of data or description of measurement methods and procedures actually	These data are the best and most recent data available, and use the same data publication as the calculation of the emission factors published by the Chinese authorities.

applied :	
Any comment:	

Data / Parameter:	CAP_y
Data unit:	MW
Description:	The installed capacity of every kind of electricity generation (such as thermal power, hydro power, nuclear power, wind power and other energy sources etc.) of the grid in the recent years.
Source of data used:	China Electric Power Yearbook
Value applied:	-
Justification of the choice of data or description of measurement methods and procedures actually applied :	Official data
Any comment:	

Data / Parameter:	Cap_{BL}
Data unit:	W
Description:	Installed capacity of the hydro power plant before the implementation of the project activity.
Source of data used:	Project site.
Value applied:	For new hydro power plants, this value is zero
Justification of the choice of data or description of measurement methods and procedures actually applied :	
Any comment:	

Data / Parameter:	A_{BL}
Data unit:	m^2
Description:	Area of the reservoir measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m^2).
Source of data used:	Project site.
Value applied:	For new reservoirs, this value is zero.
Justification of the choice of data or description of measurement methods and procedures actually applied :	
Any comment:	

Data / Parameter:	EF_{Res}
Data unit:	$kgCO_2e/MWh$
Description:	Default emission factor for emissions from reservoirs of hydro power plants
Source of data used:	Decision by EB23
Value applied:	90 $kgCO_2e/MWh$
Justification of the choice of data or description of measurement methods and procedures actually applied :	-
Any comment:	Only applicable to hydro power project activities with a power density of the project activity (PD) greater than 4 W/m^2 and less than or equal to 10 W/m^2.

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

>>

According to the methodology AMS-I.D. version 17.0, the project emission reduction can be obtained by the following processes:

Baseline Emissions:

The baseline emissions are the product of electrical energy baseline $EG_{BL,y}$, expressed in MWh of electricity produced by the renewable generating unit multiplied by the grid emission factor.

$$BE_y = EG_{BL,y} * EF_{CO_2,grid,y} \quad (1)$$

Where:

BE_y =Baseline Emissions in year y (tCO_2)

$EG_{BL,y}$ =Quantity of net electricity supplied to the grid as a result of the implementation of the CDM project activity in year y (MWh)

$EF_{CO_2,grid,y}$ =CO_2 emission factor of the grid in year y (tCO_2/MWh)

For newly built hydropower project.

$$EG_{BL,y} = EF_{facility,y} \quad (2)$$

Where:

$EG_{facility,y}$ =Quantity of net electricity supplied to the grid in year y (MWh)

$$EF_{CO_2,grid,y} = EF_{grid,CM,y} \quad (3)$$

$EF_{grid,CM,y}$ =CO_2 emission factor of the grid in year y (tCO_2/MWh) calculated using "Tool to calculate the emission factor for an electricity system (version 02.2.1)".

The emission factor can be calculated in a transparent and conservative manner as follows:

(a) A combined margin (CM), consisting of the combination of operating margin (OM) and build margin (BM) according to the procedures prescribed in the "Tool to calculate the Emission Factor for an electricity system";

OR

(b) The weighted average emissions (in tCO_2/MWh) of the current generation mix. The data of the year in which project generation occurs must be used.

A combined margin (CM) is adopted to calculate the emission reductions. The calculating process will be in accordance with steps of Tool to calculate the emission factor for an electricity system (version 02.2.1) and[XXX]*Baseline Emission Factors for Regional Power Grids in China* published by Chinese DNA. The detailed calculating processes are as follows:

Step 1: Identify the relevant electricity systems.
Step 2: Choose whether to include off-grid power plants in the project electricity system (optional).
Step 3: Select a method to determine the operating margin (OM).
Step 4: Calculate the operating margin emission factor according to the selected method.
Step 5: Calculate the build margin (BM) emission factor.
Step 6: Calculate the combined margin (CM) emission factor.

The detailed calculating processes are:

Step 1 Identify the relevant electricity systems

Identify the electricity system and its covered areas that the CPA connects to, according to the "Tool to calculate the emission factor for an electricity system" and delineation of electricity system given by Chinese DNA.

The proposed CPA will connect to [XXX] which covers [XXX] Provinces. Correspondingly, [XXX] is identified as the relevant electricity system.

Step 2 Choose whether to include off-grid power plants in the project electricity system (optional).

According to the tool, project participants may choose between the following two options to calculate the operating margin and build margin emission factor:
Option I: Only grid power plants are included in the calculation.
Option II: Both grid power plants and off-grid power plants are included in the calculation.

Option I is chosen to calculate the operating margin and build margin emission factor.

Step 3 Select a method to determine the operating margin (OM)

The calculation of the operating margin emission factor ($EF_{grid,OM,y}$) is based on one of the following methods:
(a) Simple OM, or
(b) Simple adjusted OM, or
(c) Dispatch data analysis OM, or
(d) Average OM.

In the five most recent years from where data are available, the low-cost/must run resources[8] constituted less than 50%[9] of total power generation of the grid. As a result, the simple OM method can be used to calculate the operating margin emission factor ($EF_{grid,OM,y}$) of the CPA.

To calculate the simple OM emission factor of the grid, the ex-ante option is adopted by using 3-year generation-weighted average based on the most recent data at the time of the CPA-DD submission to the DOE for validation.

Step 4 Calculate the operating margin emission factor according to the selected method

The simple OM emission factor is calculated as the generation-weighted average CO_2 emissions per unit net electricity generation (t CO_2/MWh) of all generating power plants serving the system, not including low-cost/must-run power plants/units. It may be calculated:

Option A: Based on the net electricity generation and a CO_2 emission factor of each power unit;[10]or

Option B: Based on the total net electricity generation of all power plants serving the system and the fuel types and total fuel consumption of the project electricity system.

According to the tool, Option B can only be used if:
(a) The necessary data for Option A is not available; and
(b) Only nuclear and renewable power generation are considered as low-cost/must-run power sources and the quantity of electricity supplied to the grid by these sources is known; and
(c) Off-grid power plants are not included in the calculation (i.e., if Option I has been chosen in Step 2).

The fuel consumption data in China is not available for each power plant/unit, thus Option A is not applicable. According to the [XXX] Baseline Emission Factors for Regional Power Grids in China, only the nuclear and renewable power generation is considered as low-cost/must run power sources in China and the quantity of electricity supplied to the grid by these sources is known. Further, the off-grid power plants are not included in the calculation as mentioned in the above. So Option B is adopted to calculate the simple OM emission factor.

Under this Option, the simple OM emission factor is calculated based on the net electricity supplied to the grid by all power plants serving the system, not including low-cost/must run power plants/units, and based on the fuel type(s) and total fuel consumption of the project electricity system, as follows:

[8]Low-cost/must-run resources are defined as power plants with low marginal generation costs or power plants that are dispatched independently of the daily or seasonal load of the grid. They typically include hydro, geothermal, wind, low-cost biomass, nuclear and solar generation. If coal is obviously used as must-run, it should also be included in this list, i.e. excluded from the set of plants.

[9]The concrete demonstration will be filled in the specific CPA-DD.

[10] Power units should be considered if some of the power units at the site of the power plant are low-cost/must-run units and some are not. Power plants can be considered if all power units at the site of the power plant belong to the group of low-cost/must-run units or if all power units at the site of the power plant do not belong to the group of low-cost/must-run units.

$$EF_{grid,OMsimple,y} = \frac{\sum_i (FC_{i,y} * NCV_{i,y} * EF_{co2,i,y})}{EG_y} \quad (4)$$

Where:
$EF_{grid,OMsimple,y}$ = Simple operating margin CO_2 emission factor in year y(tCO_2/MWh)
$FC_{i,y}$ = Amount of fossil fuel type *i* consumed by power plant/unit *m* in year (y) (mass or volume unit)
$NCV_{i,y}$ = Net calorific value (energy content) of fossil fuel type *i* in year *y* (GJ/mass or volume unit)
$EF_{co2,i,y}$ = CO_2 emission factor of fossil fuel type *i* in year *y* (tCO_2/GJ)
EG_y = Net electricity generated and delivered to the grid by all power sources serving the system, not including low-cost/must-run power plants/units, in year *y* (MWh)
i = All fossil fuel types combusted in power sources in the project electricity system in year *y*
y = The relevant year as per the data vintage chosen in Step 3.

Based on *[XXX] Baseline Emission Factors for Regional Power Grids in China*published by Chinese DNA, the Operating Margin Emission Factor ($EF_{grid,OM,y}$) of the [XXX]is determined as: [XXX] tCO_2e/MWh.

Step 5 Calculate the build margin (BM) emission factor

In terms of vintage of data, project participants can choose between one of the following two options:

Option 1: For the first crediting period, calculate the build margin emission factor *ex ante* based on the most recent information available on units already built for sample group *m* at the time of CDM-PDD submission to the DOE for validation. For the second crediting period, the build margin emission factor should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.

Option 2: For the first crediting period, the build margin emission factor shall be updated annually, *ex post*, including those units built up to the year of registration of the project activity or, if information up to the year of registration is not yet available, including those units built up to the latest year for which information is available. For the second crediting period, the build margin emissions factor shall be calculated *ex ante*, as described in Option 1 above. For the third crediting period, the build margin emission factor calculated for the second crediting period should be used.

For the CPA, option 1 is chosen to calculate Build Margin emission factor ($EF_{grid,BM,y}$).

The sample group of power units *m* used to calculate the build margin should be determined as per the following procedure, consistent with the data vintage selected above:

(a) Identify the set of five power units, excluding power units registered as CDM project activities, that started to supply electricity to the grid most recently ($SET_{5\text{-}units}$) and determine their annual electricity generation ($AEG_{SET\text{-}5\text{-}units}$, in MWh);

(b) Determine the annual electricity generation of the project electricity system, excluding power units registered as CDM project activities (AEG_{total}, in MWh). Identify the set of power units, excluding power units

registered as CDM project activities, that started to supply electricity to the grid most recently and that comprise 20% of AEG_{total} (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation) ($SET_{\geq 20\%}$) and determine their annual electricity generation ($AEG_{SET\geq 20\%}$, in MWh);

(c) From $SET_{5\text{-units}}$ and $SET_{\geq 20\%}$ select the set of power units that comprises the larger annual electricity generation (SET_{sample});

Otherwise:

(d) Exclude from SET_{sample} the power units which started to supply electricity to the grid more than 10 years ago. Include in that set the power units registered as CDM project activities, starting with power units that started to supply electricity to the grid most recently, until the electricity generation of the new set comprises 20% of the annual electricity generation of the project electricity system (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation) to the extent is possible. Determine for the resulting set ($SET_{sample\text{-}CDM}$) the annual electricity generation ($AEG_{SET\text{-}sample\text{-}CDM}$, in MWh);

If the annual electricity generation of that set is comprises at least 20% of the annual electricity generation of the project electricity system (i.e. $AEG_{SET\text{-}sample\text{-}CDM} \geq 0.2 \times AEG_{total}$), then use the sample group $SET_{sample\text{-}CDM}$ to calculate the build margin. Ignore steps (e) and (f).

Otherwise:

(e) Include in the sample group $SET_{sample\text{-}CDM}$ the power units that started to supply electricity to the grid more than 10 years ago until the electricity generation of the new set comprises 20% of the annual electricity generation of the project electricity system (if 20% falls on part of the generation of a unit, the generation of that unit is fully included in the calculation);

(f) The sample group of power units m used to calculate the build margin is the resulting set ($SET_{sample\text{-}CDM>10yrs}$).

The Build Margin Emission Factor ($EF_{grid,BM,y}$) is calculated as follows:

$$EF_{grid,BM,y} = \frac{\sum_m EG_{m,y} * EF_{EL,m,y}}{\sum_m EG_{m,y}} \quad (5)$$

Where:
$EF_{grid,BM,y}$ = Build margin CO_2 emission factor in year *y* (t CO_2/MWh)
$EG_{m,y}$= Net quantity of electricity generated and delivered to the grid *y* power unit *m* in year *y* (MWh)
$FE_{EL,m,y}$= CO_2 emission factor of power unit *m* in year *y* (t CO_2/MWh)
m = power units included in the build margin
y = most recent historical year for which power generation data is available.

Due to data's unavailability, the BM calculation follows the guidance provided by CDM EB in the deviation. First, calculate the newly installed capacity and its power generation technology mix, then the weights of different

power technologies in the newly installed capacity, finally the BM emission factor base on the emission factors of different types of most advanced commercial generation technologies.[11]

Because the generating capacity of the coal-fired, oil-fired and gas-fired power plants can not be separated from the existing statistical data, the BM calculation adopts the following method: First, use the available data in the energy balance tables on the most recent year to calculate the proportion of CO_2 emissions from solid, liquid and gaseous fuels corresponding to the total emissions of CO_2 emissions. Second, calculate the emission factor of the fossil fuel fired power generation in each grid using the above proportions as the weights and the emission factors of the most advanced commercial generation technologies as the reference. Finally, the BM emission factor is multiplied by the proportion of fossil fuel fired power generation and the proportion of fossil fuel fired power plants in the newly added 20% capacity. Concrete steps and the formula for BM are as follows:

Sub-step 5a. Calculating the share of CO_2 emission of different fuel-fired power plants in the total CO_2 emissions

$$\lambda_{coal,y} = \frac{\sum_{ieCOAL,j} F_{i,j,y} * NCV_{i,y} * EF_{co2i,j,y}}{\sum_{i,j} F_{i,j,y} * NCV_{i,y} * EF_{co2i,j,y}} \quad (6)$$

$$\lambda_{oil,y} = \frac{\sum_{ieOIL,j} F_{i,j,y} * NCV_{i,y} * EF_{co2i,j,y}}{\sum_{i,j} F_{i,j,y} * NCV_{i,y} * EF_{co2i,j,y}} \quad (7)$$

$$\lambda_{gas,y} = \frac{\sum_{ieGAS,j} F_{i,j,y} * NCV_{i,y} * EF_{co2i,j,y}}{\sum_{i,j} F_{i,j,y} * NCV_{i,y} * EF_{co2i,j,y}} \quad (8)$$

Where:

$F_{i,j,y}$ = the amount of fuel *i* (in a mass or volume unit) consumed by project *j* in year *y*;

$NCV_{i,j}$ = Net calorific value (energy content) of fossil fuel type *i* consumed by province *j* (GJ/mass or volume unit)

$EF_{co2,i,j,y}$ = CO_2 emission coefficient of fossil fuel type *i* (tCO_2/mass or volume unit of the fuel), taking into account the carbon content of the fuels used by relevant provincial sub-grids *j* and the percent oxidation of fuel in year *y*;

Coal, Oil and Gas is the footnote for solid fuels, liquid fuels and gas fuels.

Sub-step 5b. Calculation the emission factor of fuel-fired power technology.

$$EF_{Thermal} = \lambda_{Coal,y} * EF_{Coal,Adv,y} + \lambda_{Oil,y} * EF_{Oil,Adv,y} + \lambda_{Gas,y} * EF_{Gas,Adv,y} \quad (9)$$

Where:

$EF_{Coal,Adv,y}$, $EF_{Oil,Adv,y}$ *and* $EF_{Gas,Adv,y}$ represent the emission factors of the commercially available most advanced coal, oil and gas fired power technology.

Sub-step5c. Calculating the $EF_{grid,BM,y}$

[11] http://cdm.ccchina.gov.cn

$$EF_{grid,BM,y} = \frac{CAP_{Thermal,y}}{CAP_{Total,y}} * EF_{Thermal,y} \quad (10)$$

Where:
$CAP_{Total,y}$is the newly increment of total installed capacity;
$CAP_{Thermal,y}$is the newly increment of fuel-fired installed capacity.

Based on *[XXX] Baseline Emission Factors for Regional Power Grids in China*published by Chinese DNA, the Build Margin Emission Factor ($EF_{grid,BM,y}$) of the [XXX]is determined as: [XXX] tCO_2e/MWh.

The $EF_{grid,OM,y}$ and $EF_{grid,BM,y}$ of the first crediting period of the CPA is calculated ex-ante and will not change during the first crediting period. For the second crediting period, the $EF_{grid,OM,y}$ and $EF_{grid,BM,y}$ should be updated based on the most recent information available on units already built at the time of submission of the request for renewal of the crediting period to the DOE. For the third crediting period, the $EF_{grid,OM,y}$ and $EF_{grid,BM,y}$ calculated for the second crediting period should be used. This option does not require monitoring the emission factor during the crediting period.

Step 6. Calculate the combined margin (CM) emission factor

The calculation of the combined margin (CM) emission factor ($EF_{grid,CM,y}$) is based on one of the following methods:
(a) weighted average CM; or
(b) simplified CM
The weighted average CM method should be used as the preferred option.

Method (a) is adopted for calculating the combined margin emission factor of the CPA:

$$EF_{grid,CM,y} = w_{OM} * EF_{grid,OM,y} + w_{BM} * EF_{grid,BM,y} \quad (11)$$

Where:
$EF_{grid,CM,y}$ = Combined margin CO_2 emission factor in year *y* (tCO_2/MWh)
$EF_{grid,OM,y}$= Operating margin CO_2 emission factor in year *y* (tCO_2/MWh)
$EF_{grid,BM,y}$= Build margin CO_2 emission factor in year *y* (tCO_2/MWh)
w_{OM} = Weighting of operating margin emission factor (%)
w_{BM} = Weighting of build margin emission factor (%)

The weight w_{OM} and w_{BM} are taken both by 0.5 for the first crediting period of the CPA; and w_{OM}=0.25 and w_{BM}=0.75 for the second and third period of the CPA.

Therefore, the combined baseline emission factor is:
$EF_{grid,CM,y}$ =0.5*[XXX] t CO_2/MWh+0.5*[XXX] t CO_2/MWh=[XXX] t CO_2/MWh

Thus, BE_y can be calculated as following table according to the formula $BE_y = EG_{facility,y} * EF_{grid,CM,y}$:

Hydro Power Station No.	$EG_{facility,y}$ (MWh)	$EF_{grid,CM,y}$ (tCO_2/MWh)	BE_y (tCO_2e/yr)

HP-[XXX]01	[XXX]	[XXX]	[XXX]
HP-[XXX]02	[XXX]	[XXX]	[XXX]
……	……	……	……
HP-[XXX]	[XXX]	[XXX]	[XXX]
Sum	[XXX]	[XXX]	[XXX]

Project emissions

In accordance with the methodology, for most renewable energy project activities, $PE_y = 0$. However, project emissions from water reservoirs of hydro power project activities that result in new reservoirs or the increase of existing reservoirs have to be considered following the procedure described in the most recent version of ACM0002(ver13.0.0).

If the hydro power project activity result in the new reservoir or the increase of existing reservoir, the power density of the project activity (PD) is calculated as follows:

$$PD = \frac{Cap_{PJ} - Cap_{BL}}{A_{PJ} - A_{BL}} \quad (12)$$

Where:

PD = Power density of the project activity (W/m^2)

Cap_{PJ} = Installed capacity of the hydro power plant after the implementation of the project activity (W)

Cap_{BL} = Installed capacity of the hydro power plant before the implementation of the project activity (W). For new hydro power plants, this value is zero.

A_{PJ} = Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full (m^2)

A_{BL} = Area of the reservoir measured in the surface of the water, before the implementation of the project activity, when the reservoir is full (m^2). For new reservoirs, this value is zero

The project emissions from water reservoirs of hydro power project activity are determined based on the PD of the project activity according to the following procedures:

(a) If the power density of the project activity (*PD*) is greater than 4 W/m^2 and less than or equal to 10 W/m^2:

$$PE_y = \frac{EF_{Res} * TEG_y}{1000} \quad (13)$$

Where:

PE_y = Project emissions from water reservoirs in year y (tCO_2e/yr)

EF_{Res} = Default emission factor for emissions from reservoirs of hydro power plants in year *y* (kg CO_2e/MWh)

TEG_y = Total electricity produced by the project activity, including the electricity supplied to the grid and the electricity supplied to internal loads, in year *y* (MWh)

(b) If the power density of the project activity (PD) is greater than 10 W/m^2

$PE_y = 0$ (14)

PD can be calculated as following table according to the above formula: :

Hydro Power Station No.	Cap_{PJ} (W)	Cap_{BL} (W)	A_{PJ} (m^2)	A_{BL} (m^2)	PD (W/m^2)
HP-[XXX]01	[XXX]	[XXX]	[XXX]	[XXX]	[XXX]
HP-[XXX]02	[XXX]	[XXX]	[XXX]	[XXX]	[XXX]
……	……	……	……	……	……
HP-[XXX]	[XXX]	[XXX]	[XXX]	[XXX]	[XXX]
Sum	[XXX]	[XXX]	[XXX]	[XXX]	[XXX]

The PD of the hydropower plant HP-[XXX]01 that result in new reservoir(s) or the increase of existing reservoir(s), is [XXX]W/m^2(which is greater than 10 W/m^2 / is greater than 4 W/m^2 and less than 10 W/m^2), therefore, the project emission (PE_y) of the project activity HP-[XXX]01 is [XXX]tCO_2e.

The PD of the hydropower plant HP-[XXX]02 that result in new reservoir(s) or the increase of existing reservoir(s), is [XXX]W/m^2(which is greater than 10 W/m^2 / is greater than 4 W/m^2 and less than 10 W/m^2), therefore, the project emission (PE_y) of the project activity HP-[XXX]02 is [XXX]tCO_2e.
…..

The PD of the hydropower plant HP-[XXX] that result in new reservoir(s) or the increase of existing reservoir(s), is [XXX]W/m^2(which is greater than 10 W/m^2 / is greater than 4 W/m^2 and less than 10 W/m^2), therefore, the project emission (PE_y) of the project activity HP-[XXX] is [XXX]tCO_2e.

Thus, the PE_y can be summarized as following table:

Hydro Power Station No.	PE_y (tCO_2e/yr)
HP-[XXX]01	[XXX]
HP-[XXX]02	[XXX]
……	……
HP-[XXX]	[XXX]
Sum	[XXX]

Leakage

According to the methodology AMS-I.D. version 17.0, the project activity leakage does not take into account, the $LE_y=0$

Project Emission Reduction:

Emission reductions are calculated as follows:

$$ER_y = BE_y - PE_y - LE_y \quad (15)$$

Where:

ER_y	Emission reductions in year*y*(tCO_2e/yr)
BE_y	Baseline emission in year y (tCO_2e/yr)
PE_y	Project emission from water reservoirs in year y(tCO_2e/yr)
LE_y	Leakage emission in year y (tCO_2e/yr)

ER_y can be calculated as following table:

Hydro Power Station No.	BE_y (tCO_2e/yr)	PE_y (tCO_2e/yr)	LE_y (tCO_2e/yr)	ER_y (tCO_2e/yr)
HP-[XXX]01	[XXX]	[XXX]	[XXX]	[XXX]
HP-[XXX]02	[XXX]	[XXX]	[XXX]	[XXX]
……	……	……	……	……
HP-[XXX]	[XXX]	[XXX]	[XXX]	[XXX]
Sum	[XXX]	[XXX]	[XXX]	[XXX]

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

>>

For HP-[XXX]01:

Year	Estimation of project activity emissions (tonnes of CO_2e)	Estimation of baseline emissions (tonnes of CO_2e)	Estimation of leakage (tonnes of CO_2e)	Estimation of overall emission reductions (tonnes of CO_2e)
Year 1				
Year 2				
Year 3				
Year 4				
Year 5				
Year 6				
Year 7				
Total (tonnes of CO_2e)				

……

For HP-[XXX]:

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)
Year 1				
Year 2				

Year 3				
Year 4				
Year 5				
Year 6				
Year 7				
Total (tonnes of CO_2e)				

For the CPA:

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)**
Year 1				
Year 2				
Year 3				
Year 4				
Year 5				
Year 6				
Year 7				
Total (tonnes of CO_2e)				

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

B.6.1. Description of the monitoring plan:

>>

1. Monitoring Framework

The CME (ZCNI) will act as the overall supervisor of the PoA, preparing the operation and monitoring manual for CPAs, calculating emission reductions and preparing monitoring reports periodically to the DOE

The CPA implementer will undertake the monitoring of CPA operations including employee training, data collection and report to ZCNI periodically. The monitoring structure of the project is as follows:

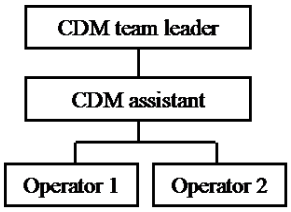

Figure E-1 Monitoring structure

This monitoring team of the CPA will be under the supervision of the CME, which consists of a team leader, an assistant and at least two operators.

This team leader has the overall responsibility for the monitoring and verification process, training and managing all team members, and keep in touch with the CME. The assistant will help the team leader to supervise the operation of the project, including data monitoring, negotiations with the consumers, and to collect financial data

such as the sold/purchased electricity records. The operators will be responsible for calibrating and maintaining the meters, measuring and recording relevant readings, collecting, checking, archiving and managing data, and making summary according to the CDM requirements at a regular basis.

2. Monitoring Data

The data and parameters to be monitored are indicated in Section E.7.1 of the PoA DD and described in this section.

3. Data Collection and Management

Qualified meter(s) will be installed to measure the net electricity supplied to the grid **(**$EG_{facility,y}$). Installed capacity of the hydro power plant after the implementation (CAP_{PJ})will be yearly verified and area of the reservoir A_{PJ} will be yearly measured. For hydro power project activity with a power density of the project activity (PD) greater than 4 W/m^2 and less than or equal to 10 W/m^2, the total electricity produced by the project activity (TEG_y) will be monitored by the qualified meter(s). The CPA implementer will record and collect the data as required by its monitoring plan, and report to ZCNI periodically, while, ZCNI will check the data and its evidence to ensure its accuracy. The data will be archived electronically and be stored for 2 years after the end of the crediting period of the proposed CPA.

4. Quality Assurance and Quality Control

The meter(s) will be installed by either the project developer or the grid company according to the national standards and the accuracy of the meter(s) will be satisfied with the related national standards. The project entity will implement QA&QC measures to calibrate and guarantee the accuracy of metering and safety of the project operation. The metering devices will be calibrated and inspected properly and periodically as per standard industry norms and requirements. The grid company and the project owners are responsible for operation and maintenance of their respective electricity meter(s).

5. Training

The employee of each CPA will receive general training on hydropower project operation organized by the CPA implementer, including reading and calibration of meter(s), recording of the readings, adjustment of readings, and reporting of readings. On the other hand, they will receive CDM training, including validation, registration and verification.

6. Emergency procedure

When reading error of the meter exceeds the allowable range or any inconsistency occurs, the meter should be repaired immediately. The record should be kept by the CPA implementer.

When the fault of the meter exceeds the allowable tolerance or its malfunction occurs, the grid connected electricity generated by the proposed project will be resolved by following measures:

- The value of records for sold electricity will be adopted; or
- The conservative and reasonable methods agreed by both parties will be adopted; or
- If no agreement can be reached, arbitration in accordance with previous agreement will be preceded.

The parameters to be monitored:

Data / Parameter:	**$EG_{facility,y}$**
Data unit:	MWh/yr
Description:	Quantity of net electricity supplied to the grid in year y

Source of data to be used:	Measured by meter
Value of data applied for the purpose of calculating expected emission reductions in section B.5	[XXX]
Description of measurement methods and procedures to be applied:	Measured by electricity meter(s). Continuous monitoringand monthly recording
QA/QC procedures to be applied:	The meter will be calibrated periodically according to national standard, and the measurement results will be crosschecked with records for sold/purchased electricity.
Any comment:	The net electricity supplied to the grid is the difference between the measured quantities of the grid electricity export and the import.

Data / Parameter:	**CAP_{PJ}**
Data unit:	W
Description:	Installed capacity of the hydro power plant after the implementation of the project
Source of data to be used:	Project site.
Value of data applied for the purpose of calculating expected emission reductions in section B.5	[XXX]
Description of measurement methods and procedures to be applied:	Verified on siteyearly
QA/QC procedures to be applied:	
Any comment:	

Data / Parameter:	**A_{PJ}**
Data unit:	m^2
Description:	Area of the reservoir measured in the surface of the water, after the implementation of the project activity, when the reservoir is full.
Source of data to be used:	Project site
Value of data applied for the purpose of calculating expected emission reductions in section B.5	[XXX]

Description of measurement methods and procedures to be applied:	Yearly measured from topographical surveys, maps, satellite pictures, etc
QA/QC procedures to be applied:	
Any comment:	

Data / Parameter:	**TEG_y**
Data unit:	MWh/yr
Description:	Total electricity produced by the project activity, including the electricity supplied to the grid and the electricity supplied to internal loads, in year *y*
Source of data to be used:	Measured by meter
Value of data applied for the purpose of calculating expected emission reductions in section B.5	[XXX]
Description of measurement methods and procedures to be applied:	Continuous measurement and monthly recording
QA/QC procedures to be applied:	The meter will be calibrated periodically according to national standard.
Any comment:	Only applicable to hydro power project activities with a power density of the project activity (PD) greater than 4 W/m^2 and less than or equal to 10 W/m^2.

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:

☐ Please tick if this information is provided at the PoA level. In this case sections C.2. and C.3. need not be completed in this form.

Environmental analysis of the PoA is done at CPA level, because the environmental impact of small hydropower plants depends entirely on the particular location, size and how the plant is embedded in its environment.

Therefore, the environmental analysis should be done at SSC-CPA level, and the EIA and its approval will be provided for each small hydropower plant.

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

>>

The analysis of the environmental impacts will be done at the CPA level. Please refer to the specific CPA-DD for details.

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:

>>
According to China's related laws and regulations, the project conducted EIA and got approval from [XXX] Environmental Protection Department.

SECTION D. Stakeholders' comments

>>

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

☐ Please tick if this information is provided at the PoA level. In this case sections D.2. to D.4. need not be completed in this form.

The stakeholder comments are invited at the CPA level. The impact on the surrounding communities of small hydro plants depends entirely on the particular location, size and how the plant is embedded in its environment. Therefore, the CPA level is the adequate choice for inviting stakeholder comments.

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

>>
Please refer to specific CPA DD.

D.3. Summary of the comments received:

>>
Please refer to specific CPA DD.

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

>>
Please refer to specific CPA DD.

Annex 1

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

Organization:	Zhongying Changjiang International New Energy Investment Co., Ltd
Street/P.O.Box:	T1 Jiangxia Avenue, Eastlake New Technology Development Zone
Building:	607room, Kaidi Building
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Telephone:	027-67869276
FAX:	027-87992893
E-Mail:	xuefei@kaidihi.com
URL:	
Represented by:	Xuefei
Title:	General Manager of CDM department
Salutation:	Mr.
Last Name:	Xue
Middle Name:	
First Name:	Fei
Department:	Carbon Asset Management Centre
Mobile:	13871271546
Direct FAX:	027-87992893
Direct tel:	027-67869276
Personal E-Mail:	xuefei@kaidihi.com

Organization:	CPA implementer
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 funding from Annex I countries available to the CPA.

Annex 3

BASELINE INFORMATION

To be filled in the specific CPA-DD.

Annex 4

MONITORING INFORMATION

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