



South Asia

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Validation Report

VALIDATION OF THE CDM-POA:
ADVANCED ENERGY SOLUTIONS FOR BUILDINGS.
PROGRAMME OF ACTIVITIES (POA)

AND VALIDATION OF THE SPECIFIC CDM-CPA:
"Installation of a Tri Generation system supplying
energy to the Serafi Mega City" CPA Number (001)

REPORT No. 000549KM

25 March 2014

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Managing Entity (contractor): CES Carbon Services Ltd 44-45 Clontarf Road 1 The Seapoint Building Dublin, Ireland		Host Country/ies: Kingdom of Saudi Arabia Oman Egypt	
CPA Implementer: Total Energy Solutions Ealya Abu Madi Street/P.O. Box 15870 Jeddah 21454 Kingdom of Saudi Arabia		Project Site: Tahila Street, Jeddah, Kingdom of Saudi Arabia 21.55583, 39.18194	
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VALIDATION OPINION

TÜV SÜD has performed a validation of the aforementioned CDM programme of activity (PoA) and specific CPA.

Standard auditing techniques have been used for the validation of the PoA and the specific CPA. An internal validation checklist has been prepared to conduct the validation process in a transparent and comprehensive manner.

The review of the PoA and CPA design documentation, subsequent follow-up interviews, and further verification of references have provided TÜV SÜD with sufficient evidence to determine the fulfilment of stated criteria in the protocol. In the opinion of TÜV SÜD, the PoA and the specific CPA fulfill all relevant UNFCCC requirements for the CDM if the underlying assumptions do not change. TÜV SÜD recommends the PoA for registration by the CDM Executive Board. TÜV SÜD also recommends the specific CPA for inclusion under the PoA.

An analysis, as provided by the applied methodology, demonstrates that the proposed activity is not a likely baseline scenario. Emission reductions attributable to the activity are additional to any that would occur in the absence of the programme. Considering that the PoA will be implemented as designed, the CPAs under the same are likely to achieve emission reductions.

The validation has been performed following the requirements of the latest version of the CDM VVS and on the basis of the contractual agreement. The single purpose of this report is its use during the registration process as part of the CDM project cycle. Based on the work described in this report, nothing has come to our attention that causes us to believe that any project component or issue has not been covered by the validation process.

Pune, 25/03/2014



Shivraj Sharma,
Member
Certification Body "Environment and Energy"
TÜV SÜD South Asia Pvt Ltd

Abbreviations

ACM	Approved Consolidated Methodology
BM	Build Margin
CAR	Corrective Action Request
CB	Certification Body
CDM	Clean Development Mechanism
CDM EB	CDM Executive Board
CPA	Component Project Activity
CPA-DD	Component Project Activity Design Document
CER	Certified Emission Reduction
CM	Combined Margin
CME	Coordinating Managing Entity
CMP	Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol
CR	Clarification Request
DNA	Designated National Authority
DOE	Designated Operational Entity
DM	Diesel Mill
EF	Emission Factor
EIA / EA	Environmental Impact Assessment / Environmental Assessment
ER	Emission Reduction
FAR	Forward Action Request
FSR	Feasibility Study Report
GHG	GreenHouse Gas(es)
GSP	Global Stakeholder Consultation / Process
IPCC	Intergovernmental Panel on Climate Change
IRL	Information Reference List
IRR	Internal Rate of Return
KP	Kyoto Protocol
KSA	Kingdom of Saudi Arabia
MP	Monitoring Plan
LoF	List of Findings
OM	Operating Margin
PoA	Programme of Activities
PoA-DD	Programme of Activities Design Document
PP	Project Participant
TÜV SÜD	TÜV SÜD South Asia Pvt Ltd
TES	Total Energy Solutions
UNFCCC	United Nations Framework Convention on Climate Change
VVS	Clean Development Mechanism Validation And Verification Standard

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1 INTRODUCTION

1.1 Objective

The objective of the validation process is to provide an independent assessment by a third party, a Designated Operational Entity (DOE), of the proposed Programme of Activities (PoA) and the Component Project Activity (CPA; generic and specific) against the applicable CDM requirements. The assessment involves the evaluation whether the proposed activities comply with the requirements of §37 of the CDM modalities and procedures, the applicability conditions of the selected methodology and any applicable guidance issued by the CDM Executive Board (CDM-EB).

The PoA validation is part of the PoA CDM project cycle and results in a conclusion by the executing DOE on whether or not the PoA is valid to be submitted for registration to the CDM-EB. The CPA validation is also part of the PoA CDM project cycle and results in a conclusion by the executing DOE on whether or not a CPA is valid to be included under the proposed PoA. The ultimate decision on the registration of a proposed PoA rests with the CDM-EB and the Parties involved.

1.2 Scope

The scope of any assessment is defined by the underlying legislation, regulation and guidance given by relevant entities or authorities. In the case of CDM PoA, the scope is set by:

- The Kyoto Protocol, in particular §12 and modalities and procedures for the CDM;
- Decision 2/CMP1 and Decision 3/CMP.1 (Marrakech Accords);
- Further COP/MOP decisions with reference to the CDM (e.g. decisions 4 – 8/CMP.1);
- Clean Development Mechanism Validation And Verification Standard (VVS) published under <http://cdm.unfccc.int>;
- Decisions and specific guidance outlined by the EB which are published under <http://cdm.unfccc.int>;
- Guidelines for completing the CDM PoA and CPA design documents (PoA-DD and CPA-DD) and the applied CDM methodology;
- Baselines and monitoring methodologies (including GHG inventories);
- Management systems and auditing methods;
- Environmental issues relevant to the applicable sectoral scope;
- Applicable environmental and social impacts and aspects of the CDM PoA;
- Sector specific technologies and their applications;
- Current technical and operational knowledge of the specific sectoral scope and information on best practice.

The validation process is not meant to provide any form of consulting to the project participant (PP). However, stated requests for clarifications, corrective actions, and/or forward actions may provide input for improvement of the programme design.

Once TÜV SÜD receives the design documents, it is made publicly available through a dedicated interface on the UNFCCC CDM website for global stakeholder consultation. The duration of the period for submission of comments for the global stakeholder consultation is 30 days.

2 VALIDATION METHODOLOGY

The information provided by the project participant(s) is assessed by applying the means of validation specified in the “Clean Development Mechanism Validation And Verification Standard” and standard auditing techniques. In the absence of specific means of validation specified in the VVS, the standard auditing techniques are applied.

A competent team is selected for the performance of the validation prior to the start of the assessment. The team is selected to cover the technical scope(s), sectoral scope(s), and relevant host country experience for evaluating the CDM PoA and specific CPA. Once the program is made available for the stakeholder consultation process, members of the team carry out the desk review, follow-up actions, resolution of issues identified, and the preparation of the validation report. The prepared validation report and other supporting documents then undergo an internal quality control by the CB “Environment and Energy” before being submitted to the CDM-EB.

In case the validation team identifies issues that require further elaboration, research or expansion in order to determine whether the activities meet the CDM requirements, and whether the CPAs under the same PoA can achieve credible emission reductions, findings are raised as specified in the VVS.

All corrective action and clarification requests shall be closed out in order to submit the request for registration for this PoA.

All requests are listed in annex 1 of this validation report including the responses provided by the project participant(s) as well as the means of validation of these responses and any references to any resulting changes in the design documents or supporting annexes.

2.1 Appointment of the Assessment Team

According to the technical scopes and experiences in the sectoral or national business environment, TÜV SÜD composed a project team in accordance with the appointment rules of the TÜV SÜD Certification body “Environment and Energy”.

The composition of an assessment team has to be approved by the Certification Body (CB) to assure that the required skills are covered by the team. The CB TÜV SÜD operates the following qualification levels for team members that are assigned by formal appointment rules:

- Assessment Team Leader (ATL);
- Validator (VAL);
- Validator Trainee (T);
- Technical Experts (TE);
- Country expert (CE);
- Technical review (TR).

It is required that the sectoral scope(s) and the technical area(s) (TA) linked to the methodology and project has to be covered by the assessment team. A technical review is conducted to perform a check on quality and completeness. Appointment certificates are attached to this report in Annex 3.

Assessment Team:

Name	Qualification	Coverage of scope	Coverage of technical area	Coverage of financial aspect	Host country experience	Conducted On-site visit
Eswar Murty	ATL/VAL	-	-	-		<input checked="" type="checkbox"/>
Khalid Mahmood*	Formerly ATL	-	-	-		<input checked="" type="checkbox"/>
Bratin Roy	VAL	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>		<input checked="" type="checkbox"/>
Muhammad Amin Zammam†	CE	-	-	-	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>

Technical Reviewer:

Name	Qualification	Coverage of scope	Coverage of technical area	Coverage of financial aspect
Nikunj Agarwal	Formerly TR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (All)	<input checked="" type="checkbox"/>
Supratik Dutta	TR	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/> (All)	<input checked="" type="checkbox"/>

Appointment certificates are attached to this report in Annex 3.

2.2 Review of Documents

The GSP-DDs and additional background documents related to the PoA and specific CPA design and baseline have been reviewed to verify the correctness, credibility, and interpretation of the presented information. Furthermore, a cross-check between information provided and information from other sources was performed as an initial step of the validation process. A complete list of all documents and evidences reviewed is attached as annex 2 to this report.

2.3 Follow-up Interviews

During the period 12th – 15th April 2012, TÜV SÜD performed interviews and physical site inspections with project stakeholders to confirm relevant information, and to resolve issues identified in the document review. A list of all persons interviewed in this process is presented in annex 2 to this report.

2.4 Cross-check

During the validation process the team has made reference to available information related to similar projects or technologies as described in the CDM PoA and CPA. Project documentation has also been reviewed against the approved methodology applied to confirm the appropriateness of formulae and correctness of calculations.

2.5 Resolution of Clarification and Corrective Action Requests

The objective of this phase of the validation is to resolve the requests for corrective actions (CAR), clarifications (CR), and any other outstanding issues which need to be clarified for TÜV SÜD's con-

* Left the Organization

† Left the Organization

clusion on the PoA and CPA design. The CARs and CRs raised by TÜV SÜD are resolved during communication between the managing entity, the CPA implementer and TÜV SÜD. To guarantee the transparency of the validation process, the concerns raised and responses that have been given are documented in more detail in annex 1 to this report.

2.6 Internal Quality Control

Internal quality control within the team is assured by means of a technical review process that takes place after the on-site assessment and after the closure of findings. The internal quality control in the validation process is given by the final decision (Validation Opinion) made by the CB “Environment and Energy”.

3 REPORTING REQUIREMENTS

The assessment work and the main results are described below in accordance with the CDM Validation and Verification Standard (VVS). The reference documents indicated in this report are stated in annex 2 of this report.

3.1 Global stakeholder consultation

No comments have been received during the global stakeholder process.

3.2 Approval, Authorization and Contribution to sustainable development

Party / DNA	Authorized Project Participant(s)
National Committee for CDM, Kingdom of Saudi Arabia	CES Carbon Services Ltd (CME) Total Energy Solutions (CPA implementer)
Oman DNA	CES Carbon Services Ltd (CME)
Egypt DNA	CES Carbon Services Ltd (CME)
Ireland DNA - Annex 1 party	CES Carbon Services Ltd (CME)

The DNA of Kingdom of Saudi Arabia, National Committee for CDM has issued LoA on 9 December 2012 authorizing CES Carbon Services Ltd as Coordinating and Managing Entity and project participant [#48].

The DNA of Sultanate of Oman has issued a Letter of Approval (LoA) on 8th August 2012 authorizing CES Carbon Services Ltd as a Project Participant and CME [#49].

The DNA of Arab Republic of Egypt has issued a Letter of Approval (LoA) in June 2012 authorizing CES Carbon Services Ltd as a Project Participant and CME [#50].

The DNA of Ireland has issued a Letter of Approval (LoA) on 10th December 2012 authorizing CES Carbon Services Ltd as a Project Participant [#51].

The Party's DNA is included in the list available on the UNFCCC CDM.

As checked by TÜV SÜD the LoA is in accordance with paragraph 39-42 of the VVS.

The project participant mentioned above has been authorized by the aforementioned DNA.

TÜV SÜD received the LoA from the project participants and has confirmed authenticity.

The **host Party's** DNA has confirmed the contribution of the project to the sustainable development of the host Party.

3.3 Modalities of Communications

TÜV SÜD used notarized documentation [#51] to perform due diligence on the Modalities of Communication (MoC) statement. The notarized documentation confirms the corporate identity of all project participants and focal points included in the MoC statement, as well as the personal identities, including specimen signatures and employment status, of their authorized signatories.

TÜV SÜD confirms that the MoC statement complies with all relevant forms and requirements as

- the latest version of the form "Modalities of Communication statement" (F-CDM-MOC) has been used

- the information required as per the F-CDM-MOC, including its annex 1, is correctly completed
- the project participant's authorized signatories signing the F-CDM-MOC correspond to the project participant's authorized signatories included in F-CDM-MOC, annex 1

3.4 Design Documents

The PoA-DD and the CPA-DDs are in compliance with the relevant forms and guidance as provided by UNFCCC. The most recent versions of the PoA-DD and CPA-DD forms were used. It can be further confirmed that the two parts of the PoA-DD including the first part (i.e. PoA) and the second part (i.e. generic CPA) have been filled correctly. There are two generic CPAs reflecting the two different types of CPA regarding the demonstration of additionality (for details please refer to section 3.6.3 and 3.6.8.2 and 3.6.8.3 of this report). TÜV SÜD considers that the guidelines for the completion of the PoA documents in their most recent version have been followed. Furthermore, TÜV SÜD confirms that the PoA-DD and the CPA-DDs (generic and specific) are in compliance with relevant forms and guidance, hence the requirement of VVS § 62 & 63 is fulfilled.

3.4.1. Programme Description:

The following description of the programme as per PoA-DD was verified:

The PoA involves the installation of fossil fuel based cogeneration and trigeneration systems in order to supply electricity, cooling and/or heating in non-industrial buildings such as shopping malls, university campuses, hospitals, data centres. The PoA introduces more efficient forms of meeting electrical power, space cooling and hotwater needs in commercial and institutional buildings. The Trigeneration and cogeneration systems that are to be implemented under the proposed PoA would be in both new buildings as well as in existing buildings. The CDM programme activities (CPAs) under the PoA will be implemented in the countries of Saudi Arabia, Oman and Egypt. The main objective of this PoA is to reduce the amount of power drawn from the grid or/and captive fossil fuel fired systems, introduce lower carbon chilled water production solutions and utilization of waste heat in the proposed systems in all the host countries. The proposed PoA is a voluntary action by the coordinating and managing entity CES Carbon Services Ltd. CES Carbon Services Ltd works closely with the individual CPA implementers for the inclusion of CPA's into the PoA. The PoA neither receives any funding from government-funded nor any diversion of ODA is involved [6].

The starting date of the PoA is 7th August 2011 based on the Board decision by CES Energy for the establishment of a CME to invest in the PoA. This could be considered as the earliest date at which the CME has committed to implement with the PoA. The length of the PoA is taken as 28 years [16].

The information presented in the PoA documents on the technical design is consistent with the actual planning and implementation of the project activity confirmed in the following ways:

- A review of data and information (see annex 2);
- An on-site visit to the place where the associated real case CPA is being implemented and interview with relevant stakeholder and personnel with knowledge of the project in attendance. In case of doubt, further cross checks through additional interviews were conducted. and
- A review of information related to similar projects or technologies which have been used if available to validate the accuracy and completeness of the project description.

In conclusion, TÜV SÜD confirms that the PoA project description, as included in the PoA-DD, is sufficiently accurate and complete in order to comply with the requirements of the CDM.

The closure of CARs/CRs/FARs/Stakeholder consultation performed in the validation cycle is reflected in the table below to comply with the requirement of §147 (c), VVS:

Subject	Web-hosted PoA-DD	Final PoA-DD	Assessment and reason of acceptance
PDD (project title / participants involved/ project location /project technology etc.)	Project boundary of PoA includes the countries Saudi Arabia, Oman, Egypt, UAE and Qatar.	Project boundary of PoA includes the countries Saudi Arabia, Oman, and Egypt.	CR 22 has been raised in the LoF table for PoA-DD. The Host countries of UAE and Qatar have been removed from the project boundary, as there would be difficulty in getting the Host country approvals before the end of 2012., when it was originally submitted to UNFCCC. The audit team has also conducted telephonic interviews with the respective representatives of host countries of Qatar and UAE and found that these two countries are still in the very early stage of conceptualization [#49]. This does not match with the timeline implementation of the PoA and hence the PP has withdrawn these two countries from the PoA boundary. Hence the final PoA-DD includes only the host countries of KSA, Oman and Egypt.
Methodologies and tools applied (scope and version)	AMS II.K version 02	AMS II.K version 02	No change in the methodology
CER calculations (formula applied/ amount of emission reduction)	CPA-DD : 10577 t CO ₂ e	CPA-DD : 6014 t CO ₂ e	CAR9 has been raised in the LoF table for CPA-DD. The change in the ER value is accepted since the NCV value applied has been corrected from 43 to 43.3 GJ/Tonne to reflect the value at the upper limit at the uncertainty at a 95% confidence interval as per the IPPC 2006 Guidelines (table 1.2) of chapter 1.
Additionality: (Benchmark / input values/ analysis type/ project start date/ IRR or NPV values etc.)	CAR 16 was raised as the additionality demonstration was not clear in the initial DD.	Latest guideline for additionality and eligibility criteria were used in the final PoA DD.	PP has revised the DD with new additionality argument and revised the eligibility criteria 3. PP has updated the DD with the latest available guidelines. PP has demonstrated the additionality argument in the revised DD and updated the CPA DD accordingly. Hence CAR 16 was closed out.
Template	VVM	VVS	The documents were revised as per latest VVS templates.

In opinion of TÜV SÜD the project description, as included in the PDD, is accurate and complete; and it provides a correct understanding of the proposed project activity. Further this also complies with the requirement mentioned in § 29 of VVS.

3.5 Application of the selected baseline and monitoring methodology

3.5.1 Applicability of the selected baseline and monitoring methodology

Compliance with each applicability condition as listed in the chosen baseline and monitoring methodology has been demonstrated.

The validation team assessed by checking the UNFCCC webpage that the baseline and monitoring methodology selected by the project participants are the valid versions of those approved by the Board.

Applicability criteria from AMS-II.K. version 02

1. This methodology applies to the installation of fossil fuel based co-generation or tri-generation facilities that simultaneously produce electricity and cooling (e.g., chilled water) and/or heating (e.g., steam or hot water) for supplying such energy to commercial, non-industrial, buildings.
2. The methodology is applicable to installation of new cogeneration or tri-generation systems that replace or supplement either: the operation of (a) existing systems that supply electricity (grid or on-site generation) and cooling (e.g., chillers) and/or heating systems (e.g., boilers) or (b) electricity and cooling and/or heating systems that would have been built and utilized.
3. The methodology does not apply to the replacement of existing co-generation or tri-generation systems
4. If it is identified that the baseline situation is the continued use of an existing system then the existing system must have been in operation for at least the immediately prior three years, to the start date of the project activity, in order to ensure that adequate baseline performance data are available.
5. This methodology only applies to commercial, non-industrial applications. Projects that comprise energy efficiency measures implemented through integration of a number of utility provisions (for example, integrating power, steam/heat and cooling systems) of an industrial facility cannot apply this methodology.
6. For the purpose of this methodology, natural gas is defined as a gas which consists primarily of methane and which is generated from (i) natural gas fields (non-associated gas), (ii) associated gas found in oil fields. It may be blended up to 1% on a volume basis with gas from other sources, such as, *inter alia*, biogas generated in biodigesters, gas from coal mines, gas which is gasified from solid fossil fuels
7. Any chilled water/cooling, steam/hot water/heat and electricity produced by the cogeneration or trigeneration system must be used on-site (within the project boundary) to meet all or part of the energy demand. Existing chillers, boilers, electrical heaters, electricity generating units, etc. may remain in operation after the implementation of the project activity to either (a) supply the balance of the demand not met by the cogeneration or trigeneration systems if the cogeneration or trigeneration system has insufficient capacity to supply the total energy demand and/or (b) provide backup to the cogeneration or trigeneration facilities. However, emission reductions can only be claimed for the cooling, heat and electricity produced by the new cogeneration or trigeneration system.
8. The energy savings caused by a single project activity may not exceed the equivalent of 60 GWh per year. A maximum saving of 60 GWh is equivalent to maximum savings of 60 GWh_e of electricity consumption or maximum savings of 180 GWh_{th} of fuel consumption, i.e., for calculation of maximum savings allowable per year, 1 GWh_e equals 3 GWh_{th}.
9. The project activity can include installation of cooling equipment which use refrigerants only if such refrigerants have no ozone depleting potential (ODP) and if such installation is not mandated by laws or regulations

10. In case the produced electricity, cooling and/or heat are delivered to a facility that is not owned or under the control of the project owner, a contract between the project owner and consumer of the energy must be in force, during the crediting period, specifying that only the facility generating the energy can claim CERs from the emissions displaced by the subject project.

Information from POA-DD:

1. SSC-CPAs to be included under the PoA shall consist of fossil fuel based co-generation or trigeneration facilities that will simultaneously produce electricity and cooling (eg. chilled water) and/or heating (eg., steam or hot water) to commercial and other non industrial buildings such as university campuses, hospitals and other institutional buildings.
2. SSC-CPAs to be included in the PoA involve the installation of new cogeneration or trigeneration systems that replace or supplement either: the operation of (a) existing systems that supply electricity (grid or onsite generation) and cooling (e.g. vapour compression chillers) and or heating systems (e.g hot water boilers) or (b) electricity and cooling and/or heating systems that would have otherwise been utilized.
3. No SSC –CPA shall involve the replacement of an existing co-generation or trigeneration system
4. The PoA caters for SSC – CPAs which install Cogeneration or trigeneration systems at sites in which an existing system has been operation and shall ensure that whenever this is the case, that the site's existing system must have been in operation for at least 3 years prior to the start date of the SSC-CPA. This to ensure that adequate baseline performance data from the existing system can be gathered if the baseline is to be considered the continued operation of the existing system.
5. The goal of the PoA is to deploy cogeneration / trigeneration systems for the provision of electricity, cooling and/or heat for use in non industrial buildings, such as shopping malls, hospitals, institutional buildings, campuses, hotels, to mention some.
6. SSC-CPAs under the PoA may involve cogeneration /Trigeneration systems at some point in the future that are run from natural gas obtained from gas mains. Natural gas used in the host countries covered by this PoA result from a combination of associated and non associated gas
7. Any chilled water/cooling, steam/hot water and electricity that is produced by the SSC-CPA will be used within the project boundary to meet either all or part of the building's energy demand. In certain cases, the SSC – CPAs cogeneration/regeneration system to be installed will not have sufficient capacity to meet the entire demand for power, cooling and heating. In such cases, equipment which existed prior the implementation of the SSC-CPA may a) continue to be used to supply the balance of the demand that cannot be met by the SSC CPA and/or b) provide back up to the cogeneration or trigeneration facilities. Emissions reductions shall only be claimed for the cooling, heat and electricity that is obtained from the SSC-CPA's cogeneration or trigeneration system.
8. All SCA-CPAs shall not exceed the referred maximum savings limit of 180 GWh_{th} of fuel consumption. For calculation of maximum savings allowable per year for any SSC-CPA, 1 GWH_e equals 3 GWH_{th}
9. SSC-CPAs shall involve the installation of absorption chillers using LiBr. The working fluid therefore does not have a ozone depleting potential. Trigeneration /cogeneration system may also include high efficiency electric chillers if such chillers are an integral part of the systems design. In such cases, the refrigerants that will used will have no ODP.
10. SSC-CPAs in which electricity, cooling and/or heat is delivered to an end using facility that is not owned or under the control of the CPA Implementer (the entity incurring in the investment in the project and who therefore needs the carbon revenue to overcome an

investment barrier) shall enter into a contract with the consumer, which shall remain in force during the crediting period, specifying that only the facility generating the energy can claim CERs from the emissions displaced by the SSC CPA.
<p>Assessment:</p> <p>The validator compared the actual text of the applicable version of the methodology with the information stated in the PoA-DD and CPA-DD. The assessment was carried out for each applicability criterion and included, among other checks, a compliance check of the PoA with the applicability conditions in regard to baseline setting and eligible project measures. This assessment also included the review of secondary sources such as published data to demonstrate the compliance with applicability conditions.</p> <p>During CPA inclusion these applicability criteria for respective CPA shall be validated using the eligibility criteria specified.</p> <p>Hence it is confirmed by the local and sectoral knowledge of the assessment team that the content of this document is correctly quoted and interpreted in the POA-DD.</p>
<p>Validation opinion:</p> <p>The documentation content is correctly quoted and interpreted in the POA-DD and CPA-DD.</p> <p>The applicability criterion is met by the project activity.</p>

TÜV SÜD confirms that the chosen baseline and monitoring methodology is applicable to the project activity.

3.5.2 Baseline scenario identification and description

TÜV SÜD did following steps to assess the requirements for baseline identification:

The PoA is a voluntary coordinated action as evident through the implementation plan as per the PoA-DD. Since the CPA is the installation of Trigeneration or cogeneration systems, either in new buildings or buildings that already exist, the baseline options for electricity, heating and cooling as per AMS II.K. ver.02 paragraph 12 are applicable.

The baseline scenario has been described in terms of combination of the following:

- A source of electricity, which is typically imported from the grid and/or produced by an onsite captive power plant
- A means of providing space cooling (e.g, chilled water) is produced in a vapour compression system driven by electricity
- A means of providing heat (eg. in the form of hot water or steam) which is produced using fossil fuel or electricity

There are 2 scenarios identified for the project activity, for which the baseline scenario is to be applied.

Scenario 1: CPA replaces systems that would have been built

Scenario 2: CPA replaces/supplements the operation of existing systems that supply electricity (grid or onsite generation) and cooling (eg. chillers) and/or heating systems (e.g hot water boilers).

The baseline scenario is as per the legal requirements/laws and the installation of project activity is not mandatory by any laws or requirements.

The information presented in the PoA-DD has been verified during the on-site visit. The sources referenced in the PoA-DD have been quoted correctly.

The baseline scenario in the respective host country has been validated based on the following documents from the leading consultants and manufacturer of conventional systems in the respective host countries. :

- Letter from Mott MacDonald Engineering Consultants. Kingdom of Saudi Arabia on common practices for generation of electricity, hot water and cooling in the Kingdom of Saudi Arabia [# 21].
- Letter from Dellap & Waller on common practices for generation of electricity, hot water and cooling in Oman [# 21, 24].
- Letter from CGroup (electro mechanical consultant) Engineering Consultancy on common practices for generation of electricity, hot water and cooling in Egypt [# 25].

The letters provided by these consultants are found credible as they are established players in the region. TÜV SÜD has determined that no reasonable alternative scenario has been excluded based on the regional expertise and interviews with these consultants.

Based on the validated assumptions used for project activity calculations, TÜV SÜD considers that the identified baseline scenario is reasonable.

Taking the definition of the baseline scenario into account, TÜV SÜD confirms that all relevant CDM requirements, including relevant and/or sectoral policies and circumstances, have been identified correctly in the project PoA-DD.

The sources referenced in the PoA-DD have been quoted correctly.

TÜV SÜD has determined that no reasonable alternative scenario has been excluded.

Based on the validated assumptions used for project activity calculations, TÜV SÜD can conclude that the identified baseline scenario is reasonable.

Taking the definition of the baseline scenario into account, TÜV SÜD cannot conclude yet that all relevant CDM requirements, including relevant and/or sectoral policies and circumstances, have been identified correctly in the PoA-DD.

A verifiable description of the baseline scenario has been included in the PoA-DD).

TÜV SÜD confirms the following statements:

- (a) All the assumptions and data used by the project participants are listed in the DDs, including their references and sources;
- (b) All documentation used is relevant for establishing the baseline scenario and correctly quoted and interpreted in the DDs;
- (c) Assumptions and data used in the identification of the baseline scenario are justified appropriately, supported by evidence, and can be deemed reasonable;
- (d) Relevant national and/or sectoral policies and circumstances are considered and listed in the POA-DD;
- (e) The approved baseline methodology has been correctly applied to identify the most reasonable baseline scenario, and the identified baseline scenario reasonably represents what would occur in the absence of the proposed CDM project activity.
- (f) The POA-DD provides a description of the identified baseline scenario, including a description of the technology that would be employed and/or the activities that would take place in the absence of the proposed project activity.

3.5.3 Algorithms and/or formulae used to determine emission reductions

TÜV SÜD has assessed the calculations of project emissions, baseline emissions, leakage, and emission reductions. Corresponding calculations have been carried out based on calculation spreadsheets. The parameters and equations presented in the POA-DD, as well as other applicable documents, have been compared with the information and requirements presented in the methodology and respective tools. An equation comparison has been made to ensure consistency between all the formulae presented in the calculation files and in the POA-DD, methodology, and tools.

The estimate of the baseline emissions are considered correct as the calculations have been reproduced by the audit team with the attainment of the same results.

The assumptions and data used to determine the emission reductions are listed in the POA-DD and all the sources have been reviewed.

TÜV SÜD confirms the following statements

- (a) All assumptions and data used by the project participants are listed in the POA-DD, including their references and sources;
- (b) All documentation used by project participants as the basis for assumptions and source of data is correctly quoted and interpreted in the POA-DD;
- (c) All values used in the POA-DD are considered reasonable in the context of the proposed project activity;
- (d) The baseline methodology and corresponding tool(s) have been applied correctly to calculate project emissions, baseline emissions, leakage and emission reductions;
- (e) All estimates of the baseline emissions can be replicated using the data and parameter values provided in the POA-DD;
- (f) Any estimates for monitored data or parameter are reasonable for estimating the emission reductions in the POA-DD.

3.6 Programme of activities / component project activities

3.6.1 Coordinating/managing entity and participants in a PoA

A clear and transparent description of the operational and management arrangement has been established by CES Carbon Services Ltd and stated in the PoA-DD. The CME is responsible for CPA-DDs development and inclusion of CPA's into the PoA, monitoring plan development and distribution of CER revenues with the implementers of CPA. The CPA implementer is responsible for construction, installation and maintenance of the individual projects along with monitoring.

The CME has developed a monitoring manual which clearly specifies the monitoring procedures and elaborates the operational and management plan of the PoA in detail. The management manual underlines clear roles and responsibilities for the personnel involved in monitoring and those involved in inclusion of CPAs [20]. The records of arrangements for training and capacity development for personnel and the competencies of the individuals are also presented. The procedures for technical review of inclusion of CPAs and measures for continuous improvements of the PoA management system are also included in the CME Monitoring manual. This has been verified by the audit team [20].

There is a record keeping system for each CPA under the PoA. The CPAs will follow the implementation plan. CES Carbon Services Ltd will be checking the records for each CPA before submission to the DOE [20].

The system to avoid double counting has been indicated in the PoA-DD. This will be done by the CME through credentials check and information available on UNFCCC website. Also, as each CPA will have a unique identification number and GPS coordinates in the host countries of Saudi Arabia, Oman and Egypt, thus it can be checked whether a CPA under the PoA already is a registered CDM project or CPA in another PoA from the UNFCCC website.

Provisions are in place to ensure that those operating the CPA are aware of and have agreed that their activity is being subscribed to the PoA. The agreement between CES Carbon Services Ltd and the CPA implementers ensure that those operating the CPA are aware of and have agreed that their activity is being subscribed to the PoA.

Hence the DOE confirms that the CME has the capacity and competencies to implement the monitoring plan as per the requirements of EB 70 Annex 5.

3.6.2 Eligibility Criteria for CPA

All the eligibility criteria required for the inclusion of the CPA under the PoA have been addressed in the CPA-DD. The stated confirmation against each eligibility criteria has been checked and found to be correct.

- The CPA is located in the city of Jeddah in the Kingdom of Saudi Arabia. The unique identification of the project site is through Latitude: 21.55583° and Longitude: 39.18194° [# 91].
- The starting date of the CPA is 1st April 2014, which is the expected date of issuance of purchase order of equipment related to CPA. The start date is after the GSP start date of 6th March 2012 [# 3].

The CPA is in compliance with the applied small scale methodology AMS.II.K. version 02 as required in eligibility criteria of PoA-DD. Each applicability criteria of the methodology has been assessed as per the PoA-DD.

Compliance with each applicability condition as listed in the chosen baseline and monitoring methodology AMS-II.K Version 02 has been demonstrated below:

1. PoA Consists CPAs involving fossil fuel based co-generation or trigeneration facilities that will simultaneously produce electricity and cooling and/or heating to commercial and other non industrial buildings such as university campuses, hospitals and other institutional buildings.
2. The CPA consists of a diesel fired trigeneration facility that will simultaneously produce electricity and cooling (chilled water) and heating (hot water) and supply to the Serafi Mega City building, The simplified schematic and CAD drawing showing the location of the proposed SSC CPA with respect to the Serafi Mega City building has been checked to confirm the criteria. The CPAs under the PoA would involve the installation of new cogeneration or trigeneration systems that replace or supplement either: the operation of (a) existing systems that supply electricity (grid or onsite generation) and cooling (e.g. vapour compression chillers) and or heating systems (e.g hot water boilers) or (b) electricity and cooling and/or heating systems that would have otherwise been utilized.

The CPA involves the installation of new trigeneration systems that replaces: the operation of (b) electricity and cooling and/or heating systems that would have otherwise been built and utilized The simplified schematic and CAD drawing showing the location of the proposed SSC CPA with respect to the Serafi Mega City building has been checked to confirm the criteria.

3. The PoA does not involve the replacement of an existing cogeneration or trigeneration system.

The CPA does not involve the replacement of an existing co-generation or trigeneration system

4. The PoA consists of CPAs which install Cogeneration or trigeneration systems at sites in which an existing system has been operation and shall ensure that whenever this is the case, that the site's existing system must have been in operation for at least 3 years prior to the start date of the SSC-CPA. This to ensure that adequate baseline performance data from the existing system can be gathered if the baseline is to be considered the continued operation of the existing system.

The CPA involves the installation of new trigeneration systems that replaces: the operation of (b) electricity and cooling and/or heating systems that would have otherwise been built and utilized. Hence this criteria is not applicable.

5. The goal of the PoA is to deploy cogeneration/trigeneration systems for the provision of electricity, cooling and/or heat for use in non industrial buildings, such as shopping malls, hospitals, institutional buildings, campuses and hotels.

The CPA consists of a diesel fired trigeneration facility that will simultaneously produce electricity and cooling (chilled water) and heating (hot water) and supply to the Serafi Mega City building, which is a non industrial building.

6. The CPA's under the PoA may involve cogeneration /Trigeneration systems at some point in the future that are run from natural gas obtained from gas mains. Natural gas used in the host countries covered by this PoA result from a combination of associated and non associated gas.

The CPA consists of a diesel fired trigeneration facility that will simultaneously produce electricity and cooling (chilled water) and heating (hot water) and supply to the Serafi Mega City building, Hence no natural gas is used. The criterion is not applicable.

7. Emissions reductions shall only be claimed for the cooling, heat and electricity that is obtained from the SSC-CPA's cogeneration or trigeneration system [# 4].

The chilled water/cooling, hot water and electricity that is produced by the proposed SSC-CPA will be used within the project boundary to meet the energy requirements of the Serafi Mega City building. Thus the emission reductions would be claimed only to the Trigeneration CPA.

8. The CPA follows the additionality check with the criteria specified in the PoA-DD based on investment analysis. The project IRR is less than the benchmark value. Hence the additionality of the CPA is demonstrated in line with the eligibility criteria as specified in the PoA-DD and is in line with EB 62 annex 5 requirements [# 42].
9. A local stakeholder consultation has been conducted at CPA level for this CPA and the comments from the stakeholders have been taken into account [# 54, 55, 56].
10. The CPA does not result in any diversion of ODA and the letter confirming the same has been checked by the audit team [# 70].
11. CES Carbon Services Ltd has entered into an agreement with the SSC CPA implementer, TES, whereby TES cedes the rights to claim CERs resulting from the implementation of the proposed SSC CPA. [# 18].
12. Energy savings calculations presented by the CME show that the estimated energy savings are 50 GWh/yr_{th} which is less than the small scale project activity threshold limit of 180 GWh/yr_{th} [# 79].
13. The Proposed SSC CPA involves the use of LiBr based absorption chillers, which have no Ozone Depleting Potential. The criteria is checked from the Cooling Equipment data sheets.
14. The proposed CPA involves generating and selling energy (power, cooling and heat) to the Serafi Mega City building. An agreement between the SSC CPA implementer (TES) and the owner of the Serafi Mega City building is in place, and ensures that only the owner of the trigeneration facility can claim the emissions reductions resulting from proposed SSC CPA.
15. The CPA satisfies the debundling rules for PoA's. This has been checked and found that there is no other registered SSC-CPA of a PoA, or an application to register another small-scale CPA of a PoA or another registered CDM project activity with the following characteristics:
 - a) The same project implementer as SSC-CPA.
 - b) The boundary is within 1 km of the boundary of the proposed SSC-CPA, at the closest point.
16. The proposed SSC CPA is neither registered nor seeking to be registered as an individual CDM project activity nor is part of another registered PoA. The information provided in the by the PP and the subsequent assessment of the information thereof, carried out in accordance

with doublecounting avoidance check as described in section A 4.4.1 (iii) of the PoA DD. This is also supported by written statement from the SSC CPA implementer (TES) and has been confirmed by the audit team.

In conclusion, TÜV SÜD confirms that the Serafi Mega City CPA complies with the eligibility criteria requirements set in the PoA-DD, methodology applicability criteria and also with EB 70 Annex 5 requirements.

In summary, the assessment team confirms that the management system allows the CME to easily check the features of any potential CPAs and ensures that each CPA meets all requirements and eligibility criteria before inclusion in the PoA. As a result, it can be confirmed that the requirements of the “Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities” with respect to the management system are fully met (IRL #16).

The managing entity employs clear and unambiguous criteria for the inclusion of the CPA. The eligibility criteria stated in the PoA-DD are verifiable with regards to the applicability of the applied methodology and EB 65 annex 3. Furthermore, the DOE confirms that the eligibility criteria are sufficiently objective and comprehensive to permit the assessment of the inclusion of CPAs in the PoA.

The eligibility criteria can be checked at the CPA level by the managing entity and can be confirmed by the DOE during inclusion.

Hence, TÜV SÜD considers that the eligibility criteria for inclusion of CPA in the PoA is demonstrated accurately in order to comply with the VVS §196.

3.6.3 CPA Design Document

The proposed specific CPA was assessed by the validation team and it can be confirmed that it complies with the eligibility criteria specified in the PoA-DD. Please refer to section 3.7.2 above for a detailed assessment of the compliance with the eligibility criteria.

The means of validation of the specific CPA include a desk review as well follow-up interviews and a site visit. Hence, the requirements of §187 and §188 are considered to be fully met.

3.6.4 Description of a PoA/CPA

The following description of the CDM programme activity as per CPA-DD was verified:

The project is developed under the Small-Scale Programme of Activities (PoA) titled “Advanced Energy Solutions for Buildings. Programme of Activities PoA”.

The CPA implementer is Total Energy Solutions. The CME for the PoA is CES Carbon Services Ltd.

The CPA 'Installation of a Tri Generation system supplying energy to the Serafi Mega City' aims to Serafi Mega City's power, space cooling and heat requirements in a more energy efficient and less carbon intensive way than a conventional system. The conventional system uses electricity from the grid, space cooling requirements from electrical driven chillers and hot water from electric heaters.. The CDM programme activities (CPAs) under the PoA will be implemented in the host country Kingdom of Saudi Arabia. The Trigeneration system consists of Diesel fired CHP engines and turbines to provide the site's electrical needs. Waste heat resulting from the power generation process is used to run Lithium Bromide (LiBr) based absorption chillers, which produce chilled water which in turn is used to meet space cooling requirements. A portion of the heat contained in the waste heat is extracted by means of heat exchangers to produce hot water. Heat is only generated in the power plant, and hot water produced by extracting waste heat from it (The diagram in figure 5 of the CPA DD refers to “Heat Exchanger” instead of “Heater” as was stated in the previous version of the CPA). The DOE confirms that the “heater” shown in the previous version is not a fossil fuel fired device.

There is no mandatory policy in the Kingdom of Saudi Arabia which mandates the installation of Trigenation or Cogeneration systems in commercial buildings. This has been confirmed based on the discussions with the officials of the Energy Department in Saudi Arabia [# 46]. A signed declaration by the SSC CPA implementer (TES) is provided confirming that the measure is a voluntary (non mandatory) one. The Feasibility Study Report which presents the design parameters of the CPA has been checked by the audit team [# 13].

The CPA is expected to result in an average annual emission reduction of **6,014 tCO₂e**. The CPA is privately funded by TES and receives no public funding. The starting date of the CPA is 1st April 2014, which is the expected date of issuance of purchase order of equipment related to CPA. The start date is after the GSP start date of 6th March 2012. The length of the CPA is taken as 7 years [# 18].

The audit team has assessed from UNFCCC website and on-site interviews that there is no other similar PoA or CDM project occurring in the CPA area.

The information presented in the CPA documents is consistent with the actual planning and implementation of the activity confirmed in the following ways:

(a) Document review including

- A review of data and information;
- Cross checks between information provided in the PoA-DD, CPA-DD and information from sources other than those used including the DOE's sectoral or local expertise. In addition, independent background investigations were performed.

(b) Follow-up actions including:

- Interviews with relevant stakeholders in the host country, personnel with knowledge of the PoA/CPA design and implementation;
- Cross checks between information provided by interviewed personnel (i.e. by checking sources or other interviews) to ensure that no relevant information has been omitted.

(c) Reference to available information relating to projects or technologies similar to the proposed PoA under validation;

It is TÜV SÜD's opinion that the project description, as included in the PoA-DD including the generic CPA-DDs and the specific CPA-DD, is accurate and complete; and it provides a correct understanding of the proposed programme and the specific CPA. After assessment of the PoA-DD including the generic CPA-DDs and the specific CPA-DD that was submitted to TÜV SÜD by the CME, the assessment team confirms the framework developed for the implementation of the PoA, and defining a CPA under the PoA as per VVS §189. For a more detailed assessment of the framework including CME and participants, physical/geographical boundary, technology/measures and public funding information please refer to the sections below.

3.6.5 Application of Multiple Methodologies

Not Applicable

3.6.6 Boundary for the PoA in terms of geographical area

The CPA boundary was assessed considering information gathered from the physical site inspection, interviews, and secondary evidence received on the design of the CPA. The information includes the location of the CPA, GPS coordinates and feedback from the stakeholders regarding the Trigenation project.

The project boundary encompasses the physical site of the facility, which is the Serafi Mega City energy centre where the cogeneration or trigeneration system is being implemented and the facility

or facilities consuming the energy generated by it. TÜV SÜD confirms that the identified boundary, the selected sources, and gases as documented in the CPA-DD are justified for the CPA and are fully in line with the requirements set by the applied methodology. Therefore, the audit team confirms that the identified boundary, the selected sources, and gases as documented in the PoA-DD are justified for the proposed PoA (including the generic and specific CPA) and are fully in line with the requirements set by the applied methodology and the PoA-DD as per VVS §87. Furthermore, it can be confirmed that the boundary of the specific CPA is correctly identified and in line with the underlying requirements. It can also be confirmed that the sources and gases included in the specific CPA boundary are in accordance with the above.

Emission sources, not addressed by the applied methodology and expected to contribute more than 1% of the overall expected average annual emission reductions, have not been identified.

Hence, TÜV SÜD confirms that the boundary for the PoA in terms of geographical area is accurately selected and complete in order to comply with the VVS (§§191-192).

3.6.7 Start Date of a PoA / CPA

The starting date of the PoA is 6th March 2012 based on the date of submission of PoA for Global Stakeholder Consultation process. This could be considered as the earliest date at which the CME has committed to implement with the PoA. The length of the PoA is taken as 28 years [# 16].

The starting date of the CPA is 1st April 2014, which is the expected date of issuance of purchase order of equipment related to CPA. The CPA start date is after the GSP start date of 6th March 2012. The length of the CPA is taken as 7 years [# 18].

In addition the assessment team further confirms that the start date of the CPA is not prior to the commencement of the validation of the PoA.

Hence, it can be confirmed that the start date of the specific CPA is not prior to the start date of the CDM-PoA. As a result, it can be confirmed that the requirements of VVS §193 are met.

3.6.8 Prior Consideration of the CDM

The starting date of the PoA is 6th March 2012 based on the date of submission of PoA for Global Stakeholder Consultation process. This could be considered as the earliest date at which the CME has committed to implement with the PoA. CES Energy set up the CME, which is CES Carbon Services Ltd, to manage and roll out the PoA. The role of CES Energy in the PoA is primarily to provide the necessary technical support to address the technical issues and also to ensure compliance with the eligibility and applicability criteria. The length of the PoA is taken as 28 years [# 16].

According to EB 60, annex 26 and VVS §194, the demonstration and assessment of prior consideration of the CDM does not apply to PoAs.

3.7 Additionality

3.7.1 Demonstration of additionality of the PoA as a whole

The additionality of the programme has been presented in section A.4.3 of the PoA-DD. The approach used in the PoA-DD has been assessed initially through the document review followed by on-site discussions. Finally, the data, rationales, assumptions, justifications, and documentation provided have been verified using local knowledge as well as sectoral and financial expertise.

The additionality shall always be demonstrated in accordance to EB 68 Annex 27. Guidelines on the Demonstration of additionality of small scale project activities. (Version 09.0) that the proposed SSC CPA wouldn't have been implemented due to an investment barrier, and that a financially more viable alternative to project activity that would have led to higher emissions. No other barriers shall be used to assess and demonstrate additionality. The approaches applied to assess and

demonstrate the additionality of SSC CPAs corresponding to each of such project scenario types is described below, referring to the relevant substeps of Step 2: Investment analysis of the Tool for the demonstration and assessment of additionality (Version 07.0.0).

3.7.2 Approach for demonstrating CPA additionality

Project Scenario Type 1: CPAs involve the installation of a trigeneration system in a new building.

There are two business modalities that will be applied by CME to introduce trigeneration systems in new buildings under the PoA:

1. ESCO, third party modality.

Under this modality, the CPA Implementer is a third party and undertakes the investment in the cogeneration or trigeneration system and incurs in the ongoing cost of operating it. The CPA implementer sells electricity, chilled water and heat in the form of hot water and/or steam to the users and charges a rate for providing these to the consumers. In other words the implementer becomes a building energy and utilities supplier. The CPA Implementer, eg ESCO, technology supplier, etc. in these cases has the option to choose whether to make such an investment or not. Therefore, in accordance to the “Guidelines on the assessment of the investment analysis” EB 62, Annex 5, Version 05, paragraph 13 the appropriate investment analysis method is a Benchmark Approach. The framework approach for the benchmark analysis has been provided by the PP and was validated by the DOE in the sections below.

If the Project IRR is less than the benchmark value determined in each future CPA (WACC approach), then the proposed SSC CPA is deemed not to be most financially attractive option for an investor to pursue.

2. Engineering Procurement and Construction (EPC modality)

Under this modality, the investment in the Cogeneration or Trigeneration system is made by an entity that has a stake in the operation and maintenance of the building once it has been commissioned. In the absence of the CDM the building would have been fitted with a conventional, more carbon intensive system to meet its electrical, cooling and heating requirements. In other words an investment would have been made anyhow.

In this case the investment is made by an entity who has a stake in the building's operation once it has been commissioned and is responsible for sourcing of energy and meeting the building's requirements for space cooling and heat. In the absence of the SSC CPA involves an investment being made by the entity who will be ultimately responsible for running the building's energy facilities and ensuring that its electricity, cooling and heating requirements are met. In this case, the SSC-CPA implementer has to make an investment anyway in a system to provide the same services, i.e. electricity, cooling and heating in the building. The SSC CPA implementer in this case opts for the building solution that enables the building's electrical, cooling and heating loads to be met at the lowest cost (taking into account the total costs associated with the project, including capex, fuel, energy and O&M costs).

Hence as per paragraph 19 of the “Guidelines on the assessment of investment analysis an investment comparison analysis is a suitable approach to be applied in such cases, the chosen financial indicator is the Net Present Value of the total costs. If there is a viable alternative to the proposed CPA that has less NPV costs than the other alternative, then the proposed project activity is deemed to be not the most financially attractive alternative.

Project Scenario Type 2: The Trigeneration system that is to be installed replaces/supplements the operation of systems that supply electricity (grid or onsite generation) and cooling (eg. chillers) and/or heating systems (e.g hot water boilers) to consumers in an existing building.

1. ESCO, third party modality.

Under this modality, the CPA Implementer is a third party and undertakes the investment in the cogeneration or trigeneration system and incurs in the ongoing cost of operating it. The CPA implementer sells electricity, chilled water and heat in the form of hot water and/or steam to the users and charges a rate for providing these to the consumers. In other words the implementer becomes a building energy and utilities supplier. The CPA Implementer, eg ESCO, technology supplier, etc. in these cases has the option to choose whether to make such an investment or not. Therefore, in accordance to the “Guidelines on the assessment of the investment analysis” EB 62, Annex 5, Version 05, paragraph 13 the appropriate investment analysis method is a Benchmark Approach.

If the Project IRR is less than the benchmark, then the proposed SSC CPA is deemed not to be most financially attractive option for an investor to pursue.

2. Engineering Procurement and Construction (EPC modality)

Under this modality, the investment in the Cogeneration or Trigenation system is made by an entity that has a stake in the operation and maintenance of the building once it has been commissioned. The CPA implementer has 2 options

1. Keep the existing system in operation
2. Replace the existing system with one which reflects common practice in the market

In this case additionality is assessed by comparing the NPV of the total costs of the proposed project activity with that of an alternative. If the NPV of the total costs of such alternative is less than that of the project activity and that this same conclusion holds for realistic variations in the key parameters that influence the NPV of the costs, then the proposed SSC CPA is deemed additional.

It follows from the above discussion that there are two financial indicators that can be applied to assess and demonstrate additionality depending on the business modality involved, i.e. whether:

- a. the entity that aims to implement the SSC CPA has the choice to make an investment in a system to provide electricity, cooling and heat to a building or not to do so, or
- b. the entity that aims to implement the SSC CPA must either
 - incur in an ongoing expenditure to either keep an existing system running
 - make an investment anyhow and install a new system, be it in a building that is yet to be built or one that already exists.

In other words, the SSC CPA Implementer has no option but to incur in an expenditure to provide the electricity, cooling and heat that the building needs. The calculation of the financial indicators and relevant benchmarks /discount factors for each of the two approaches as per Sub-step 2c of the Tool for the demonstration and assessment of addtionality (Version 07.0.0) are described below.

The investment analysis would be demonstrated at CPA level but the PP has provided a framework of the parameters to be assessed for the investment analysis in the PoA-DD. The benchmark calculation and investment analysis parameters will be in line with the 'Guidelines on the Assessment of Investment Analysis' EB 62 Annex 5.

The PoA-DD presents a framework for the calculation of benchmark for different kinds of projects, where as the Benchmark would be applied on the basis of CPA.

The Benchmark has been determined considering an analysis based on the Weighted Average Capital Cost (WACC), which is based on the guidance provided in EB 62 Annex 5- Guidelines for Investment analysis. WACC considers the cost of debt and cost of equity as its main parameters. Cost of equity would be calculated based on Capital Asset Pricing Model (CAPM).

The PoA-DD has provided a clear approach on the calculation of pre tax Weighted Average Capital Cost (WACC) benchmark. The pre tax IRR would be compared with pre tax benchmark. The CAPM is widely used to determine a theoretically appropriate required rate of return of an asset, and its

model takes into account the expected return of a theoretical risk-free asset (R_f), the asset's sensitivity to non-diversifiable risk (also known as systematic risk or market risk) represented by Beta (β), the expected risk premium of the market, size premium and the country risk. The parameters used to determine the WACC Benchmark have been validated as per the table below:

Parameter	Source / Cross-check	Auditor Conclusion
Risk-free rate of return	Long-term government bond rate U.S http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yieldYear&year=2010 [#44]	☑ Verified from the weblink of the US long term bond rate, which is considered as a risk free rate. This value could be taken for risk free rate, as per the guidance provided in EB 62 annex 5.
Beta (unlevered)	Total Beta (Unlevered) from Damadoran (Stern Univerisity); most recent before investment decision and for the Engineering and construction sector: http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/totalbeta.html [#45]	☑ Verified from the Beta calculations by Damodaran Stern University link.
Total risk premium	The total risk premium includes an Equity Risk Premium and a Country Risk Premium: http://pages.stern.nyu.edu/~adamodar/	☑ Verified from the Beta calculations by Damodaran Stern University link.
Size Premium	Investors risk when involved in a small project: Ibbotson SBBI 2009 Valuation Yearbook, Chapter 7 [#46]	☑ Verified from the Ibbotson SBBI 2009 book. This is deemed to be an appropriate as the document. The PP proposes to apply the size premium corresponding to smallest 10% of companies in the US stock exchanges given in the most recent publication of the SBBI Ibbotson Valuation Year book. In so doing it is being conservative because the risk premium values is drawn from a more mature and lower risk market (US market) than the

		host country (developing country) where the CPA is to be implemented.
Cost of Debt	Based on Commercial lending rate in the host country	<input checked="" type="checkbox"/> The cost of debt could be taken based on the Commercial lending rate in the host country. This approach has been verified from EB 62 Annex 5 guidelines.
Cost of Equity	Calculation based on the above parameters	<input checked="" type="checkbox"/> The cost of equity is calculated based on the cost of debt, equity rate and the calculation approach has been verified from EB 62 Annex 5 guidelines.

The benchmark applicable at the time of CPA investment decision shall be validated which has been identified by the CME as pre-tax Weighted Average Cost of Capital (WACC). This framework approach will then be valid for all new CPAs during the PoA crediting period. The sources used to determine the value for parameters used in determination of the Project Pre Tax IRR have been defined. The PP considers that any CPA applying investment benchmark analysis is now limited by a framework, defined by a single Benchmark Type (Pre Tax WACC) and defined by a Project Pre Tax based IRR in which the sources for the values for the various parameters considered are restricted to the source options as per the PoA DD. The eligibility criteria has also been revised to underscore that the parameters and sources for their values shall be those described for the Project Pre tax IRR and Pre Tax WACC).

A CPA implementer determines exactly one benchmark, which is in line with his expected returns and with EB 62 Annex 5- Guidelines for Investment analysis. The framework parameters have been assessed by the audit team and are deemed to be appropriate.

Sensitivity Analysis:

The sensitivity analysis framework has been defined in the PoA-DD for the 2 project scenarios. The parameters like investment costs, operation and maintenance costs, electricity and fuel costs would be subjected to (+/-) 10% variation in each CPA.

If the NPV of the total costs of the proposed SSC CPA in the sensitivity analysis is less than the NPV of the costs associated with the operation of the existing system while altering one the 3 parameters (investment costs, operation and maintenance costs, electricity and fuel costs), the SSC CPA implementer shall provide evidence that this scenario is unlikely to occur. If insufficient proof is provided, the SSC-CPA will be considered non-additional. Otherwise the CPA shall be deemed additional.

The DOE confirms that this approach is deemed correct.

3.7.3 Demonstration of CPA additionality

The CPA falls under Project Scenario Type 1 : ESCO modality

TES undertakes the investment in a trigeneration system in a building that has yet to be built and incurs in the ongoing cost of operating it. TES sells electricity, chilled water and heat in the form of hot water to the site's consumers. TES has the option to choose whether to make such an investment or not. Hence, as described in section E.5.1 of the PoA DD a Benchmark Approach is appropriate under such circumstances.

Additionality for the proposed CPA has been chosen to be demonstrated by calculating the project IRR, on a Pre Tax basis, and by showing first that the resulting IRR is below the benchmark, and that hence the proposed SSC-CPA is not a financially attractive option, and second, that variations in the values of key parameters that impact the project IRR that would lead to the IRR reaching benchmark are unlikely to materialise. The investment analysis has been demonstrated at CPA level but the PP has provided a framework of the parameters to be assessed for the investment analysis in the PoA-DD. The benchmark calculation and investment analysis parameters are in line with the 'Guidelines on the Assessment of Investment Analysis' EB 62 Annex 5.

The pre tax IRR of 7.65% and all the input values used in the calculation have been validated as per the table below:

Description	Source / Cross-check	Auditor Conclusion
Investment decision date	Minutes of Board Meeting dated 01/09/2011 [11]	<input checked="" type="checkbox"/> Verified from the Minutes of Board Meeting.
Technical lifetime	CIBSE guidance document [92]	<input checked="" type="checkbox"/> Verified from the CIBSE guidance (Guidance for the lifetime of absorption chillers) document which is a manufacturer specification document. This specifies the technical lifetime of chillers(as it is the main item of the plant equipment). The document could be accepted as a source as it is the specification manual related to equipments.
Total amount of electricity sold	Serafi Financial Model, Confirmation letter for the input values in the financial model [77, 89]	<input checked="" type="checkbox"/> Checked and verified from the Serafi Financial Models, which are the internal source for CES for the Feasibility Study Report. These values were applicable at the time of investment decision, as per EB 62 Annex 5, paragraph 6. This has also been cross checked based on the third party confirmation (Mott MacDonald) letter. This letter is considered as authentic since this is from the leading consultants and manufacturer of conventional systems in Sau-

Description	Source / Cross-check	Auditor Conclusion
		<p>di Arabia.</p> <p>The DOE based on its local and sectoral expertise confirms that MMTM is a highly reputed and experienced engineering and consultancy firm which is involved in developing a number of projects in Saudi Arabia and the region and in which electricity, cooling and heat loads need to be determined.</p> <p>References to such projects can be found in the company's website (http://www.turkimottmac.com/urban%20Development.html) from which two major local projects are referenced.</p>
Total amount of cooling sold	Serafi Financial Model, Confirmation letter for the input values in the financial model [77, 89]	<p><input checked="" type="checkbox"/></p> <p>Checked and verified from the Serafi Financial Models, which are the internal source for CES for the Feasibility Study Report. These values were applicable at the time of investment decision, as per EB 62 Annex 5, paragraph 6. This has also been cross checked based on the third party confirmation letter. This letter is considered as authentic since this is from the leading consultants and manufacturer of conventional systems in Saudi Arabia.</p> <p>The DOE based on its local and sectoral expertise confirms that MMTM is a highly reputed and experienced engineering and consultancy firm which has and continues to develop a number of projects in Saudi Arabia and the region and in which electricity, cooling and heat loads need to be determined.</p> <p>References to such projects can be found in the company's website (http://www.turkimottmac.com/urban%20Development.html) from which two major local projects are referenced.</p>
Total amount of heat sold	Serafi Financial Model, Confirmation letter for the input	<p><input checked="" type="checkbox"/></p> <p>Checked and verified from the</p>

Description	Source / Cross-check	Auditor Conclusion
	values in the financial model [77, 89]	<p>Serafi Financial Models, which are the internal source for CES for the Feasibility Study Report. These values were applicable at the time of investment decision, as per EB 62 Annex 5, paragraph 6. This has also been cross checked based on the third party confirmation (Mott MacDonald) letter. This letter is considered as authentic since this is from the leading consultants and manufacturer of conventional systems in Saudi Arabia.</p> <p>The DOE based on its local and sectoral expertise confirms that MMTM is a highly reputed and experienced engineering and consultancy firm which has and continues to develop a number of projects in Saudi Arabia and the region and in which electricity, cooling and heat loads need to be determined.</p> <p>References to such projects can be found in the company's website (http://www.turkimottmac.com/urban%20Development.html) from which two major local projects are referenced.</p>
Electricity tariff	0.26 SAR t/kWh SEC rate that would have had to be paid for sourcing power from the grid. [61]	<input checked="" type="checkbox"/> Checked and verified from the Kingdom of Saudi Arabia electricity tariff rate. The same is in line with paragraphs 120, 121 of VVS.
Cooling Tariff	0.19 SAR/kWh Cooling supply agreement between the supplier and the offtaker [62]	<input checked="" type="checkbox"/> Checked and verified from Cooling supply agreement between the supplier and the offtaker. The same is in line with paragraphs 120, 121 of VVS.
Heat Tariff	0.26 SAR/kWh Heat supply agreement between the supplier and the offtaker [63]	<input checked="" type="checkbox"/> Checked and verified from heat supply agreement between the supplier and the offtaker. The same is in line with paragraphs 120, 121 of VVS.
Fuel price	0.02394 SAR /kWh Diesel invoices [68]	<input checked="" type="checkbox"/>

Description	Source / Cross-check	Auditor Conclusion
		Checked and verified from the diesel invoices. The same is in line with paragraphs 120, 121 of VVS.
Water rate	6 SAR/m3 Supply agreements [67]	<input checked="" type="checkbox"/> Checked and verified from the standard water rates in KSA and the supply agreement. The same is in line with paragraphs 120, 121 of VVS.
Tax rate	Corporate Tax rate (20%) in Kingdom of Saudi Arabia [69]	<input checked="" type="checkbox"/> Checked and verified from the corporate tax rate. The same is in line with paragraphs 120, 121 of VVS.
Total investments	82,254,097 USD as per Feasibility Study Report and Financial Model [12, 77, 89] Individual costs as per respective quotations. [IRL 57-60]	<input checked="" type="checkbox"/> The audit team has assessed the total investment costs based on the individual costs of the following items in the financial model: <ol style="list-style-type: none"> 1. Detailed Engineering Design 2. Diesel Turbines and Reciprocating diesel fired engines 3. Turbine exhaust fired absorption chillers (double effect) and absorption chillers - engines (Single effect) 4. Cooling towers 6. Pumps & Speed Drives 7. Mechanical and Electrical integration 8. Grid connection Checked and verified from the Serafi Financial Models which are the internal source for CES for the Feasibility Study Report. This has also been cross checked based on the third party confirmation letter. The same is in line with paragraphs 120, 121 of VVS.
Annual Operation & Maintenance cost	11,295,402, which includes Fuel cost: 3,253,723 USD/year Makeup Water: 1,377,088 USD/year USD /year as per Feasibility Study Report and Financial Model [12, 77]	<input checked="" type="checkbox"/> Checked and verified from the Serafi Financial Models and FSR. The same is in line with paragraphs 120, 121 of VVS.
Insurance	0.55 % of Capex p.a.	<input checked="" type="checkbox"/> Checked and verified from the

Description	Source / Cross-check	Auditor Conclusion
		Serafi Financial Models and FSR. The same is in line with paragraphs 120, 121 of VVS.
Residual value	6,250,689 USD based on Project developer's estimate	<input checked="" type="checkbox"/> Checked and verified. For the purpose of determining the residual value used to assess and demonstrate additionality, trigeneration project can be considered to be similar to that of a power generation project. Residual values for power generation projects vary but 10% is a value that is common. Although the value applied in the IRR analysis is somewhat lower than this it shall be noted that even if instead of 10% such value were to be 15% of the initial investment, the IRR values under each of the scenarios considered as part of the sensitivity analysis would always be below the benchmark. Moreover, if instead of 15%, the residual value were 50% of the initial capex investment, which is impossible for equipment that is 20 years old, the IRR of the project would still be below the benchmark under each of the scenarios considered in the sensitivity analysis. The same is in line with paragraphs 120, 121 of VVS.

The PoA-DD presents a framework for the calculation of benchmark for different kinds of projects, where as the Benchmark would be applied on the basis of CPA.

The Benchmark has been determined considering an analysis based on the Weighted Average Capital Cost (WACC), which is based on the guidance provided in EB 62 Annex 5- Guidelines for Investment analysis. WACC considers the cost of debt and cost of equity as its main parameters. Cost of equity would be calculated based on Capital Asset Pricing Model (CAPM).

The PoA-DD has provided a clear approach on the calculation of pre or post tax Weighted Average Capital Cost (WACC) benchmark. The pre tax IRR of 7.65% has been compared with pre tax WACC benchmark of 26.54%. The CAPM is widely used to determine a theoretically appropriate required rate of return of an asset, and its model takes into account the expected return of a theoretical risk-

* See Page 3 of the document on depreciation for power generation projects at the following link:
<http://cercind.gov.in/discussion1.pdf>

free asset (R_f), the asset's sensitivity to non-diversifiable risk (also known as systematic risk or market risk) represented by Beta (β), the expected risk premium of the market and the country risk. The parameters used to determine the WACC Benchmark have been validated as per the table below:

Parameter	Source / Cross-check	Auditor Conclusion
Risk-free rate of return	3.92 Long-term government bond rate U.S http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yieldYear&year=2010 [#44]	<input checked="" type="checkbox"/> Verified from the weblink of the US long term bond rate, which is considered as a risk free rate. This value could be taken for risk free rate, as per the guidance provided in p.16, EB 62 annex 5.
Beta (unlevered)	3.13 Total Beta (Unlevered) from Damadoran (Stern Univerisity); most recent before investment decision and for the Engineering and construction sector: http://pages.stern.nyu.edu/~adamodar/New_Home_Page/datafile/totalbeta.html [#45]	<input checked="" type="checkbox"/> Verified from the Beta calculations by Damodaran Stern University link.
Total risk premium	5.85 The total risk premium includes an Equity Risk Premium and a Country Risk Premium: http://pages.stern.nyu.edu/~adamodar/	<input checked="" type="checkbox"/> Verified from the Beta calculations by Damodaran Stern University link.
Size Premium	The value is zero for this project. Investors risk when involved in a small project: Ibbotson SBBI 2009 Valuation Yearbook, Chapter 7 [#46]	<input checked="" type="checkbox"/> Verified from the Ibbotson SBBI 2009 book. This is deemed to be an appropriate as the document. The PP proposes to apply the size premium corresponding to smallest 10% of companies in the US stock exchanges given in the most recent publication of the SBBI Ibbotson Valuation Year book. In so doing it is being conservative because the risk premium values is drawn from a more mature and lower risk mar-

		ket (US market) than the host country (developing country) where the CPA is to be implemented.
Cost of Debt	Based on 7% Commercial lending rate in KSA [23]	<input checked="" type="checkbox"/> Approach verified from EB 62 Annex 5 appendix 1 guidelines
Tax Rate	20% as per KSA corporate tax rate	<input checked="" type="checkbox"/> Checked and verified from the corporate tax rate of KSA, which is a publicly available source [IRL 26].
Debt-Equity ratio	1.0	<input checked="" type="checkbox"/> Checked and verified.

The benchmark applicable at the time of CPA investment decision shall be validated which has been identified by the CME as pre-tax Weighted Average Cost of Capital (WACC). This framework approach will then be valid for all new CPAs during the PoA crediting period. A CPA implementer determines exactly one benchmark, which is in line with his expected returns and with EB 62 Annex 5 Guidelines for Investment analysis. The framework parameters have been assessed by the audit team and are deemed to be appropriate.

The procedure and the data used for the calculation of project IRR of 7.65 % has been verified by the DOE and are done in accordance to the "Guidelines on the Assessment of Investment Analysis".

Sensitivity analysis: The Guidelines on assessment of investment analysis requires the robustness of the conclusion arrived at to be proved through a sensitivity analysis by varying the critical assumptions to a reasonable variation ($\pm 10\%$). The project developer has identified Investment, O&M cost and Revenue as the critical parameters since these parameters are more likely to vary during the course of the CPA, which are in accordance with p.21 of EB 62 annex 5.

Base case		7.65 %		
Benchmark		26.54 %		
		Decrease	Increase	
Variable	Para- meter	10%	10%	Comments
Investment		9.06 %	5.85%	IRR is less than the benchmark value for a variation of (± 10%) investment costs.
O&M expenses		9.40 %	3.53%	IRR is less than the benchmark value for a variation of (± 10%) O&M ex- penses.
Revenue		--	10.59%	IRR is less than the benchmark value for a variation of (+10%) revenue. The

			decrease in the revenue is not appropriate and result in negative IRR.
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Taking into account the description of the validation of the barriers presented above, the assessment team can confirm with reasonable certainty that the investment barrier is credible and correctly presented to demonstrate the additionality of the project, in line with p.118-122 of VVS.

3.8 Monitoring

3.8.1 Monitoring plan for a PoA

The monitoring plan for parameters included in section E.7.1 will be implemented for each SSC-CPA with assistance from the coordinating entity as follows:

- SSC-CPA owner will implement each SSC-CPA individually and monitor and record all parameters included in section E.7.1.
- The coordinating entity will provide guidance to SSC-CPA owner on how monitoring should be conducted and data should be collected in regards to emission reductions calculation.
- The SSC-CPA owners will provide data on monitored parameters included in section E.7.1 to the coordinating entity.
- The coordinating entity will document and store all parameters included in section E.7.1 provided by SSC-CPA owners in an electronic database, while primary data will be stored by SSC-CPA owner

The operational and management structure has been clearly described and is in compliance with the envisioned situation. The responsibilities and institutional arrangements for data collection and archiving have been clearly provided. The information provided in the PoA-DD could be confirmed based on the on-site interviews and also through the submitted documentary evidence – management system (IRL 76). Hence it could be confirmed that the PP would be able to implement the monitoring plan as per the methodology and the reporting requirement as per VVS para 133 and 198.

3.8.2 Monitoring plan for a CPA

The monitoring plan presented in the specific CPA-DD complies with the requirements of the generic CPA-DDs and the applicable methodology. The assessment team has verified all parameters in the monitoring plan against the requirements of the methodology and no deviations have been found. The procedures have been reviewed by the assessment team through document review and interviews with the relevant personnel. The information provided has allowed the assessment team to confirm that the proposed monitoring plan is feasible within the project design. The relevant points of monitoring plan have been discussed with the CME and the CPA implementer. Specifically, these points include the monitoring methodology, data management, quality assurance and quality control procedures to be implemented in the context of the activity.

The parameters that are to be monitored ex-post are:

$E_{Grid,y}$ - Amount of captive electricity displaced by project in year y

$C_{P,i,y}$ - Cooling output of the baseline chiller i displaced as a result of the installation of project activity in year y

$m_{C,i,h}$ - The chilled water mass flow-rate for chiller(s) i produced by project in hour h of year y

$T_{C,i,h}$ - Differential temperature for chiller(s) i in hour h of year y of incoming and outgoing water from project

$m_{H,i,h}$ - The water mass flow-rate from heater unit(s) i in year y

$T_{H,i,h}$ - Differential temperature of incoming and outgoing water from heater unit i

Quantity of fossil fuel/electricity consumed by the equipment (e.g., chiller, heater, boiler) which remain operational during the project activity during the year y

Quantity of electricity consumed by the project electricity consumption source j in year y

NCV_{i,y}- Weighted average net calorific value of fuel type i in year y. The value of 43 GJ/Tonne would be applied in the CPA-DD based on the IPCC default values for NCV of diesel, as per the option (d) of the data source provided in the PoA-DD. This option would be used since the Values are not usually provided by fuel suppliers in invoices as per option (a). Hence the same is in line with the PoA-DD.

EFCO_{2 i,y}- Weighted average CO₂ emissions factor of diesel i in year y. The value of 0.0741 tCO₂/GJ would be applied in the CPA-DD based on the IPCC default values for NCV of diesel, as per the option (d) of the data source provided in the PoA-DD. This option would be used since the Values are not usually provided by fuel suppliers in invoices as per option (a). Hence the same is in line with the PoA-DD.

The entity responsible for monitoring, which is the CPA implementer, will provide the verifying DOE with meter readings for electricity, cooling and heat delivered and calibration certificates. The data management, quality assurance and quality control procedures are sufficient to ensure that the emission reductions achieved by the project activity can be reported ex post and verified. Hence it is expected that the PPs will be able to implement the monitoring plan and the emission reductions achieved can be reported ex-post and verified. It can be confirmed that the parameter that is determined ex-post is correctly presented and is considered to be in accordance with the applied methodology and the applied tool. Therefore, the CPA implementer will be able to implement the monitoring plan and the achieved emission reductions can be reported ex-ante and verified as per para 198 of VVS.

3.8.3 Sampling

Not applicable.

3.9 Environmental impact analysis

It has been indicated in the PoA-DD that the environmental analysis will be done at CPA level. The Environmental impacts of each CPA would be assessed at CPA level as per EB 70 annex 5 guidance.

As per the Host Party regulations of KSA, an environmental impact assessment is not required at an early stage of development of the CPA , [# 83].

Hence the requirement of VVS para 199 has been met.

3.10 Local stakeholder consultation

It has been indicated in the PoA-DD that the local stakeholder consultation would be done at the CPA level. The documentation and the comments from stakeholders would be assessed at CPA level as per EB 70 annex 5 guidance.

The Stakeholder Consultations were done at the CPA level on 22nd January 2012. The CPA implementer has identified local residents, technology suppliers and consultants as possible affected individuals from whom comments have to be invited. The audit team has checked the invitation letters and the comments received from the stakeholders. There are no negative comments regarding the CPA from the local stakeholders [# 54, 55, 56].

The assessment team has reviewed the documentation in order to validate the inclusion of relevant stakeholders. The local expertise of the assessment team confirmed that the communication method used to invite the stakeholders is appropriate and ensures transparency and the unbiased representation of the project information. The summary of comments presented in the CPA-DD has

been verified with the documentation of the stakeholder consultation and has been found to be complete.

Comments presented by the local stakeholders have been taken into account by the managing entity and has been verified with information obtained during on-site interviews.

As a result, it can be confirmed that the local stakeholder consultation is in accordance with the level of consultation specified by the managing entity and that the local stakeholder comments were taken into account and described in the CDM-PoA-DD and the CDM-CPA-DD (i.e §201 and §202).

3.11 Determination of occurrences of debundling under a PoA

As per para 203 of VVS, DoE has checked that the proposed small-scale CPA of a PoA is not a debundled component of a large-scale project activity in accordance with the “Guidelines on assessment of debundling for SSC project activities”.

Annex 1

List of Findings

List of Findings: CDM-PoA-DD

Programme (PoA) Title: Advanced Energy Solutions for Buildings. Programme of Activities (PoA)



Table 2 Resolution of Clarification and Corrective Action Requests

Corrective Action Requests/ Clarification Requests by audit team			
	Comments and Results	Ref	Conclusion and IRL
CAR	<u>Corrective Action Request No.1.</u> PP shall elaborate how much energy efficient services the CPA's covered under the PoA could provide when compared to the conventional systems.	A.2.1	<input checked="" type="checkbox"/> 33, 34
Response	Additional discussion has been presented in section A.4.2.1 of the PoA DD to describe in more detail the systems to be introduced by the PoA and the typical efficiencies they achieve compared to conventional alternatives		
Assessment	It has been mentioned in the revised PoA-DD that the Trigeneration systems could achieve 90% efficiency when compared to the conventional systems which is 35% only. Relevant references/sources need to be indicated to substantiate this discussion.		
Response	<p>The following industry references substantiate the statement made in the PoA DD that efficiencies of up to 90% can be achieved, compared to for example, efficiencies of 33% attained by conventional systems:</p> <p>Source 1.Miraclei LLC</p> <p>Weblink: http://www.miraclei.com/alternative_energy/trigeneration.html</p> <p>Statement: "Trigeneration" at efficiencies now around 90% (as opposed to central power plants at 33% efficiency) is the simultaneous production of cooling, heating and power, in one process and the most environmentally-friendly method of generating power and energy.</p> <p>This is further supported by</p> <p>Source 2: Rudds Consulting Engineers, Australia</p> <p>Weblink : http://www.rudds.com.au/content.php/category/id/52</p> <p>Statement: Greener electricity contributed back into the grid. Trigeneration can operate at overall efficiency levels up to 90% while the most efficient modern coal fired power is just 45%</p>		

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Corrective Action Requests/ Clarification Requests by audit team			
	efficient. PoA DD section A.4.2.1 has been amended to indicate the source of such statement		
Further Assessment	The relevant references indicating the trigeneration efficiencies compared to conventional systems have been included in the PoA-DD. The references provided by both Miracle and Rudds consulting Engineers demonstrate the trigeneration efficiency of 33% when compared to over 90% in the conventional systems. Hence the issue is closed.		
CAR	<u>Corrective Action Request No.2.</u> The description needs to be more elaborate whether the technology to be applied provides sufficient and transparent input to evaluate its impact on the greenhouse gas balance	A.2.4	<input checked="" type="checkbox"/> 4
Response	Additional detail of the main items of plant equipment that would be introduced by SSC CPAs has been provided in section A.4.2.1 of the PoA DD. This includes typically capacity ranges for such equipment as well as certain key operational parameters, such as chilled and hot water temperature ranges		
Assessment	The additional details provide sufficient and transparent input to evaluate its impact on the greenhouse gas balance. Hence the issue is closed.		
CAR	<u>Corrective Action Request No.3.</u> 1. PP needs to clearly indicate in section A.3 if the Project participants are Public or Private entities 2. It needs to be clarified whether TES is a CME or a CPA implementer?	A.3	<input checked="" type="checkbox"/> 4
Response	1. PP has corrected section A.3 to indicate that the Project Participants are private entities 2. PP wishes to clarify that TES is not a CME. TES is a possible SSC CPA implementer		
Assessment	The PoA-DD has been revised to indicate that the entities are private and also TES as a PP. Hence the issue is closed.		
CAR	<u>Corrective Action Request No.4.</u> PP shall provide a clear map showing the countries that are part of the PoA boundary, as the existing one is not clear.	A.4.1.1	<input checked="" type="checkbox"/> 4
Response	PP has provided a clearer map in section A.4.1.2 clearly indicating the countries that are covered by the PoA		

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Corrective Action Requests/ Clarification Requests by audit team			
Assessment	The map clearly indicates the countries that are covered under the PoA. Hence the issue is closed.		
CAR	<u>Corrective Action Request No.5.</u> The CME needs to indicate in section A.4.2.1 of the PoA- DD regarding the applicable sectoral policies and regulations which are relevant to the PoA for each host country. The references/supportive of such policies need to be included in the PoA-DD.	A.4.1.2	<input checked="" type="checkbox"/> 4, 23, 25, 27, 30, 35, 36
Response	A table has been added to section A.4.2.1 where it is discussed whether there are national and/or sectoral policies, including any trigeneration or cogeneration incentives and regulations that are relevant to any of the host countries covered by the PoA. References to support such discussion are indicated in this table. Neither cogeneration nor trigeneration systems are incentivised in any of countries covered by the PoA. Moreover no regulations exist that make the implementation of such systems, nor the installation of absorption chillers mandatory.		
Assessment	It is to be noted that the letter provided by the consultant (MTMM consultants, Saudi Arabia) is given as supportive for the existing regulations/policies in other countries as well. This may be relevant for Saudi but for the other host countries, relevant policy decisions/regulations/references that are available in respective host country need to be provided.		
Response	<p>The consultant letter provided (See attached file “MTMM Letter – Common Practices (2)” provides the relevant information for all the countries covered by the PoA by a consultancy firm that is active in the region, ie not just the KSA. An additional document (See attached publication “GCC Countries – Possibilities and limitations of ecological modernization in rentier states”) was also provided as supporting evidence.</p> <p>This evidence has been further supported by more recent sources:</p> <ul style="list-style-type: none"> a) Consultancy Firm Oliver Wyman, 2012 study titled “<i>Delivering on the Energy Efficiency promise in the Middle East</i>”(See attached file “Delivering on the Energy Efficiency promise in the middle east”) which underscores the lack of energy efficiency measures and policies in the MENA region.(please see page 2) and recommends that the Middle East takes a closer look at energy efficiency technologies in other countries around the world. Moreover the study recommends in page 8 that “<i>Governments in the Middle East should also look to encourage private investment into energy efficiency, through collaboration with the private financial sector to establish public-private tools to facilitate energy efficiency financing. This can be done for example by providing subsidies,</i> 		

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South Asia

Corrective Action Requests/ Clarification Requests by audit team			
	<p><i>soft loans and other financial incentives to key energy efficiency players such as equipment producers, to promote the development of energy efficiency-compliant equipment'.</i></p> <p>b) The Egyptian Electricity Holding Company in its 2010/2011 annual report report (See attached file “Egyptian Electricity Holding Co. annual report 2010-2011”),, which reports on EE initiatives that are in progress in the country. Efforts have concentrated on improving lighting energy efficiency in the residential sector and for street lighting . .</p> <p>Hence, based on the above, the type of policy incentives that are needed to promote energy efficiency in the MENA countries are either simply not in place or , as in the case of Egypt targeted at sectors other than the commercial one and focusing technologies different than cogeneration and trigeneration.</p> <p>The PoA DD has been amended to also refer to the two additional references mentioned above.</p>		
Further Assessment	<p>The annual report for the Egypt could be accepted as this is from the Government. The document “GCC Countries – Possibilities and limitations of ecological modernization in rentier states” is not a relevant source/supportive to demonstrate the regulation or policy in the respective host countries such as UAE, Qatar and Oman. The relevant policy decisions/regulations/references that are available in these counties still needs to be provided.</p>		
Response	<p>PP has provided in its earlier response the document titled “Delivering on the Energy Efficiency promise in the middle east” by consulting firm Oliver Wyman. PP wishes to point out that Oliver Wyman is a global consulting firm http://www.oliverwyman.com/index.html which also has offices in the middle east region , including the UAE , http://www.oliverwyman.com/MiddleEastAndTurkey.htm Hence we feel that reports from Oliver Wyman, such as the one provided in the PP’s previous response constitute a credible third party source, more so consider that this firm is one with a regional presence.</p> <p>Thus, this supporting document serves to confirm the statements made in the one initially submitted to the DOE, from Mott Mac Donald, which is also a highly reputed third party.</p> <p>In addition PP wishes to point out that as far as Oman is concerned, the following additional sources also serve as confirmation to earlier evidence submitted to the DOE that there are no policies in place to incentivize energy efficiency in the commercial sector in such country.</p>		

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Corrective Action Requests/ Clarification Requests by audit team			
	<p>And that hence this information is consistent with statements made in the documentation provided In our previous response (Oliver Wyman study), as well as in our initial response.</p> <p>1. According to REEEP http://www.reeep.org/index.php?id=9353&special=viewitem&cid=117</p> <p>2. according to Ahmed Saleh Al Jahdami, GM for policy and strategy at the Public Authority for Electricity and Water http://www.albawaba.com/learn-german-energy-model-397588</p> <p>There's a very strong economic reason to take energy-saving policies seriously," Koch said. <i>There are some studies underway that look at gas efficiency, renewable energy, and energy conservation as possible ways to improve energy efficiency in Oman, said Ahmed Saleh Al Jahdami, GM for policy and strategy at the Public Authority for Electricity and Water. "It will give us an overview of the country at large and where we should focus our initiatives," Al Jahdami said. In Oman, over half of the energy consumption is residential, with much of that going to air conditioning.</i></p> <p>Hence, this means that there are no policies in place to incentivize energy efficiency in the commercial sector, less so to incentivize cogeneration or trigeneration in this sector in Oman. These documents confirm statements presented in documentation from MTMM that was initially submitted to the DOE.</p>		
Assessment	The references from REEEP and Public Authority for Electricity and Water, Oman also confirm the existing policies/regulations in the host countries. Hence the issue is closed.		
CAR	<p><u>Corrective Action Request No.6.</u></p> <p>PP shall include further detailed technology description (with specifications) for the proposed Cogeneration/Trigeneration systems to be employed in the CPAs under the PoA.</p>	A.4.2.1	<input checked="" type="checkbox"/> 4
Response	PP has elaborated further in section A.4.2.1 and included additional information pertaining to the capacity ranges and performance values of the equipment that is expected to introduced by SSC CPAs under this PoA. Hence the issue is closed.		
Assessment	The technology description has been revised and details have been provided in the PoA-DD. More specific details are indicated in CPA-DD. Hence the issue is closed.		
CAR	<p><u>Corrective Action Request No.7</u></p> <p>PP shall indicate whether the implementation of the project activity require any technology</p>	A.4.2.3	<input checked="" type="checkbox"/> 4

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	transfer from Annex-I-countries to the host countries.												
Response	Correction has been made in section A.2 to confirm that the PoA supports technology/know-how transfer from other Annex I countries, eg Germany, Switzerland, Ireland and others, thru the use of technology and via the training and practical work experience which result from the implementation of the SSC CPAs												
Assessment	The PoA-DD has been revised to indicate that implementation of the project activity require technology transfer from Annex-I-countries to the host countries. Hence the issue is closed.												
CAR	<p><u>Corrective Action Request No.8</u></p> <p>The eligibility criteria stated in the PoA-DD does not cover the following as per EB 65 Annex 3</p> <ol style="list-style-type: none">1. specifications of technology/measure including the level and type of service, performance specifications including compliance with testing/certifications;2. baseline and monitoring methodology AMS II.K requirements for new buildings3. conditions that ensure that CPAs meet the requirements pertaining to the demonstration of additionality as specified in Section A of EB 65 Annex 34. the conditions related to sampling requirements for a PoA in accordance with the approved guidelines/standard from the Board pertaining to sampling and surveys5. the conditions that ensure that every CPA in aggregate meets the small-scale or microscale threshold criteria and remains within those thresholds throughout the crediting period of the CPA			A.4.2.9	<input checked="" type="checkbox"/> 4								
Response	<p>1. An EC has been added in section A.4.2.2 to ensure that main items of Cogeneration/trigeneration plant equipment introduced by SSC CPAs must comply with the following specifications in terms of output capacity range, certification and performance levels to allow a proposed SSCCPA to be included in the POA;</p> <table><tr><th>ITEM</th><th>TYPICAL CAPACITY RANGE</th><th>CERTIFICATIONS REQUIRED</th><th>OTHER DETAILS</th></tr><tr><td>Fossil Fuel</td><td>2 MWe – 20</td><td>Tested to ISO 2314:2009</td><td></td></tr></table>			ITEM	TYPICAL CAPACITY RANGE	CERTIFICATIONS REQUIRED	OTHER DETAILS	Fossil Fuel	2 MWe – 20	Tested to ISO 2314:2009			
ITEM	TYPICAL CAPACITY RANGE	CERTIFICATIONS REQUIRED	OTHER DETAILS										
Fossil Fuel	2 MWe – 20	Tested to ISO 2314:2009											

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		Fired Turbine	MWe	(or equal and approved) Electrical Efficiency to be > 20% on a NCV basis			
		Fossil Fuel Fired IC En- gine	500 kWe – 4 MWe	Tested to ISO 3046 (or equal and approved) Electrical Efficiency to be > 25% on a NCV basis	Hot water output tem- perature range 60°C – 120°C		
		Chiller	150TR – 4000TR	AHRI, ANSI, BS, EN, ISO or equal and approved	Chilled water tem- peratures from 0 °C to 10 °C		
		Heat Recov- ery Steam Boiler	0.5 t/h – 25 t/h	PED 97/23/EC (or equal and approved)	Pressures in range 1 bar – 30 bar Temperatures in range 120 °C – 400 °C		
<p>Similarly, the corresponding EC tables in the Generic CPA DD and Specific CPA DD have been revised to include this EC.</p> <p>2. EC No 5 has been corrected to state that the SSC CPAs must meet the requirements of AMS II K when such CPAs are implemented in new buildings as well as existing buildings. Correction has also been made to indicate the number of the relevant table in section E.2.</p> <p>Similar corrections have been made to the same EC text in the Generic CPA DD and the Specific CPA DD.</p> <p>3. The PoA consist only of small scale projects as CPAs. Hence the EC has been derived from Attachment A of Appendix B of the “Simplified modalities and procedures for small scale CDM projects”, more specifically, by showing that the proposed SSC</p>							

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	<p>CPA would not have occurred anyway due to the existence of barrier 1 (a) of Attachment A of Appendix B, ie due to an investment barrier.</p> <p>The relevant EC criteria have been corrected to clearly indicate that this is the only barrier that shall be used for the purpose of assessing whether a proposed SSC CPA is additional or not. Other barriers (ie 1 (b), 1(c) and 1(d) shall not be considered. The Generic CPA DD and the Specific CPA DD have been revised to emphasize that no other barriers shall be used to demonstrate additionality.</p> <p>4. No EC criterion condition related to sampling requirements is included because there are no sampling requirements in this PoA,. Hence criterion 14 (j) of Annex 3, EB 65 is not applicable to this PoA.</p> <p>5. The relevant threshold eligibility condition for the type of project implemented under the PoA has been added to the EC table under 4.2.2 ie that the energy savings caused by a single project activity may not exceed the equivalent of 60 GWh per year. A maximum saving of 60 GWh is equivalent to maximum savings of 60 GWh_e of electricity consumption or maximum savings of 180 GWh_{th} of fuel consumption, i.e., for calculation of maximum savings allowable per year, 1 GWh_e equals 3 GWh_{th}.</p>		
Assessment	The eligibility criteria has been revised to include the technical specifications of the equipments, methodology requirements, additionality demonstration and threshold limit for projects implemented under CPA. Hence the issue is closed.		
CAR	<p><u>Corrective Action Request No.9</u></p> <p>The O&M responsibilities mentioned in the PoA-DD does not clearly specify the entity/role for some activities. This needs to be in line with p.17 of EB 65 Annex 3.</p>	A.4.4.2	<input checked="" type="checkbox"/> 4
Response	The PoA has been corrected to bring it line with p. 17 of EB 65 Annex 3 and to clarify that CES Energy has set up the CME, Carbon Services Ltd. CES Energy Ltd, provides a range of technical services and expertise to the CME. In addition to this, certain CDM specific tasks are to be outsourced to specialised carbon services providers. During the initial phase of the PoA the CME has designated South Pole Carbon Asset Management Ltd, (SPCAM) a highly experi-		

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	enced CDM project developer to provide such services. Additional description has been provided in section of the poA to clearly indicate which entity is involved in which activities.		
Assessment	The PoA-DD has been revised to include role/entity for O&M activities. Hence the issue is closed.		
CAR	<u>Corrective Action Request No.10</u> The version of the Tools used in the PoA needs to be mentioned in the PoA-DD.	E.1.	<input checked="" type="checkbox"/> 4
Response	Versions of the tools used in the PoA have been indicated in section E.1		
Assessment	The versions of the tools used in the PoA have been indicated. Hence the issue is closed.		
CAR	<u>Corrective Action Request No.11</u> PP shall explain/provide references in PoA-DD whether the identified baseline scenario is as per the legal requirements/laws of the respective host country and the installation of project activity is not mandatory by any laws or requirements	E.4.1.1	<input checked="" type="checkbox"/> 4, 18, 19, 20, 21, 22
Response	Further discussion has been added to Section E.4 of the PoA DD to confirm that the identified baseline scenario for each type of SSC CPA conforms to the legal requirements of the host countries covered by the PoA. Moreover the installation of the project activity is not mandatory by any laws. Ie the technologies that are currently used and which could continued to be used in existing buildings, or installed in new buildings in the absence of the PoA all comply with the existing regulations. There is no restriction concerning the use of electric chillers to provide chilled water for cooling in buildings, nor is there any restriction in generating hot water or steam to meet a commercial building's heat requirements nor any impediment to sourcing power from the grid or from a captive power plant in any of the host countries considered in the PoA. This is discussed for each country and confirmed in a communication provided by MTMM Engineering Consultancy who are familiar with the markets covered by the PoA. KSA The baseline reference plants comprise conventional commonly used equipment in the building sector: Electric chillers, hot water and steam boilers. The use of cogeneration/trigeneration technology is not mandated in any of the countries covered by the PoA. Moreover, absorption chillers are not mandatory. This has been confirmed by engineering consultants MTMM Engineering Consultancy, active in the market. This has additionally been confirmed by means of a conversation between the PP and the DOE with .Eng.Abdullah AL Bawardi from the Saudi Energy Efficiency Center.in Riyadh, Saudi		

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	<p>Arabia, held on Saturday April 14th 2012</p> <p>Qatar The baseline reference plants consist of conventional commonly used equipment in the building sector: Electric chillers, hot water and steam boilers. The use of cogeneration/trigeneration technology is not mandated in Qatar. Moreover, absorption chillers are not mandatory in this country. This has been confirmed by engineering consultants active in the market</p> <p>UAE The baseline reference plants consist of conventional commonly used equipment in the building sector: Electric chillers, hot water and steam boilers. The use of cogeneration/trigeneration technology is not mandated in the UAE. Moreover, absorption chillers are not mandatory in this country. This has been confirmed by engineering consultants, MTMM. Active in the market</p> <p>Oman The baseline reference plants consist of conventional commonly used equipment in the building sector: Electric chillers, hot water and steam boilers. The use of cogeneration/trigeneration technology is not mandated in Oman. Moreover, absorption chillers are not mandatory in this country. This has been confirmed by engineering consultants active in the market, please refer to MTMM Letter – common practices (2).</p> <p>Egypt The baseline reference plants consist of conventional commonly used equipment in the building sector: Electric chillers, hot water and steam boilers. The use of cogeneration/trigeneration technology is not mandated in Egypt. Moreover, absorption chillers are not mandatory in this country. This has been confirmed by engineering consultants active in the market. A letter from MTMM Engineering Consultants is attached confirming the above, please refer to. MTMM Letter – common practices (2)</p>		
Assessment	It has been mentioned in the PoA-DD that “ <i>For the sake of simplicity and conservativeness in the determination of the baseline emissions, it is assumed that electrically driven chillers are used as the baseline reference space cooling technology in the above countries given their higher COP compared to Split systems</i> ”. This is related to the baseline conditions in Qatar,		

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	<p>Oman, UAE and Egypt. The PP needs to provide enough supporting evidences to demonstrate this condition.</p> <p>The letter from the consultant seems to be a generic one, considering the fact that there could be other systems which provide equivalent service in the counties.</p>		
Response	<p>PP has provided additional reference from air conditioning equipment manufacturers Daikin McQuay Middleast which further confirms that the air cooled electrical driven chillers are the common practice in Qatar, Oman, UAE and Egypt too (See attached file: “Mcquay ME refrigerants and cooling practice”). Further references from engineering consultants and services providers in Qatar (see attached file “Qatar Common Practice – Mercury Engineering”) and Egypt (see attached file “Egypt Common Practice – Cgroup”) confirm the baseline reference plants identified. This is consistent with the statement issued by MTMM consulting Engineers a professional consulting firm that was formed as a partnership between Mohammed Turki Office for Engineering Consultancy, and leading engineering Consultancy Mott Macdonald SA ltd – part of the Mott Macdonald Group of companies in the UK, that air cooled chiller systems are common practice in the countries covered by the poA.</p> <p>Section E.4 in the PoA DD has been revised to refer to these additional references too. Splits can of course be used to a certain extent, but as the references show, they are not the predominant means of providing commercial air conditioning. Moreover, the assumption that electrical driven chillers constitute the baseline reference air conditioning technology is a conservative one on account of their higher efficiencies compared to their split counterparts. In other words even if splits were to be the common practice (which note, they are not) it would be conservative to assume that baseline commercial cooling technology is electrical chillers because their COP is higher than that of splits. PP wishes to point out that in case of Qatar, given that gas can be used to generate steam the baseline reference plant description for this country assumes for conservativeness that less carbon intensive of the two fuels would be used to generate steam, ie gas.</p>		
Further assessment	<p>It is clear from the documents submitted by ‘Cgroup’ and ‘Mercury’ regarding the baseline conditions in Egypt and Qatar respectively. The baseline conditions in KSA have already been assessed. The same needs to be submitted for Oman and UAE as well.</p> <p>The issue of use of air conditioning equipment is different and hence Please see our response to CR 12 below.</p>		
Response	PP attached as part of this response with letters from consulting engineers Delap and Waller		

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	that confirm the common practices for the UAE and neighboring OMAN, which serve to confirm statements made in previously submitted documentation. Kindly refer to attachments "Oman Common Practice.pdf" and "UAE Common Practice". PP also wishes to clarify that the letters come from the Middle East REGIONAL office.		
Assessment	The letters from the Consulting Engineers and the technology suppliers in the host countries of Saudi Arabia, Oman and Egypt are checked by the audit team and these provide information to confirm the common practice in these countries. Hence the issue is closed.		
CAR	<p><u>Corrective Action Request No.12</u></p> <p>As per the methodology p.12, "<i>The Reference Plant is based on common practice for similar capacity, new heating and cooling systems and sources of electricity in the same commercial sector and in the same country or region as that of the proposed SSC CPA</i>". However in the PoA-DD, there is only one reference plant given in Saudi Arabia, where as the PoA also covers Oman and Egypt. Provide the details of such baseline reference plants for new buildings in all the host countries.</p>	E.4.1.1	<input checked="" type="checkbox"/> 4, 18, 19, 20, 21, 22
Response	Correction to the PoA DD in section E.4 has been made to describe the baseline reference plants for SSC CPAs implemented in Qatar, United Arab Emirates, Oman and Egypt and provide the corresponding evidence from a MTMM Engineering Consultancy, a firm active in those markets presented in <i>MTMM letter-common practices.pdf</i>		
Assessment	<p>It has been mentioned in the PoA-DD that "<i>For the sake of simplicity and conservativeness in the determination of the baseline emissions, it is assumed that electrically driven chillers are used as the baseline reference space cooling technology in the above countries given their higher COP compared to Split systems</i>". This is related to the baseline conditions in Qatar, Oman, UAE and Egypt. The PP needs to provide enough supporting evidences to demonstrate this condition.</p> <p>The letter from the consultant seems to be a generic one, considering the fact that there could be other systems which provide equivalent service in the counties.</p>		
Response	PP has provided additional reference from air conditioning equipment manufacturers Daikin McQuay Middleast which further confirms that the air cooled electrical driven chillers are the common practice in Qatar, Oman, UAE and Egypt too (See attached file: "Mcquay ME refrigerants and cooling practice"). Further references from engineering consultants and services providers in Qatar (see attached file "Qatar Common Practice – Mercury Engineer-		

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	<p>ing) and Egypt (see attached file “Egypt Common Practice – Cgroup) confirm the baseline reference plants identified. This is consistent with the statement issued by MTMM consulting Engineers a professional consulting firm that was formed as a partnership between Mohammed Turki Office for Engineering Consultancy, and leading engineering Consultancy Mott Macdonald SA Ltd – part of the Mott Macdonald Group of companies in the UK., that air cooled chiller systems are common practice in the countries covered by the poA.</p> <p>Section E.4 in the PoA DD has been revised to refer to these additional references too. Splits will of course be used, but as the references show, they are not the predominant means of providing commercial air conditioning. Hence the above references, show that the identified baseline reference plants are the common practice in the countries considered.</p>			
Further assessment	<p>It has been mentioned in the PoA-DD that <i>“For the sake of simplicity and conservativeness in the determination of the baseline emissions, it is assumed that electrically driven chillers are used as the baseline reference space cooling technology in the above countries given their higher COP compared to Split systems”</i>. This is related to the baseline conditions in Qatar, Oman, UAE and Egypt. The PP needs to provide enough supporting evidences to demonstrate this condition.</p> <p>The letter from the consultant seems to be a generic one, considering the fact that there could be other systems which provide equivalent service in the counties.</p>			
Response	Please kindly refer to response to CAR 11 which refers to additional supporting documentation from consulting engineering firm Delap and Waller, that confirms the information previously provided regarding what the baseline reference plants are in the UAE and neighbouring OMAN.			
Assessment	Based on the letters from the Consulting Engineers and the technology suppliers in the host countries of Saudi Arabia, Oman and Egypt, it could be confirmed that the common practice in these countries is the air cooled chiller systems. Hence the issue is closed.			
CAR	<p><u>Corrective Action Request No.13</u></p> <p>The description of different baseline options in PoA-DD is not in line with the methodology. Please indicate references to paragraph or a specific section of the methodology in demonstrating the baseline scenario options.</p>	E.6.3.1	<input checked="" type="checkbox"/>	4
Response	Section E4 of the PoA DD has been corrected to bring it line with the methodology			
Assessment	The baseline options have been revised in line with the methodology. Hence the issue is closed.			

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CAR	<u>Corrective Action Request No.14</u> The data unit needs to be clearly specified, whether it is hours or years (Lifetime of equipment)	E.6.3.21.1	<input checked="" type="checkbox"/> 4
Response	Remaining lifetime shall be specified in years. Relevant correction have been made to the tables in the in the PoA DD and generic CPA DD		
Assessment	Hence the issue is closed.		
CAR	<u>Corrective Action Request No.15</u> The complete information needs to be presented in Annex1 for all the PPs	F.1.1	<input checked="" type="checkbox"/> 4
Response	Annex 1 has been revised to include the information of the PP which is also the CME		
Assessment	Hence the issue is closed.		
CAR	<u>Corrective Action Request No.16</u> Eligibility criteria related to additionality is not sufficiently objective and comprehensive to permit the assessment of the inclusion of CPAs in the PoA. As per, CLEAN DEVELOPMENT MECHANISM PROJECT STANDARD version 01.0 (§ 154), the coordinating/managing entity shall consider that a full additionality assessment is not required in the context of CPA. Instead, the confirmation of additionality for CPAs should be conducted by means of the eligibility criteria. Hence, generalised statement like “project IRR must be less than benchmark” (EC number 7) and “...lower NPV cost than that of project CPA (EC number 8) is not accepted.		
Response	According to Section IV para.13 of the Terms and Definitions provided in the “Clean Development Mechanism Project Standard” the term “ <i>should</i> ” “is used to indicate that among several possibilities, one course of action is <i>recommended</i> as particularly suitable”. In other words, the standard <i>recommends</i> , such an approach as an alternative to undertaking a full addiionality assessment at the CPA level. The referred paragraph 154 in that standard goes onto say that such a “full additoinality assessment” “is not required” i.e. that such a full additoinality assessment is not necessary. It does not say however that one <i>cannot</i> undertake such a full assessment at the CPA level if the PP deems such an assessment is more appropriate, it merely states that one does not have to undertake such a full additionality assessment. Moreover, the PP is of the opinion that a detailed assessment of additionaity at the CPA level, as proposed for this PoA enables a more objective and rigorous assessment of the additional-		

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	ity of the CPAs that seek inclusion in the POA to be carried out. Given the relative complexity of trigeneration projects (compared to say a windpower project where there is one output instead of three as occurs in a trigeneration projects) and that differences are expected to be encountered between one building and another served by a trigeneration in terms of energy loads it is the PPs opinion that a CPA level assessment of additionality minimizes the risk of an erroneous inclusion of a CPA in the PoA. Such approach enables, in the PPs opinion a more transparent depiction of the project to be presented to a DOE at the validation stage of the CPA seeking inclusion.		
Assessment	The full additionality assessment has been presented at the CPA level, The financial indicators such as project IRR and NPV will be assessed based on the investment barrier analysis. It could be accepted that CPA level assessment of additionality minimizes the risk of an erroneous inclusion of a CPA in the PoA and is more appropriate. Hence the issue is closed.		
CAR	<u>Corrective Action Request No.17</u> The eligibility criteria and additionality approach are not specified clearly and it is kept completely open to CPA to decide. In the eligibility criteria no. 7, it needs to be explained in detail which kind of IRR will be considered - Pre-tax or post-tax (if both, then under which circumstances what kind of IRR will be taken). The PoA must include a framework for CPA. similarly, benchmark analysis framework (which can be used in all future CPA) should also be included in eligibility criteria.		
Response	Eligibility criteria 7 has been corrected to clearly indicate that if a Pre Tax Project IRR is applied it shall be compared against a Pre Tax Benchmark. Similarly if the Project IRR is to be presented on a Post Tax basis the comparison shall be done against a Post Tax benchmark. As per the Investment Guidelines, Post Tax basis is only applied where the benchmark or other financial indicator is intended for post-tax comparisons.POA DD, Generic CPA DD and Specific CPA DD have been updated accordingly.		
Assessment	It is not clear when the Pre tax benchmark will be applied and the post tax benchmark will be applied? Also the second part of the CAR has not been answered.		
Further response	Eligibility criteria has been corrected to state that the Project IRR shall always be determined on a Pre Tax basis and that the Benchmark to be applied shall be the WACC (Pre Tax basis only). This has also been corrected in the relevant eligibility criteria No. 7 texts tables in the two generic CPA DDs as well as the Specific CPA DD.		

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Further Assessment	The issue of applying pre tax and post tax benchmark is explained in the PoA-DD and can be accepted. However the second part of CAR is still not addressed (from the first round) in the PoA-DD, which is regarding the framework for benchmark analysis and investment analysis to be used in future CPAs. The PP shall address the same to close the CAR1		
Further response	In addition to the above corrections, the possible sources used to determine the value for parameters used in determination of the Project Pre Tax IRR have been defined. Thus in conjunction with the previous changes the PP considers that any CPA applying investment benchmark analysis is now limited by a framework, defined by a single Benchmark Type (Pre Tax WACC) and defined by a Project Pre Tax based IRR in which the sources for the values for the various parameters considered are restricted to the source options given in Table 4 of the PoA DD. Corrections have been made to E.C 7 to underscore that the parameters and sources for their values shall be those described in table 4 (for the Project Pre tax IRR) and table 5 (for the Pre Tax WACC). Similar changes have been made to the Generic CPA DDs and the Specific CPA-DD.		
Final assessment	The framework is defined for the future CPAs by a single Benchmark Type (Pre Tax WACC) and defined by a Project Pre Tax based IRR. The revision has been made in the PoA-DD. Hence the issue is closed.		
CR	<u>Corrective Action Request No.18</u> The applied "attachment A to appendix B" for additionality demonstration (EB 62 annex 24) is not the latest one (in both DDs). The PP shall apply the latest EB guidance for demonstration of additionality		
Response	PP has revised the PoA DD, Specific CPA DD and the Generic CPA DD to reflect the use of the latest EB Guidance, ie <i>EB 68 Annex 27. Guidelines on the Demonstration of additionality of small scale project activities. (Version 09.0)</i>		
Assessment	The PP has applied the latest EB guidance <i>EB 68 Annex 27. Guidelines on the Demonstration of additionality of small scale project activities. (Version 09.0)</i>		
CAR	<u>Corrective Action Request No.19</u> It is still not clear in the DDs that which of the three baseline (as per the methodology) would be chosen for future for the CPAs, it need to be define in the PoA DD that what will be the baseline scenario and if there are the mixture of these three baselines		

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Response	<p>The POA DD describes the baseline scenarios for two project scenario types catered for under the PoA, ie, the two project scenario types being:</p> <p>“Project Scenario Type 1.</p> <p><i>Under this project scenario type, the CPA installs a trigeneration or a cogeneration system in a new building (new consumers), thus preventing a more GHG intensive system to provide electricity, cooling and heat from being installed.</i></p> <p>And,</p> <p>“Project Scenario Type 2.</p> <p><i>Under this project scenario, the CPA installs a trigeneration or a cogeneration system that either replaces or supplements the operation of systems that supply electricity (grid or on-site generation) and cooling (eg chillers) and/or heating systems (e.g. hot water boilers) to an existing building (existing consumers)”.</i></p> <p>PP wishes to point out that <i>Project Scenario Type 2 CPAs</i> are the only type of CPAs that have the option to apply one of two possible baseline scenarios, as stipulated in the AMS IIK, as is also indicated in page 38 of the PoA DD, i.e.:</p> <p><i>“SSC CPA implementers seeking to implement Project Scenario Type 2 SSC CPAs shall describe in Annex of 3 of the corresponding SSC CPA DD form which of the two options a) or b) above is to be taken as the baseline scenario”</i></p> <p>Where, as per paragraph 13 of AMS IIK there can only be two baseline scenario possibilities: <i>The continued operation of the existing systems or the installation of a new, more efficient system or “Baseline Reference plant “.</i></p> <p>Thus, since the the Project Scenario Types that may be included in the PoA have been clearly defined in the POA, there can be no CPAs that combine the installation of a trigeneration or cogeneration system at a site where no building exists and at the same time, retrofit existing buildings to be able to use a portion of the utilities that such a trigeneration or cogeneration plant would produce. Ie the PoA doesn't cater for cases where there may be a combination of above referred Project Scenario Type 1 and Project Scenario Type 2.</p> <p>Hence, there can be no mix of baseline scenarios in CPAs included in this PoA. Each CPA can only have one baseline scenario.</p>		

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Assessment	As per the PoA-DD, there is no combination of technologies and hence there is no mix of baseline scenarios. This has been clearly explained in the baseline section of PoA-DD. Hence the issue is closed.		
CR	<u>Clarification Request No. 1.</u> The PoA-DD mentions that Cooling loads in buildings in the host countries covered by the PoA are large, and constitute the single most important energy load. Please provide a background information/ study report done for all host countries prior to this PoA consideration.	A.2.1	<input checked="" type="checkbox"/> 18, 26, 28
Response	A communication from the MTMM consulting engineers has been provided describing how cooling loads in buildings make up approximately 60% of the cooling loads in each of the countries listed in the PoA. MTMM consulting Engineers is a professional consulting firm that was formed as a partnership between Mohammed Turki Office for Engineering Consultancy, and leading engineering Consultancy Mott Macdonald SA Ltd – part of the Mott Macdonald Group of companies in the UK. Please refer to reference document provided as file <i>MTMM Common practices.pdf</i> . Reference has been added to the PoA DD in Section A.2. Also attached a paper entitled: “Developing Sustainable Residential Buildings in Saudi Arabia” where it states that nearly 80% of household electricity is used for air conditioning that consumes massive amounts of electricity. Thus although not a commercial application an indication of the importance of cooling loads with respect to total electrical loads. The source of the cooling loads is found in section 2 on the first page of the referred published paper. In addition an article published on gulfnews.com indicates that cooling accounts for up to 70% in Dubai. The article is attached and is entitled: “Gulf News Article” The countries covered by the PoA share similar climates, in which the main electrical loads imposed on buildings are due to air conditioning requirements		
Assessment	The documents submitted could substantiate the fact that cooling loads are large and constitute the single most important energy load. Hence the issue is closed.		
CR	<u>Clarification Request No. 2.</u> PP shall provide a confirmation that there is no mandatory requirement in host country to undertake a Cogeneration/Trigeneration activity and the implementation is a voluntary one (for each of the host countries)	A.2.3	<input checked="" type="checkbox"/> 4, 18, 19, 20, 21, 22
Response	This has been confirmed by a communication from MTMM Consulting Engineers, active in the		

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	region, stating that no mandatory laws or requirements exist in each of the host countries to undertake cogeneration/trigeneration activities. Also attached is a statement from CES Carbon Services certifying that the AESB PoA is a voluntary initiative (please see attached file entitled "CES Carbon Statement of voluntary initiative". In addition, there is also an article attached entitled " <i>GCC countries- possibilities and limitations of ecological modernization in rentier states</i> ". Within the article in section 9, there is a statement that "no GCC country has a consistent policy framework for renewable energies and energy efficiency" and it summarizes in table 2 the policies in each of the GCC countries. It is evident that there is no mandatory requirement for KSA, Qatar, Oman and U.A.E to implement cogeneration/trigeneration.		
Assessment	It is to be noted that the letter provided by the consultant (MTMM consultants, Saudi Arabia) is given as supportive for the existing regulations/policies in other countries as well. This may be relevant for Saudi but for the other host countries, relevant policy decisions/regulations/references that are available in respective host country need to be provided.		
Response	As indicated in response to CAR 5, one of the recommendations (see attached file " <i>Delivering on the Energy Efficiency promise in the middle east</i> ") given is to promote EE measures in the countries in the region is to provide incentives of one form or another, ie mandatory approaches to adopting EE do not exist and are not even recommended by the consultant either.		
Further assessment	The annual report for the Egypt could be accepted as this is from the Government. The document " <i>GCC Countries – Possibilities and limitations of ecological modernization in rentier states</i> " is not a relevant source/supportive to demonstrate the regulation or policy in the respective host countries such as UAE, Qatar and Oman. The relevant policy decisions/regulations/references that are available in these counties still needs to be provided		
Response	PPs response to CAR 5 above provides additional supporting evidence to further substantiate that there are no mandatory requirements to install cogeneration and trigeneration systems in commercial buildings in Oman and UAE. The PP being an expert in the field is in fact not aware of any country where the installation of such systems is mandatory.		
Assessment	The references from REEEP and Public Authority for Electricity and Water, Oman also confirm the existing policies/regulations in the host countries.,Hence the issue is closed.		
CR	<u>Clarification Request No. 3.</u> 1. The application for LoA to different host countries needs to be submitted to the audit team	A.3.2	

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	2. Letter of authorization & letter of approval needs to be provided from DNA s of Saudi Arabia, Oman, Egypt and Ireland.		
Response	The LoAs of KSA, Oman, Egypt and Ireland have been submitted to the DOE.		
Assessment	Hence the issue is closed.		
CR	<u>Clarification Request No. 4.</u> The CME needs to provide the MoC (modalities of communication with CDM EB- UNFCCC.	A.3.2	
Response	The MoC has been submitted to the DOE.		
Assessment	Hence the issue is closed.		
CR	<u>Clarification Request No. 5.</u> The boundary of PoA needs to be clarified as the PoA-DD mentions that it will be amended to include other countries	A.4.1.1	<input checked="" type="checkbox"/> 4
Response	Clarification has been made that the boundary of the PoA is a geographical boundary that includes the geographical boundaries of each of the host countries covered by the PoA: The Kingdom of Saudi Arabia, Qatar, United Arab Emirates, Oman and Egypt. Sentence stating that the POA will be amended to include other countries has been deleted (please refer to PoA DD section 4.1.1)		
Assessment	Hence the issue is closed.		
CR	<u>Clarification Request No. 6.</u> The PP needs to submit documentary evidence to demonstrate that electricity grid rates in the countries covered by the PoA are low and high cost of upfront capex investment when compared to conventional systems, as mentioned in the PoA-DD.	A.4.3.2	<input checked="" type="checkbox"/> 8,9,10,11, 12,24
Response	Document showing the electricity rates in the host countries and how these rates compare to those in developed countries has been provided to the DOE as file <i>electricity rates v2.pdf</i> . Also attached is a document indicating that cogeneration is a marginal commercial proposition. Please refer to the document titled "Cogeneration in NSW – Review and analysis of opportunities". In page viii.		
Assessment	The document showing the electricity rates in the host countries and how these rates compare to those in developed countries has been checked by the DOE. Hence the issue is closed.		
CR	<u>Clarification Request No. 7.</u> The PP needs to clarify what are ESCO type solutions and how they are applied to the CPAs	A.4.3.2	<input checked="" type="checkbox"/> 4

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	covered under the PoA.		
Response	PP wishes to clarify, and discussed in section E.5.1 that an ESCO type solution is one in which the ESCO, who is a third party (i.e., not the owner of the building nor the operator responsible for the operation and management on an existing building's energy and utilities supply), invests capital and incurs in the ongoing expenditure to operate and maintain a trigeneration or cogeneration system and meet the electricity, cooling and heat (where appropriate) requirements of the building, In the context of this PoA the term ESCO does not refer to a performance contracting arrangement whereby payment to the ESCO is based on the amount of energy saved. In the context of the PoA, payment to the ESCO is made for the amount of electricity, cooling and heat that is provided by the ESCO to meet the building's energy demands. In other words, the ESCO provides a service which is the supply of energy to the building and gets paid for the quantity of energy sold. The POA DD has been revised in section A.2 to define the term ESCO, as an Energy Service Company and to add further clarity to this issue. In addition the term, ESCO type solution has been deleted to avoid confusion.		
Assessment	The term ESCO type solution has been modified in the PoA-DD, which is not actually applicable to the PoA. Hence the issue is closed.		
CR	<u>Clarification Request No. 8.</u> The PP needs to provide references/submit necessary evidences to demonstrate the listed barriers to the PoA.	A.4.3.2	<input checked="" type="checkbox"/> 4
Response	The PP wishes to clarify that the barriers listed are barriers that the CME <i>expects</i> to face going forward, as the PoA is rolled out. The PP wishes to point out that although additoinality is to be assessed and demonstrated n the grounds of investment barriers, the PP anticipates that other barriers <i>will surface in the future</i> which will have to be overcome, even if these are not used to demonstrate additionality. Hence, arrangements with key local and regional stakeholder have and are being pursued in order to position the CME to address these barriers as soon as they are encountered. Hence no third party evidence can be provided as this relates to risks that the PP perceives will be encountered at some point in the future. The PoA DD has been revised to stress this point and is discussed to assist the reader in understanding the context in which such an is being pursued.		
Assessment	The issue is still open as there is no evidence for the listed barriers.		
Response	The PoA has been amended to remove the discussion presented on additional barriers.		

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Further assessment	The barriers have been removed in the final PDD. Hence the issue is closed.		
CR	<u>Clarification Request No. 9.</u> PP shall clarify the linkage between CES Energy and CES carbon, and the role of CES energy in the PoA.	A.4.4.2	<input checked="" type="checkbox"/> 4, 5,16
Response	The link between CES Energy and CES Carbon Services Ltd has been described, in the poA DD. CES Energy set up the CME, ie CES Carbon Services, to manage and roll out the PoA (please refer to document <i>Minutes-CME establishment and PoA.pdf</i>) . CES Energy's role in the PoA is primarily to provide the necessary technical support to address matters purely of a technical nature, such as screening potential projects from a technical standpoint to ensure compliance with the eligibility and applicability criteria, amongst others, and which are described in the poA DD in section A.4.4.1. Attached as well is the certificate of incorporation of CES Carbon Services Ltd. The document attached is entitled " <i>CES Carbon Services Certificate</i> "		
Assessment	It has been clearly explained in the PoA-DD regarding CES Energy and CES Carbon and the role of CES Energy in the PoA. Hence the issue is closed.		
CR	<u>Clarification Request No. 10.</u> PP shall justify the start date of PoA section A.4.4.1 for 1 June 2012, as this seems to be not a realistic date as mentioned in the GSP PoA-DD	B.1.1	<input checked="" type="checkbox"/> 16
Response	Section has been revised to indicate that start date of the PoA shall be the date of submission of PoA for Global Stakeholder Consultation process. This could be considered as the earliest date at which the CME has committed to implement with the PoA.		
Assessment	The starting date of the PoA is 6 th March 2012 based on the date of submission of PoA for Global Stakeholder Consultation process. This could be considered as the earliest date at which the CME has committed to implement with the PoA.. Hence the issue is closed.		
CR	<u>Clarification Request No. 11.</u> The PoA-DD needs to be clear on how the operation of existing system complies with criteria 7 of methodology	E.2.1.9	<input checked="" type="checkbox"/> 4
Response	Means of checking compliance with applicability criteria 7 of the methodology has been expanded to require that it be proven that existing buildings utility systems are still in operation and being used to meet the existing building's energy requirements. Correction has been		

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	made to the text of this criterion in Section E.2 Table 2 of the PoA DD and in Table B.2.2 of the Generic CPA DD		
Assessment	The PoA-DD has been revised to explain the criteria 7 of the methodology. The existing buildings utility systems and drawings would be checked to assess that the systems are still in operation and being used to meet the existing building's energy requirements Hence, the issue is closed.		
CR	Clarification Request No. 12. PP shall provide the reference to legal requirement mandate for refrigerants for each country	E.2.1.11	<input checked="" type="checkbox"/> 29, 37, 38
Response	The Kingdom of Saudi Arabia, Oman and Egypt all adhere to the Montreal Protocol and are operating under article 5 of paragraph 1 of the Montreal Protocol. Supporting evidence can be found at the following site: http://ozone.unep.org/new_site/en/parties_under_article5_para1.php The Montreal Protocol on Substances that Deplete the Ozone Layer is an international treaty designed to protect the ozone layer by phasing out the production of numerous substances. The control measures for refrigerants under the Montreal Protocol are found in the following site: http://ozone.unep.org/new_site/en/Treaties/control_measures_summary.php Electric chillers in these countries utilize such refrigerants as R 410A and HFC 134 A. R410 A Is not part of the group of substances listed as ozone depleting substances under the Montreal Protocol. Similarly, HFC 134A is also not part of the ozone depleting substances under the Montreal Protocol that are subject to be phased out. As such, electric chillers utilizing these refrigerants in the baseline will continue to be used in coming years as they do not contravene with the Montreal Protocol		
Assessment	The reference needs to be provided for the use of refrigerants such as R 410A and HFC 134 A in the host countries.		
Response	PP has provided additional documentation (See attached file: "Mcquay ME refrigerants and cooling practice") from leading Air Conditioning Equipment supplier in the region, Daikin McQuay that confirms the above statement, indicating that In accordance with the Montreal Protocol, all major Air Cooled Chiller manufacturers have updated their chiller designs to adopt non-regulated ozone friendly R410A and R134A (HFC 134A) refrigerants. Moreover, that R410A refrigerant has taken a preferential position in smaller capacity ranges and the R134A		

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	for the larger ones and that the same trend is seen in equipment marketed and sold in the Middle East Region, particularly the countries covered by the PoA.																
Further assessment	The document from Daikin Mcquay regarding the use of R410A and R134A (HFC 134A) refrigerants could be accepted for UAE and Qatar in general, but the same needs be substantiated for KSA, Egypt and Oman. Supporting evidences in these countries needs to be provided as the document too is more generic.																
Response	<p>http://www.daikinme.com/sales-network/index.jsp .Please note in particular the section “sales network” on this page from which the following has been taken, and which includes the KSA, Egypt and Oman.</p> <p>A. Middle, Near East & Africa<i>Daikin Middle and Near East Sales Network</i></p> <table><tr><td><u>Bahrain</u></td><td><u>Egypt</u></td></tr><tr><td><u>Iran</u></td><td><u>Iraq</u></td></tr><tr><td><u>Jordan</u></td><td><u>Kuwait</u></td></tr><tr><td><u>Lebanon</u></td><td><u>Oman</u></td></tr><tr><td><u>Palestine</u></td><td><u>Qatar</u></td></tr><tr><td><u>Saudi Arabia</u></td><td><u>Syria</u></td></tr><tr><td colspan="2"><u>United Arab Emirates</u></td></tr></table> <p>Hence, Daikin McQuay Middle East , given its status as a regional sales headquarter, is in the PPs view, a credible source of information concerning matters relating to the air conditioning markets in the countries that are under its remit and which included those covered by the PoA, because this office is responsible for overseeing businesses in such countries. Thus, this office is familiar with the business environment in such countries and therefore also familiar with a topic so important to the AC business as is the type of refrigerants that are allowed to be used by AC equipment in such countries.</p>	<u>Bahrain</u>	<u>Egypt</u>	<u>Iran</u>	<u>Iraq</u>	<u>Jordan</u>	<u>Kuwait</u>	<u>Lebanon</u>	<u>Oman</u>	<u>Palestine</u>	<u>Qatar</u>	<u>Saudi Arabia</u>	<u>Syria</u>	<u>United Arab Emirates</u>			
<u>Bahrain</u>	<u>Egypt</u>																
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<u>Lebanon</u>	<u>Oman</u>																
<u>Palestine</u>	<u>Qatar</u>																
<u>Saudi Arabia</u>	<u>Syria</u>																
<u>United Arab Emirates</u>																	

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Assessment	Based on the document from Daikin Mcquay, (who are the leading manufacturers for refrigerants and cooling systems in Middle East) regarding the use of R410A and R134A (HFC 134A) refrigerants and other supporting evidences, the issue is closed.		
CR	<u>Clarification Request No. 13.</u> PP shall clarify how option (a) and option (b) are used for Project scenario 2 (replacing/ supplementing existing systems) as the methodology does not specify it?	E.4.1.1	<input checked="" type="checkbox"/> 4
Response	Relevant sub section in section E.4 of the PoA has been amended to better describe the possible baseline scenarios for Project Scenario 2 Type SSC CPAs as given in the methodology.		
Assessment	The baseline scenarios for Project type 2 have been clearly explained in the final PoA-DD, as per the methodology. Hence the issue is closed.		
CR	<u>Clarification Request No. 14.</u> The baseline scenario is not clearly defined in PoA-DD in case of Option (i) of 13(a) of methodology, for the buildings whose consumption does not increase by more than 20% from the baseline. How is this scenario applicable for the proposed CPAs in existing buildings in all the host countries?	E.4.1.1	<input checked="" type="checkbox"/> 4
Response	Clarification has been made in the PoA DD that a baseline reference plant is a possible baseline scenario for SSC CPAs that replace /supplement systems in existing buildings. However the Baseline Reference plant must be defined for each of the host countries in which the SSC CPA is implemented in. In other words each host country has its own "Baseline Reference Plant" defined for it as per Option (i) of 13(a) of methodology, for the buildings whose consumption does not increase by more than 20% from the baseline. This is also now described in the PoA DD in Section E4 under the subheading "Baseline Reference Plant.		
Assessment	The PoA-DD has been revised to clarify the baseline scenario. The baseline reference plant is a possible baseline scenario for SSC CPAs that replace /supplement systems in existing buildings and this approach has been described in the PoA-DD, which is in line with the Option (i) of 13(a) of methodology. Hence the issue is closed		
CR	<u>Clarification Request No. 15.</u> It is mentioned in the PoA-DD that additionality would be demonstrated in accordance to Attachment A to Appendix B and that the proposed SSC CPA wouldn't have been implemented due to an investment barrier. But there are 2 options mentioned where the "Tool to demon-	E.5.1	<input checked="" type="checkbox"/> 4

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	strate additionality” also has been used. Please clarify the exact approach to demonstrate additionality.		
Response	<p>As discussed in section E.5.1. there are two different ways or business modalities considered in the PoA under which investments can be made to implement a cogeneration/trigeneration SSC CPA:</p> <p>The <i>first</i> one, which the PP have called <i>ESCO (Energy Service Company), third party modality</i> is one whereby a third party investor, who has no stake in the building where the trigen or cogen system is to be installed, invests the capital needed to build such a system and thereafter, spends money to keep it operational. In this case the investor recoups the investment and expenditures made from the sale of the electricity and other utilities. In this case:</p> <ul style="list-style-type: none"> i) the SSC CPA implementer needs to show that as per Attachment A of Appendix B that the project activity would not have occurred anyway due to at least one barrier. In this case, only one barrier (Investment barrier) shall be considered. Hence an investment analysis is always to be carried out, in this case as per Step 2 of the additionality tool ii) <i>Sub Step 2a</i> of the Additoinality tool is followed to determined which is the appropriate analysis method for this type of business modality. As discussed in the poA DD, the investor has the option to invest or not in the trigeneration system, hence the Benchmark approach is chosen, ie <i>Substep 2b. Option III. Apply Benchmark Analysis</i> iii) <i>Substep 2b Option III</i> is applied and the project IRR is chosen as the appropriate indicator iv) <i>Substep 2c Calculation and comparison of financial indicators</i> is then applied. The project IRR is calculated and the financial benchmark against the which the project IRR is to be compared against is defined and also calculated (in this cases the Weighted Average cost of capital) v) <i>Substep 2d Sensitivity analysis</i> is then followed, if the outcome of iv) ie substep 2c of the additionality tool is that the project IRR is below the benchmark. Then a sensitivity analysis is carried out. <p>The <i>second</i>, which the PP has defined as EPC (engineering, procurement and construction contract refers to cases in which the SSC CPA must make an investment or continue to spend money to meet a buildings energy needs. In other word, and investment in a new plant or the</p>		

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	<p>continued operation of an existing system has to be made anyhow:</p> <ul style="list-style-type: none"> i) As in the above case the SSC CPA implementer needs to show that as per Attachment A of Appendix B that the project activity would not have occurred anyway due to at least one barrier. In this case as well, only one barrier (Investment barrier) shall be considered. ii) <i>Sub Step 2a</i> of the Additoinality tool is followed to determined which is the appropriate analysis method. As discussed in the poA DD the investor in this case has to either to continue spending money to provide energy to the building (fuel costs, O&M) and or to invest eventually in replacing equipment in order to provide the same outputs and levels of services as the proposed SSC CPA. Hence as indicated in para 19 of Guidelines of Investment analysis a benchmark analysis is not appropriate. Rather a comparison analysis needs to be applied. iii) <i>Substep 2b Option II. Apply investment comparison analysis</i> is applied and the NPV of the costs is chosen as the appropriate indicator. iv) <i>Substep 2c Calculation and comparison of financial indicators</i> is then applied, whereby the NPV of the costs associated with an alternative to the propoposed SSC CPA is compared against the NPV costs of the proposed SSC CPA. . The discount rate to be applied can be for example taken as the WACC as calculated in the above case, or another suitable discount factor subject to the requirements stated in para 30 on “Discount rates and benchmarks” presented in the “ Tool for demonstration and assessment of additionality” (Version 06.0.0). v) <i>Substep 2d Sensitivity analysis</i> is then followed, if the outcome of iv) ie substep 2c of the additionality tool is that the NPV of the costs of the alternative to the proposed SSC CPA is less that than that of the propsed SSCPA. Then a sensitivity analysis is the carried carried out. <p>The approach followed in the PoA DD to assess and demonstrate additoinalty for a SSC CPA is as follows:</p> <ul style="list-style-type: none"> a) First the two business modalities under which SSC CPAs can be implemented are first described b) The PoA prescribes that additionality shall be assessed as per Attachment A of Appendix B, on the grounds of one barrier only: investment barrier. Ie no other barriers shall be used to demonstrate additionality for a SSC CPA. This barrier is applicable to 		

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	<p>both business modalities</p> <p>c) The appropriate analysis method for each of the two business modalities is described</p> <p>d) The PoA then prescribes the indicators to be used and types of benchmark / discount rates to be applied in each investment analysis option that is carried out</p> <p>e) Calculate the indicators (IRR or NPV costs) and calculate the BM (WACC) or, calculate or select the Discount rate, depending on the modality employed (ESCO or EPC).</p> <p>f) Compare the indicators:ie compare IRR vs WACC or NPV cost of an alternative with the NPV cost of the SSC PA</p> <p>g) Conduct sensitivity analysis</p> <p>Additional text and some sections in Section E.5.1 have been modified to better describe how the approach described in the PoA to assess additionality for an SSC CPA is inline with the one described in the response given herein.</p>		
Assessment	It has been clearly explained in the PoA-DD regarding the two approaches followed to demonstrate additionality. One in case of third party implementer and other in case of the building owner. The relevant approach would be followed in case of each CPA and the additionality would be demonstrated at CPA level using the additionality tool. This approach is found acceptable to the audit team. Hence the issue is closed.		
CR	<p><u>Clarification Request No. 16.</u></p> <p>In the calculation of WACC benchmark, the total risk premium, cost of debt, tax considers country specific values while the risk free rate (US Long term Government Bond) and Size premium considers the US market values? Please clarify.</p>	E.5.2.7	<input checked="" type="checkbox"/> 4, 39
Response	<p>The WACC comprises two elements: the cost of debt and the cost of equity.</p> <p>Cost of equity</p> <p>Using the return of US treasury bond as a Risk Free Rate of return is a common approach when determining the return equity. For instance, the EB uses it to determine default values for the expected return on equity for projects in different host countries (please refer to “Guidelines on the assessment of investment analysis “EB 62, Annex 5, Appendix “Default values for the expected return on equity), para. 2 “ <i>the risk free rate of return is calculated based on the long-term average returns of US treasury bonds. The US Stock market is used as a proxy because it has the longest well recorded data for government bonds as well as stocks....”</i></p> <p>Similarly, other risk premium used by the PP is derived from US based data. The use of US</p>		

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	<p>based date is commonly accepted as discussed above, eg, as indicated in para 3 of the above mentioned reference <i>"the equity risk premium is derived from the long-term historical returns on equity in the US market relative to the return of bonds"</i>. Similarly, the Size Premium is referred to US stock date for the very same reason as that indicated above: the US has the longest well recorded data for stocks</p> <p>The Total Risk Premium however includes an equity risk premium and a country risk premium, which takes into account the spread between the US bonds and those of the host country in which the investment is to be made.. This approach, by Prof A. Damadoran of the Stern Business School of The University of New York, is described in the spreadsheet tab Country Premiums, which has been submitted along the Specific CPA DD. It enables the cost of equity to be "exported" from the US to the host country in which the project is to be developed, ie the Kingdom of Saudi Arabia, in the case of the Specific CPA DD, i.o.w ., the approach enables the US based cost of equity to be adjusted to reflect the host country risk and to arrive at a cost of equity for the host country.</p> <p>Cost of Debt</p> <p>The cost of debt is however to based on the host country specific information, and this is in fact a requirement stated in EB62 Annex 5, para 16. Moreover the referred paragraph states that <i>" In cases where this data is not available use the commercial lending rate in the host country to calculate the cost of debt"</i></p>		
Assessment	Considering the guidance provided in EB 62 annex 5, the risk free rate of return is calculated based on the long-term average returns of US treasury bonds. Since the US Stock market has the longest well recorded data for government bonds, the value used in the calculations could be accepted. Hence the issue is closed.		
CR	<p><u>Clarification Request No. 17.</u></p> <p>The PP need to clarify whether the Benchmark considered is post tax or pre tax?</p>	E.5.2.7	<input checked="" type="checkbox"/> 4
Response	The benchmark has been presented on a Pre Tax basis. Section E.5.1 has been edited to reflect that this is the basis upon which the WACC shall be determined		
Assessment	The benchmark considered is a pre tax benchmark and it is clarified in the PoA-DD. Hence the issue is closed.		
CR	<p><u>Clarification Request No. 18.</u></p> <p>How sensitivity analysis is applicable to both the Project scenarios 1 and 2?</p>	E.5.2.7	<input checked="" type="checkbox"/> 4

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Response	<p>Sensitivity analysis is described individually, for each of the two project approaches to investment analysis used, ie one sensitivity analysis is to be carried out when and IRR analysis is done, and a second and also different sensitivity analysis is to be carried out when a NPV costs analysis is undertaken. Tables are provided for each investment analysis indicating the parameters to be varied and varying these within reasonable bounds to determine their impact on the IRR or NPV and to establish if the IRR of the proposed SSC remains below the Benchmark or if the NPV of the costs of the proposed SSC CPA is larger than that of the alternative against which the proposed SSC CPA is compared to.</p> <p>When an Investment comparison analysis is undertaken the sensitivity analysis shall consider the following scenarios:</p> <ul style="list-style-type: none"> - The investment costs for the proposed SSC CPA are 10% or possibly less than initially quoted to be (ie therefore, the NPV costs of the proposed SSC CPA are less than initially estimated). In this sensitivity analysis scenario therefore the NPV costs of the proposed SSC CPA are lowered compared to what they were originally presented to be and compared with the NPV of the costs of the alternative to the proposed SSC CPA. - The costs of operating and maintaining the trigeneration/cogeneration system (excl fuel costs) are 10% or possibly less than those originally assumed and compared against the NPV of the cost of the alternative to the proposed SSC CPA. - The operating and maintenance costs of the alternative to the proposed cogeneration/trigeneration SSC CPA (eg. the costs of operation and maintenance of the building's existing facilities costs are 10% higher, or possibly in excess of 10% higher than those originally assumed). The NPV cost of the alternative to the SSC CPA in this case is now higher than initially estimated and it is compared with the NPV cost of the proposed SSC CPA. <p>The costs of electricity and fuel associated with the alternative to the SSC CPA (eg costs of electricity and fuel needed to meet the building's energy requirements) are 10% or more higher than those initially assumed and are compared against the NPV cost associated with the proposed SSC CPA.</p>		

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	- The costs of fuel assumed to be required to run the proposed Cogeneration/trigeneration the system, ie the proposed SSC CPA are 10% or possibly less than those initially quoted for the proposed SSC CPA. The NPV costs for this case is then compared against the NPV of the costs for the alternative to the proposed SSC CPA.			
Assessment	<p>The sensitivity analysis framework has been defined in the PoA-DD for the 2 project scenarios. The sensitivity analysis framework has been defined in the PoA-DD for the 2 project scenarios. The parameters like investment costs, operation and maintenance costs, electricity and fuel costs would be subjected to (+/-) 10% variation in each CPA.</p> <p>If the NPV of the total costs of the proposed SSC CPA in the sensitivity analysis is less than the NPV of the costs associated with the operation of the existing system while altering one the 3 parameters, the SSC CPA implementer shall provide evidence that this scenario is unlikely to occur. If insufficient proof is provided, the SSC-CPA will be considered non-additional. Otherwise the CPA shall be deemed additional.</p> <p>The DOE confirms that this approach is deemed correct. Hence the issue is closed.</p>			
CR	<p><u>Clarification Request No. 19.</u> The QA/QC procedures for all the monitoring parameters needs to be presented in the PoA-DD.</p>	E.7.1.1	<input checked="" type="checkbox"/>	4
Response	QA/QC procedures have been presented in the PoA DD			
Assessment	Hence the issue is closed.			
CR	<p><u>Clarification Request No. 20.</u> The PP needs to explain whether the Grid emission factor will be fixed ex ante or would be an expost parameter?</p>	E.7.1.4	<input checked="" type="checkbox"/>	4
Response	Grid emissions factor is to be fixed ante for any SSC CPA			
Assessment	The PoA-DD has been revised to state that Grid emission factor is fixed ex ante. Hence the issue is closed.			
CR	<p><u>Clarification Request No. 21.</u> PP shall provide the Operation and Management structure (Administrative Manual) pertaining to the proposed PoA. Mention clearly the responsibilities and institutional arrangements for data collection archiving.</p>	E.7.2.1	<input checked="" type="checkbox"/>	17
Response	The CME's management manual is provided to the DOE. Specific elements of this manual are			

List of Findings: CDM-PoA-DD

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Corrective Action Requests/ Clarification Requests by audit team				
	presented in section A.4.4.1 to bring it in line with the requirements of para.17 of Annex 3 of EB 65.			
Assessment	The CME management manual has been checked by the audit team, which includes the operation and management structure, roles and responsibilities, record keeping system and data management, which is line with EB 65 annex 3 requirements. Hence the issue is closed.			
CR	<u>Clarification Request No. 22.</u> The PP shall clarify why the host counties of UAE and Qatar are excluded from the final PoA-DD?	E.7.2.1	<input checked="" type="checkbox"/>	49
Response	In the beginning the PoA boundary was to include all five countries: Kingdom of Saudi Arabia, Egypt, Oman, United Arab Emirates (U.A.E) and Qatar. However, the PoA boundary now only includes: Kingdom of Saudi Arabia, Egypt and Oman. We have been in contact with the DNAs in each of the five countries listed. When we contacted the DNAs in Qatar and the UAE regarding the letters of approvals, the timeframe that was given to us in which to obtain the same was outside the 2012 deadline. This motivated us to eliminate the two countries, Qatar and U.A.E from our proposed PoA.			
Assessment	The Host countries of UAE and Qatar have been removed from the project boundary, as there would be difficult in getting the Host country approvals before the end of 2012. The audit team has also conducted telephonic interviews with the respective representatives of host countries of Qatar and UAE and these are still in the very early stage of conceptualization [IRL 49]. This does not match with the timeline implementation of the PoA and hence the PP has withdrawn these two countries from the PoA boundary. Hence the final PoA-DD includes only the host countries of KSA, Oman and Egypt. Hence the issue is closed.	E.7.2.2		
CR	<u>Clarification Request No. 23.</u> Calculation of baseline emission considers all the possible baseline condition. One of the conditions is the baseline emission associated with grid and captive power plant sourced electricity displaced by project in year y (page 53 of PoA-DD). PP needs to explain the ratio b/w grid and captive power plant source.	E.7.2.2	<input checked="" type="checkbox"/>	
Response	The ratios of the quantities of electricity that are drawn from captive power plants and the grid shall be determined by adding the total amount of electricity obtained from each source of electricity on its own over the most recent three years (ie $E_{capt,hist,i}$ in the case of electricity			

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Corrective Action Requests/ Clarification Requests by audit team			
	obtained from captive power plants and $E_{grid,hist}$ in the case of electricity drawn from the grid) and dividing each of the resulting two electricity consumption figures by the total (combined) amount of electricity consumed over those same 3 years, i.e. the sum of the electricity drawn from the grid plus that drawn from the captive power plants over that same period. The corresponding parameter tables for $E_{capt,hist,i}$ and $E_{grid,hist}$ have been added to section E.6.3 of the PoA DD and the B.5.1 in the Generic CPA DD		
Assessment	The revised PoA-DD includes the parameters $E_{capt,hist,i}$ and $E_{grid,hist}$. The ratio between the grid and captive power plant source has been explained. Hence the issue is closed.		
CR	<u>Clarification Request No. 24.</u> As per PoA-DD, SSC PoA aims to introduce Trigenation and Cogeneration schemes in non-industrial buildings, As per EB 70 annex 5 guidelines, PP shall submit separate CPA DD for each measure/technology used in the PoA.as there are two different measures in the PoA (i.e. cogeneration and tri-generation), and hence the different CPAs need to be submitted for each technology/measure.	A.2	<input checked="" type="checkbox"/>
Response	EB 70, Annex 5 “Standard for Demonstration of Additionality, development of eligibility criteria and application of multiple methodologies” paragraphs 14 and 28 suggest that generic CPA DD are only required when combinations of technologies/measures <i>AND / OR</i> approved methodologies will be implemented in the PoA. The PP wishes to clarify therefore that: a) CPAs to be included in the PoA do NOT apply several methodologies. The POA and CPAs to be included therein, apply only one methodology: AMS IIK. b) None of the CPAs to be included in the POA will involve any combination of trigeneration and cogeneration systems, ie CPAs will either introduce a trigeneration system OR a co-generation system. Never both systems in any single CPA. i.e. the PoA introduces Trigen-eration systems and cogeneration systems but never combines the two in any one CPA Moreover: <ul style="list-style-type: none"> Under the VVS Track, which serves as the regulatory framework under which this PoA is developed, there are no further requirements concerning the need for various generic CPA DDs Most importantly, Cogeneration and Trigenation systems applied in non industrial build- 		

List of Findings: CDM-PoA-DD

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Corrective Action Requests/ Clarification Requests by audit team			
	ings constitute a single, broad measure as per AMS IIK: <i>“Technology/measure This methodology applies to the installation of fossil fuel based co-generation or tri-generation facilities that simultaneously produce electricity and cooling (e.g., chilled water) and/or heating (e.g., steam or hot water) for supplying such energy to commercial, non-industrial, buildings.”</i>		
Assessment	p.28 of EB 70 annex 5 states that “The CME shall list in the PoA-DD and the generic CPA-DDs various combinations of technologies/measures and/or approved methodologies that will be implemented in the PoA ”. Also the argument that there are no further requirements concerning the need for various generic CPA DDs under VVM track is not valid since the EB 70 annex 5 is a guidance and it is irrespective of VVM or VVS and comes into immediate effect. Hence the PP needs to submit a separate generic CPA-DD for each technology/measure under the PoA.		
Further response	Separate Generic CPA DDs have been prepared. One to cover Trigeneneration projects and one for Cogeneration projects		
Final assessment	The PP has submitted separate generic CPA-DDs for each of the measure which is cogeneration and trigeneration (previously as per VVM but now integrated into VVS template). Hence the issue is closed.		
CR	Clarification Request No. 25. It is not clear in PoA-DD that what will be the combination of technologies for the future CPAs (i.e. cogeneration/tri-generation will apply either in commercial or non industrial applications or in both the applications).	A.2	<input checked="" type="checkbox"/>
Response	As indicated in the PoA DD, CPAs will either involve the installation of a Trigeneneration system OR Cogeneration system in a non industrial building, of which commercial buildings such as shopping malls, for instance are an example of. This, as indicated in the PP’s response to CL1 above is in line with the text of the methodology quoted, i.e: “Technology/measure <i>1. This methodology applies to the installation of fossil fuel based co-generation or tri-generation facilities that simultaneously produce electricity and cooling (e.g., chilled water) and/or heating (e.g., steam or hot water) for supplying such energy to commercial, non-industrial, buildings.”</i>		

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South Asia

Corrective Action Requests/ Clarification Requests by audit team			
	<p>Whereby, such combinations (ie. trigeneration or cogeneration systems installed in commercial or any other non industrial building), are defined to be the “<i>Technology or Measure</i>” covered by the methodology.</p> <p>This, in the PPs opinion makes sense given that the Trigeneration/Cogeneration and their deployment in the non industrial built environment are broadly a similar class of GHG reduction activities. Nevertheless, Eligibility criteria 3 has been revised to indicate that CPAs shall include Trigeneration “or” (not “and”) Cogeneration systems. The PoA-DD and Specific CPA DD (as per VVS) have been revised accordingly in the relevant criteria 3 sections, to make this clear.</p>		
Assessment	The PoA does not involve any combination of technologies and this has been clearly defined in the PoA-DD. Hence the issue is closed.		

List of Findings: CDM-SSC-CPA-DD

CPA Title: "Installation of a Tri Generation system supplying energy to the Serafi Mega City" CPA Number (001)"



Table 2 Resolution of Corrective Action and Clarification Requests

Corrective Action Requests/ Clarification Requests by audit team			
	Comments and Results	Ref	Conclusion and IRL
CAR	<u>Corrective Action Request No.1.</u> The GPS coordinates of the Energy Centre of Serafi Mega city needs to be provided in the CPA-DD.	A.2.4	<input checked="" type="checkbox"/> 4
Response	The PP has made a correction to the GPS coordinates in section A.4.1.2 to reflect the location of the energy center		
Assessment	The GPS coordinates of the energy center has been included in the revised CPA-DD. Hence the issue is closed.		
CAR	<u>Corrective Action Request No.2.</u> PP shall justify the starting date of CPA and submit documentary evidences to support the start date.	A.3	<input checked="" type="checkbox"/> 13
Response	The starting date of the CPA is taken as the forecasted date on which purchases order for equipment aims to be issued (real action being taken to implement the project). This is shown in the project schedule provided to the DOE. The start date on the schedule or the date for equipment ordering is 1 st April 2014. The project schedule is also attached: "Project Planner R02"		
Assessment	The issue would be closed upon submission of the purchase order/Letter of Intent to supplier		
Response	As indicated above, the start date occurs in the future, hence no purchase orders exist yet. The minutes of the meeting at which this project schedule milestone were agreed to, are provided to the DOE as part of this response (See attached file: Project Planning Meeting 012 02-02-2013). These minutes of meeting serve to confirm that start date provided in the project schedule previously provided to the DOE (forecasted date on which equipment purchase orders aims to be issued).		
Further assessment	Since there is no purchase order exist and also the start date is a planned activity (1 st April 2014) as per project planning document, the issue is closed.		
CAR	<u>Corrective Action Request No.3.</u> The start date of the crediting period needs to be revised in accordance with PoA procedures	A.4.1.1	<input checked="" type="checkbox"/> 4
Response	Corrective action has been taken by the PP to indicate in section A.4.3.1 that the starting date of the crediting period to be July 4 th , 2017 which is the estimated start date of operation of the plant.		

List of Findings: CDM-SSC-CPA-DD

CPA Title: "Installation of a Tri Generation system supplying energy to the Serafi Mega City" CPA Number (001)"



Corrective Action Requests/ Clarification Requests by audit team			
Assessment	This date is indicated in the attached project planner document The date needs to be in dd/mm/yy format.		
Response	Date in section A.3.1. has been corrected to 04/07/2017		
Further assessment	Hence the issue is closed.		
CAR	<u>Corrective Action Request No.4.</u> The Table B.2 of CPA-DD needs to be revised to include the references/evidence against each applicability criteria	A.4.1.2	<input checked="" type="checkbox"/> 4
Response	Table B.2.2 has been revised to include the references/evidence used to ensure compliance with the relevant applicability criteria		
Assessment	All the applicability criteria of methodology have been checked with the supporting evidences such as Serafi Mega City Site Layout, Energy savings calculations spreadsheet, Chiller data sheet. Hence, the issue is closed.		
CAR	<u>Corrective Action Request No.7</u> The justification provided for Criteria 1 of methodology applicability needs to be more clear on the type of fossil fuel used in the CPA.	A.4.2.3	<input checked="" type="checkbox"/> 4
Response	Correction has been made in the justification to criterion 1 that diesel fuel shall be the fossil fuel used by the trigeneration system		
Assessment	The type of fossil fuel has been indicated as diesel and hence the issue is closed.		
CAR	<u>Corrective Action Request No.8</u> The source of the values needs to be provided for the following: 1. Chilled water mass flow rate for chillers produced by project in hour h of year y 2. Indication of fuel type and reference for the NCV 3. Water mass flow rate of the heaters. Also there is a change in the ER value from the GSP CPA-DD. PP shall clarify	A.4.2.9	<input checked="" type="checkbox"/> 35
Response	Sources for the values used have been presented in the Emissions Reductions Spreadsheet.		

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Corrective Action Requests/ Clarification Requests by audit team			
Assessment	The same needs to be provided in the CPA-DD as well.		
Response	Sources for the above values have been indicated in CPA DD section B.5..2. The source for the NCV value is also given in the corresponding parameter table in section B.5.1. The value applied has been corrected from 43 to 43.3 GJ/Tonne to reflect the value at the upper limit at the uncertainty at a 95% confidence interval as per the IPPC 2006 Guidelines (table 1.2) of chapter 1. The ER calculation (in the CPA DD and the spreadsheet) has been revised accordingly to reflect this correction.		
Further assessment	The sources for the ex ante values have been indicated in the CPA-DD. The change in the ER value is accepted since NCV value applied has been corrected from 43 to 43.3 GJ/Tonne to reflect the value at the upper limit at the uncertainty at a 95% confidence interval as per the IPPC 2006 Guidelines (table 1.2) of chapter 1. Hence the issue is closed.		
CAR	<p><u>Corrective Action Request No.9</u></p> <p>The PP shall address the following parameters</p> <ol style="list-style-type: none"> 1. Which value is used for COEFas per Tool 2. Value should be specified for COPc,I in case of Saudi Arabia 3. Value should be justified for Cpw, NCV 4. The fuel type needs to be specified for EFCO₂ 	A.4.4.2	<input checked="" type="checkbox"/> 35
Response	<ol style="list-style-type: none"> 1. Which value is used for COEFas per Tool: The table in section E.5.2 has been corrected to indicate the source of data to be used is the IPPC default given the lack of fuel vendor data. 2. Value should be specified for COPc,I in case of Saudi Arabia The relevant section of the parameter table has been revised to emphasize that the source of the value to be applied corresponds to equipment commonly used the Kingdom of Saudi Arabia. 3. Value should be justified for Cpw, NCV. CPw refers to the specific heat capacity of water, its value is given in AMS II K and prescribed for the purpose of the relevant calculations. The relevant parameter table has been revised to indicate. NCV is not usually provided by the fuel suppliers. Therefore, the fuel providers are NOT a reliable source for the NCV 		

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CPA Title: "Installation of a Tri Generation system supplying energy to the Serafi Mega City" CPA Number (001)"



Corrective Action Requests/ Clarification Requests by audit team			
	4. The fuel type needs to be specified for EFCO ₂ . Correction has been made in the relevant parameter to table to indicate that the fuel to be used is diesel		
Assessment	The CPA-DD has been corrected to indicate the IPCC default given the lack of fuel vendor data, specific heat capacity of water. The corrections have been made to the parameters to indicate the source and the type of fuel used. Hence the issue is closed.		
CAR	<u>Corrective Action Request No.10</u> PP shall provide the responsibilities and institutional arrangements for data collection and archiving in the CPA-DD.		✓ 4
Response	CPA DD has been revised to highlight the responsibilities and institutional arrangements for data arrangement and archiving have been provided.		
Assessment	The CPA DD has been revised to highlight the responsibilities and institutional arrangements for data arrangement and archiving have been submitted to DOE. Hence the issue is closed.		
CAR	<u>Corrective Action Request No.11</u> PP shall mention the QA/QC procedures with the indication of accuracy of the meters for the following parameters: 1. EG grid,y 2. C _{PI,y} 3. m c,i,h 4. DT H,i,h 5. EC P,j,y	E.4.1. 1	✓ 4
Response	QA/QC procedures have been provided in parameters to be monitored tables for 1. EG grid,y 2. C _{PI,y} 3. m c,i,h 4. DT H,i,h 5. EC P,j,y Accuracies have also been provided:		

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Corrective Action Requests/ Clarification Requests by audit team			
	<p>Provide the accuracy of the meters for the following parameters:</p> <ol style="list-style-type: none"> 1. EG grid,y – MID approved (or Equivalent and Approved) 2. C_{pl,y} – OIML 75, EN 1434 (or Equivalent & Approved) 3. m c,l,h – OIML 75, EN 1434 (or Equivalent & Approved) 4. DT H,l,h– OIML 75, EN 1434 (or Equivalent & Approved) 5. EC P,j,y – MID approved (or Equivalent and Approved) 		
Assessment	The QA/QC procedures have been included in the revised CPA-DD. The reference to international standards for measurement has been given but not the accuracy of the meters. The accuracy of meters need to be specified.		
Response	<p>Metering accuracy is to be as follows:</p> <ol style="list-style-type: none"> 1. EG grid,y – MID approved (or Equivalent and Approved) – Accuracy Class 1.0 or Better 2. C_{pl,y} – OIML 75, EN 1434 (or Equivalent & Approved) – Accuracy Class 1, Class 2 or Class 3 3. m c,l,h – OIML 75, EN 1434 (or Equivalent & Approved) – Accuracy Class 1, Class 2 or Class 3 4. DT H,l,h– OIML 75, EN 1434 (or Equivalent & Approved) – Accuracy Class 1, Class 2 or Class 3 5. EC P,j,y – MID approved (or Equivalent and Approved) – Accuracy Class 1.0 or Better <p>The corresponding parameter tables in section B.6.1 have been amended accordingly to reflect such accuracies</p>		
Further assessment	Hence the issue is closed.		
CAR	<p><u>Corrective Action Request No.12</u></p> <p>PP shall clarify whether the parameter is the net electricity measured by the project and how it is cross checked?</p>	E.4.1.1	<input checked="" type="checkbox"/> 4
Response	As per AMS lik, $E_{grid,y}$ is amount of grid electricity displaced by project in year y, and thus is the amount of electricity that would have otherwise been drawn from the grid to meet the electrical demands of the building's consumers. This is determined by an energy balance around the site's distribution board, which calculates the difference between the total amount of electricity supplied to		

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Corrective Action Requests/ Clarification Requests by audit team			
	that board (ie. The electricity that the trigen system's power plant generates in a year, which is metered, plus any electricity drawn from the grid during that same year y, which is also metered) and the electricity that is consumed by the trigen system's auxiliaries. Or, in simple terms, $E_{grid,y} = \text{Tri-Generation Power Output} + \text{Grid Power Consumption} - \text{Tri-Generation auxiliary consumption}$		
Assessment	The formula is not clear regarding the electricity imported from the grid. This should be deducted from the gross generation along with the auxiliary consumption. PP needs to clarify the same. Also the cross check procedure needs to be provided.		
Response	Further clarification has been provided in document " Clarification to response to CPA DD CAR 12 2012_06_25.doc " attached. The electricity that is supplied by the project activity to the building's electricity consumers is equal to the amount that would have been provided to meet such needs in the absence of the project. Hence this is the amount that is displaced. This quantity is determined from an energy balance around the sites electrical board based on metered data of the electricity that is produced by the trigeneration system's power plant and the electricity that is consumed by the auxiliaries and that which is imported from the grid over a year. As the attached document shows, deducting the imported electricity that is imported from the grid from the gross electricity produced in a year will result in double counting the project emissions associated with such consumption when calculating the emissions reductions, which is not correct. Any electricity that is consumed from the grid is accounted for in the form of project emissions, only once, as per the meth. The value for $E_{grid,y}$ is to be cross checked against the total amount of electricity sold to the consumers (invoices). Relevant parameter table has been corrected to include this cross check procedure.		
Further assessment	The explanation regarding the cross check of grid electricity displaced by the project could be accepted. Hence the issue is closed.		
CAR	<u>Corrective Action Request No.13</u> The PP needs to clarify whether Grid emission factor is expost or ex ante?	E.6.3.1	<input checked="" type="checkbox"/> 4
Response	Grid emissions factor is to be applied Ex ante, taken from the PoA DD. Correction has been made in the appropriate parameter table to indicate that it shall be applied exante and be valid for the first crediting period of the SSC CPA. The ex ante value shall be revised at the end of this crediting period and apply the value given in the PoA DD version that is valid at that time.		
Assessment	The Grid emission factor is taken ex ante and the same has been clarified in the CPA-DD. Hence		

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Corrective Action Requests/ Clarification Requests by audit team			
	the issue is closed.		
CAR	<u>Corrective Action Request No.14</u> The measurement description for quantity of fossil fuel should be as per actual implementation	E.6.3. 21.1	<input checked="" type="checkbox"/> 4
Response	Measurement description for $FC_{i,j,y}$ has been corrected to reflect the method to be applied (flow metering)		
Assessment	Hence the issue is closed.		
CAR	<u>Corrective Action Request No.15</u> The justification needs to be in compliance with 'Tool to calculate project emissions and leakage' for NCV and Weighted avg EF of COEF	F.1.1	<input checked="" type="checkbox"/> 4
Response	The relevant tables have been correct to include the justification for the choice of data source. The NCV is not usually provided by the fuel suppliers. Therefore, the fuel providers are not a reliable source for the NCV. Values for the CO ₂ emission coefficient of diesel are not given in the fuel supplier's invoices		
Assessment	Hence the issue is closed.		
CAR	<u>Corrective Action Request No.16</u> The environmental analysis and the impacts need to be properly documented in the CPA-DD.		<input checked="" type="checkbox"/>
Response	Positive impacts, such as the introduction of more energy efficient and less GHG intensive means of meeting the Serafi Mega City's electricity, cooling and hot water needs. This in turn will also mean that the generation of other pollutants associated with the production of electricity in grid connected power plants will also be reduced. Potentially, negative impacts such as increased noise levels associated with the operation of the power plant but which are mitigated by acoustically isolating the generators and turbines to ensure noise is contained within the energy center. In addition, exhaust gases will be treated using diesel oxidation catalyst units or similar technologies to reduce emissions of air pollutants. Section C.2 has been revised to provide additional information on the project's environmental impacts		
Assessment	The CPA-DD has been revised to include the environmental impacts due to trigeneration project. Hence the issue is closed.		

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Corrective Action Requests/ Clarification Requests by audit team			
CAR	<u>Corrective Action Request No.17</u> The Grid emission factor calculation needs to be presented in Annex 3		
Response	The grid emissions factor is not reproduced in the Specific CPA DD since it is a value that has been fixed and validated at the PoA level and is described in the POA-DD		☑ 4
Assessment	The calculation of Grid emission factor still needs to be provided in CPA-DD Annex 3, since it has been fixed ex ante and it is relevant to Saudi Arabia. At the PoA level the Grid emission factor for all the host countries need to be indicated.		
Response	The grid emissions factor has been provided in CPA DD Annex 3. Moreover PoA DD section E.7.1 has been corrected to indicate that the Grid Emissions to be applied to any SSC CPA, regardless of the host country in which it is to be implemented in, shall be presented in its corresponding SSC CPA DD (in Annex 3 of such DD). Hence, the Grid Emissions factor description provided in PoA DD Annex 3 has been deleted. Generic CPA DD section E.7.1 has also been corrected to reflect that the grid emissions factor shall be determined at the CPA level and that the relevant information shall be presented in the Annex 3 of the SSC CPA DD.		
Further assessment	The Grid emission factor calculation has been presented in Annex 3 of CPA-DD. Hence the issue is closed.		
CR	<u>Clarification Request No. 1.</u> The Detailed Project Report (DPR) or the Feasibility Study report for the CPA needs to be submitted to the audit team.	A.2.1	☑ 9
Response	Feasibility study is submitted to the DOE (please refer to Serafi_CES_Feasibility Study Report.		
Assessment	The FSR has been submitted and the input values used in the IRR calculations have been checked based on it. Hence the issue is closed.		
CR	<u>Clarification Request No. 2.</u> The operational lifetime of CPA needs to be in line with the operational lifetime of equipment	A.2.1	☑ 4
Response	The expected operational lifetime of the equipment has been corrected to be inline with its technical lifetime. However the investment analysis is carried out over a period of 20 years and a fair value of asset taken into account as an additional revenue at the end of the assessment period.		
Assessment	The operational lifetime of CPA is in line with the technical lifetime. The residual value is taken as zero for the last 5 years in the investment analysis. Hence the issue is closed.		

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Corrective Action Requests/ Clarification Requests by audit team			
CR	<u>Clarification Request No. 3.</u> The Agreement between CES Carbon and TES needs to be submitted	A.2.1	✓ 12
Response	Agreement between CES Carbon and TES is submitted as part of this response (file name: " CES CS & TES Agreement")		
Assessment	Hence the issue is closed.		
CR	<u>Clarification Request No. 4.</u> PP shall submit the simplified energy efficiency drawings/plan to demonstrate that energy used will be within the project boundary	A.2.3	✓ 4
Response	Simplified drawings showing the location of the Trigenation plant with respect to the project boundary showing that the electricity, chilled water and hot water that will be produced will be used with the project boundary are provided (<i>SK01-Serafi Megacity Layout – RO1.pdf</i>)		
Assessment	The Serafi Mega City layout plan has been submitted which shows the location of the Trigenation plant with respect to the project boundary. Hence the issue is closed.		
CR	<u>Clarification Request No. 5.</u> PP shall provide the calculation for the energy savings by the CPA	A.3.2	✓ 4
Response	Calculation of the energy savings is presented in the spreadsheet titled "Copy of CES CS_AMSIK Energy Saving Calculation Template". PP wishes to point out that the value of energy savings presented in EC 8 has been corrected		
Assessment	Hence the issue is closed.		
CR	<u>Clarification Request No. 6.</u> It needs to be demonstrated that installation of chillers not mandated by any laws	A.3.2	✓ 4
Response	The use of Absorption chillers is not mandated in the Kingdom in Saudi Arabia as indicated by . Abdullah Al-Bawardi from the Saudi Energy Efficiency Centre during a conference call with the DOE on April 12 th 2012.		
Assessment	Documentary evidences/references/reports needs to be provided. The call with Saudi Energy Efficiency can be used as cross check reference.		
Response	"MTMM letter – common practices 2" attached to this response provides a statement from leading		

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Corrective Action Requests/ Clarification Requests by audit team			
	consultancy MTMM that confirms that absorption chillers are not mandated by law in KSA. This was further confirmed during a conference call with Mr. Abdullah Al-Bawardi from the Saudi Energy Efficiency Centre and the DOE on April 12 th 2012.		
Further assessment	Hence the issue is closed		
CR	Clarification Request No. 7. PP shall submit the agreement between TES and the Serafi Group regarding the ownership of CERs	A.4.1.1	<input checked="" type="checkbox"/> 4
Response	Agreement between TES and the Serafi group concerning the ownership of the CERs is presented to the DOE as file TES – Serafi Agreement		
Assessment	Hence the issue is closed.		
CR	Clarification Request No. 8. Please address the following issues with respect to investment analysis 1. Please justify why pre tax IRR has been chosen and not post tax? 2. Please clarify how the US department values of Risk free rate are applicable to Saudi project 3. Please clarify what is ESCO modality and its relevance in the CPA.	A.4.3.1	<input checked="" type="checkbox"/> 4
Response	1. Pre tax basis IRR is chosen as it is deemed to offer a simpler means of determining the cashflows from which the IRR is to be calculate from. Besides, the post tax cashflows are not known. 2. Using the return of US treasury bond as a Risk Free Rate of return is a common approach when determining the return equity for any country. For instance, the EB uses it to determine default values for the expected return on equity for projects in different host countries (please refer to "Guidelines on the assessment of investment analysis "EB 62, Annex 5, Appendix "Default values for the expected return on equity), para. 2 " <i>the risk free rate of return is calculated based on the long-term average returns of US treasury bonds. The US Stock market is used as a proxy because it has the longest well recorded data for government bonds....</i> " 3. ESCO modality refers to cases in which a SSC CPA Implementer such as TES, takes on the risk to invest capital and incurs in the expenditure needed to operate and maintain the tri-generation system, and recoups this investment and expenditure, through the sale of elec-		

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CPA Title: "Installation of a Tri Generation system supplying energy to the Serafi Mega City" CPA Number (001)"



Corrective Action Requests/ Clarification Requests by audit team			
	tricity, cooling and hot water to the building's consumers.		
Assessment	It still needs to be clarified how the value of risk free rate for US treasury bond is taken for a project in Saudi Arabia and its relevance.		
Response	<p>The EB, uses the long term average return of the US treasury bonds to determine default values for the expected return on equity for projects in different host countries, including Saudi Arabia.</p> <p>The underlying reason being for this being:</p> <p>" the risk free rate of return is calculated based on the long-term average returns of US treasury bonds. The US Stock market is used as a proxy because it has the longest well recorded data for government bonds....". (Please refer to "Guidelines on the assessment of investment analysis "EB 62, Annex 5, Appendix "Default values for the expected return on equity" page 7, para) 2</p> <p>Hence the US treasury bond is applicable to the proposed SSC CPA in Saudi Arabia, and can be therefore taken to be the risk free rate that is applied to determine the cost of equity and consequently a WACC, for the proposed SSC CPA .</p>		
Further assessment	Hence the issue is closed.		
CR	<p>Clarification Request No. 9.</p> <p>PP shall provide the following documentation with respect to the Pre tax IRR calculation;</p> <ol style="list-style-type: none"> 1. Internal financial model by CES and the summary sheet 2..Tax duties 3. Contingency costs 4. Insurance costs 5. Salary costs 	A.4.3.2	<input checked="" type="checkbox"/> 4
Response	<p>The following documentation has been presented:</p> <ol style="list-style-type: none"> 1. Internal financial model by CES and the summary sheet: clarification is made that the financial model is not the relevant document. The relevant document is a technical study, in which the inputs used in the IRR model are provided (Serafi_CES Feasibility Study Report) 2..Tax duties <p>The tax duties can be found at the following web site: http://www.the-saudi.net/business-center/regulation-import.htm.</p>		

List of Findings: CDM-SSC-CPA-DD

CPA Title: "Installation of a Tri Generation system supplying energy to the Serafi Mega City" CPA Number (001)"



Corrective Action Requests/ Clarification Requests by audit team			
	<p>4. Contingency costs In the attached document "Cogeneration – a user's guide" a cost breakdown for a typical cogeneration plant is provided on page 83, and 10% value is used for contingency. Moreover according to other sources such as "The European Educational Tool on Cogeneration"(attached to this response as file "Cogeneration Technology Guideline_2001_Educogen_Tool") this figure can even be higher, in the range 15-20% when a project is early in the design process (please refer to page 93 of the referred document). These range of values are also consistent with the range provided in a communication from TPE Consulting Engineers, in which it is indicated that contingency costs for projects in MENA that are at a feasibility study stage are in the range of 15-20%.</p> <p>Hence the above sources support the 10% value applied.</p> <p>5. Insurance costs Insurance costs, are typically in the range of 0.9-1.5%. This is supported by a communication from the Al Aman Company, who is actively involved in the installation of power plant projects in the Kingdom of Saudi Arabia (please refer to ref doc "CES Carbon – Insurance-letter.pdf"</p> <p>6. Salary costs Salaries indicated in the IRR model based on information provided by Human Resources provider in Saudi Arabia, Mounsour Al Mosaid Co. Please refer to document entitled "Quotation for Manpower supply".</p>		
Assessment	<ol style="list-style-type: none"> 1. It was discussed during the site visit that there is an internal financial model which is the basis for all the assumptions in the investment analysis. The document needs to be provided to the DOE. 2. Accepted 3. Accepted 4. Accepted 5. Accepted 		
Response	The internal financial model by TES and the summary sheet are attached (See attached file: "Serafi financial Models") This model was used to undertake the feasibility study that was presented to the DOE. Output figures from this model that were used in the Feasibility Study and which		

List of Findings: CDM-SSC-CPA-DD

CPA Title: "Installation of a Tri Generation system supplying energy to the Serafi Mega City" CPA Number (001)"



Corrective Action Requests/ Clarification Requests by audit team			
	are also referenced in the IRR model spreadsheet provided to the DOE have been highlighted.		
Further assessment	Hence the issue is closed.		
CR	<u>Clarification Request No. 10.</u> In the calculation of risk free rate, 6 month data previous to the investment decision needs to be taken as per the IRR spreadsheet. The data in the excel sheet is taken from 03/04/2011 which is not matching with the six months period (investment date is 01/09/2011)	A.4.3.2	<input checked="" type="checkbox"/> 4
Response	The spreadsheet has been corrected to reflect six months leading up to the decision date and provided with this response.		
Assessment	Hence the issue is closed.		
CR	<u>Clarification Request No. 11.</u> PP shall provide the O&M manual and documents for project monitoring system of the CPA	A.4.3.2	<input checked="" type="checkbox"/> 4
Response	Detailed and final design of the SSC CPA's monitoring system (in terms of metering model and make for instance) has yet to be defined and purchased. Hence O&M manual and documents cannot be provided yet.		
Assessment	Hence the issue is open.		
Response	The types of meters that could be used have been indicated in the relevant parameter tables in section B.6.1 including the accuracies to which they would be specified to. Monitoring system engineering design however is still as a very early stage and the make and exact model have yet to be selected. Hence OM manuals are not available at this point in time. However , and most importantly, the metering is to be specified as given in section B.6.1 of the Specific CPA DD to ensure compliance with the methodology's and the General Guidelines for SSC CDM methodologies		
Further assessment	Hence the issue is closed.		
CR	<u>Clarification Request No. 12.</u> The eligibility criteria number 6 i.e. "having a self declaration letter" to confirm the voluntary initiative of CPA is not objective and verifiable. How would CME check this need to be elaborated further?	A.4.3.2	<input checked="" type="checkbox"/>
Response	The CME will confirm the statement made by the CPA implementer that the initiative is voluntary one and not mandated by any law, by providing to the DOE supporting evidence obtained from third party sources, such as consultants or govt sources confirming that the installation of cogeneration/trigeneration is not mandated by law. The eligibility criteria 6 in section Section A.4.2.2 of the		

List of Findings: CDM-SSC-CPA-DD

CPA Title: "Installation of a Tri Generation system supplying energy to the Serafi Mega City" CPA Number (001)"



Corrective Action Requests/ Clarification Requests by audit team			
	PoA DD, Table B.2.1.in the Generic and Specific CPA DD have been revised to indicate that check shall be carried out. Please refer to the file name "MTMM Common Practices (2)" which was previously submitted to the DOE and which is a confirmation from MTMM Consulting engineers that the installation of cogeneration/trigeneration is not mandated by law.		
Assessment	The evidence from the third party sources demonstrate that the Trigeneration projects in KSA are not mandated by any laws. Hence it could be confirmed that the participation by CME is voluntary and in this regard, the self declaration letter could be accepted. Hence the issue is closed.		
CR	<u>Clarification Request No. 13.</u> PP needs to provide another source to DOE (other than internal financial model of Serafi financial model) to cross check the Input value for IRR sheet for indicators like " total amount of electricity sold", " total amount of heat" and "total amount of cooling sold"	A.4.3.	<input checked="" type="checkbox"/>
Response	PP has provided a letter from engineering consultancy MTMM which confirms that the loads (inputs) upon which the financial model was built are adequate for the type of construction involved. Please refer to "MTMM Confirmation Letter" to be submitted to the DOE as part of this response		
Assessment	The confirmation letter from third party sources has been provided as a supportive to the financial models to check the input values. Hence the issue is closed.		
CR	<u>Clarification Request No. 14.</u> The 6. 7% has been considered as commercial lending rate in CPA DD (Table 4. Parameter for WACC calculation). PP needs to indicate the source in the CPA-DD. Similarly, 20% has been considered as host country tax rate. Official source or official link has to be provided in CPA-DD	B.5.2	<input checked="" type="checkbox"/>
Response	The sources of the commercial lending rate (<i>PricewaterhouseCoopers' "Commercial Lending Rates Confirmation.pdf"</i>) and the link to the source of the host country tax rate http://dzit.gov.sa/en/tax-base-and-tax-rates have been indicated in table 4 of the CPA DD		
Assessment	The sources and references for commercial lending rate and tax rate have been assessed and found to be correct. Hence the issue is closed.		
CR	<u>Clarification Request No. 15.</u> In the eligibility criteria no. 7, it needs to be explained in detail which kind of IRR will be considered - Pre-tax or post-tax (if both, then under which circumstances what kind of IRR will be taken). The PoA must include a framework for CPA. similarly, benchmark analysis framework (which can be used in all future CPA) should also be included in eligibility criteria	B.5.2	<input checked="" type="checkbox"/>
Response	Eligibility criteria no. 7 has been revised to reflect that the project IRR that has been chosen is one		

List of Findings: CDM-SSC-CPA-DD

CPA Title: "Installation of a Tri Generation system supplying energy to the Serafi Mega City" CPA Number (001)"



Corrective Action Requests/ Clarification Requests by audit team			
	of the two that are permitted (ie Pre Tax Project IRR).		
Assessment	The CPA-D has been revised to elaborate clearly the eligibility criteria 7. Hence the issue is closed.		
CR	<u>Clarification Request No. 16.</u> It needs to be clarified what is retail place, with respect to the Serafi megacity (A.4 of CPA-DD)	B.5.2	<input checked="" type="checkbox"/>
Response	Retail space is part of the shopping mall. To avoid confusion revision has been made in the specific CPA DD, section A.4.1, as it is part of the Shopping Mall.		
Assessment	The term retail space has been clearly explained in the CPA-DD. Hence the issue is closed.		

Table 3 Unresolved Corrective Action and Clarification Requests (in case of denials)

Clarifications and / or corrective action requests by validation team	Id. of CAR/CR	Explanation of Conclusion for Denial
-	-	-

Annex 2

Information Reference List



Ref. No.	Author/Editor/ Issuer	Title/Type of Document. Publication place	Issuance and/or submission date	Additional Information
1.	TÜV SÜD	<p>Onsite interviews and Audit carried out by TÜV SÜD:</p> <p>Validation Team: Bratin Roy Eswar Murty Khalid Mahmood¹ Muhammad Amin Zammam²</p> <p>Interviewed Persons: Dareen Ayyad CES Carbon Services Ltd Neil O Conneor CES Energy Donal O Donall ESDM Taher Tag-Eldin Total Energy Solutions Dr. Majid Enami Serafi Mega City Francisco Koch South Pole Carbon Asset Management</p>	12-15 April, 2012	
2.	UNFCCC	Approved small scale methodology AMS.II.K, version 2		
3.	CES Carbon Services	<p>GSP PoA-DD, version 1 http://cdm.unfccc.int/UserManagement/FileStorage/DEK1306SOFZ8B57I2N/GUARWPXHCL4Q GSP CDA-DD, version 1</p>	06.03.2012	

¹ Left the Organization

² Left the Organization



Ref. No.	Author/Editor/ Issuer	Title/Type of Document. Publication place	Issuance and/or submission date	Additional Information
		http://cdm.unfccc.int/filestorage/G/F/S/GFS0UDTZHCA1W69BQM42V3IYJ57RL8/CPA-DD%20Real%20Case.pdf?t=MEF8bTgycjd6fDAnSpl6eCfECemh78yTofCe		
4.	CES Carbon Services	Final PoA-DD, version 07 Final CPA-DD, version 06	29.12.2013 29.12.2013	
5.	CES Carbon Services	Certificate of Incorporation for CES Carbon Services and name change certificate	10.02.2012	
6.	CES Carbon Services	Declaration of Voluntary implementation of PoA	17.04.2012	
7.	DNA of KSA	Grid emission factor in Saudi Arabia http://www.cdmdna.gov.sa/GEF.pdf	Last accessed on 29.12.2013	
8.	Kingdom of Saudi Arabia electricity authority	Electricity rate in Kingdom of Saudi Arabia http://www.ecra.gov.sa/31_22_1.aspx	Last accessed on 29.12.2013	
9.	UAE electricity authority	Electricity rate in UAE http://www.dewa.gov.ae/tariff/tariffdetails.aspx http://www.dynamic-ews.com/Tariffs/Electricity%20Tariffs/abudhabi.pdf	Last accessed on 29.12.2013	
10.	Qatar Electricity authority	Electricity rate in Qatar http://www.km.com.qa/en/customer/Pages/RateInformation.aspx	Last accessed on 29.12.2013	
11.	Oman Public authority	Electricity rate in Oman: Public Authority of Electricity	Last accessed on 29.12.2013	
12.	Egypt Electricity Department	Electricity rate in Egypt http://www.egyptera.com/en/Bill_Tariffs.htm	Last accessed on 29.12.2013	



Ref. No.	Author/Editor/ Issuer	Title/Type of Document. Publication place	Issuance and/or submission date	Additional Information
13.	CES Carbon Services	CDM Feasibility Study for CES Energy Project	August 2011	
14.	CES Energy	Services Agreement between South Pole Carbon Asset Management and CES Energy	02.08.2011	
15.	CES Energy & Total Energy Solutions	Minutes of meeting and decision to pursue PoA	06.08.2011	
16.	CES Energy	Minutes of meeting to discuss the establishment of CME	07.08.2011	
17.	CES Energy	Minutes of Meeting of CPA (Serafi Mega City Development)	02.02.2013	
18.	Total Energy Solutions	Supply for Energy to the Serafi Mega City Development, Jeddah, KSA between Total Energy Solution and Serafi Development	01.09.2011	
19.	Total Energy Solutions	Project planner R02	09.01.2013	
20.	CES Carbon Services	Draft manual for Management system procedures	Feb 2012	
21.	Mott MacDonald	Letter from the Engineering consultant & technology supplier to confirm the Common practice for electricity, heating and cooling in KSA	09.05.2012	
22.	Delap & Waller	Letter from the Engineering consultant & technology supplier to confirm the Common practice for electricity, heating and cooling in UAE	29.06.2012	
23.	Mercury Qatar	Letter from the Engineering consultant & technology supplier to confirm the Common practice for electricity, heating and cooling in Qatar	23.06.2012	
24.	Delap & Waller	Letter from the Engineering consultant & technology supplier to confirm the Common practice for electricity, heating and cooling in Oman	29.06.2012	
25.	CGroup	Letter from the Engineering consultant & technology supplier to confirm the	23.06.2012	



Ref. No.	Author/Editor/ Issuer	Title/Type of Document. Publication place	Issuance and/or submission date	Additional Information
		Common practice for electricity, heating and cooling in Egypt		
26.	Mott MacDonald	Cogeneration/Trigeneration policy regulations in KSA	09.05.2012	
27.	University of Technology Sydney	Cogeneration in NSW	March 2008	
28.	Oliver Wymann	Delivering on the Energy Efficiency promise in Middle East- An article		
29.	Applied Energy	Developing sustainable development buildings in Saudi Arabia- Case study		
30.	Energy Policy	Energy Generation Policies of Gulf Cooperation Council- An abstract		
31.	Gulf news	District cooling and the general practice in the Middle East – An article		
32.	Daikin	Common refrigerants and Cooling for chillers in Middle east	26.06.2012	
33.	Egyptian Electricity Holding Company	Annual report	2010-11	
34.	KSA tax rates	http://www.taxrates.cc/html/saudi-arabia-tax-rates.html	Last accessed on 15.08.2012	
35.	DNA of KSA	Letter to CES Energy regarding EIA requirements	28.02.2012	
36.	Rudds Consulting Engineers	http://www.rudds.com.au/content.php/category/id/52	Last accessed on 29.12.2013	
37.	Miraclei LLC	http://www.miraclei.com/alternative_energy/trigeneration.html	Last accessed on 29.12.2013	
38.	REEEP	http://www.reeep.org/index.php?id=9353&special=viewitem&cid=117	Last accessed on 29.12.2013	
39.	Ahmed Saleh Al Jahdami	http://www.albawaba.com/learn-german-energy-model-397588	Last accessed	



Ref. No.	Author/Editor/ Issuer	Title/Type of Document. Publication place	Issuance and/or submission date	Additional Information
			on 29.12.2013	
40.	Montreal Protocol	http://ozone.unep.org/new_site/en/parties_under_article5_para1.php http://ozone.unep.org/new_site/en/Treaties/control_measures_summary.php	Last accessed on 29.12.2013	
41.	Daikin sales	http://www.daikinme.com/sales-network/index.jsp	Last accessed on 29.12.2013	
42.	UNFCCC	EB 62 Annex 5 “Guidelines on the assessment of investment analysis”		
43.	North American LNG systems	http://www.fwc.com/publications/tech_papers/files/LNJ091105p34-36.pdf	Last accessed on 29.12.2013	
44.	U.S long-term government bond	http://www.treasury.gov/resource-center/data-chart-center/interest-rates/Pages/TextView.aspx?data=yieldYear&year=2010	Last accessed on 29.12.2013	
45.	Damodaran Stern University	http://pages.stern.nyu.edu/~adamodar/	Last accessed on 29.12.2013	
46.	Ibbotson SBBI	2009 Valuation Yearbook, Chapter 7, page 96		
47.	Damodaran Stern University	http://www.stern.nyu.edu/~adamodar/pc/archives/ctryprem09.xls	Last accessed on 29.12.2013	
48.	National Committee for CDM	LoA of Saudi Arabia	09.12.2012	
49.	Ministry of Environment and Climate Affairs	LoA of Oman	08.08.2012	
50.	Ministry of State for Environmental Affairs	LoA of Egypt	June 2012	



Ref. No.	Author/Editor/ Issuer	Title/Type of Document. Publication place	Issuance and/or submission date	Additional Information
51.	Environmental Protection Agency	LoA of Ireland	10.12.2012	
52.	CES Carbon services & TUV SUD	Telephonic interviews with representatives of DNA of UAE and Qatar	10.07.2012	
53.	CES Carbon services	MoC form	16.12.2012	
54.	CES Carbon Services Ltd	Local Stakeholder meeting Consultation invitation by following Newspaper <ul style="list-style-type: none"> • Saudi Gazette (January 8th, 2012 (Advertisement in English) • Okaz newspaper (January 8th, 2012) (Advertisement in Arabic) 	08.01.2012	Local Stakeholder meeting Consultation invitation
55.	CES Carbon Services Ltd	<ol style="list-style-type: none"> 1. List of Participants and summary of comments of Public stakeholder process. 2. Pictures of Participants of Public stakeholder meeting 	31.01.2012	
56.	CES Carbon Services Ltd	Local Stakeholder meeting report- Serafi Mega City Trigeneneration	31.01.2012	
57.	Turbomac	Project equipment quotation offer from Turbomach for Trigeneneration system	13.03.2012	
58.	Al Aman Company	Bill of quantity for supply and installation of 10 Generating Sets	30.11.2010	
59.		Quotation for vapor absorption chiller	06.01.2010	
60.	Carrier Saudi Arabia	Quotation for pumps from Carrier		
61.	Saudi Arabia electricity tariff rate	Electricity tariff	January 2011	
62.	Cooling supply agreement between the supplier and the	Cooling Tariff	January 2011	



Ref. No.	Author/Editor/ Issuer	Title/Type of Document. Publication place	Issuance and/or submission date	Additional Information
	offtaker			
63.	Heat supply agreement between the supplier and the offtaker	Heat Tariff	January 2011	
64.	Mercury	Mechanical & electrical integration	27/04/2010	
65.	TURBOMACH SA	Maintenance cost for turbines	25/03/2010	
66.	Price waterhouse coopers	Legal fees, financial arrangement and consultancy fees	15/08/2011	
67.	National Water company of Saudi Arabia	water tariff calculator www.nwc.com.sa	NA	
68.		diesel rate invoice (0.26 SAR/L)	14/08/2011	
69.	KSA Corporate tax rate	Corporate tax rate: 20% http://www.taxrates.cc/html/saudi-arabia-tax-rates.html	NA	
70.	Serafi group	Letter from Serafi group to CES Energy regarding claim and ownership of CER	March 2012	
71.	McQuary	McQuary---manufacturers for chillers (as per requirement of applied methodology)	09/01/2012	
72.	McQuary	Carrier---manufacturers for chillers (as per requirement of applied methodology)	01/12/2012	
73.	MTMM Engineering Consultancy	Common practices for Generation of electricity , hot water and cooling in KSA	29/9/2012	



Ref. No.	Author/Editor/ Issuer	Title/Type of Document. Publication place	Issuance and/or submission date	Additional Information
74.	DNA for KSA	EIA requirement for CDM projects in Saudi Arabia	28/02/2012	Letter specify that EIA is not required at early stage of project but it is required at constructional stage
75.	Serafi Mega City	Tri-generation system site layout	---	
76.	CES & TES	Serafi Project implementation schedule	---	
77.	CES & TES	Serafi Project Financial models	---	
78.	CES & TES	Emission reduction calculation spreadsheet for Serafi CPA	---	
79.	CES & TES	Investment analysis spreadsheet for Serafi CPA	--	
80.	UNFCCC	EB 62 Annex 5 "Guidelines on the assessment of investment analysis"	---	
81.	McQuary	Carrier---manufacturers for chillers (as per requirement of applied methodology)	01/12/2012	
82.	MTMM Engineering Consultancy	Common practices for Generation of electricity , hot water and cooling in KSA	29/9/2012	
83.	DNA for KSA	EIA requirement for CDM projects in Saudi Arabia	28/02/2012	Letter specify that EIA is not required at early stage of project but it is required at constructional stage

Advanced Energy Solutions for Buildings. Programme of Activities (PoA) and “Installation of a Tri Generation system supplying energy to the Serafi Mega City” CPA Number (001)

Information Reference List

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South Asia

Ref. No.	Author/Editor/ Issuer	Title/Type of Document. Publication place	Issuance and/or submission date	Additional Information
84.	Serafi Mega City	Tri-generation system site layout	---	
85.	CES & TES	Serafi Project implementation schedule	---	
86.	CES & TES	Serafi Project Financial models	---	
87.	CES & TES	Emission reduction calculation spreadsheet for Serafi CPA	---	
88.	CES & TES	Investment analysis spreadsheet for Serafi CPA	--	
89.	Mott MacDonald	Confirmation letter for the input values in the financial model	01.09.2010	
90.	Saudi Energy Efficiency Department	Discussions by audit team to confirm the policy and regulations in KSA	April 2012	
91.	Google Earth	GPS coordinates of the CPA location: Serafi Mega City	---	
92.	Chartered Institute of Building Services Engineers document	Technical lifetime of equipment	---	

Annex 3

Appointment Certificates



South Asia

CERTIFICATE OF APPOINTMENT

Mr. Murty, Eswar fulfills the requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd to participate in audits.

Qualification applicable to					
Standard	CDM	GS	VCS	VER	Other
Date	26.11.12				

Qualification as						
Status	Trainee	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date		26.11.12	26.11.12	26.11.12		1.2, 6.1, 13.1

Other qualification						
Country Expertise						
Region	1	2	3	4	5	Other
Date	26.11.12					
Further countries						
Financial Expertise						
Date						

Qualification in technical areas	
Technical Area	Date
1.2_Energy generation from renewable energy source	26.11.12
6.1_Construction	26.11.12
13.1_Waste handling and disposal	26.11.12

This appointment is valid until 31.05.2014 and is bound by internal requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd.

In case of loss of validity of this certificate as per result of an assessment according to internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference no. CB-IND-CCP-0031/003.

Date	Signature
01.03.2013	
01.03.2014	



South Asia

CERTIFICATE OF APPOINTMENT

Mr. Roy, Bratin fulfills the requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd to participate in audits.

Qualification applicable to					
Standard	CDM	GS	VCS	VER	Other
Date	22.11.12				

Qualification as						
Status	Trainee	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date		22.11.12	22.11.12	22.11.12	22.11.12	1,2, 3,1,13.1

Other qualification						
Country Expertise						
Region	1	2	3	4	5	Other
Date	22.11.12					
Further countries						
Financial Expertise						
Date	22.11.12					

Qualification in technical areas	
Technical Area	Date
1.2_Energy generation from renewable energy source	22.11.12
3.1_Energy demand	22.11.12
13.1_Waste handling and disposal	22.11.12

This appointment is valid until 31.05.2014 and is bound by internal requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd.

In case of loss of validity of this certificate as per result of an assessment according to internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference no. CB-IND-CCP-0038/003.

Date	Signature
01.03.2013	
01.03.2014	



South Asia

CERTIFICATE OF APPOINTMENT

Mr. Dutta, Supratik fulfills the requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd to participate in audits.

Qualification applicable to					
Standard	CDM	GS	VCS	VER	Other
Date	21.11.12				

Qualification as						
Status	Trainee	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date		21.11.12	21.11.12	01.03.13	01.02.14	1.2, 3.1

Other qualification						
Country Expertise						
Region	1	2	3	4	5	Other
Date	21.11.12					
Further countries						
Financial Expertise						
Date	21.11.12					

Qualification in technical areas	
Technical Area	Date
1.2_Energy generation from renewable energy source	21.11.12
3.1_Energy demand.	15.07.13

This appointment is valid until 31.05.2014 and is bound by internal requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd.

In case of loss of validity of this certificate as per result of an assessment according to internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference no. CB-IND-CCP-0012/004.

Date	Signature
01.03.2013	
15.07.2013	
01.03.2014	



South Asia

CERTIFICATE OF APPOINTMENT

Mr. Agarwal, Nikunj fulfills the requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd to participate in audits.

Qualification applicable to					
Standard	CDM	GS	VCS	VER	Other
Date	23.11.12				

Qualification as						
Status	Trainee	Validator	Verifier	Team Leader	Technical Reviewer	Technical Expert
Date		23.11.12	23.11.12			1.2, 3.1, 13.1, 13.2, 15.2

Other qualification						
Country Expertise						
Region	1	2	3	4	5	Other
Date	23.11.12					
Further countries						
Financial Expertise						
Date	23.11.12					

Qualification in technical areas	
Technical Area	Date
1.2_Energy generation from renewable energy source	23.11.12
3.1_Energy demand	23.11.12
13.1_Waste handling and disposal	23.11.12
13.2_15.2_Animal waste management	23.11.12

This appointment is valid until 31.05.2014 and is bound by internal requirements of the Certification Body 'Environment and Energy' of TÜV SÜD South Asia Pvt Ltd.

In case of loss of validity of this certificate as per result of an assessment according to internal procedures or due to any other reason, it will be properly communicated to you.

Your Certificate has the internal reference no. CB-IND-CCP-0001/004.

Date	Signature
01.08.2013	
01.03.2014	