PROGRAMME DESIGN DOCUMENT FORM FOR SMALL-SCALE CDM PROGRAMMES OF ACTIVITIES (F-CDM-SSC-PoA-DD) Version 02.0

PROGRAMME OF ACTIVITIES DESIGN DOCUMENT (PoA-DD)

PART I. Programme of activities (PoA)

SECTION A. General description of PoA

A.1. Title of the PoA

PoA Title:	PoA for fuel switching at micro and small-sized enterprises in Egypt (hereinafter referred to as the "PoA")
Version Number:	07
Date of completion:	23/12/2012

A.2. Purpose and general description of the PoA

This PoA is designed by the CDM Awareness & Promotion Unit under the Egyptian Environmental Affairs Agency (CDM-APU/EEAA), as the coordinating and managing entity (CME), to reduce greenhouse gases (GHG) at micro and small enterprises (defined for the purpose of this PoA as facilities with labour force of no more than 50 workers and a capital investment of no more than 1 million EGP) wishing to switch from burning fuel oils to burning natural gas in their kilns/furnaces/ovens (where the output of combustion is heat/thermal energy used for manufacturing products, e.g. bread, bricks, etc).

- ***Overview on M/SMEs in Egypt:***

Micro, Small and Medium Enterprises (M/SMEs) are one of the main driving forces of the Egyptian economy. Developing this sector is considered to be a powerful mean of promoting inclusive growth. The development of SMEs in Egypt is considered as one of the important components of the government's social and economic development agenda, as they constitute a large portion of the country's economy as well as act as a major employment provider. According to Egypt's General Authority for Investment and Free Zones (GAFI), SMEs account for 80 percent of Egypt's domestic economy, and 75 percent of the private sector's labour force.[1]

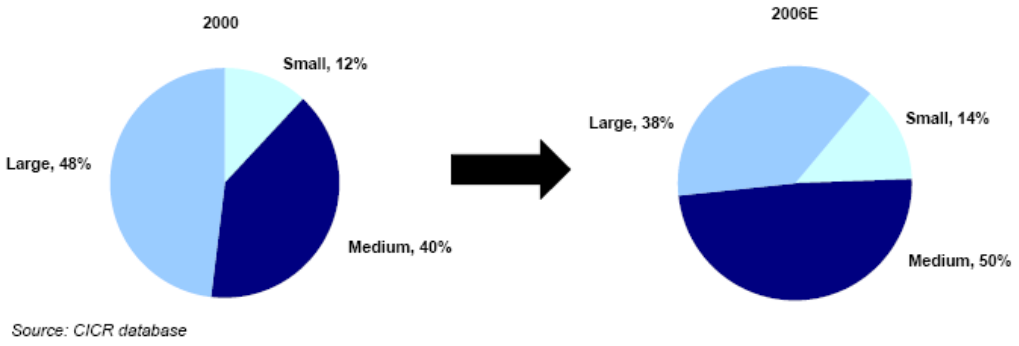


Figure 1: SME's contribution to Industrial GDP[2]

[1] Quarterly newsletter published by the Ministry of Planning & International Co-operation - Centre for Project Evaluation and Macroeconomic Analysis, Vol. IX, Issue no. 4, Oct 2011 - http://www.pema.gov.eg/FileUpload/Publication/Files/328.pdf

[2] Egypt Book – CI Capital Research (CICR), Nov 2008 – http://www.gafinet.org/English/Publications/CI%20Capital%20Research%20Book%20%20EGYPT-2008.pdf

An Egypt country paper, prepared by UNIDO in 2001, shows that manufacturing output represented more than 20% of the Gross Domestic Product (GDP) employing about 20% of the active labor power. The Manufacturing Value Added (MVA) in 2001 represented about 12% of the Gross National Product (GNP). Private sector share of MVA was 87.9% while the public sector share of MVA was 12.1%.[3]

According to a report prepared by C.A.I.MED (Formez) in 2004[4], M/SMEs are said to be the second critical component of the Government of Egypt's economic reform and trade liberalization programs. They constitute the bulk of private sector activity and approximately 99% of the non-agricultural private sector, three quarters of the total labor force in the private sector.

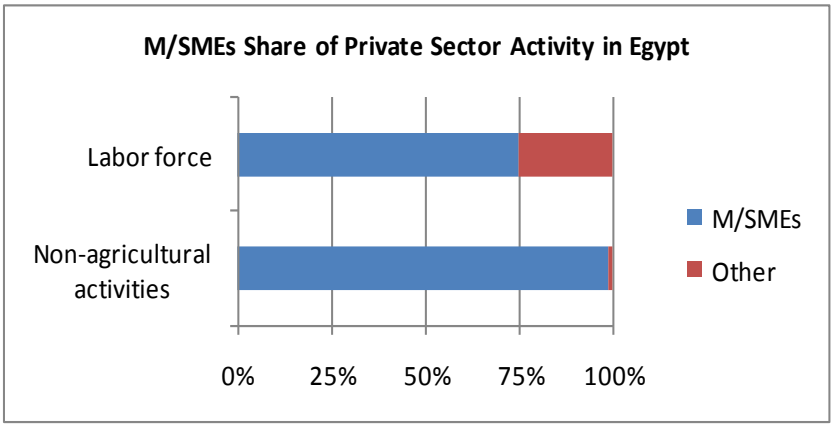


Figure 2: M/SMEs share of private sector activity in Egypt

Based on Formez report, about 71% of the total M/SMEs are micro-enterprises, the rest being divided between small (19%) and medium (10%).

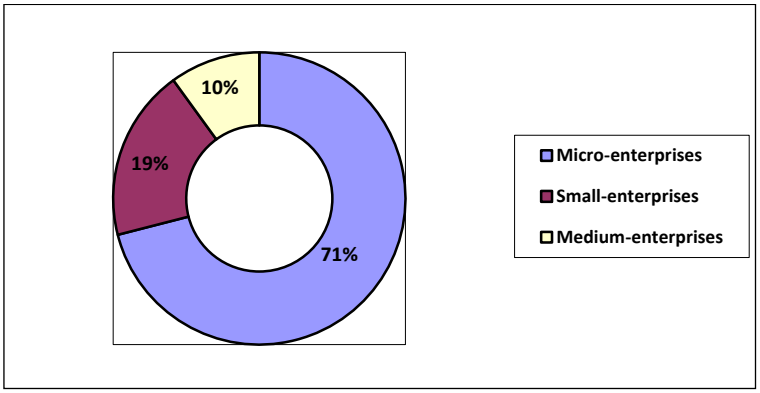


Figure 3: Division of M/SMEs in Egypt

Statistics of 2006 show that there are about 2.5 million private enterprises in Egypt, most of them small or micro as shown in the table below. [5]

[3] The Challenges of Sustainable Industrial Development in Egypt, A country paper prepared by UNIDO in 2001 - http://www.mafhoum.com/press2/79E19.pdf

[4] Policies for business in the Mediterranean Countries, Egypt Report prepared by C.A.I.MED (Formez), 2004 - http://unpan1.un.org/intradoc/groups/public/documents/caimed/unpan018699.pdf

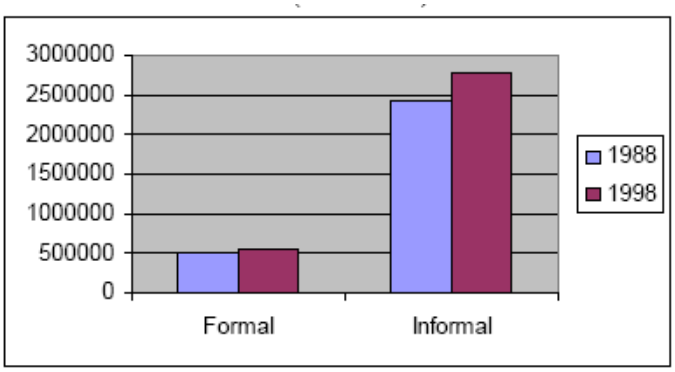
[5] Egypt Private Sector Country Profile, The African Development Bank, 2009 - http://www.afdb.org/fileadmin/uploads/afdb/Documents/Project-and-Operations/Brochure%20Egypt%20Anglais.pdf

Table 1: Enterprises in operation - Results of 2006 Census (by size)

Type of Formal Enterprise	Number
Very Large (over 1000 employees)	207
Large (500 to 1000 employees)	292
Medium (100 to 500 employees)	2,871
Small (10 to 100 employees)	3,163
Very small (5 to 10 employees)	42,538
Micro (1 to 5 employees)	152,445
Micro (one employee)	2,252,550
Total	2,450,903

Source: CAPMAS 2006 Census

In addition to the millions of M/SMEs and micro-enterprises, there are also some two million informal enterprises. The informal sector is however an important segment in the economy that is not included in the formal economy. It cannot be ignored as it plays a significant role in providing services and employment to a significant segment of the society. [6]



Source: El-Mahdi, A, ELMS98 data files.

Figure 4: Change in number of SMEs from 1988 to 1998[7]

Despite the importance of M/SME development, no coherent policy for M/SME development was developed until the late 90s. As a consequence of this, M/SME contributions to employment creation, productivity improvement, and income generation are still underutilized in Egypt.

However, being a sector subject to numerous constraints, the government, the private sector, NGOs, business associations as well as researchers and academics have been studying and exploring ways of providing support to the sector in order to strengthen its contribution to income growth and employment generation.[8]

[6] See the reference presented in footnote (05) above.
[7] Profile of SMEs in Egypt, The Small and Medium Enterprises Policy Development Project, Ministry of Foreign Trade, Mar 2003 - http://www.sme.gov.eg/English_publications/M/SME_Profile_2003.pdf
[8] M/SME Definition Study (Phase II), Ministry of Foreign Trade, January 2004 - http://www.sme.gov.eg/English_publications/Definition.pdf

- ***Policy, measures and stated goals that the PoA seeks to promote:***

o National goal 1 – Encouraging the use of natural gas in place of fuel oils:

Most of the M/SMEs in Egypt use energy generated from the combustion of either heavy fuel oil (HFO, locally know as mazout), or light fuel oil (LFO, also known as diesel oil, and locally known as solar/gaz)[9] in their operations. The government of Egypt has been trying to encourage M/SMEs to switch to using natural gas (NG) instead of the traditionally used fuel oils (HFO/LFO). This is driven by the following:

a) The government's desire to encourage the use of low-carbon fuels as a way of improving the living conditions of the local community has been growing. In this context, the government committed in 2011 to strongly support the measures required for supplying NG to SMEs as a way of reducing their energy costs and protect the environment at the same time.[10]

   It is to be noted that the majority of M/SMEs are located in the middle of residential areas. Hence, the government plans for switching to NG at M/SMEs comes in line with their plans for switching to NG at households. In May 2012, EGAS announced their plan to connect about 750,000 household – in various governorates of Egypt – to the NG network in the fiscal year 2012/2013 (compared to 560,000 in 2011/2012, and 550,000 in 2010/2011). It is noted that 2012/2013 plan includes the NG connections to bakeries and commercial stores.[11]

b) Presently, the government of Egypt subsidizes energy for most industries, and also provides subsidies for some products. An example of such subsidies is the one provided by the Ministry of Supply and Internal Trade to bakeries. This subsidy accounts for the high price of LFO through granting each bakery 10 EGP for each shewal (a weighing unit widely used locally – equivalent to 100 kg sack) of the consumed flour. Due to that such obligations represent a burden for the government of Egypt, the responsible ministry has been unable to release this subsidy for over 6 month, and has been struggling to obtain sufficient finance to meet its obligations.[12]

c) The dependency of strategic products, mainly bread, on the availability of LFO is resulting in rare, yet critical, chaotic situations for the government, the cause of which they would like to eliminate. According to the latest reports of the Egyptian Ministry of Supply and Internal Trade (April 2012)[13], there are presently 22,000 operating bakeries in Egypt. The capacity of each is determined during licensing and is referred to by its consumption of flour in shewal. Each shewal of flour requires 12 litres of LFO to be processed into the final product; bread.

   The average consumption of each bakery varies from 70-300 litre of LFO daily (where the average flour consumption varies between 6-30 shewal per day). After one of the recent fuel crises, the ministry announced that it is planning to start a framework of proportionally linking the LFO quantities required for each bakery operation to its requirements of flour, in order to be able to secure future demand.

   From the above, and since LFO is neither consistently nor securely distributed compared to piped NG, therefore connecting bakeries to the NG network is becoming increasingly of special importance to the

[9] Egyptian Environmental Affairs Agency/Egyptian Pollution Abatement Project (EEAA/EPAP): Self-monitoring manual for energy generating plants - http://industry.eeaa.gov.eg/publications/Energy.pdf
[10] Al-youm Online Newspaper, Article dated Oct. 2011 – http://www.alyaum.com/News/art/34493.html
[11] El-balad Online Newspaper, Article dated May 2012 – www.el-balad.com/158891/tosyl-alghaz-l-750-alf-o.aspx
[12] Al-Masry Al-Youm Newspaper, Article dated May 2012 – http://www.almasryalyoum.com/node/814021
[13] Akhbar El-Youm Newspaper, Article dated April 2012 – http://dar.akhbarelyom.org.eg/issuse/detailze.asp?mag=akh&field=news&id=8394

Egyptian government – in addition to their continuous efforts to promote NG switching activities in general.

d) As LFO is imported, the switch to natural gas from Egypt's reserves will help secure supply and reduce dependency on foreign currency imports which threaten the economy with shortages particularly in the present period of instability and the foreseeable future.[14]

- ✓ *How the PoA encourages the switching activities:*
  The PoA offers much needed incentives to CPA Facilities Owners through providing financial income in the form of a share of the sales revenues of the CERs to be generated by their CPAs. This would assist M/SME owners in switching to NG, resulting in providing:
  - Better living conditions for the Egyptian community;
  - Reduced subsidies obligations on the government; and
  - Secured and continuous supply of energy to fundamental industrial facilities like bakeries, where the same concept applies to other industries of relevant importance, e.g. brick manufacturing and its importance to the construction sector, etc.

- o National goal 2 – M/SMEs development and capacity building:

The M/SME sector in Egypt has been growing during the last three decades at a phenomenal rate with almost no state support. In 2004, the government of Egypt issued law (141/2004) to support and enhance the development of the SME sector.

Law (141/2004) defined a small enterprise as "any economic, productive or service enterprise employing up to 50 workers with a paid in capital of maximum one million EGP". It also stated that an enterprise would be considered a micro-enterprise if the "capital does not exceed 50,000 EGP and the number of employees is below 10 employees".[15]

However, it did not provide any definition for medium enterprises. Such a limitation excludes a large number of medium-sized enterprises (those employing over 50 employees) from taking advantage of any benefits provided under the law, i.e. reduced licensing fees, training services provided by Social Fund for Development (SEF)[16].

- ✓ *How the PoA assist in the development and capacity building of CPA Facilities Owners:*
  The oversight and guidance of the CME in the implementation of project activities is anticipated to develop the institutional and organizational structure of CPA Facilities Owners and help them become more organized in terms of operation and documentation. This will in turn allow them to develop as individual entities that are able to function in the Egyptian market formally and meets the requirements of banks and donors when seeking finance or applying to join appropriate schemes and programmes.

- o National goal 3 – Encouraging sustainability practices in M/SMEs operation:

According to a study on environment as an aspect of M/SME policy development in Egypt prepared in 2008[17], the local status in Egypt demonstrates a clear direction to assign and empower one organization to be the focal point for planning, providing technical assistance and monitoring/ inspecting compliance

[14] Reuters, Article dated May 2012 – http://www.reuters.com/article/2012/05/21/us-egypt-fuel-idUSBRE84K10F20120521
[15] Law 141/2004 for the Development of Small Enterprises - www.ida.gov.eg/PDF/Direct%20Laws/141_2004.pdf
[16] Social Fund for Development website – http://www.sfdegypt.org/
[17] A Study on Environment as an Aspect of M/SME Policy Development in Egypt, Egypt/Canada Small & Medium Enterprise Policy Development Project, Ministry of Finance/CIDA/IDRC, by Megacom, January 2008 - http://www.sme.gov.eg/Jan_publications/Environment_EN.pdf

to laws related to the environment. Adhering to good environmental practices is a voluntary initiative and not a mandatory action disciplined by Egyptian law, since neither the law nor the executive regulations specify standards for good environmental practices.

The study mentions that 95% of the total businesses in Egypt are micro and small enterprises. These enterprises present the highest threat to the environment. This is due to their large numbers, remarkable geographical distribution, which makes their lack of awareness and inability to commit to clean production trends has an overall huge negative environmental impact. There are several funded programs for improving the M/SME's environmental practices addressing different stages of the industrial process. The table below shows a sample of funds directed to environmental development at M/SMEs in Egypt.

Table 2: Environmental projects overview

Item	SEAM I & II	EPAP I & II/ CF	ACI	CPC	ISO 14000 assistance
Description	Support for Environmental Assessment and Management	Egyptian Pollution Abatement Project and Carbon Fund	Achieving Compliance with environmental regulation in Industry	Clean Production Center	To evaluate the level of compliance to the international standards for environmental management
Sector of focus	Dairy sector	General industry and trade sector	Engineering, Textile, Chemical & Food	All Industrial Sector	All Industrial Sectors
Beneficiary size	MSME	SME's & large	SME's	All sizes	All sizes
Implementer	EEAA	EEAA	FEI	Ministry of Trade and Industry	IMC
Donor	UK Department for International Development	- World Bank - EIB - Finnish Gov	DANIDA	UNIDO	EU
Period	1994-1999 (I) 2000-2004 (II)	1997- 2004 (I) 2006- 2012 (II)	2001-2007	On going	On going
Financial	SEAM II: €4.238 million	EPAP: US$ 48.7 Mils EPAP II: US$ 165.97 Mils	L.E. 22 million	Information Not Available	Information Not Available

Nevertheless, most M/SMEs perceive environmental improvement as a costly burden. Being primarily concerned with short-term economic survival, they are not motivated to ask for, or use environmental information or support and they often lack the time, information and money needed to improve matters. In addition, smaller manufacturing companies often do not have staff with sufficient environmental knowledge and expertise to be able to address problems and opportunities in the environmental field.[18]

Hence, the M/SME sector still suffers from inadequate resources, where support efforts reaches no more than 5% of the total number of M/SME. [19]

- ✓ *How the PoA promotes sustainable practices and efficiency measures:*
  The qualitative benefits of participation in this PoA will enhance CPA Facilities Owners' understanding of environmental concepts and practices, e.g. related to GHG and its effect on the climate...etc. Such knowledge is expected to encourage the involvement of the sector in taking up environmental initiatives, and contributing to more of the environmental programmes/initiatives offered by government and donor agencies.

- National goal 4 – Mobilization of investments in the environmental sector:

The Environmental Protection Fund (EPF) was established under Law 4/1994[20] for the Environment with the aim of mobilizing investments in the environmental sector. The financial resources of the EPF include revenues from the national protectorates entrance fees, and fines on environmental violations.

[18] Big challenge for small business: Sustainability and SMEs, UNEP Industry and Environment Publication, 2003 – http://www.uneptie.org/media/review/vol26no4/IE26_4-SMEs.pdf
[19] See the reference presented in footnote (04) above.

The EPF provides financial assistance to environmental projects on a competitive basis. In this regard, a broad range of organizations are eligible to apply to the EPF for supporting their implementation of environmental projects and initiatives. Applicants, however, must meet preset criteria primarily concerned with their ability to cover a share of the projects costs, as well as demonstrate their capability, both financially and technically, to undertake the proposed project. [21]

It is among the Egyptian DNA's regulations that every project proponent has to pay a percentage of the CER revenues to the Environmental Protection Fund (EPF). The EPF in turn offers financial support (e.g. soft loans, grants, subsidies) to stimulate investment in the environmental sector. [22]

- ✓ *How the PoA contributes to nation-wide sustainability:*
  Although it might not be possible for most M/SMEs to make best use of the advantages provided by the EPF, the PoA would however result in creating a source of finance for EPF, where 3% of the CER revenues from each CPA is paid to the EPF abiding by the Egyptian DNA regulations. EPF funds may later be circulated in more environmental projects around Egypt to support the government's efforts in promoting sustainability.

- ***Contributions of the PoA to sustainable development:***

Burning NG in place of fuel oils results in a reduction of GHG emissions. The expected outcome of implementing the PoA is encouraging M/SMEs in Egypt to undertake the project of switching from heavy or light fuel oil to NG which would not have been attractive without the PoA. In addition, the PoA will also lead to several additional environmental, social, technological and economic benefits. Such benefits are discussed below:

- Environmental benefits:
  Fuel oils contain large amounts of sulphur, while the sulphur content in NG is insignificant. Thus, fuel switching from FO to NG will decrease the SOx emissions considerably, as well as decrease large portion of NOx and particulate matter (PMs), which are not considered under Kyoto protocol but are harmful pollutants. The PoA is also expected to result in reductions in pollution from tankers that are presently used in liquid FO transportation.
- Health benefits:
  Decreased air pollutants will generally improve the health conditions in the nearby area to each CPA Facility location. Potential risks of skin contact during maintenance and handling of FO, as well as fire and explosion risks of FO tankers and storage tanks will be prevented creating social benefits for labour conditions. The introduction of piped NG will remove the need for these deliveries and help reduce heavy truck traffic in the areas.
- Technological benefits:
  The PoA involves the installation of new burners, piping systems, and other installations at the facilities undergoing the switch, which would lead to an increase in overall operation efficiency.
- Economical benefits:
  With the elimination of sulphur containing fuels, causing corrosion of the pipes and decreasing the life time of equipments, cost saving measures is already expected. This is in addition to the control instruments and close monitoring of several key parameters, which would guarantee optimal conditions in the production process.
- Institutional and Political benefits:
  Evidently, the CDM could have an indirect impact on institutions and policies in Egypt. The prospect of new foreign investments looking for fertile ground might induce policy-makers to

[20] Egyptian Environmental Law 4/1994 - http://www.eeaa.gov.eg/english/main/law4.asp
[21] See the reference presented in footnote (17) above.
[22] Climate Change 15/07, Promoting Renewable Energy Technologies in Developing Countries through the CDM, Chapter 5: Country Study Egypt, Federal Environmental Agency (Umwelt Bundes Amt), October 2007 - http://www.bmu.de/files/english/pdf/application/pdf/studie_ee_cdm_en.pdf

streamline administrative process and put flanking policies into place. Also being a mechanism established by international policy, the CDM might give project developers better access to decision-makers compared to traditional private investments. This might help to alleviate some of the problems associated with the hierarchical nature of Egyptian institutions. [23]

For this PoA in particular, the benefits from CDM will be utilized as part of the CME role to promote the project activities, assist CPA Facilities Owners with the capacity building required, in addition to facilitating the ability of an entity to obtain the necessary approval/finance.

- ***Framework for the implementation of the proposed PoA:***

In Egypt, the Egyptian Natural Gas Holding Company (EGAS) is responsible for designing the NG grid and infrastructure nation-wide. EGAS is also the only governmental body entitled to contract with NG suppliers for constructing the NG regional networks and trading NG in Egypt.

When a facility is interested in switching to NG, the facility owner – referred to in this document as the CPA Facilities Owners – is responsible for financing the construction of internal and external connections and other relevant constructions, as well as the replacement/retrofitting of the element processes burning fossil fuels in the facility, i.e. adaptation of the fuel storage system, feeding system and burners. If more than one facility is located in an area for which the closest NG line is at a similar distance, the owners may jointly finance the external connections.

The PoA involves a nation-wide effort to reduce GHG emissions through fuel switching in micro and small enterprises involved in industrial activities in Egypt, using the revenues provided by the sale of CERs as a financial incentive. Among the manufacturing industries which are in the scope of this PoA are those burning fuel oils to produce heat for the manufacturing of their products, e.g. bakeries, smelters, brick factories, etc.

The proposed PoA is small scale. CPAs to be included under this PoA will independently apply one of two independent small scale methodologies, either AMS-III.B (Version 16) or AMS-III.Z (Version 04). Thus the PoA falls under sectoral scope (1): energy industries (renewable-/non-renewable sources), and sectoral scope (4): manufacturing industries.

Egypt presently has 11 registered stand-alone CDM projects, 10 of which are large scale CDM projects, while one is a SSC CDM project applying AMS-III.B methodology at textile factories.

Most of these registered projects apply methodologies which fall under either one, or both, of the sectoral scopes of this PoA, i.e. only two projects fall under different sectoral scopes than 1 and 4. One of the registered projects involves fuel switching from HFO to NG at 311 independent brick kiln. However, being large-scale, it applies ACM0009.

With respect to PoAs, there is only one registered CDM PoA in Egypt, which falls under sectoral scope 7; Transport.

The CME for the PoA is the CDM-APU/EEAA, a government agency responsible for raising awareness and promoting for CDM concepts and projects in Egypt. The CME has identified that carbon finance through the CDM can help overcome the barriers that currently prevent micro and small enterprises from investing in fuel switching. The CME has developed the proposed PoA as a way of enabling the existence of a thin-threaded, well-coordinated, national effort to promote fuel switching activities.

The PoA covers micro and small facilities at which the baseline scenario is burning heavy or light fuel oil to produce the necessary heat for their processes. The coverage of bakeries, smelters, and other facilities

[23] See the reference presented in footnote (22) above.

including brick manufacturing facilities is made possible through the use of two small scale methodologies: AMS-III.B (to be used for bakeries and other similar industries) and AMS-III.Z (to be used for brick kilns only). The employed methodologies are discussed in details in section B.3 of this document.

- ***Confirmation that the PoA is a voluntary action by the CME:***

Developing and registering the PoA:
This PoA is a voluntary action by the CME, CDM-APU/EEAA. The CME will voluntarily make the investment required for the development and registration of the PoA, as well as develop and facilitate the inclusion of component project activities (CPAs) under the PoA. There are no regulations in Egypt that obligate public or private bodies to undertake such investments.

Carrying out the fuel switching activity:
The PoA does not implement any mandatory policy or regulation.

- There are no laws or regulations in Egypt that prohibit the use of HFO or LFO by M/SMEs.
- There is no law or regulation in Egypt that obligates M/SMEs to switch from using FO to NG.

Furthermore, the CME has no obligation to encourage the development of fuel switching activities or to provide incentives for enterprises undertaking such project activities. The CME similarly has neither national nor international commitments to reduce or participate in the reduction of GHG emissions.

Participating in the PoA:
Facilities Owners who choose to participate in this PoA by implementing a CPA will do so voluntarily. Such Facilities Owners may freely implement their fuel switching project activity independent of this programme, or may choose not to switch fuels at all.

The PoA is therefore an entirely voluntary action initiated by the CME designed to support the government policy and assist micro and small enterprises sector in Egypt.

A.3. CMEs and participants of PoA

CME of the PoA:
The CME of the PoA is the CDM Awareness & Promotion Unit under the Egyptian Environmental Affairs Agency (CDM-APU/EEAA).

CDM-APU/EEAA will be the focal point and entity which communicates with the Executive Board for all matter related to this PoA.

As the name implies, the unit was originally created to raise awareness, promote and develop the CDM in Egypt. Hence, CDM-APU/EEAA is almost always involved in CDM projects along the different stages of the CDM pipeline. CDM-APU/EEAA was able to identify a potential for considerable reduction in GHG emissions through fuel switching in M/SMEs. It was also noted that to target M/SMEs in Egypt, a coordinated effort has to be made.

M/SMEs wishing to either register their fuel switching activities as stand-alone CDM projects or to include their projects as component project activities (CPAs) under this PoA, have to submit their applications (project idea note, PIN) to the Egyptian Designated National Authority (DNA), which is also under EEAA. Hence, CDM-APU/EEAA is capable of ensuring that any CPAs to be included under the PoA have not and will not be registered as single CDM projects, thus ensuring that there is no double-counting of the credits generated by CPAs.

CPA Facilities Owners and CPA Developers:
For each facility implementing a fuel switching activity under a CPA, an owner/manager will be identified (collectively, they will be referred to as *CPA Facilities Owners*). CPA Facilities Owners will be responsible for the implementation of the CPA activity, for example the fuel switching activity taking place at the bakery, brick factory or similar industrial site (i.e. CPA Facilities Owners are the activity implementers in the language of the UNFCCC guidelines on assessment of debundling [24]).

For each CPA submitting for inclusion under this PoA, a developer for the CDM component of the CPA will be identified (referred to as *CPA Developer*). CPA Developers will be responsible for handling all matters related to the CPA validation and registration (inclusion under the PoA), as well as the requirements for the issuance of credits (monitoring and verification).

CPA Developers may be one of the following – provided that written CPA Development Authorization is obtained from all CPA Facilities Owners:
- One of the CPA Facilities Owners involved in the implementation of a CPA;
- The CME of the PoA; or
- A third party, in the form of a CDM individual consultant or consulting firm. .

CPA Boundary and the geographic locations of the CPA Facilities involved:
A CPA could be composed of a single CPA Facility, or it can constitute multiple CPA Facilities. For the purpose of this PoA, the CPA Boundary is defined in each of the two cases as follows:
- CPA consisting of a single CPA Facility: The CPA boundary will be uniquely defined by the CPA Facility location, and uniquely identified using GPS coordinates.
- CPA consisting of multiple CPA Facilities: The CPA boundary will be uniquely defined by the locations of all the CPA Facilities involved in the CPA, each of which will be uniquely identified using GPS coordinates.

Characteristics and scale of a typical CPA:
In the case when a single CPA is composed of multiple CPA Facilities, the following conditions apply:
- All CPA Facilities under a single CPA must be switching from the use of only one type of fuel (either HFO or LFO) to NG, i.e. only one type of baseline fuel per CPA is permitted for inclusion under this PoA.
- All CPA Facilities under a single CPA must be applying the same industrial process to produce the same type of product, e.g. a CPA involving a mix of bakeries and smelters is ineligible for inclusion under this PoA.
- CPA Facilities could either have one owner, or the CPA Facilities registering under the same CPA could have several owners. Either way, all CPA Facilities Owners must sign both the CPA Facility Owner statement and CPA Development Authorization (the two documents are discussed in details under section C of the PoA-DD)
- The CPA Facilities could be located in a specific area (e.g a cluster of smelters), or could be in dispersed geographic locations within the geographical boundary of the PoA (Egypt).

Other key stakeholders involved in the PoA include EGAS, NG suppliers (contracted by EGAS regionally), and CER buyers. Stakeholders may also include consultants and/or sub-contractors involved in the implementation of the CPA activity.

[24] Guidelines on Assessment of Debundling for SSC Project Activities (EB 54, Annex 13, Version 03) – http://cdm.unfccc.int/Reference/Guidclarif/ssc/methSSC_guid17.pdf

A.4. Party(ies)

Name of Party involved (host) indicates a host Party	Private and/or public entity(ies) project participants (as applicable)	Indicate if the Party involved wishes to be considered as project participant (Yes/No)
Arab Republic of Egypt (host)	Public entity – CME: CDM Awareness & Promotion Unit under EEAA (CDM-APU/EEAA)	No

Please see the contact information listed in Appendix 1.

A.5. Physical/ Geographical boundary of the PoA

The PoA and all CPAs to be included in the PoA will be located in Egypt. The geographical boundaries of the PoA are the international borders of the Arab Republic of Egypt (North 31.670878, South 21.725059, East 24.695463, and West 36.8967).[25]

Figure 5: Map of Egypt[26]

[25] Maps.google.com
[26] Map of Egypt - http://www.lib.utexas.edu/maps/africa/egypt_pol97.jpg

A.6. Technologies/measures

According to the Guidelines for completing the programme design document form for small-scale CDM programmes of activities (EB 67, Annex 30, Version 02)[27], Section V, Specific guidelines, Part I, A.6. Technologies/measures, states that:

"Describe the technologies and/or measures to be employed and/or implemented by the CPAs in the PoA.

For the description of above, where relevant, consider applicable provisions for application of selected baseline and monitoring methodology for small-scale project activities in the Project standard.

Do not provide information that is not essential to understanding the purpose of the PoA and how it reduces GHG emissions. Information related to equipment, systems and measures that are auxiliary to the main scope of the CPAs in the PoA and do not affect directly or indirectly GHG emissions and/or mass and energy balances of the processes related to the CPAs in the PoA should not be included."

- ***Description of the fuel switching activity:***

Fuel oils (HFO and LFO) are usually the fuel of choice amongst industrial facilities. The proposed PoA aims to provide incentives to M/SMEs which presently consume fuel oils to encourage them to undertake fuel switching to NG. This results in the reduction of GHGs because the emissions intensity of HFO and LFO is higher than that of NG as is demonstrated in the table below.

Type of fuel	**HFO**	**LFO**	**Natural Gas**
National values for emission factor* in tCO_2e/TJ [28]	77.0	75.52	55.19
* Notice that the national values referenced are those of the net calorific value (NCV) and the carbon content for each type of fuel. The emission factor is obtained using these two national values. The calculation is detailed in Section B.6.2 (Part II) of this PoA-DD.			

Environmental and safety soundness of the technologies:

NG is the most environmentally sound fossil fuel available today. It has the lowest emissions of GHG and pollutants among fossil fuels. NG pipelines also eliminate the risk of fuel spills and accidents whether in transportation or storage. Similarly, since there are no high-pressure fluids or components as in fuel oils, there is a greatly reduced risk to those working in CPA Facilities burning NG.

Transfer of the know-how to CPA Facilities Owners:

The implementation of the CPAs will give the CPA Facilities Owners' experience in the operation and maintenance of their activities with exposure to MRV (monitored, reported, verifiable) practices. This is anticipated to raise the general awareness of Facilities Owners and allow them to achieve a higher level of sustainability.

- ***Schematic description of the fuel switching activity:***

The specific measures that are to be implemented by the M/SMEs participating in each CPA included in the PoA in order to undertake the fuel switching will include, *inter alia*:

- Construction/extension of the external NG networks.
- Construction of the internal NG networks and piping.

[27] Guidelines for completing the programme design document form for small-scale CDM programmes of activities (EB 67, Annex 30, Version 02) - http://cdm.unfccc.int/filestorage/P/I/V/PIVX6Q4SCNYMJOB80UEL57H1FGDWTZ/eb67_repan30.pdf?t=cmp8bWVnYmVnfDBQV23YMXus7orS1gUS7yBw

[28] See the reference presented in footnote (09) above.

- Construction of pressure reduction stations, gas pumping stations, etc (as appropriate).
- Modification/retrofitting/replacement of the element process to allow for burning NG.
- Installation of measuring devices, safety valves, pressure control system, and other required equipment, etc.

As shown in the following figure, each element process, defined for the purpose of this PoA as each single burner or combustion chamber burning fossil fuel to produce heat, will undergo fuel switching to burn NG instead of FO. The micro and small-sized industrial facilities, where the element processes are located, are referred to as the CPA Facilities, while the CPA Boundary is defined by the location of the individual CPA Facilities.

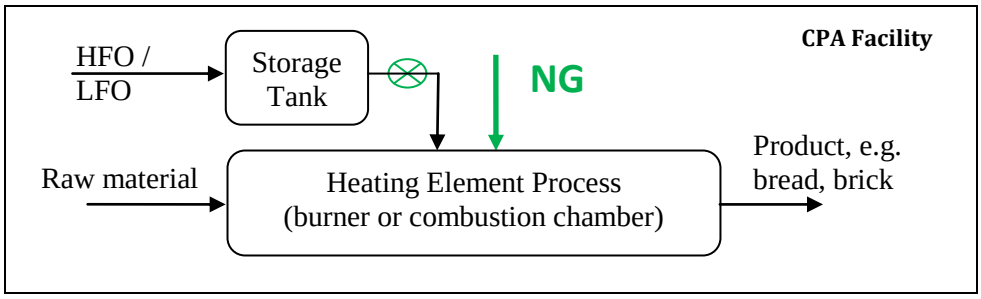


Figure 6: Schematic diagram showing a typical CPA Facility

- ***Applicable provisions for application of the selected methodologies:***

From the provisions of each of the two applicable methodologies:
- AMS-III.B (Version 16):

"1- This methodology comprises fossil fuel switching in industrial, residential, commercial, institutional, or electricity generation applications (e.g. fuel switch from fuel oil to natural gas in an existing captive electricity generation or replacement of a fuel oil boiler by a natural gas boiler)."

- AMS-III.Z (Version 04):

"1- The methodology comprises one or more technology/measures listed below in brick production facilities:
- Shift to an alternative brick production technology/process; or
- Complete/Partial substitution of fossil fuels with renewable biomass (including solid biomass residues such as sawdust and food industry organic liquid residues); or
- Complete/partial substitution of high carbon fossil fuels with low carbon fossil fuels."

The applicable provisions have been considered, where the application of both methodologies independently for the purpose of this PoA will be limited to fuel switching from heavy or light fuel oil to natural gas in micro and small enterprises in Egypt. This means that although:
- AMS-III.B is applicable for fuel switching in residential application, yet residential facilities are not eligible for inclusion under this PoA (only micro and small enterprises are eligible); also
- AMS-III.Z is applicable for brick manufacturing facilities implementing a change in the production technology/process, and also applicable for switching to the use of biomass, yet facilities implementing either of these two measures are not eligible for inclusion under this PoA.

- ***Examples of typical CPAs with a brief description on their operation:***

CPAs submitting for inclusion under this PoA must be applying only one of the two approved methodologies. Fuel oils combustion is a common practice in the industrial activities that are to be covered by the typical CPAs included in the PoA, such as:

a. ***Bakeries:***

The process of baking bread in Egypt is based on a traditional approach which depends on having certain ratios between the ingredients flour, salt, water and yeast. Baking takes place under certain temperature and time to yield the bread according to the national standards defined by the Ministry of Internal Trade and Supply. Bakeries use ovens with burners as illustrated in the following figure.

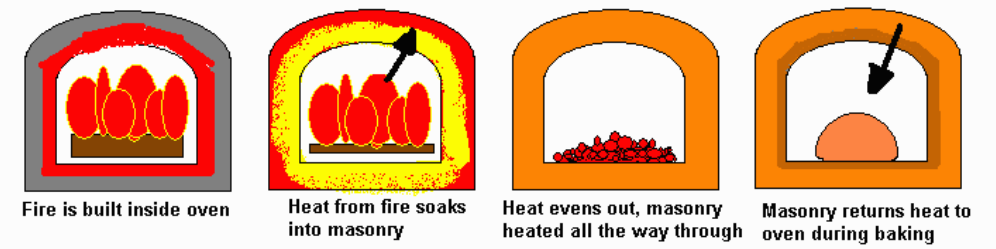


Figure 7: Cross-section of thermal brick ovens [29]

b. ***Brick kilns:***

The process of producing bricks in Egypt consists of two main phases:

(i) Green brick (GB) preparation: this entails the processes of raw material mixing, bricks moulding, and pre-drying.

Figure 8: Green brick left in the open air to pre-dry before firing in the kiln

(ii) Red brick (RB) production: where the green bricks are cooked in a special kiln to produce final product (the red bricks). The common kiln used in the brick industry in Egypt is the Open Hoffman Kiln, which is designed for manual loading and unloading of bricks.

HFO is used in firing the kiln. The required air for combustion as well as the exhaust gases is in motion by natural draft, which is controlled mainly by the height of the chimney (50 to 60 m). The brick cooking process is carried out following these 4 steps:

- *Stacking of GB:* The bricks are stacked inside the kiln in arrangements that form combustion chambers in between; to allow for circulation of hot combustion gases around the bricks.

[29] The Brick Oven Project, How the oven works - http://www.quarterbyte.com/brian/brickoven.html

Figure 9: Brick stacking chamber (manual loading and uploading)

- *Wall and roof coating:* After completing the brick stacking, the doorways of the kiln are temporary sealed by brick walls; these walls as well as the kiln top are coated by thick impermeable clay layer.
- *Firing process:* The firing is carried out through burner racks located at the roof of the kiln. The hot air is drafted down into the combustion chambers positioned among the brick piles and to perform the cooking process. The burners are currently fired with HFO that is either dripped or atomized. The gases are then naturally drafted to the stack through underground flues.

Figure 10: Brick kiln burner racks located on the roof of the kiln

- *Cooling of the cooked red bricks:* After cooking, the kiln doorways are opened, the top is removed and the cooked bricks are left to cool naturally (this takes about one week in the winter and two weeks in the summer).

A.7. Public funding of PoA

This PoA does not receive any public funding from parties included in Annex I.

SECTION B. Demonstration of additionality and development of eligibility criteria

B.1. Demonstration of additionality for PoA

- **Additionality of developing the PoA:**

According to the Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities (EB 70, Annex 05, Version 02.1) [30], paragraph 7 states that:

> *7- Additionality shall be demonstrated by establishing that in the absence of CDM, none of the implemented CPAs would occur;*

The CPAs to be included in the PoA involve fuel switching from fuel oils to NG in micro and small-sizaed enterprises (e.g. bakeries, brick kilns and similar industrial activities). A range of barriers, in particular the lack of access to finance, currently discourages fuel switching in these industries. As is discussed below, the CPAs would therefore not occur in the absence of the PoA.

Financial resources are considered a major hurdle to the initiation of cleaner production projects and the implementation of Environment Management Systems (EMS) in a developing country such as Egypt. M/SMEs are especially vulnerable to this barrier, due to their lack of access to finance, inadequacy of external capital and the absence of appropriate funding mechanisms. Similarly, applying EMS represents an administrative and time burden to Egyptian M/SMEs.

A survey conducted as part of an Egyptian/Canadian study in 2008 showed that the majority of M/SMEs lack the proper environmental awareness, i.e. 3% of the sample had no awareness whatsoever, while only 3% had a comprehensive knowledge of environmental issues. 35% of the sample was aware of the law 4/1994, while only 3% was aware of the term "Clean Production". [31]

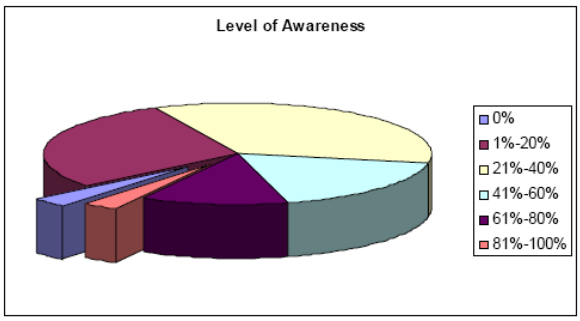


Figure 11: Level of awareness between surveyed M/SMEs - 2008

Furthermore, having limited access to the capital and financial services needed to meet their working and fixed capital needs constitute a major constraint to the development of the M/SME sector. [32]

As discussed in section A.2 of this document, there are national goals announced by the Egyptian government, in addition to donor agencies efforts, to encourage the use of NG instead of the commonly used fuel oils at M/SMEs. Yet these efforts remain to be insufficient in promote for such activities, and

[30] Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities (EB 70, Annex 05, Version 02.1) - http://cdm.unfccc.int/filestorage/5/_/XJROKC13PNH45YGZI9VSW78AQF0LDU.pdf/eb70_repan05.pdf?t=WUV8bWY0aHBhfDCgWaBNrDJ4-cN1N7MQznX6

[31] See the reference presented in footnote (17) above.

[32] See the reference presented in footnote (04) above.

continuing to operate on business as usual basis (burning fuel oils) remains to be a more viable option for many M/SMEs owners.

In the same section (A.2) it was highlighted how the PoA would support the efforts. In this section, the barriers which face entities attempting to implement a fuel switching project activity are identified. They constitute mainly the following obstacles:

a) Investment barrier:
   - Large capital investment required for the implementation of the switching project activity.
   - Fragile financial position of the M/SMEs sector in Egypt.
   - Rising NG prices in Egypt risking the viability of the project activity.
   - Dynamic production rate leading to variable cost savings estimations.

b) Other barriers:
   - Institutional barriers leading to the inability of obtaining external finance.
   - Insecurity towards entering into projects requiring long-term investments and commitments.

The purpose of the PoA is to help CPA Facilities Owners to overcome these barriers through offering them much needed incentives and assistance. Thus, in absence of the PoA, these barriers would prevent the CPA Facilities Owners from undertaking the fuel switching activity.

A typical CPA under the PoA will face these barriers and will therefore be considered additional, provided that the relevant eligibility criteria (in section B.2 of this document) are satisfied.

- **Additionality of developing CPAs under the PoA:**

According to the Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities (EB 70, Annex 05, Version 02.1)[33], paragraphs 8-9 state that:

> *8- PoAs that consist of one or more micro-scale projects as CPAs shall include eligibility criteria derived from all the relevant requirements of the "Guidelines for demonstrating additionaliy of micro-scale project activities"*
>
> *9- PoAs that consist of one or more small-scale projects as CPAs shall include eligibility criteria derived from all the relevant requirements of the "Guidelines for demonstrating additionaliy of small-scale project activities".*

It is envisaged that two types of CPAs will be included under the PoA: those fitting within the micro-scale threshold, and those fitting within the small-scale threshold. Thus, there are two cases for which additionality will be demonstrated; micro-scale and small-scale CDM project activities.

- ***Case (1): Micro-scale CDM project activities:***

According to the guidelines for demonstrating additionality of micro-scale project activities (EB 68, Annex 26, Version 04)[34], paragraphs 4-6 state that:

> *4-b) Type III project activities that aim to achieve emission reductions at a scale of no more than 20 ktCO_2e per year are additional if both conditions (i) and (ii) below are satisfied:*
>
> *i. Each of the independent subsystems/measures in the project activity achieves an estimated annual emission reduction equal to or less than 600 tCO_2e per year; and*
>
> *ii. End users of the subsystems or measures are households/communities/SMEs.*

[33] See the reference presented in footnote (30) above.

[34] Guidelines for demonstrating additionality of microscale project activities (EB 68, Annex 26, Version 04) - http://cdm.unfccc.int/Reference/Guidclarif/ssc/methSSC_guid22.pdf

5- Project activities that meet the requirements specified in paragraph 2 or paragraph 3 or paragraph 4 are termed "Micro-scale CDM project activities".
6- Project activity in paragraphs 2-4 means a small-scale or large-scale clean development mechanism (CDM) project activity or a project activity under a programme of activities (CPA of a PoA).

The above mentioned conditions are illustrated in the following figure (Figure 3 in Version 04 of the guidelines, page 8).

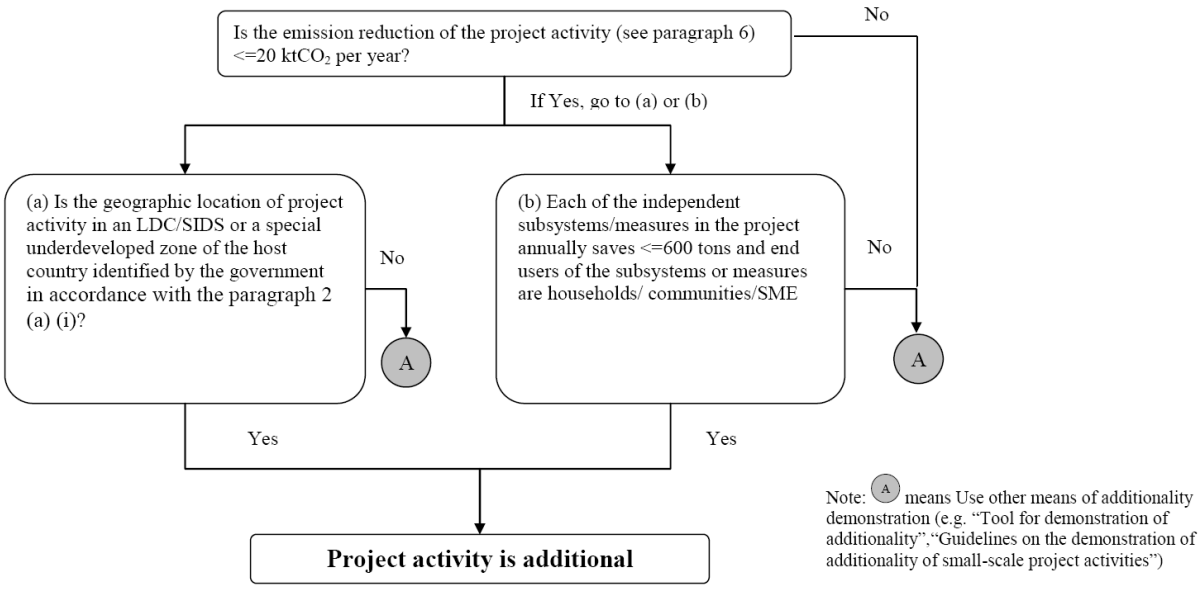


Figure 12: Micro-scale additionality test for project activities ≤ 20 ktCO$_2$/*y*

Therefore, a CPA which satisfies the eligibility criteria for micro-scale additionality is said to be automatically additional. These eligibility criteria (listed in the guidelines) are discussed in details in section B.2 of this document.

It is to be noted that all Type 1 CPAs submitting for inclusion under this PoA will be micro-scale projects, satisfying the conditions above, and are thus automatically additional.

- ***Case (2): Small-scale CDM project activities:***

According to the guidelines on the demonstration of additionality of small-scale project activities (EB 68, Annex 27, Version 09.0)[35] state the following:

"*Project participants shall provide an explanation to show that the project activity would not have occurred anyway due to at least one of the following barriers:*
(a) Investment barrier: a financially more viable alternative to the project activity would have led to higher emissions; or
(d) Other barriers: Without the project activity, for another specific reason identified by the project participant, such as institutional barriers or limited information, managerial resources, organizational capacity, financial resources, or capacity to absorb new technologies, emission would have been higher."

[35] Guidelines on the demonstration of additionality of small-scale project activities (EB 68, Annex 27, Version 09) - http://cdm.unfccc.int/Reference/Guidclarif/meth/methSSC_guid05.pdf

The following are the applicable barriers preventing micro and small industrial facilities - involved in the typical CPAs eligible for inclusion under this PoA – from attempting to switch to burning NG rather than continuing to burn heavy or light fuel oil:

a) ***Investment barrier:*** *a financially more viable alternative to the project activity would have led to higher emissions;*

Most CPA Facilities Owners are unable to solely carry the burden of providing the capital investment required for the implementation of their project activities due to the following reasons:

- Large capital investment:
  The implementation of the fuel switching CPA sometimes involves extension of the NG network, construction of internal connections, pressure reduction stations, gas pumping stations and other accompanying installations that require considerable capital cost. In addition, M/SMEs are responsible for covering all other relevant expense, e.g. contracting a consultant to undertake an EIA, reimbursement to owners of the lands through which the external NG network would path, etc.

  For bakeries and similar CPA Facilities submitting for inclusion as Type 1 CPAs, their being micro-scale exempts them from demonstrating additionality in details. However, for brick kilns (Type 2 CPAs for which demonstration of additionality is applicable), the capital investment, consisting mainly of the construction of internal and external NG networks, typically exceeds 2 million EGP[36].

- Fragile financial position:
  Since the revolution began in Jan 2011, GDP has declined by almost 4% and manufacturing by 12%. The declining trend of the Egyptian economy is, in part, because of the instability inherent in transitioning states, which in this case was amplified by the global economic downturn. The effects of the current slowdown are most visible in terms of domestic consumption, direct private investment, and tourism. This lead to banks being reluctant to lend because of the political and economic uncertainty of the transition, which in turn could exacerbate the problem and lead to further deterioration of the economy. [37]

  More signs of this decline appeared when Egypt's credit rating and currency outlook have been downgraded several times, most recently reaching B+ by Standard and Poor's[38], and BB- by Fitch[39]. Like all other sectors, M/SMEs have been damaged by the market fluctuations, and most of them are barely able to maintain normal operation conditions.

- Influence of the rising NG price on the investment:
  Rising NG prices represent a further disincentive for M/SMEs to seriously consider fuel switching. Subsidies on energy sources in Egypt have been under thorough review during the past few years. In 2007, ministerial decree number 1914/2007[40] came to raise the NG price from 1.25 USD/MBTU to 2.65 USD/MBTU over 3 phases, with an average rate of increase of 0.466 USD/MBTU/year. This

[36] Figure obtained from a sample NG internal and external construction contract for a brick factory in Egypt.
[37] Challenges of Egypt's Economic Transition, The Carnegie Papers, Carnegie Middle East Center, Nov 2011 - http://carnegieendowment.org/files/egypt_econ_transition.pdf
[38] S&P lowers ratings on Egypt to 'B+', Reuters Africa, Article dated 24 Nov 2011 - http://af.reuters.com/article/commoditiesNews/idAFWLB919120111124
[39] Fitch cuts Egypt to 'BB-': Outlook Negative, Ahram Online from Reuters, Article dated 30 Dec 2011 - http://english.ahram.org.eg/NewsContent/3/12/30578/Business/Economy/Fitch-cuts-Egypt-to-BB-Outlook-Negative.aspx
[40] Ministerial Decree no. 1914/2007 - http://www.ida.gov.eg/PDF/Cabinet%20Decisions/Direct%20Council/1914_2007.pdf

was followed by ministerial decree number 1795/2008 [41] raising the NG for energy intensive industries to 3.00 USD/MBTU. Starting 2012, the energy (NG and electricity) prices have already been increased by 33% for energy intensive industries.[42]

- Influence of the dynamic production rate on the investment:
  Fuel demand depends directly on production, and is therefore dependent on market conditions, i.e. production rate may decrease due to reducing demand or operation stoppage (demonstration or riots), etc. The very large investment for fuel switching is only capitalized upon if large quantities of NG are consumed in place of HFO. When the production rate is reduced, resulting in reduced fuel consumption, the capital investment in NG infrastructure is not fully utilized and in that scenario HFO consumption is advantageous since the M/SME owner only pay for the fuel consumed with no capital investment cost. Therefore, it is a risk to invest in switching to NG under uncertain market conditions.

  In 2008, the Ministry of Trade and Industry had plans to gradually reduce energy price subsidies to energy-intensive industries over the course of three years. Initially the decision was likely to affect large firms only, but small and medium-sized enterprises (SMEs) will be included in the future.[43]

  Given that the price of NG is expected to increase considerably for the entire industrial sector, it leads to additional risk in implementing the fuel switching project activity as the price of the fuel in the future is not known while the capital cost must be invested at present to enable the project to take place.

b) ***Other barriers:*** *such as institutional barriers or limited information, managerial resources, organizational capacity, financial resources, or capacity to absorb new technologies*.

- Institutional barriers leading to the lack of financial resources:
  Despite their significant contribution to Egypt's economy, M/SMEs receive only 10% of available banking finance. As a result, many M/SMEs find it difficult to gain access to funding to increase their productivity and output. Among the main factors that negatively affect lending to SMEs is the absence of a clear definition provided by the Central Bank of Egypt (CBE) for SMEs. As a result, commercial banks do not use a unified method of classifying and categorising SMEs.[44] This in turn causes the approval to be granted on case-by-case basis requiring extra guarantees, paperwork, etc.

  - Inadequate institutional structure of the M/SME sector:
    M/SME face significant and numerous problems with regards to establishment and licensing, operation, taxes, registration, export and import permits, and compliance with the different directives of various governmental entities. The complexity of the regulatory system is further exacerbated by several other problems. These include the overlapping jurisdictions across government institutions and overlapping central and local government codes, the lack of coordination among government entities, the inconvenient location of some of these facilities and the low quality of the information available to the officials.

    In order to get the required licenses and approvals, the small entrepreneur has to prove his/ her compliance with at least 18 laws, and has to acquire as many as 32 approvals before being granted the licence to operate. In addition, licensing and registration are regulated by more than 100

[41] Ministerial Decree no. 1795/2008 - http://www.ida.gov.eg/PDF/qrar1795.pdf
[42] Egypt plans to cut subsidies on energy-intensive industries, Reuters Business News, Article dated 01 Jan 2012 - http://af.reuters.com/article/commoditiesNews/idAFL6E8C107S20120101
[43] African Economic Outlook for Egypt, AfDB/OECO, 2008 - http://www.oecd.org/dataoecd/13/36/40577424.pdf
[44] See the reference presented in footnote (01) above.

presidential, prime ministerial or ministerial decrees. It should be noted that this regulatory setup is managed by some twenty- four government entities.[45]

As a result, and although M/SMEs provide affordable goods and services that suit the lower and lower-middle income groups – which account for 57% of the population, they are highly interrelated to the informal economy. Such a high level of informality limits M/SMEs access to a wide range of formal services, most importantly credit facilities.[46]

The majority of Egypt's commercial banks also treat M/SMEs as small corporate clients, and do not have any specialised guidelines set for them. Accurate and timely information on their status is also lacking. The above-mentioned limitations have proven to be factors which hinder progress in developing M/SMEs in Egypt.[47]

- Non-familiarity with the banking sector:
  Despite lengthy approval procedures, large enterprises are usually able to obtain some loans. However, it is far more difficult for smaller enterprises, and basically impossible for micro enterprises. Many SMEs do not have a bank account (SMEs with business account are estimated at less than 10% of the total SMEs by the National Bank of Egypt in 2008). They do not use the banking sector, very often because they are partially in the informal sector where most of the transactions are on cash basis, and where financing is done through the family-friend network.[48]

It is noted that since the commencement of a reform program in 2003/04, total loans/deposits ratio has declined from 70% in 2003/04 to 52% in 2007/08, which shows a decrease in the bank lending activity.[49]

Therefore, while most M/SMEs are incapable of self-financing projects requiring large investments, it also happens that in most of the cases - their institutional form prohibits their chances in getting bank loans. This is of particular importance when the finance required is significant compared to the size and the production rate of a facility.

- Social barrier - Liquidity safe-zone:
  For projects such as fuel switching, the concept of investing a lump-sum in the present to achieve future savings is always faced by the fact that it is socially a more viable option to have enough cash, than invest in a project requiring significant capital, even if it means paying an extra amount for a commodity or service. This is because governments in developing countries do not provide the people with a safety net in the cases were immediate cash is required, i.e. health issues, loss of property, etc. For owners of M/SMEs, long term investments additionally represent a terrifying idea of not having enough cash to run their business. The fear is presently even bigger with the political and general instability, forming a huge barrier for M/SMEs owners to put their life savings in any project, and then wait for it to pay back in the future, if and when things work as planned.

B.2. Eligibility criteria for inclusion of a CPA in the PoA

CPAs under this PoA will be micro or small enterprises which presently burn heavy or light fuel oil, and wish to switch to burning NG.

For the purpose of this PoA, micro and small enterprises will be defined based on their definitions in Law 141/2004, where the threshold of small enterprises (economic, productive or service enterprise employing

[45] See the reference presented in footnote (04) above.
[46] See the reference presented in footnote (02) above.
[47] See the reference presented in footnote (37) above.
[48] See the reference presented in footnote (05) above.
[49] See the reference presented in footnote (05) above.

up to 50 workers with a paid in capital of maximum one million EGP) will define the eligibility of potential CPAs.

According to the Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities (EB 70, Annex 05, Version 02.1)[50], paragraphs 13-15 and 17 state that:

> *13- The CME shall demonstrate that compliance with the additionality-related eligibility criteria set in the PoA-DD will ensure that all the relevant additionality-related guidelines, tools or any requirements embedded in the methodologies are met.*
> *14- For PoAs involving combinations of technologies/measures and/or methodologies, the eligibility criteria relative to each of them shall be proposed to demonstrate additionality. Types of combinations as indicated in paragraph 31 below shall be taken into account.*
> *15- The CME shall develop eligibility criteria for inclusion of CPAs in the PoA and shall include these criteria in the PoA-DD and demonstrate their usability to assess the inclusion of CPAs in the generic CPA-DD.*
> *17- The eligibility criteria shall be verifiable.*

The proposed PoA covers the Egyptian micro and small enterprises which presently consume heavy or light fuel oil to cover the energy needs (heat requirements) of their processes and could take advantage of a switching to NG voluntarily under this PoA.

The CPAs that will be able to register under this PoA must meet the following criteria (each CPA must respond to all the eligibility criteria in the table below with a "Yes" and provide the verification method/document specified).

Table 3: Eligibility criteria for inclusion of CPAs under the PoA

#	Eligibility criteria	Verification method/documents	Confirmation (must be Yes)
1	The CPA Facilities must be located within the geographic boundaries of Egypt.	Map of each CPA Facility location and its coordinates	YES/NO
2	The CPA is a voluntary action	Statement by each CPA Facility Owner that the CPA is a voluntary action.	YES/NO
3	The inclusion of the CPA in the present PoA does not represent any double counting of emission reductions, i.e. The CPA is neither registered as an individual CDM project, nor is it included in another PoA.	- Statement by each CPA Facility Owner that their activity is neither registered as an individual CDM project activity nor is part of another registered PoA. - Cross-checking against the CME database and UNFCCC listing of projects in the Host Country to prove that the CPA is a distinct activity, at least by unique identification of location coordinates of each of the CPA Facilities.	YES/NO
4	Each CPA Facility is a micro or small-sized enterprise (M/SE), the threshold of which is 1 million EGP capital and 50 workers.	- Statement by each CPA Facility Owner identifying its capital investment and number of employees.	YES/NO
5	The CPA activity is a switch from HFO or LFO to NG and provision of	Proof of the baseline situation via onsite visit, official documentation, or historical	YES/NO

[50] See the reference presented in footnote (30) above.

	the attendant infrastructure where required.	facility records (logbooks, purchase receipts, etc.) - as applicable.	
6	For CPAs involving more than one facility, all facilities under a CPA must be applying the same industrial process to produce the same type of product, e.g. bakeries, smelters.	- Proof of the activity type at each CPA Facility (onsite visit or official documentation, e.g. commercial registry, as applicable). - Each CPA Facility must be in compliance with any mandatory regulations at the time of inclusion, i.e. bakeries must be in compliance with the Supply and Internal Trade Ministry requirements, brick kilns must comply with national brick strength standards, etc.	YES/NO
7	Start date of the CPA, where the start date should not be before the start of validation of the PoA (webhosting date for global stakeholder comments)	Start date of the CPA as evidenced by the date of signing the first contract or purchase order for CPA implementation is compared to the date of PoA hosting on UNFCCC.	YES/NO
8	Each of the CPA Facilities should meet all the eligibility criteria of the applied methodology and CPA Developer has completed the applicability table in the relevant generic CPA-DD to the chosen methodology.	- Comparison of CPA Facilities data with the requirements and methodology applicability criteria in the relevant generic CPA-DD. - Type (1) CPA Facilities should meet all the applicability criteria of methodology AMS-III.B, while Type (2) CPA Facilities should meet all the applicability criteria of methodology AMS-III.Z, as listed in Section B.2 of Part II of this document. - All relevant proofs must be provided to demonstrate that applicability criteria have been met, as defined in Section B.2 of Part II.	YES/NO
9	The CPA Facilities Owners have secured all environmental and social permits as required by the laws of Egypt – if any (some activities, e.g. bakeries, are exempted by the Environmental laws of Egypt from performing an EIA for their activities).	- To be conducted on the CPA level - In the case when an EIA is required by the law for the activity type applied at the CPA Facilities, letter of EIA approval from the Egyptian Environmental Affairs Agency (EEAA), or relevant regulation showing compliance should be submitted.	YES/NO
10	The CPA Developer undertakes a stakeholder consultation meeting in accordance with Section D of this PoA-DD	- To be conducted on the CPA level - Copy of the stakeholder consultation meeting announcement, list of attendees, comments and conclusion of the meeting.	YES/NO
11	CPA does not receive funding from Annex I parties, or can provide a letter of non-diversion of Official Development Assistance (ODA).	Identify source(s) of financing, and provide letter of non-diversion of Official Development Assistance (ODA) as applicable	YES/NO

12	The CPA meets small-scale threshold criteria and remains within those thresholds throughout the crediting period of the CPA	CPA emission reductions (ERs) calculation spreadsheet will be checked upon submission for inclusion and prior to request for issuance of CERs to ensure that the ERs are in aggregate less than small-scale threshold.	YES/NO
13	***Demonstration of additionality***		
13.1	Wherever the CPA Developer demonstrates that the CPA is a micro-scale project activity (600 tCO_2e per year per element process and 20,000 tCO_2e per year per CPA), the CPA is automatically additional.	ERs estimations relating to each burner or combustion chamber at which the switching to NG is implemented, as well as for the CPA as a whole, showing that the CPA falls into the threshold of micro-scale CDM project (600 tCO_2e per year per element process and 20,000 tCO_2e per year per CPA) would therefore make the CPA automatically additional (to be considered in conjunction with EC #4, which requires proof that the CPA implementer is a M/SE).	YES/NO
13.2	For Small-Scale CPAs, the CPA Developer will demonstrate additionality in accordance with Section B.1of Part I of this PoA-DD	Supporting evidence showing that at least one of the additionality arguments in the PoA-DD (Section B.1, Part I) applies to the CPA studied for inclusion.	YES/NO
14	***Methodological choice***		
14.1	For using AMS.III.B (Ver. 16): CPA Facilities Owners burning heavy or light fuel oil to generate heat for their operation, where the CPA submitting for inclusion under the PoA is a micro-scale, i.e. ERs are estimated to fall below 600 tCO_2e per year per element process, and below 20,000 tCO_2e per year per CPA. Since only micro-scale CPAs are eligible for inclusion under Type (1), therefore all Type 1 CPAs will apply equation 3 of the methodology, such that the amount of fossil fuel consumed in the project activity in year *y*, FC_y, can be used as a proxy for determining baseline emissions	For each CPA Facility, the CPA Developer will study the applicability criteria listed under Type 1 generic CPA-DD (Section B.2, Part II of this PoA-DD), to demonstrate compliance with the requirements of AMS-III.B (Version 16) methodology.	YES/NO
14.2	For using AMS.III.Z (Ver. 04): CPA Facility Owners burning heavy or light fuel oil to produce brick in a brick manufacturing facility, where the annual ERs are estimated to fall below 60,000 tCO_2e per year (i.e. micro and small scale CPAs are eligible for inclusion under Type (2))	For each CPA Facility, the CPA Developer will study the applicability criteria listed under Type 2 generic CPA-DD (Section B.2, Part II of this PoA-DD), to demonstrate compliance with the requirements of AMS-III.Z (Version 04) methodology.	YES/NO

Also according to the PoA guidelines, CPA Developers must demonstrate that their CPA is not a de-bundled component of a large scale project in order to be eligible for inclusion in the PoA. The following table summarizes the checks to be performed on the CPA level (each CPA must respond to all the questions below – in the listed sequence – with a "Yes" in order to be eligible).

Table 4: Demonstration that CPA is not a de-bundled component of a larger scale project

#	Criteria	Verification method/documents	Confirmation (must be Yes)
I	*Option 1: Exemption from debundling check for micro-scale CPAs* [51]		
	Does the fuel switching in each element process at each CPA Facility (bakery, smelter, brick kiln, etc), to be included in the proposed CPA, result in ERs equal to or less than 1% of the micro-scale threshold (20,000 tCO_2e/year), i.e. 1% of the micro-scale threshold is equal to 200 tCO_2e/year?	ERs at each element process at each CPA Facility must be less than or equal to 1% of the micro-scale threshold, i.e. ERs must be not more than 200 tCO_2e per year per element process.	YES/NO
II	*Option 2: Exemption from debundling check for SSC-CPAs* [52]		
	Does the fuel switching in each element process at each CPA Facility (bakery, smelter, brick kiln, etc) to be included in the CPA result in ERs equal to or less than 1% of the small scale threshold (60,000 tCO_2e/year), i.e. 1% of the small-scale threshold is equal to 600 tCO_2e/year?	ERs at each element process at each CPA Facility must be less than or equal to 1% of the small-scale threshold, i.e. ERs must be not more than 600 tCO_2e per year per element process.	YES/NO
- If the response to either of the above questions is "Yes", then the CPA is exempted from having to perform the de-bundling check.- If the response to either of the above questions is "No", then the de-bundling check is to be performed as follows.			
III	*Option 3: Debundling check without exemptions (see the figure below)* [53]		
1	There is no other CPA or CDM project activity with the same CPA Facility Owner that is registered or applying for registration. Please confirm.	Comparison with CME database, and UNFCCC listing of projects in the Host Country showing that the proposed CPA Facility Owner is distinct from them, with special focus on the geographical coordinates of the CPA Facilities.	YES/NO
2	There is no other CPA or CDM project activity with the same CME, which also manages a large scale PoA of same sectoral scope. Please confirm.	The CME for this PoA, CDM-APU/EEAA, does not manage any large scale PoAs.	YES/NO
- If the response to either question 1 or 2 is "Yes", then the proposed CPA is not deemed to be a de-bundled component of a large-scale project activity. - If the response to either question 1 or 2 is "No", then continue the list of questions.			
3	Is the CPA Facility location of the other CPA or CDM project activity more than 1 km away from the boundary of the proposed CPA Facility location at the closest point?	Compare the geographical location coordinates of each proposed CPA Facility with the other CPAs/CDM projects' locations having the same owner.	YES/NO
- If the response to question 3 is "Yes", then the proposed CPA is not deemed to be a de-bundled component of a large-scale project activity. - If the response to question 3 is "No", then continue the list of questions.			

[51] See the reference presented in footnote (34) above.
[52] See the reference presented in footnote (24) above.
[53] See the reference presented in footnote (24) above.

4	Is the size of the proposed CPA combined with the other CPAs/CDM project activities equal to or less that the limit of small-scale projects?	Compare the summation of ERs resulting from all CPAs/CDM project activities having the same owner, and compare with the small scale threshold (60,000 tCO_2e/year)	YES/NO
- If the response to question 4 is "Yes", then the proposed CPA is deemed to be a de-bundled component of a large-scale project activity but can qualify as a small scale CPA. - If the response to question 4 is "No", then the proposed CPA is deemed to be a de-bundled component of a large-scale project activity, and is not eligible to be registered as a small scale CPA.			

For the CPA Facilities to be considered for inclusion under this PoA:

- Any Type (1) CPA, applying AMS-III.B methodology, shall be exempted from performing the de-bundling check, using either option 1 or option 2, i.e. Type 1 CPAs will be eligible only if they're micro-scale and each element process reduces emissions of an amount less than or equal to 600 tCO2e per year.
- Any brick manufacturing facility submitting for inclusion under a Type (2) CPA, applying AMS-III.Z methodology, shall indicate in their CPA Facilities Owners Statement whether they own other brick manufacturing facilities within 1 km, at the closest points, of their CPA Facility(ies) being considered for inclusion, and indicate their status with respect to CDM.

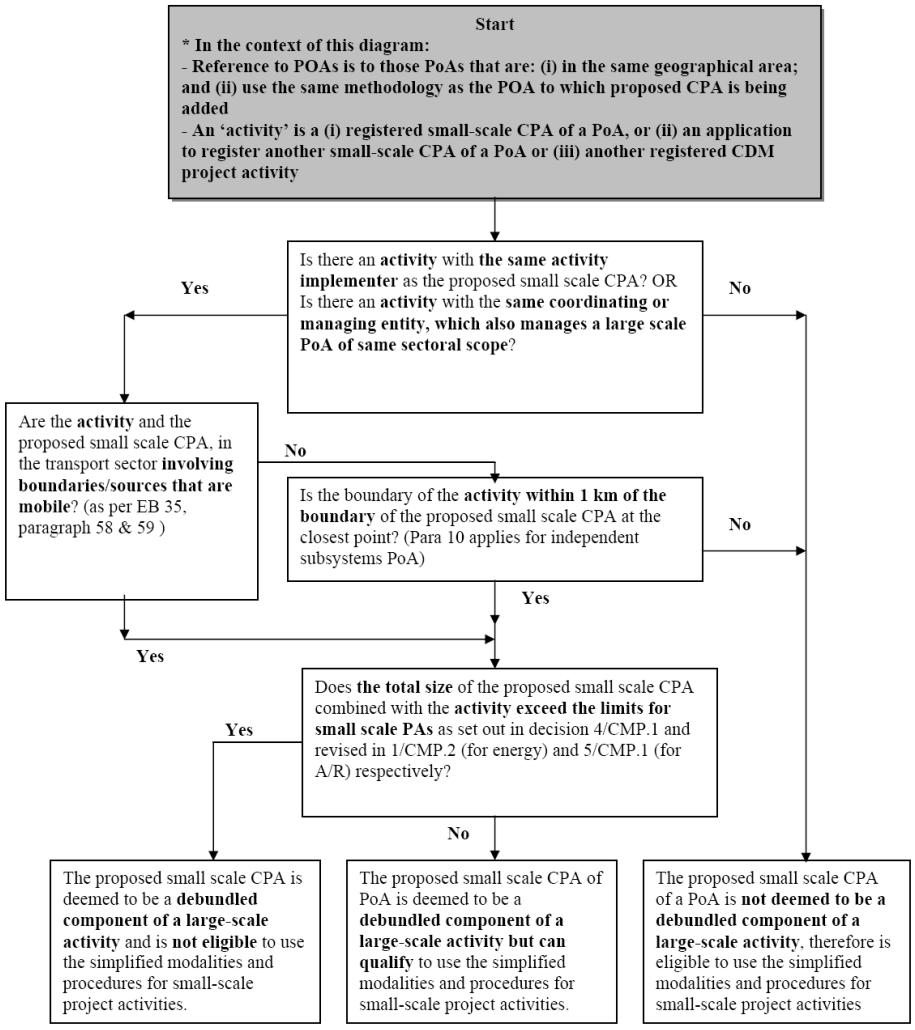


Figure 13: Guidance for determining the occurrence of de-bundling under a PoA

B.3. Application of methodologies

According to the Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programmes of activities (EB 70, Annex 05, Version 02.1)[54], paragraphs 28, 30 and 31 state that:

> *28- 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.*
>
> *30- Combinations of technologies/measures and/or methodologies for a PoA are eligible where it is demonstrated that there are no cross effects between the technologies/measures applied. Where such cross effects do exist, the CME shall propose methods to account for such cross effects using the "Procedures for requests to the Executive Board for deviation from an approved methodology" or "Clean development mechanism project cycle procedure" so as to ensure that the calculation of emission reductions is accurate.*
>
> *31- In particular, the following situations for applying combinations of technologies/measures and/or methodologies are eligible:*
>
> (d) *Combinations of technologies/measures and methodologies vary across CPAs within a PoA, i.e. the policy or goal can only be realized through the use of multiple and disparate methodologies. Therefore in such situations the CME shall demonstrate that the implementation of the activities is integrated through the design of the programme. This may include, for example, a range of activities within different sectors such as energy generation (e.g. wind electricity using AMS-I.D, solar water heaters using AMS-I.J), energy efficiency (e.g. efficient lighting using AMS-II.J, building energy efficiency using AMS-III.AE, efficient street lighting using AMS-II.L), water management (e.g. efficient irrigation), waste management (e.g. landfill gas recovery using AMS-III.G, composting using AMS-III.F, recycling using AMS-III.AJ), transport (e.g. using AMS-III.C) and agriculture (using AMS-III.D for manure management).*

SSC-CPAs under this PoA will apply one of the following approved small scale methodologies:

- **AMS-III.B. Switching Fossil Fuels (Version 16)** – Sectoral Scope 1 : Energy industries (renewable – non-renewable sources)

OR

- **AMS-III.Z. Fuel switch, process improvement and energy efficiency in brick manufacture (Version 04)** – Sectoral Scope 4 : Manufacturing industries

Both methodologies (AMS-III.B and AMS-III.Z) will be used for the same measure; fuel switching from heavy or light fuel oil to NG at micro and/or small enterprises.

- AMS-III.B will be used for facilities where element processes are producing heat and the ERs are within the micro-scale threshold (20,000 tCO2e per year and 600 tCO2e per element process per year), excluding brick manufacturing facilities.
- AMS-III.Z will be used for brick manufacturing facilities, where the ERs are within the small-scale threshold (60,000 tCO2e per year).

Therefore, each CPA will apply only one of the two methodologies. Thus, the independent use of the two approved methodologies does not result in cross effects of any kind.

This PoA aims to provide fuel switching activities in Egypt with a framework facilitating their implementation at micro and small enterprises. AMS-III.B will be applied for bakeries, smelters, and other facilities (except for brick manufacturing facilities), where the ERs per element process would not exceed 600 tCO_2 annually, and also not exceeding 20,000 tCO2 annually for the whole CPA. AMS-III.Z will be applied only for brick kilns, which represent a key sector targeted by the PoA, where the ERs per year would not exceed 60,000 tCO2 annually for the whole CPA.

[54] See the reference presented in footnote (30) above.

Hence, the independent use of these two approved methodologies will allow the PoA to achieve its goal, without the exclusion of micro and small-sized brick manufacturers. Each CPA under this PoA will be verified.

- ***Methodologies that will be used in the PoA:***

For each SSC-CPA, application of these two methodologies under this PoA for the purpose of fuel switching from heavy or light fuel oil to natural gas will take place as follows:

Generic CPA type	Type of CPA Facilities	Methodology	Technology/measure
Type 1	Micro and/or small enterprises burning fuel oil to generate heat for their operations (does not include brick kilns).	AMS-III.B (V-16)	Fossil fuel switching project activities i.e. complete substitution of high carbon fossil fuel (HFO/LFO) with low carbon fossil fuel (NG).
Type 2	Micro and/or small enterprises burning fuel oil to produce bricks	AMS-III.Z (V-04)	

- ***Generic and First Specific CPAs submitted for inclusion under the PoA:***

According to the latest CDM Project Standard (EB 70, Annex 02, Version 02.0)[55], section 11, paragraphs 143 and 144 state that:

> *143- As part of the proposed CDM PoA, the coordinating/managing entity shall prepare generic CPA-DDs with generic information applicable to all CPAs that will be included in the PoA. For PoAs applying more than one technology/measure or more than one methodology, the coordinating/managing entity shall prepare a generic CPA for each technology/measure, each methodology and each combination thereof.*
>
> *144- Also as part of the proposed CDM PoA, the coordinating/managing entity shall define a specific CPAs under the PoA as follows:*
>
> > *(a) For PoAs applying the same technology/measure under the same methodology across all CPAs, only one specific case CPA-DD shall be provided;*
> >
> > *(b) For PoAs applying more than one technology/measure or more than one methodology, the coordinating/managing entity shall complete one specific case CPA-DD for each generic CPA-DD. In case where all specific case CPA-DDs to cover all generic CPA-DDs cannot be provided at the time of the publication of the PoA-DD for global stakeholder consultation, at least one specific case CPA-DD corresponding to any of the generic CPA-DDs shall be provided at the time of the publication of the PoA-DD for global stakeholder consultation. In this case, for each of the remaining generic CPA-DDs, one specific case CPA-DD shall be provided at the time of request for registration of the PoA or after the registration of the PoA. In the latter case, the specific case CPA-DD shall be provided for approval by the Board in accordance with the post-registration change process as defined in the Project cycle procedure.*

For each SSC-CPA, a generic CPA is provided in Part II of this PoA-DD.

One specific CPA, of Type (1) CPAs applying AMS-III.B methodology, is submitted with the PoA at the time of publishing for global stakeholder consultation, and is validated to be submitted with the PoA request for registration.

[55] CDM Project Standard (EB 70, Annex 02, Version 02.1) - http://cdm.unfccc.int/filestorage/y/u/7U2YKZHAPRI63FQN45GWCXMTD1L9B0.pdf/eb70_repan02.pdf?t=bVl8bWYyempkfDBmA782t0mYZQ3gS96A6gKt

After the successful registration of the PoA, the first specific (real case) CPA submitting for inclusion as Type (2) CPA will be provided for approval by the Board in accordance with the post-registration change process as defined in the most recent Project cycle procedure at the time of submission of the CPA.

SECTION C. Management system

In order to create a successful PoA, an organizational structure is created within the CME to provide the administrative support for all stakeholders of the PoA. There are three main functions of a CME:

- *Administration management:* for efficient operation and organizational structure development;
- *Project cycle management:* for harmonized CDM development, screening of CPA inclusion and CPA implementation; and
- *Management of external affairs:* including marketing and business development, as well as buyer-seller CER transactions facilitation.

The following diagram illustrates how the CME is planning to coordinate the whole PoA, including the various CPAs and the interaction with CPA Facilities Owners and CPA Developers. It also shows the different actors, the information and documents flow. The diagram is designed based on that CDM-APU/EEAA is the CME and the sole focal point for the PoA.

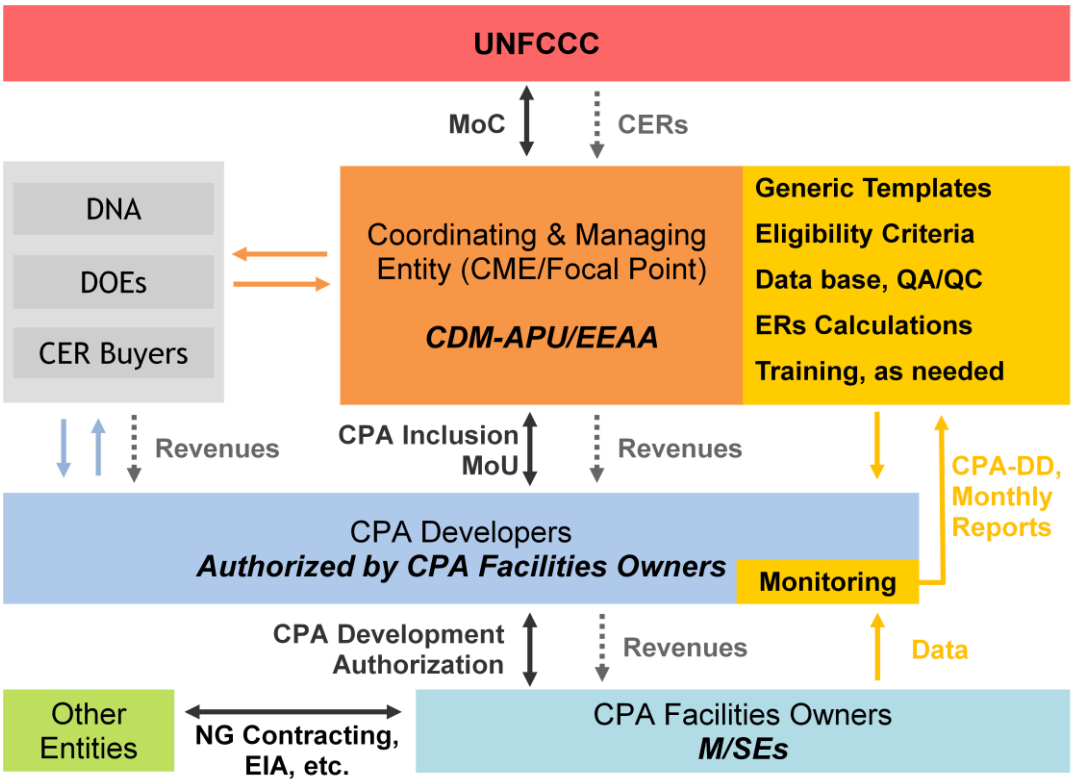


Figure 14: Schematic diagram showing the parties involved in the PoA

According to the Standard for demonstration of additionality, development of eligibility criteria and application of multiple methodologies for programme of activities (EB 70, Annex 05, Version 02.1)[56], paragraph 19 states that:

> *19- The CME shall have the competencies to check the features of potential CPAs and ensure that each CPA meets all requirements and eligibility criteria before inclusion in the registered PoA.*

[56] See the reference presented in footnote (30) above.

The CME shall develop and implement a management system that includes the following made available to the DOE at the time of validation of the PoA:

(a) A clear definition of roles and responsibilities of personnel involved in the process of inclusion of CPAs, including a review of their competencies;

The main responsibility of the CME is to communicate with the Board and the secretariat at UNFCCC, including on matters relating to the distribution of CERs.[57] The CME will also provide a support team to help promote and coordinate the PoA, to assist CPA Developers and individual CPA Facilities Owners with the CDM aspects of their project activities, and to ensure proper monitoring of CPAs. The goal of the CME support team is to ensure the successful operation of the PoA.

Figure 15: Proposed roles for members of the CME

The CME will include - at a minimum - one person in each of the roles shown in the above figure:

- CME Head:
  Responsible for the overall operation and staffing of the CME, ensuring that team members are properly performing their roles, ensuring that all data requests are available for the validators/verifiers, and ensuring adequate communication between CPA Developers and buyers of the generated CERs, e.g. the responsibility of each party, fees and timeline, etc.
- CDM Expert:
  Responsible for assessing the eligibility criteria for the proposed CPA, in terms of inclusion under the PoA and applying the applicable methodology. He/she will be in charge of all aspects related to developing the CPAs, the validation, registration, monitoring, and issuance of credits. The CDM expert will draw upon support from the other members of the CME to enable the success of the projects. The CDM expert will be required to provide input to all aspects of the process, including contracting with buyers and relationships with CPA Developers.
- Legal Expert:
  Responsible for drafting/reviewing contractual agreements with CPA Facilities Owners, CDM Developers, CER buyers, etc. He/she would be in charge of contracting with Designated

[57] Glossary of CDM Terms (EB 70, Annex 07, Version 07) - http://cdm.unfccc.int/filestorage/y/g/5TDUAGKQ4JH9Y0MFP1ZW63OILVN7X8.pdf/eb70_repan07.pdf?t=UDF8bWYyenE3fDBohlExig6FPY2ZvNdjQucS

Operational Entities (DOEs), obtaining country clearances, and discussing credit ownership with partners, such as the CPA Developers. The Legal Expert should acquire a good understanding of the carbon market and emission trading practices.

- Technical Expert:
  Responsible for supporting the CDM Expert with technical information related to the CPAs and the connection to the NG network. He/she will be also responsible for ensuring that the technical components of the monitoring plan are technically sound and applicable, e.g. choice of meters and gauges, reasonable scheduling of calibration, etc.
- Document Controller:
  Responsible for the CME database and for providing the necessary administrative support to the unit, particularly in keeping track of communication, monitoring records, and schedules, contractual agreements, sales dates for CERs, and related material.

The roles and responsibilities to be shared between the CME and the CPA Developers will be defined using a Memorandum of understanding (MoU). This MoU will also cover the respective share of CERs to be generated by the CPA (including the CME share and EPF share), as well as the CER issuance procedures, inter alia, the monitoring procedure, verification frequency, etc.

An official statement - signed by each CPA Facility Owner - will be an essential part of this MoU and the eligibility for inclusion under the PoA. Each CPA Facility Owner Statement will state that:

- The CPA Facility is a micro or small enterprise (identifying the capital and workforce).
- The type of industrial activity applied in the CPA Facility and the type of product manufactured.
- The CPA is a voluntary action, and not mandated by the national law or regulatory.
- The CPA activity is not registered, and has not submitted for registration, neither as an individual CDM project activity, nor as part of another registered PoA.
- The CPA either does not receive public funding and/or does not result in ODA.

CPA Developers must be authorized, by each CPA Facility Owner involved in the CPA, to act on their behalf on all CDM related matters. The responsibilities of CPA Developers shall be captured in the CPA Development Authorization, including:

- Voluntarily subscribing the activities to be implemented by the CPA Facilities Owners to the PoA;
- Financing the CPA inclusion under the PoA and CERs issuance processes;
- Managing CPA communication with the CME;
- Providing the necessary CDM training and guidance to CPA Facilities Owners to ensure the monitoring plan is accurately followed;
- Preparation of monthly reports, as per the applicable CME template; and
- Assignment of carbon rights, in light of the inclusion MoU and other obligations to third parties, i.e. CME share of CERs, EPF share, UNFCCC share of proceeds, signed ERPAs, etc.

In the case when the CME is authorized by CPA Facilities Owners to act as the CPA Developer for their CPA, the head of the CME will sign the CPA Development Authorization with the CPA Facilities Owners, and his team (members of the CME) will be responsible for undertaking the responsibilities listed above.

In the case when a one of the CPA Facilities Owners, or a third party (individual consultant/firm), are authorized by the CPA Facilities Owners to act as the CPA Developer, a quality check of the person/firm acting as the CPA Developer will be applied as part of the CME management procedure for the PoA. This check will include investigating the technical capacities and project plan offered by the CPA Developer to the CPA Facilities Owners, as well as obtaining guarantees for proper completion of tasks – as appropriate.

(b) Records of arrangements for training and capacity development for personnel;

In the initial stages, the CDM Expert will receive heavy support from a consortium of expert consultants in the form of developing the PoA and first CDM Project Activity (CPA). Afterward, the capacity building will focus on the following main areas:

- Management of the PoA:
  Members of the CME should be well equipped with basic knowledge of the CDM rules and guidelines. They should also acquire sufficient data to help them identify the types of projects which would be eligible under this PoA. They will also be responsible for interaction with the UNFCCC on the transfer of credits and other matters.
  Each staff member should also have good understanding of his/her role, as well as a general idea regarding the roles of all other members of the CME to ease the communication within the team.
- Supervising the Monitoring Plan on the CPA Facility level:
  CPA Facilities Owners will be responsible for implementing the monitoring plan and recording the monitored parameters. CPA Developers should document the recorded data and other monitoring information (meter type, calibration, etc.) on monthly basis. The CDM Expert will assist CPA Developers on following all requests made by DOEs. He will also be responsible for following up on any requests from UNFCCC and convey the necessary instructions to CPA Developers and/or CPA Facilities Owners. In addition, the CDM Expert and Technical Expert of the CME will be responsible for setting and following a quality check for the monitoring plan, on regular basis, i.e. scheduled quarterly reviews of the monthly monitoring reports prepared by the CPA Developers.
  Capacity building in this area will involve the CPA Facilities Owners, and the staff members who would be in charge of carrying out the monitoring plan accurately, and collecting the monitored parameters data as specified in the CPA-DDs of their Facilities. CPA Developers will be expected to keep prepare monthly monitoring reports, to document the monitoring parameters for the CPA Facilities which authorized them, until the issuance of credits for the length of the crediting period.
- Marketing the PoA and the generated CERs:
  The CME should be able to market for the PoA and invite eligible CPA Developers and Facilities Owners to participate under the PoA. It should also be able to market the generated CERs in order to monetize them and deliver incentives to participants of the CPA.
- Administration and record keeping:
  The CME will provide administrative support, particularly in keeping track of communication, monitoring records, and schedules, contractual agreements, sales dates for CERs, and related material.

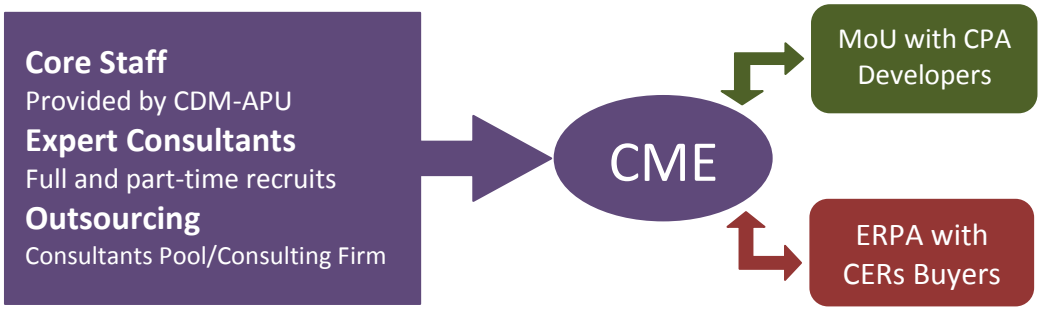


Figure 16: Factors contributing to the success of the CME in managing the PoA

(c) A procedure for technical review of inclusion of CPAs;

The Technical Expert and CDM Expert of the CME must have an onsite due diligence visit to the CPA Facilities locations and the CPA boundary, where they would confirm the type of activity and product, as well as assess the exact fuel switching activity implementation requirements. They would also be able to inspect the element process(s) involved in the CPA. Additional technical information regarding the description of the CPA could be obtained afterward from the responsible authorities or literature.

(d) A procedure to avoid double counting (e.g. to avoid the case of including a new CPA that has already been registered either as a CDM project activity or as a CPA of another PoA);

For quality control and avoidance of double counting, the CME will also document the following:

- As part of the MoU that would be signed between the CME and each CPA Developer:
  - CPA Facilities Owners are aware and agree that their projects will be subscribed to the PoA. This declaration will be part of the inclusion MoU.
  - CPA Facilities Owners acknowledge that their projects are not registered or seeking registration as a stand-alone CDM project activity, part of a bundle CDM project activity, or CPA under a PoA different from this PoA.
- Each CPA and each CPA Facility will be uniquely identified and checked against the list of projects seeking letters of approval (known to the EEAA in its capacity as the DNA, in validation or already registered (in UNFCCC database, online) to ensure that there is no double counting.
- Location coordinates of each of the CPA Facilities will be checked against existing CDM projects and other CPAs in the region.

(e) Records and documentation control process for each CPA and CPA Facility under the PoA;

As a CME for the PoA, CDM-APU/EEAA, will maintain records for each CPA and each CPA Facility under a CPA. When a CPA Developer approaches the CME requesting inclusion under the PoA, the following procedure would be applied for saving information in the CME database:

Table 5: CME coding system for control of documents

#	Coding criteria	Eligible alternatives	Ref. code	First CPA
1	CPA counter	Numbering based on previous CPAs	CPA	00001
2	CPA type and number	Type 1 – Applying AMS-III.B (V-16)	TYB	0001
		Type 2 – Applying AMS-III.Z (V-04)	TYZ	-
3	Type 1 CPA activity (more options can be added to the database in the future)	Bakery	BAK	0001
		Smelters	SML	-
		Glass manufacturing facility	GLS	-
4	Name given to each CPA Facility	As defined in the CPA-DD		Bakery01
				Bakery02
5	Commercial registry number	Unique for each CPA Facility		238756
				39071

For illustration; the first CPA consists of two bakeries applying AMS-III.B, therefore its reference code in the CME database would be "CPA00001-TYB0001-BAK0001", and the CPA Facilities codes would be "BAK0001-Bakery01-238756" and "BAK0001-Bakery02-39071".

If, for example, the 27th CPA submitting for inclusion under the PoA is the 15th brick kiln to submit, it would be given the following reference code "CPA00027-TYZ0015", and if the following CPA submission happens to be the 3rd smelter submitting, it is thus "CPA00028-TYB0013-SML0003", etc.

The CME database will contain a folder for each CPA (identified using the CPA reference code as well as the CPA Facilities codes and geographical locations). Record keeping will include the following:

Table 6: CME database and document control

#	CME database records (for each CPA)	Source
1	Name of each of the CPA Facilities and their coordinates (geographic coordinates of the CPA Facilities locations)	Provided by CPA Developers and confirmed by the CDM Expert and Legal Expert

2	Unique CPA reference code e.g. CPA00000-TYB0000-BAK0000	Given by the CME (Document Controller) to each CPA after checking the CME database
3	Unique name for the CPA e.g. including the type of industrial activity, number of facilities, name of governorate/district, etc.	Given by the CME (Document Controller) to each CPA after checking the CME database
4	Unique CPA Facility code e.g. BAK0000-"Name"-"Registry No."	Given by the CME (Document Controller) to each CPA after checking the CME database
5	Contact details for the CPA Facilities	Provided by CPA Developers and confirmed by the Legal Expert
6	Description of the CPA Facilities, including (i) Type of the industrial activity and product produced; (ii) Type of element process(es) involved in the CPA; and (iii) Identification of the data available (e.g. fuel consumption, production rate, etc.)	Provided by CPA Developers and confirmed by the Technical Expert and CDM Expert
7	Background information on the person/outsourced consultant/contracted consulting firm to be responsible for the CPA monitoring	Provided by CPA Developers and confirmed by the Technical Expert and CDM Expert, in order for the CME to assess and provide proper training needs.
8	Monitoring reports, including detailed record of CPA monitoring data, as applicable for each type of CPA Facility	Provided by the person/firm responsible for the CPA monitoring and confirmed by the CDM Expert
9	History of meters calibration or replacement according to specifications	Provided by CPA Developers and confirmed by the Technical Expert and CDM Expert
10	History of monitoring reports and verification findings	Supervised and archived by the CME (CDM Expert and Document Controller)

All data will be stored electronically and backed up on a regular basis by the document controller.

(f) Measures for continuous improvements of the PoA management system;

For continuous development purposes, spot checks will be performed by members of the CME on quarterly basis, producing progress reports complementary with the monitoring report. These progress reports – written by experts of the CME – will be kept in the CME database for each CPA. Training needs and requests for revision/deviation will be developed accordingly.

SECTION D. Duration of PoA

D.1. Start date of PoA

26/06/2012[58]

D.2. Length of the PoA

28 years.

[58] This date represents the date of publication of the PoA documents for Global Stakeholder Consultation (GSC) on UNFCCC website.

SECTION E. Environmental impacts

E.1. Level at which environmental analysis is undertaken

Environmental analysis/impact assessment will be undertaken at the SSC-CPA level.

Since the environmental impacts are case specific, and CPAs may differ in the type of activity performed, CPA Facilities' locations, element processes used and the type of output considered (heat/hot air or bricks), etc. Therefore, all environmental impacts will be assessed at the CPA Facility level and will adhere to the Host Country's environmental laws and regulations regarding categorization, relevant forms and allowable limits.

According to the Egyptian regulations and depending on the type of the facility implementing a project, the required EIA may be in category A, B, or C, with each category requiring different levels of assessment and documentation. The classification of projects depends on a number of criteria that take into consideration the elements of location, resources consumption, nature of project and energy as per law 4/1994, for the protection of the environment. These criteria have been elaborated as follows:

- Nature of the project was elaborated in terms of types of inputs, outputs as well as the changes that the project may lead to and its geographical extent.
- The energy is taken into consideration in terms of the nature of inputs.
- Resource consumption is considered as one of the criteria.

For each of these criteria, the classification approach depends on indicating three levels of severity (highest, medium and lowest). Using the criteria:

- *Category A project:* The project which meets all criteria of lowest level.
- *Category B project:* The project which meets at least one criterion of the medium level and the rest is of the lowest level.
- *Category C project:* The project which meets at least one criterion of the highest level.

The Guidelines of Principles and Procedure for EIA, 2nd Edition define "lowest", "medium", and "highest" levels, as well as a positive list of activities, which do not require an EIA at all, i.e. bakeries for example are on this list and are thus exempted from performing EIAs for their project activities.[59]

Where a group of CPA Facilities are to be developed in one CPA, or when a group of CPAs are in the same region; environmental analysis may be conducted for each individual CPA Facility, each CPA or for a group of CPAs together in a single EIA, as allowed by the host country regulations.

Nevertheless, the environmental impacts of the PoA are expected to be largely positive due to the reduction in greenhouse gas emissions and other pollutants. There are also no significant transboundary impacts expected as a result of this PoA, and the negative impacts assessed, if any, will be mitigated at the CPA Facility level.

E.2. Analysis of the environmental impacts

This is done at the CPA level.

[59] Guidelines of Principles and Procedures for Environmental Impact Assessment (2nd Edition, 2009), Section 5: Project Classification, pg. 13, 15 and 36 - http://www.eeaa.gov.eg/arabic/main/guides/English_EIA_guidelines.pdf

SECTION F. Local stakeholder comments

F.1. Solicitation of comments from local stakeholders

Stakeholder consultation meetings will be undertaken at the SSC-CPA level.

Due to the several potential variations in the CPAs under the PoA (activity type, Facilities' location, etc), the stakeholder consultation will be done at the SSC-CPA level to ensure full participation and consultation of local stakeholders.

Description of the process by which the comments from local stakeholders were invited and compiled for each CPA will be included in the corresponding specific CPA-DD.

F.2. Summary of comments received

The stakeholder comments will be captured at the CPA level and included in each specific CPA-DD.

F.3. Report on consideration of comments received

The comments of stakeholders will be recorded in the CPA-DD, along with any clarifications and debate. Report on how the comments received were addressed and taken in consideration will be provided at the CPA level and included in the corresponding specific CPA-DD.

SECTION G. Approval and authorization

The following are the approval to be obtained for this PoA and their status:

Table 7: Approvals and Authorizations required for the registration of the PoA

Approval type	Issuing Entity	Status
Letter of no objection*	Egyptian Bureau for CDM	Obtained in Feb. 2012
Letter of approval (LoA)**	Egyptian DNA Council	Obtained in Jun. 2012
* A request for issuance of the letter of approval (LoA) must be within 9 months from the date of issuance of the letter of no objection. ** The LoA authorizes the CDM-APU/EEAA to act as CME for the PoA.		

PART II. Generic component project activity (CPA)

Type (1) Generic CPA: CPAs applying AMS-III.B methodology

SECTION A. General description of a generic CPA

A.1. Purpose and general description of generic CPAs

CPAs submitting for inclusion under this PoA must be Egyptian micro and/or small enterprises (M/SEs) wishing to implement a project for switching from burning fuel oil i.e. Heavy fuel oil (HFO, known locally as mazout), or light fuel oil (LFO, also known as diesel oil, and known locally as solar/gaz), to burning natural gas (NG).

Each CPA may include one or more enterprise (CPA Facility), given that the demonstration of de-bundling requirements is satisfied (as discussed in the eligibility criteria section below). In each CPA Facility, the switching activity may be in either one or several element processes.

Multiple fossil fuel switching in an element process is however not covered under this PoA, i.e. each element process must switch from burning only one type of fossil fuel (HFO/LFO) to burning NG.

Typically, CPA Facilities Owners would have element processes which operate on fuel combustion to generate the heat necessary for their operations, such as bakeries and smelters. Each element process generates a single output (heat) by using a single energy source.

The ERs for switching fuel in each element process must not exceed 600 tCO_2e per year, and that for each CPA must not exceed 60,000 tCO_2e per year.

SECTION B. Application of a baseline and monitoring methodology

B.1. Reference of the approved baseline and monitoring methodology(ies) selected

CPAs registered under this PoA will apply the following approved SSC methodology

AMS-III.B. Switching Fossil Fuels (Version 16)

Reference to UNFCCC website:
http://cdm.unfccc.int/filestorage/O/B/2/OB2ELN8X65ISGAQP04TCVK7URF13YM/EB66_repan56_Revison%20of%20AMS-III.B_ver16.pdf?t=N3h8bWYzMDJ6fDBxMbQWtY7O0f4-KWQAN3zn
This methodology falls under sectoral scope 1; energy industries (renewable – non-renewable sources).
This approved methodology has been revised to allow for its application under a PoA in July 2007[60].

The selected methodology, AMS-III.B (V-16), refers to the guidance provided in the leakage section of

ACM0009 Consolidated baseline and monitoring methodology for fuel switching from coal or petroleum fuel to natural gas (Version 04.0.0)

Reference to UNFCCC website:
http://cdm.unfccc.int/filestorage/z/z/IRUQ7VL9Y6DOK3STH5ZAMWXNP1F8JG.pdf/EB%2068_repan12_ACM0009%20ver04.0.0.pdf?t=Vkl8bWYzMGVnfDCebbju203IluRMFVm2Z9Ek
For calculation of leakage emissions resulting from fuel extraction, processing, liquefaction, transportation, re-gasification and distribution of fossil fuels outside of the project boundary for CPAs under a PoA.

[60] EB 33, Annex 30, dated 27 July 2007 - http://cdm.unfccc.int/EB/033/eb33_repan30.pdf

The selected methodology also refers to the following tool, which is however inapplicable:

- *Tool to determine the baseline efficiency of thermal or electric energy generation systems*
  Not applicable – since the CPAs under this PoA are eligible only if they meet the 600 tCO_2 per year per element process (which uses an alternative approach to calculate baseline emissions).

B.2. Application of methodology(ies)

The applicability criteria for registering under this PoA using AMS-III.B (Version 16) methodology are listed in the table below. The compliance requirements that must be met by each CPA and/or each CPA Facility are also listed.

Table 8: Applicability study of Type 1 CPAs for using AMS-III.B methodology under this PoA

#	Applicability clauses of AMS-III.B (Version 16)	Compliance of CPAs with these requirements
1	*1- This methodology comprises fossil fuel switching in industrial, residential, commercial, institutional, or electricity generation applications.*	Each of the CPA Facilities under this PoA will implement the fuel switching in industrial applications only.
2	*2- Fuel switch may be in a single element process or may include several element processes within the facility. Multiple fossil fuels switching in an element process however is not covered under this methodology.*	In each element process within a proposed CPA, the switch will be from only one type of fuel oil (heavy fuel oil/light fuel oil) to one type of fuel (natural gas).
3	*3- This methodology is applicable for new facilities as well as for retrofit or replacement of existing installations.*	The switching activity may be for new facilities, retrofit, or replacement of existing installations within the CPA boundary.
4	*4- Fuel switching may also result in energy efficiency improvements. If the project activity primarily aims at reducing emissions through fuel switching, it falls into this methodology.*	- Each CPA shall primarily aim at reducing emissions through fuel switching from FO to NG. - CPA Developers and/or CPA Facilities Owners shall not claim emission reductions due to any resulting indirect energy efficiency improvements.
5	*5- New facilities (Greenfield projects) and project activities involving capacity additions compared to the baseline scenario are only eligible if they comply with the related and relevant requirements in the general guidelines to SSC CDM methodologies.*	CPAs involving new facilities shall comply with the related and relevant requirements in the general guidelines to SSC CDM methodologies.
	The requirements concerning demonstration of the remaining lifetime of the replaced equipment shall be met as described in the general guidelines to SSC CDM methodologies.	Requirements concerning demonstration of the remaining lifetime of the replaced equipment as described in the "General Guidelines for SSC CDM methodologies" shall be met by each of the CPA Facilities, where the guidelines state that "*11-c) For the lifetime of existing equipment, project participants and coordinating/managing entities must refer to applicable provisions for application of selected baseline and monitoring*

		methodology for small-scale project activities in the Project standard"[61]. For replaced equipment, the date at which it would have been replaced in absence of the CPA must be provided. This can be evidenced by one of two ways: - Manufacturer statement stating the lifetime and documentation showing the commissioning date, i.e. by subtracting the years of operation of the existing equipment from its lifetime, the duration remaining before replacement (without CDM) is obtained; or - Letter from an industry expert estimating the remaining lifetime of the equipment, i.e. a letter stating the point in time when the existing equipment would be replaced in the absence of the CPA.
	If the remaining lifetime of the affected systems increases due to the project activity, the crediting period shall be limited to the estimated remaining lifetime, i.e. the time when the affected systems would have been replaced in the absence of the project activity	For CPA Facilities in which the remaining lifetime of the affected systems increases due to the project activity, the crediting period shall be limited to the estimated remaining lifetime.
6	*6- This methodology is not applicable to project activities that propose switch from fossil fuel use in the baseline to renewable biomass, bio-fuel or renewable energy in the project scenario. This methodology is also not applicable to project activities involving the use of waste gas.*	CPA Facilities switching to the use of renewable biomass, bio-fuel, renewable energy, or waste gas to replace fuel oil combustion in their applications are not eligible under this PoA.
7	*7- The facility may involve grid connected elemental processes however this methodology does not cover emission reductions on account of shift from use of a grid electricity or electricity exported to a grid*	CPA Developers and/or CPA Facilities Owners shall not claim emission reductions due to shift from use of grid electricity or electricity exported to a grid under this PoA.
8	*8- This category is applicable to project activities where it is possible to directly measure and record the energy use/output (e.g. heat, steam and electricity) and consumption (e.g. fossil fuel) within the project boundary.* *In case of project activities that meet the criteria under paragraph 17 below, this methodology is applicable only where it is possible to directly measure and record at least the energy consumption in the element process (e.g. fossil fuel input).*	- CPA Developers and/or CPA Facilities Owners under this PoA will be eligible to apply this methodology only if they meet the criteria under paragraph 17 of methodology AMS-III.B, where the emission reductions at each of the element processes at the CPA Facilities submitting for inclusion, is less than or equal to 600 tCO_2e per year. - Within each of the CPA Facilities, it will be possible to directly measure and record at least the energy consumption in the element process (e.g. fossil fuel input) after project implementation. The fuel used in the project scenario (Natural Gas)

[61] General guidelines for SSC CDM methodologies (EB 69, Annex 27, Version 19) - http://cdm.unfccc.int/Reference/Guidclarif/ssc/methSSC_guid25.pdf

		will be metered by the gas suppliers. Bills from the gas suppliers provide a recorded measurement of consumption in the CPA Facility.
9	*9- Heat, steam or electricity produced under the project activity shall be for on-site captive use and/or export to other facilities included in the project boundary. In case of electricity generation plants, the generated electricity may also be supplied to users via mini/isolated grid(s) system exclusively supplied by fossil fuel units*	The heat produced under each of the CPA Facilities will be only for on-site captive use.
10	*10- In case energy produced by the project activity is delivered to another facility, or facilities, within the project boundary, a contract between the supplier and consumer(s) of the energy will have to be entered into specifying that only the facility generating the energy can claim emission reductions from the energy displacement.*	The energy (heat) produced by each of the CPA Facilities will not be delivered to other facilities and will be used only within the CPA Facility.
11	*11- Regulations do not constrain the facility from using the energy sources cited in paragraph 1 before or after the fuel switch.*	The regulations in Egypt do not constrain the CPA Facilities from using the energy sources cited in paragraph 1.
	Regulations do not require the use of low carbon energy source (e.g. natural gas or any other fuel) in the element processes.	There are no legislative requirements in Egypt for the use of NG or any other low carbon energy source.
12	*12- The project activity does not result in integrated process change. The purpose is to exclude measures that affect other characteristics of the process besides switch of energy sources e.g. operational conditions, type of raw material processed, use of non-energy additives, change in type or quality of products manufactured etc.*	- CME will ensure that in conformity with the methodology requirement, the CPA does not result in integrated process change in the CPA Facilities, (e.g. change in operational conditions, type of raw material processed, use of non-energy additives, or change in type or quality of products manufactured, etc). - An assessment of the CPA Facilities with respect to this requirement will be carried out by the technical expert of the CME before the CPA inclusion in the PoA. The assessment made, including a detailed description of the process before the implementation of the project activity, will be documented and made available for reference during the CPA verification.
13	*13- Measures are limited to those that result in emission reductions of less than or equal to 60 kt CO_2 equivalent annually.*	Each CPA shall result in emission reductions of less than or equal to 20 ktCO_2eq annually (micro-scale threshold).
	Additional applicability criteria for inclusion of a Type 1 CPA under the PoA	
14	*17- In case of project activities where the estimated annual emission reductions of each of the element processes are equal to or less than 600 tCO_2e per year per element process an alternative approach may be used to calculate baseline emissions as per paragraph 21 using equation 3 instead of applying equation 1.*	Each element process with each CPA shall result in emission reductions of less than or equal to 600 tCO_2eq per year.

If a CPA Facility complies with the applicability criteria in the table above, therefore, it is eligible to apply for inclusion under the PoA using AMS-III.B (Version 16).

B.3. Sources and GHGs

The following table shows the sources and types of gases included in typical CPAs' boundaries.

Table 9: Sources and types of gases included in the CPA boundary

Phase	Source	Gas	Included or not?	Justification/Explanation
Baseline	Fuel oil combustion	CO_2	Yes	Main emission source in the baseline scenario.
		CH_4	No	Considered as minor source.
		N_2O	No	Considered as minor source.
Project activity	Natural gas combustion	CO_2	Yes	Main emission source in the project scenario.
		CH_4	No	Considered as minor source.
		N_2O	No	Considered as minor source.

Section A.6 of Part I include photos and diagrams for the processes which can be involved in a typical CPA (e.g. baking oven in bakeries). The following is a schematic flow diagram physically delineating a typical Type (1) generic CPA.

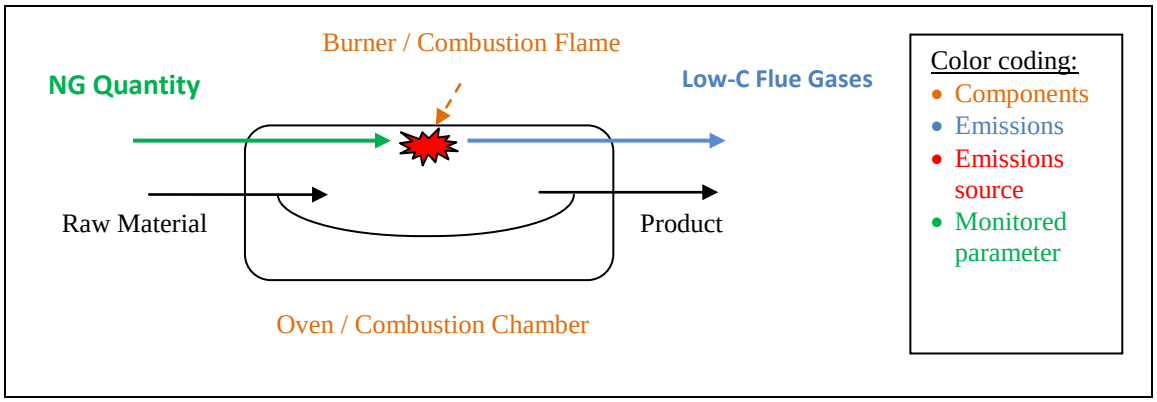


Figure 17: Cross-sectional flow diagram physically delineating Type (1) CPAs

B.4. Description of baseline scenario

For CPA Facilities under this PoA, the baseline scenario, being the most likely scenario that would occur in absence of the PoA, is the continuation of fuel oil combustion in the element processes at the CPA Facilities. For each type of CPA, the baseline scenario would be identified according to the applied baseline and monitoring methodology.

According to the CDM Project Standard (EB 70, Annex 02, Version 02.1) [62], paragraph 44:

> *44- When establishing the baseline scenario, project participants shall take into account the following two types of national and/or sectoral policies:*
>
> *(a) National and/or sectoral policies or regulations that give comparative advantages to more emissions-intensive technologies or fuels over less emissions-intensive technologies or fuels - Such policies, which increase GHG emissions, are called type E+.*

[62] See the reference presented in footnote (55) above.

(b) National and/or sectoral policies or regulations that give comparative advantages to less emissions-intensive technologies over more emissions-intensive technologies (e.g. public subsidies to promote the diffusion of renewable energy or to finance energy efficiency programmes) - Such policies, which decrease GHG emissions, are called type E- .

The vast majority of Egypt's energy consumption is in the form of fossil fuels. The World Bank reports that in 2009 this as 96.29% of Egypt's total energy consumption.[63] Egypt's general policy of subsidizing fossil fuels in general has reduced incentives to increase the efficiency of use or seek alternatives, and therefore has acted as an E+ policy.

The government has also introduced initiatives to encourage switching to NG as discussed in section A.2 of Part I of this document. However, for M/SMEs in particular, access to the capital investment remains to be a main obstacle to switching to natural gas. The government has not been able to resolve these difficulties and barriers, discussed in section B.1 of Part I of this document, and therefore the initiatives do not alleviate the barriers to switching for a large portion of the consumer base.
For CPAs applying AMS-III.B (Version 16) methodology, and at which the ERs does not exceed 600 tCO_2 per year per element process, an alternative approach – other than the use of historical data/information on baseline parameters such as efficiency, energy consumption and output – may be used to calculate baseline emissions in accordance with paragraph 17 of the methodology.

For these CPAs, the amount of fossil fuel consumed in the project activity in year y is used as a proxy for determining baseline emissions in accordance with paragraph 21 of the methodology.

B.5. Demonstration of eligibility for a generic CPA

Table 10: Demonstration of eligibility for a generic CPA

#	Eligibility criteria	Method/document required for proving compliance	Confirmation (only eligible if all are *Yes*)
1	The CPA Facilities must be located within the geographic boundaries of Egypt.	Maps of each of the CPA Facilities locations and their coordinates.	☐ Yes / ☐ No
2	The CPA is a voluntary action	Statement by each CPA Facility Owner involved in the proposed CPA confirming that the CPA is a voluntary action.	☐ Yes / ☐ No
3	The inclusion of the CPA in the present PoA does not represent any double counting of emissions reductions, i.e. The CPA is neither registered as an individual CDM project, nor is it included in another PoA.	- Statements by each CPA Facility Owner that their activity is neither registered as an individual CDM project activity nor is part of another registered PoA. - Cross-checking against the CME database and UNFCCC listing of projects in the Host Country to prove that the CPA is a distinct activity, at least by unique identification of the location coordinates of each of the CPA Facilities.	☐ Yes / ☐ No
4	Each CPA Facility is a micro or small-sized enterprise (M/SE), the	Statements by each CPA Facility Owner identifying its capital investment and	☐ Yes / ☐ No

[63] Fossil fuel energy consumption in Egypt - http://www.tradingeconomics.com/egypt/fossil-fuel-energy-consumption-percent-of-total-wb-data.html

	threshold of which is 1 million EGP capital and 50 workers.	number of employees.	
5	The CPA activity is a switch from HFO or LFO to NG and provision of the attendant infrastructure where required.	Proof of the baseline situation via onsite visit, official documentation, or historical facility records (logbooks, purchase receipts, etc.) - as applicable.	☐ Yes / ☐ No
6	For CPAs involving more than one facility, all facilities under a CPA must be applying the same industrial process to produce the same type of product, e.g. bakeries, smelters.	- Proof of the activity type at each CPA Facility (onsite visit or official documentation, e.g. commercial registry, as applicable). - Each CPA Facility must be in compliance with any mandatory regulations at the time of inclusion, i.e. bakeries must be in compliance with the Supply and Internal Trade Ministry requirements, brick kilns must comply with national brick strength standards, etc.	☐ Yes / ☐ No
7	Start date of the CPA, where the start date should not be before the start of validation of the PoA (webhosting date for global stakeholder comments)	Start date of the CPA as evidenced by the date of signing the first contract or purchase order for CPA implementation is compared to the date of PoA hosting on UNFCCC.	☐ Yes / ☐ No
8	Each of the CPA Facilities meets all the eligibility criteria of the applied methodology and CPA Developer has completed the applicability table in the relevant generic CPA-DD to the chosen methodology.	- Comparison of CPA Facilities data with the requirements and methodology applicability criteria in the relevant generic CPA-DD. - Type (1) CPA Facilities should meet all the applicability criteria of methodology AMS-III.B. - All relevant proofs must be provided to demonstrate that applicability criteria have been met, as defined in Section B.2 of Part II.	☐ Yes / ☐ No
9	The CPA Facilities Owners have secured all environmental and social permits as required by the laws of Egypt – if any (some activities, e.g. bakeries, are exempted by the Environmental laws of Egypt from performing an EIA for their activities.	- To be conducted on the CPA level - In the case when an EIA is required by the law for the activity type applied at the CPA Facilities, letter of EIA approval from the Egyptian Environmental Affairs Agency (EEAA), or relevant regulation showing compliance should be submitted.	☐ Yes / ☐ No
10	The CPA Developer undertakes a stakeholder consultation meeting in accordance with Section D of this PoA-DD	- To be conducted on the CPA level - Copy of the stakeholder consultation meeting announcement, list of attendees, comments and conclusion of the meeting.	☐ Yes / ☐ No
11	CPA does not receive funding from Annex I parties, or can provide a letter of non-diversion of Official Development Assistance (ODA).	Identify source(s) of financing, and provide letter of non-diversion of Official Development Assistance (ODA) as applicable	☐ Yes / ☐ No

12	The CPA meets small-scale threshold criteria and remains within those thresholds throughout the crediting period of the CPA	CPA ERs will be checked upon submission for inclusion and prior to request for issuance of CERs to ensure that the ERs are in aggregate less than small-scale threshold.	☐ Yes / ☐ No
13	***Demonstration of additionality***		
13.1	Wherever the CPA Developer demonstrates that the CPA is a micro-scale project activity (600 tCO_2e per year per element process and 20,000 tCO_2e per year per CPA), the CPA is automatically additional.	ERs estimations for each burner or combustion chamber at which the switching to NG is implemented, as well as for the CPA as a whole, showing that the CPA falls into the threshold of micro-scale CDM project (600 tCO_2e per year per element process and 20,000 tCO_2e per year per CPA) would therefore make the CPA automatically additional (to be considered in conjunction with EC #4, which requires proof that the CPA implementer is a M/SE).	☐ Yes / ☐ No
13.2	For Small-Scale CPAs, the CPA Developer will demonstrate additionality in accordance with Section B.1 of Part I of the PoA-DD	Supporting evidence showing that at least one of the additionality arguments in the PoA-DD (Section B.1 of Part I) applies to the CPA studied for inclusion.	☐ Yes / ☐ No
14	***Methodological choice***		
	For using AMS.III.B (V-16): CPA Facilities Owners burning heavy or light fuel oil to generate heat for their operation, where the CPA submitting for inclusion under the PoA is a micro-scale, i.e. ERs are estimated to fall below 600 tCO_2e per year per element process, and below 20,000 tCO_2e per year per CPA. Since only micro-scale CPAs are eligible for inclusion under Type (1), therefore all Type 1 CPAs will apply equation 3 of the methodology, such that the amount of fossil fuel consumed in the project activity in year *y*, FC_y, can be used as a proxy for determining baseline emissions.	For each CPA Facility, the CPA Developer will study the applicability criteria listed under Type 1 generic CPA-DD (Section B.2, Part II of this PoA-DD), to demonstrate compliance with the requirements of AMS-III.B (Version 16) methodology.	☐ Yes / ☐ No

B.6. Estimation of emission reductions of a generic CPA

B.6.1. Explanation of methodological choices

The project emissions concept is accounting for the actual consumed NG quantity and multiplying it by the emission factor and calorific value of NG. The emission reductions result from using a less carbon-intensive fuel than that used in the baseline.

Type (1) CPAs shall apply equations (3) and (4) in the methodology (AMS-III.B) for the calculation of baseline and project emissions directly, where the actual NG consumption is multiplied in the baseline by the emission factor and calorific value of the baseline fuel, while in the project emissions multiplied by the emission factor and calorific value of NG.

CPA Facilities to be submitting for inclusion under this PoA and applying AMS-III.B will include those facilities which burn fuel oil in their industrial applications to produce heat necessary for their operations.

Version 16 of AMS-III.B methodology exempts CPAs with estimated emission reductions of less than or equal to 600 tCO_2e per year per element process from having to provide historical records of their fuel consumption and eliminate the need for energy output data. This will be of great benefits for CPA Facilities eligible under the PoA (micro and small enterprises), at which data availability have always represented a great obstacle hindering their development.
The key variables and parameters which will be used to calculate the emission reductions for Type 1 CPAs applying AMS-III.B (Version 16) methodology under this PoA are listed in the following table.

Table 11: Key variables and parameters for the calculation of baseline and project emissions

Variables and Parameters *	Data Source
Quantity of NG to be combusted - after project implementation	Calculated
Net calorific value and CO_2 emission factor of HFO	National data
Net calorific value and CO_2 emission factor of LFO	National data
Net calorific value and CO_2 emission factor of NG	National data
Emission factor for upstream fugitive methane emissions from production of the fuel oil type (in tCH_4 per GJ fuel produced)	National data
Emission factor for upstream fugitive methane emissions from production, transportation and distribution of natural gas (in tCH_4 per GJ fuel supplied to final consumers)	National data
Global warming potential of methane valid for the relevant commitment period	IPCC data
* Each parameter is described in more details in sections B.6.2	

- **Equations to be used in calculating emission reductions:**

Baseline emissions:
21- In case of project activities where the estimated annual emission reductions of each of the element processes are equal to or less than 600 tCO_2e per year per element process the amount of fossil fuel consumed in the project activity in year y, FCy, can be used as a proxy for determining baseline emissions using the following equation:

$$BE_y = FC_{PJ,y} * NCV_{FF,PJ,y} * EF_{FF,CO2,BL} \quad (3)$$

Parameter	Description	Unit
BE_y	Baseline emissions in the project activity in year *y*	tCO_2e
$FC_{PJ,y}$	Amount of fuel consumed in the project activity during year *y*	Mass or volume unit
$NCV_{FF,PJ,y}$	Net calorific value of the fossil fuel used in the project activity	TJ/mass or volume unit
$EF_{FF,CO2,BL}$	CO_2 emission factor of the fossil fuel used in the baseline activity	tCO_2/TJ

Project emissions:
23- Project emissions from on-site consumption of fossil fuel should be calculated as follows:

$$PE_y = FC_{PJ,y} * NCV_{FF,PJ,y} * EF_{FF,CO2,PJ} \quad (4)$$

Parameter	Description	Unit
PE_y	Project emissions in the project activity in year *y*	tCO_2e
$FC_{PJ,y}$	Amount of fuel consumed in the project activity during year *y*	Mass or volume unit

$NCV_{FF,PJ,y}$	Net calorific value of the fossil fuel used in the project activity	TJ/mass or volume unit
$EF_{FF,CO2,PJ}$	CO_2 emission factor of project fuel used in the project activity	tCO_2/TJ

Leakage:

Leakage emissions resulting from fuel extraction, processing, liquefaction, transportation, regasification and distribution of fossil fuels outside of the project boundary shall be considered, as per the guidance provided in the leakage section of ACM0009 - Consolidated baseline and monitoring methodology for fuel switching from coal or petroleum fuel to natural gas. In case leakage emissions in the baseline situation are higher than leakage emissions in the project situation, leakage emissions will be set to zero."

Therefore, leakage emissions will be calculated according to ACM0009 (Version 04.0.0), which states that:

In this methodology, the following leakage emission sources shall be considered: Fugitive CH_4 emissions associated with fuel extraction, processing, liquefaction, transportation, re-gasification and distribution of natural gas used in the project plant and fossil fuels used in the grid in the absence of the project activity.

For the purpose of determining fugitive methane emissions associated with the production – and in case of natural gas, the transportation and distribution of the fuels – project participants should multiply the quantity of natural gas consumed in all element processes i with a methane emission factor for these upstream emissions ($EF_{NG,upstream,CH4}$), and subtract for all fuel types k which would be used in the absence of the project activity the fuel quantities multiplied with respective methane emission factors ($EF_{k,upstream,CH4}$), as follows:

$$LE_{CH4,y} = [FF_{project,y} * NCV_{NG,y} * EF_{NG,upstream,CH4} - \sum_k FF_{baseline,k,y} * NCV_k * EF_{k,upstream,CH4}] * GWP_{CH4}$$

$FF_{project,y} = \sum_i FF_{project,i,y}$ *and* $FF_{baseline,k,y} = \sum_i FF_{baseline,i,k,y}$, where:

Parameter	Description	Unit
$LE_{CH4,y}$	Leakage emissions due to upstream fugitive CH4 emissions in year y	tCO_2e
$FF_{project,y}$	Quantity of NG combusted in all element processes during year y	m^3
$FF_{project,i,y}$	Quantity of NG combusted in the element process i during year y	m^3
$NCV_{NG,y}$	Average net calorific value of the NG combusted during year y	GJ/m^3
$EF_{NG,upstream,CH4}$	Emission factor for upstream fugitive methane emissions from production, transportation and distribution of NG - in tCH4 per GJ fuel supplied to final consumers	tCH_4/GJ
$FF_{baseline,k,y}$	Quantity of fuel type k (a coal or petroleum fuel type) that would be combusted in the absence of the project activity in all element processes during the year y - in a volume or mass unit	Mass or Volume unit
$FF_{baseline,i,k,y}$	Quantity of fuel type k (a coal or petroleum fuel type) that would be combusted in the absence of the project activity in the element process i during the year y - in a volume or mass unit	Mass or volume unit
NCV_k	Average net calorific value of the fuel type k (a coal or petroleum fuel type) that would be combusted in the absence of the project activity during the year y - in GJ per volume or mass unit	GJ/mass or volume unit
$EF_{k,upstream,CH4}$	Emission factor for upstream fugitive methane emissions from production of the fuel type k (a coal or petroleum fuel type) - in tCH4 per GJ fuel produced	tCH_4/GJ
GWP_{CH4}	Global warming potential of methane valid for the relevant commitment period	-

Emission reductions:

The emission reduction achieved by the project activity will be calculated as the difference between the baseline emissions and the sum of project emissions and leakage as follows:

$$ER_y = BE_y - PE_y - LE_y \quad (5)$$

Parameter	Description	Unit
ER_y	Emission reductions in the year *y*	tCO_2e

B.6.2. Data and parameters that are to be reported ex-ante

The following are the parameter to be used in the emission reductions calculations for included CPA Facilities applying AMS-III.B methodology.

Data / Parameter	NCV_{HFO}
Unit	GJ/ton HFO
Description	Net calorific value for heavy fuel oil (HFO)
Source of data	Egyptian Environmental Affairs Agency/Egyptian Pollution Abatement Project (EEAA/EPAP): Self-monitoring manual for energy generating plants
Value(s) applied	41.08
Choice of data or Measurement methods and procedures	As stated in the methodology, *project participants may use accurate and reliable local or national data where available.*
Purpose of data	Calculation of baseline emissions
Additional comment	- This value will be used to get a forecast of the future consumption of NG based on historical data of the baseline fuel consumed in the element process. - This value will also be used in leakage emissions calculation.

Data / Parameter	$EF_{CO2,HFO}$
Unit	tCO_2/TJ
Description	CO_2 emission factor for heavy fuel oil (HFO)
Source of data	Egyptian Environmental Affairs Agency/Egyptian Pollution Abatement Project (EEAA/EPAP): Self-monitoring manual for energy generating plants
Value(s) applied	76.76
Choice of data or Measurement methods and procedures	- As stated in the methodology, *project participants may use accurate and reliable local or national data where available.* - This value is calculated based on nationally reported carbon content of 86% for the Egyptian mazout (HFO, heavy fuel oil).
Purpose of data	Calculation of baseline emissions
Additional comment	The EF for HFO was derived from the national reported data as follows: (C-content= 86% and NCV= 41.08 GJ/ton HFO): 1- Basis: 1 ton fuel. Therefore, the C-content is equal to 0.86 tCO_2/ton HFO. 2- Quantity of CO_2 released is the product of multiplying the C-content by the molecular weight of CO_2 (44), and dividing by the molecular weight of Carbon (12). i.e. $m_C/Mwt_C = m_{CO2}/Mwt_{CO2}$ Therefore, CO_2-content = (0.86*44/12) = 3.1533 tCO_2/ton HFO

	3- To obtain the emission factor per unit energy, divide the CO_2 quantity obtained (tCO_2/ton HFO) by the calorific value (GJ/ton HFO) Therefore, EF = 3.1533/41.08 = 0.076760 tCO_2/GJ

Data / Parameter	**NCV_{LFO}**
Unit	TJ/ton LFO
Description	Net calorific value for light fuel oil (LFO)
Source of data	Egyptian Environmental Affairs Agency/Egyptian Pollution Abatement Project (EEAA/EPAP): Self-monitoring manual for energy generating plants
Value(s) applied	0.0419
Choice of data or Measurement methods and procedures	As stated in the methodology, *project participants may use accurate and reliable local or national data where available.*
Purpose of data	Calculation of baseline and leakage emissions
Additional comment	This value will be used to get a forecast of the future consumption of NG based on historical data of the baseline fuel consumed in the element process.

Data / Parameter	**$EF_{CO2,LFO}$**
Unit	tCO_2/TJ
Description	CO_2 emission factor for light fuel oil (LFO)
Source of data	Egyptian Environmental Affairs Agency/Egyptian Pollution Abatement Project (EEAA/EPAP): Self-monitoring manual for energy generating plants
Value(s) applied	75.52
Choice of data or Measurement methods and procedures	- As stated in the methodology, *project participants may use accurate and reliable local or national data where available.* - This value is calculated based on nationally reported carbon content of 86.3% for the Egyptian solar (LFO, light fuel oil).
Purpose of data	Calculation of baseline emissions
Additional comment	The EF for LFO was derived from the national reported data as follows: (C-content=86.3% and NCV=0.0419 TJ/ton LFO) 1- Basis: 1 ton fuel. Therefore, the C-content is equal to 0.863 tCO_2/ton LFO. 2- Quantity of CO_2 released is the product of multiplying the C-content by the molecular weight of CO_2 (44), and dividing by the molecular weight of Carbon (12). i.e. $m_C/Mwt_C = m_{CO2}/Mwt_{CO2}$ Therefore, CO_2-content = (0.863*44/12) = 3.16433 tCO_2/ton LFO 3- To obtain the emission factor per unit energy, divide the CO_2 quantity obtained (tCO_2/ton LFO) by the calorific value (TJ/ton LFO) Therefore, EF = 3.1533/41.08 = 75.5210 tCO_2/TJ

Data / Parameter	**NCV_{NG}**
Unit	TJ/ton NG
Description	Net calorific value for NG per unit mass
Source of data	Egyptian Environmental Affairs Agency/Egyptian Pollution Abatement Project (EEAA/EPAP): Self-monitoring manual for energy generating plants
Value(s) applied	0.04983

Choice of data or Measurement methods and procedures	As stated in the methodology, *project participants may use accurate and reliable local or national data where available.*
Purpose of data	Calculation of baseline, project and leakage emissions
Additional comment	CPAs applying AMS-III.B will use this value for the complete crediting period. In case of CPAs applying AMS-III.Z, this parameter is to be monitored and updated during verification.

Data / Parameter	**$EF_{CO2,NG}$**
Unit	tCO_2/TJ
Description	CO_2 emission factor for the NG
Source of data	Egyptian Environmental Affairs Agency/Egyptian Pollution Abatement Project (EEAA/EPAP): Self-monitoring manual for energy generating plants
Value(s) applied	55.19
Choice of data or Measurement methods and procedures	- As stated in the methodology, *project participants may use accurate and reliable local or national data where available.* - This value is calculated based on nationally reported carbon content of 75% for the Egyptian natural gas.
Purpose of data	Calculation of project emissions
Additional comment	The EF for NG was derived from the national reported data as follows: (C-content=75% and NCV=0.04983 TJ/ton NG) 1- Basis: 1 ton NG. Therefore, the C-content is equal to 0.75 tCO_2/ton NG. 2- Quantity of CO_2 released is the product of multiplying the C-content by the molecular weight of CO_2 (44), and dividing by the molecular weight of Carbon (12). i.e. $m_C/Mwt_C = m_{CO2}/Mwt_{CO2}$ Therefore, CO_2-content = (0.75*44/12) = 2.75 tCO_2/ton NG 3- To obtain the emission factor per unit energy, divide the CO_2 quantity obtained (tCO_2/ton NG) by the calorific value (TJ/ton NG) Therefore, EF = 2.75/0.04983 = 55.1876 tCO_2/TJ

Data / Parameter	**d_{NG}**
Unit	g/l (kg/m^3)
Description	Density of NG
Source of data	The Egyptian General Petroleum Corporation (EGPC)
Value(s) applied	0.84
Choice of data or Measurement methods and procedures	As stated in the methodology, *project participants may use accurate and reliable local or national data where available.*
Purpose of data	Calculation of baseline, project and leakage emissions
Additional comment	This value is provided by EGPC for the density of Natural Gas at 60°F temperature and a pressure of 1 atm. - This value is mainly used to convert the monitored consumed NG in the project element process(es) *in volume units (m3/h) into mass units (e.g. ton/h)*

Data / Parameter	$EF_{NG,upstream,CH4}$
Unit	tCH_4/GJ
Description	Emission factor for upstream fugitive methane emissions from production, transportation and distribution of NG
Source of data	Egypt's Second National Communication
Value(s) applied	$5.35*10^{-6}$
Choice of data Or Measurement methods and procedures	As stated in ACM0009 methodology, National Communication data may be used.
Purpose of data	Calculation of leakage emissions
Additional comment	Egypt's Second National Communication data were used, where: 1- The consumption of NG is obtained from Figure (I.9) in page 15. The most recent value corresponds to 23 MTOE: 23 (MTOE)*41.87*10^6 = 9.63*10^8 GJ 2- In page 33, it is stated that: "The total fugitive emissions encompass 1.47 Mt CO_2, 0.444 Mt CH_4 and 0.02 Kt of N_2O, collectively equivalent to 10.81 Mt CO_2e (Aziz, 2007). Sources of these emissions entail oil production, natural gas production, petroleum products processing and distribution, with oil production being the main source with a contribution of more than 99% of the emissions." Accordingly, the contribution of NG in the fugitive emissions was taken as 1% of the 10.81 Mt CO_2e (108,100 tCO_2e) 3- The emission factor was thus calculated from the above two values: $EF_{K,upstream,CH4}$ = 108,100 tCO_2e / 9.63 * 10^8 GJ = 1.123 * 10^{-4} tCO_2e/GJ 4- To obtain the emission factor in (tCH_4/GJ), the global warming potential of Methane is used: $EF_{NG,upstream,CH4}$ (tCH_4/GJ) = 1.123*10^{-4} (tCO_2e/GJ)/21 = 5.35*10^{-6} tCH_4/GJ

Data / Parameter	$EF_{k,upstream,CH4}$
Unit	tCH_4/GJ
Description	Emission factor for upstream fugitive methane emissions from production of the fuel type k (a coal or petroleum fuel type)
Source of data	Egypt's Second National Communication
Value(s) applied	$4.35*10^{-4}$
Choice of data or Measurement methods and procedures	As stated in ACM0009 methodology, National Communication data may be used.
Purpose of data	Calculation of leakage emissions
Additional comment	Egypt's Second National Communication data were used, where: 1- The consumption of petroleum products is obtained from Figure (I.9) in page 15. The most recent value corresponds to 28 MTOE: 28 (MTOE)*41.87*10^6 = 1.17*10^9 GJ 2- In page 33, it is stated that: "The total fugitive emissions encompass 1.47 Mt CO_2, 0.444 Mt CH_4 and 0.02 Kt of N_2O, collectively equivalent to 10.81 Mt CO_2e (Aziz, 2007). Sources of these emissions entail oil

	production, natural gas production, petroleum products processing and distribution, with oil production being the main source with a contribution of more than 99% of the emissions." Accordingly, the contribution of petroleum products in the fugitive emissions was taken as 99% of the 10.81 Mt CO_2e (10,701,900 tCO_2e) 3- The emission factor was thus calculated from the above two values: $EF_{k,upstream,CH4}$ = 10,701,900 t CO_2e / $1.17*10^9$ GJ = $9.129 * 10^{-3}$ tCO_2e/GJ 4- To obtain the emission factor in (tCH_4/GJ), the global warming potential of Methane is used: $EF_{k,upstream,CH4}$ (tCH_4/GJ) = $9.129*10^{-3}$ (tCO_2e/GJ)/21 = $4.35*10^{-4}$ tCH_4/GJ

Data / Parameter	**GWP_{CH4}**
Unit	tCO_2e/tCH_4
Description	Global warming potential of methane valid for the relevant commitment period
Source of data	IPCC
Value(s) applied	21
Choice of data or Measurement methods and procedures	As stated in ACM0009 methodology, IPCC 2006 guidelines Default value for the first commitment period should be used.
Purpose of data	Calculation of leakage emissions
Additional comment	-

Data / Parameter	**FC_{BL}**
Unit	Mass or Volume
Description	Average annual baseline fossil fuel consumption value - To be determined on the CPA Facility level.
Source of data	Literature, national averages, historical records at the CPA Facility level, etc.
Value(s) applied	To be determined on the CPA Facility level
Choice of data or Measurement methods and procedures	These data are to be obtained in accordance with the methodology from the available documentation at each CPA Facility.
Purpose of data	- Calculation of the baseline emissions, where this value will be used to estimate the fuel consumption in project activity ($FC_{PJ,y}$); and - Calculation of the leakage emissions **(**$FF_{baseline,k,y}$**)**
Additional comment	- The ERs will be calculated for each CPA Facility based on its independent consumption. - The total ERs of a CPA is the summation of the ERs at all CPA Facilities it includes.

B.6.3. Ex-ante calculations of emission reductions

As per the equations listed under section B.6.1 of this generic CPA for Type (1) CPAs, and based on the data provided by the CPA Facility Owner; ex-ante calculations will be applied on the CPA Facility level.

Ex-ante calculation for a typical CPA Facility, i.e. a bakery applying Type 1 CPA, is presented in Appendix 04.

B.7. Application of the monitoring methodology and description of the monitoring plan

B.7.1. Data and parameters to be monitored by each generic CPA

Data / Parameter	**$FC_{NG,y}$**
Unit	m^3/hr NG
Description	Flow rate of NG consumed in the element process(es) for captive energy generation in year *y*
Source of data	Measured by the contracted NG supplier's flow meter.
Value(s) applied	To be determined on the CPA Facility level (The value used in the typical example presented in Appendix 04 of this PoA-DD is 239.04 m^3/day)
Measurement methods and procedures	- The flow rate of NG will be recorded continuously by flow meters at the inlet to the element processes. - Monthly readings will be kept by CPA owners and reported to the authorized CPA implementer. CPA Developers will provide the CME with the collected data quarterly to be included in each CPA's progress reports. - Records will be kept for the entire duration of the crediting period, plus two additional years.
Monitoring frequency	Monthly starting the date of gas supply and until the end of the crediting period.
QA/QC procedures	– The recorded values will be cross-checked with NG receipts – Flow meters will be subjected to regular maintenance operations and calibrations (following the manufacturer's specifications for calibration procedures).
Purpose of data	Calculation of the baseline and project emissions
Additional comments	- The value applied for ex-ante calculation of the emission reductions will be a forecast of the future consumption of NG based on historical data of the baseline fuel consumed in the element process. - This value will also be used in leakage emissions calculation.

B.7.2. Description of the monitoring plan for a generic CPA

Data Recording & Reporting:

On monthly basis, the CPA Developers will prepare a summary report of all data collected for the previous month to the CME. This report will be submitted to the CME for review.

Quarterly (every 3 months), the CME will prepare a quarterly progress report for each CPA under the PoA, including the CPA Facilities status, monitoring parameters, quality of collection and training needs - if any. These reports would assist in the preparation of the monitoring reports for verification.

The authorized CPA Developer (whether an individual/firm or CME) will be responsible for the preparation of the monitoring reports and the relevant communication with the DOE during each verification period.

The Monitoring Report will comprise all required monitoring information in order to allow the DOE to verify the emission reductions for each monitoring period for each individual CPA Facility.

Data Storage & Archiving:

For each CPA Facility, all parameters included in B.7.1 will be monitored by the CPA Facility Owners of the CPA and recorded electronically or manually.
NG consumption will be kept in the CPA Facilities' log-books during each shift as per the meter readings. Monthly totals are continuously catalogued by the CPA Developer and kept in separate log-books.

CDM-APU/EEAA will prepare a form to be filled monthly by each CPA Developer identifying the CPA name, activity, the hours of operation (or down time) for the month, comments on any operational problems in addition to attaching all the monitored parameters included in B.7.1. Forms will be in Arabic, and it will be signed by the CPA Facilities Owner and CPA Developers (as authorized by CPA Facilities Owners). A signed copy will be with each of them and will be electronically archived by the Document controller of the CME.

In addition, for each of the CPA Facilities, copies of NG invoices from the gas suppliers will be collected and kept by the CPA Developer. Similarly, a copy of these documents will be electronically archived by the Document Controller of the CME.

The Document Controller at the CME will be responsible for handling all these documents. The CME database will include information on both the CPA and the CPA Facility level as described in Section C of the PoA-DD. The data recording and archiving activities will be utilized in the monitoring reports; and thereby ensuring the prevention of double counting of emission reductions data from different CPAs or different CPA Facilities under a single CPA. Records will be kept for a minimum of two years after the end of the crediting period.

On the CME level, an internal auditing procedure will be applied to secure the correctness of data storage.

Regular QA/QC Procedures:

a) Calibration procedure:

The gas flow meters and any other measurement equipment used for CPAs monitoring will be subject to regular calibration. The meters used for monitoring and generation of CERs will be calibrated at least once every three years. Calibration procedure will follow the requirements listed in the manufacturer's specifications for the meter used by the contracted gas suppliers.

b) Personnel training:

Personnel involved in the CPA implementation and monitoring will be assessed and trained by the CME before the start of the crediting period. Personnel at the CPA Facilities will be trained on the parameters to be monitored and monitoring procedures. In addition, they will be educated on the main rules and benefits of the PoA.

Data Acquisition:

a) CPA Facilities monitoring:

For each of the CPA Facilities, all parameters included in B.7.1 will be monitored and recorded on the CPA Facility level.
Moreover, the CPA Developer will monitor and document all technical data relevant to the metering devices:

- Exact location of the meter;
- Manufacturing company/supplier and model type;
- Serial number of the meter used;
- Manufacturer's specifications including the calibration procedures;
- Date of start of operation of the meter;

- Regular service contract with the supplying company;
- Date of decommissioning of the meter (if any); and
- Meter reading at time of decommissioning of the meter (if any).

These data will be submitted to the CME at the end of each monitoring period.

b) CME monitoring:

The database of the CME will contain a folder for each CPA, which will include CPA and CPA Facilities specific data. The following data will be checked and reported in each monitoring report:

- Progress reports for the CPA's operation and the status of the element processes in the project boundary;
- Detailed record of CPA monitoring data, as applicable for each types of CPAs;
- History of meter calibration or replacement according to specifications; and
- The remaining lifetime of project equipment. In each CPA Facility, the requirements concerning demonstration of the remaining lifetime of the replaced equipment shall be met as described in the methodology. If the remaining lifetime of the affected systems increases due to the Project activity, the crediting period shall be limited to the estimated remaining lifetime, i.e. the time when the affected systems would have been replaced in the absence of the Programme activity

Data QA/QC Procedure:

Records for NG quantities are kept both by the CPA Facility and by the NG supplier for billing purposes. The CPA Facility records will be checked against NG purchase receipts. In addition, the facility log-books recording NG are signed monthly by the facility operator or CPA Developer.

Type (2) Generic CPA: CPAs applying AMS-III.Z methodology[64]

SECTION A. General description of a generic CPA

A.1. Purpose and general description of generic CPAs

CPAs submitting for inclusion under this PoA must be Egyptian micro and/or small enterprises (M/SEs) wishing to implement a project for switching from burning fuel oil i.e. Heavy fuel oil (HFO, known locally as mazout), or light fuel oil (LFO, also known as diesel oil, and known locally as solar/gaz), to burning natural gas (NG).

Each CPA may include one or more enterprise (CPA Facility), given that the demonstration of de-bundling requirements is satisfied (as discussed in the eligibility criteria section below). In each CPA Facility, the switching activity may be in either one or several element processes.

Multiple fossil fuel switching in an element process is however not covered under this PoA, i.e. each element process must switch from burning only one type of fossil fuel (HFO/LFO) to burning NG.

Typically, CPA Facilities Owners are brick manufacturing facilities which operate on fuel combustion to produce brick. Each brick kiln is treated as one element process operating using a single energy source to generate the necessary heat to cook the brick.

The ERs for switching fuel for each CPA must not exceed 60,000 tCO_2e per year.

SECTION B. Application of a baseline and monitoring methodology

B.1. Reference of the approved baseline and monitoring methodology(ies) selected

CPAs registered under this PoA will apply the following approved SSC methodology

AMS-III.Z. Fuel switch, process improvement and energy efficiency in brick manufacture (Version 04)

Reference to UNFCCC website:
http://cdm.unfccc.int/filestorage/R/H/E/RHEASNU01VILTFY6ZG7W3XDKOCBM59/EB67_repan21_Revisionof%20AMS-III.Z_ver04.0.pdf?t=bVB8bWYzMWN3fDDSUO0lYwpt0XIRkVBPQTWQ
This methodology falls under sectoral scope 4; manufacturing industries.
This approved methodology has been designed to include project activities under a PoA since its initial adoption in March 2009.[65]

The selected methodology, AMS-III.Z (V-04), refers to the guidance provided in the leakage section of

ACM0009 Consolidated baseline and monitoring methodology for fuel switching from coal or petroleum fuel to natural gas (Version 04.0.0)

Reference to UNFCCC website:
http://cdm.unfccc.int/filestorage/z/z/IRUQ7VL9Y6DOK3STH5ZAMWXNP1F8JG.pdf/EB%2068_repan12_ACM0009%20ver04.0.0.pdf?t=Vkl8bWYzMGVnfDCebbju203IluRMFVm2Z9Ek

[64] No specific CPA is provided for this generic Type (2) CPA, applying AMS-III.Z methodology, at the time of requesting the PoA registration. According to paragraph 144 of the CDM Project Standard (EB70, Annex 02, Version 02.1), when including the first CPA of Type (2) after the registration of the PoA, *the specific case CPA-DD shall be provided for approval by the Board in accordance with the post-registration change process as defined in section VI.B of the Project cycle procedure*. – See the reference presented in footnote (55) above.

[65] EB 46, Annex 20, dated 25 March 2009 - http://cdm.unfccc.int/EB/046/eb46_repan20.pdf

For calculation of leakage emissions resulting from fuel extraction, processing, liquefaction, transportation, re-gasification and distribution of fossil fuels outside of the project boundary for CPAs under a PoA.

As well as the following tools:

Tool to calculate project or leakage CO_2 emissions from fossil fuel combustion (V-02)

Reference to UNFCCC website:
http://cdm.unfccc.int/methodologies/PAmethodologies/tools/am-tool-03-v2.pdf
For calculation of the emissions due to fossil fuel consumption (including auxiliary use) $PE_{fossilfuel,y}$, associated with the operation of the manufacturing process, and monitoring of project emissions due to the fossil fuels consumption.

The selected methodology also refers to the following tools, which are however inapplicable:

- *Tool to calculate baseline, project and/or leakage emissions from electricity consumption*
  Not applicable – since the PoA does not involve biomass project activities (no emissions would occur due to electricity consumption associated with the biomass treatment and processing).
- *Tool for the identification of degraded or degrading lands for consideration in implementing CDM A/R project activities*
  Not applicable – since the PoA does not involve CDM A/R project activities.

B.2. Application of methodology(ies)

The applicability criteria for registering under this PoA using AMS-III.Z (Version 04) methodology are listed in the table below. The compliance requirements that must be met by each CPA and/or each CPA Facility are also listed.

Table 12: Applicability study of Type 2 CPAs - applying AMS-III.Z methodology - under this PoA

#	Applicability clauses of AMS-III.Z (Version 04)	Compliance of CPAs with these requirements
1	*1- The methodology comprises one or more technology/measures listed below in brick production facilities:* *- Shift to an alternative brick production technology/process; or* *- Complete/Partial substitution of fossil fuels with renewable biomass; or* *- Complete/partial substitution of high carbon fossil fuels with low carbon fossil fuels.*	- Each of the CPA Facilities under this PoA will be brick producing facilities. - The applicability of this methodology within this PoA is limited only to CPA Facilities implementing fuel switching project activities (complete substitution of high carbon fossil fuels with low carbon fossil fuels). - In each element process within a proposed CPA, the switch will be from only one type of fuel oil (HFO/LFO) to one type of fuel (NG). - CPA Facilities switching to the use of renewable biomass, bio-fuel, renewable energy, or waste gas to replace fuel oil combustion in their applications are not eligible under this PoA. Thus, the following paragraphs do not apply to CPAs under this PoA; 7, 8, 9 and 10
2	*2- Complete or partial fuel substitution and associated activities may also result in improved energy efficiency of existing facility; however project activities primarily aimed at emission reductions from energy efficiency measures shall apply AMS-II.D "Energy efficiency and*	- Each CPA shall primarily aim at reducing emissions through fuel switching from FO to NG. - CPA Developers and/or CPA Facilities Owners shall not claim emission

	fuel switching measures for industrial facilities". Thus, the methodology is applicable for the production of: *(a) Bricks that are the same in the project and baseline cases; or* *(b) Bricks that are different in the project case versus the baseline case due to a change(s) in raw materials, use of different additives, and/or production process changes resulting in reduced use or avoidance of fossil fuels for forming, sintering (firing) or drying or other applications in the facility as long as it can be demonstrated that the service level of the project brick is comparable to that of the baseline brick (see paragraph 11). Examples include pressed mud blocks (soil blocks) with cement or lime stabilization and other 'unburned' bricks that attain strength due to fly ash, lime/cement and gypsum chemistry.*	reductions due to indirect resulting energy efficiency improvements. - CPA Facilities Owners will carry out the necessary tests to demonstrate that the produced brick is the same in the project and baseline cases, or that the service level of the project brick is comparable to that of the baseline brick, based on the specification provided in the CPA-DD and agreed upon with the CME.
3	*3- The measures may replace, modify, retrofit or add capacity to systems in existing facilities or be installed in a new facility*	The switching activity may involve replacing, modifying, retrofitting, or adding capacity to the element process whether in existing or new facilities.
4	*4- New facilities (Greenfield projects) and project activities involving capacity additions are only eligible if they comply with the requirements for Greenfield projects and capacity increase projects specified in the "General Guidelines for SSC CDM methodologies"*	CPAs involving new facilities shall comply with the related and relevant requirements in the general guidelines to SSC CDM methodologies.
5	*5- The requirements concerning demonstration of the remaining lifetime of the replaced equipment shall be met as described in the "General Guidelines for SSC CDM methodologies"*	Requirements concerning demonstration of the remaining lifetime of the replaced equipment as described in the "General Guidelines for SSC CDM methodologies" shall be met by each of the CPA Facilities, where the guidelines state that "*11-c) For the lifetime of existing equipment, project participants and coordinating/managing entities must refer to applicable provisions for application of selected baseline and monitoring methodology for small-scale project activities in the Project standard*"[66]. For replaced equipment, the date at which it would have been replaced in absence of the CPA must be provided. This can be evidenced by one of two ways: - Manufacturer statement stating the lifetime and documentation showing the commissioning date, i.e. by subtracting the years of operation of the existing equipment from its lifetime, the duration remaining before replacement (without CDM) is obtained; or - Letter from an industry expert

[66] See the reference presented in footnote (61) above.

		estimating the remaining lifetime of the equipment, i.e. a letter stating the point in time when the existing equipment would be replaced in the absence of the CPA.
	If the remaining lifetime of the affected systems increases due to the project activity, the crediting period shall be limited to the estimated remaining lifetime, i.e. the time when the affected systems would have been replaced in the absence of the project activity.	For CPA Facilities within which the remaining lifetime of the affected systems increases due to the project activity, the crediting period shall be limited to the estimated remaining lifetime.
6	*6- For existing facilities, it shall be demonstrated, with historical data, that for at least three years immediately prior to the start date of the project implementation, only fossil fuels (no renewable biomass) were used in the brick production systems that are being modified or retrofitted. In cases where small quantities of biomass were used for experimental purposes this can be excluded*	- Three year of historical data regarding the fuel consumption proving that the baseline at each of the existing CPA Facilities is the combustion of fossil fuel (HFO/LFO). - No renewable biomass has been used in any of the existing CPA Facilities during the last three years prior to the start of the CPA.
7	*11- This methodology is applicable under the following conditions:* *(a) The service level of project brick shall be comparable to or better than the baseline brick, i.e. the bricks produced in the brick production facility during the crediting period shall meet or exceed the performance level of the baseline bricks (in terms of, for example dry compressive strength, wet compressive strength, density).*	- Compressive strength test will be made prior to the CPA implementation (to identify the baseline brick quality). - Compressive strength test will be made every 6 months after the CPA implementation (as per the monitoring plan in the methodology) to determine the quality of the product brick. - CME will ensure that in conformity with the methodology requirement, the the service level (compressive strength) of project brick is comparable to or better than that of the baseline brick at each CPA Facility.
	An appropriate national standard shall be used to identify the strength class of the bricks; bricks that have compressive strengths lower than the lowest class bricks in the standard are not eligible under this methodology. Project bricks are tested in nationally approved laboratories at 6 six-month intervals (at a minimum) and test certificates on compressive strength are made available for verification.	- An appropriate national standard will be identified in each CPA-DD, and the CPA Facilities Owners shall comply with the specifications in the standard. - CPA Developers shall submit test certificates (at 6 month intervals) during verification.
	(b) The existing facilities involving modification and/or replacement shall not influence the production capacity beyond ±10% of the baseline capacity unless it is demonstrated that the baseline for the added capacity is the same as that for the existing capacity in accordance with paragraph 4 above;	CPA Facilities applying modifications and/or replacements shall undergo a comparison between the baseline production capacity and the project capacity after CPA implementation.
	(c) Measures are limited to those that result in emission reductions of less than or equal to 60 kt CO2 equivalent annually.	Each CPA shall result in emission reductions of less than or equal to 60 kt CO_2eq annually.
8	*12- This methodology is not applicable if local regulations require the use of the proposed technologies or raw materials for the manufacturing of*	- The regulations in Egypt do not constrain brick manufacturing facilities from using the energy sources cited in

	bricks unless widespread non compliance (i.e. less than 50% of brick production activities in the country comply) of the local regulation evidenced.	paragraph 1. - There are no legislative requirements in Egypt for the use of NG or any other low carbon energy source.
9	*14- The baseline emissions are the fossil fuel consumption related emissions (fossil fuel consumed multiplied by an emissions factor) associated with the system(s), which were or would have otherwise been used, in the brick production facility(ies) in the absence of the project activity.* *a) For projects that involve replacing, modifying or retrofitting systems in existing facilities, the average of the immediately prior three-year historical fossil fuel consumption data, for the existing facility, shall be used to determine an average annual baseline fossil fuel consumption value. Similarly, prior three-year historical production data (excluding abnormal years) for the existing facility, shall be used to determine an average annual historical baseline brick production rate in units of weight or volume.*	- Immediately prior three years of historical fossil fuel consumption data at each of the existing CPA Facilities will be provided – based on which, the average annual baseline fossil fuel consumption is determined. - Prior three year of historical brick production data (excluding abnormal years) at each of the existing CPA Facilities will be provided – based on which, the average annual historical baseline brick production rate is determined (in units of weight or volume).
	b) For projects involving the installation of systems in a new facility or a capacity addition in an existing system, the average annual baseline fossil fuel consumption value and the baseline brick production rate shall be determined as that which would have been consumed and produced, respectively, under an appropriate baseline scenario. If the baseline scenario identification as per paragraph 4 above results in more than one alternative technologies with different levels of energy consumption, the alternative with the least emissions intensity should be chosen for determining the baseline emissions of the facility.	For new facilities, the average annual baseline fossil fuel consumption value and the baseline brick production rate will be determined based on national industry practices.

If a CPA complies with the applicability criteria in the table above, therefore, it is eligible to apply for inclusion under the PoA using AMS-III.Z (Version 04).

B.3. Sources and GHGs

The following table shows the sources and types of gases included in typical CPAs' boundaries.

Table 13: Sources and types of gases included in the CPA boundary

Phase	Source	Gas	Included or not?	Justification/Explanation
Baseline	Fuel oil combustion	CO_2	Yes	Main emission source in the baseline scenario.
		CH_4	No	Considered as minor source.
		N_2O	No	Considered as minor source.
Project activity	Natural gas combustion	CO_2	Yes	Main emission source in the project scenario.
		CH_4	No	Considered as minor source.
		N_2O	No	Considered as minor source.

Section A.6 of Part I include photos and diagrams for the processes which can be involved in a typical CPA (e.g. brick kilns with rotating burners). The following is a schematic flow diagram physically delineating a typical generic CPA.

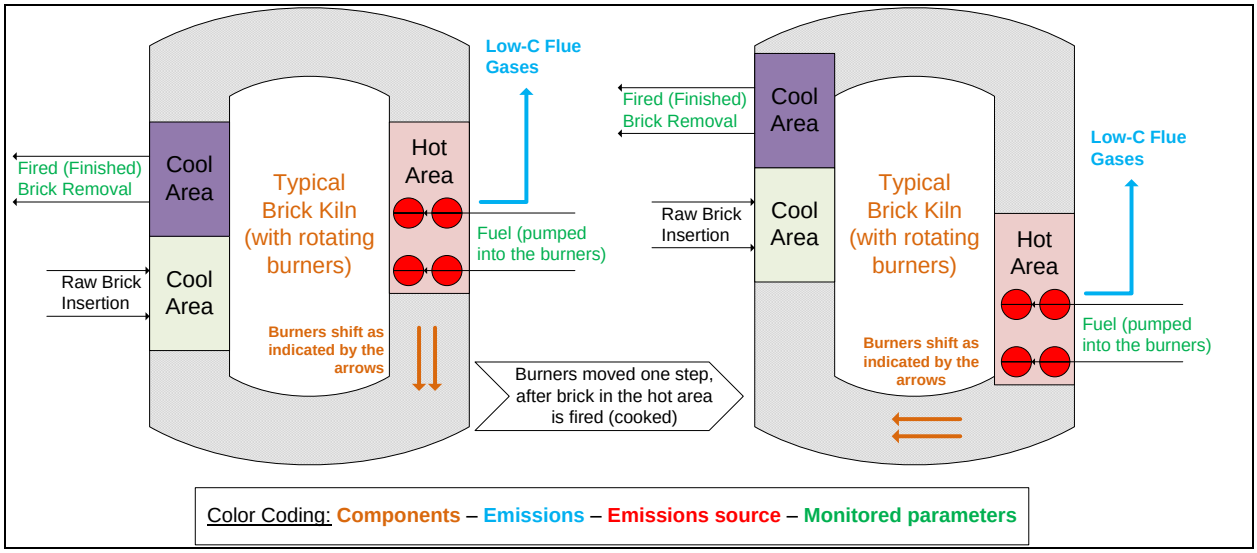


Figure 18: Top view flow diagram physically delineating Type (2) CPAs

B.4. Description of baseline scenario

For CPA Facilities under this PoA, the baseline scenario, being the most likely scenario that would occur in absence of the PoA, is the continuation of heavy or light fuel oil combustion in the element processes at the CPA Facilities. For each type of CPA, the baseline scenario would be identified according to the applied baseline and monitoring methodology.

According to the CDM Project Standard (EB 70, Annex 02, Version 02.1) [67], paragraph 44:

> *44- When establishing the baseline scenario, project participants shall take into account the following two types of national and/or sectoral policies:*
>
> *(a) National and/or sectoral policies or regulations that give comparative advantages to more emissions-intensive technologies or fuels over less emissions-intensive technologies or fuels - Such policies, which increase GHG emissions, are called type E+.*
>
> *(b) National and/or sectoral policies or regulations that give comparative advantages to less emissions-intensive technologies over more emissions-intensive technologies (e.g. public subsidies to promote the diffusion of renewable energy or to finance energy efficiency programmes) - Such policies, which decrease GHG emissions, are called type E- .*

The vast majority of Egypt's energy consumption is in the form of fossil fuels. The World Bank reports that in 2009 this as 96.29% of Egypt's total energy consumption.[68] Egypt's general policy of subsidizing fossil fuels in general has reduced incentives to increase the efficiency of use or seek alternatives, and therefore has acted as an E+ policy.

The government has also introduced initiatives to encourage switching to NG as discussed in section A.2 of Part I of this document. However, for M/SMEs in particular, access to the capital investment remains to be a main obstacle to switching to natural gas. The government has not been able to resolve these

[67] See the reference presented in footnote (55) above.
[68] See the reference presented in footnote (63) above.

difficulties and barriers, discussed in section B.1 of Part I of this document, and therefore the initiatives do not alleviate the barriers to switching for a large portion of the consumer base.

For CPAs applying AMS-III.Z (Version 04) methodology in brick manufacturing facilities, and in accordance with paragraph 14 of the methodology, baseline emissions are defined as the fossil fuel consumption related emissions (fossil fuel consumed multiplied by an emissions factor) associated with the system(s), which were or would have otherwise been used, in the brick production facility(ies) in the absence of the project activity.

As described in the same paragraph (14), for CPAs which involve replacing, modifying or retrofitting systems in existing facilities, the average of the immediately prior three-year historical fossil fuel consumption data, for the existing facility, shall be used to determine an average annual baseline fossil fuel consumption value. Similarly, prior three-year historical production data (excluding abnormal years) for the existing facility, shall be used to determine an average annual historical baseline brick production rate in units of weight or volume.

CPAs involving the installation of systems in a new facility or a capacity addition in an existing system, the average annual baseline fossil fuel consumption value and the baseline brick production rate shall be determined as that which would have been consumed and produced, respectively, under an appropriate baseline scenario.

B.5. Demonstration of eligibility for a generic CPA

Table 14: Demonstration of eligibility for a generic CPA

#	Eligibility criteria	Method/document required for proving compliance	Confirmation (only eligible if all are *Yes*)
1	The CPA Facilities must be located within the geographic boundaries of Egypt.	Maps of each of the CPA Facilities locations and their coordinates.	☐ Yes / ☐ No
2	The CPA is a voluntary action	Statement by each CPA Facility Owner involved in the proposed CPA confirming that the CPA is a voluntary action.	☐ Yes / ☐ No
3	The inclusion of the CPA in the present PoA does not represent any double counting of emission reductions, i.e. The CPA is neither registered as an individual CDM project, nor is it included in another PoA.	- Statements by each CPA Facility Owner that their activity is neither registered as an individual CDM project activity nor is part of another registered PoA. - Cross-checking against the CME database and UNFCCC listing of projects in the Host Country to prove that the CPA is a distinct activity, at least by unique identification of the location coordinates of each of the CPA Facilities.	☐ Yes / ☐ No
4	Each CPA Facility is a micro or small-sized enterprise (M/SE), the threshold of which is 1 million EGP capital and 50 workers.	Statements by each CPA Facility Owner identifying its capital investment and number of employees.	☐ Yes / ☐ No
5	The CPA activity is a switch from HFO or LFO to NG and provision of the attendant infrastructure where required.	Proof of the baseline situation via onsite visit, official documentation, or historical facility records (logbooks, purchase receipts, etc.) - as applicable.	☐ Yes / ☐ No

6	For CPAs involving more than one facility, all facilities under a CPA must be applying the same industrial process to produce the same type of product, e.g. bakeries, smelters.	- Proof of the activity type at each CPA Facility (onsite visit or official documentation, e.g. commercial registry, as applicable). - Each CPA Facility must be in compliance with any mandatory regulations at the time of inclusion, i.e. bakeries must be in compliance with the Supply and Internal Trade Ministry requirements, brick kilns must comply with national brick strength standards, etc.	☐ Yes / ☐ No
7	Start date of the CPA, where the start date should not be before the start of validation of the PoA (webhosting date for global stakeholder comments)	Start date of the CPA as evidenced by the date of signing the first contract or purchase order for CPA implementation is compared to the date of PoA hosting on UNFCCC.	☐ Yes / ☐ No
8	Each of the CPA Facilities meets all the eligibility criteria of the applied methodology and CPA Developer has completed the applicability table in the relevant generic CPA-DD to the chosen methodology.	- Comparison of CPA Facilities data with the requirements and methodology applicability criteria in the relevant generic CPA-DD. - Type (2) CPA Facilities should meet all the applicability criteria of methodology AMS-III.Z, as listed in Section B.2 of Part II of this document. - All relevant proofs must be provided to demonstrate that applicability criteria have been met, as defined in Section B.2 of Part II.	☐ Yes / ☐ No
9	The CPA Facilities Owners have secured all environmental and social permits as required by the laws of Egypt – if any (some activities, e.g. bakeries, are exempted by the Environmental laws of Egypt from performing an EIA for their activities.	- To be conducted on the CPA level - In the case when an EIA is required by the law for the activity type applied at the CPA Facilities, letter of EIA approval from the Egyptian Environmental Affairs Agency (EEAA), or relevant regulation showing compliance should be submitted.	☐ Yes / ☐ No
10	The CPA Developer undertakes a stakeholder consultation meeting in accordance with Section D of this PoA-DD	- To be conducted on the CPA level - Copy of the stakeholder consultation meeting announcement, list of attendees, comments and conclusion of the meeting.	☐ Yes / ☐ No
11	CPA does not receive funding from Annex I parties, or can provide a letter of non-diversion of Official Development Assistance (ODA).	Identify source(s) of financing, and provide letter of non-diversion of Official Development Assistance (ODA) as applicable	☐ Yes / ☐ No
12	The CPA meets small-scale threshold criteria and remains within those thresholds	CPA ERs will be checked upon submission for inclusion and prior to request for issuance of CERs to ensure that the ERs are	☐ Yes / ☐ No

	throughout the crediting period of the CPA	in aggregate less than small-scale threshold.	
13	***Demonstration of additionality***		
13.1	Wherever the CPA Developer demonstrates that the CPA is a micro-scale project activity (600 tCO_2e per year per element process and 20,000 tCO_2e per year per CPA), the CPA is automatically additional.	ERs estimations for each burner or combustion chamber at which the switching to NG is implemented, as well as for the CPA as a whole, showing that the CPA falls into the threshold of micro-scale CDM project (600 tCO_2e per year per element process and 20,000 tCO_2e per year per CPA) would therefore make the CPA automatically additional (to be considered in conjunction with EC #4, which requires proof that the CPA implementer is a M/SE).	☐ Yes / ☐ No
13.2	For Small-Scale CPAs, the CPA Developer will demonstrate additionality in accordance with Section B.1 of Part I of the PoA-DD	Supporting evidence showing that at least one of the additionality arguments in the PoA-DD (Section B.1 of Part I) applies to the CPA studied for inclusion.	☐ Yes / ☐ No
14	***Methodological choice***		
	For using AMS.III.Z (V-04): CPA Facilities Owners burning heavy or light fuel oil to produce brick in brick manufacturing facilities, where the annual ERs are estimated to fall below 60,000 tCO_2e per year (i.e. micro and small scale CPAs are eligible for inclusion under Type (2))	For each CPA Facility, the CPA Developer will study the applicability criteria listed under Type 2 generic CPA-DD (Section B.2, Part II of this PoA-DD), to demonstrate compliance with the requirements of AMS-III.Z (Version 04) methodology.	☐ Yes / ☐ No

B.6. Estimation of emission reductions of a generic CPA

B.6.1. Explanation of methodological choices

The project emissions concept is accounting for the actual consumed NG quantity and multiplying it by the emission factor and calorific value of NG. The emission reductions result from using a less carbon-intensive fuel than that used in the baseline.

Type (2) CPAs shall apply equations (1) and (2) in the methodology (AMS-III.Z) for the calculation of baseline emissions, defined in the methodology as being the fossil fuel consumption related emissions (fossil fuel consumed multiplied by an emission factor) associated with the system(s), which were or would have otherwise been used in the brick production facilities in the absence of the project activity.

For the calculation of project emissions under Type (2) CPAs, the methodology (AMS-III.Z) refers to the Tool to calculate project or leakage CO2 emissions from fossil fuel combustion. According to the tool, CO2 emissions from fossil fuel combustion in process j are calculated based on the quantity of fuels combusted and the CO2 emission coefficient of those fuels. This coefficient can be calculated using the chemical composition of the fuel type, or using the net calorific value and CO2 emission factor – based on depending on the availability of data on the fossil fuel type.

CPA Facilities to be submitting for inclusion under this PoA and applying AMS-III.Z will include brick manufacturing facilities which burn heavy or light fuel oil in their kilns to produce brick.

Baseline and project activity emissions are calculated according to AMS-III.Z, which state in paragraphs 14 and 22, that:

- *14-a) For projects that involve replacing, modifying or retrofitting systems in existing facilities, the average of the immediately prior three-year historical fossil fuel consumption data, for the existing facility, shall be used to determine an average annual baseline fossil fuel consumption value. Similarly, prior three-year historical production data (excluding abnormal years) for the existing facility, shall be used to determine an average annual historical baseline brick production rate in units of weight or volume. For calculating the emission factor for fossil fuel, reliable local or national data shall be used. IPCC default values shall be used only when country or project specific data are not available or demonstrably difficult to obtain;*
- *22- The project emissions include fossil fuel consumption (including auxiliary use) $PE_{fossilfuel\ y}$, associated with the operation of the manufacturing process and the biomass treatment and processing, calculated as per the "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion".*

In compliance with the methodology, emission reductions will be determined using actual data which will also be monitored during verification. Historical records for fuel use and production rate of the element processes included in the CPA Facilities will be used to calculate the baseline emissions.

The key variables and parameters which will be used to calculate the emission reductions for Type 2 CPAs applying AMS-III.Z (Version 04) methodology under this PoA are listed in the following table.

Table 15: Key variables and parameters for the calculation of baseline and project emissions

Variables and Parameters *	Data Source
Quantity and type of FO combusted in each element process in the baseline	CPA data
Brick production rate in units of weight or volume, and quality (compressive strength and/or density) in the baseline	CPA data
Quantity of NG to be combusted - after project implementation	Calculated
Bricks production capacity in units of weight or volume, and its quality (compressive strength and/or density) - after project implementation	Calculated
Net calorific value and CO_2 emission factor of HFO	National data
Net calorific value and CO_2 emission factor of LFO	National data
Net calorific value and CO_2 emission factor of NG	National data
Emission factor for upstream fugitive methane emissions from production of the fuel oil type (in tCH_4 per GJ fuel produced)	National data
Emission factor for upstream fugitive methane emissions from production, transportation and distribution of natural gas (in tCH_4 per GJ fuel supplied to final consumers)	National data
Global warming potential of methane valid for the relevant commitment period	IPCC data
* Each parameter is described in more details in sections B.6.2	

- **Equations to be used in calculating emission reductions:**

Baseline emissions:

The emission baseline is the current emissions of the facility expressed as emissions per unit of output. Baseline emissions shall be determined as follows:

$$BE_y = EF_{BL} * P_{PJ,y} \quad (1)$$

Parameter	Description	Unit
BE_y	Baseline emissions in the project activity in year *y*	tCO_2e
EF_{BL}	Annual production specific emission factor for year y	tCO_2/kg or m^3
$P_{PJ,y}$	Annual net brick production in the project activity in year *y*	kg or m^3

The emission factor in the baseline situation (EF_{BL}) is the coefficient for the fossil fuel used in the baseline expressed as emissions per unit of output (e.g. tCO_2/kg or m^3*).*

$$EF_{BL} = \sum FC_{BL,i,j} * NCV_j * EF_{CO2,j} / P_{Hy} \quad (2)$$

Parameter	Description	Unit
EF_{BL}	Annual production specific emission factor for year y	tCO_2/kg or m^3
$FC_{BL,i,j}$	Average annual baseline fossil fuel consumption value for fuel type *j* combusted in the process *i*	volume or weight units
NCV_j	Net calorific value of the fuel type *j*	TJ/ volume or weight units
$EF_{CO2,j}$	CO_2 emission factor of the fuel type *j*	tCO_2/TJ
P_{Hy}	Average annual historical baseline brick production rate	volume or weight units, m^3 or kg

Project activity emissions:

20- The project emissions should be calculated as follows:

$$PE_y = PE_{elec,y} + PE_{fosilfuel,y} + PE_{transport,y} + PE_{cultivation,y} + PE_{CH4,y}$$

CPAs submitting for inclusion under this PoA does not involve the use of renewable biomass; therefore, there are no project emissions from cultivation or transportation. Production of charcoals in brick kilns is also not eligible for inclusion under this PoA; therefore there are no CH_4 project emissions.

In addition, brick kilns do not require electricity to operate neither in the baseline nor project scenarios. Only fuel is combusted to generate the necessary heat for brick cooking (see the schematic diagram in Section B.3 above). Therefore, there are no project emissions due to electricity consumption.

Hence, $PE_y = PE_{fossilfuel,y}$

22- The emissions include fossil fuel consumption (including auxiliary use) $PE_{fossilfuel,y}$, associated with the operation of the manufacturing process and the biomass treatment and processing, calculated as per the "Tool to calculate project or leakage CO2 emissions from fossil fuel combustion"

$PE_y = FC_{i,j,y} * COEF_{i,y}$, where:

Parameter	Description	Unit
PE_y	Project emissions in the project activity in year *y*	tCO_2e
$FC_{i,j,y}$	Quantity of fuel type i combusted in process j during the year y	mass or volume unit/yr
$COEF_{i,y}$	CO_2 emission coefficient of fuel type i in year y	tCO_2/mass or volume unit

$COEF_{i,y} = EF_{CO2i,y} * NCV_{i,y}$, where:

Parameter	Description	Unit
$EF_{CO2i,y}$	Weighted average CO_2 emission factor of fuel type i in year y	tCO_2/GJ
$NCV_{i,y}$	Weighted average net calorific value of the fuel type i in year y	GJ/mass or volume unit

Leakage:

Leakage emissions resulting from fuel extraction, processing, liquefaction, transportation, regasification and distribution of fossil fuels outside of the project boundary shall be considered, as per the guidance provided in the leakage section of ACM0009 - Consolidated baseline and monitoring methodology for fuel switching from coal or petroleum fuel to natural gas. In case leakage emissions in the baseline situation are higher than leakage emissions in the project situation, leakage emissions will be set to zero."

Therefore, leakage emissions will be calculated according to ACM0009 (Version 04), which states that:

In this methodology, the following leakage emission sources shall be considered: Fugitive CH_4 emissions associated with fuel extraction, processing, liquefaction, transportation, re-gasification and distribution of natural gas used in the project plant and fossil fuels used in the grid in the absence of the project activity.

For the purpose of determining fugitive methane emissions associated with the production – and in case of natural gas, the transportation and distribution of the fuels – project participants should multiply the quantity of natural gas consumed in all element processes i with a methane emission factor for these upstream emissions ($EF_{NG,upstream,CH4}$), and subtract for all fuel types k which would be used in the absence of the project activity the fuel quantities multiplied with respective methane emission factors ($EF_{k,upstream,CH4}$), as follows:

$$LE_{CH4,y} = [FF_{project,y} * NCV_{NG,y} * EF_{NG,upstream,CH4} - \sum_k FF_{baseline,k,y} * NCV_k * EF_{k,upstream,CH4}] * GWP_{CH4}$$

$FF_{project,y} = \sum_i FF_{project,i,y}$ *and* $FF_{baseline,k,y} = \sum_i FF_{baseline,i,k,y}$, where:

Parameter	Description	Unit
$LE_{CH4,y}$	Leakage emissions due to upstream fugitive CH4 emissions in year y	tCO_2e
$FF_{project,y}$	Quantity of NG combusted in all element processes during year y	m^3
$FF_{project,i,y}$	Quantity of NG combusted in the element process i during year y	m^3
$NCV_{NG,y}$	Average net calorific value of the NG combusted during year y	GJ/m^3
$EF_{NG,upstream,CH4}$	Emission factor for upstream fugitive methane emissions from production, transportation and distribution of NG - in tCH4 per GJ fuel supplied to final consumers	tCH_4/GJ
$FF_{baseline,k,y}$	Quantity of fuel type k (a coal or petroleum fuel type) that would be combusted in the absence of the project activity in all element processes during the year y - in a volume or mass unit	Mass or volume unit
$FF_{baseline,i,k,y}$	Quantity of fuel type k (a coal or petroleum fuel type) that would be combusted in the absence of the project activity in the element process i during the year y - in a volume or mass unit	Mass or volume unit
NCV_k	Average net calorific value of the fuel type k (a coal or petroleum fuel type) that would be combusted in the absence of the project activity during the year y - in GJ per volume or mass unit	GJ/mass or volume unit
$EF_{k,upstream,CH4}$	Emission factor for upstream fugitive methane emissions from production of the fuel type k (a coal or petroleum fuel type) - in tCH4 per GJ fuel produced	tCH_4/GJ
GWP_{CH4}	Global warming potential of methane valid for the relevant commitment period	-

Emission reductions:

The emission reduction achieved by the project activity will be calculated as the difference between the baseline emissions and the sum of project emissions and leakage as follows:

$$ER_y = BE_y - PE_y - LE_y \quad (4)$$

Parameter	Description	Unit
ER_y	Emission reductions in the year *y*	tCO_2e

B.6.2. Data and parameters that are to be reported ex-ante

The following are the parameter to be used in the emission reductions calculations for included CPA Facilities applying AMS-III.Z methodology.

Data / Parameter	NCV_{HFO}
Unit	GJ/ton HFO
Description	Net calorific value for heavy fuel oil (HFO)
Source of data	Egyptian Environmental Affairs Agency/Egyptian Pollution Abatement Project (EEAA/EPAP): Self-monitoring manual for energy generating plants
Value(s) applied	41.08
Choice of data Or Measurement methods and procedures	As stated in the methodology, *project participants may use accurate and reliable local or national data where available.*
Purpose of data	Calculation of baseline emissions
Additional comment	- This value will be used to get a forecast of the future consumption of NG based on historical data of the baseline fuel consumed in the element process. - This value will also be used in leakage emissions calculation.

Data / Parameter	$EF_{CO2,HFO}$
Unit	tCO_2/TJ
Description	CO_2 emission factor for heavy fuel oil (HFO)
Source of data	Egyptian Environmental Affairs Agency/Egyptian Pollution Abatement Project (EEAA/EPAP): Self-monitoring manual for energy generating plants
Value(s) applied	76.76
Choice of data or Measurement methods and procedures	- As stated in the methodology, *project participants may use accurate and reliable local or national data where available.* - This value is calculated based on nationally reported carbon content of 86% for the Egyptian mazout (HFO, heavy fuel oil).
Purpose of data	Calculation of baseline emissions
Additional comment	The EF for HFO was derived from the national reported data as follows: (C-content= 86% and NCV= 41.08 GJ/ton HFO): 1- Basis: 1 ton fuel. Therefore, the C-content is equal to 0.86 tCO_2/ton HFO. 2- Quantity of CO_2 released is the product of multiplying the C-content by the molecular weight of CO_2 (44), and dividing by the molecular weight of Carbon (12). i.e. $m_C/Mwt_C = m_{CO2}/Mwt_{CO2}$ Therefore, CO_2-content = (0.86*44/12) = 3.1533 tCO_2/ton HFO 3- To obtain the emission factor per unit energy, divide the CO_2 quantity obtained (tCO_2/ton HFO) by the calorific value (GJ/ton HFO) Therefore, EF = 3.1533/41.08 = 0.076760 tCO_2/GJ

Data / Parameter	NCV_{LFO}
Unit	TJ/ton LFO
Description	Net calorific value for light fuel oil (LFO)
Source of data	Egyptian Environmental Affairs Agency/Egyptian Pollution Abatement Project (EEAA/EPAP): Self-monitoring manual for energy generating plants
Value(s) applied	0.0419
Choice of data or Measurement methods and procedures	As stated in the methodology, *project participants may use accurate and reliable local or national data where available.*
Purpose of data	Calculation of baseline and leakage emissions
Additional comment	This value will be used to get a forecast of the future consumption of NG based on historical data of the baseline fuel consumed in the element process.

Data / Parameter	$EF_{CO2,LFO}$
Unit	tCO_2/TJ
Description	CO_2 emission factor for light fuel oil (LFO)
Source of data	Egyptian Environmental Affairs Agency/Egyptian Pollution Abatement Project (EEAA/EPAP): Self-monitoring manual for energy generating plants
Value(s) applied	75.52
Choice of data or Measurement methods and procedures	- As stated in the methodology, *project participants may use accurate and reliable local or national data where available.* - This value is calculated based on nationally reported carbon content of 86.3% for the Egyptian solar (LFO, light fuel oil).
Purpose of data	Calculation of baseline emissions
Additional comment	The EF for LFO was derived from the national reported data as follows: (C-content=86.3% and NCV=0.0419 TJ/ton LFO) 1- Basis: 1 ton fuel. Therefore, the C-content is equal to 0.863 tCO_2/ton LFO. 2- Quantity of CO_2 released is the product of multiplying the C-content by the molecular weight of CO_2 (44), and dividing by the molecular weight of Carbon (12). i.e. $m_C/Mwt_C = m_{CO2}/Mwt_{CO2}$ Therefore, CO_2-content = (0.863*44/12) = 3.16433 tCO_2/ton LFO 3- To obtain the emission factor per unit energy, divide the CO_2 quantity obtained (tCO_2/ton LFO) by the calorific value (TJ/ton LFO) Therefore, EF = 3.1533/41.08 = 75.5210 tCO_2/TJ

Data / Parameter	NCV_{NG}
Unit	TJ/ton NG
Description	Net calorific value for NG per unit mass
Source of data	Egyptian Environmental Affairs Agency/Egyptian Pollution Abatement Project (EEAA/EPAP): Self-monitoring manual for energy generating plants
Value(s) applied	0.04983
Choice of data or Measurement methods and procedures	As stated in the methodology, *project participants may use accurate and reliable local or national data where available.*

Purpose of data	Calculation of baseline, project and leakage emissions
Additional comment	CPAs applying AMS-III.B will use this value for the complete crediting period. In case of CPAs applying AMS-III.Z, this parameter is to be monitored and updated during verification.

Data / Parameter	**$EF_{CO2,NG}$**
Unit	tCO_2/TJ
Description	CO_2 emission factor for the NG
Source of data	Egyptian Environmental Affairs Agency/Egyptian Pollution Abatement Project (EEAA/EPAP): Self-monitoring manual for energy generating plants
Value(s) applied	55.19
Choice of data or Measurement methods and procedures	- As stated in the methodology, *project participants may use accurate and reliable local or national data where available.* - This value is calculated based on nationally reported carbon content of 75% for the Egyptian natural gas.
Purpose of data	Calculation of project emissions
Additional comment	The EF for NG was derived from the national reported data as follows: (C-content=75% and NCV=0.04983 TJ/ton NG) 1- Basis: 1 ton NG. Therefore, the C-content is equal to 0.75 tCO_2/ton NG. 2- Quantity of CO_2 released is the product of multiplying the C-content by the molecular weight of CO_2 (44), and dividing by the molecular weight of Carbon (12). i.e. $m_C/Mwt_C = m_{CO2}/Mwt_{CO2}$ Therefore, CO_2-content = (0.75*44/12) = 2.75 tCO_2/ton NG 3- To obtain the emission factor per unit energy, divide the CO_2 quantity obtained (tCO_2/ton NG) by the calorific value (TJ/ton NG) Therefore, EF = 2.75/0.04983 = 55.1876 tCO_2/TJ

Data / Parameter	**d_{NG}**
Unit	g/l (kg/m^3)
Description	Density of NG
Source of data	The Egyptian General Petroleum Corporation (EGPC)
Value(s) applied	0.84
Choice of data or Measurement methods and procedures	As stated in the methodology, *project participants may use accurate and reliable local or national data where available.*
Purpose of data	Calculation of baseline, project and leakage emissions
Additional comment	This value is provided by EGPC for the density of Natural Gas at 60°F temperature and a pressure of 1 atm. - This value is mainly used to convert the monitored consumed NG in the project element process(es) *in volume units (m3/h) into mass units (e.g. ton/h)*

Data / Parameter	**$EF_{NG,upstream,CH4}$**
Unit	tCH_4/GJ
Description	Emission factor for upstream fugitive methane emissions from production, transportation and distribution of NG

Source of data	Egypt's Second National Communication
Value(s) applied	$5.35*10^{-6}$
Choice of data Or Measurement methods and procedures	As stated in ACM0009 methodology, National Communication data may be used.
Purpose of data	Calculation of leakage emissions
Additional comment	Egypt's Second National Communication data were used, where: 1- The consumption of NG is obtained from Figure (I.9) in page 15. The most recent value corresponds to 23 MTOE: 23 (MTOE)*41.87*10^6 = 9.63*10^8 GJ 2- In page 33, it is stated that: "The total fugitive emissions encompass 1.47 Mt CO_2, 0.444 Mt CH_4 and 0.02 Kt of N_2O, collectively equivalent to 10.81 Mt CO_2e (Aziz, 2007). Sources of these emissions entail oil production, natural gas production, petroleum products processing and distribution, with oil production being the main source with a contribution of more than 99% of the emissions." Accordingly, the contribution of NG in the fugitive emissions was taken as 1% of the 10.81 Mt CO_2e (108,100 tCO_2e) 3- The emission factor was thus calculated from the above two values: $EF_{K,upstream,CH4}$ = 108,100 tCO_2e / 9.63 * 10^8 GJ = 1.123 * 10^{-4} tCO_2e/GJ 4- To obtain the emission factor in (tCH_4/GJ), the global warming potential of Methane is used: $EF_{NG,upstream,CH4}$ (tCH_4/GJ) = 1.123*10^{-4} (tCO_2e/GJ)/21 = 5.35*10^{-6} tCH_4/GJ

Data / Parameter	**$EF_{k,upstream,CH4}$**
Unit	tCH_4/GJ
Description	Emission factor for upstream fugitive methane emissions from production of the fuel type k (a coal or petroleum fuel type)
Source of data	Egypt's Second National Communication
Value(s) applied	$4.35*10^{-4}$
Choice of data or Measurement methods and procedures	As stated in ACM0009 methodology, National Communication data may be used.
Purpose of data	Calculation of leakage emissions
Additional comment	Egypt's Second National Communication data were used, where: 1- The consumption of petroleum products is obtained from Figure (I.9) in page 15. The most recent value corresponds to 28 MTOE: 28 (MTOE)*41.87*10^6 = 1.17*10^9 GJ 2- In page 33, it is stated that: "The total fugitive emissions encompass 1.47 Mt CO_2, 0.444 Mt CH_4 and 0.02 Kt of N_2O, collectively equivalent to 10.81 Mt CO_2e (Aziz, 2007). Sources of these emissions entail oil production, natural gas production, petroleum products processing and distribution, with oil production being the main source with a contribution of more than 99% of the emissions." Accordingly, the contribution of petroleum products in the fugitive emissions was taken as 99% of the 10.81 Mt CO_2e (10,701,900 tCO_2e) 3- The emission factor was thus calculated from the above two values:

	$EF_{k,upstream,CH4}$ = 10,701,900 t CO_2e / 1.17*10^9 GJ = 9.129 * 10^{-3} tCO_2e/GJ 4- To obtain the emission factor in (tCH_4/GJ), the global warming potential of Methane is used: $EF_{k,upstream,CH4}$ (tCH_4/GJ) = 9.129*10^{-3} (tCO_2e/GJ)/21 = 4.35*10^{-4} tCH_4/GJ

Data / Parameter	**GWP_{CH4}**
Unit	tCO_2e/tCH_4
Description	Global warming potential of methane valid for the relevant commitment period
Source of data	IPCC
Value(s) applied	21
Choice of data or Measurement methods and procedures	As stated in ACM0009 methodology, IPCC 2006 guidelines Default value for the first commitment period should be used.
Purpose of data	Calculation of leakage emissions
Additional comment	-

Data / Parameter	**FC_{BL}**
Unit	Mass or Volume
Description	Average annual baseline fossil fuel consumption value - To be determined on the CPA Facility level.
Source of data	Prior three-year historical fossil fuel consumption data, at the existing CPA Facility level
Value(s) applied	To be determined on the CPA Facility level
Choice of data or Measurement methods and procedures	These data are to be obtained in accordance with the methodology from the available log-books at each CPA Facility.
Purpose of data	- Calculation of the baseline emissions; and - Calculation of the leakage emissions **(**$FF_{baseline,k,y}$**)**
Additional comment	- The ERs will be calculated for each CPA Facility based on its independent consumption. - The total ERs of a CPA is the summation of the ERs at all CPA Facilities it includes.

Data / Parameter	**P_{Hy}**
Unit	kg or m^3
Description	Brick production rate in the baseline situation
Source of data	Prior three-year historical production data (excluding abnormal years), at the existing CPA Facility level
Value(s) applied	To be determined on the CPA Facility level
Choice of data or Measurement methods and	- The daily production rate of bricks is normally recorded by each CPA Facility Owner. It is directly related to the bricks daily demand.

procedures	
Purpose of data	Calculation of the baseline emissions
Additional comment	Data described above will be archived for the duration of the project activity, plus two additional years

Data / Parameter	**Quality of baseline brick**
Unit	MPa
Description	Compressive strength of produced bricks
Source of data	Nationally approved data
Value(s) applied	To be determined on the CPA Facility level
Choice of data or Measurement methods and procedures	Appropriate national standard shall be used to identify the strength class of the bricks and demonstrate its service level.
Purpose of data	Confirmation that the CPAs primarily aimed at emission reductions from fuel switching measures – not energy efficiency.
Additional comment	Bricks that have compressive strengths lower than the lowest class bricks in the national standard are not eligible under this methodology.

B.6.3. Ex-ante calculations of emission reductions

As per the equations listed under section B.6.1 of this generic CPA for Type (2) CPAs, and based on the data provided by the CPA Facility Owner; ex-ante calculations will be applied on the CPA Facility level.

Ex-ante calculation for a typical CPA Facility, i.e. a brick kiln applying Type 2 CPA, is presented in Appendix 04.

B.7. Application of the monitoring methodology and description of the monitoring plan

B.7.1. Data and parameters to be monitored by each generic CPA

Data / Parameter	**$FC_{NG,y}$**
Unit	m^3/y
Description	NG consumed in the project element process(es) year *y*
Source of data	Measured by flow meter.
Value(s) applied	To be determined on the CPA Facility level (The value used in the typical example presented in Appendix 04 of this PoA-DD is 1,602,869 m^3/yr)
Measurement methods and procedures	- NG consumption will be recorded continuously by flow meters at the inlet to the element processes. - Monthly readings will be kept by CPA owners and reported to the authorized CPA implementer. CPA Developers will provide the CME with the collected data quarterly to be included in each CPA's progress reports. - Records will be kept for the entire duration of the crediting period, plus two additional years.
Monitoring frequency	Monthly

QA/QC procedures	– The recorded values will be cross-checked with NG receipts – Flow meters will be subjected to regular maintenance operations and calibrations (following the manufacturer's specifications for calibration procedures).
Purpose of data	Calculation of the baseline and project emissions
Additional comments	- The value applied for ex-ante calculation of the emission reductions will be a forecast of the future consumption of NG based on historical data of the baseline fuel consumed in the element process. - This value will also be used in leakage emissions calculation. - In case of disruptions in NG flow, FO might be used. Such occasions will be investigated and the quantities of FO used will be recorded.

Data / Parameter	$\mathbf{P_{PJ,y}}$
Unit	kg or m^3 / year
Description	Annual net brick production in the project activity in year *y*
Source of data	Monthly reports from brick factory owners
Value(s) applied	To be determined on the CPA Facility level (The value used in the typical example presented in Appendix 04 of this PoA-DD is 34,020,000 kg/yr)
Measurement methods and procedures	- CPA Developers will prepare a monthly form indicating the hours of production, the total brick production and the quality of produced brick. - Factory forms will be filed by the CPA Developer and data will be transferred to electronic files. Then, the monthly rates will be added to obtain the annual net brick production.
Monitoring frequency	Daily measurements
QA/QC procedures	The value will be cross checked with the fuel use, hours of operation and the historical data
Purpose of data	Calculation of the baseline emissions
Additional comments	The value applied for ex-ante calculation of the emission reductions will be a forecast of the future bricks productivity based on historical data of the baseline.

Data / Parameter	$\mathbf{NCV_{NG}}$
Unit	GJ/mass or volume unit (e.g. GJ/m^3, GJ/ton)
Description	Net calorific value of NG in year *y*
Source of data	a) Gas supplier or d) IPCC default values
Value(s) applied	To be determined on the CPA Facility level (The value used in the typical example presented in Appendix 04 of this PoA-DD is 0.04983 GJ/kg)
Measurement methods and procedures	- For a): Measurements should be undertaken in line with national or international fuel standards. - For d) IPCC default values at the upper or lower limit – whatever is more conservative - of the uncertainty at a 95% confidence interval as provided in Table 1.2 of Chapter 1 of Vol. 2 (Energy) of the 2006 IPCC Guidelines on National GHG Inventories.
Monitoring frequency	- For a): The NCV should be obtained for fuel deliveries, from which weighted average annual values should be calculated. - For d): Any future revision of the IPCC Guidelines should be taken into account.

QA/QC procedures	Verify if the values under a) are within the uncertainty range of the IPCC default values as provided in Table 1.2, Vol. 2 of the 2006 IPCC Guidelines.
Purpose of data	Calculation of the project and leakage emissions
Additional comments	The more conservative value is the value that results in the lower overall emission reductions of the project activity. This may imply using the higher or the lower value, depending on the specific configuration of the project activity.

Data / Parameter	**Quality of project bricks**
Unit	MPa
Description	Compressive strength of produced bricks
Source of data	Nationally approved data
Value(s) applied	To be determined on the CPA Facility level
Measurement methods and procedures	Appropriate national standard shall be used to identify the strength class of the bricks and demonstrate its service level compared to that of the baseline brick.
Monitoring frequency	6 months interval (at a minimum)
QA/QC procedures	Test certificates on compressive strength will be made available for verification
Purpose of data	Ensuring that a similar level of service is achieved by project brick compared to baseline brick.
Additional comments	- This parameter is not used in the calculation of the ERs. - Bricks that have compressive strengths lower than the lowest class bricks in the national standard are not eligible under this methodology.

Data / Parameter	**Principle raw and additive materials purchases**
Unit	Ton/month
Description	Principle raw and additive material which are purchased and used in the brick manufacturing process
Source of data	Purchase receipts
Value(s) applied	To be determined on the CPA Facility level
Measurement methods and procedures	Facility Owner collect monthly receipts for the raw and additive materials purchased during that month.
Monitoring frequency	Monthly
QA/QC procedures	Types will be compared to the baseline situation, and value will be cross checked with the production rates. Non-purchasable material, i.e. mud, will be checked during the onsite visits.
Purpose of data	Ensuring that the changes/if any are not resulting in reduced use or avoidance of fossil fuels for forming, sintering (firing) or drying or other applications in the facility.
Additional comments	- This parameter is not used in the calculation of the ERs. - AMS-III.Z (Version 04) methodology is applicable for the production of: a) Bricks that are the same in the project and baseline cases; or b) Bricks that are different in the project case versus the baseline case due to a change(s) in raw materials, use of different additives, and/or production

	process changes resulting in reduced use or avoidance of fossil fuels for forming, sintering (firing) or drying or other applications in the facility as long as it can be demonstrated that the service level of the project brick is comparable to that of the baseline brick (see paragraph 11).

Data / Parameter	$FC_{FF,y}$
Unit	Mass or Volume
Description	Backup fossil fuel consumption value
Source of data	Actual fossil fuel consumption data at the existing CPA Facility level
Value(s) applied	To be determined on the CPA Facility level
Measurement methods and procedures	These data are to be obtained from the available log-books at each CPA Facility.
Monitoring frequency	Monthly
QA/QC procedures	The recorded values will be cross-checked with fuel oil receipts
Purpose of data	As requested by the methodology (paragraph 28) and to justify variations which may occur in NG consumption rate verses brick production rate.
Additional comments	- This parameter is not used in the calculation of the ERs. - The consumption of backup FF will be limited to disruptions in NG flow.

B.7.2. Description of the monitoring plan for a generic CPA

Data Recording & Reporting:

On monthly basis, the CPA Developers will prepare a summary report of all data collected for the previous month to the CME. This report will be submitted to the CME for review.

Quarterly (every 3 months), the CME will prepare a quarterly progress report for each CPA under the PoA, including the CPA Facilities status, monitoring parameters, quality of collection and training needs - if any. These reports would assist in the preparation of the monitoring reports for verification.

The authorized CPA Developer (whether an individual/firm or CME) will be responsible for the preparation of the monitoring reports and the relevant communication with the DOE during each verification period.

The Monitoring Report will comprise all required monitoring information in order to allow the DOE to verify the emission reductions for each monitoring period for each individual CPA Facility.

Data Storage & Archiving:

For each CPA Facility, all parameters included in B.7.1 will be monitored by the CPA Facility Owners of the CPA and recorded electronically or manually.

NG consumption will be kept in the CPA Facilities' log-books during each shift as per the meter readings. Monthly totals are continuously catalogued by the CPA Developer and kept in separate log-books.

CDM-APU/EEAA will prepare a form to be filled monthly by each CPA Developer identifying the CPA name, activity, the hours of operation (or down time) for the month, comments on any operational problems in addition to attaching all the monitored parameters included in B.7.1. Forms will be in Arabic,

and it will be signed by the CPA Facilities Owner and CPA Developers (as authorized by CPA Facilities Owners). A signed copy will be with each of them and will be electronically archived by the Document controller of the CME.

In addition, for each of the CPA Facilities, copies of NG invoices from the gas suppliers will be collected and kept by the CPA Developer. Similarly, a copy of these documents will be electronically archived by the Document Controller of the CME.

The Document Controller at the CME will be responsible for handling all these documents. The CME database will include information on both the CPA and the CPA Facility level as described in Section C of the PoA-DD. The data recording and archiving activities will be utilized in the monitoring reports; and thereby ensuring the prevention of double counting of emission reductions data from different CPAs or different CPA Facilities under a single CPA. Records will be kept for a minimum of two years after the end of the crediting period.

On the CME level, an internal auditing procedure will be applied to secure the correctness of data storage.

Regular QA/QC Procedures:

a) Calibration procedure:

The gas flow meters and any other measurement equipment used for CPAs monitoring will be subject to regular calibration. The meters used for monitoring and generation of CERs will be calibrated at least once every three years. Calibration procedure will follow the requirements listed in the manufacturer's specifications for the meter used by the contracted gas suppliers.

b) Personnel training:

Personnel involved in the CPA implementation and monitoring will be assessed and trained by the CME before the start of the crediting period. Personnel at the CPA Facilities will be trained on the parameters to be monitored and monitoring procedures. In addition, they will be educated on the main rules and benefits of the PoA.

Data Acquisition:

a) CPA Facilities monitoring:

For each of the CPA Facilities, all parameters included in B.7.1, except the calorific value of NG, will be monitored and recorded on the CPA Facility level.

Records of brick production in kg or m^3 in addition to the NG consumption will be kept in the CPA Facilities' log-books. Monthly totals are continuously catalogued by the operation supervisor or CPA Developers and kept in separate log-books. The results of the analysis of the compressive strength of produced bricks will be recorded at the CPA Facility level every 6 months.

In addition, if and when FO is burned in the element processes, the consumption will be monitored by means of the fuel gauges attached to the units. The readings will be recorded for each shift during which the FO is used in the same way as in the baseline scenario. In addition, records will be kept for the purchase of FO in the financial documentation, as possible.

Moreover, the CPA Developer will monitor and document all technical data relevant to the metering devices:

- Exact location of the meter;
- Manufacturing company and model type;
- Serial number of the meter used;
- Manufacturer's specifications including the calibration procedures;

- Date of start of operation of the meter;
- Regular service contract with the supplying company;
- Date of decommissioning of the meter (if any); and
- Meter reading at time of decommissioning of the meter (if any).

These data will be submitted to the CME at the end of each monitoring period.

b) CME monitoring:

The database of the CME will contain a folder for each CPA, which will include CPA and CPA Facilities specific data. The following data will be checked and reported in each monitoring report:

- Progress reports for the CPA's operation and the status of the element processes in the project boundary;
- Detailed record of CPA monitoring data, as applicable for each types of CPAs;
- History of meter calibration or replacement according to specifications; and
- The remaining lifetime of project equipment. In each CPA Facility, the requirements concerning demonstration of the remaining lifetime of the replaced equipment shall be met as described in the methodology. If the remaining lifetime of the affected systems increases due to the Project activity, the crediting period shall be limited to the estimated remaining lifetime, i.e. the time when the affected systems would have been replaced in the absence of the Programme activity

Data QA/QC Procedure:

With respect to the bricks productivity in kg or m^3, the CPA Facility log-books will be signed off regularly by the Facilities Owners. This value can be cross-checked with the brick sales documents, if available.

Records for NG quantities are kept both by the CPA Facility and by the NG supplier for billing purposes. The CPA Facility records will be checked against NG purchase receipts. In addition, the facility log-books recording NG are signed monthly by the facility supervisor or CPA Developers.

In case of using any backup FO, the use of FO is recorded and is to be cross-checked against purchase receipts. The consumption of FO will be limited to disruptions in NG flow. Such occasions will be highlighted to explain any abnormality in the monitored parameters (NG consumption and brick production).

The compressive strength of produced bricks will be analyzed according to national standards in one of the certified national laboratory. The laboratory may be changed from one monitoring period to the next to ensure the reliability of results.

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Appendix 1: Contact information on entity/individual responsible for the PoA

Organization	CDM Awareness & Promotion Unit under EEAA (CDM-APU/EEAA)
Street/P.O. Box	Misr-Helwan Agricultural Road, Maadi
Building	Building number 30
City	Cairo
State/Region	---
Postcode	---
Country	Egypt
Telephone	+20 2 252 61 419
Fax	+20 2 252 61 421
E-mail	eeaa@eeaa.gov.eg
Website	www.eeaa.gov.eg/english/main/cdmapu.asp
Contact person	
Title	Operational Manager of CDM APU
Salutation	Mr.
Last name	Medhat
Middle name	---
First name	Ahmed
Department	CDM Awareness and Promotion Unit – EEAA
Mobile	+2 011 119 66 869
Direct fax	+20 2 252 61 421
Direct tel.	+20 2 252 61 419
Personal e-mail	a_medhat50@hotmail.com

Appendix 2: Affirmation regarding public funding

This PoA does not receive public funding.

Appendix 3: Application of methodology(ies)

The applicability of each of the two independent methodologies is detailed in Section B.2, Part II of this PoA-DD.

Appendix 4: Further background information on ex ante calculation of emission reductions

Example of a typical CPA Facility that could be included under this PoA as Type 1 CPA:

Egyptian bakeries generally consume a fixed amount of flour per day (measured in sacks of flour called "shewal", which is equal to 100 kg). Each shewal of flour requires 12 litres (0.012 m^3) of light fuel oil (LFO) to be baked into bread. This example shows a bakery which consumes 20 shewal of Flour per day.

Given that the relative density of fuel oil [69] = 0.995, and water density = 1000 kg/m^3

Therefore, the density of fuel oil = 0.995 * 1000 kg/m^3 = 995 kg/m^3

Table 16: Baseline information of the bakery (as obtained from the CPA Facility Owner)

	Shewal Flour/day	Ltr. LFO/day	m^3 LFO/year
Bakery's data	20	240	87.6

$FF_{baseline,bakery,FO,y}$ = 87.6 (m^3 LFO/yr) * 0.995 (ton LFO/m^3) = 87.16 (ton LFO/yr)

The project fuel consumption is estimated based on the baseline fuel consumption and the calorific value of each type of fuel:

$FF_{project,y}$ = FC_{PJy} = $\sum_i FF_{project,i,y}$

= $FC_{LFO,y}$ (ton LFO) * $NCV_{LFO,BL,y}$ (TJ/ton LFO) / $NCV_{NG,PJ,y}$ (TJ/ton NG)

= (87.16) * 0.0419 / 0.04983 = 73.29 (ton NG)

Leakage emissions:

Calculating the emission factor for upstream fugitive methane emissions from production, transportation and distribution of NG:

From Egypt's Second National Communication data, the consumption of NG is obtained from Figure (I.9) in page 15. The most recent value corresponds to 23 MTOE:

23 (MTOE)*41.87*10^6 = 9.63*10^8 GJ

In page 33, it is stated that: "The total fugitive emissions encompass 1.47 Mt CO_2, 0.444 Mt CH_4 and 0.02 Kt of N_2O, collectively equivalent to 10.81 Mt CO_2e (Aziz, 2007). Sources of these emissions entail oil production, natural gas production, petroleum products processing and distribution, with oil production being the main source with a contribution of more than 99% of the emissions."

Accordingly, the contribution of NG in the fugitive emissions was taken as 1% of the 10.81 Mt CO_2e (108,100 tCO_2e)

The emission factor was thus calculated from the above two values:

$EF_{K,upstream,CH4}$ = 108,100 tCO_2e / 9.63 * 10^8 GJ = 1.123 * 10^{-4} tCO_2e/GJ

To obtain the emission factor in (tCH_4/GJ), the global warming potential of Methane is used:

$EF_{NG,upstream,CH4}$ (tCH_4/GJ) = 1.123*10^{-4} (tCO_2e/GJ)/21 = 5.35*10^{-6} tCH_4/GJ

Calculating the emission factor for upstream fugitive methane emissions from production of the fuel type k (a coal or petroleum fuel type)

From Egypt's Second National Communication data, the consumption of petroleum products is obtained (figure I.9, pg. 15). The most recent value corresponds to 28 MTOE:

28 (MTOE)*41.87*10^6 = 1.17*10^9 GJ

In pg. 33, it is stated that: "The total fugitive emissions encompass 1.47 Mt CO_2, 0.444 Mt CH_4 and 0.02 Kt of N_2O, collectively equivalent to 10.81 Mt CO_2e (Aziz, 2007). Sources of these emissions entail

[69] National value of the relative density of FO is obtained from EGPC.

oil production, natural gas production, petroleum products processing and distribution, with oil production being the main source with a contribution of more than 99% of the emissions."

Accordingly, the contribution of petroleum products in the fugitive emissions was taken as 99% of the 10.81 Mt CO_2e (10,701,900 tCO_2e)

The emission factor was thus calculated from the above two values:

$EF_{k,upstream,CH4}$ = 10,701,900 t CO_2e / $1.17*10^9$ GJ = $9.129 * 10^{-3}$ tCO_2e/GJ

To obtain the emission factor in (tCH_4/GJ), the global warming potential of Methane is used:

$EF_{k,upstream,CH4}$ (tCH_4/GJ) = $9.129*10^{-3}$ (tCO_2e/GJ)/21 = $4.35*10^{-4}$ tCH_4/GJ

By substitution in the equation provided in ACM0009 (Version 04.0.0) methodology:

$LE_{CH4,y} = [FF_{project,y} * NCV_{NG,y} * EF_{NG,upstream,CH4} - \sum_k FF_{baseline,k,y} * NCV_k * EF_{k,upstream,CH4}] * GWP_{CH4}$

= [[73.29 (ton NG/yr) * 0.04983 (TJ/ton NG) * $5.35*10^{-3}$ (tCH_4/TJ)]
– [87.16 (ton LFO/yr) * 0.0419 (TJ/ton LFO) * 0.435 (tCH_4/TJ)]]*21 = - 32.93 (tCO_2e/yr)

Since the LE_y is found to be negative; its value in the ERs calculations will be assumed to be zero.

Baseline emissions:

By applying equation (3) of the methodology:

BE_y = $FC_{PJ,y}$ (ton NG/yr) * $NCV_{NG,PJ,y}$ (TJ/ton NG) * $EF_{FO,CO2,BL}$ (tCO_2e/TJ)
= 73.29 * 0.04983 * 75.52 = 275.81 (tCO_2e/yr)

Project emissions:

By substitution in equation (4):

PE_y = $FC_{PJ,y}$ (ton NG/yr) * $NCV_{FF,PJ,y}$ (TJ/ton NG) * $EF_{NG,CO2,PJ}$ (tCO_2e/TJ)
= 73.29 * 0.04983 * 55.19 = 201.55 (tCO_2e/yr)

Emission reductions:

Using the values obtained from equations (3) and (4) and substituting in equation (5):

ER_y = BE_y - PE_y - LE_y = 275.81 – 201.55 - 0 = 74.26 (tCO_2e/yr)

Example of a typical CPA Facility that could be included under this PoA as Type 2 CPA:

This example shows a brick plant which have a monthly consumption of 136.1 ton HFO and monthly production of 1,620,000 bricks, each 1.75 kg.

Table 17: Baseline information of the brick kiln (as obtained from a CPA Facility Owner[70])

	Ton HFO/month	Ton HFO/year	Number of Bricks/month	Mass of one brick in kg	Brick productivity in kg/year
Brick kiln data	136.1	1,633	1,620,000	1.75	34,020,000

The project fuel consumption is estimated based on the baseline fuel consumption and the calorific value of each type of fuel:

$FF_{project,y}$ = $FC_{NG,\ kiln,y}$ = $\sum_i FF_{project,i,y}$

= $FC_{BL,HFO,kiln,y}$ (ton HFO/yr) * NCV_{HFO} (TJ/ton HFO) / NCV_{NG} (TJ/ton NG)

= (1,633) * 0.0411 / 0.04983 = 1,346 (ton NG/yr)

Leakage emissions:

By substitution in the equation provided in ACM0009 (Version 04.0.0) methodology:

$LE_{CH4,y} = [FF_{project,y} * NCV_{NG,y} * EF_{NG,upstream,CH4} - \sum_k FF_{baseline,k,y} * NCV_k * EF_{k,upstream,CH4}] * GWP_{CH4}$

= [[1,346 (ton NG/yr) * 0.04983 (TJ/ton NG) * $5.35*10^{-3}$ (tCH_4/TJ)]

– [1,633 (ton HFO/yr) * 0.0411 (TJ/ton HFO) * 0.435 (tCH_4/TJ)]]*21 = - 604.92 (tCO_2e/yr)

Since the LE_y is found to be negative; its value in the ERs calculations will be assumed to be zero.

Baseline emissions:

By applying equation (2) of the methodology:

$EF_{BL} = \sum FC_{BL,HFO,Kiln}$ (ton HFO/yr) * NCV_{HFO} (TJ/ton HFO) * $EF_{CO2,HFO}$ (tCO_2/TJ) / P_{Hy} (Kg bricks/yr)

= 1,633 * 0.0411 * 76.76 / 34,020,000 = 0.00015 tCO_2/Kg bricks

By applying equation (1) of the methodology:

$BE_y = EF_{BL}$ (tCO_2/Kg bricks) * $P_{PJ,y}$ (Kg bricks/yr)

= 0.00015 * 34,020,000 = 5,150.02 (tCO_2e/yr)

Project emissions:

By applying the equations from the tool to calculate baseline, project and/or leakage emissions from electricity consumption:

$COEF_{NG,y}$ = $EF_{CO2\ NG,y}$ (tCO_2e/GJ)* $NCV_{NG,y}$ (GJ/ton NG)

= 0.05519 * 49.8 = 2.75 (tCO_2/ ton NG)

$PE_y = FC_{NG,\ Kiln,\ y}$ (ton NG/yr)* $COEF_{NG,y}$ (tCO_2e/ ton NG)

= 1,346 * 2.75 = 3,702.64 (tCO_2e/yr)

Emission reductions:

Using the values obtained above and substituting in equation (4):

ER_y = BE_y - PE_y - Leakage = 5,150.02 – 3,702.64 - 0 = 1,447.38 (tCO_2e/yr)

[70] Sample fuel consumption and brick production data for one month have been obtained from a typical brick kiln for the purpose of applying this typical ER calculation.

Appendix 5: Further background information on the monitoring plan

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History of the document

Version	Date	Nature of revision(s)
02.0	EB 66 13 March 2012	Revision required to ensure consistency with the "Guidelines for completing the programme design document form for small-scale CDM programmes of activities" (EB 66, Annex 13).
01	EB33, Annex43 27 July 2007	Initial adoption.
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