



UNFCCC

Ministry of State for Environmental Affairs
Egyptian Environmental Affairs Agency



Mobilization of Carbon Fund to Urban Transportation

Improvement of Urban Transportation The Case of Egypt

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INTRODUCTION



The Greater Cairo area suffers from high levels of air pollution. Potential sources include transportation and industrial emissions.

One possible strategy for reducing emissions from transportation sector is the replacement of fossil fuel vehicle engines by CNG engines, along with improved maintenance.

Description of the Greater Cairo Area



- **Cairo, Giza, and Qaliubeya Governorates** are collectively called “**Greater Cairo**” region and have an estimated population in excess of 20 million persons.
- **Cairo City** is one of the most **overpopulated and polluted cities**.
- **Cairo governorate area is 1492 km²**, with a population average is 482 person / km .
- **Giza governorate area is 13189 km²**
- **Qaliubeya governorate area is 1001 km²**



GC Heavy Traffic



-There are more than **1.5 million** vehicles moving in the GC area, with high emitters of pollutants.

-**68%** of vehicles older than **15 years**.

-The transportation sector inventory resulting from the total fuel combustion amounted to **27.27 Mt CO₂e per year**, sharing by **25.83%** in total GHG emission

Traffic Data for GC



Type	More than 35 years ago	From 25-35 years ago	From 15-25 years ago	Less than 15 years ago	Totals
Private	114082	185054	265407	406726	971269
Taxi	23474	17097	21587	22752	84910
Microbus	7658	5456	6042	10153	29309
Truck	13004	31085	106896	23326	174311
Bus	28044	76207	112426	8839	225516
Totals	186262	314899	512358	471796	1485315
Percentage %	13%	21%	34%	32%	100%



Road Classification ***Law 229 / 1996***

Free Roads;

Roads with high level of service and free of intersections.

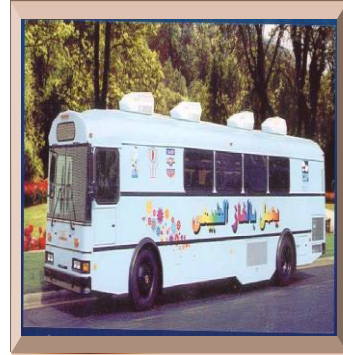
Highways;

Roads with specific level of service, double lanes and provided with special services (Police Stations, Communication Centers, Fuel Stations, etc.) and alternative routes.

Main Roads

Urban Roads

Estimation of Emissions in the Greater Cairo Area



- The total number of buses is **225516** in the GC area.
- The number of CNG buses is about **516** and the rest of buses are diesel buses.
- that the average speed of buses is about **20 km/hr** and the working hours are about **16 hours** as an average. So, the total distance crossed per day is about **320 km/day**.
- It should be noted that **96.09 %** of the transit buses are older than **15 years**, **12.44 %** are older than **35 years**, **33.80 %** are from **25-35 years**, and **49.85%** are from **15-25 years** old.
- it was found that **36%** only of the transit buses passed successfully the environmental limits stated in the Environmental Law 4/1994

Emissions from Diesel and CNG Buses

Pollutant Bus Type	CO (gm/k m)	CO₂ (gm/k m)	NO_x (gm/km)	HHC (gm/k m)	PM (gm/k m)	Fuel Economy (km/l)
Diesel Buses (Before Repair)	8.21	1190	9.42	3.87	1.09	2.01
Diesel Buses (After Repair)	4.47	1150	7.57	2.15	0.506	2.08
CNG Buses	1.65	1410	12.1	25.6	0.0590	1.24

Estimated Annual Emissions from mixed fleet of diesel and CNG buses

Pollutant	CO	CO₂	NO_x	HHC	PM
Bus Type					
TOTAL Daily EMISSIONS (Ton/day)	457 (Ton /day)	84,500 (Ton /day)	614 (Ton /day)	221 (Ton /day)	57.4 (Ton /day)
TOTAL Estimated Annual EMISSIONS (Ton/year)	137,100 (Ton /year)	25,350,000 (Ton /year)	184,200 (Ton /year)	66,300 (Ton /year)	17,220 (Ton /year)



mitigation opportunities For Transportation sector

- **Automotive Transport:**

- Shift to diesel (including bio-diesel) engines
- Introduction of the hybrid-electric vehicle.

- **Rail Transport:**

- Development of urban transport in the cities of Cairo and Alexandria in the form of metros and tramways, and combinations of “light” and “heavy” rail passenger transport .

- **Freight Transport:**

- Nile barge freight transport
- Rail freight transport (container inland ports).



mitigation opportunities For Transportation sector

- **Power Train Technologies:**

- Power train technologies available today include ICE petrol (further development of the ICE can improve fuel efficiency of petrol vehicles by 30% and diesel vehicles by around 20%); ICE diesel; compressed natural gas (CNG); and hybrids.

- **Shifting from Diesel to Electrified Railways**

Potential Shifts:

- Electrification of Cairo – Alexandria Line around 2020
- Electrification of Cairo – Upper Egypt Line (to Assiut then to Aswan) around 2030.

- **Fuel Cells Technology:**

- Numbers of vehicles utilizing fuel cells are anticipated to grow as their economics improve.
- Hydrogen generated as a by-product in industry will be used.
- More hydrogen could be generated via electrolysis of water using free carbon energy available from as solar photo voltaic, or wind energy.

Old Vehicle Scrapping and Recycling Program as (SSC-PoA-CDM) Project





(SSC-PoA-CDM) Project Description

- The program is designed to **support the enforcement of Traffic Law #121 /2008**, which states that owners of mass transport vehicles (including taxis) that are greater than **20 years old are not eligible for new operating licenses** or license renewal.
- The objective is to accelerate the rate of fleet replacement, which would **improve air quality and reduce the number of traffic accidents** involving these older vehicles.



(SSC-PoA-CDM) Project Description

- **Vehicle owners may** Sell vehicles to regions where the law does not apply
- Convert vehicles to private use
- Dismantle the vehicles and sell the engines for use in other vehicles.
- **Without a scrapping and recycling program** that ensures that older vehicle components are permanently (and safely) disposed of, the Law cannot have its intended impact on safety, air quality, and greenhouse gas mitigation.
- **National program established** through which vehicle owners affected by the law may **voluntarily surrender** their vehicle for scrapping and recycling, in exchange for **financial incentives** that may be used towards the **purchase of a new vehicle** from a PoA or SSC-CPA participating vehicle dealer, under a closely **monitored process**.



***(SSC-PoA-CDM)
Project Portfolio***

Project Title	Egypt Vehicle Scrapping and Recycling (POA)
CERs	263,671 ton CO₂e
Project Category	Fuel Switching
GHGs	CO₂
Project Start Date	2008
First Year of Crediting Period	2010
Project Cost	26,703,000 Euro
DNA Status	Approved
Registration	in final process



Sustainable Development Contribution

The PoA contributes to sustainable development in Egypt by:

- Reducing the level of urban air pollution generated by older vehicles;
- Reducing the number of traffic accidents associated with older vehicles;
- Supporting the local automobile components and vehicle assembly industries;
- Supporting technology and best practices transfer for vehicle recycling.



(PoA) Duration

- The PoA began on April 21, 2009, with the introduction of the first taxi SSC-CPA.
- The PoA is expected to last **28 years** from the start date, through April 2037, though the length of the individual SSC-CPAs shall not be more than 10 years.
- Calculated emissions reductions are based on the **average annual fuel efficiency, and distance driven** by registered participating vehicles.
- Owners of these registered vehicles are obligated to participate in the **annual monitoring sample survey**.

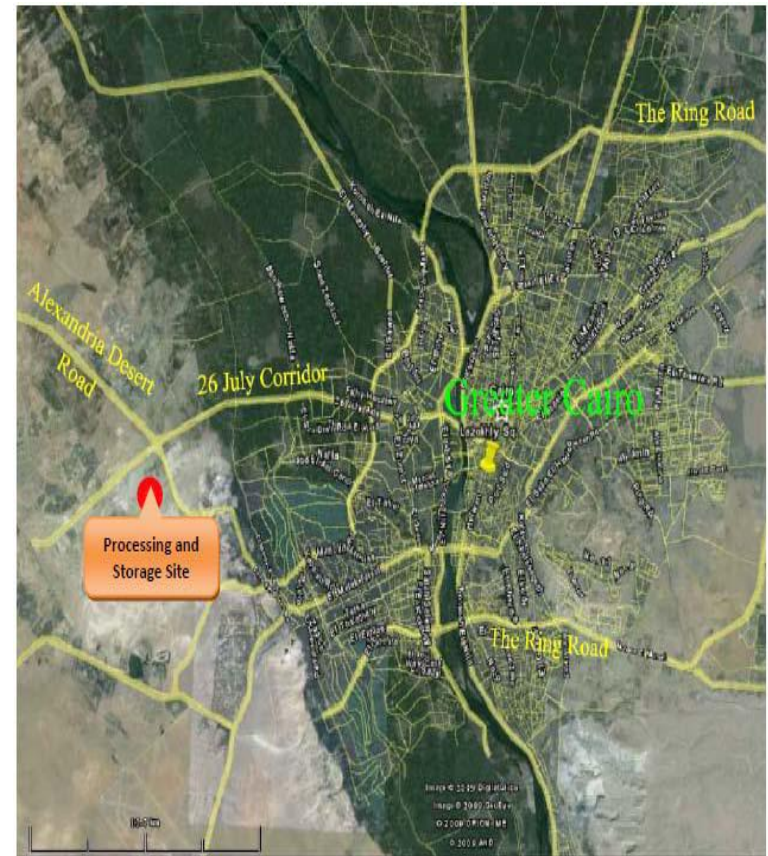


Technology or Measures

- Under each SSC-CPA, vehicles greater than 20 years old are replaced with new vehicles, by more modern technologies employed, more energy efficient, less polluting, and safer.
- The vehicle replacement will happen in two sites intended to cover all SSC-CPA activities occurring under the PoA within the Greater Cairo Region.

Processing and Storage Site

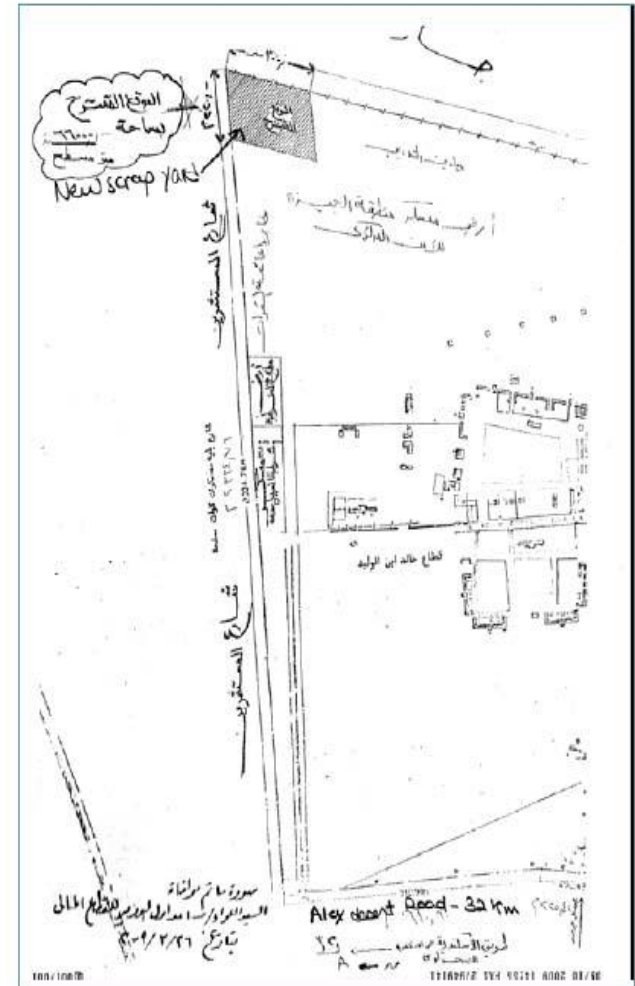
The majority of PoA activities undertaken by Project Participants in the Greater Cairo Region occur at the Processing and Storage Site, located on Cairo-Alexandria Desert Road, about 20 km west of downtown Cairo



Scrapping Site



- Inspection of old vehicles for program eligibility;
- Preparation of surrendered vehicles for temporary on-site storage (liquids are drained and batteries are removed);
- Distribution of subsidy for surrendered vehicles;
- Purchase of new vehicles from independent representatives;
- Storage of new vehicles in parking lot;
- Inspection of new vehicles;
- Licensing;
- Advertising procedures;
- First-aid kit distribution;
- **Program security and monitoring**



New Vehicles Fuel Efficiency

Various Vehicle Types	Fuel	Fuel Efficiency (L or m³ / 100 km)
Baseline Average fuel efficiency (1500-1600) cm³	Motor Gasoline/ CNG	13.16 L/100km (G) 13.26 m³/100km (CNG)

263,671 ton CO₂e



Eligibility Criteria

All SSC-CPAs must meet the following criteria:

- 1) The SSC-CPA utilizes the baseline and monitoring methodology AMS III.C “Low Emissions Vehicles,”
- 2) The Ministry of Finance is the Project Entity, responsible for coordinating and managing the SSC-CPA,
- 3) The SSC-CPA is approved by the coordinating entity and DOE prior to consideration in to the PoA.
- 4) Participating vehicle owners are directly implicated in Traffic Law #121 /2008, which states that owners of mass transport vehicles (including taxis) greater than or equal to 20 years old in a given year may not receive new operating licenses or license renewals.
- 5) Vehicle owners surrendering their old vehicle for managed scrapping and recycling in exchange on voluntary basis that may be used towards the purchase of a new vehicle from a participating vehicle-dealer under a monitored scheme.



Eligibility Criteria

- 6) The mechanism considered under SSC-CPA is publically advertised and is voluntary for vehicle owners.
- 7) The SSC-CPA includes an initial inspection of the participating vehicles to ensure eligibility. Inspection criteria include:
 - a. The vehicle is affected by Traffic Law #121;
 - b. The owner holds legal title to the vehicle;
 - c. The vehicle is legally licensed and registered in Egypt;
 - d. The vehicle's original chassis and engine serial numbers are intact;
 - e. The vehicle (and/or its engine) is operational
- 8) A Processing and Storage site is available for conducting project activities.
- 9) The Ministry of Interior provides support for security, licensing, and monitoring at the Processing and Storage Site



Eligibility Criteria

- 10) A facility for vehicle recycling, which has successfully completed an Environmental Impact Assessment process in accordance with national regulations, shall be available at some date to recycle project vehicles.
- 11) The SSC-CPA is uniquely identified in an unambiguous manner by providing the project registration date of the vehicle owner for all participating vehicles in the SSC-CPA.
- 12) Vehicle dealers offering eligible replacement vehicles, the Ministry of the Interior, banks, and the insurance company have signed a Protocol with the Project Entity (Ministry of Finance) to signify their understanding of the PoA and willingness to participate.
- 13) Vehicle owners were not required by Law to surrender their vehicles for scrapping and recycling.



Eligibility Criteria

- 14) The project database management is overseen by the Ministry of Finance, and the following data is collected:
- a. Vehicle owner name;
 - b. Vehicle owner contact information, including home and mobile phone numbers;
 - c. Date of SSC-CPA participation registration;
 - d. Model and model year of old vehicle;
 - e. License, and engine and chassis serial numbers of old vehicle;
 - f. Scrapping certificate number;
 - g. Model and model year of new vehicle;
 - h. License, and engine and chassis serial numbers of new vehicle;
 - i. Name of bank issuing loan for new vehicle (if applicable);
 - j. Record of survey results;
 - k. Record of complaints from participants.

Project Participants Roles

PoA Participant	Role
Ministry of Finance	<ul style="list-style-type: none">• Oversees PoA management and on-site Processing and Scrapping Site management;• Provides vehicle owners with payment for surrendered eligible vehicles;• Pays vehicle sales taxes on behalf of the owner;• Exempts customs on imported components of the vehicle;• Guarantees the loan against default in select cases;• Places program advertising in local and national media
Ministry of Interior	<ul style="list-style-type: none">• Provides land for Processing and Scrapping Site and for Recycling Facility Site for GCR SSC-CPAs;• Manages initial vehicle inspection;• Manages licensing of new vehicles;• Provides security and monitoring services for Processing and Scrapping Site; and• Locates vehicles in case of loan default.
Banks	
National Bank of Egypt Banque Misr Bank of Alexandria	<ul style="list-style-type: none">• Provide low-interest loans to eligible vehicle owners who have surrendered their old vehicles;• Provide branch office representatives at Processing and Scrapping Site.

Project Participants Roles

Auto Dealerships

Daewoo Egypt Aboul Fotouh (Speranza)
Ghabbour Auto (Hyundai)
Al Mansour Auto (Chevrolet)
Al Amal (Lada)
Wagih Abaza (Peugeot)

- Provide discounted vehicles to eligible vehicle owners who have surrendered their old vehicles;
- Prepare vehicles for mass transport use (e.g., install meters and paint exteriors);
- Provide up-to 3-year warranty on vehicles;
- Provide routine maintenance;
- Guarantee loans against default, where the dealer repossesses the vehicle and pays the outstanding loan to the Bank;
- Provide branch office representatives at Processing and Scrapping Site; and
- Shall work with Ministry of Finance on arranging annual vehicle usage surveys after PoA registration.

Insurance Company

Misr Insurance

- Provides insurance for all replacement vehicles;
- Provides branch office representatives at Processing and Scrapping Site.

Advertising Firm

Instant Media

- Provides loan supplements plus monthly cash payment to vehicle owners in exchange for use of internal and external advertising space;
- Provides branch office representatives at Processing and Scrapping Site;



Project Participants Roles

The Ministry of Environment is not a PoA Partner (i.e., it hasn't signed the Protocol for PoA implementation), but it plays a critical role in the SSC-CPAs by:

- Reviewing and approving Environmental Impact Assessments, per Egyptian law, for each Processing and Storage Site and Recycling Facility Site;
- Approving environmental monitoring plans submitted by PoA Participants;
- Performing random spot-checks / audits of on-going operations of these facilities and enforcing monitoring plans presented in the Environmental Impact Assessment (EIA).


Recording System (Ministry of Finance)

1. Scrapped Vehicle Database:

After completion of inspection, an assigned technical specialist prepares two copies of a vehicle report –one for the driver, and one for the Ministry of Finance, which maintains the Scrapped Vehicle Database, including:

- Vehicle owner name;
- Vehicle owner home telephone number;
- Vehicle owner mobile phone number;
- Vehicle model type;
- Vehicle model year;
- Vehicle license number;
- Vehicle chassis number;
- Vehicle motor number; and
- Date of issue of vehicle scrapping certificate.

The vehicle scrapping database is updated on a weekly basis.



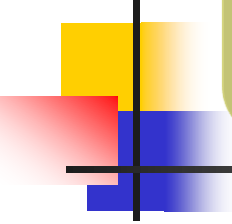
Recording System (Ministry of Finance)

2. Project Vehicle Database :

Participating auto dealers are required to submit the following documentation to a participating Bank:

- Copy of the new vehicle license;
- Letter from advertising agency indicating participation;
- Delivery confirmation letter.

These documents are used to maintain the project vehicle database, which includes such information as the number of new vehicles purchased (by model) and the number of loans issued (by bank). This database is updated on a daily basis.



Recording System (Ministry of Finance)

The Scrapped Vehicle and Project new Vehicle databases are used by the Ministry of Finance to:

- Keep track of the number and type of vehicles that are replaced;
- Keep track of subsidy payments, tax waivers, and loan guarantees provided by the Ministry of Finance ;
- Conduct periodic random surveys of project participants ;
- To track average fuel efficiency of the new project fleets (to begin after PoA Registration).



***Promising CDM project in
Urban Transportation Sector***

**Egypt is currently focusing on
sectarian programs of the POA**

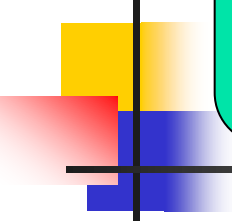


Implementation of the Line 3 Greater Cairo Metro Network Phase 1 & 2 Project

The length of the line from Cairo Airport to Imbaba is 30.6 km & 3.6 km for ElMohandseen branch. Nearly, 28.8 km will be underground section. The 3rd line includes 29 stations, 2 of them are on grade, (Ain Shams-2 & Omar Ibn Alkhattab) and all the rest are underground stations. The line interfaces with the existing line 1 at Nasr station & with line 2 at Ataba station.

The objectives are:

- Time saving of about 584 million hour/year, which is equivalent to 1963 M EGP/year.
- Fuel saving = 219 M EGP/year.
- Operation saving = 250 M EGP/year.
- Value of Environmental Improvement 350 M EGP.



Replace the two-stroke motorcycle by Hybrid-Electric Motorcycle which is currently under study replacement of 10,000 motorcycles in the first phase. (PoA)

It aims at substitution of 200,000 two stroke motorcycles with electric motorcycles which have zero emissions achieving an estimated annual emission reduction of 540 Million Tons CO2 Equivalent. The project will cover all the governorates of Egypt.

using the methodology (AMSIII.C.) “Emission reductions by electric and hybrid vehicles” version 12.

Also, electric vehicles have many advantages like:

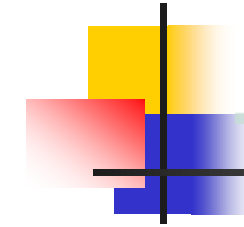
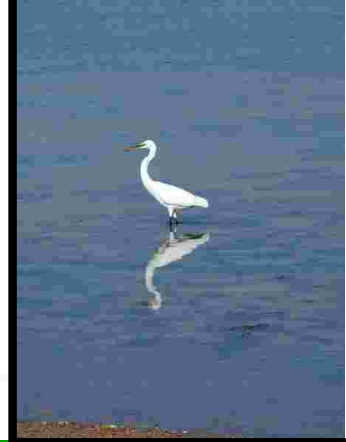
- a- Environmental friendly (no exhausted gases at point of use).
- b- Using grid power to charge batteries causing zero emissions.
- c- Lower maintenance costs and fewer maintenance activities.
- d- Can be ridden indoors.
- e- More affordable than electric cars.
- f- Instant on / no warm-up time.
- g- Much lower amount of heat given off by motor than is typical for some internal combustion motorcycle engines.



Replacement the streets lighting lamps by Efficient High Pressure Sodium Lamps (HPS) , up to million lamps in the first phase. (PoA)

Replacement of compact fluorescent Lamps (CFLs), and low-power high-pressure sodium lamps (HPS) instead of the unfriendly Environment -inefficient mercury bulbs and ,sodium high-power bulbs for street lighting, leading to the provision of 150 million kw / year, reducing 75,000 tons of carbon dioxide equivalent / year

Thank You



Egyptian DNA-CDM
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Central Department of Climate Change
General Department of Mitigation & CDM

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