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COMITÉ EXÉCUTIF
DU FONDS MULTILATÉRAL AUX FINS
D'APPLICATION DU PROTOCOLE DE MONTRÉAL
Soixante-douzième réunion
Montréal, 12–16 mai 2014

PROPOSITION DE PROJET : ALGÉRIE

Le présent document comprend les observations et les recommandations du Secrétariat du Fonds sur la proposition de projet suivante :

Destruction

• Projet de démonstration sur la gestion et la destruction des SAO résiduaires	ONUDI

FICHE D'ÉVALUATION DE PROJET : PROJETS NON PLURIANNUELS
ALGÉRIE

TITRE DU PROJET	AGENCE D'EXÉCUTION
Projet de démonstration pilote sur la gestion et la destruction des SAO résiduaires	ONUDI

AGENCE NATIONALE DE COORDINATION : Unité nationale d'ozone de l'Algérie

DERNIÈRES DONNÉES DE CONSOMMATION DÉCLARÉES POUR LES SAO VISÉES PAR LE PROJET

A : DONNÉES RELATIVES À L'ARTICLE 7 (TONNES PAO en 2012)

Annexe I - CFC	0		

B : DONNÉES SECTORIELLES LIÉES AU PROGRAMME DE PAYS (TONNES PAO, 2012)

SAO	Sous-secteur/quantité	Sous-secteur/quantité	Total
CFC			0

PLAN D'ACTIVITÉS DE L'ANNÉE EN COURS : Financement total 535 000 $US - Élimination totale : 50 tonnes PAO

TITRE DU PROJET

SAO utilisées dans l'entreprise		s.o.
SAO à éliminer		s.o.
SAO introduites		s.o.
Projet inclus dans le plan d'activités en cours		Oui
Secteur		Destruction des SAO
Sous-secteur		s.o.
Incidences du projet		61,09 tonnes métriques
Durée du projet		24 mois
Participation d'intérêts locaux		s.o.
Exportations		s.o.
Montant initial demandé	$US	684 518*
Subvention demandée au Fonds multilatéral		
FRANCE	$US	250 000
ONUDI	$US	375 059
Total	$US	625 059
Coûts d'appui à l'agence d'exécution		
FRANCE (13 %)	$US	32 500
ONUDI (7 %)	$US	26 254
Total	$US	58 754
Coût total du projet pour le Fonds multilatéral	**$US**	**683 813**
Rapport coût-efficacité	$US/kg métrique	10,23
Étapes de suivi du projet		Comprises

*Initialement présenté à la 71e réunion (sauf les coûts d'appui d'agence)

RECOMMANDATION DU SECRÉTARIAT :	Pour examen individuel

DESCRIPTION DU PROJET

1. Au nom du gouvernement de l'Algérie, l'ONUDI a proposé à la 71e réunion une demande de financement pour un projet de démonstration pilote sur la gestion et la destruction de substances résiduaires appauvrissant la couche d'ozone (SAO), pour un montant total de 747 434 $US comprenant 434 518 $US plus des coûts d'appui d'agence de 30 416 $US pour l'ONUDI et 250 000 $US plus des coûts d'appui d'agence de 32 500 $US pour le gouvernement de la France, tel que demandé initialement[1]. Avant la 71e réunion et à la demande du gouvernement de l'Algérie, l'ONUDI a retiré la proposition et informé le Secrétariat que ce projet serait présenté de nouveau à la 72e réunion.

2. Par la suite, l'ONUDI a présenté de nouveau la proposition pour un montant total de 683 813 $US, qui comprend 375 059 $US plus des coûts d'appui d'agence de 26 254 $US pour l'ONUDI, et 250 000 $US plus des coûts d'appui d'agence de 32 500 $US pour le gouvernement de la France. Ce montant a été le dernier convenu avec le Secrétariat lors des discussions ayant précédé la 71e réunion.

Description du projet

3. Le projet pilote a pour but de créer une stratégie permanente de destruction des stocks de SAO indésirables au pays en se basant sur la modification et l'adaptation d'un four à ciment afin d'élargir la capacité de destruction nationale. On s'attend à ce que ce projet soit porteur de leçons utiles qui pourront contribuer aux efforts de destruction des SAO résiduaires en Afrique du Nord.

Quantité de SAO résiduaires

4. Le programme existant de collecte des SAO résiduaires vise surtout le secteur du pétrole et du gaz et des SAO récupérés des appareils ménagers dans le cadre de projets de récupération et de recyclage pendant la mise en oeuvre du plan de gestion des frigorigènes (PGF) et du plan national d'élimination des CFC (PNE). Dans le secteur du pétrole et du gaz, qui est géré par la société pétrolière publique (Groupe Sonatrach) qui oblige toutes ses installations (résidentielles et industrielles) à effectuer la collecte et le stockage des résidus avant de les détruire. Cette entreprise exploite plusieurs installations au pays et, pour chaque type de résidus, le transport vers les installations correspondantes pour la destruction ou le stockage est couvert par la société mère.

5. Bien que des SAO résiduaires aient déjà été collectés des centres de récupération et de recyclage dans le cadre du plan de gestion des frigorigènes et du plan national d'élimination antérieurs et que ces montants soient inclus dans le présent projet, aucun programme de collecte institutionnelle organisée n'est encore en place pour les appareils ménagers desquels les SAO chargés peuvent être récupérés. Un programme devrait être en place avant que le projet soit terminé.

6. Le tableau l résume les quantités de résidus gérées dans le cadre de ce projet :

[1] À la 59e réunion, le Comité exécutif a fourni des fonds à l'ONUDI afin de préparer pour l'Algérie un projet pilote de démonstration de la destruction des SAO.

Tableau 1 : Quantités totales de SAO résiduaires à détruire en Algérie (au 1er octobre 2013)

Type de SAO	Secteur du pétrole et du gaz (kg)	Centres de récupération et de recyclage (kg)	Total (kg)	Pourcentage du total (%)
CFC-11	7,067	14 035	21 102	34,54
CFC-12	25 308	787	26,095	42,71
CFC-13	-	29	29	0,05
R-502*	13 378	490	13 868	22,70
TOTAL (MT)	**45 753**	**15 341**	**61 094**	**100,00**

*48,8 pour cent du HCFC-22 et 51,2 pour cent du CFC-115

Sélection de la technologie de destruction

7. Avant d'arrêter leur choix sur la destruction locale des SAO, l'ONUDI et l'Algérie ont évalué quatre méthodes : 1) destruction dans un centre national de destruction des déchets dangereux; 2) destruction dans un four à ciment modifié au pays; 3) exportation pour destruction vers des installations aux États-Unis afin d'obtenir des crédits de carbone selon les marchés volontaires; et 4) exportation pour destruction dans un centre sans recevoir de crédits de carbone dans le cadre du marché volontaire.

8. La reconversion d'un four à ciment a permis d'établir à long terme une installation nationale de destruction des résidus à un coût moindre que celui de la mise en place d'une nouvelle installation. Le gouvernement avait identifié le four à ciment le plus important au pays, qui peut produire chaque année quatre millions de tonnes de clinker[2] et qui peut être adapté pour la destruction des SAO résiduaires. Après sa reconversion, on devrait pouvoir détruire de 20 à 30 kg de SAO par heure grâce à l'incinération thermique, conformément aux normes acceptées de destruction et à un taux accepté de rendement de destruction et d'élimination (RDE) de 99,99 pour cent. Les émissions de substances toxiques feront l'objet d'un suivi constant durant tout le processus, conformément aux normes nationalement acceptables de suivi des émissions des émissions des cheminées de four.

9. Les coûts de la modification du four à ciment seront payés par le propriétaire des installations. Le volet technique de l'adaptation sera réalisé en étroite collaboration avec les spécialistes de l'ONUDI.

Activités du projet

10. La mise en oeuvre du projet comprend les étapes suivantes :

a) Modification du four à ciment;

b) Essai pilote de la capacité de destruction du four;

c) Essais de qualité et regroupement des SAO résiduaires de toutes les sources;

d) Transport des stocks de SAO résiduaires au four à ciment;

e) Destruction des SAO indésirables;

[2] Le clinker est constitué de boulettes dures (nodules) produites lors de la fusion du calcaire et du silicate d'aluminium pendant la cuisson du ciment dans le four lors de la fabrication du ciment Portland.

f) Vérification des quantités de SAO détruites et production du rapport.

11. Une fois la modification du four à ciment terminée, l'ONUDI entreprendra un programme d'essais pilotes afin de déterminer et de confirmer la capacité de destruction de SAO des installations modifiées, de définir les paramètres à prendre en ligne de compte pour réduire la production de sous-produits de la décomposition tels que les chlorures, et de déterminer la façon appropriée de les traiter. Les émissions seront également suivies de près. Les résultats des essais détermineront l'approche globale à adopter pour le processus de destruction définitif.

Durabilité du projet

12. Les éléments ci-dessous contribueront à la durabilité du projet de destruction des SAO:

a) Renforcement des lois existantes sur la collecte et la destruction des SAO au pays. La mise en oeuvre du projet créerait un environnement favorable à l'application de l'obligation de détruite les SAO résiduaires;

b) Il facilitera les occasions de cofinancement avec le secteur du pétrole et du gaz et le secteur privé, et les résultats du projet pourraient permettre l'accès futur au financement du carbone, lorsqu'il aura été démontré que tous les éléments du processus ont été menés à terme; et

c) La sensibilisation des parties prenantes et de la société civile pourrait être encouragée.

Gestion financière du projet

13. Le financement accordé par le Fonds multilatéral (684 518 $US) couvrira les coûts des activités du projet décrits au paragraphe 10 ci-dessus, y compris le fonctionnement du projet pilote durant deux ans (Tableau 2). Un cofinancement (160 350 $US) sera assuré par les propriétaires du four à ciment. Cette somme permettra de payer les coûts d'investissement dans la technologie requise pour adapter les installations. Aucun autre coût d'exploitation n'est demandé pour ce projet.

Tableau 2 : Coûts proposés du projet*

Élément de coût	Coût ($US)		
	Fonds multilatéral	**Cofinancement**	**Total**
Modification du four à ciment	0	129 150	129 150
Essais pilotes	31 500	10 000	41 500
Essais de qualité et regroupement	103 530	21 200	124 730
Transport des SAO résiduaires	128 297	0	128 297
Destruction	391 191	0	391 191
Vérification et rapports	30 000	0	30 000
TOTAL ($US)	**684 518**	**160 350**	**844 868**

*Tel que présenté initialement à la 71e réunion.

14. Le projet pilote ne tiendra pas compte pour l'instant d'aucun mécanisme de marché à l'extérieur des paramètres de la méthode actuelle, mais il continuera à suivre le marché du carbone et proposera des choix pour l'avenir lorsque ces marchés seront devenus plus stables. Le projet contribuera également à l'élaboration d'un programme durable pour une collecte institutionnelle organisée dans les centres de récupération et de recyclage en exploitation au pays, en plus de celui qui est déjà en place pour le secteur du pétrole et du gaz.

Suivi et vérification de la destruction

15. Le processus sera suivi de près et les données seront consignées par le groupe de gestion du projet, afin de veiller à ce que toutes les SAO résiduaires soient enregistrées correctement par l'unité de gestion du projet. L'installation devra produire un document de vérification de la destruction qui sera remis au propriétaire des résidus. Ce document comprendra le nom de l'installation, la date de destruction de la quantité précise de SAO (y compris la date de réception), et une confirmation de la destruction des SAO résiduaires à un taux de rendement de destruction et d'élimination (RDE) accepté de 99,99 pour cent. Le document portera la signature de la personne légalement autorisée à représenter les installations et l'entité indépendante accréditée responsable de l'inspection, de la vérification et des essais. Il n'y a aucun risque de gonflement des volumes et des stocks inadmissibles, car il n'existe aucune installation de production de SAO en Algérie, et le pays n'utilise plus aucun CFC, CTC ou halon depuis 2010.

OBSERVATIONS ET RECOMMANDATIONS DU SECRÉTARIAT

OBSERVATIONS

16. Le Secrétariat a procédé à l'examen de la proposition de projet basé sur les lignes directrices provisoires pour le financement des projets de démonstration de la destruction des SAO conformément à la décision 58/19. Lors de l'examen, le Secrétariat a demandé des précisions à l'ONUDI sur les points suivants :

a) La méthode utilisée pour déterminer les résidus de SAO à détruire dans le cadre du projet, et l'établissement d'un lien avec le système de collecte national;

b) La stratégie globale du projet et la démonstration de la valeur du projet pilote;

c) Les moyens d'assurer la durabilité du projet et la synergie avec les autres programmes de destruction; et

d) Le budget proposé et les activités correspondantes.

17. L'ONUDI a expliqué que 45,7 des 61,09 tonnes métriques de SAO résiduaires proviennent du secteur du pétrole et du gaz, qui possède déjà un excellent programme de collecte des résidus comprenant les SAO. L'ONUDI a également indiqué que les lois du pays soutiennent déjà la collecte nationale des SAO résiduaires et que des centres établis de récupération et de recyclage assurent la collecte de ces résidus dans le cadre de leurs activités, mais qu'il n'existe encore aucun programme de collecte détaillé à cet effet. Ce programme sera mis au point lorsque le projet sera terminé.

18. En ce qui concerne les questions reliées à la conception et à la durabilité du projet, l'ONUDI a réitéré que la méthode adoptée pour le projet a été déterminée après consultation avec les parties prenantes du pays. D'autres méthodes ont été examinées, mais le choix s'est arrêté sur l'adaptation du four à ciment, parce que le pays souhaitait créer ses propres installations de destruction pour l'avenir. Selon cette méthode, bien que le gouvernement assure le suivi des opérations des installations à des fins de réglementation, les installations seront exploitées par des intérêts privés, et des investissements privés ont été obtenus pour le projet. Les propriétaires des installations continueront de fonctionner sans soutien financier supplémentaire du gouvernement, parce qu'ils auront l'entière responsabilité de payer tous les coûts d'exploitation associés à la prestation de ces services, maintenant et plus tard.

19. L'ONUDI a aussi indiqué que les résultats du projet pourraient faciliter l'accès aux marchés du carbone lorsque de meilleures occasions se présenteront pour ces marchés. Elle a toutefois réitéré que le projet ne participera pas à ces échanges pour l'instant, mais qu'il proposera de meilleurs mécanismes de suivi et de vérification qui permettraient d'avoir accès aux marchés du carbone plus tard. La possibilité que les marchés du carbone puissent représenter une source de cofinancement des futures opérations de gestion des SAO résiduaires en Algérie fera l'objet d'un examen plus attentif lorsque le projet de démonstration sera terminé.

20. L'ONUDI a également répondu aux questions du Secrétariat sur la manière dont le projet créera des synergies avec d'autres programmes de destruction de produits chimiques. Elle a précisé que le Centre national de production technologique plus propre (NCCTP), qui abrite le Bureau national de l'ozone, a été désigné Centre régional de l'Afrique du Nord pour la Convention de Stockholm. Cet aménagement institutionnel offre une excellente occasion de communiquer les résultats du projet pilote directement dans la région et d'en faire un exemple pour la destruction des polluants organiques persistants. L'ONUDI a toutefois indiqué que les règlements actuels interdisent l'importation de résidus dangereux en Algérie, et que le projet permettrait seulement de fournir les leçons apprises à d'autres pays.

21. Le Secrétariat et l'ONUDI ont discuté du financement requis pour le projet lorsque ce dernier a été présenté pour examen à la 71e réunion. Lors de ces discussions, l'ONUDI a accepté de rajuster ses coûts de transport des SAO résiduaires du secteur du pétrole et du gaz à destination des installations de destruction, et réduit le nombre de réservoirs requis, ce qui a mené à un coût de 10,23 $US/kg de SAO détruit pour 61,09 tonnes métriques en deux ans (coût inférieur au financement maximal admissible de 13,20 $US/kg).

22. Le coût final du projet a été convenu à 625 059 $US (plus des coûts d'appui d'agence de 58 754 $US). Une somme supplémentaire de 202 745 $US sera fournie par les propriétaires du four à ciment en guise de financement de contrepartie. Ce montant est supérieur au montant initial de 160 350 $US indiqué au tableau 2 afin de tenir compte d'une partie des coûts du transport des SAO résiduaires. La situation est résumée au tableau 3.

Tableau 3. Coût final convenu pour la gestion des SAO résiduaires et la gestion du projet pilote de destruction en Algérie

Élément de coût	Coût ($US)		
	Fonds multilatéral	Cofinancement	Total
Modification du four à ciment	0	129 150	**129 150**
Essais pilotes	31 500	10 500	**42 000**
Essais de qualité et regroupement	79 905	22 260	**102 165**
Transport des SAO résiduaires	87,463	40 835	**128 297**
Destruction	391 191	0	**391 191**
Vérification et rapports	35 000	0	**35 000**
TOTAL ($US)	**625 059**	**202 745**	**827 804**

RECOMMANDATION

23. Le Comité exécutif pourrait souhaiter :

a) Prendre note avec satisfaction de la proposition du gouvernement de l'Algérie portant sur un projet pilote de gestion et de destruction des SAO résiduaires visant à détruire 61,09 tonnes métriques de SAO résiduaires; et

b) Approuver la mise en oeuvre d'un projet pilote de démonstration sur la gestion et la destruction des SAO en Algérie pour un montant de 683 813 $US, qui comprend 375 059 $US plus des coûts d'appui de 26 254 $US pour l'ONUDI et 250 000 $US plus des coûts d'appui de 32 500 $US pour le gouvernement de la France, en étant entendu que l'Algérie ne recevra plus à l'avenir aucune autre somme pour des projets de destruction des SAO.

MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL ON SUBSTANCES THAT DEPLETE THE OZONE LAYER			
PROJECT COVER SHEET			
COUNTRY	Algeria	**IMPLEMENTING AGENCIES**	France UNIDO
PROJECT TITLE	Pilot Demonstration Project on ODS Waste Management and Disposal		
PROJECT IN CURRENT BUSINESS PROGRAMME		Yes	
SECTOR		ODS destruction	
SUB-SECTORS		Refrigeration and Air Conditioning sub-sector	
ODS DESTROYED	R11	21.10	Metric tonnes
	R12	26.09	Metric tonnes
	R13	0.03	Metric tonnes
	R502	13.87	Metric tonnes
	Total	61.09	Metric tonnes
		51.86	ODP tonnes
PROJECT IMPACT	Net ODP value per annum	25.93	ODP tonnes
	Annual emissions (CO_2 equivalent)	192,483	tonnes CO_2e
PROJECT DURATION – Demonstration Project			24 months
PROJECT COSTS	Incremental Capital Costs	US$	755,051
	Contingencies	US$	37,753
	Incremental Operating Costs	US$	-
	Policy and Management Support	US$	35,000
	Total Project Costs	US$	827,803
LOCAL OWNERSHIP			100%
EXPORT COMPONENT			0%
REQUESTED MLF GRANT	FRANCE	US$	250,000
	UNIDO	US$	375,059
	TOTAL	US$	625,059
COST EFFECTIVENESS		US$/kg	10.23
IMPLEMENTING AGENCY SUPPORT COSTS	FRANCE (13%)	US$	32,500
	UNIDO (7%)	US$	26,254
	TOTAL	US$	58,754
TOTAL COST OF PROJECT TO THE MULTILATERAL FUND		US$	683,813
STATUS OF COUNTERPART FUNDING		Committed – Provided by project participants to support project activities as detailed in Project Document	
PROJECT MONITORING MILESTONES (Y/N)		Y	
NATIONAL COORDINATING BODIES		National Ozone Unit of Algeria	

Project summary:
UNIDO, on behalf of the Government of Algeria, is submitting the project document "Pilot Demonstration Project on ODS Waste Management and Disposal in Algeria" to the 71st Meeting of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol.

The **main objective of the project** is to develop a sustainable strategy to destroy stocks of unwanted ODS in Algeria. Implementation of the project will contribute to the establishment of local destruction capacity for the disposal of ODS waste and other chemical waste in Algeria, which can be replicated in other countries in the North African Region.

To ensure efficient implementation of the project, a total of **61.09 metric tonnes of ODS waste** will be disposed of over a period of two years. This amount of ODS waste has already been collected as a result of well-documented on-going collection initiatives. The amount of ODS waste to be destroyed is distributed as follows:

- 21,10 metric tonnes of R11;
- 26,09 metric tonnes of R12;
- 0,03 metric tonnes of R13;
- 13,87 metric tonnes of R502.

During project preparation, various strategies were discussed and assessed by relevant stakeholders in the country and UNIDO. In order to ensure sustainability of the project beyond implementation of the MLF-funded project, the **chosen project strategy** involves destruction in a cement kiln located in the country.

The implementation of this project will contribute to the **long-term sustainability of ODS destruction activities** in Algeria by contributing to such sustainability from a variety of angles, namely:

- The destruction capacity set up in the context of this project will be large enough to handle the ODS waste generated in the country, and even that which could arrive at the facility from neighbouring countries;

- Contribution to the effective enforcement of existing legislation addressing ODS disposal; implementation of the project would contribute to create the adequate enabling environment to enforce the obligation to destroy ODS waste;

- A thorough stakeholder engagement process will be undertaken in order to ensure a cooperative environment in the setting up of an ODS disposal infrastructure in the country;

- For ODS destruction activities undertaken after completion of this project, the cement kiln will be in a position to obtain carbon credits for future destruction activities due to the experience obtained through the implementation of this project), thus making carbon financing one of the components of the financing mix that will ensure sustainability of Algeria's efforts in undertaking environmentally friendly ODS waste disposal;

- Implementation of the project and related lessons learned will contribute to encourage owners of ODS stocks to co-finance ODS destruction activities in the country upon completion of this project.

PREPARED BY International Experts (A. Pandey and A. Datta)
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UNIDO (M. Caballero)

DATE 7 February 2014

Project Document

Ministry for Territory and Environment,
People's Democratic Republic of Algeria

United Nations Industrial Development Organization

Pilot Demonstration Project on ODS Waste Management and Disposal

February 2014

TABLE OF CONTENTS

1. INTRODUCTION

The Executive Committee, at its 59th meeting, provided funds to prepare a pilot demonstration project on ODS waste management and disposal in Algeria, to be developed in line with the criteria and guidelines for the selection of ODS disposal projects as reflected in Decision 58/19.

The project document has been prepared by national and international experts coordinated by UNIDO, in cooperation with the National Ozone Unit, the Ministry for Territory and the Environment (MATEV) and the Ministry of Energy and Mines of Algeria. During the preparatory phase of the project, on-site visits were organized to collect data on available ODS stocks, and two stakeholder meetings have been organized by MATEV and UNIDO.

As a result of this process UNIDO, on behalf of the Government of Algeria, is submitting the present project document to the 71st Meeting of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol.

The main objective of the project is to develop a sustainable strategy to destroy stocks of unwanted ODS in Algeria. Implementation of the project will contribute to the establishment of local destruction capacity for the disposal of ODS waste and other chemical waste in Algeria, which can be replicated in other countries in the North African Region. The necessary logistical infrastructure for such a strategy will be set in place, and both technical and human resources will be reinforced to facilitate ODS waste management at country level.

To ensure efficient implementation of the project, a total of 61.09 metric tonnes of ODS waste will be disposed of over a period of two years. The amount of ODS waste to be destroyed is distributed as follows:

- 21,10 metric tonnes of R11;
- 26,09 metric tonnes of R12;
- 0,03 metric tonnes of R13;
- 13,87 metric tonnes of R502.

This amount of ODS waste has been collected prior to the start of the implementation activities as a result of the on-going collection activities described in Section 3.7. of this project document:

- Approximately 75% of the ODS stocks identified for destruction under this project have been collected in various applications (both industrial and non-industrial) in the oil & gas sector (industrial refrigeration, air conditioning units in office buildings and home appliances used in lodging camps at the oil fields).

- 25% of the ODS stocks have been collected by servicing workshops, end users and importers, and are related to their use in home appliances and commercial refrigeration equipment, as well as in companies which have undertaken conversion activities.

In addition to the main project activities, the project will contribute to the effective enforcement of existing legislation addressing ODS disposal, which has been hampered so far due to

unavailability of a suitable disposal facility as well as the difficulties to obtain a license to export ODS waste for destruction purposes. Implementation of the project would contribute to create the adequate enabling environment to enforce the obligation to destroy ODS waste.

2. COMPLIANCE OF THE PROJECT CONCEPT WITH THE FUNDING GUIDELINES (DECISION 58/19)

The Executive Committee, at its 58th Meeting, approved a set of interim guidelines for the funding of demonstration projects for the disposal of ODS in accordance with paragraph 2 of decision XX/7 of the Meeting of the Parties. The following information is provided to show the project's compliance with all the requirements as set out by the above mentioned Decision 58/19.

a) Updated and more detailed information for all issues mentioned under project preparation funding

i. An indication of the category or categories of activities for the disposal of ODS (collection, transport, storage, destruction), which will be included in the project proposal.

The project includes the following categories of activities for the disposal of ODS: transport, storage and destruction. The project is linked to the various ongoing collection activities in Algeria; however it only seeks funding from the MLF for the three activities above in line with the interim guidelines for the funding of demonstration projects for the disposal of ODS.

A detailed description of the activities to be undertaken during project implementation can be found in Section 7 of this project document.

ii. An indication of whether disposal programmes for chemicals related to other multilateral environmental agreements are presently ongoing in the country or planned for the near future, and whether synergies would be possible.

Algeria is currently implementing various programmes on POPs management in the framework of its obligations under the Stockholm Convention, with UNIDO supporting the country in some of them as detailed in Section 3.8. of this project document.

The project will benefit from the fact that Algeria's National Ozone Unit has a strong cooperation in place with the National Center for Cleaner Technologies Production (NCCTP), which has been selected as the North Africa Regional Centre for the Stockholm Convention by the fifth meeting of the Conference of the Parties to the Stockholm Convention (April 2011). This will ensure coordination between ODS and POPs disposal activities, the latter being at a less advanced stage of development than the former (project design is not yet completed).

iii. An estimate of the amount of each ODS that is meant to be handled within the project.

Implementation of the project will allow for the destruction of 61.09 metric tonnes of ODS waste, distributed as follows:

- 21,10 metric tonnes of R11;
- 26,09 metric tonnes of R12;
- 0,03 metric tonnes of R13;
- 13,87 metric tonnes of R502.

A detailed break-down of these amounts and the location of the related stocks can be found in Section 5 and Annexes 1 and 2 of this project document.

iv. The basis for the estimate of the amount of ODS; this estimate should be based on known existing stocks already collected, or collection efforts already at a very advanced and well-documented stage of being set up.

The total amount of ODS waste considered for destruction in the context of this project has already been collected through the various ongoing collection efforts. These amounts have been confirmed through a series of data collection exercises conducted at two levels:

- Two national experts recruited by UNIDO have undertaken on-site data collection; one of the experts has focused on the oil & gas sector whereas the other has focused on other potential sources of ODS waste;

- The survey on the oil and gas sector was complemented by data provided by the Directorate of Hygiene, Safety and Environment of Groupe Sonatrach.

Data on ODS waste collected in the oil & gas industry have been endorsed by the National Ozone Unit, the Ministry for Territory and the Environment and the Ministry of Energy and Mines; data on ODS waste collected in other sectors has been endorsed by the National Ozone Unit and the Ministry for Territory and the Environment.

v. For collection activities, information regarding existing or near-future, credible collection efforts and programmes that are at an advanced stage of being set up and to which activities under this project would relate.

Available information on on-going ODS waste collection activities in Algeria can be found in Section 3.7. of this project document.

vi. For activities that focus at least partially on CTC or halon, an explanation of how this project might have an important demonstration value

Neither CTC nor halon disposal will be addressed during the implementation of this project.

b) Specific information required for project submissions

i. A detailed description of the foreseen management and financial set up.

The total project budget is presented in the following table:

Table 1: Total Project Budget

Cost Item	Cost (USD)		
	MLF	Co-financing	Total
Modification of the cement kiln	0	129,150	129,150
Pilot testing	31,500	10,500	42,000
Quality testing and aggregation	79,905	22,260	102,165
Transportation	87,463	40,835	128,297
Destruction	391,191	0	391,191
Additional activities	35,000	0	35,000
TOTAL (USD)	**625,059**	**202,745**	**827,803**

The following table shows the break-down of funding requested to the Multilateral Fund:

Table 2: Project Funding under the Multilateral Fund

Cost Item	Cost (USD)
Project funding requested to the Multilateral Fund	**625,059**
-France	250,000
-UNIDO	475,059
Project support costs	**58,754**
-France 13%	32,500
-UNIDO 7%	26,254
Total requested from the Multilateral Fund	**683,813**

The project funding requested to the Multilateral Fund is 625,059 USD (excluding support costs), with a total cost efficiency of 11.20 USD/kg of ODS waste.

Project funding under the Multilateral Fund (USD)	**625,059**
Unit cost of disposal (USD/kg)	**10.23**

A dedicated Project Management Unit (PMU) will be set up for this project, as detailed in Section 7.8. Detailed information on the sustainability of the underlying business model can be found in Section 8 of this project document.

ii. A clear indication how the project will secure other sources of funding.

Section 9.3 of this project document provides information on the total amount of co-financing secured for this project, as well as its application and respective sources.

iii. A concept for monitoring the origin of recovered ODS for future destruction, with the objective of discouraging the declaration of virgin ODS as used ODS for destruction.

The amount of ODS waste identified for destruction under this project consists of stocks which, in the context of the Algerian legislation, have to be disposed of. The whole amount of ODS waste has already being collected, and complete data on its composition and lack of possible alternative application has been compiled and endorsed at Government level; therefore, there are no ODS stocks to be destroyed in this project coming from amounts to be collected in the future (during project implementation), for which additional monitoring measures should be put in place.

It is important to note that, due to the fact that this project will not obtain any revenue from carbon financing in destroying the identified ODS stocks, the destruction strategy does not pose any perverse incentive that may encourage owners of ODS stocks to destroy them instead of giving them an alternative use.

iv. Valid assurances that the amount of ODS mentioned in the proposal will actually be destroyed, and the agencies should submit proof of destruction with the financial closure of the project.

This requirement is appropriately addressed under activities described in Section 7.6. of this project document.

v. An exploration of other disposal options for the used ODS such as recycling and reuse opportunities;

As stated above, the amount of ODS waste identified for destruction under this project consists of stocks which, in the context of the Algerian legislation, have to be disposed of due to the lack of alternative application.

3. BACKGROUND

3.1. Ratification of Amendments to the Montreal Protocol

Algeria is a Party to the Montreal Protocol and is listed as an Article 5 country. The following are the dates on which Algeria had ratified the Montreal Protocol and its amendments:

Table 3: Status of Ratification of Amendments to the Montreal Protocol

Agreement/ Amendment	Entry into force	Date of ratification	Status
Vienna Convention	November 1988	20th October, 1992	Accession
Montreal Protocol	January 1989	20th October, 1992	Accession
London Amendment	August 1992	20th October, 1992	Accession
Copenhagen Amendment	June 1994	31st May, 2000	Ratification
Montreal Amendment	November 1995	6th August, 2007	Ratification
Beijing Amendment	February 2002	6th August, 2007	Ratification

3.2. ODS Consumption in Algeria

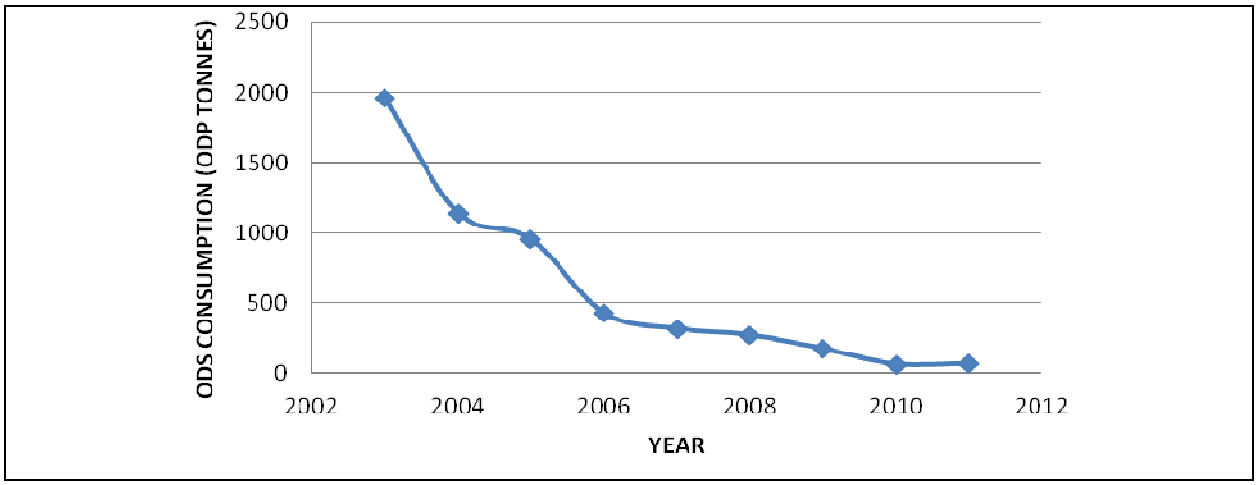
The following table shows the total consumption of all ODSs in Algeria in ODP tonnes from 2003 to 20101 as reported by the Ozone Secretariat:

Table 4: ODS Consumption (in ODP Tonnes) in Algeria[1]

Years	ODS Consumption (in Metric Tonnes)
2003	1966.1
2004	1142.2
2005	956.2
2006	428.7
2007	318.1
2008	272.5
2009	174.35
2010	65.68
2011	69.12

The following figure shows the above data graphically:

Figure 1: ODS Consumption (in ODP Tonnes) in Algeria



3.3. Stakeholders in ODS Activities in Algeria

Major Stakeholders

The **National Ozone Unit (NOU)** is under the direction of the Ministry for Territory and the Environment (MATEV). Activities related to the commitments of the Montreal Protocol and its amendments are implemented at the national level by the NOU and managed by the HPMP implementing agencies (UNEP and UNIDO).

[1] Source: Ozone Secretariat

The **Ministry for Territory and the Environment (MATEV)** of the Government of Algeria, jointly with the **Ministry of Trade** and the **Ministry of Energy and Mines**, are responsible for the application and issuance of licenses for imports of ODS substances. The Ministry of Energy and Mines includes HCFCs among the substances on the list of hazardous materials and chemicals subject to prior approval of the ministry. The Inter-Ministerial Order of August 1st 2004, establishing the conditions and terms of import of hazardous materials and chemicals, states that registered companies who wish to import substances that are included in the provided list of hazardous materials and chemicals must apply for a permit through the Ministry of Energy and Mines.

The **Algerian National Center for Cleaner Technologies Production (NCCTP)**, under the direction of the Ministry for Territory and the Environment (MATEV) helps the industrial sector to attain environmental sustainability through programs for awareness building, education and training, as well as helping industries to adopt environmentally friendly technologies. The centre has been selected as the North Africa Regional Centre for the Stockholm Convention by the fifth meeting of the Conference of the Parties to the Stockholm Convention (April 2011). NCCTP and the NOU have various cooperation programmes in place.

Industry Associations

There are no industry associations linked to ODS-related issues that are presently active in Algeria, although such associations would help the dialogue among representatives of the different sectors in their discussions with the different government agencies. During the preparation of the project, it was noted that the **Association du Froid**, which was active some years back, is dormant now; however interest has been shown in its revival as its institutional structure still exists.

There are also ongoing discussion to set up an association within the **Centre National de Refrigeration** which will consist of specialized groups of professionals from the sub-sectors of the industry.

In addition, the Algerian Centre for Refrigeration Research and Testing, which was created in 1948, was transformed in 1973 into the Institute of Refrigeration Technology and then into **Vocational Training Institute**. There are ongoing discussions to create a Higher Institute of Refrigeration, which will, among other things, contribute to the choice of technical alternatives in the substitution of HCFCs.

Other Stakeholders

The **Agency for the Promotion and Rationalization of the Use of Energy (APRUE)** was entrusted by the National Energy Management Agency (PNEM) with the enactment of Law No. 99-09 of July 28, 1999 on Energy which aims at monitoring, controlling and saving energy. This program was established by the Executive Decree No. 04-149 of May 19, 2004 and has a National Fund for Energy Conservation (NFEC) for the effective reduction of energy consumption in different sectors.

The Algerian Institute of Standardization (IANOR) is responsible for the delivery of the mandatory certification of compliance (Article 13 of Decree n°05-465 of 6 December 2005), as well as for the implementation of Act n°04-04 of June 27, 2004 which aims at regulating

products harmful to the environment and controlling their traceability, by taking the following action:

- Certification of products such as refrigerants (CFCs and HCFCs) Art. 22 of Law n°04-04 of June 23, 2004;
- Coding of products such as refrigerants (CFCs and HCFCs);
- Refrigerants and lubricants must be easily identifiable by the indices defined by the existing standards (EN 314 -1);
- Establishment of the **National Technical Committee** for "Air Conditioning and Refrigeration" (NTC 61).

3.4. ODS Waste-Related Legislation

The current legislative framework in Algeria aims at the preservation of the ozone layer and climate by addressing several sectors such as environment, energy and industry. This legislative framework consists of the following pieces of legislation:

Environment Act n°03-10

This piece of legislation, which aims to protect the environment and ensure sustainable development, was enacted on July 19, 2003.

Executive Decree n° 06-104 of 28 February 2006 of the Act n° 01-19 of December 12, 2001

This decree addressing the management of hazardous substances includes provisions to consider refrigerant waste containing CFCs, HCFCs and HFCs as special hazardous waste:

- Waste solvents agents CFCs, HCFCs and HFCs are considered dangerous for the environment with code 1411 "Special Dangerous" (SD);
- Scrapped equipment containing CFCs, HCFCs and HFCs are considered dangerous for the environment with code 1623 "Special Dangerous" (SD).

Executive Decree n° 07-144 of May 19, 2007

This decree establishes the nomenclature of classified installations for environmental protection.

Executive Decree n° 13-110 of March 17, 2013

This decree regulates the use of substances that deplete the ozone layer, their blends and products containing them. The decree sets the following provisions:

- Production and export of ODS are prohibited except for the export of recovered ODS

which is designated for destruction. Controlled ODS recovered for destruction can be exported subject to an authorization by the Ministry of Environment; for this purpose, a "Committee of Controlled Substances" has been set in place with the purpose of assessing the requests for export of this type of substances.

- Import of controlled ODS used, recovered, recycled or regenerated is forbidden;

- The controlled ODS contained in equipment destined for disposal must be collected for one of the following purposes:

  a) Recycling or regeneration during maintenance and servicing operations, or during equipment disposal;

  b) Destruction by using a technology which is both environmentally friendly and in line with Algeria's commitments to the various Multilateral Environmental Agreements ratified by the country.

3.5. CFC Phase-Out Programme

Algeria has developed a strategy to eliminate substances that deplete the ozone layer. A Refrigerant Management Plan (RMP) was developed in 1997 for the implementation of the Montreal Protocol. The National Phase-out Plan (NPP) aimed at eliminating totally the CFCs in early 2010 and led to the phase out of more than 2,000 tonnes of CFCs.

In addition to 28 conversion projects, training programs have been developed and implemented, and CFC recovery and recycling equipment have been awarded to recovery and recycling centers, training centers and service workshops of refrigeration equipment. Recovery and recycling equipment of CFCs were also distributed to these centers and workshops.

Several training sessions on good practices in refrigerant management were conducted for trainers in the refrigeration field and focused mainly on good practices of repair and servicing of CFC recovery and recycling equipment. Training sessions for refrigeration technicians on the use of the recovery and recycling equipment of CFCs have also been organized.

3.6. ODS Waste Sources

The main source of ODS waste in Algeria is the **oil & gas sector**, due to its significant importance on the country's economy (in 2009, the oil & gas sector accounted for 45.5% of GDP, 97.6% of exports –in monetary terms- and 80% of budget revenues). The ODS waste generated by this sector comes from a number of end-use applications, namely:

- Industrial refrigeration;

- Air conditioning units in office buildings;

- Home appliances (refrigeration and air conditioning units) used in the lodging camps at the oil fields.

The second most important source of ODS waste in the country is also related to the industrial sector and consists of a group of companies involved in (or affected by) the **conversion activities** undertaken in the context of the CFC phase out, especially in the foam sector. As a result of the implementation of the conversion projects, a number of end users and distributors have kept stocks of CFC-11 (and to a minor extent, of CFC-12) which cannot be placed in the market due to the completion of the conversion activities.

A third source of ODS waste consists of **home appliances and commercial refrigeration** equipment reaching recovery and recycling centers and service workshops with collection capacity.

3.7. ODS Waste Collection Activities

Algeria currently lacks a nation-wide collection system for ODS waste despite the existing law requesting recovery, recycling, reclamation and destruction of ODS waste. Collection activities are currently being undertaken by various stakeholders working in different sectors.

3.7.1. Collection Activities for the Oil & Gas Sector

The oil & gas sector in Algeria is structured around Groupe Sonatrach, the state-owned oil company which plays a key role in both upstream and downstream oil and gas operations. The company has recently set up a management system for chemical products and wastes which is operated by the Directorate for the Supply and Management of Stocks (DGAS), which belongs to the Sonatrach External Industries Activities Holding, responsible for all non-oil-related activities.

According to this management system, all facilities operating under Sonatrach Group have specific procedures to collect and store their wastes prior to processing. For each type of waste, transportation to the corresponding disposal facility is organized by DGAS and costs are covered by the parent company of the facility (always a member of Sonatrach Group). In the event of these facilities reaching their maximum storage capacity, DGAS makes available a central storage facility located in Hassi-Messaoud, in Ouargla's prefecture.

3.7.2. Collection Activities for Other Sectors

As stated above, collection activities were organized, in the context of the implementation of the RMP and NPP, around three types of entities which were supported with recovery and recycling equipment:

1. Recovery and recycling centers;
2. Training centers;
3. Service workshops of refrigeration equipment.

The maximum theoretical capacity attributed to these entities for the storage of refrigerant waste

is estimated to be more than 10 tonnes, based on the availability of cylinders of various sizes (10 kg., 40 kg. and 100 kg.).

1. Recovery and recycling centers

The existing recovery and recycling centers in Algeria can be grouped as follows:

- 10 centers established under the company Aures Gaz Industriels, covering the following prefectures:

  - Algiers
  - Annaba
  - Bouira
  - Constantine
  - Oran (two centers)
  - Ouargla (two centers)
  - Sidi Bel Abbes
  - Skikda

- 6 centers established by the state-owned company ENIEM, which is the leading manufacturer of home appliances in Algeria.

2. Training centers

The existing training centers in Algeria can be grouped as follows:

- 5 National Institutes of Vocational Training, which include specialized courses in cold;
- 4 Centers for Vocational Training and Learning.

3. Service workshops of refrigeration equipment

A total of 60 major workshops have collection capacity, grouped as follows:

- 18 workshops established under the National Security DGNS;
- 42 workshops working as authorized agents of ENIEM.

In addition, it is worth noting that 20 workshops specialized in the mobile air conditioning (MAC) sector have limited collection capacity.

3.8. Disposal Programmes for Other Chemicals

Paragraph 4 of Article 12 of the Stockholm Convention, calls for the establishment, as appropriate, of arrangements for the purpose of providing technical assistance and promoting the transfer of technology to developing country Parties and Parties with economies in transition relating to the implementation of the Convention. These arrangements are to include regional and subregional centres for capacity-building and transfer of technology to assist developing country Parties and Parties with economies in transition to fulfill their obligations under the Convention.

The North Africa Regional Centre for the Stockholm Convention is responsible for capacity building and technology transfer in relation to the implementation of the provisions of the Stockholm Convention in Algeria, Egypt, Libya, Mali, Morocco, Mauritania, Niger and Tunisia.

At the fifth meeting of the Conference of the Parties to the Stockholm Convention (April 2011), Parties endorsed the selection of the Algerian National Center for Cleaner Technologies Production (NCCTP) as the North Africa Regional Centre for the Stockholm Convention for a term of four years.

In addition to its commitments under the Stockholm Convention, the centre serves as a tool for implementation of the national policy of environmental protection, reduction of active forms of pollution and industrial pollution at their source, and environmentally sound use of natural resources (water, energy and raw materials). Besides, it also plays an important role in promoting environmental management system and cleaner production in industries.

In the context of Algeria's activities on POPs management, it is worth noting that UNIDO is currently supporting the country in the implementation of the following projects:

- Enabling Activities to Facilitate Early Action on the Implementation of the Stockholm Convention on Persistent Organic Pollutants in Algeria;

- Enabling Activities to Review and Update the National Implementation Plan for the Stockholm Convention on Persistent Organic Pollutants (POPs) in Algeria;

- Capacity Building for the Environmentally Sound Management of POPs and the Destruction of PCB Wastes in Algeria.

4. PROJECT OBJECTIVES

The Pilot Demonstration Project on ODS Waste Management and Disposal in Algeria aims to achieve the following objectives:

- Development of a sustainable strategy to destroy stocks of unwanted and recollected ODS in Algeria, based on the technological suitability, as well as the financial and logistical viability of the various disposal options that can in principle be implemented in the country;

- Facilitation of the establishment of local destruction capacity for ODS waste and other chemical waste in the country;

- Development of the appropriate technical and human resources capacity for ODS waste management at country level, including aggregation, storage and disposal, which will lead to better compliance with the Montreal Protocol.

- Establishment of a ODS waste disposal infrastructure that can be replicated in other countries in the North African Region;

- Destruction of 61.09 metric tonnes of ODS waste (essentially CFC 11 and 12) collected from various sectors in Algeria.

The destruction facility that will be used for the implementation of the Pilot Demonstration Project on ODS Waste Management and Disposal in Algeria will be used solely and exclusively for the destruction of ODS waste generated in Algeria as the Algerian regulations do not allow the import of ODS waste, even for destruction purposes.

5. PROJECT SCOPE

The stocks for which the destruction strategy is to be developed include 61.09 metric tonnes of CFCs collected from various sectors in Algeria, as shown in the following table:

Table 5: CFC Stocks for Disposal in Algeria (as of October 2013)

Sector	ODS Waste Collection Process	Quantity (MT)
Oil and Gas Sector	ODS Waste from oil companies in Algeria used for servicing of various applications (industrial refrigeration, air conditioning units in office buildings and home appliances used in lodging camps at the oil fields).	45.75
Others	ODS Waste collected during maintenance operations in functional or non-functional equipment	2.02
Others	ODS Waste stored in service workshops and importers facilities	13.32
	TOTAL (Metric Tonnes)	**61.09**

Approximately 75% of the ODS stocks identified for destruction under this project have been collected in the oil & gas sector. There are various reasons for this sector accounting for such a large share of the available ODS waste, namely:

- Importance of the oil & gas sector in Algeria's economy: as stated above, in 2009 this sector accounted for 45.5% of GDP, 97.6% of exports –in monetary terms- and 80% of budget revenues. Therefore, both industrial and non-industrial activities related to this sector are responsible for a significant share of the ODS consumed in Algeria and consequently are quantitatively important sources of the ODS waste generated in the country;

- Sector's country-specific structure: the oil & gas sector in Algeria is structured around Groupe Sonatrach, the state-owned oil company which plays a key role in both upstream and downstream oil and gas operations. Under the umbrella of Groupe Sonatrach's operations, a significant number of sub-contractors spamming from large enterprises to small and medium ones also develop their activities.

- As shown in Section 3.7. of this project document, Groupe Sonatrach has a well-established waste management system in place, which allows all companies undertaking activities related to this sector to benefit from it and channel their hazardous waste to Groupe Sonatrach's waste storage facilities.

5.1. CFC Banks in the Oil and Gas Sector

The companies in the oil and gas sector in Algeria have in total 45.75 metric tonnes available for disposal. This stock consists of CFCs which the companies had bought prior to 1st January 2010 for the servicing of the old RAC equipments in their factories as well as townships for employees. The detailed list of stocks with their related compositions and locations can be found in Annex 1 to this project document.

5.2. CFC Banks in Other Sectors

There are two other areas of activity in Algeria which have CFCs available for disposal: ODS importers and maintenance workshops. One of the ODS importers (Linde) reported having 13.32 tonnes of CFC 11 imported for sale to foam manufacturers which had become obsolete as a consequence of final users' conversion to non-CFC based technologies. The workshops which are responsible for the maintenance of the RAC equipments have also reported amounts of CFC stocks for disposal. The detailed list of stocks with their related compositions and locations can be found in Annex 2 to this project document.

5.3. Total Amount of ODS Waste for Disposal in the Project

The following table summarizes the data collected in Annexes 1 and 2, showing the quantities of the ODS stocks to be destroyed in the context of this project:

Table 6: Total Quantities of ODS Waste Available for Disposal in Algeria (as of 1 October 2013)

ODS type	Oil and gas sector (kg)	Other sectors (kg)	Sub-total (kg)	Percentage of total (%)
R11	7,067	14,035	21,102	34.54%
R12	25,308	787	26,095	42.71%
R13	-	29	29	0.05%
R502	13,378	490	13,868	22.70%
TOTAL (MT)	**45,753**	**15,341**	**61,094**	**100%**

6. PROJECT STRATEGY

During project preparation, various strategies were discussed and assessed by relevant stakeholders in the country and UNIDO, namely:

1. Destruction in a hazardous waste disposal facility in the country;

2. Destruction in a cement kiln in the country;

3. Export for destruction in a facility in the United States in order to get carbon credits under the voluntary market;

4. Export for destruction in a facility without receiving carbon credits under the voluntary market.

In order to ensure sustainability of the project beyond implementation of the MLF-funded project, relevant stakeholders and UNIDO agreed on the need to choose a project strategy involving destruction in a facility located in the country. In principle, this would apply to both Strategies #1 and #2 above; regarding the former, it is worth noting that Algeria currently has no hazardous waste disposal facility in the country, and although there are plans to set up such a facility, it would not be operational in the timeframe when this project is scheduled to be implemented.

For this reason, a decision has been made to undertake destruction of the collected ODS stocks in an adequate cement kiln located in Algerian territory. The following are the advantages of ODS waste destruction in cement kilns compared to other approved destruction technologies:

- Low cost of modification compared to the cost related to the installation of a new facility in the country;

- Ease of modification / upgrade;

- Large destruction capacity;

- The acidic by-products (HCl and/or HF) of ODS destruction are neutralised by the alkaline environment (calcium compounds needed to manufacture cement) in the kiln, without the need of any additional neutralisation equipment.

In order to identify those cement kilns where ODS destruction activities can be undertaken in Algeria, a survey was developed to assess the facilities against 50 criteria taken into consideration based on the code of housekeeping; such an assessment followed a semi-quantitative approach, providing a score for each facility and each criteria as follows:

- Meet the requirement: 3 points;
- Partially meet the requirement: 2 points;
- Do not meet the requirement but it is subject to do so upon modification: 1 point;
- Do not, and cannot, meet the requirement: 0 points, or no further consideration should the criterion be of paramount importance to ensure adequate ODS destruction.

An evaluation table was developed to compare the results achieved for each of the assessed cement kilns. The evaluation showed that one of the assessed cement kilns (Lafarge facility in M'sila) performed significantly better than other assessed facilities. For this reason, it was agreed that destruction activities in the context of this project would be undertaken in the above-mentioned facility.

7. PROJECT IMPLEMENTATION

Implementation of the project will involve the following steps:

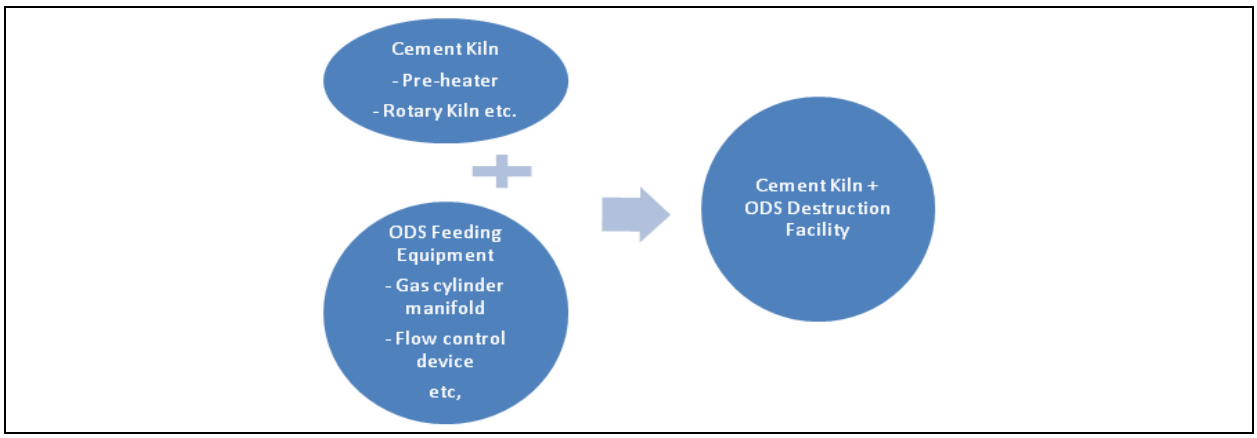
1. Modification of the cement kiln;
2. Pilot testing;
3. Quality testing and aggregation of the 61.09 tonnes of CFCs from all sources;
4. Transportation of the ODS stocks to the cement kiln;
5. Destruction;
6. Verification of destroyed ODS amounts and reporting.

7.1. Modification of the Cement Kiln

Cement kilns can be modified or retrofitted to destroy ODS in them with high efficiency, especially due to the high temperatures that are prevalent in them. However, flue gas and stack monitoring systems need to be installed and the emissions monitored accordingly.

The following diagram represents the process of modifying existing cement kilns to handle ODS:

Figure 2: Cement Kiln Retrofitting to Destroy ODS



7.2. Pilot Testing

7.2.1. Approach

This stage of the project implementation is of paramount importance in order to ensure adequate disposal of the bulk of ODS waste at a later stage. The pilot tests will be designed to ensure that

the facility meets the following requirements:

- High ODS removal capacity;
- The operational parameters should be set in a way to minimize the generation of decomposition products like chlorides and fluorides;
- Proper treatment of chlorides, fluorides and other toxic wastes in exhaust gases, effluent water, ashes etc.

During this stage of the project implementation, special attention will be paid to the following:

- Flue gas and stack monitoring systems in the cement kiln have to be checked and, if necessary, re-engineered in its design parameters to ensure that relevant emissions monitored accordingly;

- The input of ODS into the facility needs to be controlled to avoid chlorine deteriorating the quality of the cement produced during ODS destruction activities.

If the test results are not satisfactory, proper action has to be taken to ensure that all detected problems are rectified, followed by another pilot run.

7.2.2. Technical Aspects of the Pilot Tests

The Technology and Economic Assessment Panel (TEAP) of the Montreal Protocol set up a Task Force on Destruction Technologies (TFDT). The Task Force, in its report in 2002, established destruction efficiency and air emissions recommendations for ODS destruction.

For determining whether facilities are operating with minimal impacts to human and environmental health while destroying ODS, the "TEAP recommendations" include specifications for the following parameters:

- Destruction and Removal Efficiency (DRE);

- Emissions of Polychlorinated Dibenzodioxins (PCDDs) and Polychlorinated Dibenzofurans (PCDFs)/Dioxins and Furans, Hydrochloric Acid (HCl), Chlorine (Cl_2), Hydrofluoric Acid (HF), Hydrobromic Acid (HBr), Bromine (Br_2), Particulate Matter (PM), and Carbon Monoxide (CO);

- Technical Capability when destroying ODS on a commercial scale.

The following table presents the DRE and emission limits recommended by the TEAP (for concentrated sources).

Table 7: Destruction Efficiency and Air Emission Limits Recommended by TEAP for ODS Destruction

Efficiency/Emission	Limit[a]
DRE (%)	99.99[b]
PCDD/PCDFs (ng/m^3)	0.2
HCl/ Cl_2 (mg/m^3)	100
HF (mg/m^3)	5
HBr/ Br_2 (mg/m^3)	5
Particulate Matter (mg/m^3)	50
CO (mg/m^3)	100

Source: Task Force on Destruction Technologies, TEAP (2002)
[a] Emission limits are expressed as mass per dry cubic meter of flue gas at 0°C and 101.3 kPa corrected to 11 percent O_2.
[b] A DRE of 95 percent is required for the destruction of dilute sources of ODS (i.e., foams containing ODS).

Measurement of the ODS destruction efficiency during the pilot tests will be done as follows:

- The ODS concentration in the exhaust gas, and the quantity of ODS fed for destruction should be identified. The ODS destruction can be verified based on Removal Efficiency (DRE), shown below:

$$DRE = \frac{N_1^{in} - \sum_i N_i^{out}}{N_1^{in}}$$

  Where N_1^{in} is the number of moles of ODS fed into the system and N_i^{out} is the number of moles of i^{th} type of ODS that is released into the atmosphere.[2]

- ODS removal efficiency can be checked by the ODS concentration in the exhaust gas or decomposition efficiency. The ODS concentration in the final exhaust gas should be 1 ppm or lower or the decomposition efficiency shall be 99.99% or higher;

- The ODS destruction efficiency will be checked at appropriate frequencies.

7.3. Quality Testing and Aggregation

The ODS waste to be destroyed in the context of this project has been collected through the existing collection activities in the country, as detailed in Section 3.7., namely:

- For ODS stocks collected from the various uses linked to the oil & gas sector in Algeria, collection takes place through the management system for chemical products and wastes operated by the Directorate for the Supply and Management of Stocks (DGAS), which belongs to the Sonatrach External Industries Activities Holding;

- For other sectors, collection takes place through the established recovery and recycling centers, training centers and service workshops of refrigeration equipment.

[2] Formula recommended by TEAP 2002.

In order to increase the cost-efficiency of the destruction activities, the project plans to aggregate[3] the identified stocks at a reduced number of locations in the country; the objective is to reduce the transportation costs by optimizing transportation loads on their way to the identified destruction facility. With regard to the selection of the aggregation facility, two options have been assessed in this regard:

- Aggregation prior to transport of the ODS waste to the destruction facility;
- Aggregation at the destruction facility.

The second option is more cost efficient due to the fact that it would benefit from already-existing infrastructures such as Sonatrach's central storage facility located in Hassi-Messaoud, in Ouargla's prefecture; by contrast, the first option would require setting up an infrastructure to undertake the aggregation activities at plant level.

It is worth noting that Sonatrach's central storage facility should not be taken as the sole aggregation facility for the project; its location makes it very convenient as aggregation point for stocks coming from the oil and gas facilities in the south; however, for ODS stocks collected in the urban areas of the north, transportation to Hassi-Messaoud would not be efficient, given the fact that the selected destruction facility in M'sila is much closer than Sonatrach's central storage facility. For this reason, a second aggregation facility has been selected in the Algiers area; such facility will be the recovering centre established by the company Aures Gaz Industriels in the prefecture of Algiers.

In this context, the project will support the identified aggregation facilities by providing them with the necessary equipment (ISO cylinders) and supporting it in the analysis of the composition of the stocks.

In order to prepare the designated facility for the aggregation activities, the project will provide:

- 1 ISO container (10,000 liters);
- 10 ISO cylinders (950 liter each);
- 6 ISO cylinders (200 liter each).

Prior to aggregation, testing of the composition of the various cylinders arriving at the aggregation facilities will be done at the facilities themselves. This will be done with a double objective:

- Check that the content of the cylinders corresponds to that reported by the sources of the ODS stocks;
- Aggregate ODS amounts according to similarities in composition and purity.

[3] The concept "aggregation" as defined in this project document cannot be linked to "collection" as defined in Annex VIII of document UNEP/OzL.Pro/ExCom/58/53. Collection takes place outside the scope of the project, in the context of the various collection schemes already in place as detailed in Section 3.7. In the context of this project, aggregation is understood as a first stage of the transportation activities which aims at minimizing transportation costs.

The latter is especially important given the fact that, for destruction in cement kilns, purity levels above 95% are recommended for the ODS stocks to be destroyed in order to avoid impurities which, upon thermal incineration, may degrade the cement quality by affecting the pH content inside the kiln. However, in the context of this project, it is worth noting that the above-mentioned purity level is not a requirement given the fact that the feed rate of ODS waste is very small compared to the throughput of the kiln. Notwithstanding this, an effort will be made during the aggregation activities in order to maximize purity to the extent possible.

7.4. Transportation of the ODS stocks to the cement kiln

The transportation distances to be covered during the project implementation are determined by the following factors:

- Location of the established collection points;
- Location of the selected aggregation facilities;
- Location of the selected destruction facility;
- Existing road network.

A clear identification of the distances to be covered is needed in order to have an accurate estimate of transportation costs; in this regard, the following has to be noted:

- Approximately 75% of the ODS stocks identified for destruction under this project will have to be transported from their respective point of origin to Sonatrach's central storage facility in Hassi-Messaoud. On average, the distance to be covered under this tranche will be about 880 kilometers;

- The distance from the aggregation facility in Hassi-Messaoud to the cement kiln in M'Sila is 642 kilometers;

- The remaining 25% of the ODS stocks identified for destruction under this project will have to be transported from their respective point of origin to the recovering centre established by the company Aures Gaz Industriels in the prefecture of Algiers. In this case, the distance to be covered under this tranche will be about 175 kilometers;

- The distance from the aggregation facility in the prefecture of Algiers to the cement kiln in M'sila is 240 kilometers.

7.5. Destruction

7.5.1. Description of the Destruction Facility

The selected cement kiln where destruction activities in the context of this project will be undertaken is located in the prefecture of M'sila which is in central Algeria some 240 kilometers from Algiers. More specifically, the plant is located about 25 kilometers north of M'sila and 7

kilometers south east of Hamman Dalaa. The plant is well communicated by road as it is midway between two national roads, RN 45 (Bourdj Bourerdj – M'sila) and RN 60 (El Mheir – M'sila).

The plant is the biggest installed capacity in Algeria. It has a licence for the production of 4 million tonnes of clinker and has produced 4.8 million tons of cement in 2012.

The main operational parameters are as follows:

- Temperature in the precalciner: 880-920 ° C
- Kiln temperature can reach 960 ° C at the inlet
- Clinkerisation temperature is about 1450 ° C

With regard to emissions during normal operation, the following has to be noted:

- The volume of output gas is between 450 000 and 600 000 Nm^3 / h

- Concentration of carbon monoxide at the outlet of exhaust gas: during the last measurements, plant operators monitored the stack output CO concentration at the following values:

  - Stack kiln 1 = 86.8 ppm or 249 mg/Nm^3 at 11% O^2 ref.
  - Stack kiln 2 =161.2 ppm or 366 mg/Nm^3 at 11% O^2 ref.

- Concentration of oxygen at the outlet of the incinerator or the secondary combustion chamber:

  - Exit of the kiln: 4 - 5 %
  - Exit of the precalciner: 1.5 - 2 %
  - At the stack: 2.5 - 3%

The plant is currently investing in a continuous monitoring system for the dust. A restarting of the continuous monitoring system of kilns stacks is also underway. Regular spot measurements are made for the following: dust, SOx, NOx and CO.

7.5.2. Operational Details during Destruction Activities

Operational Control Conditions

The facility will be operated in a similar manner to ordinary cement production so that successful destruction of ODS and safe control of exhaust gas are ensured. ODS feeding will be undertaken as follows:

- The flow rate of ODS to be fed will be determined taking into account the capacity of the exhaust gas treatment system and the influence on quality of products, or cement clinker;

- ODS will be sprayed at the position close to the burner before the kiln under the normal operation control conditions;

- Equipment for feeding ODS will consist of an oil filter, a flow meter and other relevant device to feed ODS quantitatively;

The following will be done to monitor the operational control conditions during destruction activities:

- Measurement of the following items:

  - Physical conditions at the specific points of the kiln where ODS are destroyed, mainly temperature of combustion;
  - Exhaust gas volume after treatment;
  - Concentration of carbon monoxide (CO) at the outlet of exhaust gas;
  - Concentration of oxide (O_2) at the outlet of the incinerator or the secondary combustion chamber;

- Measurements will be pursuant to the procedures set in the applicable laws and regulations and the related standards;

- Measurements should be conducted on a daily basis.

Measurement of Toxic Substances

During ODS destruction activities, plant operators will take the following actions to measure the quantities of toxic substances released:

- Verification that the exhaust gas emitted during ODS destruction activities meet the standards specified by the applicable laws and regulations. The following items which could generate or increase through the ODS destruction shall be measured:

  - Concentration of hydrogen chlorides (HCl) in the final exhaust gas;
  - Concentration of hydrogen fluorides (HF) in the final exhaust gas;
  - Concentration of dioxins in the final exhaust gas;
  - Content of fluorides in effluent water;
  - Concentration of hydrogen ions in effluent water.

- The measurements should be pursuant to the procedures set in the applicable laws and regulations and related standards;

- Measurements will be conducted at least once per year in addition to those required in the applicable laws and regulations;

7.6. Verification of Destroyed ODS Amounts and Reporting

The Project Management Unit established during the implementation of the project (see Section 7.8.) will require the cement kiln where destruction will take place to provide a destruction verification document, which documents that the materials entering the facility will be destroyed. Copies of these verification documents will also be submitted to the points of origin of the ODS waste. This verification document must include:

- Name and address of the destruction facility;
- Date(s) of destruction of the received ODS waste (in case of destruction in several batches, an indication of the amounts destroyed in each batch will be included);
- An indication of the fact that the ODS waste has been destroyed with a DRE of at least 99.99 per cent as established by TEAP;
- Signature of a person entitled to legally represent the cement kiln, as well as of an accredited independent industry leading inspection, verification, testing and certification service.

Upon completion of the project activities focused on achieving the destruction of the ODS waste, the PMU will be responsible for the preparation of a final report detailing all activities of the project and lessons learned. Such a report will be endorsed by the Algerian Government and UNIDO, and will be shared with all stakeholders for their understanding.

The proposed project does not contemplate the possibility of generating carbon credits from the destruction activities to be undertaken during implementation of the project; however, revenues from carbon financing are considered as one of the components of the financing mix that will contribute to ensure long-term sustainability of ODS destruction activities in the country beyond implementation of this project, as described in Section 8 of this project document.

With this in mind, implementation of the project will provide the framework to set up a code of good practices in line with the requirements of the applicable voluntary carbon market schemes which, from the perspective of verification and reporting activities, will include the following:

- Documentary evidence shall be provided to verify the origin of the destroyed ODS waste. Such evidence may consist of shipping manifests, bills of lading, other commercial documentation, and addresses of households, commercial premises and other evidence of collection of the products;
- Where ODS waste is recovered from products that have been imported specifically for their disassembly, destruction facility shall request documentary evidence, such as shipping manifests, bills of lading and evidence of collection of the products in the originating country, to demonstrate the origin of such products;
- Where ODS waste consists of refrigerant mixtures containing substances whose destruction does not generate carbon credits, the destruction facility shall develop a

methodology to determine the amount of ODS contained in such mixtures. This shall be achieved using a mass balance analysis and/or other approach (based on conservative assumptions), as appropriate to the nature and scale of the project.

In addition to this, UNIDO will apply its experience in previously approved ODS waste destruction projects to advise the Government of Algeria on how to set up an electronic verification system with the following functionalities:

- Registry of companies / facilities owning ODS waste (points of origin) with an indication of stored amounts and amounts processed for disposal;

- Registry of enterprises carrying out ODS waste collection;

- Database on ODS destruction data, such as destroyed amounts, regular inspections of the destruction facility and storage sites.

7.7. Policy Support

Implementation of the project will contribute to improve existing regulations and policies related to, and affecting ODS waste destruction, and to develop new ones if needed. In this regard, two main areas of work have been identified during project preparation:

- As explained in Section 3.7. of this project document, Algeria currently lacks a nation-wide collection system for ODS waste despite the existing law requesting recovery, recycling, reclamation and destruction of ODS waste. Collection activities are currently being undertaken by various stakeholders working in different sectors and with varying degrees of success in their operations: Groupe Sonatrach's management system for chemical products has proved to be effective in terms of ODS waste collection, whereas other initiatives have collected limited amounts. In addition to the lack of a homogeneous collection system, it is worth noting that the existing initiatives lack coordination among each other.

  In this context, the project will act as a framework under which France and UNIDO will bring their expertise to assist the Government of Algeria in developing a national waste collection system building on the experience of Groupe Sonatrach, in line with existing laws mandating ODS waste collection in the country.

- Algerian law states that registered companies who wish to import substances included in the list of hazardous materials and chemicals must apply for a permit through the Ministry of Energy and Mines. Such provision and the specificities of its application means that imports of ODS waste for destruction are *de facto* unlikely, which poses a challenge to using the destruction infrastructure set up in Algeria for disposal of ODS waste originated in other countries in the region.

  In this context, France and UNIDO will set up a consultative process to assess the possibility of making special provisions to allow the import of unwanted ODS into the country for the purpose of destruction.

7.8. Project Management and Implementation Schedule

A Project Management Unit (PMU) for the project execution will be established in Algeria for tracking the movement of the ODS from the sources to the destruction facility, testing and purification of the ODS and final destruction. This PMU should be setup by the Algerian NOU and by UNIDO, but would also include representatives from the various sectors, which are contributing to the ODS stocks, as well as from the destruction facility.

The PMU would collect and verify of all documentary evidences from all possible sources as well as report on the project progress to both the NOU and UNIDO. The role of the PMU would be key to the preparation of the final report (as mentioned above). The PMU can also continue functioning, with membership expanded to include representatives from all stakeholder groups who have unwanted ODSs in Algeria, in the future to account for all future ODS destruction activities in Algeria.

The following table shows the time schedules of the various implementation steps over a two-year period:

Table 8: Implementation Schedule

Activities		Duration of Project (Project Months)																							
Completion of major activities		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24
1	Preparation of an implementation plan for the modification of the cement kiln																								
2	Preparation of engineering designs and modification of the cement kiln																								
3	Pilot tests to be done in the modified kiln																								
4	Quality testing and aggregation of the 61.09 tonnes of OSD waste from all sources																								
5	Transportation of the tanks to the cement kiln																								
6	Final destruction of the stocks and issuance of a final destruction certificate																								
7	Preparation of a final report detailing all activities of the project and lessons learned																								

8. PROJECT SUSTAINABILITY AND DEMONSTRATION VALUE

The implementation of this project will contribute to the long-term sustainability of ODS destruction activities in Algeria by contributing to such sustainability from a variety of angles, as detailed below.

a) Technical factors contributing to sustainability of ODS destruction efforts in Algeria

Destruction in a cement kiln ensures a destruction capacity which is large enough to handle the ODS waste generated in the country, and even that which could arrive at the facility from neighbouring countries. Taking into account that the facility's main activity is not ODS waste destruction but cement production, the sustainability and profitability of the facility's operation is not subject to a regular inflow of ODS waste. Even though in theory the operation of the cement kiln may be halted due to low demand of cement in the country, this is quite unlikely due to the current demand trends influenced in the surge in investments in public infrastructure and the plans to increase cement production capacity through the construction of new cement kilns. Even in the case of such a halt occurring for a limited period of time, this would not have an impact on ODS destruction in the cement kiln as the batch-based destruction scheme could be easily adapted at point of aggregation level to avoid accumulation of ODS waste in the cement kiln's storage facilities.

b) Contribution to the effective enforcement of existing legislation addressing ODS disposal

Currently Algerian laws make the disposal of ODSs mandatory, since they have been classified under the special hazardous category called "Déchets spéciaux dangereux" or Special Dangerous (SD). As per the existing laws, hazardous substances have to be mandatorily disposed in an environment friendly way, which thus applies for the CFCs as well. Since there is no hazardous waste management facility (e.g. thermal rotary kilns) in Algeria, this law could not be enforced for the CFCs so far. In addition, export of CFCs for destruction is allowed by law, but seriously hampered due to licensing requirements, which so far has not allowed the owners of the stock to export their materials for destruction outside the country.

This pilot project provides Algeria with the opportunity not only to have a facility which can destroy the ODS in an environmentally friendly manner within the country, but also to enforce the law to mandatorily destroy the unwanted ODS. Once the project is implemented, the owners of the stocks will be moved to pay for the testing, transportation and destruction of their stocks. This process would only need the support of the Algerian government to fix the prices of these activities. This will also provide Algeria with an opportunity to plan for future disposal operations involving unwanted HCFCs, since their phase-out has also started from 1st January 2013.

During implementation of this project, informative sessions will be organized by the National Ozone Unit to inform all relevant stakeholders about the fact that the Algerian laws mandate destruction of ODS. So far, due to unavailability of a suitable facility and the difficulties to obtain a license to export ODS waste for destruction purposes, this regulation has not been

enforced until now, but implementation of the project would contribute to create the adequate enabling environment to enforce the obligation to destroy ODS waste.

c) Awareness raising at stakeholder and civil society level

A thorough stakeholder engagement process will be undertaken in order to ensure a cooperative environment in the setting up of an ODS disposal infrastructure in the country. Concerns from environmental groups need to be addressed by explaining the environmental integrity of the process and that the resultant products, if handled carefully, would not violate any regulatory or emission norms, apart from having no health and safety implications.

d) Facilitation of access to carbon financing for ODS destruction upon completion of the project

Upon completion of the project, revenues from carbon financing should be considered as one of the components of the financing mix that will ensure sustainability of Algeria's efforts in undertaking environmentally friendly ODS waste disposal.

There are currently two international carbon market protocols that are important while discussing the issue of generating carbon financing from ODS destruction projects. There is a proven track record of projects that have gained carbon credits by destroying ODS stocks by applying two voluntary standards: the Verified Carbon Standard (VCS), and the Climate Action Reserve (CAR); both standards have robust ODS destruction methodologies in place.

As it has been stated above, this project will support Algeria to develop local destruction capacity for ODS waste disposal. For ODS waste to be destroyed in the selected facility in Algeria, the only applicable voluntary carbon market scheme is VCS, due to the fact that CAR only accepts ODS destruction activities undertaken in certified facilities located in the United States. Implementation of the project will provide the framework to set up a code of good practices in line with the requirements of the VCS methodology with specific emphasis in verification and reporting activities, as detailed in Section 7.6. of this project document.

Upon completion of the project, the cement kiln will be in a position to obtain carbon credits for future destruction activities due to the experience obtained (through the implementation of this project) in terms of project cycle management for registration under VCS. This will pull destruction prices down under any of the following two scenarios:

a) Should ownership of the ODS stocks remain under the points of origin throughout the project cycle, they will obtain a revenue through carbon credit sales, thus partially compensating for the costs incurred in undertaken destruction of the collected ODS waste; in this case, the role of the destruction facility from the point of view of the carbon financing is that of a mere service provider;

b) Should ownership of the ODS stocks be transferred to the destruction facility, this will be the beneficiary of the revenue obtained from carbon credit sales. Under such a scenario, the destruction facility is the active stakeholder in the carbon financing scheme, and both government and companies owning the stocks will be in a position to negotiate a reduced destruction price.

e) Facilitation of increased co-financing from owners of ODS stocks in the oil & gas sector

Implementation of the project and related lessons learned will contribute to encourage owners of ODS stocks to co-finance ODS destruction activities in the country upon completion of this project. Stocks in the oil & gas sector come from facilities where the government-owned Groupe Sonatrach partners with multinational companies which are engaged in exploration, refining and export of petroleum from Algeria to the rest of the world. There are multiple benefits for the companies to co-finance the disposal of these stocks, some of which are listed below:

- Sustainability: ODS disposal can help companies in reducing their carbon footprint as ODS stocks could eventually leak into the atmosphere increasing their footprint;

- Environmental responsibility: The companies, many of which are multinationals, supply oil and natural gas worldwide for use as fuels, thus contributing to the global CO_2 emissions. The disposal of the CFCs would definitely account for some reduction in those CO_2 emissions;

- Corporate Social Responsibility (CSR): companies can fulfil their CSR obligations by diverting a part of CSR funds for the disposal of ODS. This would help them earn a good name in Algeria and provide examples for other companies to follow.

- Emission Compliance: disposal of CFCs can generate carbon credits (CRTs) which could be purchased by multinational oil companies operating in the American market (especially in California) and in Europe and with subsidiaries in Algeria, to comply with their emission norms.

- Environmental synergy: in case the funds for ODS disposal come from the companies, then this would be an unprecedented instance in the world of a synergy created between the Corporate sector, the Montreal Protocol and the Carbon Markets.

f) Establishment of a ODS waste disposal infrastructure that can be replicated by other countries in the North African Region

Given the fact that no country in the North African region has a facility available for destruction of ODS waste, the project has an obvious regional demonstration value. Implementation of the project will allow the Algerian NOU and UNIDO alike to create a wealth of knowledge that will be of great use to other countries in the region in order to set up ODS waste disposal infrastructures.

Knowledge sharing will be articulated in various ways, mostly through activities in the context of Regional Network Meetings; Algeria belongs to the African Network, so project-related presentations at meetings of the network will also be useful for Sub-Saharan African countries, and will complement lessons learned from the MLF-funded Technical Assistance project on ODS waste destruction for five countries in the region (Burundi, Cameroon, Central African Republic, Congo and Guinea).

9. PROJECT BUDGET

9.1. Total Budget

The total project budget is presented in the following table:

Table 9: Total Project Budget

Cost Item	Cost (USD)		
	MLF	Co-financing	Total
Modification of the cement kiln	0	129,150	129,150
Pilot testing	31,500	10,500	42,000
Quality testing and aggregation	79,905	22,260	102,165
Transportation	87,463	40,835	128,297
Destruction	391,191	0	391,191
Additional activities	35,000	0	35,000
TOTAL (USD)	**625,059**	**202,745**	**827,803**

The following table shows the break-down of funding requested to the Multilateral Fund:

Table 10: Project Funding under the Multilateral Fund

Cost Item	Cost (USD)
Project funding requested to the Multilateral Fund	**625,059**
-France	250,000
-UNIDO	475,059
Project support costs	**58,754**
-France 13%	32,500
-UNIDO 7%	26,254
Total requested from the Multilateral Fund	**683,813**

The project funding requested to the Multilateral Fund is 625,059 USD (excluding support costs), with a total cost efficiency of 11.20 USD/kg of ODS waste.

Project funding under the Multilateral Fund (USD)	**625,059**
Unit cost of disposal (USD/kg)	**10.23**

9.2. Detailed Budget Breakdown

The following tables show the detailed budget for each of the project components:

Table 11: Project Budget – Modification of the Cement Kiln

Cost Item	Units	Unitary Cost (USD)	Cost (USD)	
			MLF	Co-financing
Project Preparation	1	20,000	0	20,000
Modification of the facility	1	78,000	-	78,000
Training of personnel	1	20,000	-	20,000
Project monitoring	1	5,000	-	5,000
Contingency (5%)	-	-	-	6,150

	MLF	Co-financing	TOTAL
Modification of the Cement Kiln	0	129,150	129,150

Table 12: Project Budget – Pilot Testing

Cost Item	Units	Unitary Cost (USD)	Cost (USD)	
			MLF	Co-financing
Pilot test	1	30,000	30,000	-
Preparation of Operation Manuals and Standards Operational Procedures	1	10,000	-	10,000
Contingency (5%)	-	-	1,500	500

	MLF	Co-financing	TOTAL
Pilot Testing	31,500	10,500	42,000

Table 13: Project Budget – Quality Testing and Aggregation

Cost Item	Units	Unitary Cost (USD)	Cost (USD)	
			MLF	Co-financing
Testing of stocks	30	200	6,000	-
ISO container	1	20,000	20,000	-
ISO 950 liter	10	4,500	45,000	-
ISO 200 liter	6	850	5,100	-
Tools	2	4,000	-	8,000
Staff time	72	100	-	7,200
Documentation, labelling	-	-	-	6,000
Contingency (5%)	-	-	3,805	1,060

	MLF	Co-financing	TOTAL
Quality Testing and Aggregation	79,905	22,260	102,165

Table 14: Project Budget – Transportation

Cost Item	Units	Unitary Cost (USD)	Cost (USD)	
			MLF	Co-financing
Transportation	61,094	2.00	83,298	38,890
Contingency (5%)	-	-	4,165	1,945

	MLF	Co-financing	TOTAL
Transportation	87,463	40,835	128,297

Table 15: Project Budget – Destruction

Cost Item	Units	Unitary Cost (USD)	Cost (USD)	
			MLF	Co-financing
Purification and testing of ISO containers at destruction facility	6	1,000	6,000	-
Destruction	61,094	6	366,563	-
Contingency (5%)	-	-	18,628	-

	MLF	Co-financing	TOTAL
Destruction	391,191	0	391,191

Table 16: Project Budget – Additional Activities

Cost Item	Units	Unitary Cost (USD)	Cost (USD)	
			MLF	Co-financing
Policy support	1	15,000	15,000	-
Project management	1	20,000	20,000	-

	MLF	Co-financing	TOTAL
Additional Activities	35,000	0	35,000

9.3. Project Co-Financing

The total amount of funds provided in terms of co-financing by various project stakeholders accounts for a total of 202,745 USD.

The project secures co-financing from two main sources:

- Modification of the cement kiln will be undertaken through a dedicated technology fund for which French companies are eligible. During project preparation, this co-financing option has been assessed by the French Development Agency and UNIDO as suitable for the nature of the activities to be undertaken under this project component. Group Lafarge, in its capacity as eligible company to apply for this fund will be responsible for securing the amount detailed in the budget breakdown above;

- Facilities selected as points of aggregation in the context of this project will provide both technical and human resources under this project component.

ANNEXES

Annex 1: CFC Stocks in the Oil & Gas Sector in Algeria

(As of 1 October 2013)

SONATRACH – Functional Area: Transportation and Pipelining

Region	CFC type	Capacity of cylinders (kg)	Sub-total quantity (kg)
RTE	R12	11	3
	R502	100	17
RTH	R12	13.6	4
	R502	13.6	12
RTI	R502	23	138
	R502	64	64
DML	R12	13.6	108.8
DMB	R12	13.6	45
	R502	22.5	90
RTO	R12	13.6	1,656
RTC	R12	13.6 and 12	146
	R502	13.6 and 12	39.2
GPDF	R12	13.6	10
	R11	13.6	5
	Sub-Totals (kg)	**R11**	**5.0**
		R12	**1,972.8**
		R502	**360.2**
		TOTAL (kg)	**2,338.0**

SONATRACH – Functional Area: Upstream Operations

Division	CFC type	Capacity of cylinders (kg)	Sub-total quantity (kg)
Drilling	R12	13.6	8
Laboratories	R12	n/a	13.5
	R11	n/a	13.5
	R502	n/a	13.5
Production	R12	13.6, 26 and 64	16,218.6
	R11	13.6, 270 and 280	4,178.8
	R502	13.6 and 23	8,624.7
	Sub-Totals (kg)	**R11**	**4,192.3**
		R12	**16,240.1**
		R502	**8,638.2**
		TOTAL (kg)	**29,070.6**

SONATRACH – Functional Area: Development and Exploration, Natural Gas Liquefaction

Complex	CFC type	Capacity of cylinders (kg)	Sub-total quantity (kg)
GL1Z	R12	13.6	108.8
	R11	13.6	258.4
GL4Z	R12	13.6	40.8
RA1Z	R12	13.6	54.4
GP1Z	R12	13.6	40.8
	R11	13.6	13.6
GL1K	R12	26	52
	R11	13.6	149.6
Sub-Totals (kg)		**R11**	**421.6**
		R12	**296.8**
		TOTAL (kg)	**718.4**

SONATRACH – Functional Area: Branches

Company	CFC type	Capacity of cylinders (kg)	Sub-total quantity (kg)
ENGTP	R12	13.6	203.28
	R11	13.6	13.6
ENAFOR	R12	13.6	2,380.0
	R11	13.6	2,434.4
	R502	13.6	2,964.8
ENTP	R12	13.6	3,712.8
	R502	13.6	1,305.6
ENSP	R12	13.6	13.6
ENGAGEO	R502	13.6	109
ENIP	R12	13.6	190
Sub-Totals (kg)		**R11**	**2,448.0**
		R12	**6,499.7**
		R502	**4,379.4**
		TOTAL (kg)	**13,327.1**

SONATRACH – PEC Directorate

Complex	CFC type	Capacity of cylinders (kg)	Sub-total quantity (kg)
CP1K	R12	13.6 and 22.5	298.7
Sub-Totals (kg)		**R12**	**298.7**
		TOTAL (kg)	**298.7**

Annex 2: CFC Stocks in Other Sectors in Algeria

(As of 1 October 2013)

Organisation	CFC type	Capacity of cylinders (kg)	Number of cylinders	Quantity (kg)
ALLAM Mostapha (Workshop)	R11	13.6	1 Cylinder	14
	R12	13.6	1 Cylinder	14
	R502	13.6	1 Cylinder	14
			SUB-TOTAL (kg)	**42**
KERHAR Mohamed (Workshop)	R11	13.6	1 Cylinder	14
			SUB-TOTAL (kg)	**14**
Drouche Djemal (Workshop)	R12	13.6	1 Cylinder	10
			SUB-TOTAL (kg)	**10**
Naimi Rachid (Workshop)	R12	13.6	6 Cylinders	82
			SUB-TOTAL (kg)	**82**
Ouarth Mohamed (Workshop)	R12	13.6	50 Cylinders	680
	R11	13.6	30 Cylinders	408
	R502	13.6	35 Cylinders	476
			SUB-TOTAL (kg)	**1,564**
SONELGAZ(end user)	R11	13.6	1 Cylinder	2
	R12	13.6	1 Cylinder	1
	R13	12 and 17	2 Barrels	29
			SUB-TOTAL (kg)	**32**
SPPO (end user)	R11	13.6	20 Cylinders	272
			SUB-TOTAL (kg)	**272**
LINDE Gaz Algérie (importer)	R11	270	1 barrel	270
	R11	270	48 Barrels	12,960
	R11	13.6	7 Cylinders	95
			SUB-TOTAL (kg)	**13,325**
			TOTAL (kg)	**15,341**