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COMITE EXECUTIF  
DU FONDS MULTILATERAL AUX FINS  
D'APPLICATION DU PROTOCOLE DE MONTREAL  
Soixante-dix-neuvième réunion  
Bangkok, 3 – 7 juillet 2017

**RAPPORT SUR LES PROJETS COMPORTANT DES EXIGENCES PARTICULIÈRES  
DE REMISE DES RAPPORTS**

1. Ce document présente les projets pour lesquels des rapports particuliers ont été demandés lors de réunions antérieures et les projets exigeant l'attention du Comité exécutif. Il est divisé comme suit :

- Partie I : Plans de gestion de l'élimination des HCFC (PGEH)/plans de gestion de l'élimination de la production de HCFC (PGEPH) ;
- Partie II : Projets d'élimination définitive des SAO
- Partie III : Projets sur les refroidisseurs
- Partie IV : Autres projets

2. Chaque partie propose un court rapport périodique, ainsi que les observations et recommandations du Secrétariat.

## **Partie I : PGEH/PGEPH**

3. Des rapports particuliers sur la phase I des PGEH de l'Arménie<sup>1</sup>, du Chili<sup>2</sup>, de la Chine<sup>3</sup>, de Cuba<sup>4</sup>, de l'Indonésie<sup>5</sup>, de la République islamique d'Iran<sup>6</sup> et du Viet Nam<sup>7</sup>, et sur la phase I des PGEPH de la Chine<sup>8</sup> ont été demandés pour la 79<sup>e</sup> réunion. Les rapports n'ont été remis que pour trois pays : Arménie, Chili et Chine.

4. Le Comité exécutif pourrait souhaiter exhorter les agences d'exécution concernées de remettre les rapports en instance sur la phase I des plans de gestion de l'élimination des HCFC pour Cuba, l'Indonésie, la République islamique d'Iran et le Viet Nam à la 80<sup>e</sup> réunion.

### Retour des soldes de la vente d'équipement acheté pour SAGA en Arménie (PNUD)

#### *Contexte*

5. La phase I du PGEH approuvé pour l'Arménie<sup>9</sup> comprenait un projet d'investissement sur la reconversion de la fabrication d'appareils de réfrigération commerciaux à base de HCFC-22 et de HCFC-141b aux hydrocarbures chez SAGA. Le projet a été annulé à la 74<sup>e</sup> réunion<sup>10</sup> car l'entreprise a fait faillite après la livraison de l'équipement. Le Comité exécutif, à sa 77<sup>e</sup> réunion, a demandé au PNUD de faire rapport sur l'état de la vente de l'équipement acheté pour SAGA à chaque réunion jusqu'à ce que l'équipement soit vendu et que les sommes obtenues de la vente de l'équipement soient retournées au Fonds multilatéral.<sup>11</sup>

#### **Observations**

6. Le Secrétariat a reçu un rapport du PNUD indiquant que l'équipement avait été vendu et qu'un solde de 95 479 \$US provenant de la vente de l'équipement serait retourné au Fonds multilatéral à la 79<sup>e</sup> réunion.

#### **Recommandation**

7. Le Comité exécutif pourrait souhaiter prendre note du retour du solde de 95 479 \$US provenant de la vente de l'équipement acheté pour SAGA à la phase I du plan de gestion de l'élimination des HCFC pour l'Arménie.

### Phase I du PGEH du Chili (rapport périodique annuel) (PNUD)

8. Le PNUD, en qualité d'agence d'exécution principale, présente à la 79<sup>e</sup> réunion, au nom du gouvernement du Chili, le rapport périodique annuel sur la mise en œuvre du programme de travail associé aux quatrième et cinquième tranches du plan de gestion de l'élimination des HCFC (PGEH)<sup>12</sup>,

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<sup>1</sup> Décision 77/41 e)

<sup>2</sup> Décision 76/45 b)

<sup>3</sup> Décision 77/21 c)

<sup>4</sup> Décision 77/50 b)

<sup>5</sup> Décision 76/47 d)

<sup>6</sup> Décision 74/43 e)

<sup>7</sup> Décision 76/49 e)

<sup>8</sup> Décisions 77/66 c) ii) et 78/5 c)

<sup>9</sup> Décision 62/40

<sup>10</sup> Décision 74/23 et document UNEP/OzL.Pro/ExCom/74/20

<sup>11</sup> Décision 77/41 e) et document UNEP/OzL.Pro/ExCom/77/35

<sup>12</sup> Les quatrième et cinquième (finale) tranches de la phase I du PGEH ont été approuvées à la 76<sup>e</sup> réunion pour la somme totale de 291 225 \$US, à savoir 199 299 \$US plus les coûts d'appui à l'agence de 14 947 \$US pour le PNUD et 68 123 \$US plus les coûts d'appui à l'agence de 8 856 \$US pour ONU-Environnement.

conformément à la décision 76/45 b). Le rapport de vérification de la consommation de HCFC en 2015 n'a pas été remis avec le rapport annuel.

#### *Consommation de HCFC*

9. Le gouvernement du Chili a déclaré une consommation de 63,33 tonnes PAO en 2016, ce qui représente 20 pour cent de moins que l'objectif de 78,75 tonnes PAO pour 2016 établi dans le PGEH et 27,5 pour cent de moins que la valeur de référence établie de 87,5 tonnes PAO. Le gouvernement a également déclaré des données sur la consommation sectorielle dans le rapport sur la mise en œuvre du programme de pays de 2016 qui confirment les données déclarées en vertu de l'article 7.

#### *Rapport périodique sur la mise en œuvre des quatrième et cinquième tranches du PGEH*

10. Le gouvernement a maintenu ses efforts pour renforcer le programme d'octroi de permis pour les SAO en actualisant le Code national des douanes afin d'y inclure des modifications sur les positions tarifaires et des descriptions des HCFC, des HFC et des produits/équipements qui en contiennent. Ces changements sont en place depuis janvier 2017.

#### *Secteur de l'entretien de l'équipement de réfrigération*

11. Au total, 290 techniciens ont reçu une formation en bonnes pratiques de réfrigération, y compris sur les processus et substances de remplacement du HFC-141b utilisé pour le rinçage tels que l'azote, les filtres pour l'absorption de l'acide et les nombreuses vidanges d'huile \*(compresseurs) ; 162 techniciens ont obtenu leur certification ; 61 techniciens ont reçu des subventions dans le cadre d'un programme de soutien financier pour la certification des techniciens, et 24 techniciens ont subi une évaluation de leurs habiletés en entretien en vue de la certification finale ; un accord a été signé pour un projet de démonstration sur l'utilisation du CO<sub>2</sub> transcritique dans deux supermarchés (un supermarché qui profite de l'appui de la Coalition pour le climat et la qualité de l'air et un supermarché qui a reçu l'appui du Fonds multilatéral) ; le cahier des charges de l'entreprise et techniques de l'équipement du centre de régénération a été établi et les achats ainsi que les travaux d'installation sont en cours ; les lignes directrices de la récupération et du recyclage des frigorigènes ont été élaborées ; et les activités de sensibilisation se poursuivent.

#### *Bureau de gestion du projet*

12. Le suivi et la mise en œuvre du projet sont assurés par le Bureau national de l'ozone, qui poursuit ses travaux avec le comité consultatif afin de soutenir la mise en œuvre des activités du PGEH en organisant des réunions de consultation avec les parties prenantes ; en visitant des supermarchés dans le but de suivre les progrès des projets de démonstration et en travaillant avec le Chambre de réfrigération et de climatisation du Chili pour appuyer le processus de certification des techniciens.

#### *Niveau de décaissement des fonds*

13. Au total, 934 640 \$US (52,3 pour cent) des 1 786 455 \$US approuvés ont été décaissés en date de février 2016, à raison de 779 130 \$US pour le PNUD et de 155 510 \$US pour ONU-Environnement, comme indiqué dans le tableau 1.

**Tableau 1. Rapport financier de la phase I du PGEH pour le Chili (\$US)**

Agence	Somme approuvée (\$US)	Somme décaissée (\$US)	Taux de décaissement (%)
PNUD	1 497 966	779 130	52,0
ONU-Environnement	288 489	155 510	53,9
<b>Total</b>	<b>1 786 455</b>	<b>934 640</b>	<b>52,3</b>

## Observations

14. Le Secrétariat a pris note du rapport complet témoignant des progrès continus accomplis dans le cadre des activités de la phase I du PGEH. Le rapport indique que les activités du secteur de l'entretien vont bon train et que le projet de démonstration sur l'utilisation du CO<sub>2</sub> transcritique dans deux supermarchés incitera ce secteur à reconverter ses magasins. Plusieurs activités ont été mises en œuvre pour la formation et la certification des techniciens, et le programme de certification est en voie de devenir une exigence obligatoire dès qu'il sera entièrement mis en place.

15. Le Secrétariat a pris note avec inquiétude de l'absence du rapport de vérification de la consommation de HCFC et a demandé des explications au PNUD à ce sujet. Le PNUD a informé le Secrétariat que les rapports de vérification de la consommation de 2015 et de 2016 seront remis à la 80<sup>e</sup> réunion, au plus tard.

16. La mise en œuvre des activités se poursuit comme prévu et le taux de décaissement global atteint 52 pour cent des sommes approuvées. Le PNUD a confirmé que la phase I du PGEH sera achevée en décembre 2017, comme convenu à la 76<sup>e</sup> réunion.

## Recommandation

17. Le Comité exécutif pourrait souhaiter :

- a) Prendre note du rapport périodique de 2016 sur la mise en œuvre du plan de gestion de l'élimination des HCFC (phase I) pour le Chili présenté par le PNUD ;
- b) Demander au PNUD de remettre les rapports de vérification de la consommation de HCFC exigé à la phase I du PGEH à la 80<sup>e</sup> réunion, au plus tard.

### Phase I du PGEH de la Chine (PNUD)

18. Une vérification indépendante de la reconversion des chaînes de fabrication d'appareils de climatisation et de refroidisseurs d'eau industriels et commerciaux (pompes à chaleur) du HCFC-22 à une technologie à base de HFC-32 été menée en 2016 chez DunAn Environment, dans le cadre du plan du secteur de la réfrigération industrielle et commerciale de la phase I du PGEH de la Chine, conformément au paragraphe 5 b) i) de l'Accord entre le gouvernement de la Chine et le Comité exécutif pour la réduction de la consommation des HCFC. La vérification a révélé que DunAn Environment fabriquait des appareils à base de HFC-410A sur une chaîne reconvertie à une technologie à base de HFC-32 en l'absence d'une norme nationale de sécurité pour les appareils de climatisation à base de frigorigènes inflammables.

19. Le PNUD a informé le Comité exécutif, à la 77<sup>e</sup> réunion, que DunAn Environment avait cessé la fabrication d'équipement à base de R-410A sur les chaînes reconverties pour la fabrication d'équipement à base de HFC-32. Le Comité exécutif a demandé au PNUD de lui remettre une lettre de l'entreprise dans laquelle celle-ci confirme son engagement à utiliser les chaînes reconverties grâce au soutien financier du Fonds multilatéral uniquement pour la fabrication d'équipement à base de la technologie pour laquelle le financement a été approuvé (décision 77/21 c)).

## Observations

20. Le PNUD a remis une lettre de DunAn Environment datée du 21 décembre 2016, indiquant que les chaînes reconverties au HFC-32 ne seront pas utilisées pour la fabrication d'équipement de climatisation à base de HCFC, de HFC-410A ou de tout autre frigorigène dont le PRG est supérieur à celui du HFC-32. L'entreprise concentrera ses efforts à production et la promotion d'équipement de

climatisation à base de HFC-32 dès que la norme de sécurité GB 9237 entrera en vigueur et que la vente d'équipement à base de HFC-32 sera permise, et elle accepte également de subir l'inspection et le suivi de ses installations de production afin de confirmer son respect de cet engagement.

21. En réponse à la demande d'information supplémentaire, le PNUD a répondu que le suivi continu des chaînes reconverties sera assuré par le bureau local de protection de l'environnement dans le cadre du programme de suivi régulier, afin de confirmer que l'entreprise fabrique bel et bien de l'équipement utilisant un frigorigène à base de HFC-32 ou d'un autre frigorigène dont le PRG est inférieur à celui du HFC-32.

### **Recommandation**

22. Le Comité exécutif pourrait souhaiter prendre note de la lettre d'engagement remise par DunAn Environment par l'entremise du PNUD, confirmant que les chaînes de fabrication financées par le Fonds multilatéral continueront à ne fabriquer que de l'équipement utilisant la technologie pour laquelle le financement a été approuvé en vertu de la décision 72/21 c).

### Phase I du PGEPH en Chine (Banque mondiale)

23. Les deux activités d'assistance technique ci-dessous visant à réduire au minimum les conséquences environnementales néfastes de l'émission du sous-produit HFC-23 étaient prévues à la phase I du PGEPH de la Chine :

- a) Enquête sur la réduction du ratio de sous-produit HFC-23 en appliquant les meilleures pratiques afin de réduire le ratio du sous-produit HFC-23 par l'application de politiques et de mesures techniques ;
- b) Recherche et étude sur les technologies de reconversion/pyrolyse du HFC-23 en appui à la recherche et au développement de la technologie de reconversion du HFC-23, afin de trouver une solution plus économique pour l'élimination définitive du HFC-23.

24. Le Comité exécutif, à ses 77<sup>e</sup> et 78<sup>e</sup> réunions, a demandé au gouvernement de la Chine par l'entremise de la Banque mondiale, de remettre à la 79<sup>e</sup> réunion des rapports sur l'état des études mentionnées ci-dessus (décisions 77/66 c) ii) et 78/5 c)).

25. En ce qui concerne l'étude sur les technologies de reconversion/pyrolyse du HFC-23, la Banque mondiale a indiqué que le choix d'une société d'experts-conseil est en cours et que celle-ci devrait être prête à entreprendre les travaux en juin 2017. L'expert-conseil examinera le cadre de politiques actuel et recommandera des mesures de réglementation pour appuyer la réduction des émissions en appliquant les meilleures pratiques, recueillera des données et examinera la quantité de sous-produit produite à l'heure actuelle, les pertes de matières premières et les produits intermédiaires et finaux, afin de cerner les occasions d'améliorer l'efficacité du processus, offrira des conseils techniques convenant aux différents processus de production afin de réduire le ratio de sous-produit HFC-23, et évaluera la faisabilité économique et les mesures techniques, et en évaluera les coûts.

26. En ce qui concerne l'étude sur les meilleures pratiques pour réduire le ratio de sous-produit HFC-23, la Banque mondiale a indiqué qu'un contrat avait été octroyé à une entreprise pour examiner la possibilité de recycler et de réutiliser le HFC-23 créé lors de la production de HCFC-22, que l'étude sera menée à terme en septembre 2017 et qu'un rapport final sera remis à la fin de 2017.

## Observations

27. Prenant note de l'état de la mise en œuvre des activités d'assistance technique, et après de plus amples débats, la Banque mondiale a indiqué qu'elle remettra une autre mise à jour de l'état des travaux à la 79<sup>e</sup> réunion.

28. Le Comité exécutif pourrait également souhaiter prendre note qu'une courte description des pratiques actuelles de suivi du HFC-23 dans le cadre du PGEPH de la Chine est jointe au document sur les principaux aspects des technologies de contrôle du sous-produit HFC-23.<sup>13</sup>

## Recommandation

29. Le Comité exécutif pourrait souhaiter :

- a) Prendre note des rapports périodiques remis par la Banque mondiale sur les activités d'assistance technique pour les technologies de reconversion/pyrolyse du HFC-23 et sur les enquêtes pour réduire le ratio de produit HFC-23 en appliquant les meilleures pratiques ;
- b) Demander à la Banque mondiale de remettre un rapport périodique sur l'état de la mise en œuvre des activités techniques sur les technologies de reconversion/pyrolyse du HFC-23 et le projet de rapport final de l'étude sur l'enquête sur la réduction du ratio de sous-produit HFC-23 en appliquant les meilleures pratiques à la 80<sup>e</sup> réunion.

## Partie II : Projets d'élimination définitive des SAO

30. Le Comité exécutif, à sa 77<sup>e</sup> réunion, a demandé aux agences bilatérales et d'exécution de remettre des rapports sur tous les projets de démonstration pilotes sur l'élimination définitive des SAO en tant que projets comportant des exigences particulières de remise de rapports<sup>14</sup> à compter de la 79<sup>e</sup> réunion jusqu'à l'achèvement des projets.

### Contexte

31. Le Comité exécutif a approuvé le financement de la préparation de 16 projets entre la 58<sup>e</sup> à la 73<sup>e</sup> réunions, qui ont abouti à des projets de démonstration pilotes entièrement développés sur la gestion et l'élimination définitive des résidus de SAO dans 11 pays, ainsi que deux projets régionaux et un projet d'assistance technique, pour une valeur totale de 11 278 052 \$US, comme indiqué dans le tableau 1. Ces projets ont été approuvés conformément à la décision 58/19, lignes directrices intérimaires sur les projets d'élimination définitive des résidus de SAO.

**Tableau 1. Approbation des projets de démonstration sur l'élimination définitive des SAO**

Pays	Titre du projet	Agence	Réunion	Somme (\$US)	État
Algérie	Projet de démonstration pilote sur la gestion et l'élimination définitive des résidus de SAO	France	72 <sup>e</sup>	250 000	En cours
		ONUDI	72 <sup>e</sup>	375 059	En cours
Brésil	Projet de démonstration pilote sur la gestion et l'élimination définitive des résidus de SAO	PNUD	72 <sup>e</sup>	1 490 600	En cours

<sup>13</sup> UNEP/OzL.Pro/ExCom/79/48

<sup>14</sup> Décision 77/8 e) i)

Pays	Titre du projet	Agence	Réunion	Somme (\$US)	État
Chine	Projet de démonstration pilote sur la gestion et l'élimination définitive des résidus de SAO	Japon	67 <sup>e</sup>	900 000	En cours
		ONUDI	67 <sup>e</sup>	1 227 885	En cours
Colombie	Projet de démonstration pilote sur la gestion et l'élimination définitive des résidus de SAO	ONU-Environnement	66 <sup>e</sup>	1 195 000	En cours
Cuba	Projet de démonstration pilote sur la gestion et l'élimination définitive des résidus de SAO	PNUD	62 <sup>e</sup>	525 200	Achevé en octobre 2015
Géorgie	Projet de démonstration pilote sur la gestion et l'élimination définitive des résidus de SAO	PNUD	69 <sup>e</sup>	55 264	Achevé en décembre 2015
Ghana	Projet de démonstration pilote sur la gestion et l'élimination définitive des résidus de SAO	PNUD	63 <sup>e</sup>	198 000	Achevé en décembre 2016
Liban	Projet de démonstration sur l'élimination définitive des SAO indésirables	ONUDI	73 <sup>e</sup>	123 475	En cours
Mexique	Projet de démonstration sur l'élimination définitive des SAO indésirables	France	63 <sup>e</sup>	500 000	En cours
		ONUDI	63 <sup>e</sup>	927 915	En cours
Nigéria	Projet de démonstration sur l'élimination définitive des SAO indésirables	ONUDI	67 <sup>e</sup>	911 724	En cours
Turquie	Projet de démonstration sur l'élimination définitive des SAO indésirables	ONUDI	66 <sup>e</sup>	1 076 250	En cours
Région : Europe	Démonstration d'une stratégie régionale de gestion et l'élimination définitive des résidus de SAO dans la région de l'Europe et de l'Asie centrale	ONU-Environnement	69 <sup>e</sup>	75 000	En cours
		ONUDI	69 <sup>e</sup>	274 480	En cours
Népal	Projet de démonstration sur l'élimination définitive des SAO indésirables	ONU-Environnement	59 <sup>e</sup>	157 200	Achevé

32. Trois de ces projets pilotes ont été menés à terme, et le PNUD (Géorgie et Ghana) tout comme ONU-Environnement (pour le Népal) ont remis les rapports finaux de ces projets à la 79<sup>e</sup> réunion, aux fins d'information du Comité exécutif, comme résumé ci-dessous. Les rapports complets sont joints à l'annexe I au présent document.

Géorgie : Projet de démonstration pilote sur la gestion et l'élimination définitive des résidus de SAO (PNUD)

33. Le projet pilote de la Géorgie avait pour objectif de montrer comment les synergies entre les résidus de SAO et les stocks de POP peuvent surmonter les obstacles à la destruction et la gestion des SAO indésirables et à l'élimination définitive de 2,13 tonnes de résidus de SAO indésirables déjà recueillis et stockés temporairement dans des installations du pays.

34. Le rapport final a mis l'accent sur les activités conjointes des domaines d'intervention, où les deux flux de résidus ont été éliminés conjointement de manière économique. Les mandats et une soumission ont été préparés pour l'élimination définitive conjointe afin de choisir un sous-traitant des résidus qui aurait la responsabilité de recueillir, regrouper, emballer et transporter les POP désuets et les résidus de SAO vers des installations de destruction en France. Le cadre de politique sur la gestion des

matières dangereuses a été révisé afin de tenir compte des résidus des SAO et des POP d'une manière exhaustive.

35. L'étroite coordination appuyée par le gouvernement entre deux activités financées séparément a été la clé du succès du projet. Une gestion conjointe du projet reposant sur une soumission globale, un seul sous-traitant et l'application d'un seul processus pour les procédures d'exportation des résidus a permis de réaliser des économies. De plus, grâce à des flux de résidus plus petits, l'élimination définitive des résidus de SAO continuera à reposer sur l'exportation conjointe avec les résidus de POP, la destruction de tels déchets dangereux constituant une obligations nationale au titre de la Convention de Stockholm. L'expérience a révélé que la mise en œuvre de tels projets conjoints exige que plus de temps soit accordé à la préparation et la désignation des entreprises ayant de l'expérience avec les deux types de résidus. Ce projet a permis la mise en place d'un tel système.

36. Le projet a permis d'éliminer 1,2 tm de résidus de SAO, une quantité inférieure à l'élimination prévue à l'origine. Cette différence est attribuable à la détérioration des réservoirs de stockage des CFC, qui a créé des fuites. Le projet a permis de repérer toutes les sources de résidus de SAO au pays et, grâce aux lois, la collecte de ces résidus devrait se poursuivre.

37. Quant à la pérennité du projet, la Géorgie est en voie de créer un fonds national pour l'environnement, dans lequel seront versées les sommes associées aux pénalités imposées pour le commerce illicite des SAO. Ce fonds pourra ainsi être utilisé pour des exportations supplémentaires de résidus de SAO dans l'avenir.

#### Ghana : Projet de démonstration pilote sur la gestion et l'élimination définitive des résidus de SAO (PNUD)

38. Le projet pour le Ghana proposait l'élimination définitive de 1,8 tonne de CFC-12 déjà recueilli et prêt à détruire, et la mise en place de mesures pour assurer la pérennité du projet en repérant d'autres résidus de SAO qui pourraient être recueillis au pays dans le cadre d'un projet sur l'efficacité énergétique financé par le Fonds pour l'environnement mondial (FEM).

39. Le rapport final a fourni des détails sur la mise en œuvre du projet, la mise en place des opérations, plus particulièrement la synergie entre le projet de démonstration pilote et le projet financé par le FEM, l'achat d'équipement (c.-à-d., des appareils de récupération portables de l'Allemagne, de l'équipement de laboratoire, des identifiants de frigorigènes, des bouteilles de frigorigènes) et les résultats du processus de destruction. On y indique que 1,2 tm de CFC-12 et 5,2 tm de bromure de méthyle ont été détruites dans des installations situées en Pologne (Veolia), et qu'une quantité supplémentaire de 1,1 tm de CFC a été exportée pour être détruite dans des installations situées aux États-Unis d'Amérique (Tradewater). La quantité totale de SAO détruite a donc été de 7,4 tm.

40. Il y a eu certaines difficultés au niveau de la mise en œuvre, notamment des difficultés à regrouper les résidus en quantités suffisantes pour les détruite de manière économique; l'instabilité du marché du carbone vu comme un moteur de l'intérêt envers l'exportation aux fins de destruction; le processus interne d'obtention des autorisations pour exporter des mélanges de résidus en Pologne et aux États-Unis d'Amérique (c.-à-d., polluants organiques persistants (POP), biphényle polychloré (BPC) et SAO); et la détermination des mesures à prendre concernant les stocks de mousse recueillis contenant du CFC-11 et leur destruction.

41. L'importance de la coopération entre les projets de nature complémentaire, à savoir le financement du remplacement des appareils par le FEM et le programme de rabais et le projet pilote de destruction des résidus financé par le Fonds multilatéral, est un des enseignements tirés du projet. L'approche a été complexe, mais la combinaison de ces deux flux de résidus a permis de trouver une solution de destruction économique, grâce aux économies réalisées dans les coûts du transport et de la



destruction. Ce projet a aussi mené à une collaboration entre la Commission de l'énergie du Ghana et l'Agence de protection de l'environnement des États-Unis, les deux agences responsables des projets du FEM et du Fonds multilatéral, respectivement.

Népal : Projet de démonstration pilote sur la gestion et l'élimination définitive des résidus de SAO (ONU-Environnement)

42. Le projet pilote du Népal proposait deux choix pour l'élimination définitive de 10 tm de CFC-12 recueillies et stockées par l'entremise du Bureau national de l'ozone. La méthode choisie consistait à exporter les SAO aux États-Unis d'Amérique afin qu'elles soient détruites. Tout a été orchestré par un courtier qui a organisé le transfert des SAO indésirables vers des installations possédant les permis nécessaires pour les détruire. Les 10 tm (107 000 tonnes de CO<sup>2</sup>) ont été détruites en février 2013. Le projet a été présenté au Carbon Action Reserve (CAR) en mars 2013 et inscrit par la suite au CAR, et il a satisfait aux exigences de vérification finale du CAR, ce qui a mené à l'émission de tonnes de réserve climatique.

43. Le projet a créé 82 391 réductions vérifiées des émissions, dont 22 000 qui ont été vendues. La part de la vente remise au pays (12 925 \$US) a été déposée dans un compte convenu du Bureau national des normes et de métrologie, et servira à la formation, la création d'emplois, au renforcement des capacités et au développement communautaire axés sur la gestion des frigorigènes, l'efficacité énergétique et la durabilité de l'environnement.

44. Le projet a établi un lien entre la destruction des SAO et le marché du carbone, et permis l'étude d'autres mécanismes de soutien aux projets d'élimination définitive de résidus de SAO. Les enseignements tirés du projet sont indiqués dans le rapport final soumis.

### **Observations**

45. Dans son examen des différents rapports, le Secrétariat a constaté que les éléments suivants de la décision 58/19 figuraient dans le rapport final :

- a) Une estimation de la quantité de SAO ayant finalement été détruite dans le cadre du projet;
- b) Une description des systèmes de collecte, surtout lorsque les projets du Fonds multilatéral étaient en synergie avec d'autres projets;
- c) Les étapes détaillées du processus global;
- d) Les principales difficultés rencontrées et la façon dont elles ont été surmontées, ainsi que les enseignements tirés à ce jour de la tenue de projets pilotes.

### **Recommandation**

46. Le Comité exécutif pourrait souhaiter :

- a) Prendre note avec satisfaction des rapports finaux sur les projets pilotes de gestion et d'élimination finale des résidus des SAO du Ghana et de la Géorgie proposés par le PNUD, et du projet du Népal proposé par le Programme des Nations Unies pour l'environnement;

- b) Inviter les agences bilatérales et d'exécution à tenir compte, s'il y a lieu, des enseignements tirés des projets de démonstration pilotes sur l'élimination définitive des SAO mentionnés à l'alinéa a) ci-dessus lors de la conception et de la mise en œuvre de futurs projets semblables;
- c) Demander aux agences bilatérales et d'exécution de remettre leurs rapports finaux des projets pilotes d'élimination définitive des SAO en instance et de remettre les soldes non dépensés des projets dont les rapports n'ont pas été remis à la 80<sup>e</sup> ou la 81<sup>e</sup> réunion à la 82<sup>e</sup> réunion.

### Partie III : Projets sur les refroidisseurs

#### Contexte

47. Le Comité exécutif, à sa 77<sup>e</sup> réunion, a demandé aux agences bilatérales et d'exécution de remettre des rapports pour tous les projets sur les refroidisseurs en cours en tant que projets comportant des exigences particulières de remise des rapports<sup>15</sup>, à compter de la 79<sup>e</sup> réunion jusqu'à ce que les projets soient achevés. Il y a quatre projets sur les refroidisseurs en cours à l'heure actuelle. Les résultats de ces projets sont résumés dans le tableau 2.

**Tableau 2. Rapport périodique des projets sur les refroidisseurs en cours**

Pays	Titre du projet	Agence	Réunion	Somme approuvée (\$US)	Date d'achèvement prévue	État des progrès
Brésil	Projet de démonstration sur la gestion intégrée du sous-secteur des refroidisseurs centrifuges, mettant l'accent sur l'application de technologies éconergétiques sans CFC pour remplacer les refroidisseurs à base de CFC	PNUD	47	1 000 000	Janvier 2017	Le PNUD a mobilisé 13,5 millions \$US du FEM et 64 millions \$US de plus en cofinancement. Toutes les activités de fond de ce projet sont terminées. L'impression des publications en lien avec le projet est en cours. Le PNUD prévoit terminer le volet financier du projet à la fin de 2017.
Région de l'Afrique	Projet de démonstration stratégique sur la reconversion accélérée des refroidisseurs à base de CFC dans 5 pays africains (Cameroun, Égypte, Namibie, Nigéria et Soudan)	France	48	360 000	Décembre 2017	La mise en service des refroidisseurs au titre de ce projet devrait se terminer immédiatement après l'adaptation de l'équipement, au dernier trimestre de 2017. Le solde à la fin de décembre 2016 s'élève à 249 519 \$US.
		Japon	48	700 000	Décembre 2017	

<sup>15</sup> Décision 77/8 e) ii)

Pays	Titre du projet	Agence	Réunion	Somme approuvée (\$US)	Date d'achèvement prévue	État des progrès
Mondial	Projet mondial de remplacement des refroidisseurs	BIRD	47	6 884 612	Décembre 2017	<p>Le projet réunit la Chine, l'Inde, l'Indonésie, la Jordanie, la Malaisie, les Philippines et la Tunisie. L'état du projet est précisé ci-dessous.</p> <p><b>Argentine</b> : Le groupe de coordination, UEPRO, a signé en 2016 un accord de subvention avec Fundación Favaloro - Hospital Universitario y de Investigación Médica pour deux refroidisseurs de 350 tonnes (TR<sup>16</sup>) et un autre avec un consortium de propriétaires de bâtiments pour un refroidisseur de 400 TR. Un des refroidisseurs de 350 TR et le refroidisseur de 400 TR ont été détruits après la capture des CFC, et remplacés en 2016. Le remplacement de l'autre refroidisseur de 350 TR a été reporté à 2017, car la livraison de l'équipement accusait du retard, et l'air climatisé est essentiel en été. UEPRO a amorcé des discussions au début de 2017 concernant le remplacement de deux autres refroidisseurs et lancera un appel de soumissions pour le remplacement de refroidisseurs en avril 2017.</p> <p><b>Inde</b> : Le projet est achevé depuis décembre 2016; 34 refroidisseurs ont été remplacés, et environ 7 tm de CFC ont été récupérées et stockées. La puissance de réfrigération pour une capacité de 1 TR est de 0,63 kilowatt, ce qui est inférieur à l'objectif de 1 kilowatt pour le projet.</p> <p><b>Jordanie</b> : Les 20 refroidisseurs à base de CFC ont été remplacés; 15 de ceux-ci ont pu être remplacés grâce à une subvention partielle du Fonds multilatéral; 4 tm de CFC ont été récupérées et stockées dans des installations gouvernementales jusqu'à leur destruction. L'économie d'énergie a été de l'ordre de 17 à 24,4 pour cent.</p> <p><b>Philippines</b> : Le projet est achevé depuis le 31 décembre 2016; 72 refroidisseurs ont été remplacés.</p> <p><b>Indonésie</b> : Le projet a été annulé car il n'a pas satisfait aux critères de financement du Fonds pour l'environnement mondial (FEM), en raison de l'utilisation possible de frigorigènes de remplacement à base de HFC. L'information sur la Chine, la Malaisie et la Tunisie n'est pas disponible et n'a donc pas été communiquée.</p> <p>La somme totale de 3 735 556 \$US a été engagée dans le cadre des projets ci-dessus. Les économies représentent 3 149 056 \$US en tenant compte des sommes non allouées pour le projet de refroidisseurs de la Chine, de la Malaisie et de la Tunisie, le projet d'efficacité énergétique des refroidisseurs de la Malaisie et les économies réalisées grâce au projet de la Jordanie.</p>

<sup>16</sup> Une tonne de réfrigération équivaut à environ 3,5 kilowatts de capacité de réfrigération

## Observations

48. Le Secrétariat a pris note que les quatre projets en cours connaissent des progrès, et que certains projets en sont à une étape avancée de leur réalisation.

## Recommandation

49. Le Comité exécutif pourrait souhaiter réitérer sa décision 77 e) ii) et demander aux agences bilatérales et d'exécution de remettre un rapport pour tous les projets sur les refroidisseurs en tant que projets comportant des exigences particulières de remise de rapports à la 80<sup>e</sup> réunion, un rapport d'achèvement de projet avant juin 2018 au plus tard, et de retourner le solde des fonds avant le mois de décembre 2018, au plus tard.

## Partie IV : Autres projets

50. D'autres rapports périodiques et finaux pour les activités suivantes étaient attendus à la 79<sup>e</sup> réunion, mais n'ont pas été remis :

- a) Études sur la faisabilité d'utiliser des technologies non en nature dans trois pays<sup>17</sup> :
  - i) Étude de faisabilité sur le refroidissement urbain à Punta Cana (PNUD);
  - ii) Étude de faisabilité sur le refroidissement urbain en Égypte (ONU-Environnement et ONUDI);
  - iii) Analyse comparative de trois technologies non en nature destinées à la climatisation centrale au Koweït (ONU-Environnement et PNUE);
- b) Plan sectoriel pour l'élimination de la production de bromure de méthyle en Chine (ONUDI);<sup>18</sup>
- c) Recherche et développement sur le secteur de la production de CFC entrepris grâce au soutien financier du Fonds multilatéral (Banque mondiale).<sup>19</sup>

## Recommandation

51. Le Comité exécutif pourrait souhaiter réitérer les décisions pertinentes du Comité exécutif et exhorter les agences d'exécution concernées de remettre leurs rapports spécifiques suivants à la 80<sup>e</sup> réunion

- a) Études sur la faisabilité d'utiliser des technologies non en nature en République dominicaine (Punta Canada), en Égypte et au Koweït;
- b) Plan sectoriel pour l'élimination de la production de bromure de méthyle en Chine;
- c) Projets de recherche et développement sur le secteur de la production de CFC entrepris grâce au soutien financier du Fonds multilatéral (Banque mondiale).

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<sup>17</sup> Décision 77/27 e)

<sup>18</sup> Décision 73/56

<sup>19</sup> Décision 77/26 b)

# Annex I

## Pilot Demonstration Project on ODS- waste Management and Disposal in Georgia

Summary report

Prepared by NOU-Georgia and UNDP

May, 2017

## GLOSSARY

**CFCs** - Chlorofluorocarbons

**GARCAE** - Georgian Association of Refrigerating, Cryogenic and Air Conditioning Engineers

**GEF** - Global Environment Facility

**HCFCs** - Hydrochlorofluorocarbons

**LVC countries** - Low-Volume Consuming countries

**MLF** –Multi-lateral Fund

**MoENRP** - Ministry of Environment and Natural Resources Protection of Georgia

**NOU** - National Ozone Unit

**ODSs** –Ozone Depleting Substances

**PIU** - Project Implementation Unit

**POPs** – Persistent Organic Pollutants

**R&R** - Recovery and Recycling Centers

**UNDP** - United Nations Development Programme

## **1. Introduction**

The purpose of the Summary Report is to analyze the effectiveness of the Pilot Demonstration Project supported activities on ODS-Waste Management and Disposal in Georgia. The project was funded by the Multilateral Fund (MLF) for the Implementation of the Montreal Protocol and implemented by the United Nations Development Programme (UNDP).

The analysis of compliance of expected and achieved results is the main focus of the Summary Report with a special emphasis on cost-effectiveness of the selected joint project implementation modality.

The Summary Report is based on the data obtained during the implementation of the MLF/UNDP Pilot Demonstration Project on ODS-Waste Management and GEF/UNDP project “Disposal of POPs pesticides and initial steps for the containment of the dumped POPs pesticides in Georgia” (POPs project) documents and progress reports as well as required interviews with direct implementers of the programmes at UNDP-Georgia, the Project Implementation Unit (PIU), National Ozone Unit (NOU) and the Ministry of Environment and Natural Resources Protection of Georgia (MoENRP), and a selected sub-contractor waste management company (waste sub-contractor).

The Report also includes conclusions and recommendations for future similar activities which could be of interest to other countries in similar conditions.

## **2. Background**

The Ozone Depleting Substances (ODSs) belong to a group of chemicals featuring ozone-layer reactions with resulting impacts on the environment and human health.

ODSs are not produced in Georgia and can only be obtained by import, which is regulated by the Government. The phase-out of the consumption of ODSs in Georgia was started after the country became the Party to the Montreal Protocol in 1996. As a result, over the last 15 years the decrease in the use of ODSs has been observed. Currently, Georgia consumes ODSs defined by the Montreal Protocol as temporarily allowed substances.

To address the national ODS phase-out commitments, since 1999 Georgia has implemented a number of activities aiming at reduction of the consumption of ODSs on one hand, and collection of unwanted ODSs on the other one. The decrease in the consumption of ODSs at national level was achieved through introducing stringent regulatory mechanisms and conducting a number of awareness raising, and capacity building and investment programs for Customs officers, technicians and the refrigeration servicing sector as a whole.

At the same time, the collection of the ODSs related waste started since 2003-2004 and over the period of 9 years 2,133 kg of ODSs had been collected in total (1,767 kg of CFCs and 366 kg of HCFCs). Two existing Recovery and Recycling (R&R) Centers and 15 small and medium enterprises in commercial/industrial/transport refrigeration sectors participated in this process.

Although the progress with respect to phasing out the use of ODSs as well as collecting the unwanted ODSs at national level has been tangible, the safe disposal and destruction of accumulated unwanted ODSs was a challenge for Georgia like the other Low-Volume Consuming (LVC) countries. To respond to the needs of the LVC countries, on request of the Twenty-First Meeting of the Parties to the Montreal Protocol, in 2011 the Executive Committee made a decision to set a funding window for ODSs waste destruction for LVC countries (Decision 63/5 (c)). This decision opened an opportunity for Georgia to get such financial support from the Multilateral Fund (MLF) for the Implementation of the Montreal Protocol in addressing this problem at national level.

Further to that, Georgia also faced a national problem of safe and sound disposal of obsolete pesticides of the Persistent Organic Pollutants (POPs) group, controlled under the Stockholm convention. In that respect, a number of GEF-funded and bilateral project activities were implemented during the recent years or are still ongoing in Georgia aiming at collection, safe disposal and destruction of abandoned obsolete POPs pesticides in the country. One of these projects was funded by GEF and implemented by UNDP which has been recently completed and originally aimed to prepare for export and disposal around 230 tons of obsolete POPs pesticides from the main Iagluja dumpsite.

With support of UNDP, the Government of Georgia prepared and, in April of 2013, submitted a project document to the MLF requesting funding for starting up a pilot project on destruction of collected unwanted ODSs in the estimated amount of 2,133 kg in a joint cooperative manner with the above mentioned GEF/UNDP POPs pesticides programme where both waste streams could be co-disposed to identify related cost-savings and report back to the MLF Secretariat on such achievements and lessons learned which could be of use to other LVC countries. No similar approach has been previously tested or applied by this type of MLF approved pilot projects. Besides that, the project aimed to develop an unwanted ODS waste collection and financial disposal scheme, expected to be generated in future in Georgia. In other words, the project focused on achieving the results in a most cost-effective way on one hand and developing sustainable mechanism for future disposal and handling of ODSs waste on the other one.

Project proposal was approved by the Executive Committee in 2013 and the budget of US\$ 55,264 was allocated for its implementation during 2014-2015.

The actual project implementation started after it was endorsed by the Ministry of Environment and Natural Resources Protection (MoENRP) and UNDP in April 2014. The main beneficiary and the



implementing institution of the project is the MoENRP, acting through its established National Ozone Unit (NOU) which has carried out the project in close cooperation and with the technical support from UNDP.

### **3. Project implementation analysis**

Two main objectives of the MLF/UNDP ODSs project were (i) to identify synergies and ensure cost-effective co-disposal (destruction) of 2,133 kg of collected unwanted ODSs in combination with the obsolete POPs pesticides under a parallel GEF/UNDP project; and (ii) to design the scheme for accessing and handling other unwanted ODSs in the country that can be generated in future.

#### **Objective 1 - Cost-effective destruction of collected unwanted ODSs**

##### ***Procedural activities***

Currently, there are no special companies/facilities with necessary technical capacity and means for the national disposal of unwanted chlorinated ODSs wastes within Georgia, apart from cement kilns. The main reasons for that are (i) the lack of any regulatory mechanism requiring safe disposal and destruction of ODSs waste; (ii) the small amount of ODSs waste being generated throughout the country (Georgia belongs to LVC countries with small HCFC consumption); and (iii) the high capital costs needed to equip local cement kiln facilities with relevant technical means for waste disposal and emission controls, to be able to provide destruction services. Therefore, the only possibility for safe destruction of collected ODSs waste was to export it to the country with relevant capacities. Due to small amounts of collected ODSs waste of about 2 tons, the management, transportation abroad and destruction costs were expected to be also very high. Therefore, the co-disposal of the ODS wastes with the ongoing project GEF/UNDP POPs pesticides project was seen as a solution which could achieve a cost effective destruction of ODSs.

In order to achieve the final destruction of estimated 2,133 kg of unwanted ODSs it was necessary to prepare that ODS waste for export to qualified disposal facilities. The initial inventory of collected and temporarily stored unwanted ODSs located in various storage facilities throughout the country was carried out about 2 years before the actual project's start-up.

The project was supposed to be launched in 2012 after its approval by the 64<sup>th</sup> meeting of the Executive Committee in parallel to an ongoing GEF/UNDP POPs pesticides project. However, implementation of the project started only immediately after the project document's signature with the Government in April 2014 which was due to a new national project review procedure adopted by the Government of Georgia applied to all new international programmes.

In line with the project document the planned preparatory activities were aimed at transporting ODSs from different storages to the Georgian Refrigerant Recovery and Recycling Center in Tbilisi (capital); testing the composition by gas-chromatograph as the information on the ODSs composition was a necessary precondition before it could be accepted for destruction at qualified hazardous waste facility; and transferring the accumulated ODSs wastes in new containers meeting the modern safety standards as the waste gas was stored in deteriorating tanks to enable their further export.

With the purpose to implement the abovementioned tasks and prepare ODS wastes for exporting, UNDP concluded a contract with the Georgian Association of Refrigerating, Cryogenic and Air Conditioning Engineers (GARCAE). This organization unites more than 200 members from the service sector throughout the country and has over 15 years of experience in addressing ODSs related challenges at the national level, and plays an important role in promoting new internationally accepted standards and practices in this sector in Georgia. The agreement included specific activities to be implemented by GARCAE to support the project.

For the waste co-disposal purposes, a consolidated Terms of Reference (ToR) was elaborated in the framework of the GEF/UNDP POPs pesticides disposal project with the assistance of an international expert who was then hired and was assisting in parallel the MLF/UNDP ODS waste project.

Prior to announcing the joint international tender for the disposal of the POPs pesticides and ODS waste gas, a market research was conducted to identify experienced and internationally based hazardous waste management companies. All those interested companies which were identified were then invited to participate in the tender commissioned in August 2013. Four such international service providers had expressed the willingness to participate in the consolidated tender and were invited to a pre-bid conference. Based on tender results, a waste subcontractor was selected to excavate and repack obsolete POPs pesticides under the parallel GEF/POPs programme and transport them abroad along with the ODS waste gas to specialized hazardous waste destruction facilities in the EU.

### ***Implementation activities***

Under circumstances with lacking legal obligations on safe handling and storage of ODSs waste, it was important to re-confirm the previously reported inventory of ODS waste.

While conducting the complementary inventory of the already collected unwanted ODSs, GARCAE found out that instead of recorded 2,133 kg of ODSs, only 1,050 kg were remaining in stock at the Kutaisi Regional Recycling Center and the Georgian Refrigerant Recovery and Recycling Center in Tbilisi. This discrepancy in the amount may be explained by the absence of legal regulations and lack

of technical capacities (such as containment tanks of sufficient size) for storing such unwanted ODSs. Therefore, part of ODSs waste stock most probably ventilated out due to deteriorated condition of aging gas cylinders where part of those simply might have been lost due to mishandling.

In order to ensure safe storage and transportation of the ODS waste gas from the Kutaisi R&R center to Tbilisi, as well as preparation of the whole amount of the collected ODS waste for transportation abroad and final disposal, GARCAE had purchased two new containers fitting this purpose. The ODS waste was transferred into the new large capacity cylinders and the composition of ODSs was tested by means of the gas chromatograph, purchased previously in 2008 under other Montreal Protocol programmes, and then calibrated in the scope of the ODS pilot demonstration project to ensure proper readings of the ODS waste gas content.

Despite the initial perceived shortage of ODS waste gas as compared to the original project's targets, further, during the project's implementation period, some mislabeled ODS containing substances were identified and confiscated by Customs, and placed for storage in the Georgian Refrigerant Recovery and Recycling Center in Tbilisi. In total, more than 400 kg of additional unwanted ODSs waste from the Customs' confiscate was added to the re-confirmed 1,050 kg of ODSs for final disposal.

Finally, all ODS waste from the Kutaisi Recycling Center, the Georgian Refrigerant Recovery and Recycling Center in Tbilisi and the newly detected mislabeled substance, which was identified as the blend of HCFC-22, CFC-12 and HFC-134 (and not HFC-134a as it was labeled), amounting to 1,467 kg, were transferred into two new containers (750 kg and 717 kg charge capacity each respectively) and prepared for the Basel convention's export and transit procedures. All these activities were carried out by GARCAE in line with approved work plans.

For sustainability purposes, as part of its assignment, GARCAE organized trainings of staff responsible for the operation of gas-chromatograph in the Georgian Refrigerant Recovery and Recycling Center. Two technicians have been trained in gas-chromatography related operational processes as well as in the design and functional capacities of this SRI 8610C model. The training course included both theoretical and practical exercises.

All preparatory activities were completed by end of April, 2014. As a result, the ODS waste gas was sent in two cylinders to a dedicated disposal facility in France. All required export and transit documentation were obtained by the waste sub-contractor with assistance from the Government.

Exporting procedures and activities have been synchronized between these two GEF/UNDP POPs and MLF/UNDP ODS waste projects, and demonstrated a good level of cooperation in one lead

implementing agency - UNDP. Such practical experience at the national level equipped the Government with strengthened skills for future hazardous waste disposal operations for these two waste streams, and specifically the ODS waste gas in particular.

The table below summarizes all planned and implemented steps as outlined in sub-contracts with GARCAE and the waste sub-contractor.

Table 1. Activities undertaken by GARCAE and waste sub-contractor

Activity	Implementer	Status of implementation
Conduct complementary inventory and verification of ODS wastes originally listed in the Pilot Demonstration Project	GARCAE	<b>Done on time</b> 1,050 kg identified instead of original estimate of 2,133 kg
Purchase of two ISO containers and ancillary equipment for the ODS waste aggregation	GARCAE	<b>Done on time</b> Two containers purchased
Transport already collected ODS waste to the R&R Centre in Tbilisi	GARCAE	<b>Done on time</b>
Calibrate the gas chromatograph	GARCAE	<b>Done on time</b>
Train staff responsible for gas - chromatograph operating	GARCAE	<b>Done on time</b> 2 R&R technicians trained
Transfer collected ODS from the old containers to the newly purchased containers and test them by gas-chromatograph	GARCAE	<b>Done on time</b> 2 new containers were filled in with ODSs
Formulate a national scheme for accessing other unwanted ODSs (about 0.5 tons annually)	GARCAE	<b>Done on time</b> Draft provided to NOU
Excavate POPs pesticides from Iagluja Dumpsite	Sub-contractor	<b>Done on time</b>
Repack the excavated 230 tons of pesticides into safe packaging ready for export	Sub-contractor	<b>Done with a short delay due to weather conditions</b>
Transport prepared ODSs and POPs abroad for safe disposal	Sub-contractor	<b>Done on time</b> Exported to France and to Belgium

**Cost Savings** - At the project preparation stage, it was planned that the new demonstration MLF/UNDP project may benefit from coordinating its activities with the GEF/UNDP POPs pesticides disposal project that was already starting during that time. Specifically, savings were achieved through cost sharing, or, in other words, with minimal expenses induced to the MLF/UNDP ODS waste project: in the revision of legislative frameworks related to hazardous waste management, procedural implementation of one joint tender process for waste disposal, joint launch of waste export notification through the governmental departments, handling the wastes by selected waste management company and taking awareness raising measures on health and environmental risks posed by hazardous wastes.

According to estimates provided by the waste sub-contractor (see the Table 2 below), the cost saving from the joint implementation of the ODS waste project together with the POPs waste project is estimated to be US\$ 9,000 and these savings relate only to the sub-contractor's (international) part of work.

**Table 2. Estimated costs savings<sup>1</sup>**

<b>Cost item (USD)</b>	<b>Est. costs \$ for POPs (230 tones) as if only POPs</b>	<b>Est. costs \$ for ODS (~1,5 tones) as if only ODSs</b>	<b>Joint implementation est. costs \$ (POPs/ ODSs)</b>	<b>Est. savings for MLF project</b>
<b>Preparation during Tendering</b>	3,000	1,500	3,070	1,430
<b>Participation to the inception workshop</b>	3,000	1,000	3,070	930
<b>Equipment Delivery</b>	44,000	-	44,000	0
<b>On site Repackaging Works</b>	59,000	-	59,000	0
<b>Inland Transportation</b>	23,200	1,500	23,560	1,140
<b>Maritime Transportation</b>	82,000	5,400	82,900	4,500
<b>Disposal</b>	252,000	5,900	257,900	0
<b>Management cost by sub-contractor (insurance, license, travel, off site personnel etc)</b>	47,200	2,500	48,700	1,000
<b>TOTAL</b>	<b>513,400</b>	<b>17,800</b>	<b>522,200</b>	<b>9,000</b>

At the same time, if looked at from a perspective of national level's savings, the following Table 3, based on financial expenditure data, indicates overall savings in the amount of US\$ 20,800.

Such detailed break-down by activity, based planned and real costs, as well as savings, is provided below in the Table 3.

<sup>1</sup> Line-Activity 6 of Table 3 where data is more accurate as coming from a financial system

Table 3. Project savings by activity

Activity type	Planned Costs US\$ (2 ton of ODS)	Actual Costs \$US (1,5 tons of ODS <sup>2</sup> )	Savings
1.Purchasing two ISO container (950 kg each) and ancillary equipment	6,000	4,000 <sup>3</sup>	2,000
2.Inception workshop for stakeholders involved in ODSs destruction	2,500	2,000	500
3.Transportation of ODSs from different locations to a centralized location in Tbilisi (16 locations)	3,200	3,000	200
4.Aggregation, calibration/certification of gas-chromatograph, and testing of the stocks before export	5,000	5,000	0
5.Training of staff and technicians	2,000	2,000	0
6. Transportation abroad and actual destruction incl. inland and maritime transportation, participation in the inception workshop, and management and logistics costs of sub-contractor, as per the Table 2)	17,564	8,800	8,764
7. Project management (part time 25% - 24 months times US\$ 500/month)	12,000	6,664	5,336
8. Pilot project summary report preparation and, printing costs	7,000	3,000	4,000
<b>Grand total</b>	<b>55,264</b>	<b>34,464</b>	<b>20,800</b>

As visible from Table 3, some savings were achieved **in activities 6, 7 and 8** as a direct result of the joint tendering procedure for co-disposal of ODS and POPs waste, joint management of these two projects as well as savings during the final assessment report preparation stage.

Also it needs to be indicated that the ISO containers were purchased with the lowest price – US\$ 1,000 / per tank. These containers and the ancillary equipment were purchased by the GARCAE from China under a contract with UNDP. Based on the information from the waste sub-contractor on the costs of this equipment return from France at a cost of US\$ 3,500, the containers were not requested

<sup>2</sup> As it was mentioned in the paragraph *Implementation activities*, in the scope of the demonstration project 1.5 tons of ODSs were collected, exported and distracted in the framework of the project.

<sup>3</sup> From the indicated US\$ 4000, US\$ 2,000 was spent for the ancillary equipment and US\$ 2,000 for two new containment cylinders (US\$ 1000 for each container).

for shipment back to Georgia after the operation on ODS waste destruction was completed as it is more cost-effective to purchase new such tanks next time.

Other savings were made through the cost sharing because of joint management of these two projects.

As per the table 3, after implementation of the project, the costs for the transportation and destruction is US\$ 5,800 for 1 ton of ODS waste gas which is, according to the waste sub-contractor, double the average costs for 1 tons of POPs pesticides.

Further, based on feedback from the sub-contractor, the management costs for a low quantity of ODSs or any other hazardous waste is usually quite high as it includes both transportation costs in individual sea-freight containers<sup>4</sup> and export/transit/import transactions (Basel Convention permitting) for a given low quantity of wastes with same amount of effort as for a larger cargo. Other related costs, like travel and accommodation cost of the sub-contractor, local transportation, personnel supervision, additional sub-contracting of certified personnel from abroad to handle gaseous substances as well as export and port handling fees would have to be considered case-by-case and would relate to the split of responsibilities with local partners. All these would make the destruction of such a small quantity of the collected ODS waste much more expensive.

In this particular case, according to the contract conditions, the sub-contractor had the responsibility only for the export and destruction of the ODS waste. Other activities connected with ODS waste's preparation for the export procedures were handled by GARCAE, which in terms of the cost and time saving was considered a better option. As said, the value of the contract would have been much higher if all required activities would have been implemented solely by the sub-contractor, therefore bringing the average ODS waste disposal substantially higher than the currently reported figures.

After the detailed analyses of the ODS project implementation, it should be emphasized as a conclusion that the joint implementation of these two projects (MLF/UNDP and GEF/UNDP) proved the feasibility of relatively sizeable cost-savings despite small scale.

## **Objective 2 – Development of scheme for handling unwanted ODSs**

The second important objective of the project was to develop a sustainability scheme for collection and destruction of ODSs expected to be accumulated in Georgia in future. Specifically, it was planned to develop the scheme for accessing other unwanted ODSs and proposing financially sustainable

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<sup>4</sup> Hazardous waste cannot be transported with other cargo, which means that higher costs for a whole 20/40 foot container would be necessary.



scenarios for their destruction in Georgia. The scheme was also based on experience acquainted in GARCAE. Development of such a system was scheduled as one of GARCAE's assignments under the main contract under this project with UNDP (see Table 1).

GARCAE formulated and submitted a draft scheme within the planned implementation timeframes. The scheme development methodology included a study on the ODS wastes generation and accumulation rates, interviews with key end-users on these respective matters, and analysis of existing national regulatory framework controlling ODS waste management as well as existing technological capacities for ODSs waste destruction, locally and internationally, and best international practices as applicable. The draft scheme was prepared in close collaboration with NOU and MoENRP and a number of meetings were held with the relevant stakeholders during its drafting and consultation processes.

While developing the scheme, GARCAE identified all major sources of ODSs waste generation, specifically listed below:

- Refrigerant Recovery and Recycling Centers,
- Service centers providing services to the air conditioning and refrigerator equipment (around 50 such centers),
- Importers and vendors of the refrigerants,
- Scrap metal collecting services as well as
- End-users who do not use CFCs any more but still keeping CFC12 in old containers in storages.

Based on information from the above mentioned potential ODS waste generating facilities, it was reconfirmed that about 500 kg of unwanted ODSs can be accumulated annually in Georgia if the adequate legislation requiring that and technical storage capacity is in place.

To ensure the financial sustainability of ODSs waste's destruction process, the draft scheme proposes three scenarios based on international expertise and national practice:

1. Imposing/use fees for importers/users of refrigerants to be paid to the state budget which would then be allocated for disposal operations of the accumulated wastes via the Ministry of Environment from the central budget.
2. Introducing incentive mechanisms through the taxation policy, encouraging companies to become "greener" improve equipment maintenance practices, reduce refrigerant leakages/emissions, and ensure waste minimization which will all be supported by certain legal improvements with monitoring mechanisms on compliance. In this case, a "softer"

taxation policy would be applied to those companies which cover the costs of disposal of unwanted ODSs. This difference between the regular tax and reduced tax would be accumulated in the state budget, and then made available to the Ministry of Environment for handling ODS waste disposal in future.

3. Establishing a special fund, voluntarily uniting all companies operating in this sector. A governing board will be created and attached to the operations of this fund, and the fund will be capitalized by the participating companies to cover the costs of ODS waste management and disposal.

According to the draft scheme, Option 3 was found to be more feasible and streamlined as it will require the least interventions from the state side into the private sector activities, and is more convenient for both private companies and the Government to operate to address project opportunities and requirements under the Montreal Protocol.

It also defines how the ODSs destruction can be achieved at national level, which will save transportation costs for the ODSs to be exported for destruction. Cement plants, with possible need of modernization, are identified as potential facilities for the ODSs waste destruction in Georgia.

#### 4. Conclusions and recommendations

Based on review of the projects' related documents, reports and interviews with the main beneficiaries of the GEF/UNDP POPs and MLF/UNDP ODSs projects, it can be concluded that the implementation of the Demonstration Project on ODS-Waste Management and Disposal in Georgia is a great success as it has achieved its major objective – ODS waste co-disposal along with POPs wastes. Specifically, synergies between the MLF/UNDP ODS waste and GEF/UNDP POPs projects were demonstrated as possible and a cost-effective destruction of unwanted ODSs was achieved via the co-disposal with POPs materials. The project also assisted the Government and the NOU in formulating a draft national scheme for facilitating future collection and handling of ODSs waste and therefore, sustainability of ODSs management process in Georgia. This draft scheme was shared with the NOU.

Close coordination between the two projects, NOU, MoENRP and other participating partners, coherent implementation of exporting activities and joint management of the projects can be emphasized as key factors for the success of the MLF/UNDP ODS waste management project. The joint management of these two projects, one consolidated tender, one sub-contractor and related local and international waste export/transit/import permitting procedures resulted in certain savings of US\$ 20,800 compared to the originally approved budget.

Being smaller in scope and the amount of work as compared to the GEF/UNDP POPs programme, the MLF/UNDP ODS wastes project had benefited much more in terms of savings and has also demonstrated practical feasibility and rationale of this approach, as well as contributed to better communication between these two focal areas in a Government setting as other waste management departments were involved in the ozone-related work.

The project's achievements is a proof that two different funding mechanism (GEF and MLF) can collaborate in a financially transparent and mutually beneficial manner if project planning/approval cycles can be aligned to the extent possible – e.g. if the GEF regularly funds POPs disposal programmes in ongoing 4-year cycles, then the MLF in matters not required for compliance such the ODS waste management operates on the basis of funding windows, and the selection of future project countries would much depend on planned or ongoing GEF/POPs programmes in those countries. Further, successful implementation of this pilot project has demonstrated the effectiveness of the selected project operation modality and can be replicated in other LVC countries which, what is also important to note, have access to sea routes for the export of wastes, as land-locked countries might experience waste transit issues.

It is also recommended to disseminate the information about implemented activities and share lessons learnt with other countries in the region to encourage and facilitate replication of the applied

synergistic approach in case there are any ongoing activities regarding export/destruction of POPs and/or other relevant hazardous waste.

Referring to the experience gained through the synergetic implementation of GEF/UNDP POPs and MLF/UNDP ODSs projects, it is also recommended to pay due attention to the following points while replicating this approach in other LVC countries:

- Time constraints should be considered in announcing the consolidated tender as procedures for the preparation of the consolidated international tender may take more effort and have longer advertisement times to attract suitable and qualified sub-contractors;
- Preliminary market research is important as it will facilitate identification of the companies with the robust experience in POPs and ODSs management;
- Close cooperation with the Ministry of Environment or/and other relevant public authorities is essential for the implementation of planned synchronized activities in a timely manner.

## 5. Further project's activities.

Considering the importance of the issue, as well as primary objective of funds allocated by MLF for Georgia, in further consultations with the Government and stakeholders it was recommended to capitalize on current achievements and attempt to maximize the project's benefits to the country in the following manner:

- Prepare a survey and composition tests (via the GC approach) of other unwanted ODSs identified and also those reported by the Ministry of Agriculture of Georgia<sup>5</sup>;
- Explore technical opportunities for destruction of unwanted ODS within the country through conducting detailed feasibility study identifying existing technical capacities, legal requirements, willingness of the existing potential facilities to invest in gas feed mechanisms, expensive air pollution control (APC) and ash residue monitoring equipment, national laboratory capabilities for environmental monitoring etc.;
- Purchase two containers for the Recovery and Recycling Centers for future collection and safe disposal of unwanted ODSs.

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<sup>5</sup> While preparing the Summary Report, in the framework of the interview with the NOU, it was revealed that the Ministry of Agriculture had identified and informed the MoENRP about the existence of certain amount of Methyl Bromide stored in an unsafe way. Thus, the idea of conducting a detailed survey for this substance would be a step towards the safe disposal and handling of other unwanted ODSs at national level.

**UNDP-Ghana EPA**  
**Pilot demonstration project on ODS**  
**waste management and disposal**

**Final report to the**  
**Multilateral Fund Secretariat**

**Prepared by Mr. Kweku Ofori-Bruku**  
**Reviewed by Ghana EPA and UNDP**

**Updated report – May 2017**

**Summary of the project details as per the approval:**

<b>COUNTRY:</b>	<b>Ghana</b>	<b>IMPLEMENTING AGENCY:</b>	<b>UNDP</b>
<b>PROJECT TITLE:</b>	<b>Pilot Demonstration Project on ODS-Waste Management and Disposal</b>		
<b>SECTOR:</b>	<b>ODS-Waste</b>		
<b>Sub-Sector:</b>	<b>Refrigeration Servicing Sector</b>		
<b>Date of Approval</b>	<b>April 2011</b>		
<b>PROJECT IMPACT:</b>	<b>8.8 Metric Tons of CFC-12</b>		
<b>PROJECT DURATION:</b>	<b>36 months</b>		
<b>LOCAL OWNERSHIP:</b>	<b>100 %</b>		
<b>EXPORT COMPONENT:</b>	<b>0 %</b>		
<b>REQUESTED MLF GRANT:</b>	<b>US\$ 198,000</b>		
<b>IMPLEMENTING AGENCY SUPPORT COST:</b>	<b>US\$ 17,820 (9%)</b>		
<b>TOTAL COST OF PROJECT TO MLF:</b>	<b>US\$ 215,820</b>		
<b>COST-EFFECTIVENESS:</b>	<b>US\$ 22.5/kg ODS (metric)</b>		
<b>NATIONAL COORDINATING AGENCY:</b>	<b>Ghana-EPA</b>		

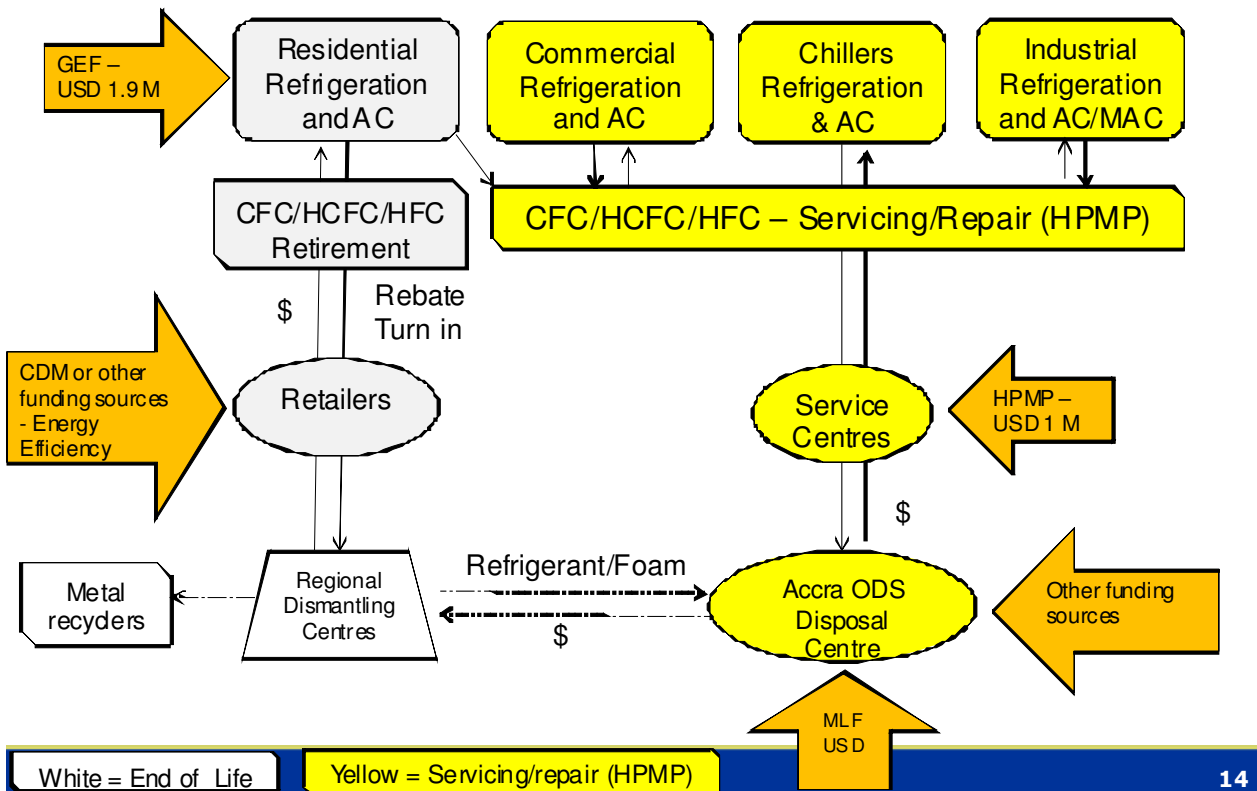
Brief Description of the Project

UNDP Ghana in collaboration with the Environment Protection Agency (EPA), Energy Commission of Ghana and the Center for Rural and Industrial Research (CRIR) had developed an overarching strategy to provide climate and ozone benefits through the Integrated Plan for Energy Efficiency, Climate Mitigation and ODS Reductions for the Refrigeration Sector as shown in Figure 1. This integrated plan brings about the convergence of 3 synergistic interventions to combine and sequence financing for: (i) the phasing out of HCFC based appliances (MLF); (ii) the promotion of energy efficient refrigerators through Market Transformation (GEF) and (iii) the complimentary pilot project for the recovery and disposal of ODS (MLF). The ultimate objective of this plan is to bring economic, social and environmental benefits to the people in Ghana through the scaling up of energy efficient appliances with low global warming potential (GWP) and zero ozone depleting potential (ODP) for the mainstreaming of ozone and climate benefits into the national development plan.

This 'learning by doing' pilot sought to demonstrate how the technical, financial, regulatory and institutional barriers and risks could be overcome to set up an ODS management-disposal facility. The project aimed to demonstrate the management and disposal of ODS refrigerants recovered from old stocks (1.8 t) and subsequent early retired or end of life (EOL) refrigerators/freezers, air-conditioners as well as from the servicing sectors. Waste-ODS would be transported from the refrigerator dismantling centers to be set up with the assistance of the GEF-project (for end-of-life equipment) as well as from the Recovery Centers to be set up through the MLF-funded HPMP (for functioning equipment being serviced). The ODS thus collected would be transported and destroyed overseas. Opportunities to monetize the ODS destroyed as carbon credit for the voluntary market will be explored so that alternative sources of funds may be tapped into once this MLF-

funded demonstration project will be completed. In addition to the carbon market, other financial modalities will also be explored: bilateral grants and auction from the European Union Allowance (EUA). This should ensure sustainability of the operation beyond the duration of this demonstration.

**Figure 1: Integrated Plan for Energy Efficiency, Climate Mitigation and ODS Disposal Management**



## 1. Introduction and Background

This pilot project sought to develop an efficient and cost effective logistic framework for the harvesting, canning, transportation, decanting, storage of ODSs collected from refrigerators, freezers and air conditioners in Ghana, prior to shipment to Europe for safe destruction.

This pilot project was a crucial part of the overarching strategy that was formulated as an Integrated Plan for Energy Efficiency, Climate Mitigation and ODS Reduction for the Refrigeration Sector in Ghana.



Therefore, this pilot project was closely integrated with the recently completed GEF-funded UNDP Energy Efficiency (EE) project (“Promoting Appliance Energy Efficiency and Transformation of the Refrigerating Appliances Market in Ghana”)<sup>1</sup> through which End-of-Life (EOL) and early retired energy inefficient refrigerators and freezers were collected and dismantled in regional depots for ODS recovery. The GFE-funded UNDP project was being implemented by the Energy Commission of Ghana, assisted by the Environmental Protection Agency, Ghana.

The primary objective of that project was to improve the energy efficiency of appliances marketed and used in Ghana through the introduction of a combination of regulatory tools such as Minimum Energy Performance Standards and Information Labels (S&L), and innovative regulatory tools including a total ban on the importation of used refrigerators and freezers into Ghana, effective 30th June 2013, and the outright seizure and dismantling of such equipment not complying with the law.

Incentive schemes in the form of rebates were given for turned-in refrigerators at Ghana Cedis (GHC) 200.00, in exchange for the purchase of a one or two star-rated refrigerator or freezer (as per the energy-efficiency star-rating), and GHC 300.00 for the purchase of any sized refrigerator or freezer of three-star rating and above.

## **2. Setting-up of the operations of the project**

### **2.1 Contractors for collection of refrigerators**

Revenue was generated for the private operators of the dismantling facilities, which have a convention with the Ghana EPA, and receive no fee for their services. They collect revenues from the dismantled equipment (selling of scrap metal). In that sense, the value of the dismantled equipment is put back in the system.

#### ***2.1.1. First contractor: City Wastes and Management Company (CWMC) and setting-up the National ODS centre***

The Refrigerator Incentive/Rebate scheme was officially launched in September 2012.

A contract was signed by Ghana EPA with the City Wastes and Management Company (CWMC) to collect the rebated refrigerators for destruction in their facility in Kwabenya, Accra. The CWMC imported a mobile ODS degassing plant from Germany that would be able to recover refrigerants from any refrigerator or freezer from any part of the country.

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<sup>1</sup> <https://www.thegef.org/project/spwa-cc-promoting-appliance-energy-efficiency-and-transformation-refrigerating-appliances>

This equipment, which was assumed to be the first of its kind in Africa, was commissioned in November 2012.

In January 2013, the National Ozone Unit (NOU) of the Ghana EPA assisted by UNDP, acquired a 40-footer container; rebuilt and reshaped it for use as both an office, laboratory and storage facility as a National ODS Collection Centre. This National ODS Centre was situated within the CWMC yard in Kwabenya, Accra.

By April 2013 the laboratory equipment, tools and computer, printer and communication equipment were acquired for the National ODS Collection Centre and the facility became functional. Additionally, 50 units of 12kg empty refrigerant recovery cylinders were procured for the project.





Between May 2013 and January 2014, the total refrigerators dismantled by the CWMC staff with some ODS in them was 7,056.

By January 2014, the EPA had established the full-functioning National ODS collection center which included a storage facility for the receipt of the ODS, as shown above.

Unfortunately, in February 2014, the project team was informed by the management of CWMC that their premises in which the National ODS Collection Center was situated, were temporarily not accessible due to a rent dispute that the CWMC had with their landlord. The Centre could not be used or visited until November 2014.

During that period, equipment such as refrigerant analyzers, recovery machines, scales and refrigerant transfer tools, as well as office equipment, were stolen. This was reported to Ghana EPA and UNDP Ghana while a police investigation was launched. Only some cylinders were left behind. This made the operation of the centre impossible after February 2014. However, activities continued under the project as described below.

### ***2.1.2 Second Contractor: the Presank Company***

To accelerate the dismantling of seized refrigerators from importers that did not abide with the new Law banning imports of second-hand refrigerators, a second company, PRESANK Ltd., was contracted in March 2014 to assist the CWMC in the degassing and the dismantling of the seized refrigerating equipment. The National ODS waste

Consultant visited the site of the Presank Company at Afienya on a weekly basis to train the technical staff of Presank, Ltd for this purpose.

The national consultant also ascertained that the Presank staff safely recovered and handled the ODS harvested from the dismantled refrigerating equipment cautiously.

The Presank Company mainly degassed and dismantled the seized refrigerators and freezers, while the CWMC was collecting, and storing the rebate refrigerators in their new yard in Afiamang for future degassing.



*Staff at the Presank facility*

As second-hand refrigerators are still being caught by customs, a 3rd degassing and dismantling Company to augment the degassing and dismantling might still need to be engaged in the future.

## **2.2. Training of Salesmen, Shop Assistants and Technical Staff**

As of 2013, it became clear that both the refrigerator salespersons, shop assistants and the recipients at the CWMC needed to be trained to know how to effectively test working refrigerators. The national project consultant had to prepare training manuals and train the personnel involved both in the classroom and later follow up into the field to ascertain their competency.

The consultant also had to train the CWMC and later Presank technical staff to know how to safely handle the refrigerators prior to harvesting the ODSs, and in handling the ODSs after retrieving them.

Additionally, between April and June 2014, the National ODS waste Consultant trained shop assistants and technicians of appliance retail shops in the PZ Company, who were selected to participate in the turned-in refrigerator rebate scheme, on the testing of refrigerators prior to acceptance. Indeed, refrigerators had to be proved to be still functioning for eligibility to the rebate scheme. This was aimed to enable the proper disposal of all the ODS contained in this old refrigerating equipment.

In July 2014, a new company, Hisense Appliance Co., with several retail-shops in Accra-Tema, was appointed to participate in the turned-in refrigerator rebate scheme. The National ODS waste consultant had to train the salesmen and technicians of this new company on how to receive, inspect and test refrigerators under the rebate scheme

Between August and September 2014, the National ODS waste Consultant led a team of Technicians as part of an inventory work, to visit facilities, hospitals, hotels, mines and motels in major towns, in all the regional and most of the district capitals in the country. This was to investigate the extent of HCFCs, HFCs, HCs and other refrigerants usage in the country. This enabled the ODS Consultant to visit appliance retail shops in the Volta, Northern, Upper East, Upper West, Brong Ahafo, Ashanti, Western, Central and Eastern regions of Ghana, to find out how the shopkeepers and local technicians, who were trained in Accra, applied these skills to receive and test the refrigerators under the rebate scheme, prior to delivery to Accra. The results were generally positive as most shop assistants seen were applying the knowledge and skills appropriately.

In total, the following training was delivered through the project:

Over 300 sales personnel (a majority of women) were trained on:

- how the refrigerator works.
- how to explain the operation and safe use of the refrigerator and the freezer to their customers.
- safe ways to handle and deliver these appliances to their customers.
- courteous ways to receive and test the rebate refrigerators and deliver them for degassing and destruction.

The CWCM staff was trained on the safest ways to test and handle the rebate refrigerators prior to and after the removal of the refrigerant.

The Presank staff was trained on:

- how to use locally-devised tools to harvest good quality ODS,
- work under adverse and stressful conditions.

The ODS Decanting Staff (see section 3) was trained on:

- how to safely deal with both high-pressure and low-temperature ODS,
- how to avoid freeze burns, explosions and other gaseous accidents.

### **3. ODS waste export operations**

#### **3.1 Cooperation with the “Capacity Building for PCB Elimination” in Ghana**

From 2014 onwards, a cooperation was developed with another GEF-funded UNDP Project, “Capacity Building for PCB Elimination” in Ghana. The project aimed to dispose of hazardous chemicals - PCBs and obsolete pesticides - through exporting these abroad in an authorised facility, for destruction as per BAT/BEP. There was an obvious opportunity to add ODS waste to this operation to achieve economies of scale, and thus with a reduced price for the disposal operation. As Ghana EPA was also in charge of the implementation of that project, the coordination was ensured within the agency, with technical support from UNDP.

Veolia UK was selected after an international competitive bidding process and in June 2015, the ODS waste project team had the opportunity to export some of the ODSs collected to date to Europe for destruction. The destruction facility was located in Poland.

It has to be noted, as was reported through the UNDP progress reports and the 2015 MLF evaluation of ODS waste projects, that the quantities of refrigerants collected have been less than anticipated in the project document. The project has however demonstrated some adaptability in that regard. Thus, considering that the CFC quantities would be less than anticipated, four cylinders of Methyl bromide that were temporarily stored at a Government pesticides storage facility and could present a risk of leaking, were identified by Ghana EPA in cooperation with the GEF-funded UNDP PCB project. It was agreed to add these chemicals to the exports of obsolete chemicals that was to be undertaken.

### 3.2 First and main operation of disposal of ODS

Because the National ODS collection centre had been shut down (see section 2.1.1), the project team had to improvise a temporary ODS Decanting and Export Centre within the National Refrigeration & Air Conditioning Centre of Excellence in the Accra Technical Training Centre (funded by the Ghana HPMP). There, all the cylinders containing ODS from Ghana EPA, Accra (refrigerants collected during the TPMP), as well as the ODSs collected by Presank in Afienuya and some from the ODS collection centre in Kwabenya were taken for decanting and preparation for export. The ODSs were decanted, checked and weighted at the Centre of Excellence, to prepare for the shipment.



Below is a picture of ODSs delivered to the Shipper's Warehouse in Pokuase, on July 11, 2015



In addition to CFC-12, some adulterated refrigerants were also included in the exports for destruction.

Total number of refrigerants (with a vast majority of CFC12) shipped out for destruction via the Veolia UK Company to Europe was 1,272.66 Kilograms. 406.37 Kg were collected through the rebate scheme and 866.29 kg were collected from the stored refrigerants from the TPMP.

In Annex are copies of the Certificates of Incineration of the ODSs and other chemicals submitted by the Sarpi Veolia Company. As indicated in the certificate, when weighted at arrival for destruction, the certified total quantity of refrigerants destroyed was 1,200 Kg. In addition, 5,200 kg of Methyl Bromide were also destroyed through the same operation.

### **3.3 Second and complementary operation of ODS disposal (2017)**

Some quantities of R12 refrigerants had remained under custody of the CWMC company since 2015 and the company had committed for their disposal through voluntary carbon market.

This was confirmed and completed in 2017.

Ghana EPA received in January 2017 a letter of intent of export seeking from Ghana EPA an authorization for export of R12 intended for destruction. The letter was received from Tradewater LLC company in the USA, which worked in in cooperation with CWMC. The



quantities of R12 set for export in an authorised facility in the US amounted to 1 tonne. Besides the 469 kg recovered R12 obtained and detained through the dismantling process, which CWMC kept for the voluntary market option, additional 531 kg were procured from stocks of a dealer (remaining unused R12) to make up for the 1 tonne for shipment. Ghana EPA confirmed that the export occurred in April 2017. Voluntary Carbon markets were used to finance this operation, at no cost for the project. It is anticipated that Tradewater will come for the residual stocks from the dealer should they be granted an import permit by the US EPA in future.

### **3.4 The issue of foam collected from the refrigerators**

Much as the two companies collecting refrigerators were quickly getting rid of the steel and non-ferrous parts of the dismantled refrigerators, the disposal of the huge mass of Polyurethane insulation and plastic materials from the dismantled refrigerators was creating a storage problem on their sites.

The foam extracted from the collected refrigerators could not be included in the two shipments sent for destruction, in Europe and in the US.

Thus, the volume of foam collected became substantial and created a challenge for the dismantling operation. A solution needed to be found for their disposal in an environmentally-sound manner, in accordance with Montreal Protocol's requirements. In the meantime, the project team advised the companies to pack the insulation materials from the dismantled refrigerators into sealed plastic bags and stock pile them while an environmentally acceptable procedure for destroying the insulation materials was being sought.

Collaboration was developed between the project, Ghana EPA and GIZ/Proklima, through GIZ's project "Management and destruction of Ozone Depleting Substances banks (ODS banks)". This was meant ensure the sustainability of the results of the MLF-funded ODS disposal project, and to find a joint solution for the remaining quantities of foams collected from the refrigerators.

Currently, under the GIZ project, the procurement of a cross flow chopper with an integrated foam blowing agent absorption system that uses an active carbon storage is in process. An expression of interest to operate the facility has already been published and three companies have been shortlisted (this is as well in process).

Additionally, though the rebate scheme has now ended, there is a substantial number of refrigerators and freezers to be dismantled and degassed and thus a remaining amount of refrigerants to be collected for destruction.

### 3.5 Total ODS disposed and destroyed

Total quantities that have been collected / destroyed are the following:

Refrigerants destroyed (in high majority R12):

- 1.2 MT through the disposal at Sarpi Veolia's incineration plant (Poland)
- 1 MT of R12 through the CWMC/Tradewater disposal in the USA
- Foam collected from the refrigerators (not yet destroyed) – quantities cannot be assessed in comparable figures. They are to be destroyed through the GIZ Proklima project.

Methyl bromide destroyed:

- 5.2 MT through the disposal at Sarpi Veolia (Poland). With an ODP of 0.7 for Methyl Bromide, this represents 3.64 ODP tonnes.

Total quantities disposed of (not including foam): 7.4 MT.

Assuming an ODP of 1 for the refrigerants destroyed, the total ODP disposed of amount to  $3.64 + 1.2 + 1 = 5.84$  ODP Tonnes.

Considering that some of the adulterated refrigerants that were exported had an ODP below 1, it can be assumed that ca. 5.5 ODP tonnes have been destroyed (not including the quantities of foam still to be destroyed).

## 4. Lessons learnt

### 4.1 Technical challenges and solutions

- The compressors on most of the refrigerators seized by customs (over 70%) had been chopped off, hence there were no refrigerants in them. This is one of the reasons for the lower amounts of CFCs collected as compared to initial estimates.

- The few refrigerators and freezers with compressors on them had their refrigerants leaked out hence the entrance of non-condensable gasses into the ODSs that were collected. Indeed, the project team noticed from the analysis of the refrigerants/ODSs recovered that the ODSs contained some amounts of non-condensable gasses in them.

This is important to note as, during decanting prior to export, pressures of the ODSs went up very high within a short time. This sudden rise in operating pressure could be very hazardous if not carefully watched due to the presence of non-condensable gases.

- Standard refrigerant cylinder heaters are required to accelerate the transfer of ODSs from cylinders to cylinders during the collection and decanting of the ODSs for export. Portable water heaters were improvised to accelerate the decanting procedure.

- A portable refrigerant re-claiming machine is required to restore the refrigerants/ODSs collected to an acceptable standard for possible reuse and the expected carbon credits from destruction.
- The project team needed portable hand-held refrigerant identifiers to ascertain the refrigerant/ODSs in every refrigerator before recovery and to prevent cross contamination.

#### **4.2 General lessons learnt**

- Synergy with other projects can bring solutions to challenges unforeseen at the project conceptualization phase
- Carbon markets instability are a challenge for this type of projects. Though an operation could be eventually launched in 2017, this did not have the scope that was initially envisaged at the start of the project.
- There is a confirmed interest of the private sector to get involved in such operations (and to continue exploring the carbon financing options), as was demonstrated in 2017 by the export to the USA of some remaining quantities of ODSs
- It is a complex but useful approach to combine with other waste streams' disposal processes (in that case, PCBs and pesticides)
- It was a good strategic approach to also combine with a rebate scheme. Another stream of old refrigerators comes from the seized refrigerators by customs, due to the ban on 2d-hand refrigerators entering the country.
- Addressing the stocks of collected foam represents a major technical challenge in this type of projects.
- It has been difficult in this project to determine the cost per tonne destroyed, due to the nature of the export for destruction operations. Ghana EPA charged a pro-rata agreed amount internally to the project budget for the disposal of refrigerants and Methyl Bromide. There has been no cost to the project for the export to the USA in 2017 or for the future destruction of collected polyurethane foam.
- As regards export transportation, this took time and considerable joint efforts to get the consent of the importing authority, due to the complex nature of the waste (mix of PCBs, pesticides, ODSs) being exported for destruction.

**ANNEX 1 – Certificate of incineration – SARPI VEOLIA – Including Ozone-Depleting Substances**



**Date:** 27 October 2015

**Certificate of Incineration**

**Veolia Job No:** FSJT0667

*We hereby certify that the waste described below* has been delivered to/destroyed by high temperature incineration at Sarpi Dabrowa Gornicza:

<b>Container Number :</b>	As per attached annex
<b>TFS Number :</b>	As per attached annex
<b>Material :</b>	As per attached annex
<b>Delivery Date(s) :</b>	As per attached annex
<b>Delivery By:</b>	Geodis Calberson

**CERTIFIED BY :**  
**TITLE :**  
**for and on behalf of:**

  
Judith Hunt  
Customer Services Manager  
**Veolia ES Field Services Limited**  
Unit 1, Heol Crochendy  
Parc Nantgarw  
Cardiff. CF15 7QT



Veolia ES Field Services Limited  
Unit 1, Heol Crochendy,  
Parc Nantgarw  
Cardiff  
CF15 7QT  
tel: +44(0)203 567 4914 • fax +44(0)203 567 4911 • www.veolia.co.uk

A SARP Industries Limited Company  
Registered office: Unit 1 Heol Crochendy, Parc Nantgarw, Cardiff, CF157QT  
Registered in England 7816723



EMPLOYER/EXPORTER ENVIRONMENTAL PROTECTION AGENCY OF THE REPUBLIC OF GHANA

SERVICE PROVIDER VEOLIA ES FIELD SERVICES LIMITED

CONTRACT NAME PROVISION OF SERVICES FOR THE FINAL DISPOSAL OF PURE POLYCHLORINATED BIPHENYLS (PCBs),  
PCB CONTAMINATED WASTES, OBSOLETE PESTICIDES AND OZONE DEPLETING SUBSTANCES FROM GHANA

Container Number	Waste Type	TFS Shipment Number	Arrival Date	Waste Received Weight (Kg)	Completion Date
MEDU 2882261	Pesticide Solid	GH603391 / 01	11-Sep-15	750	19-Oct-15
MSCU 5032780	Pesticide Solid	GH603391 / 02	09-Sep-15	12,886	19-Oct-15
MSCU 5896350	Pesticide Solid	GH603391 / 03	09-Sep-15	4,661	19-Oct-15
MEDU 4128245	Pesticide Solid	GH603391 / 04	09-Sep-15	7,235	19-Oct-15
MEDU 3994121	Pesticide Solid	GH603391 / 05	11-Sep-15	2,980	19-Oct-15
MEDU 2166694	Pesticide Liquid	GH603392 / 01	11-Sep-15	13,280	19-Oct-15
MEDU 2882261	Pesticide Liquid	GH603392 / 02	11-Sep-15	10,850	19-Oct-15
MSCU 5896350	Pesticide Liquid	GH603392 / 03	09-Sep-15	10,961	19-Oct-15
MEDU 3994121	Pesticide Liquid	GH603392 / 04	11-Sep-15	4,050	19-Oct-15
FSCU 7423560	Pesticide Liquid	GH603392 / 05	14-Sep-15	15,900	19-Oct-15
GLDU 3808441	Pesticide Liquid	GH603392 / 06	14-Sep-15	13,800	19-Oct-15
MEDU 2832595	PCB Liquid	GH603393 / 01	20-Aug-15	15,800	08-Sep-15
MEDU 3440032	PCB Liquid	GH603393 / 02	18-Aug-15	15,400	08-Sep-15
GLDU 3808441	PCB Liquid	GH603393 / 03	14-Sep-15	800	19-Oct-15
MSCU 0243769	PCB Solid	GH603394 / 01	18-Aug-15	3,640	08-Sep-15
MSCU 4660570	PCB Solid	GH603394 / 02	18-Aug-15	14,900	08-Sep-15
MEDU 4128245	MeBr	GH603395 / 01	09-Oct-15	5,200	19-Oct-15
MEDU 4128245	ODS	GH603396 / 01	09-Oct-15	1,200	19-Oct-15
<b>TOTAL TONNAGE</b>				<b>154,293</b>	

SIGNED  
JUDITH A. HUNT (Mrs)  
CUSTOMER SERVICES MANAGER



**ANNEX 2 – Letter requesting license to export R-12 for destruction – Tradewater / City Waste.**



12 January 2017

***Sent via Email***

Environmental Protection Agency  
Mr. Emmanuel Quansah  
Head Environmental Climate Change Ozone Unit  
P.O Box MB326  
Accra - Ghana  
e-mail: [emmanuel.quansah@epa.gov.gh](mailto:emmanuel.quansah@epa.gov.gh)

Dear Mr. Quansah:

As you know, Tradewater, LLC, is working closely with you and Mr. Jürgen Meinel of City Waste Recycling, Ltd., to transport to the United States certain chlorofluorocarbon refrigerants. The refrigerants to be transported include approximately 469 kilograms of recovered R-12 and approximately 531 kilograms of unused R-12. We are transporting the refrigerants from Ghana to the United States for destruction in a permitted facility.

Tradewater has applied to the United States Environmental Protection Agency (US EPA) for permission to import the material to the United States. Upon approval by the US EPA, Tradewater (in conjunction with Mr. Meinel) will then need to seek from you and the Ghana EPA an export license granting permission for the refrigerants to be exported from Ghana.

This letter confirms our intent to seek the Ghanaian export license and your authority to issue that export license when Tradewater and Mr. Meinel submit the necessary information for application.

Please let me know if you have any questions or concerns.

Sincerely,

A handwritten signature in blue ink that reads "Timothy H. Brown".

Timothy H. Brown  
President

Cc: Robert Burchard, U.S. Environmental Protection Agency ([odspetitions@epa.gov](mailto:odspetitions@epa.gov))  
Jürgen Meinel, City Waste Recycling ([recycling.ghana@gmail.com](mailto:recycling.ghana@gmail.com))  
Gabriel Bankier Plotkin, Tradewater ([gplotkin@tradewater.us](mailto:gplotkin@tradewater.us))

**FINAL PROGRESS REPORT ON  
NEPAL ODS DISPOSAL PROJECT SUBMITTED TO  
THE 79<sup>TH</sup> EXECUTIVE COMMITTEE**

**BACKGROUND**

The project for Nepal was approved by the Executive Committee at the 59th meeting to allow Nepal to explore two options for destroying a small amount of unwanted ODS that had been collected and stored through the national ozone unit.

In the year 2004, 74 ODP tonnes of CFCs were confiscated in Nepal. Most of these stocks were consumed for domestic purposes following MOP decision XVI/27 (Annex. 1) made at the Sixteenth Meeting of the Parties. As of 1.1.2010, out of this initial stock of 74 tonnes approximately 10 MT (metric tonnes) of CFCs were in stocks at Birgunj, Nepal. In the 20<sup>th</sup> Meeting of Parties, Nepal requested guidance from Parties on continued use of these CFCs post 2010. In this context, Nepal proposed to consider options for destruction of this quantity of CFCs. If destroyed, it would also achieve twin benefits of compliance with the Montreal Protocol and Green House Gas (GHG) emission reduction; otherwise the ODS would slowly be released into the atmosphere from the cylinders in which they were stored or potentially be used in the future if consumption limits were revised.

Such a scenario in Nepal is a good example of a Low Volume Consumption Country (LVC) in the Asia and the Pacific region, where there is no clear guidance from the Montreal Protocol on how to treat such unwanted CFC stocks (collected or seized). UN Environment submitted a request for a pilot ODS disposal project for Nepal in line with decision 58/19 that laid out the guidelines for developing a limited number of demonstration projects for disposal. This pilot project was proposed to design an approach for the final disposal/destruction of the remaining amount of approximately 10 MT of CFCs as of 1.1.2010.

Based on the guidance of the Meeting of Parties to the Montreal Protocol on encouraging ODS destruction in Article 5 Parties, the Multilateral Fund (MLF) approved a pilot project on destruction of Nepal ODS stock at its 59<sup>th</sup> meeting. UN Environment spearheaded the Nepal ODS Destruction Project as an important step to explore various options for destruction of small stocks in LVCs. The project has been completed and it has provided a model for replication for other LVCs.

The pilot project sought to generate data and experience on options for disposal of the current volume of ODS available for destruction as of 1.1.2010. UN Environment was advised to consider two options: (1) the use of a mobile destruction facility that could be rented and shipped back to the country of origin once the ODS is safely destroyed, or (2) transporting the waste ODS to a recycling facility outside the country. The cost of the project as approved was US \$157,200 plus support costs and covered interim storage of cylinders, costs for the transport of

the materials to the facility, as well as the operationalization of the destruction process including monitoring and reporting the final quantities destroyed. The pilot aspect would be demonstrating the use of this equipment, the results of which would be useful to LVC countries and provide cost effective options for countries that have small volumes of unwanted ODS that require destruction.

During the review of the project during the 59<sup>th</sup> Excom., one Member expressed the hope that, in the development of the project, the implementing agency and the country would ensure that it was truly a demonstration project, i.e. that it would demonstrate how the activity would be sustained and how, under relevant circumstances, it could access sustainable funding for climate activities. The project should also be designed to show how portable destruction technology could meet the needs of the country, as well as its value for similar LVC countries when dealing with unwanted ODS. Another Member said that UN Environment should make sure that the first phase of the project included a comprehensive cost-effectiveness analysis of the two options: (i) use of a portable destruction facility; and (ii) transporting the waste ODS to a recycling facility. In the second phase of the project, the most cost-effective of the two options should be used and implementation should be done in partnership with another agency.

## **PAST PROGRESS REPORTING**

UN Environment submitted, on request of the MLF Secretariat a progress report to the 70<sup>th</sup> Meeting of the Executive Committee that met on 1-5 July 2013 which detailed the process of destruction of 9.03 MT of CFC 12 in a facility in USA and provided details on the use of the draft guidelines for ODS disposal projects. At that same meeting, UN Environment had provided a report on the overall implementation process of this project. This report can be seen in Document UN Environment/OzL.Pro/ExCom/70/54, dated 5 June 2013. UN Environment provided an update on the progress of the implementation of the Nepal project, where specific timelines and target outputs achieved were listed. The selected approach that the destruction project used was to export the ODS for destruction to the United States of America. This was done through a partner, EOS Climate, who organised the transfer to a licensed facility for destruction. UN Environment reported that the shipment reached the United States of America in November 2012, and subsequently has been reported as destroyed as of February 2013. The amount of ODS handled in this project was approximately 10 ODP tonnes (107,000 CO<sub>2</sub>-equivalent tonnes). For the preparations of the 72<sup>nd</sup> ExCom in April 2014 and 76<sup>th</sup> Excom in May 2016, extensive information specifically in regard to carbon credits and their sale was provided to the Secretariat.

UNEP further reported that in March 2013, the Nepal project was submitted to the Climate Action Reserve (CAR). This has subsequently been listed in CAR with a reserve project identification number of CAR955. Upon further verification with the CAR website, the Secretariat noted the project has now changed status with CAR as registered, as of 24 May 2013.



It has met final verification requirements of the CAR, and Climate Reserve Tonne (CRTs) have now been issued<sup>1</sup>.

UN Environment's partner *EOS Climate* had obtained the first carbon credits in 2013 by destroying 9.03 MT of CFC 12. Since the 72nd Meeting, most of the work has been related to registration of the credits in the voluntary carbon market obtained by destroying the CFCs and efforts to sell them. The voluntary carbon markets have experienced an all-time decline in potential worth of the credits and prospective buyers of the same. As a result, the credits have still not been completely sold.

Under the Nepal project 82,391 Verified Emission Reductions (VERs)<sup>2</sup> have been generated. All of these are being offered for sale. The state of the carbon voluntary market is such that it is likely that more than one buyer will be involved, rather than a single buyer who wants all of the VERs at once. Under this project Climate Reserve Tons (CRTs)<sup>3</sup> were generated because the Climate Action Reserve Article 5 ODS Protocol was used. CRTs are one type of VERs. *EOS Climate* has been seeking buyers and in June 2014 established a marketing agreement with *The Carbon Neutral Company*, a leading retailer of voluntary carbon credits.

*EOS Climate* is currently vetting prospective purchasers for the offset credits that resulted from the project. Partners in this project remain optimistic they will find a buyer(s) willing to make a commitment to this new type of credit. The current price for voluntary credits is in the order of

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<sup>1</sup> Project developers submit a project by uploading the necessary forms and supporting documents to the Climate Action Reserve online software. The Reserve staff pre-screen projects for eligibility. Eligible projects are posted on the Reserve site with a status of "listed." The next step is verification by an independent, accredited verification body. Once completed, Reserve staff review the verification documentation, and if the project passes this final review process, it is labeled "registered" and CRTs are issued. Project developers submit a project by uploading the necessary forms and supporting documents to the Reserve online software. The Reserve staff pre-screen projects for eligibility. Eligible projects are posted on the Reserve site with a status of "listed." The next step is verification by an independent, accredited verification body. Once completed, Reserve staff review the verification documentation, and if the project passes this final review process, it is labeled "registered" and CRTs are issued.

<sup>2</sup> VERs is a generic term for offsets. There are three main market drivers for demand in the voluntary market. Firstly, as a key component of a company's marketing strategy linked to corporate social responsibility. Secondly, as a profit-making enterprise where financial participants build portfolios of VERs in order to obtain returns on capital employed. And thirdly, as a valuable learning exercise for forward looking companies and investors who anticipate future participation in the compliance regime. Verified Emission Reductions are derived from project-based emissions reductions from a wide range of technologies and project types.

<sup>3</sup> CRTs are offsets unique to the Climate Action Reserve. VERS is a generic term for offsets and CRTs are offsets unique to the Climate Action Reserve. Under this project CRTs were generated because the Climate Action Reserve Article 5 ODS Protocol was used. CRTs are one type of VERS.

approximately range of US \$0.55 per tonne and partners are seeking a higher price given the high quality of the project and the credits.

In December 2014, *EOS* closed a transaction to sell 22,000 of the carbon credits generated from the Nepal project. They will continue to work to find a buyer(s) for the remaining 60,391 credits. As an innovative approach under this project, it has been agreed that a portion of the revenue from the sale would be committed to the Government of Nepal to support local sustainability initiatives. The Agreement between the UN Environment partner and UNOPS specified that the revenue returned to Nepal would be paid into a fund established by the Government of Nepal in consultation with UN Environment, dedicated to training, job creation, capacity building, and community development focused on refrigerant management, energy efficiency, and environmental sustainability. This is not a typical structure for offset projects but partners believed it would enhance the project's appeal and establish a good model for future ODS projects and hence the UNOPS contract with *EOS Climate* included a provision whereby a portion of the revenue be shared with Nepal even though sale of credits was not an objective or an output of the approved project. This approach also highlighted that sale of credits, if possible, could make the project sustainable to some extent. The share of credit sales revenue that will be transferred to Nepal is specified in the December 2011 Agreement with UNOPS:

- 10% of the Gross Revenue up to US \$1.50 per credit; and
- 25% of the Gross Revenue thereafter.

Following this the Nepal share of US \$12,925 from the sale of 22,000 credits were remitted to NBSM bank account on February 15, 2017. Some of the key areas which are being explored for utilisation of these funds in consultation with the Government are:

1. Strengthen the agreed activity with private partnership. Explore possibilities of involving OEMs that are introducing air conditioners based on HCFC and HFC alternatives in the Nepal market;
2. Focus on flammable refrigerants and country needs to address flammable refrigerants
3. Build capacity of local technicians (master trainers) on handling flammable refrigerants through a training programme conducted with private partners as part of south-south cooperation.
4. Build capacity of local technicians (master trainers) on handling flammable refrigerants through a training programme conducted in Nepal in collaboration with NREMA and OEMs
5. Mainstream the module on handling flammable refrigerants in the curriculum of training institute in Nepal through the HPMP funds
6. Develop a certification scheme for certifying technicians to handle flammable refrigerants.

The state of the carbon markets has drastically changed since 2010 when the project was initially conceived, adding a challenge to sale of the credits. The partners remain intent on following

through on the final step to work with numerous parties involved in the global carbon markets in efforts to find a buyer for the remaining 60,391 credits and demonstrate to the Parties that carbon finance is a viable mechanism to address remaining ODS banks. There is no way to predict the timing.

In summarizing the demonstration value of the Nepal project, the work on this project provided an opportunity to link ODS destruction to the carbon market and explore the possibility of other financial mechanisms to support ODS destruction activities. The project's registration with the CAR is a good example for other countries who are pursuing this track for their ODS disposal projects. UN Environment also reported that one of the challenges that was faced during project implementation was the lengthy process to get approval for the export of the ODS to the United States of America, because of the legal impediments that required Parliamentary clearance. However, this was also an important lesson learned for the project as it allows UN Environment to use the same approach for similar issues in the future.

The project was a pilot project with demonstration capabilities. This project handled the destruction of the ODS according to strict standards and should serve as a model for international ODS offset projects and corporations that want to invest in international ODS projects. There are implications of this project for Article 5 countries on leveraging carbon-finance with their collected or potential ODS waste. The project demonstrated how unwanted ODS can be disposed of safely and cost-effectively in collaboration with the private sector, leveraging state-of-the-art technologies, operational systems, and when the credits are ultimately sold, carbon finance. This single project prevented emissions equivalent to over 107,000 tonnes of carbon dioxide. It helped establish for the international community a sustainable model of securing carbon finance for management and disposal of CFC stocks in developing countries, while delivering significant environmental and economic co-benefits. Some of these lessons learnt for LVCs from this demonstration project can be seen at **Annex. 2** to this document.

## **Annex. 1**

### **Decision XVI/27. Compliance with the Montreal Protocol by Nepal**

1. To note that Nepal ratified the Montreal Protocol and the London Amendment on 6 July 1994. Nepal is classified as a Party operating under paragraph 1 of Article 5 of the Protocol and had its country programme approved by the Executive Committee in 1998. The Executive Committee has approved \$453,636 from the Multilateral Fund to enable compliance in accordance with Article 10 of the Protocol;

2. To recall that in its decision XV/39, the Fifteenth Meeting of the Parties had congratulated Nepal on seizing 74 ODP tonnes of imports of CFCs that had been imported in 2000 without an import license, and on reporting the quantity as illegal trade under the terms of decision XIV/7;

3. To recall that, in paragraph 5 of decision XV/39, the Parties had stated that, if Nepal decided to release any of the seized quantity of CFCs on to its domestic market, it would be considered to be in non-compliance with its obligations under Article 2A of the Montreal Protocol and would therefore be required to fulfil the terms of decision XIV/23, including submitting to the Implementation Committee a plan of action with time-specific benchmarks to ensure a prompt return to compliance;

4. To clarify the meaning of paragraph 5 of decision XV/39 to mean that Nepal would only be considered to be in non-compliance if the amount of CFCs released on to the market in any one year exceeded its permitted consumption level under the Protocol for that year;

5. To note further that Nepal's baseline for CFCs is 27 ODP tonnes;

6. To note with appreciation Nepal's submission of its plan of action to manage the release of the seized CFCs, and to note further that, under the plan, Nepal specifically commits itself:

(a) To release no more than the following amount of CFCs in each year as follows:

- (i) 27.0 ODP tonnes in 2004;
- (ii) 13.5 ODP tonnes in 2005;
- (iii) 13.5 ODP tonnes in 2006;

- (iv) 4.05 ODP tonnes in 2007;
- (v) 4.05 ODP tonnes in 2008;
- (vi) 4.00 ODP tonnes in 2009;
- (vii) Zero in 2010, save for essential uses that may be authorized by the Parties;

(b) To monitor its existing system for licensing imports of ozone-depleting substances, including quotas, introduced in 2001, which includes a commitment not to issue import licenses for CFCs, in order to remain in compliance with its plan of action;

(c) To report annually on the quantity of CFCs released pursuant to paragraph 6 (a) above;

(d) To ensure that any quantities of CFCs remaining after 2010 are not released on to its market except in compliance with Nepal's obligations under the Montreal Protocol;

7. To note that the measures listed in paragraph 6 above will enable Nepal to remain in compliance;

8. To monitor closely the progress of Nepal with regard to the implementation of its plan of action and the phase-out of CFCs;

## **Annex. 2**

### **EXPERIENCE AND LEARNINGS FOR OTHER LVCs**

The experience in Nepal has helped build the framework for developing a work plan for the NOUs for development of the projects for destruction of unwanted ODS in their countries. The salient features of such actions would include:-

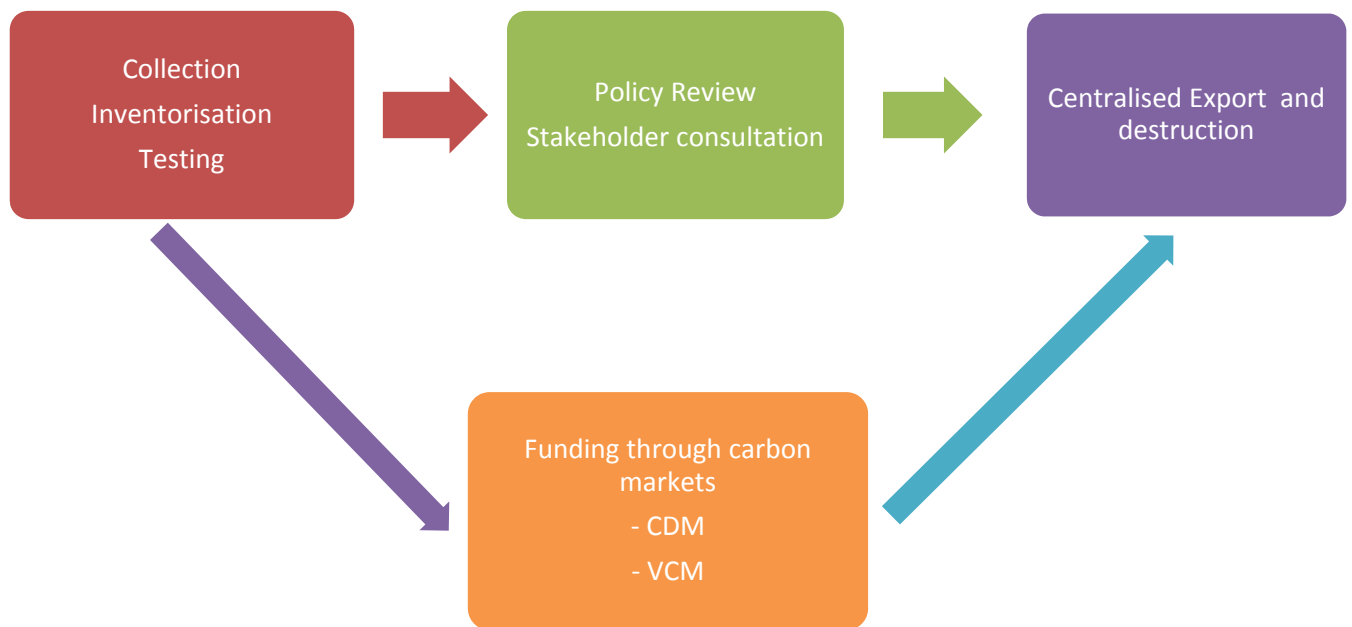
1. Get started with inventorisation of the stock immediately
  - Locate the various stocks of ODS distributed all over the country
  - Quantify the stock
  - Collect the stock in a single location and ensure that it is kept in an environmentally protected condition
  - Proper documentation of the origin of the stock
  - Arrange for testing of the stock, and establish the purity

2. Consult with the relevant Ministry with regard to advanced funds, collection and distribution of revenues
  - Determination of possibilities of linkage for other projects in the country
  - If linkage is established, then explore possibilities for funding from such programs with the help of the concerned ministries
  
3. Identify any legal limitations for the Ministry of Environment, Ministry of Commerce and Customs Department for facilitating the project
  - Policies and regulations regarding the establishment of destruction facilities in the countries
  - Establishing of roles and accountability of the various ministries and departments
  - Arrange for training and awareness programs for the personnel of the concerned ministries regarding harmful effects of ODS and the necessity of their destruction programs
  - Establish a proper network for coordination among all these ministries and departments
  
4. Identify existing legal procedures pertaining to the export of collected ODS
  - Any ban on the export of the ODSs should be relaxed for the purpose of ODS export for destruction
  - Establish necessary administrative framework to facilitate the process
  - Prepare proper documentation for providing framework to the process if the export is to be done more than once
  - Any exemption given for ODS export should be monitored with close coordination with all concerned parties
  
5. Review existing legal procedures in relation to the following
  - Disposal of hazardous wastes
  - Import and export of hazardous wastes (if unwanted ODS is considered as hazardous wastes)
  - Fee structures for government permits and clearance
  - Prepare proper documentation for the same, specifically for ODS
  
6. Involve with CDM Designated National Authority (DNA) for applicability of CDM/VCM for this project
  - If destruction facilities are established in the country, then determination of the CDM/VCM eligibility of the project should be determined from the DNA
  - Establish proper policies and guidelines for the same
  - Arrange for administrative framework for facilitating the process
  
7. Conduct a detailed stakeholder consultation and survey
  - Identify the stakeholders – Some of them are listed below:-
    - Government of the LVC concerned
    - National Ozone Unit, Ministry of Environment

- Ministry of Energy
  - Department of Customs
  - Ministry of Commerce
  - Climate Change Focal Points
  - Private Sector
  - Importers & retailers of RAC equipment
  - Transporters, container companies, freight forwarders
  - Pesticide suppliers and manufacturers
  - Industry Associations
  - Transport and freight carriers
  - Hospitality sector
  - Refrigeration & Air-conditioning Training Centres
  - Define roles and contributions of the stakeholders for the project
  - Establish accountability of the stakeholders for the same
8. Education and public awareness is vital for the success of the program
- Develop a training manual for the technicians involved in the sectors in which ODSs are used
  - Organise awareness campaigns and workshops across the country on ODSs and their harmful effects for the general public
  - Similar campaigns should be organised for all stakeholders to raise their awareness
9. Absence of any infrastructure for recollection of ODSs
- Equipment which are scrapped and which have reached their end of serviceable life can become sources of ODSs
  - Programs can be launched for the collection of ODSs from such equipment
  - Funding sources should be considered for the programs, which can actually be instrumental in making the projects more economically viable
  - Quality analysis and testing facilities should be established for such recollected ODSs
10. Options for ODS destruction for an LVC like Nepal
- Bring a mobile destruction unit and destroy the ODS in situ - an expensive proposition (fixed cost of 0.2 million USD plus variable cost of 5-7 USD per kg)
  - Destroy the ODS in cement kilns within the country in the long term
  - Export the ODS to the United States or Japan for destruction

### **NEPAL MODEL FOR LVCs**

The following figure graphically explains the replicable Nepal model for other LVCs. The process starts with Collection, Inventorisation and Testing of the ODS stocks bifurcating into Funding Review and Policy Review (With Stakeholder Consultation). After these jobs are done, the next exercise would be to export the stock and destroy it.



Additional funding for replacement and collection of ODS in LVCs could be obtained in form of Utility subsidies, Manufacturer/Retailer discounts

Fig 1 – Nepal Model for LVCs – ODS Destruction Project for LVCs