NACIONES UNIDAS **EP**

Programa de las Naciones Unidas para el Medio Ambiente

Distr.
GENERAL

UNEP/OzL.Pro/ExCom/79/14
17 de junio de 2017

ESPAÑOL
ORIGINAL: INGLÉS

COMITÉ EJECUTIVO DEL FONDO MULTILATERAL
PARA LA APLICACIÓN DEL
PROTOCOLO DE MONTREAL
Septuagésima novena Reunión
Bangkok, 3 – 7 de julio de 2017

INFORMES SOBRE LOS PROYECTOS CON REQUISITOS ESPECÍFICOS DE PRESENTACIÓN DE INFORMES

1. El presente documento recoge los proyectos para los que se solicitaron informes específicos en reuniones anteriores y aquellos que requieren la atención del Comité Ejecutivo. Los informes se ha dispuesto en las partes siguientes:

Parte I: Planes de gestión de eliminación de HCFC/planes de gestión de eliminación del consumo en el sector de producción de HCFC

Parte II: Proyectos de eliminación de SAO

Parte III: Proyectos de enfriadores

Parte IV: Otros proyectos

2. Cada parte recoge un breve informe sobre la marcha de las actividades, así como las observaciones y las recomendaciones de la Secretaría.

Parte I: Planes de gestión de eliminación de HCFC/planes de gestión de eliminación del consumo en el sector de producción de HCFC

3. Está previsto que a la 79ª reunión se presenten informes específicos sobre la etapa I de los planes de gestión de eliminación de HCFC para Armenia1, Chile2, China3, Cuba4, Indonesia5, República Islámica del Irán6 y Viet Nam7; y también sobre la etapa I de los planes de gestión de eliminación del consumo en el sector de producción de HCFC para China8. Se presentaron los informes de tan solo tres países: Armenia, Chile y China.

4. El Comité Ejecutivo puede estimar oportuno instar a los organismos de ejecución pertinentes a presentar a la 80ª reunión informes sobre la etapa I de los planes de gestión de eliminación de los HCFC para Cuba, Indonesia, la República Islámica del Irán y Viet Nam.

Devolución de los saldos de la venta de los equipos adquiridos para SAGA en Armenia (PNUD)

Antecedentes

5. La etapa I del plan de gestión de eliminación de los HCFC aprobado para Armenia[9] incluyó un proyecto de inversión para convertir la fabricación de refrigeradores comerciales de funcionamiento con HCFC-22 y HCFC-141b en SAGA a funcionamiento con hidrocarburos. El proyecto se canceló en la 74ª reunión[10] al arruinarse la empresa tras entregarles el equipo. En la 77ª reunión, el Comité Ejecutivo pidió al PNUD que informara sobre el estado y situación del equipo adquirido para SAGA en cada una de las reuniones hasta que se haya incluido todo el equipo y se hayan reembolsado al Fondo Multilateral[11] todos los fondos obtenidos de la venta de dichos equipos.

Observaciones

6. La Secretaría ha recibido un informe del PNUD en el que se indica que la venta de estos equipos ha concluido y que al Fondo Multilateral se le reembolsará, en la 79ª reunión, un saldo de 95 479 $EUA de la venta del equipo.

Recomendación

7. El Comité Ejecutivo puede estimar oportuno tomar nota de la devolución del saldo de 95 479 $EUA por la venta del equipo adquirido para SAGA en el marco de la etapa I del plan de gestión de eliminación HCFC para Armenia.

Etapa I del plan de gestión de eliminación de los HCFC para Chile (informe anual sobre la marcha de las actividades) (PNUD)

8. En nombre del Gobierno de Chile, el PNUD, en calidad de organismo director de ejecución, presentó a la 79ª reunión el informe anual sobre la marcha de las actividades de ejecución del programa

[1] Decisión 77/41(e)
[2] Decisión 76/45(b)
[3] Decisión 77/21(c)
[4] Decisión 77/50(b)
[5] Decisión 76/47(d)
[6] Decisión 74/43(e)
[7] Decisión 76/49(e)
[8] Decisión 77/66 c) ii) y 78/5 c)
[9] Decisión 62/40
[10] Decisión 74/23 y documento UNEP/OzL.Pro/ExCom/74/20
[11] Decisión 77/41 e) y documento UNEP/OzL.Pro/ExCom/77/35

de trabajo conexo a los cuarto y quinto tramos del plan de gestión de eliminación de los HCFC[12] en consonancia con la decisión 76/45 b). El informe de verificación del consumo de HCFC para 2015 no se presentó junto con el informe anual.

Consumo de HCFC

9. El Gobierno de Chile informó de un consumo de HCFC que ascendió a 63,33 toneladas PAO en 2016, lo que es un 20 por ciento inferior al objetivo de 78,75 toneladas PAO del plan de gestión de eliminación de los HCFC para 2016, y del 27,5 por ciento inferior a lo establecido en la cifra del consumo básico de referencia que fue de 87,5 toneladas PAO. El Gobierno presentó también los datos sector del sector de consumo en el marco del informe de ejecución del programa de país de 2016, lo que es congruente con los datos notificados en virtud del artículo 7.

Informe sobre la marcha de las actividades de ejecución de los tramos cuarto y quinto del plan de gestión de eliminación de los HCFC

10. El Gobierno continuó trabajando para fortalecer el sistema de concesión de licencias conexas a las SAO actualizando para ello el Código Nacional de Aduanas de forma que incluya las modificaciones de los encabezamientos de tarifas y las descripciones de los HCFC, HFC, y de los equipos/productos que los contienen. Estos cambios han estado vigentes y en funcionamiento desde enero de 2017.

Sector de servicio y mantenimiento de equipos de refrigeración

11. Se ha capacitado a un total de 290 técnicos en las prácticas de refrigeración idóneas, incluyendo en ello procesos alternativos y sustancias para el uso de HCFC-141b en labores de lavado por baldeo, tales como nitrógeno, filtros para la absorción de ácidos y múltiplos cambios de aceite (compresor); se ha certificado a 162 técnicos; habiendo recibido 61 de ellos subsidies a través del sistema de apoyo financiero para la titulación de técnicos, habiéndose evaluado las pericias en técnicas de servicio y mantenimiento de otros 24 como preparativo para su titulación definitiva; se firmó un acuerdo sobre un proyecto de demostración sobre el uso de CO_2 transcrítico en dos supermercados (uno respaldado por la Coalición Clima y Aire Limpio y otro por el Fondo Multilateral); se han determinado las especificaciones técnicas y de empresa para el equipo del centro de regeneración y está en curso el proceso de adquisición y las tareas de instalación; se crearon directrices dirigidas a la recuperación y reciclaje de refrigerantes; y continúan ejecutándose actividades de incremento del grado de concienciación.

Unidad de ejecución y supervisión del proyecto

12. La ejecución y supervisión del proyecto se efectúa sirviéndose de la Dependencia Nacional del Ozono, la cual sigue trabajando con el comité asesor para respaldar la ejecución de las actividades del plan de gestión de eliminación de los HCFC organizando para ello reuniones de asesoría con las partes interesadas; visitando supermercados y grandes superficies para examinar la marcha de las actividades de los proyectos de demostración; y trabajando con la Cámara chilena de equipos de refrigeración y de climatización para respaldar el proceso de certificación de técnicos.

Nivel de desembolso de fondos

13. A fechas de febrero de 2016, de los 1 786 455 $EUA aprobados, 934 640 $EUA (52,3 por ciento) se han desembolsado ya (779 130 $EUA para el PNUD y 155 510 $EUA para la ONU medio ambiente) como se recoge en el Cuadro 1.

[12] Los tramos cuarto y quinto (final) de la etapa I del plan de gestión de eliminación de los HCFC se aprobó en la 76ª reunión por un costo total de 291 225 $EUA, cifra compuesta de 199 299 $EUA, más gastos de apoyo al organismo por un monto de 14 947 $EUA para el PNUD, y de 68 123 $EUA más gastos de apoyo de apoyo al organismo por un monto 8 856 $EUA para la ONU medio ambiente.

Cuadro 1. Informe financiero de la etapa I del plan de gestión de eliminación de los HCFC para Chile ($EUA)

Organismo	Aprobado ($EUA)	Desembolsado ($EUA)	Régimen de desembolso (%)
PNUD	1 497 966	779 130	52,0
ONU medio ambiente	288 489	155 510	53,9
Total	**1 786 455**	**934 640**	**52,3**

Observaciones

14. La Secretaría tomó nota de la presentación de un informe general en el que se recoge la marcha continuada de las actividades de la etapa I del plan de gestión de eliminación de los HCFC. Se notifica que las actividades en el sector de servicio y mantenimiento avances a buen ritmo y que el proyecto de demostración sobre el uso del CO_2 transcrítico en dos supermercados influenciará a que en este sector se conviertan más grandes superficies en un futuro. Los técnicos de capacitación y certificación han ejecutado una serie de actividades y el programa de certificación sigue su curso de convertirse en un requisito de obligado cumplimiento tan pronto como está plenamente en vigor y funcionando.

15. La Secretaría tomó nota con preocupación de que el informe de verificación de 2015 sobre el consumo de HCFC no se había presentado, y pidió al PNUD que respondiera sobre esa cuestión. El PNUD respondió a la Secretaría que los informes de 2015 y 2016 sobre verificación se presentarán a la 80ª reunión, a lo más tardar.

16. Las actividades continúan ejecutándose según lo previsto y el nivel general de desembolso es del 52 por ciento de las finanzas aprobadas. El PNUD ha confirmado que la fecha de culminación operativa de la etapa I del plan de gestión de eliminación de los HCFC será en el mes de diciembre de 2017, conforme a lo acordado en la 76ª reunión.

Recomendación

17. El Comité Ejecutivo puede estimar oportuno:

a) Tomar nota del informe sobre la marcha de las actividades de 2016 sobre la ejecución del plan de gestión de eliminación de HCFC (etapa I) para Chile, que presentó el PNUD; y

b) Pedir al PNUD que presente los informes de verificación del consumo de HCFC para 2015 y 2016 como parte de las prescripciones de la etapa I del plan de gestión de eliminación de los HCFC a la 80ª reunión a lo más tardar.

Etapa I del plan de gestión de eliminación de los HCFC para China (PNUD)

18. De conformidad con el inciso 5 b) i) del Acuerdo entre el Gobierno de China y el Comité Ejecutivo para la reducción del consumo de los HCFC, en el 2016 se realizó una verificación independiente de la conversión de las líneas de fabricación de las unidades enfriadoras comerciales, comerciales y de climatización (bombas de calor) pasando de la tecnología de HCFC-22 a la de HFC-32 en DunAn Environment en el marco del plan del sector de equipos de refrigeración industrial y comercial de la etapa I del plan de gestión de eliminación de los HCFC en China. El informe de verificación puso de manifiesto que DunAn Environment fabricaba unidades que funcionaban con HFC-410A en una línea de fabricación que había sido convertida a la tecnología HFC-32 sin tener en cuenta la norma nacional de seguridad relativa a las unidades de climatización que utilicen refrigerante inflamable.

19. En la 77ª reunión, el PNUD informó al Comité Ejecutivo de que DunAn Environment ya no fabricaba equipos con R-410A en las líneas convertidas a la fabricación de equipos con HFC-32. El Comité Ejecutivo pidió posteriormente al PNUD que aportara una carta de la empresa en la que constara

su compromiso de que las líneas de fabricación financiadas por el Fondo Multilateral continuarían fabricando equipos con la tecnología para la que se aprobó la financiación (decisión 77/21 c)).

Observaciones

20. El PNUD presentó una carta de DunAn Environment fechada el 21 de diciembre de 2016 en la que se indicaba que ninguna de las líneas convertidas a HFC-32 produciría equipos de climatización con HCFC, HFC-410A o cualquiera otro refrigerante que tenga un valor PCA superior al de HFC-32. Al entrar en vigor la norma nacional de seguridad GB 9237 y se permita la venta de unidades de climatización con HFC-32, la empresa desplegará sus mejores esfuerzos para seguir con la producción y fomento de equipos de climatización con HFC-32; aceptando también la empresa el seguimiento e inspección del emplazamiento de la producción con miras al cumplimiento de dicho compromiso.

21. Tras una solicitud de información adicional, el PNUD informó de que el seguimiento continuo de las líneas convertidas lo efectuaría la mesa de protección del medio ambiente como parte de su programa de seguimiento reglamentario, a fin de asegurar que la empresa fabrique equipos con refrigerante HFC-32 o con otros refrigerantes de PCA inferior al del HFC-32.

Recomendación

22. El Comité Ejecutivo puede estimar oportuno tomar nota de la carta de compromiso presentada por la empresa DunAn Environment sirviéndose del PNUD, a fin de asegurar que las líneas de fabricación financiadas por el Fondo Multilateral continuarían fabricando equipos con tecnología para la que se aprobó la financiación solamente conforme a la decisión 72/21 c).

Etapa I de los planes de gestión de eliminación del consumo en el sector de producción de HCFC en China (Banco Mundial)

23. Las dos actividades de asistencia técnica que siguen, destinadas a reducir al mínimo que sus repercusiones menoscaben el medioambiental como consecuencia de la emisión del subproducto HFC-23, se incluyeron en la etapa I de los Planes de gestión de eliminación del consumo en el sector de producción de HCFC para China:

a) Investigación sobre la reducción de la relación del subproducto HFC-23 sirviéndose de las prácticas más idóneas, para reducir la relación del subproducto HFC-23 mediante medidas técnicas y políticas; y

b) Investigación y estudio de las tecnologías de conversión/pirolisis de HFC-23, para respaldar la investigación y desarrollo de la tecnología de conversión del HFC-23 para encontrar una solución más rentable a la eliminación del HFC-23.

24. En el transcurso de las Reuniones 77ª y 78ª, el Comité Ejecutivo pidió al Gobierno de China, sirviéndose del Banco Mundial, que facilitara a la 79ª reunión el estado de los estudios antedichos (decisión 77/66 c) ii) y 78/5 c)).

25. En lo tocante al estudio de las tecnologías de conversión/pirolisis de HFC-23, el Banco Mundial indicó que se está en proceso de selección de una firma de asesoría y que se prevé esté lista para iniciar las tareas en June 2017. El asesor examinará el arco de la política-normativa actual y recomendará las medidas reglamentarias para respaldar la reducción de emisiones siguiendo para ello las prácticas más idóneas para apoyar la reducción de emisiones sirviéndose de las mejores prácticas, y recolectará datos y examinará el rendimiento actual del subproducto, las pérdidas de materia prima, los productos intermedios y los productos finales, a fin de identificar las oportunidades de mejorar la eficiencia del proceso, facilitará asesoría técnica idónea para los procesos individuales de producción para reducir la

relación del subproducto HFC-23, y evaluará la viabilidad económica de las medidas técnicas y estimará sus costos.

26. En lo tocante al estudio sobre las prácticas idóneas para reducir la relación del subproducto HFC-23, el Banco Mundial indicó que se había contratado a una empresa para explorar la viabilidad de reciclar y reutilizar el HFC-23 generado por la producción de HCFC-22, que el estudio se culminará en septiembre de 2017, y que el informe definitivo se presentará a finales de 2017.

Observaciones

27. Tras tomar nota del estado de las actividades de asistencia técnica para la ejecución y tras deliberaciones ulteriores, el Banco Mundial indicó que podría facilitar una mayor actualización sobre el estado de las tareas a la 79ª reunión.

28. El Comité Ejecutivo puede estimar oportuno tomar nota de que en el documento sobre aspectos clave relacionados con las tecnologías[13] de control del HFC-23 como subproducto se ha incluido una breve descripción sobre las prácticas vigentes para el seguimiento de HFC-23 en el marco de ejecución de los planes de gestión de eliminación del consumo en el sector de producción de HCFC para China.

Recomendación

29. El Comité Ejecutivo puede estimar oportuno:

a) Tomar nota de los informes de situación presentados por el Banco Mundial sobre las actividades de asistencia técnica relativas a las tecnologías de conversión/pirolisis de HFC-23 y a la investigación sobre la reducción de la relación del subproducto HFC-23 sirviéndose de las prácticas más idóneas; y

b) Pedir al Banco Mundial que presente a la 80ª reunión un informe sobre la marcha de ejecución de las actividades técnicas relativas a las tecnologías de conversión/pirolisis de HFC-23 y el proyecto de informe final del estudio de la investigación sobre la reducción de la relación del subproducto HFC-23, sirviéndose de las prácticas más idóneas.

Parte II: Proyectos de eliminación de SAO

30. En el transcurso de la 77ª reunión, el Comité Ejecutivo pidió a los organismos bilaterales y de ejecución que, a partir de la 79ª reunión y de forma ininterrumpida hasta haberse culminado todos los proyectos, presenten informes de todos los proyectos piloto de demostración relativos a la eliminación de SAO como proyectos con requisitos específicos de presentación de informes[14].0

Antecedentes

31. En el periodo de tiempo comprendido entre las Reuniones 58ª y 73ª, el Comité Ejecutivo aprobó la financiación de 16 preparaciones de proyectos, lo que resultó en proyectos piloto de demostración plenamente desarrollados para la eliminación y gestión de desechos de SAO en 11 países, dos proyectos regionales y otro de asistencia técnica por una financiación total que ascendió a 11 278 052 $EUA como se recoge en el Cuadro 1. Estos proyectos se aprobaron conforme a la decisión 58/19, las directrices provisionales para proyectos de eliminación de desechos de SAO.

[13] UNEP/OzL.Pro/ExCom/79/48.
[14] Decisión 77/8 e) i)

Cuadro 1. Aprobaciones de proyectos de demostración para la eliminación de desechos de SAO

País	Título del proyecto	Organismo	Reunión	Fondos ($EUA)	Situación
Argelia	Proyecto piloto de demostración sobre la gestión y eliminación de desechos de SAO.	Francia	72ª	250 000	En curso
		ONUDI	72ª	375 059	En curso
Brasil	Proyecto piloto de demostración sobre la gestión y eliminación de desechos de SAO.	PNUD	72ª	1 490 600	En curso
China	Proyecto piloto de demostración sobre la gestión y eliminación de desechos de SAO.	Japón	67ª	900 000	En curso
		ONUDI	67ª	1 227 ,885	En curso
Colombia	Proyecto de demostración sobre eliminación y destrucción de SAO al final de su vida útil.	PNUD	66ª	1 195 000	En curso
Cuba	Proyecto piloto de demostración sobre la gestión y eliminación de desechos de SAO.	PNUD	62ª	525 200	Culminado en octubre de 2015
Georgia	Proyecto piloto de demostración sobre la gestión y eliminación de desechos de SAO.	PNUD	69ª	55 264	Culminado en diciembre de 2015
Ghana	Proyecto piloto de demostración sobre la gestión y eliminación de desechos de SAO.	PNUD	63ª	198 000	Culminado en diciembre de 2016
Líbano	Proyecto piloto de demostración sobre la gestión y eliminación de desechos de SAO.	ONUDI	73ª	123 475	En curso
México	Proyecto de demostración para la eliminación y destrucción de SAO no deseadas.	Francia	63ª	500 000	En curso
		ONUDI	63ª	927 915	En curso
Nigeria	Proyecto de demostración para la eliminación y destrucción de SAO no deseadas.	ONUDI	67ª	911 724	En curso
Turquía	Proyecto de demostración para la eliminación y destrucción de SAO no deseadas.	ONUDI	66ª	1 076 250	En curso
Región: EUR	Demostración de una estrategia regional para la gestión y eliminación en la región de Europa y Asia Central.	ONU medio ambiente	69ª	75 000	En curso
		ONUDI	69ª	274 480	En curso
Nepal	Proyecto de demostración para la eliminación SAO no deseadas.	ONU medio ambiente	59ª	157 200	Culminado

32. Tres de estos proyectos piloto han sido terminados y sus informes finales presentados por el PNUD (para Georgia y Ghana) y la ONU medio ambiente (para Nepal) en la 79ª reunión para informar al Comité Ejecutivo, como se resume seguidamente. Los informes completos se adjuntan al anexo I del presente documento.

Georgia: proyecto piloto de demostración sobre la gestión y eliminación de SAO (PNUD)

33. El objetivo del proyecto piloto de demostración para Georgia fue el de poner de manifiesto cómo superar los obstáculos a la gestión y destrucción de las SAO no deseadas mediante sinergias entre los desechos de las SAO y las existencias de contaminantes orgánicos persistentes (COP), y la eliminación de 2,13 toneladas de SAO no deseadas que ya habían sido recolectadas y que se encontraban almacenadas temporalmente en instalaciones de todo el país.

34. El informe final se centra en las actividades llevadas a cabo conjuntamente con las zonas focales, en las que se eliminaron conjuntamente flujos de desechos de forma eficaz respecto de los costos. Se elaboró el mandato y un documento de licitación para el proceso de eliminación conjunta con el fin de determinar a un subcontratista de eliminación de desechos capaz de recoger, acumular, empaquetar y transportar los desechos de COP y de SAO hasta una instalación de destrucción situada en Francia. El marco de política-normativa sobre gestión de desechos peligrosos fue analizado de forma general respecto de los COP y de las SAO.

35. Un factor clave para el éxito del proyecto fue la estrecha coordinación entre dos actividades financiadas por separado con el apoyo del Gobierno. La gestión conjunta del proyecto mediante una sola licitación, un solo subcontratista y un solo proceso, seguida de los procedimientos tendentes a materializar el permiso para la exportación de los desechos tuvo como resultado unos ahorros en todo su conjunto. Además, al tener flujos de desechos de menor volumen, la eliminación de desechos SAO continuará en un futuro beneficiándose de la exportación conjuntamente con los desechos COP, cuando en virtud del Convenio de Estocolmo sobre Contaminantes Orgánicos Persistentes es una obligación nacional destruir tales desechos peligrosos. La experiencia puso de manifiesto que la ejecución de tales proyectos conjuntos requiere periodos de preparación más largos, como así ocurre también con la determinación de empresas que tengan la experiencia debida en ambos desechos. Este proyecto permitió la realización y puesta en vigor y funcionamiento de un sistema de este tipo.

36. El proyecto resultó en la eliminación de 1,2 tm de desechos SAO, que es un volumen inferior a lo previsto originalmente. Ello se debió al deterioro de los tanques en los que los CFC estaban almacenados, lo que produjo fugas de gas. El proyecto determinó todas las fuentes de desechos SAO del país; con el debido respaldo legislativo, tales recogidas continuarán en un futuro.

37. En lo que respecta a la sostenibilidad del proyecto, Georgia se encuentra actualmente en proceso de establecer un Fondo Nacional para el Medio Ambiente que incluya los fondos recolectados de las multas conexas al comercio ilegal de SAO. Este fondo podrá así emplearse para otras exportaciones de desechos SAO futuras.

Ghana: proyecto piloto de demostración para la gestión y eliminación de desechos SAO (PNUD)

38. El proyecto para Ghana propuso deshacerse de 1,8 toneladas de CFC-12 que ya se había recolectado y estaba listo para su destrucción, y poner en vigor y en funcionamiento medidas que respalden la sostenibilidad del proyecto considerando para ello otros desechos SAO potenciales que pueden recolectarse en el plano nacional en el marco de un proyecto sobre consumo energético eficiente financiado por el Fondo para el Medio Ambiente Mundial (FMAM).

39. El informe final facilitó los pormenores de la ejecución del proyecto, el establecimiento de las operaciones, en particular la sinergia entre el proyecto piloto de demostración y el proyecto financiado por el FMAN, la adquisición de los equipos (por ejemplo, las máquinas portátiles de recuperación procedentes de Alemania, equipos de laboratorio, identificadores de refrigerantes, cilindros de refrigerantes), y los resultados del proceso de destrucción. El informe indicó que un total de 1,2 tm of CFC y 5,2 tm de bromuro de metilo habían sido destruidas en las instalaciones polacas de Veolia, y que otra tm de CFC se había exportado para ser destruida en una instalación de los Estados Unidos de América (Tradewater). Así pues, el total de desechos SAO destruidos llegó a ser de 7,4 tm.

40. Algunos de los retos que hubo que enfrentar durante la ejecución incluyeron: dificultades a la hora de acumular los desechos en los volúmenes suficientes y necesarios para que la destrucción fuera eficaz respecto de los costos; inestabilidad de los mercados voluntarios de cuotas de emisiones de sustancias que contienen carbono, lo que se contempló como el impulsor de los intereses en exportar con fines a la destrucción; el proceso interno de obtención de obtener el visto bueno a la exportación de una mezcla de desechos hasta Polonia y los Estados Unidos de América (es decir, contaminantes orgánicos

persistentes (COP), bifenilos policlorados (PCB) y SAO); y atajar las existencias de las espumas recolectadas con un contenido de CFC-11 y su consecuente destrucción.

41. Una lección importante que se aprendió del proyecto fue la importancia de la cooperación entre proyectos de naturaleza complementaria, lo que en este caso fue el programa de descuento y sustitución de dispositivos financiado por el FMAM y el proyecto piloto de destrucción de desechos financiado por el Fondo Multilateral. Si bien el planteamiento fue complejo, al combinarse flujos de desechos, se posibilitó una solución rentable de destrucción, economizando en los costos de transporte y de la destrucción. Ello llevó además a la colaboración entre la Agencia de protección del medio ambiente y la Comisión de la Energía de Ghana, las dos organizaciones responsables de los proyectos del FMAM y del Fondo Multilateral, respectivamente.

Nepal: proyecto piloto de demostración para la gestión y eliminación de desechos SAO (ONU medio ambiente)

42. El proyecto piloto para Nepal permitió explorar dos opciones para destruir 10 tm de CFC-12 que se habían recogido y almacenado por mediación de la Dependencia Nacional del Ozono. El enfoque seleccionado fue el de exportar las SAO para llevar a cabo su destrucción en los Estados Unidos de América. Esto se efectuó a través de un corredor, el cual organizó la transferencia de las SAO no deseadas hasta una instalación con licencia para proceder a su destrucción. Las 10 tm (107 000 toneladas CO_2) fueron destruidas en febrero de 2013. Además, el proyecto se presentó a la *Climate Action Reserve (CAR)* en marzo de 2013, quedando posteriormente catalogado en CAR, cumpliendo las prescripciones de la verificación final de CAR, y habiéndose publicado el Tonelaje de *Climate Reserve* (CRT).

43. El proyecto ha generado 82 391 Reducciones Verificadas de Emisiones (VER), de las que 22 0000 se han vendido; la parte de la venta que corresponde al país asciende a 12 925 $EUA y se ha depositado en una cuenta acordada del *National Bureau of Standards and Metrology* como fondo que se dedicará a la capacitación, creación de puestos de trabajo, creación de capacidad y desarrollo comunitario que se centra en la gestión de refrigerantes, eficiencia en el consumo energético y sostenibilidad medioambiental.

44. El proyecto vinculó la destrucción de la SAO con los mercados voluntarios de cuotas de emisiones de sustancias que contienen carbono, y exploró otros mecanismos financieros en apoyo de proyectos de eliminación de desechos SAO. Las lecciones que arroja el proyecto se recogen en el informe final que se presenta.

Observaciones

45. Al examinar cada uno de los informes la Secretaría tomó nota de que en el informe final se recogían los siguientes aspectos de la decisión 58/19:

a) El volumen estimado que a raíz del proyecto llegó a destruirse;

b) Las descripciones de los sistemas de recogida, especialmente aquellas en los que el Fondo Multilateral estaba en sinergia con otros proyectos;

c) Los pasos específicos del proceso en general; y

d) Los principales retos confrontados y cómo se atajaron, junto con las lecciones aprendidas hasta la fecha en la ejecución de los proyectos piloto.

Recomendación

46. El Comité Ejecutivo puede estimar oportuno:

a) Tomar nota con reconocimiento de los informes finales sobre la gestión piloto de los desechos SAO y los proyectos de eliminación para Ghana y Georgia, presentados por el PNUD, y para Nepal, presentados por la ONU medio ambiente;

b) Invitar a los organismos bilaterales y de ejecución a considerar, cuando proceda, las lecciones aprendidas de los proyectos pilotos de demostración de eliminación de SAO mencionados en el apartado a) anterior, en el diseño y ejecución de proyectos similares futuros; y

c) Pedir a los organismos bilaterales y de ejecución que presenten los informes finales de los proyectos piloto de eliminación de SAO que hubiera pendientes, y reembolsar a la 82ª reunión los saldos de los proyectos cuando los informes correspondientes no se hayan presentado a las Reuniones 80ª u 81ª.

Parte III: Proyectos de enfriadores

Antecedentes

47. En su 77ª reunión el Comité Ejecutivo pidió a los organismos bilaterales y de ejecución, comenzando por la 79ª reunión y continuando hasta que se hayan terminado todos los proyectos, que presenten los informes de todos los proyectos de enfriadores en curso cual proyectos con requisitos específicos de presentación de informes[15]. A fechas de hoy son cuatro los proyectos de enfriadores en curso; los resultados de estos proyectos se resumen en el Cuadro 2 que sigue.

Cuadro 2. Informe de la situación de los proyectos de enfriadores en curso

País	Título del proyecto	Organismo	Reunión	Fondos aprobados ($EUA)	Fecha prevista de terminación	Situación de la marcha de las actividades
Brasil	Proyecto de demostración para la gestión integrada del subsector de enfriadores centrífugos, centrándose en la aplicación de las tecnologías de consumo energético eficiente sin CFC para sustituir los enfriadores de funcionamiento por CFC-.	PNUD	47	1 000 000	Enero de 2017	El PNUD ha movilizado 13 5 millones de $EUA procedentes del FMAM y otro monto adicional por valor de 64 millones de $EUA en concepto de cofinanciación. Todas las actividades más importantes de este proyecto ya han sido terminadas. A día de hoy está en curso el proceso de impresión de las publicaciones conexas al proyecto. El PNUD prevé cerrar financieramente el proyecto para finales de 2017.
Región de África	Proyecto de demostración estratégica para la conversión acelerada de los enfriadores con CFC en 5 países de África (Camerún, Egipto, Namibia, Nigeria y Sudán)	Francia	48	360 000	Diciembre de 2017	Se prevé que el servicio y puesta en funcionamiento de los enfriadores, en el marco del proyecto, culminen inmediatamente tras la retroadaptación del equipo durante el último trimestre del año 2017. El saldo remanente as finales de diciembre de 2016 es de 249 519 $EUA.
		Japón	48	700 000	Diciembre de 2017	
Mundial	Proyecto de reemplazamiento mundial de enfriadores	Banco Internacional de Reconstrucción y Fomento (Banco Mundial) - BIRF	47	6 884 612	Diciembre de 2017	El proyecto incluyó a China, India, Indonesia, Jordania, Malasia, Filipinas y Túnez; el estado del proyecto se indica más abajo. **Argentina:** Durante 2016 la unidad de coordinación del proyecto, UEPRO, firmó un acuerdo de subdonación con la Fundación Favaloro - Hospital

[15] Decisión 77/8 e) ii)

País	Título del proyecto	Organismo	Reunión	Fondos aprobados ($EUA)	Fecha prevista de terminación	Situación de la marcha de las actividades
						Universitario y de Investigación Médica, por dos unidades enfriadoras de 350 toneladas de refrigeración (TR[16]) cada una de ellas, y otro acuerdo con un consorcio de propietarios de edificios por una unidad enfriadora de 400 TR. Uno de los enfriadores de 350 TR y el otro de 400 TR quedaron destrozados tras la captura del CFC, siendo reemplazados en 2016. El reemplazamiento del otro enfriador de 350 TR se pospuso hasta 2017 dado que la entrega del equipo se pospuso y fue necesario disponer de climatización durante el verano. A principios de 2017, UEPRO inició conversaciones sobre la sustitución de otros dos enfriadores. La UEPRO se dispone a preparar propuestas de licitación para la sustitución de uno de los enfriadores en abril de 2017. **India:** el proyecto se terminó el 31 de diciembre de 2016; se reemplazaron 34 enfriadores con una recuperación y almacenamiento de 7 tm de CFC aproximadamente. La potencia necesaria para refrigerar 1 TR de capacidad fue de 0,63 kilovatios en confrontación con el objetivo de 1 kilovatio previsto para todo el proyecto en su conjunto. **Jordania:** Todos los 20 enfriadores de funcionamiento por CFC han sido reemplazados; 15 de ellos estaban respaldados parcialmente por una donación del Fondo Multilateral; se recuperaron y almacenaron 4 tm de CFC en un emplazamiento gubernamental a la espera de su eliminación. El ahorro energético fue del orden de 17 a 24,4 por ciento. **Filipinas:** El proyecto se culminó al 31 de diciembre de 2016; se reemplazaron 72 enfriadores. **Indonesia:** El proyecto se canceló al no obtener el endoso del FMAM por la posibilidad de utilizar refrigerantes con HFC en los enfriadores de reemplazo. No se dispuso de información sobre los proyectos de China, Malasia y Túnez, por lo que dicha información no se notifica. El total de los fondos de financiación comprometidos en el marco de los proyectos antedichos asciende a 3 735 556 $EUA y los ahorros previstos son de 3 149 056 $EUA tras tener en cuenta el monto sin asignar destinado al proyecto de enfriadores de China, Malasia y Túnez, el proyecto de consumo energético eficiente de Indonesia y los ahorros producto del proyecto de Jordania.

Observaciones

48. La Secretaría tomó nota del avance logrado en los cuatro últimos proyectos en curso, estando algunos de los proyectos en etapas de terminación avanzadas.

[16] Una tonelada de refrigeración es, aproximadamente, equivalente a 3,5 kilovatios de capacidad de refrigeración.

Recomendaciones

49. El Comité Ejecutivo puede estimar oportuno reiterar la decisión 77/8 e) ii) y pedir a los organismos bilaterales y de ejecución que presenten a la 80ª reunión informes de todos los proyectos de enfriadores en curso, cual proyectos con requisitos específicos de presentación de informes; e informes de terminación de proyecto (ITP) para el mes de junio de 2018 a lo más tardar y reembolsar los saldos para diciembre de 2018 a lo más tardar.

Parte IV: Otros proyectos

50. Otros informes finales/sobre la marcha de las actividades al respecto de las actividades o proyectos que se indican seguidamente previstos para presentarse a la 79ª reunión pero que no lo han sido incluyen:

a) Estudios de viabilidad para utilizar tecnologías de sustitución en tres países[17]:

i) Estudio de viabilidad que aborde el enfriamiento urbano en Punta Cana (PNUD);

ii) Estudio de viabilidad que aborde el enfriamiento urbano en Egipto (ONU medio ambiente y UNIDO);

iii) Análisis comparativo de tres tecnologías de sustitución para emplearse en climatización central en Kuwait (ONU medio ambiente y el Programa de las Naciones Unidas para el Medio Ambiente);

b) Plan sectorial para la eliminación de la producción de bromuro de metilo en China (ONUDI)[18];

c) Investigación y desarrollo acometidos con los fondos procedentes del Fondo Multilateral en el marco del sector de producción de CFC (Banco Mundial)[19].

Recomendación

51. El Comité Ejecutivo puede estimar oportuno reiterar al Comité Ejecutivo las decisiones e instar a los organismos de ejecución pertinentes que presenten a la 80ª reunión los informes específicos a:

a) Los estudios de visibilidad para emplear tecnologías de sustitución en la República Dominicana (Punta Cana), Egipto y Kuwait;

b) El plan sectorial correspondiente a la eliminación de la producción de bromuro de metilo en China; y

c) Los proyectos de investigación y desarrollo acometidos con los fondos del Fondo Multilateral en el marco del sector de producción de CFC (Banco Mundial).

[17] Decisión 77/27(e)
[18] Decisión 73/56
[19] Decisión 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 64th 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	**Done on time** 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	**Done on time** Two containers purchased
Transport already collected ODS waste to the R&R Centre in Tbilisi	GARCAE	**Done on time**
Calibrate the gas chromatograph	GARCAE	**Done on time**
Train staff responsible for gas - chromatograph operating	GARCAE	**Done on time** 2 R&R technicians trained
Transfer collected ODS from the old containers to the newly purchased containers and test them by gas-chromatograph	GARCAE	**Done on time** 2 new containers were filled in with ODSs
Formulate a national scheme for accessing other unwanted ODSs (about 0.5 tons annually)	GARCAE	**Done on time** Draft provided to NOU
Excavate POPs pesticides from Iagluja Dumpsite	Sub-contractor	**Done on time**
Repack the excavated 230 tons of pesticides into safe packaging ready for export	Sub-contractor	**Done with a short delay due to weather conditions**
Transport prepared ODSs and POPs abroad for safe disposal	Sub-contractor	**Done on time** 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[1]

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

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.

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

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

[2] 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.

[3] 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[4] 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

[4] 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[5];

- 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.

[5] 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:

COUNTRY:	**Ghana**	**IMPLEMENTING AGENCY: UNDP**
PROJECT TITLE:	**Pilot Demonstration Project on ODS-Waste Management and Disposal**	

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

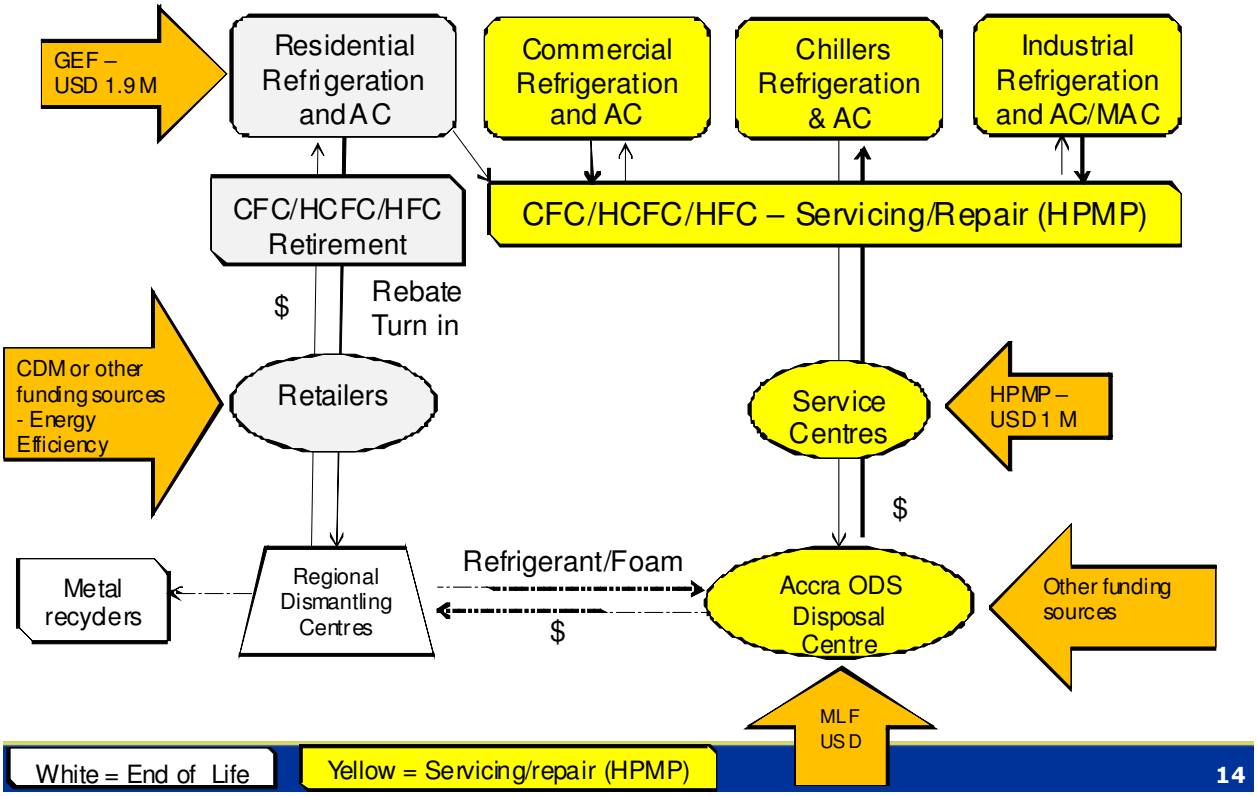
Brief Description of the Project

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")[1] 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.

[1] 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 ODSs from Ghana EPA, Accra (refrigerants collected during the TPMP), as well as the ODSs collected by Presank in Afienya 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 fiancé 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 colleting 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 form 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

SARPI VEOLIA

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:

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

CERTIFIED BY : Judith Hunt
TITLE : Customer Services Manager
for and on behalf of: **Veolia ES Field Services Limited**
Unit 1, Heol Crochendy
Parc Nantgarw
Cardiff. CF15 7QT

SARPI VEOLIA

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

SARPI VEOLIA

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 POLYCHRORINATED 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
			TOTAL TONNAGE	154,293	

SIGNED
JUDITH A. HUNT (Mrs)
CUSTOMER SERVICES MANAGER

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

tradewater

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

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,

Timothy H. Brown
President

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

FINAL PROGRESS REPORT ON
NEPAL ODS DISPOSAL PROJECT SUBMITTED TO
THE 79TH 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 20th 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 59th 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 59th 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 70th 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 CO2-equivalent tonnes). For the preparations of the 72nd ExCom in April 2014 and 76th 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[1].

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)[2] 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)[3] 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

[1] 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.

[2] 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.

[3] 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.

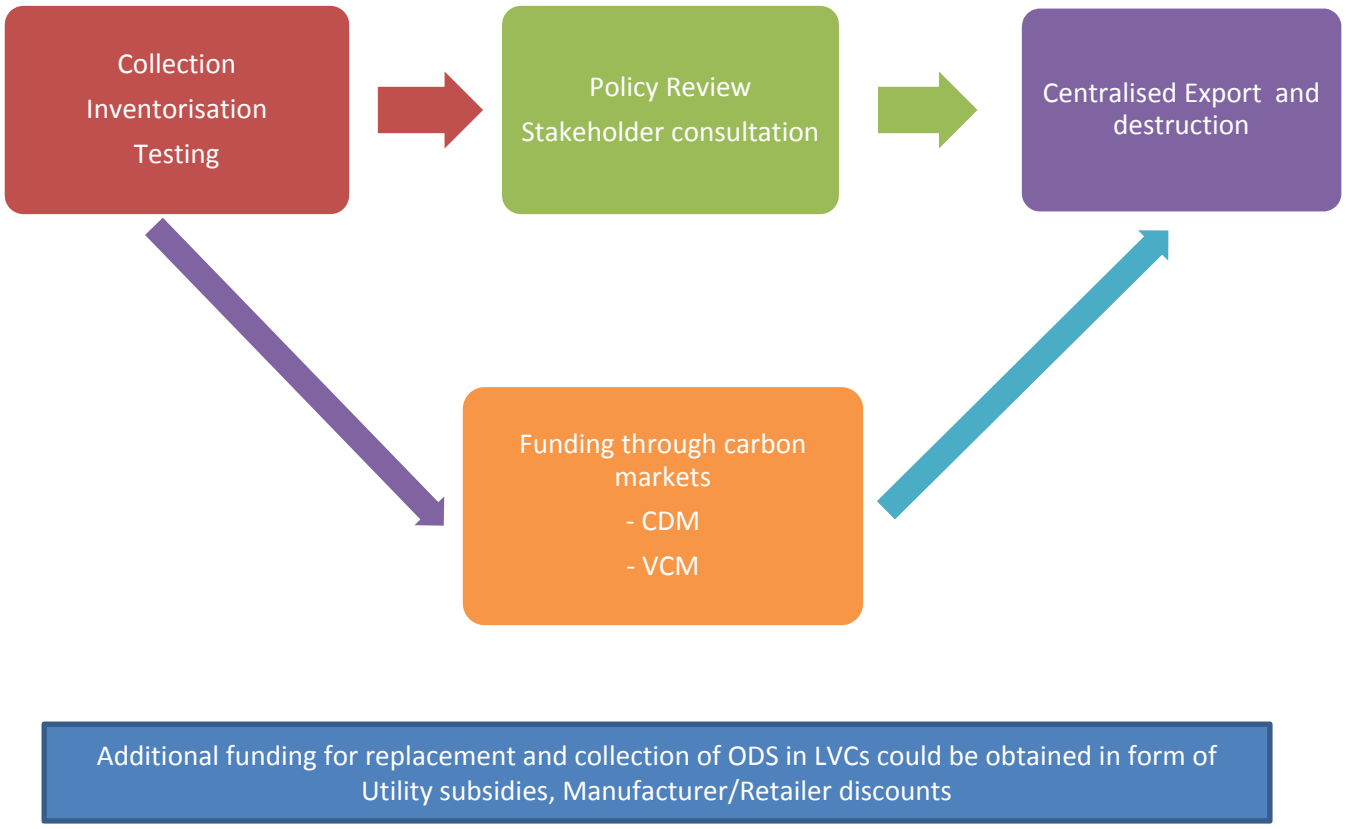


Fig 1 – Nepal Model for LVCs – ODS Destruction Project for LVCs