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COMITÉ EXÉCUTIF
DU FONDS MULTILATÉRAL AUX FINS
D'APPLICATION DU PROTOCOLE DE MONTRÉAL
Quatre-vingt-deuxième réunion
Montréal, 3-7 décembre 2018

DOCUMENT PRÉLIMINAIRE SUR TOUS LES ASPECTS DU SECTEUR DE L'ENTRETIEN DE L'ÉQUIPEMENT DE RÉFRIGÉRATION APPUYANT LA RÉDUCTION PROGRESSIVE DES HFC (DÉCISION 80/76 c))

INTRODUCTION

1. La vingt-huitième Réunion des Parties (octobre 2016) a décidé d'amender le Protocole de Montréal et a adopté la décision XXVIII/2,[1] dans laquelle elle demande notamment au Comité exécutif :

a) D'élaborer de nouvelles directives sur les méthodes de détermination et de calcul des coûts pour le secteur de l'entretien, afin que les catégories de coûts ci-après donnent droit à un financement et qu'elles soient incluses dans le calcul des coûts : Activités de sensibilisation du public, élaboration et mise en œuvre de politiques, programmes de certification et de formation des techniciens à la manipulation sans danger des produits de remplacement, aux bonnes pratiques et à la sécurité, y compris le matériel de formation, formation des douaniers, prévention du commerce illicite de HFC, outils d'entretien, matériel d'essai de frigorigènes destinés aux secteurs de la réfrigération et de la climatisation, recyclage et récupération (paragraphe 15 c));

b) D'augmenter le financement disponible pour le secteur de l'entretien au titre de sa décision 74/50, en sus des montants indiqués dans cette décision, en faveur des Parties dont la consommation de référence globale de HCFC peut aller jusqu'à 360 tonnes métriques (tm), si nécessaire pour introduire des produits de remplacement des HCFC à faible PRG et des produits de remplacement des HFC à PRG nul, tout en maintenant l'efficacité énergétique dans le secteur de l'entretien et des services aux utilisateurs (paragraphe 16);

c) D'accorder la priorité à l'assistance technique et au renforcement des capacités pour traiter des questions de sécurité associées aux produits de remplacement à faible PRG ou à PRG nul (paragraphe 23).

[1] Décisions en lien avec l'amendement pour l'élimination des HFC.

2. Le Comité exécutif, à sa 80e réunion (novembre 2017), a décidé, dans le contexte des échanges sur l'élaboration des lignes directrices sur les coûts de la réduction progressive des HFC, au point 10 c) de l'ordre du jour, d'inclure les catégories de coûts du secteur de l'entretien au projet de modèle des lignes directrices sur les coûts de la réduction progressive des HFC (décision 80/76 a) iv)), et a chargé le Secrétariat de préparer un document préliminaire, en collaboration avec les agences bilatérales et d'exécution, sur tous les aspects du secteur de l'entretien de l'équipement de réfrigération appuyant la réduction progressive des HFC, en tenant compte de ce qui suit, pour la 82e réunion :

a) Des documents de politique antérieurs, des études de cas, des analyses de suivi et évaluation et des travaux entrepris par les agences bilatérales et d'exécution pour le développement et la mise en œuvre de programmes de formation et d'assistance technique, plus particulièrement le partenariat que le Programme d'aide à la conformité a formé avec des instituts de formation et de certification reconnus mondialement ;

b) L'analyse des capacités existantes des pays visés à l'article 5 grâce à l'assistance financière approuvée à ce jour pour le secteur de l'entretien de l'équipement de réfrigération, et la façon d'utiliser cette capacité pour la réduction progressive des HFC, notamment en ce qui concerne :

   i) Les résultats des activités de récupération, recyclage et régénération (RRR) financées et l'approvisionnement en outils d'entretien, et leur potentiel de réduire les émissions de frigorigènes ;

   ii) L'étendue de la participation du secteur public et/ou privé (p. ex., équipement, composants et fournisseurs de frigorigènes) à l'introduction et à l'adoption de solutions de remplacement dans le secteur de l'entretien ;

   iii) Les normes de santé et sécurité, les protocoles et équipements (y compris l'équipement de protection) existants pour les solutions de remplacement ;

   iv) Les programmes de formation et de certification ;

   v) Le fait que l'efficacité énergétique ait ou non été abordée dans le secteur de l'entretien/services aux utilisateurs, et la façon dont cela a été fait ; et

c) Le minimum d'information nécessaire pour développer des programmes et des modules de formation et de certification basés sur les compétences pour les techniciens d'entretien et les douaniers, dans le contexte de la transition à des solutions de remplacement (décision 80/76 c)).

3. Le Comité exécutif, à sa 81e réunion, a décidé, dans le contexte des échanges sur le développement des lignes directrices sur les coûts de la réduction progressive des HFC, au point 10 a) de l'ordre du jour, d'examiner à la 82e réunion la priorisation de l'assistance technique et du renforcement des capacités, afin de régler les questions entourant les dangers associés à l'utilisation de substances de remplacement à faible PRG ou à PRG nul dans tous les secteurs, à la lumière du document que prépare le Secrétariat en réponse à la décision 80/76 sur les aspects du secteur de l'entretien de l'équipement de réfrigération qui soutiennent la réduction progressive des HFC (décision 81/67 c)).

4. Le Secrétariat a préparé ce document préliminaire en réponse aux décisions 80/76 c) et 81/67 c).

Sources d'information utilisées

5. Le Secrétariat a préparé ce document en tenant compte de toutes les décisions du Comité exécutif et des Parties au Protocole de Montréal concernant le secteur de l'entretien de l'équipement de réfrigération, de l'expérience tirée par le Fonds multilatéral de l'examen des activités autonomes[2] et des plans d'élimination[3] dans le secteur de l'entretien, des études de cas et des évaluations réalisées par l'Administrateur principal, Suivi et évaluation, et des rapports d'achèvement de projet.

6. Le Secrétariat a aussi pris en considération :

a) Les échanges avec les parties prenantes du secteur de l'entretien de l'équipement de réfrigération dans les pays visés à l'article 5 et les pays non visés à l'article 5 ayant eu lieu lors de missions dans plusieurs pays et de rencontres au Secrétariat de février à avril 2018;

b) Les échanges avec les experts des agences bilatérales et d'exécution sur tous les aspects du secteur de l'entretien de l'équipement de réfrigération qui ont eu lieu au cours des deux réunions de coordination interagences de 2018[4] et lors de la rencontre de deux jours sur le secteur de l'entretien de l'équipement de réfrigération, à Montréal le 29-20 mai 2018;

c) Les présentations et les échanges ayant eu lieu à l'Atelier des parties prenantes internationales d'ActionOzone pour l'intégration du soutien et des services au secteur de l'entretien de l'équipement de réfrigération, qui s'est déroulé à Paris, le 16-17 juillet 2018;[5] et

d) Les publications d'intérêt émises par le Programme d'aide à la conformité du PNUE, le Groupe d'évaluation technique et économique et d'autres organisations internationales.[6]

7. Le Secrétariat a fait parvenir le présent document aux agences bilatérales et d'exécution aux fins de commentaires, avant sa mise au point Le Secrétariat aussi envoyé le rapport à des experts indépendants, afin de recueillir leurs commentaires sur les questions techniques soulevées dans le document. Le Secrétariat a pris connaissance des commentaires reçus et a apporté les modifications nécessaires.

8. Le Secrétariat remercie les agences bilatérales et d'exécution de leurs perspectives, commentaires et informations.

Structure du document

9. Compte tenu de la quantité considérable d'information sur le secteur de l'entretien de l'équipement de réfrigération ayant été examinée et à la lumière de l'orientation fournie dans la décision 80/76 c), ce document a été divisé en cinq parties et une recommandation, afin d'en faciliter l'examen par les membres du Comité exécutif. Chaque partie contient de l'information portant davantage sur les orientations que les aspects plus techniques, afin d'aider le Comité exécutif dans ses débats. Des renseignements techniques

[2] Comprenant les programmes de formation des techniciens en réfrigération et des douaniers, les programmes de récupération et de recyclage, et l'adaptation de l'équipement de réfrigération approuvés depuis la quatrième réunion du Comité exécutif (juin 1991).

[3] Comprenant les plans de gestion des frigorigènes, les plans de gestion de l'élimination finale, les plans nationaux d'élimination pour les pays n'étant pas des pays à faible volume de consommation et, plus récemment, les plans de gestion de l'élimination des HCFC (PGEH)).

[4] La première réunion de coordination interagences a eu lieu du 6 au 8 mars 2018 et la deuxième du 4 au 6 septembre 2018.

[5] Les documents de la réunion sont disponibles sur le site www. ozonactionmeetings.org.

[6] Dont l'Agence internationale de l'énergie (AIE) et l'Institut international du froid (IIF).

détaillés sont toutefois disponibles et peuvent être communiqués sur demande. Une courte description des cinq parties du document est offerte ci-dessous.

I. Aperçu du secteur de l'entretien de l'équipement de réfrigération :

Décrit l'évolution de l'assistance technique et financière offerte au secteur de l'entretien de l'équipement de réfrigération depuis la création du Fonds multilatéral, présente une analyse des caractéristiques actuelle des secteurs de la réfrigération et de la climatisation, et cerne les défis potentiels de la réduction progressive des HFC dans le secteur

II. Analyse de la capacité existante créée grâce au financement approuvé pour le secteur de l'entretien de l'équipement de réfrigération :

Décrit la capacité créée et renforcée dans les pays visés à l'article 5 concernant : Les cadres d'orientation et de réglementation comprenant les normes, la formation et la certification des techniciens en réfrigération, et l'assistance technique comprenant l'approvisionnement en outils d'entretien pour les techniciens, la mise sur pied de programmes de RRR, l'adaptation des systèmes de réfrigération et le maintien de l'efficacité énergétique. L'analyse de chacun de ces thèmes abordera entre autres la participation des secteurs public et privé et la façon d'utiliser la capacité créée dans le contexte de la réduction progressive des HFC

III. Analyse de l'information minimum requise pour l'élaboration de programmes et de modules de formation et de certification fondés sur les compétences à l'intention des techniciens d'entretien et des agents de douane, pour la transition aux technologies de remplacement:
Se penche sur la façon d'appliquer les modules de formation courants en fonction de la situation dans les pays visés à l'article 5 et analyse le développement de produits mondiaux développés par le PNUE en association avec d'autres organisations internationales qui appuient les activités du secteur de l'entretien de l'équipement de réfrigération financées par le Fonds multilatéral

IV. Facteurs du financement de la réduction progressive des HFC dans le secteur de l'entretien de l'équipement de réfrigération :
Aborde l'application conjointe des décisions XIX/6 et XXVIII/2 dans le secteur de l'entretien de l'équipement de réfrigération en tentant compte du chevauchement des calendriers d'élimination des HCFC et de la réduction progressive des HFC, résume la façon dont le secteur de l'entretien de l'équipement de réfrigération a été financé et présente des facteurs possibles de la détermination de l'assistance pour la réduction progressive des HFC

V. Recommandation

10. Le document contient les annexes suivantes :

I : Décisions pertinentes concernant le secteur de l'entretien de l'équipement de réfrigération adoptées par le Comité exécutif et les Parties au Protocole de Montréal

II : Liste des évaluations liées au secteur de l'entretien de l'équipement de réfrigération entreprises par le Fonds multilatéral

III : Produits mondiaux développés par le PNUE et d'autres organisations internationales afin de venir en aide au secteur de l'entretien de l'équipement de réfrigération dans les pays visés à l'article 5

I. APERÇU DU SECTEUR DE L'ENTRETIEN DE L'ÉQUIPEMENT DE RÉFRIGÉRATION

11. Le Fonds multilatéral s'est fixé comme priorité d'éliminer les substances réglementées[7] utilisées dans le secteur de l'entretien de l'équipement de réfrigération[8] dès sa création et a commencé à financer des activités pour réduire la consommation de substances réglementées dans le secteur de l'entretien de l'équipement de réfrigération dès la quatrième réunion (juin 1991). Le secteur de l'entretien de l'équipement de réfrigération prendra de plus en plus d'importance dans tous les pays visés à l'article 5 en raison de l'émission constante de frigorigènes dans l'atmosphère et ce, jusqu'à ce que les cibles fixées au titre de l'Amendement de Kigali soient atteintes.

Évaluation des activités du secteur de l'entretien de l'équipement de réfrigération

12. Les premières activités dans le secteur de l'entretien de l'équipement de réfrigération ont mis l'accent sur l'élimination du CFC-12 utilisé pour l'entretien de réfrigérateurs domestiques, l'équipement de réfrigération commercial autonome et les climatiseurs d'automobile, et dans une moins grande mesure, l'élimination du CFC-11 et du CFC-115 utilisés dans les refroidisseurs et à d'autres fins.

Activités autonomes

13. Les premières activités dans le secteur de l'entretien de l'équipement de réfrigération ont été des projets autonomes comprenant la formation en bonnes pratiques pour les techniciens d'entretien en réfrigération, l'approvisionnement en outils et en équipement pour les techniciens et la mise sur pied de programmes de récupération et de recyclage des frigorigènes. Une assistance a souvent été fournie afin de renforcer les programmes d'octroi de permis d'importation/exportation de substances réglementées au titre de l'article 4B du Protocole de Montréal,[9] de développer des réglementations spécifiques en appui au programme d'élimination et de former les douaniers et les policiers sur les lois et les réglementations visant à éliminer les substances réglementées, y compris l'équipement d'identification des frigorigènes.

Plans d'élimination des CFC

14. Les activités autonomes liées au cadre de réglementation, à la formation et à l'assistance technique ont été subsumées au plan de gestion des frigorigènes, qui était en fait un plan de financement global s'appliquant aux pays à faible volume de consommation, au fil de l'évolution du programme d'élimination. Le plan de gestion des frigorigènes avait pour objectif général d'élaborer et de planifier une stratégie de gestion de l'utilisation et de l'élimination des CFC vierges utilisés dans le secteur de l'entretien de l'équipement de réfrigération et de climatisation[10] en tenant compte des circonstances existantes dans les

[7] Toutes les substances réglementées au titre du Protocole de Montréal avant l'accord sur l'Amendement de Kigali étaient des substances qui appauvrissent la couche d'ozone.

[8] Dans le contexte de ce document, le « secteur de l'entretien de l'équipement de réfrigération » comprend la réfrigération et la climatisation.

[9] En vertu de l'article 4B, toutes les Parties doivent créer et mettre en œuvre un programme d'octroi de permis d'importation et d'exportation de substances réglementées nouvelles, ayant déjà servi, recyclées et régénérées figurant aux annexes A, B, C et E du Protocole de Montréal. Depuis l'adoption du Protocole de Montréal, les Parties et le Comité exécutif ont adopté une série de décisions sur le financement des activités qui permettraient aux pays visés à l'article 5 de respecter leurs obligations au titre de l'article 4B.

[10] La stratégie pourrait notamment comprendre des mesures telles que des mesures d'encouragement légales et économiques et des mesures de découragement ciblant les fournisseurs, les techniciens d'entretien et les propriétaires

pays visés. Une première série de cinq plans de gestion des frigorigènes a été approuvée à la 23e réunion (novembre 1997).[11]

15. Le Comité exécutif, à sa 33e réunion (mars 2001), a reconnu la nécessité d'une approche axée sur les pays qui accorderait aux pays la souplesse de choisir la démarche qui leur permettrait de respecter leurs obligations pendant la période de conformité au Protocole de Montréal, et a adopté un cadre sur les objectifs, les priorités, les problèmes et les modalités de la planification stratégique du Fonds pendant la période de conformité. Au cours de cette même période, les pays visés à l'article 5 devaient élaborer et mettre en œuvre des objectifs, orientations et mesures nationales pour réaliser leur plan stratégique pour la conformité, qui pouvait comprendre des projets individuels, des plans sectoriels ou les deux. Le financement a été fondé sur l'engagement à réaliser des réductions globales durables de la consommation ou de la production, selon le cas. En adoptant ce cadre, le Comité exécutif a pris note que l'actualisation des plans de gestion des frigorigènes[12] doterait les pays visés à l'article 5 d'un mécanisme pour les stratégies nationales d'élimination et a décidé d'encourager les pays visés à l'article 5 à profiter de cette occasion (décision 33/54). Au cours de la période qui a suivi jusqu'en 2007, date à laquelle les pays devaient avoir réduit de 85 pour cent leur consommation de CFC, 104 pays visés à l'article 5 se sont dotés d'un plan de gestion des frigorigènes et/ ou d'un plan de gestion des frigorigènes actualisé approuvé, préparé en vertu de l'approche axée sur les pays adoptée à la 33e réunion. Dans le même ordre d'idées, des plans de gestion de l'élimination finale (PGEF) pour les pays à faible volume de consommation et des plans nationaux d'élimination pour les pays n'étant pas des pays à faible volume de consommation ont été élaborés en respectant l'approche axée sur le pays, afin d'éliminer complètement des CFC.

Plans d'élimination des HCFC

16. En conséquence de l'accélération de l'élimination des HCFC convenue dans la décision XIX/6 des Parties, le Comité exécutif a examiné, à la 53e réunion (novembre 2007), un document sur les différents moyens d'évaluer et de définir les surcoûts admissibles des activités d'élimination de la production et de la consommation des HCFC.[13] Le document a servi de base pour le développement de lignes directrices sur la préparation de plans de gestion de l'élimination des HCFC (PGEH). Une approche par étapes a été proposée afin que les pays puissent élaborer un plan global pour réaliser l'élimination complète tout en accueillant des propositions pour respecter les deux premières étapes d'élimination des HCFC, en 2013 et en 2015, ainsi que des propositions pour l'étape suivante et autres, si nécessaire, de la gestion de l'élimination des HCFC. Le Comité exécutif a reconnu l'importance du financement fondé sur l'efficacité, ce qui a mené à un engagement d'offrir un financement équivalent, en principe, à chaque pays, jusqu'à concurrence d'un objectif de consommation maximum pouvant être financé pour ce pays, assorti d'étapes de réduction linéaires.

17. Se fondant sur ces lignes directrices, le Comité exécutif, à sa 61e réunion (avril 2010), a approuvé les deux premiers PGEH pour des pays visés à l'article 5.[14] Depuis cette date, la première phase (et la

d'équipement; la formation des techniciens; des activités de sensibilisation du public; des contrôles douaniers pour le nouvel équipement et les véhicules à base de CFC; une interdiction d'introduire des climatiseurs d'automobile d'après-marché à base de CFC; le retrait de l'équipement et des véhicules à base de CFC; et une augmentation graduelle de l'offre de CFC recyclés.

[11] Des plans de gestion des frigorigènes ont été approuvés pour les Bahamas, la Géorgie, le Guyana, Sainte-Lucie et Trinité-et-Tobago.

[12] Les pays à faible volume de consommation ayant adopté un plan de gestion des frigorigènes recevront 50 p. cent du financement offert pour élaborer leur plan de gestion des frigorigènes original afin d'élaborer un plan de gestion des frigorigènes actualisé (décision 35/57).

[13] UNEP/OzL.Pro/ExCom/53/60.

[14] Des PGEH ont été approuvés pour l'ex-République yougoslave de Macédoine et les Maldives.

deuxième phase, dans plusieurs cas) des PGEH a été approuvée pour tous les pays visés à l'article 5, sauf la République arabe syrienne[15]

18. L'information contenue dans les PGEH approuvés révèle que les HCFC sont utilisés uniquement pour l'entretien de l'équipement de réfrigération et de climatisation dans 95 des 145 pays visés à l'article 5. L'élimination des HCFC utilisés dans le secteur de l'entretien de l'équipement de réfrigération devient critique dans les 50 autres pays, où les HCFC sont aussi utilisés dans le secteur de la fabrication, afin que ces pays puissent respecter leurs obligations en matière de conformité alors que les HCFC commencent à être éliminés du secteur de la fabrication.

19. Il a été reconnu, au cours des échanges sur la réduction au minimum des conséquences sur les changements climatiques de l'élimination des HCFC dans le secteur de l'entretien de l'équipement de réfrigération,[16] que la formation offerte aux techniciens devrait aller au-delà des bonnes pratiques en réfrigération et mettre l'accent sur le confinement approprié des substances réglementées grâce à l'entretien préventif, l'amélioration de la qualité de l'installation et le maintien/amélioration de l'efficacité énergétique de l'équipement grâce à des réglages appropriés, la propreté des échangeurs de chaleur et une circulation adéquate du débit d'air. Compte tenu de l'inflammabilité de certains frigorigènes à faible PRG et du risque possible d'accidents associés à leur utilisation, les programmes de formation devront comprendre des approches rigoureuses en manipulation sécuritaire des frigorigènes inflammables et la connaissance des réglementations et des normes qui s'y rapportent. Il a aussi été suggéré d'accroître la capacité des instituts de formation afin qu'ils puissent continuer à offrir la formation exigée aux fins de conformité au Protocole de Montréal de manière permanente, et qu'une formation supplémentaire actualisée et spécialisée soit offerte aux formateurs et aux publics cibles (p. ex., utilisation d'équipement à base de CO_2 dans les supermarchés, augmentation de l'efficacité énergétique lors du remplacement des refroidisseurs, ou du remplacement des appareils de fenêtre et des climatiseurs biblocs par des systèmes de climatisation centrale dans les édifices, des climatiseurs éconergétiques et leur installation dans les nouveaux édifices, entre autres). Plusieurs PGEH en voie d'être mis en œuvre ont été modifiés dans la foulée de ces échanges et plusieurs suggestions présentées y ont été incorporées.

Le secteur de l'entretien de l'équipement de réfrigération après l'Amendement de Kigali

20. Les secteurs de la réfrigération et de la climatisation ont connu une croissance phénoménale à l'échelle mondiale depuis la création du Fonds multilatéral.[17] Le nombre d'équipements de réfrigération et de climatisation installés[18] et l'utilisation connexe d'un vaste choix de frigorigènes ont considérablement augmenté au cours des 20 dernières années et continueront à augmenter à cause de la hausse continue de la population mondiale jumelée à la tendance mondiale vers l'urbanisation,[19] l'augmentation du pouvoir d'achat de la population, la disponibilité accrue d'équipement à prix abordable et l'expansion de la chaîne

[15] Le plan d'activités de 2019 comprend la présentation de la première phase du PGEH pour la République arabe syrienne.

[16] Comme indiqué dans le document UNEP/OzL.Pro/ExCom/70/53 sur la réduction au minimum des conséquences de l'élimination des HCFC dans le secteur de l'entretien de l'équipement de réfrigération sur les changements climatiques.

[17] Par exemple, l'Agence internationale de l'énergie prévoit que 8 p. cent seulement des 2,8 milliards de personnes habitant dans les régions les plus chaudes au monde posséderont un appareil de climatisation. La consommation d'énergie pour le refroidissement des espaces en Chine est passée de 6,6 TWh en 1990 à 450 TWh en 2016, et la demande dans les autres pays est quinze fois plus grande qu'en 1990 (The future of cooling – opportunities for energy efficient air-conditioning, 2018).

[18] Les chercheurs au Laboratoire national Lawrence Berkeley estiment que les stocks mondiaux de climatiseurs augmenteront de 700 millions d'unités d'ici à 2030 et de 1,6 milliard d'unités d'ici à 2059.

[19] La population mondiale de 7,0 milliards d'habitants en 2012 devrait atteindre 9,3 milliards d'habitants d'ici à 2050, dont 1 milliard de citoyens additionnels d'ici à 2025.

d'aliments froids.

21. Les HCFC et les HFC seront consommés en majeure partie dans le secteur de l'entretien de l'équipement de réfrigération, dans les pays visés à l'article 5, lors de l'échéance de la première obligation au titre de l'Amendement de Kigali pour les pays du groupe I des pays visés à l'article 5, en 2024.

Consommation de frigorigènes à base de HFC

22. On connaissait peu de choses sur les quantités de substances de l'annexe F produites et consommées dans les différents pays visés à l'article 5 et leurs usages spécifiques lors de l'adoption de l'Amendement de Kigali. Un cumul d'information sur les HFC a été fourni dans des rapports préparés par l'Équipe spéciale du Groupe de l'évaluation technique et économique au titre des décisions XXV/5 et XXVI/19 des Parties et dans un journal scientifique publié dans Atmospheric Science.[20]

23. Des renseignements supplémentaires sur la consommation de HFC ont été transmis dans les enquêtes sur les substances de remplacement des HFC menées dans 119 pays visés à l'article 5[21] en réponse au paragraphe 4 de la décision XXVI/9,[22] soumises à la 80e réunion (novembre 2017).[23] Les enquêtes ont fourni de l'information ventilée sur le niveau de consommation des HFC et d'autres substances de remplacement des HCFC, et leur répartition sectorielle. Les données ventilées ont permis de cerner les principaux HFC utilisés et leur répartition par secteur dans les pays à faible volume de consommation et les pays n'étant pas des pays à faible volume de consommation, une analyse qui n'avait pas été réalisable à partir du cumul des données fourni dans les rapports de l'Équipe spéciale du Groupe de l'évaluation technique et économique.[24]

24. Les rapports préparés par l'Équipe spéciale du Groupe de l'évaluation technique et économique révèlent que si rien ne change (sans tenir compte de l'Amendement de Kigali), la consommation de HFC dans tous les pays visés à l'article 5 devrait augmenter de 284 326 tm en 2015 à 1 021 220 tm en 2030,[25] comme indiqué dans le tableau 1. Plus de 95 p. cent de la consommation totale est réalisée dans le secteur de la réfrigération et de la climatisation. La consommation globale de HFC dans le secteur de l'entretien de l'équipement de réfrigération devrait augmenter de 176 493 tm en 2020 à 468 550 tm en 2030, ce qui

[20] Les rapports de l'Équipe spéciale du Groupe de l'évaluation technique et économique portent notamment sur les données et les prévisions dans la consommation et la production de HFC par période quinquennale, entre 2010 et 2030. Le rapport de Velders et al. (2015) fournit des renseignements sur les futurs forçages climatiques et abondances atmosphériques tirés de scénarios d'émissions mondiales et régionales de HFC.

[21] Le financement de 127 enquêtes a été approuvé à la 74e réunion (mai 2015) et à la 75e réunion (novembre 2015).

[22] Qui demande au Comité exécutif d'envisager de fournir un soutien financier supplémentaire pour la tenue d'inventaires ou d'enquêtes sur les substances de remplacement des SAO dans les pays visés à l'article 5 Parties intéressés, à leur demande.

[23] Les résultats des enquêtes menées dans 119 pays ont été soumis à la 80e réunion (UNEP/OzL.Pro/ExCom/80/54). Ils portaient sur 42 pays n'étant pas des pays à faible volume de consommation et 77 pays à faible volume de consommation.

[24] Bien que les enquêtes aient été menées dans 82 p. cent des pays visés à l'article 5 (119 des 145 pays), la valeur de référence globale de ces pays pour les HCFC ne représente que 25 p. cent de la valeur de référence globale pour les HCFC de l'ensemble des pays visés à l'article 5. La valeur de référence globale pour les HCFC dans les 42 pays n'étant pas des pays à faible volume de consommation ne représente que 24 p. cent de la valeur de référence globale de tous les pays n'étant pas des pays à faible volume de consommation, tandis que la valeur de référence globale pour les HCFC des 77 pays à faible volume de consommation représente 91 p. cent de la valeur de référence globale de tous les pays à faible volume de consommation. Les plus grands consommateurs, à savoir le Brésil, la Chine et l'Inde, n'ont pas participé à l'enquête.

[25] Aux fins d'information, la valeur de référence pour la consommation dans les pays visés à l'article 5 de 538 749 tm concerne surtout trois HCFC : Le HCFC-22, le seul HCFC consommé dans tous les pays visés à l'article 5 (395 413 tm), le HCFC-141b (107 971 tm) et le HCFC-142b (31 580 tm).

représente 46 p. cent de la consommation totale dans tous les pays visés à l'article 5. Cette consommation consistera surtout en des mélanges de HFC.

Tableau 1. Répartition de la consommation de HFC dans les pays visés à l'article 5, si rien de change

Secteurs	Consommation de HCFC				
	2010	2015	2020	2025	2030
Tonnes métriques					
Fabrication de climatiseurs individuels	91 523	185 838	281 619	392 390	510 596
Entretien des climatiseurs individuels	33 476	87 033	176 493	305 922	468 550
Autres secteurs	2 010	11 458	19 506	33 092	42 074
Total (tm)	127 009	284 329	477 618	731 404	1 021 220
Pourcentage (%)					
Fabrication de climatiseurs individuels	72,1	65,4	59,0	53,6	50,0
Entretien des climatiseurs individuels	26,4	30,6	37,0	41,8	45,9
Autres secteurs	1,6	4,0	4,1	4,5	4,1

25. L'information recueillie dans les 119 enquêtes sur les substances de remplacement des SAO[26] présente un aperçu des principaux HFC et mélanges de HFC utilisés et de leur répartition sectorielle, comme indiqué dans le tableau 2.

Tableau 2. Principaux HFC et mélanges de HFC utilisés dans 119 pays visés à l'article 5

HFC	Nombre de pays	% du total	Taux de croissance %*	Utilisations
HFC-134a	119	34	9	Réfrigération domestique et commerciale, et climatiseurs d'automobile; petites applications pour la réfrigération, les mousses et les aérosols
R-410A	119	43	40	Climatisation
R-404A	118	7	11	Réfrigération à basse température
R-507A	70	1	21	Réfrigération commerciale
R-407C	110	6	33	Climatisation
HFC-152a**	19	4	23	Secteurs des aérosols industriels et de la mousse de polystyrène extrudé
HFC-245fa***	10	2	9	Mousse de polyuréthanne
Autres	64	3	35	Faible utilisation dans toutes les applications

(*) Calculé en tant que taux de croissance annuel composé de 2012 à 2015.
(**) Plus de 90 p. cent de cette consommation ont été réalisés dans un pays.
(***) Un pays a déclaré une grande utilisation de HFC-245fa dans le secteur des mousses (c.-à-d., environ 15 p. cent de sa consommation totale de HFC).

26. Plus de 90 p. cent de la consommation totale de HFC et de mélanges de HFC déclarée en 2015 par 77 pays à faible volume de consommation et 42 pays n'étant pas des pays à faible volume de consommation,[27] ont été réalisés dans le secteur de la réfrigération, tant pour la fabrication que l'entretien, comme indiqué dans le tableau 3.

[26] Les enquêtes sur les substances de remplacement des SAO ont été une première tentative de recueillir des données sur la consommation de substances qui ne sont pas encore réglementées au titre du Protocole de Montréal. De plus, comme la méthode de collecte et d'analyse des données n'était pas normalisée, l'aperçu créé à partir des enquêtes ne constitue qu'une « bonne estimation ».

[27] Les valeurs de référence pour les CFC et les HCFC aux fins de conformité des 77 pays à faible volume de consommation ayant remis des rapports sur les substances de remplacement des SAO représentent respectivement

Tableau 3. Consommation totale de HFC déclarée par 119 pays en 2015 (tm)

Secteur	Pays à faible volume de consommation	Pays n'étant pas des pays à faible volume de consommation	Total	% des pays à faible volume de consommation	% des pays n'étant pas des pays à faible volume de consommation
Réfrigération	14 466	151 548	166 014	8,7	91,3
Autres secteurs*	751	15 376	16 127	4,7	95,3
Total (tm)	15 217	166 924	182 141	8,4	91,6

(*) Comprend les secteurs des aérosols, des mousses et de la lutte contre les incendies.

27. Les principaux HFC, en tonnes métriques, consommés dans le secteur de la réfrigération en 2015 ont été le HFC-134a (36 p. cent), le R-410A (47 p. cent), le R-404A (8 p. cent) et le R-407C (6 p. cent). Les HFC consommés pour l'entretien de l'équipement de réfrigération et de climatisation représentent 78 p. cent de la consommation totale (à savoir 97 p. cent de la consommation totale des pays à faible volume de consommation et 76 p. cent pour les pays n'étant pas des pays à faible volume de consommation).

Avancées technologiques dans les systèmes de réfrigération et de climatisation

28. L'augmentation marquée du nombre d'équipements de réfrigération et de climatisation depuis la création du Fonds multilatéral a donné lieu à des avancées technologiques considérables découlant de la nécessité d'optimiser ces systèmes et d'accroître leur efficacité énergétique. Le nombre d'appareils électroniques, de commandes et d'entraînements à vitesse variable installés dans l'équipement de réfrigération et de climatisation est à la hausse, et les fabricants d'équipement sont en voie de développer des trousses de diagnostic et de commande à base de microprocesseurs sophistiqués qui gèrent le fonctionnement du compresseur et du système de circulation d'air.[28] De plus, le nombre et le choix accrus d'équipements de réfrigération et de climatisation, jumelés aux restrictions dans la consommation de HCFC et de HFC devraient aboutir à un plus grand nombre de mélanges de frigorigènes pour ces applications, notamment l'adaptation et l'entretien.

29. Le tableau 4 illustre l'évolution de la complexité du secteur de l'entretien de l'équipement de réfrigération en présentant une analyse comparative des besoins du secteur à différentes périodes de la mise en œuvre du Protocole de Montréal.

Tableau 4. Secteur de l'entretien de l'équipement de réfrigération à différentes périodes du Protocole de Montréal

Description	Élimination des CFC	Élimination des HCFC	Élimination des HCFC/ réduction progressive des HFC
Substances abordées	Surtout le CFC-12 et, dans une moindre mesure, le CFC-11 et le CFC-115, et le R-502 (basse température)	Surtout le HCFC-22 (quantités limitées de HCFC-141b utilisées pour la vidange et de HCFC-124 et HCFC-142b contenus dans des mélanges)	HCFC-22, HFC-134a, R-410A, R-404A, R-407C, R-507 et autres HFC et mélanges de HFC (les HFC sont utilisés en remplacement du HCFC-22)
Consommation de référence pour la	La valeur de référence en tm n'est pas disponible pour la réfrigération et la climatisation.	318 474 tm de HCFC-22 utilisées dans le secteur de la réfrigération et de la	La consommation de HFC-134a, R-410A, R-407C, R-404A et R-507A dans le secteur

92 et 91 p. cent de tous les pays à faible volume de consommation, tandis que les valeurs de référence pour les 42 pays n'étant pas des pays à faible volume de consommation représentent respectivement 35 et 24 p. cent de tous les pays à faible volume de consommation.

[28] http://www.asme.org/engineering-topics/articles/technology-and-society/global-cooling-the-history-of-air-conditioning

Description	Élimination des CFC	Élimination des HCFC	Élimination des HCFC/ réduction progressive des HFC
réfrigération et la climatisation dans les pays visés à l'article 5	La valeur de référence déclarée de 164 923 tonnes PAO comprend tous les CFC utilisés dans tous les secteurs (valeur de référence aux fins de conformité, c.-à-d., consommation moyenne de 1995-1997)	climatisation (moyenne de 2009-2010) 165 924 tm pour la fabrication 152 550 tm pour l'entretien	de la réfrigération et de la climatisation est évaluée à 272 871 tm en 2015 (fabrication et entretien)[29]. De plus, il reste une consommation résiduelle de HCFC-22 à éliminer.
Substances de remplacement introduites ou à l'étude pour la reconversion de la fabrication	HFC-134a, HCFC-22 pour certaines utilisations, R-404A et autres mélanges, R-600a dans une partie du marché intérieur de la réfrigération	Mélanges de HFC à PRG élevé, frigorigènes à faible PRG si possible, et problèmes connexes tels que l'inflammabilité ou la toxicité ou une pression de fonctionnement supérieure ou une disponibilité limitée de l'équipement commercial. Le marché offre toujours de grandes quantités d'équipement à base de HFC.	Substances de remplacement possibles : à base d'hydrocarbures, HFO, mélanges de HFC/HFO, CO_2 et ammoniaque, et problèmes connexes tels que l'inflammabilité ou la toxicité ou une pression de fonctionnement supérieure ou une disponibilité limitée de l'équipement commercial
Variété des mélanges	Limitée (R-502) pour les utilisations à basse température	Limitée (R-406A, R-409A) (glissement de températures limité)	Grande quantité (R-404A, R-407C, R-410A, R-507A, (glissement de températures supérieur)). Utilisation dispersée de plusieurs autres HFC ou mélanges à base de HFC/HFO (p.ex., R-448A, R-449A, R-450A, R-513A et autres)
Applications (charge de frigorigène)	Appareils de réfrigération domestique et commerciale de petite taille; fabrication de climatiseurs d'automobile dans quelques pays et entretien dans tous les pays; petites charges de frigorigènes	Équipement à base de HCFC-22 seulement, surtout des climatiseurs et quelques appareils de réfrigération commerciale; charges de frigorigène plus importantes	Tous les types de réfrigération commerciale et industrielle, climatisation, transport frigorifique, climatiseurs d'automobile, charges de frigorigènes de tous les volumes
Activités admissibles	Notamment l'assistance pour l'élaboration de lois et de réglementations, dont les programmes d'octroi de permis d'importation/exportation; formation des douaniers et des policiers; formation en bonnes pratiques de réfrigération; mise sur pied de programmes de RRR; mesures d'encouragement à la reconversion pour les utilisateurs; certification des techniciens, normes, renforcement des associations et programmes de réduction des fuites, dans certains cas		Les catégories de surcoûts admissibles pour l'élimination des HCFC/réduction progressive des HFC sont les mêmes. L'assistance met l'accent sur la création d'un plus grand impact et la durabilité à long terme des activités proposées
Impact des activités mises en œuvre	CFC éliminés : Très peu de changements au moment de l'entretien, lors de l'utilisation des substances de remplacement introduites. L'impact des	Évaluation continue. Des changements étaient à prévoir pendant l'entretien afin de travailler sans danger avec des substances de remplacement à	Les activités du secteur de l'entretien doivent avoir un plus vaste impact et une certaine durabilité afin de soutenir une adoption sécuritaire de

[29] Rapport de l'équipe spéciale du Groupe de l'évaluation technique et économique au titre des décisions XXV/5 et XXVI/9.

Description	Élimination des CFC	Élimination des HCFC	Élimination des HCFC/ réduction progressive des HFC
	premières activités dans le secteur de l'entretien est difficile à mesurer. Le secteur de l'entretien s'est adapté aux substances de remplacement. Les services des douanes et les centres de formation ont été renforcés.	faible PRG introduites. Certaines activités du PGEH typiques du secteur de l'entretien pourraient faciliter l'introduction de substances de remplacement à faible PRG.	technologies à faible PRG, notamment en ce qui a trait à l'installation, au fonctionnement, à l'entretien et à la mise hors service des systèmes.

Obstacles à une plus grande pénétration des technologies de remplacement à faible PRG

30. L'Amendement de Kigali a aussi déclenché le besoin d'adopter à plus grande échelle des technologies utilisant des frigorigènes à plus faible PRG, ce qui augmente les problèmes liés à la sécurité et aux coûts. Par exemple, l'utilisation de frigorigènes inflammables dont la charge est supérieure à 150 grammes exige la modification des normes ainsi que des précautions de sécurité supplémentaires pendant l'installation, le fonctionnement, l'entretien et la mise hors service des systèmes de réfrigération utilisant ces technologies. D'autres facteurs limitent l'introduction de ces technologies :

a) L'absence de normes pour l'introduction, l'installation et l'entretien du nouvel équipement utilisant des frigorigènes inflammables ou toxiques ;

b) L'absence de normes pour le transport des frigorigènes et de codes du bâtiment ;

c) L'absence d'équipement essentiel et d'outils de base dans les ateliers d'entretien ;

d) La lenteur de la commercialisation et la disponibilité de certains frigorigènes ou de l'équipement fonctionnant avec ces frigorigènes.

31. Il est impossible de déterminer à l'heure actuelle s'il y aura suffisamment de techniciens d'entretien possédant le minimum d'habiletés nécessaire pour desservir le parc d'équipement plus technologiquement avancé faisant appel à une grande diversité de frigorigènes et présentant des caractéristiques de fonctionnement différentes, notamment en ce qui a trait à la pression, l'inflammabilité et la toxicité. Le caractère saisonnier du travail des techniciens, le fait qu'en basse saison (habituellement l'hiver), ces techniciens cherchent un autre emploi et ont tendance à consacrer le peu de temps dont ils disposent en haute saison à installer et entretenir l'équipement et non à faire de la formation, constitue un défi pour les écoles de formation, l'industrie et les associations de réfrigération, qui veulent améliorer les compétences des techniciens afin qu'ils effectuent un entretien convenable des appareils dotés de la technologie avancée qui fait son apparition sur le marché. De plus, le nombre de nouveaux techniciens arrivant sur le marché est à la baisse, car l'industrie de la réfrigération et de la climatisation semble être moins attrayante que d'autres secteurs tels que la technologie de l'information ou l'électronique.

32. Les pays visés à l'article 5 tentent de surmonter plusieurs de ces obstacles au moyen d'activités qui représentent de plus en plus des éléments standards des PGEH tels que le renforcement des capacités des écoles de formation locales, la formation des techniciens axée sur les frigorigènes toxiques et/ou inflammables, la révision des codes de bonnes pratiques, le développement de réglementations et l'adoption de normes d'installation et d'entretien de divers systèmes de réfrigération à base d'hydrocarbures, l'utilisation de mesures d'encouragement, les projets de démonstration de la technologie fondée sur des frigorigènes à faible PRG, et les programmes de sensibilisation.

II. ANALYSE DE LA CAPACITÉ EXISTANTE CRÉÉE GRÂCE AU FINANCEMENT APPROUVÉ POUR LE SECTEUR DE L'ENTRETIEN DE L'ÉQUIPEMENT DE RÉFRIGÉRATION

33. Le Fonds multilatéral a été créé en tant que mécanisme de financement du Protocole de Montréal, afin d'aider les pays visés à l'article 5 à respecter le Protocole de Montréal et ses amendements. Ce secteur reçoit une assistance technique et financière depuis la quatrième réunion du Comité exécutif, car tous les pays visés à l'article 5 utilisent des substances réglementées pour l'entretien de l'équipement de réfrigération.

34. Depuis lors, le Comité exécutif prend continuellement des décisions pour renforcer son assistance, répondre aux besoins et régler les problèmes qui émergent dans le secteur, afin d'aider les pays visés à l'article 5 à respecter le Protocole de Montréal. De plus, le Comité exécutif a entrepris des études théoriques, des études de pays, des évaluations du secteur de l'entretien de l'équipement de réfrigération et des évaluations de projets autonomes (p. ex., programmes d'octroi de permis d'importation/exportation, programmes de formation des douaniers, programmes de formation des techniciens en réfrigération, programmes de récupération et de recyclage et plans de gestion des frigorigènes) dans le cadre du programme de suivi et évaluation du Fonds multilatéral, afin d'évaluer plus en profondeur l'applicabilité de ses décisions selon les circonstances particulières des pays visés à l'article 5 ainsi que l'efficacité de ses activités de financement à réduire les émissions de substances réglementées dans l'atmosphère. Les enseignements tirés de ces évaluations et les recommandations qui ont suivi ont été continuellement intégrés aux activités en cours du secteur de l'entretien de l'équipement de réfrigération.[30]

35. L'annexe I au présent document présente des décisions pertinentes en lien avec le secteur de l'entretien de l'équipement de réfrigération adoptées par le Comité exécutif et les Parties, et l'annexe II propose une liste des évaluations en lien avec le secteur de l'entretien de l'équipement de réfrigération entreprises par le Fonds multilatéral, aux fins de référence.

Renforcement de la capacité nationale

36. Le cumul de l'expérience acquise pendant la mise en œuvre des projets liés au secteur de l'entretien de l'équipement de réfrigération a renforcé la capacité nationale engagée dans ces projets. En plus des Bureaux nationaux de l'ozone recevant un soutien financier direct dans le cadre du « renforcement des institutions », des capacités liées aux douanes et aux autorités et écoles policières, aux établissements d'enseignement et aux écoles professionnelles pour les techniciens d'entretien de l'équipement de réfrigération, et des associations de techniciens en réfrigération ont été créées et/ou renforcées. Un renforcement des institutions a aussi été offert directement par le Programme d'aide à la conformité du PNUE par le biais de son mécanisme de centre d'échange, aux niveaux régional et mondial, notamment dans le cadre de réunions de réseaux régionaux, depuis la 9e réunion (mars 1993). Les réunions de réseaux régionaux ont lieu tous les ans.

[30] Par exemple, le Comité exécutif, à sa 49e réunion (juillet 2006), a examiné le document UNEP/OzL.Pro/ExCom/49/7 réunissant les recommandations concernant l'évaluation des plans de gestion des frigorigènes et des plans nationaux d'élimination, préparées en réponse à la décision 48/10. En conséquence, des orientations supplémentaires ont été fournies lors de la planification et de la mise en œuvre de ces plans, qui comprenaient entre autres la collaboration avec d'autres agences gouvernementales, la mise à jour des mesures législatives, la mise à niveau des programmes de formation des techniciens afin d'y inclure les plus récentes informations sur l'application des bonnes pratiques afin de réduire l'utilisation des substances réglementées et de promouvoir l'utilisation des frigorigènes de remplacement, une attention particulière portée à la sécurité dans les pays dans lesquels une formation sur l'utilisation de frigorigènes inflammables était donnée, la certification obligatoire des techniciens et la prise en compte de la décision 41/100 sur les programmes de récupération et de recyclage.

37. Au cours de la mise en œuvre des PGEH plus particulièrement, plusieurs pays visés à l'article 5 ont trouvé pertinent d'assurer la pérennité des activités proposées liées à l'entretien de l'équipement de réfrigération, notamment en augmentant et/ou en renforçant la capacité locale et des institutions d'offrir des programmes de formation complets à un plus grand nombre de techniciens en réfrigération et de douaniers, en modifiant le programme des établissements de formation, des écoles professionnelles et/ou des autorités douanières, en révisant et en mettant à jour le code de bonnes pratiques d'entretien et en créant des programmes pour reconnaître la compétence des techniciens à mettre en place de bonnes pratiques d'installation et d'entretien, en élargissant la formation afin d'y inclure la manipulation de technologies de remplacement des HCFC, surtout celles utilisant des frigorigènes inflammables et en encourageant/facilitant l'adoption de normes liées au secteur de l'entretien de l'équipement de réfrigération.

Soutien au cadre de politiques et de réglementations

38. Le cadre de politiques et de réglementations créé au titre du Protocole de Montréal a joué un rôle déterminant en appui aux activités d'élimination dans le secteur de l'entretien de l'équipement de réfrigération et sera encore plus pertinent pour l'élimination des HFC. Cette partie du document décrit ce cadre en détail.

Cadre de réglementation établi pendant l'élimination des CFC

39. Les pays visés à l'article 5 ont réduit l'offre de substances réglementées au titre du Protocole de Montréal en en limitant l'importation et/ou l'exportation, surtout au moyen de programmes d'octroi de permis et de quotas. De plus, plusieurs pays ont établi ou sont en voie d'établir une réglementation sur l'importation et l'exportation, s'il y a lieu, de l'équipement de réfrigération utilisant des substances réglementées, afin d'en limiter la croissance et de réduire l'envergure de la base installée d'un tel équipement.

40. Ces limitations sont devenues de plus en plus efficaces, comme le démontrent les rapports de vérification accompagnant les demandes de financement des tranches des plans d'élimination analysées par le Secrétariat, qui révèlent d'importantes améliorations dans la coordination entre le Bureau national de l'ozone, les organes émetteurs de permis, les autorités douanières et les importateurs. Le suivi des importations de substances réglementées au titre du Protocole s'est aussi grandement amélioré et les pays sont de plus en plus nombreux à utiliser une base de données informatisée aux douanes.

41. Une assistance extraordinaire a été fournie pour former les douaniers et autres policiers en appui au cadre de réglementation des substances réglementées au titre du Protocole de Montréal. Par exemple, le Comité exécutif, à sa 48e réunion (avril 2006), a demandé aux agences bilatérales et d'exécution de préparer et de mettre en œuvre des plans d'élimination de manière à assurer la mise en œuvre des recommandations suivantes, si possible :

a) Adopter des réglementations sur l'exportation, les programmes d'octroi de permis et l'interdiction de vendre à des entreprises ne détenant pas de permis pour les substances réglementées; restreindre l'importation d'équipements de réfrigération et de climatisation utilisant des frigorigènes réglementés; nommer des douaniers pour participer aux comités sur l'ozone, signer des protocoles d'accord entre les services des douanes et le Bureau national de l'ozone, et désigner des correspondants nationaux de l'environnement au service des douanes ayant accès aux niveaux supérieurs de la hiérarchie douanière; faire participer les établissements d'accréditation et de normalisation à l'identification des substances réglementées en l'absence de laboratoires équipés adéquatement dans les bureaux de douane; détailler davantage les codes de douane en ajoutant des caractères au système harmonisé de désignation et de codification des marchandises (Système harmonisé) créé et entretenu par l'Organisation mondiale des douanes; informer les pays importateurs des

expéditions autorisées et s'assurer que les clients figurent sur la liste des importateurs autorisés, que les pays importateurs doivent fournir régulièrement;

b) Inviter les officiels de haut niveau, les autres ministères et les agents commerciaux ou les courtiers responsables de la gestion du dédouanement des expéditions à des séminaires, afin d'assurer l'application conforme du programme d'octroi de permis et de l'identification des importations de substances réglementées; veiller à ce que les étapes de la formation des formateurs et des douaniers se suivent rapidement et qu'une base de données de formateurs et de stagiaires actifs soit maintenue; accélérer l'envoi d'identificateurs de frigorigènes fournis aux services douaniers; et

c) Organiser des séminaires sur la coopération régionale entre les douaniers; soutenir l'harmonisation des procédures législatives et de douanes du Programme d'aide à la conformité du PNUE; encourager la création de réseaux régionaux informels de représentants des douanes; modifier le matériel de formation des douaniers en ajoutant de l'information sur les contrôles douaniers et la détection du commerce illicite; et développer des outils de dépistage (p. ex., l'outil de référence rapide des services douaniers, les affiches, les listes de vérification et des bases de données), afin d'assurer une diffusion à grande échelle dans les pays visés à l'article 5.

Renforcement du cadre de réglementation pendant l'élimination des HCFC

42. Les pays visés à l'article 5, ainsi que les agences bilatérales et d'exécution, suivent toutes les recommandations ci-dessus, selon leur situation particulière. À cet égard, le cadre de réglementation établi a été utilisé au maximum afin d'accélérer l'élimination des HCFC, comme en ont convenu les Parties.

43. Un soutien financier a été fourni afin d'intégrer les mesures de réglementation des HCFC aux lois, aux réglementations et aux programmes d'octroi de permis, dans le cadre du financement des PGEH, confirmant que l'application de telles mesures de réglementation est une condition préalable au financement de la mise en œuvre du PGEH (décision 54/39 e)). Afin de renforcer davantage le programme d'octroi de permis d'importation et de quotas, le Comité exécutif a décidé que pour toutes les propositions à compter de la 68e réunion (décembre 2012), une confirmation du gouvernement doit avoir été reçue à l'effet qu'un programme national exécutoire d'octroi de permis et de quotas d'importation de HCFC et, le cas échéant la production et les exportations, est en place et que ce système est en mesure d'assurer la conformité du pays au calendrier du Protocole de Montréal (décision 63 /17).

44. Au cours de la mise en œuvre des PGEH, plusieurs pays visés à l'article 5 ont trouvé pertinent d'adopter d'autres mesures de réglementation, dont l'obligation pour les importateurs et les exportateurs de HCFC de remettre des rapports, l'interdiction d'utiliser des bonbonnes à utilisation unique (jetables), des droits d'importation pour les HCFC, l'élargissement des programmes de permis à tous les frigorigènes importés au pays, des mesures de contrôle des émissions de HCFC et différents choix concernant le maintien de dossiers. [31]

Cadre de réglementation après l'Amendement de Kigali

45. En ce qui concerne la réduction progressive des HFC, les pays visés à l'article 5 devront réviser, mettre à jour et/ou développer davantage leurs mesures législatives, dont les programmes d'octroi de permis

[31] La publication du PNUE sur les orientations et mesures législatives concernant les HCFC propose une analyse complète des mesures législatives et de réglementation utilisées par les Bureaux nationaux de l'ozone dans la conception et la mise en œuvre de leurs plans nationaux d'élimination dans le secteur de l'entretien de l'équipement de réfrigération.

d'importation/exportation et de quotas, afin d'y inclure les HFC, lesquels ne figurent pas dans le Système harmonisé à l'heure actuelle, ce qui rend difficile le travail des douaniers de reconnaître la nature illicite des importations et exportations pertinentes de HCFC et de HFC.[32] Les pays qui ratifieront l'Amendement de Kigali avant le 1er janvier 2019 devront réviser leur cadre de réglementation en toute urgence, car ils devront mettre sur pied un programme d'octroi de permis pour les HFC en 2018, afin de respecter leur obligation de remise de rapports en vertu de l'article 7 du Protocole de Montréal. Les quantités accrues et le choix de plus en plus vaste de substances réglementées, qui comprennent un grand nombre de mélanges de frigorigènes, ainsi que la mesure de la conformité de la production et de la consommation de HFC en tonnes d'équivalents de CO_2, exigeront également des mises à jour et des modifications du matériel de formation des douaniers et de l'application des programmes de permis d'importation/exportation et de quotas de HFC.

46. La mise en œuvre en parallèle de l'élimination des HCFC et de la réduction progressive des HFC pourrait être renforcée en incluant les HFC dans les réglementations existantes sur les HCFC, surtout celles liées au contrôle et au suivi du commerce (p. ex., le programme d'octroi de permis et de quotas, les rapports des importateurs, l'interdiction d'utiliser les bonbonnes de HFC à usage unique, l'interdiction d'utiliser certains équipements à base de HFC, le maintien de dossiers pour certains types de systèmes à base de HFC et le contrôle des émissions de HFC).[33]

47. Plusieurs pays non visés à l'article 5 ont recours aux mesures de réglementation pour assurer une adoption à plus grande échelle et la pérennité des bonnes pratiques en réfrigération. Par exemple, la certification et la formation sont des conditions préalables pour les techniciens d'entretien de l'équipement de réfrigération, les producteurs et les distributeurs de frigorigènes sont obligés de recevoir des frigorigènes ayant déjà servi aux fins de recyclage ou d'élimination définitive, et les techniciens certifiés sont tenus de récupérer les frigorigènes.

48. Étant donné que plusieurs substances de remplacement des HCFC et des HFC possèdent un certain niveau d'inflammabilité, des réglementations, des codes de pratique et des normes[34] doivent être adoptés afin d'assurer l'utilisation sans danger de l'équipement contenant ces substances de remplacement, ainsi que la gestion et la manipulation sans danger de ces substances par toutes les parties prenantes touchées (p. ex., services des douanes, importateurs, techniciens et ateliers d'entretien). L'adoption de ces normes et réglementations pourrait retarder l'introduction de technologies de remplacement à faible PRG. Par exemple, le PNUE a recensé des obstacles à l'adoption des normes, à savoir la complexité et la durée du processus ; le manque d'expertise ou d'infrastructures institutionnelles adéquates; l'absence de liens avec les organes de normalisation internationaux/régionaux; la résistance à la modification des pratiques et les coûts associés à l'acquisition des normes par les petites entreprises. Les Bureaux nationaux de l'ozone peuvent soutenir les organes de normalisation nationaux afin de faciliter le processus de développement,

[32] La vingt-sixième Réunion des Parties (novembre 2014) a chargé le Secrétariat de l'ozone d'assurer la liaison avec l'Organisation mondiale des douanes, afin d'examiner la possibilité d'attribuer un code individuel du Système harmonisé aux substances de remplacement fluorées des HFC et des HCFC les plus couramment utilisées classées sous le code 2902.39 du Système harmonisé, et a encouragé les Parties à prendre les mesures nécessaires pour recommander de telles classifications douanières internationales et encourager la mise sur pied des codes douaniers intérieurs pour les substances de remplacement concernées (décision XXVI/8). Comme les codes du Système harmonisé sont mis à jour aux cinq ans, la date d'intégration la plus hâtive des nouveaux codes pour les HFC serait de 2022.

[33] La publication du PNUE sur les choix législatifs et d'orientation pour contrôler les HFC propose différents choix d'orientation et de réglementations pouvant entrer en ligne de compte lors de la mise en œuvre des plans de réduction progressive des HFC.

[34] Pour les substances, l'équipement, les contenants de frigorigènes, l'entreposage, le transport, la conception des systèmes et de leurs composants, la charge maximum de frigorigène, l'installation, l'entretien et l'élimination définitive de l'équipement, etc.

d'adoption et de mise à niveau des normes et de resserrer les liens avec les associations locales de réfrigération, ainsi que les parties prenantes.[35]

49. Le Comité exécutif, à sa 72e réunion (mai 2014) a encouragé les pays visés à l'article 5 à examiner, si nécessaire et faisable, lors de la mise en œuvre de leur PGEH, l'élaboration de réglementations et de codes de pratiques, et l'adoption de normes pour l'introduction sans danger de frigorigènes inflammables et toxiques et de frigorigènes fonctionnant à très haute pression, compte tenu du risque d'accidents et des effets négatifs sur la santé associés à leur utilisation, et d'envisager de mettre l'accent sur la formation des techniciens d'entretien, les bonnes pratiques, la manipulation sans danger, le confinement, la récupération et le recyclage des frigorigènes, et la réutilisation des frigorigènes récupérés (décision 72/41). La formation en matière d'installation, de fonctionnement, d'entretien et d'élimination de l'équipement fonctionnant avec des substances inflammables a été considérée comme une priorité à la phase I des PGEH dans les pays où ces frigorigènes sont déjà vendus ou attendus sur le marché.

50. Plusieurs PGEH en voie d'être mis en œuvre comprennent des activités d'adoption de normes nationales pour faciliter l'introduction de substances de remplacement à faible PRG, mais certains travaux supplémentaires seront nécessaires à cette fin dans la majorité des pays visés à l'article 5. À cet égard, le Comité exécutif, à sa 79e réunion (juillet 2017), a accepté de financer les activités de facilitation en appui à la réduction progressive des HFC (décision 79/46), comprenant entre autres des activités pour faciliter et appuyer la ratification hâtive de l'Amendement de Kigali, des activités pour amorcer les arrangements institutionnels en appui, la révision des programmes d'octroi de permis, la déclaration de données sur les HFC, la démonstration d'activités ne portant pas sur des investissements et des stratégies nationales. Le Comité exécutif a aussi reconnu qu'un soutien financier pourrait être offert pour la préparation des plans nationaux de réduction progressive des HFC, dans le but d'assurer le respect des premières obligations, cinq ans avant la date de ces obligations, au plus tôt, lorsque le pays aura ratifié l'Amendement de Kigali. Trente-cinq pays visés à l'article 5, appartenant tous au groupe I, avaient ratifié l'Amendement de Kigali au moment de la mise au point du présent document. Ces pays pourront commencer à présenter des demandes de financement dès 2019.

Formation et certification des techniciens

51. La formation des techniciens a d'abord été une activité indépendante de formation en bonnes pratiques d'entretien de l'équipement de réfrigération. Cette formation comprenait la formation des formateurs, suivie de la formation des techniciens. Bien que la formation n'ait été offerte qu'à un certain nombre de techniciens et que la réduction de la consommation de CFC attribuée à cette formation n'ait pas été quantifiée, les évaluations du Fonds multilatéral ont conclu que l'introduction de bonnes pratiques en entretien de l'équipement de réfrigération était un facteur important de la réduction des émissions de CFC dans l'atmosphère,[36] et aidait les pays à respecter leurs obligations au titre du Protocole de Montréal. De plus, les programmes de formation ont haussé le niveau de sensibilisation à la conservation, l'entretien préventif et les technologies de remplacement, et ont contribué à la mise à niveau de la matière des cours dans les centres de formation.

52. Au cours de l'évolution des programmes de formation à l'intention des techniciens en réfrigération, d'activités indépendantes à composantes intégrantes des plans nationaux et sectoriels d'élimination, les Bureaux nationaux de l'ozone ont augmenté la participation des centres de formation nationaux et professionnels à leur application et veillé à ce que les thèmes abordés dans la formation (p. ex., bonnes

[35] La publication du PNUE sur les normes internationales en réfrigération et en climatisation présente une introduction sur le rôle des normes dans le contexte de l'élimination des HCFC dans les pays en développement (2014).

[36] Rapport final sur l'évaluation de la mise en œuvre des plans de gestion des frigorigènes (UNEP/OzL.Pro/ExCom/41/7).

pratiques en réfrigération, utilisation sans danger des frigorigènes inflammables) soient inclus dans les programmes des centres.

53. Les programmes de formation et de certification des techniciens mis en œuvre à ce jour ont permis à plusieurs pays de renforcer leurs institutions locales, et d'offrir une formation aux techniciens de différents niveaux d'habiletés. Les évaluations passées des programmes de formation ont aussi recommandé de soutenir la mise sur pied de programmes de certification des techniciens. Plusieurs pays ont pris des mesures pour mettre sur pied un programme de certification volontaire reposant sur une réglementation. Rendre ces programmes obligatoires est plus difficile, car une telle décision dépasse souvent le mandat du Bureau national de l'ozone (p. ex., relève du mandat du ministère de l'Éducation et/ou du Travail) et exigerait davantage de travail sur le plan institutionnel. Certains pays ont adopté une autre approche et émettent des permis environnementaux, qui relèvent du ministère de l'Environnement.

54. Une des évaluations du programme de formation[37] a recommandé de renforcer les associations et de les faire participer davantage à la mise en œuvre des projets. Cette recommandation a été intégrée aux PGEH de plusieurs pays visés à l'article 5, qui ont obtenu de bons résultats, dans la mesure où certains gouvernements ont désigné et appuyé des associations de réfrigération pour participer à la mise en œuvre de programmes de certification des techniciens qui pourraient potentiellement produire des revenus contribuant à leur pérennité. Ces résultats ont été confirmés dans l'évaluation actuelle du secteur de l'entretien de l'équipement de réfrigération, qui met en lumière l'importance des associations de réfrigération en tant que parties prenantes essentielles de la conception et de la mise en œuvre du projet, et recommande de les renforcer ou de les créer si elles n'existent pas déjà.[38]

Utilisation de la capacité de formation créée pour la réduction progressive des HFC

55. L'élimination accélérée des HCFC et l'adoption de l'Amendement de Kigali ont entraîné une augmentation graduelle du nombre et de la diversité des systèmes de réfrigération et de climatisation basés sur des frigorigènes à faible PRG. Dans ce contexte, plusieurs pays ont déjà commencé à renforcer les institutions locales et les organes participant à la formation et la certification des techniciens, au cours de la mise en œuvre de leur PGEH. Ceci aidera à préparer le terrain en vue de doter les techniciens qui entretiennent de l'équipement à base de frigorigènes de remplacement des connaissances, des habiletés et des outils nécessaires pour le faire sans danger et de manière écologique.

56. Les enseignements tirés des projets mis en œuvre révèlent que la formation devrait devenir autonome afin d'assurer une application à un plus vaste groupe cible après l'achèvement du projet et de mieux contribuer à apporter un changement de comportement permanent dans le secteur de la réfrigération.

57. Une plus grande attention devrait être accordée à la mise à jour continuelle du programme de formation des institutions et des écoles professionnelles, afin d'y intégrer les changements, les mises à niveau des systèmes de réfrigération et l'introduction des frigorigènes de remplacement; étendre la formation à d'autres parties prenantes et aux utilisateurs finaux de la chaîne d'approvisionnement de réfrigération et d'équipement; étendre la certification aux entreprises participant à l'installation, à l'entretien et à la mise hors service de l'équipement contenant des frigorigènes; établir un lien entre la certification des techniciens et les normes de réglementation adoptées par le pays; déterminer le nombre et les niveaux de certification des techniciens selon les besoins précis du pays; déterminer si la certification des techniciens doit être obligatoire et veiller à ce qu'une masse critique de techniciens soit certifiée, et renforcer les associations de réfrigération et les faire participer à la promotion ou la mise en œuvre de la

[37] UNEP/OzL.Pro/ExCom/31/20

[38] UNEP/OzL.Pro/ExCom/81/7 (rapport préliminaire) et UNEP/OzL.Pro/ExCom/82/11(rapport de synthèse).

certification des techniciens, afin d'assurer la pérennité des pratiques d'entretien de l'équipement de réfrigération, au-delà de l'assistance fournie par le Fonds multilatéral.

58. Il faut aussi se pencher davantage sur les techniciens sans formation reconnue qui n'ont pas de liens avec une association ou un atelier de formation, qui ne sont pas enregistrés en qualité de techniciens et qui, dans plusieurs cas, ne travaillent pas de manière permanente dans le secteur de l'entretien de l'équipement de réfrigération. Par exemple, dans certains pays, ce secteur a reçu un appui provenant notamment d'activités de formation et de sensibilisation mises en œuvre par des moyens non conventionnels (p. ex., cours de courte durée et vidéos téléchargées sur un site Web; des « appli » spécifiques pour les téléphones cellulaires et autres moyens), et/ou grâce à l'assistance d'associations de réfrigération. Compte tenu de la complexité accrue des systèmes de réfrigération et de climatisation, les compétences et connaissances minimales exigées de ces techniciens devront être augmentées.

Assistance technique comprenant les outils et l'équipement d'entretien

59. Le Fonds multilatéral appuie trois formes d'assistance technique dans le secteur de l'entretien de l'équipement de réfrigération : l'approvisionnement en outils d'entretien de base destinés aux techniciens en réfrigération, la mise sur pied de programmes de récupération et recyclage ou de RRR de frigorigènes et l'adaptation et le remplacement d'équipement.

Outils d'entretien de base pour les techniciens

60. Des outils d'entretien de l'équipement de réfrigération[39] ont été distribués dans la majorité des pays visés à l'article 5, ce qui a permis à plus grand nombre de techniciens d'appliquer de bonnes pratiques d'entretien. Les trousses à outils distribuées varient d'un pays à l'autre, selon les priorités locales, le type d'équipement le plus couramment entretenu, les sommes disponibles et le nombre de techniciens à équiper. Plusieurs pays ont aussi reçu de l'équipement et adopté de bonnes pratiques pour la vidange des circuits de frigorigènes. Des outils supplémentaires pour l'entretien de l'équipement de réfrigération utilisant des frigorigènes inflammables, de plus haute pression et/ou à toxicité supérieure,[40] ont été distribués pendant la mise en œuvre des PGEH.

Programmes de récupération, recyclage et régénération des frigorigènes

61. Le Comité exécutif approuve des projets de récupération et de recyclage des frigorigènes depuis 1991. Le niveau d'infrastructures créé par le truchement des projets de RRR mis en œuvre varie énormément d'un pays à l'autre. Certains pays ont reçu de l'équipement de RRR pour plusieurs frigorigènes, tandis que plusieurs autres pays n'ont reçu que des outils d'entretien, car le volume de frigorigènes ne justifiait pas un programme de régénération.

[39] La liste indicative et non exhaustive des outils typiques contient des coupe-tube de cuivre, une balance, des outils d'ébarbage, un évaseur, un tampon abrasif non métallique, un alliage à braser à base de phosphore et du flux, des outils d'étalonnage et de pliage des tuyaux, des clés, une clé dynamométrique, un vacuomètre, un appareil à mandriner les tubes et des mandrins, des pompes à vide, une torche d'oxycoupage et accessoires, un détecteur électronique de fuites, un test de fuite étalonné, un allumeur-torche, un maillet de caoutchouc, une clé à cliquet de réfrigération, un flacon pulvérisateur (pour détecter les fuites), un calibre de collecteur, des tubes et autres. Les articles standards tels que des lunettes, des gants et un extincteur d'incendie sont fourni à titre d'équipement de protection personnel.

[40] La liste indicative et non exhaustive d'outils contient des détecteurs de gaz, des calibres de collecteurs électroniques et des boyaux, de l'ammoniaque et du CO_2, etc. L'équipement de protection peut comprendre de l'équipement de protection des voies respiratoires (p. ex., cartouches de respirateur autonomes ou de l'équipement respiratoire) et des vêtements protecteurs, selon le frigorigène.

62. Selon les évaluations antérieures,[41] les problèmes suivants ont empêché la mise en œuvre efficace des premiers projets de récupération et de recyclage des CFC : l'absence de réglementations interdisant les émissions volontaires de substances réglementées, l'absence d'un modèle économique jumelée aux faibles prix des CFC en vigueur pendant presque toute la période d'élimination des CFC, l'absence de sensibilisation chez les techniciens et les utilisateurs finaux, le coût élevé de l'équipement de récupération et de recyclage ainsi que le manque d'équipement (p. ex., filtres) sur le marché local, les questions de logistique (p. ex., le poids de l'équipement, la distance et la petite taille des charges de frigorigènes à récupérer) et l'absence de programmes de suivi et évaluation convenables.

63. Se fondant sur l'expérience acquise dans le cadre de projets de récupération et de recyclage précédents, plusieurs pays ont examiné des facteurs supplémentaires pour améliorer l'efficacité des programmes de RRR dans leurs plans d'élimination subséquents et leurs PGEH en cours. Par exemple, certains pays ont remplacé les appareils de recyclage par des appareils de régénération peu coûteux pouvant garantir le retour de frigorigènes certifiés.[42] Dans d'autres pays, des centres de régénération ont été aménagés dans de grandes entreprises de vente de frigorigènes plutôt que dans les centres de formation ou les installations gouvernementales, en application d'un modèle d'affaire et grâce au cofinancement des entreprises bénéficiaires. Des appareils de régénération ont aussi été mis en service pour différents types de frigorigènes purs ou contenus dans des mélanges. Un taux de récupération supérieur du HCFC-22 a été réalisé grâce à la plus grande taille de l'équipement à base de HCFC comparativement à l'équipement à base de CFC du passé.

64. Il a été constaté qu'une part importante des frigorigènes récupérés provenait de la mise hors service d'équipement en fin de vie. Dans ces cas, les entreprises ont recyclé tous les composants de l'équipement, ce qui a créé des revenus supplémentaires permettant de payer la régénération du frigorigène. Dans d'autres pays, le projet de récupération et de recyclage (ou de régénération) a été associé à des programmes d'efficacité énergétique ayant pour but d'échanger de vieux réfrigérateurs inefficaces à base de CFC par des appareils éconergétiques, et de récupérer des quantités importantes de CFC (aux fins de réutilisation ou de destruction, selon le cas) qui auraient autrement été dégagées dans l'atmosphère pendant la destruction de l'équipement.

65. Malgré tous les progrès accomplis à ce jour, la dernière évaluation du secteur de l'entretien de l'équipement de réfrigération révèle que la pérennité de programmes de RRR demeure précaire à cause de facteurs tels que les coûts de logistique, les coûts de la main-d'œuvre, l'absence d'équipement accessoire et l'absence de mesures d'encouragement pour la régénération à cause du faible coût des frigorigènes vierges.

Adaptation et remplacement de l'équipement

66. Les lignes directrices sur la reconversion des utilisateurs finaux dans le secteur de la réfrigération commerciale ont été adoptées à la 28e réunion (juillet 1999),[43] et des programmes pour encourager l'adaptation de l'équipement de réfrigération ont été autorisés à la 32e réunion (décembre 2000).

[41] Paragraphes 31 à 33 du document UNEP/OzL.Pro/ExCom/31/18.
[42] Norme 700 de l'AHRI.
[43] Les lignes directrices fixent les circonstances qui doivent exister avant que la priorité ne soit accordée à la reconversion des utilisateurs finaux : a) la réglementation sur la production et les importations de CFC et d'équipement à base de CFC est en place et appliquée efficacement, et limite la distribution de nouveaux appareils à base de CFC, b) la majeure partie de la consommation restante au pays est attribuable à l'entretien d'équipement de réfrigération et de climatisation, c) toutes les données sur le profil de toute consommation restante ont été déterminées et mises à la disposition du Comité exécutif et d) soit qu'aucune autre activité possible ne permettrait au pays de respecter ses obligations en matière de CFC ou le prix à la consommation des CFC est supérieur à celui des frigorigènes de remplacement depuis les 9 derniers mois et devrait continuer à augmenter (décision 28/44).

L'évaluation des plans de gestion de l'élimination finale réalisée en 2009 a révélé que ces programmes d'encouragement ont bien fonctionné dans les endroits où le prix du CFC-12 grimpait rapidement, dans un environnement où le prix des substances de remplacement disponibles était stable. La différence de prix, le niveau d'encouragement et les activités en lien avec le Bureau national de l'ozone ont aussi joué un rôle important.

67. En appliquant les principes de la décision 28/44 aux HCFC, les conditions pertinentes suivantes doivent exister avant que la priorité ne soit accordée aux activités de reconversion des utilisateurs finaux : a) des mesures de réglementation de la production et de l'importation de HCFC et d'équipement à base de HCFC sont en place et appliquées efficacement, et limitent le déploiement de nouveaux appareils à base de HCFC, b) le secteur de l'entretien de l'équipement de réfrigération et de climatisation est responsable de la plus grande part de la consommation au pays, c) aucune activité ou aucune autre activité ne permettrait au pays de respecter ses obligations de réglementation des HCFC ou le prix de détail des HCFC est plus élevé que celui des frigorigènes de remplacement et devrait continuer à augmenter et d) les codes de pratique et les normes d'utilisation de frigorigènes inflammables sont en place et les techniciens entretenant l'équipement ont été bien formés et certifiés.

68. À l'heure actuelle, les frigorigènes de remplacement disponibles[44] convenant à l'adaptation sont des frigorigènes à PRG élevé qui n'offrent aucune amélioration au niveau des émissions de frigorigènes ni de la consommation d'énergie. L'équipement à base de HCFC présente dans la plupart des cas un taux d'efficacité énergétique inhérent supérieure à celui des autres frigorigènes pouvant être utilisés pour l'adaptation. En conséquence, le Comité exécutif a encouragé les pays visés à l'article 5, lors de la mise en œuvre de leur PGEH dans le secteur de l'entretien de l'équipement de réfrigération, à concentrer leurs activités sur la formation des techniciens, les bonnes pratiques, la manipulation sécuritaire des frigorigènes, le confinement, la récupération et le recyclage, et la réutilisation des frigorigènes récupérés plutôt que la reconversion (décision 72/41 c) iii)).

69. Les rapports ont révélé qu'au cours de la mise en œuvre des PGEH, plusieurs pays visés à l'article 5 utilisent le R-290 pour la reconversion, le fonctionnement et/ou le remplissage d'équipement à base de HCFC-22. Il semble que les conditions du marché soient favorables à cette pratique, qui se déroule en marge du PGEH. De graves inquiétudes ont été soulevées concernant l'utilisation sécuritaire des frigorigènes inflammables dans les systèmes conçus pour des frigorigènes ininflammables et les risques que cette situation pose pour les techniciens et les utilisateurs.[45] En réponse à cette pratique, le Comité exécutif a pris note que lorsqu'un pays s'engage à adapter des équipements de réfrigération et de climatisation à base de HCFC à des frigorigènes inflammables ou toxiques et à assurer l'entretien s'y rapportant avec l'assistance du Fonds multilatéral, il le fait en étant entendu que cette adaptation doit être faite uniquement en conformité avec les protocoles et les normes pertinentes (décisions 72/17 et 73/34).

Sous-secteur de l'assemblage, de l'installation et du remplissage de la charge

70. Le Comité exécutif, à sa 31e réunion (juillet 2000), a défini le sous-secteur de l'assemblage, de l'installation et du remplissage de la charge, et a convenu des lignes directrices pour le calcul des surcoûts

[44] Les seules substances de remplacement du HCFC-22 utilisées pour la reconversion présentent un PRG élevé (telles que le HFC-470/C/F et le HFC-404A). Le HFC-32 n'est pas une substance de remplacement recommandée car il exige une pression de fonctionnement plus élevée. La seule substance de remplacement à faible PRG qui se rapproche du HCFC-22 est le HC-290, mais son usage est restreint car il est inflammable. Le HC-1270 (propylène) semble présenter une meilleure capacité volumétrique, mais les inquiétudes quant à son inflammabilité et les modifications à apporter aux échangeurs de chaleur persistent.

[45] À savoir : les compétences des techniciens effectuant la reconversion, la nécessité d'installer des capteurs pour détecter les fuites, le besoin d'étiquettes identifiant le frigorigène et la taille de l'équipement à adapter.

(décision 31/45). Une orientation supplémentaire a été convenue à la 62e réunion (décision 63/14).[46] Par la suite, des activités ont été approuvées dans ce sous-secteur dans le cadre de projets parapluie ou de plans d'élimination pour lesquels les détails des conditions existant dans les entreprises assemblant l'équipement n'étaient pas connus.

71. Ce sous-secteur peut potentiellement contribuer à faciliter l'adoption de substances de remplacement à faible PRG, car on y assemble de nouveaux systèmes de réfrigération et de climatisation. Le sous-secteur réunit différents types d'entreprises, dont des fabricants d'équipement de réfrigération et de climatisation commercial qui font le remplissage du frigorigène sur place (ils possèdent habituellement des usines de fabrication, des chaînes de production et des entrepôts, et assemblent les appareils sur mesure, selon les besoins des clients); des entrepreneurs qui installent des systèmes de réfrigération et de climatisation sur mesure chez les utilisateurs, et des utilisateurs qui installent leurs propres systèmes en utilisant leur propre capacité technique. Ce sous-secteur fournit des systèmes à différentes industries telles que la vente au détail, à savoir les supermarchés, les minimarchés et les boucheries; l'industrie agroalimentaire, plus particulièrement les fleurs, les entrepôts d'aliments surgelés, les abattoirs, les produits laitiers; le secteur pharmaceutique; les services de traiteur pour l'armée, les écoles, les hôpitaux; les chaînes de restaurants; les usines de transformation des aliments; l'industrie de la pêche, les hôtels et les édifices à bureaux, et autres.

72. De plus, on ne connaît pas encore la répartition réelle de la consommation de substances réglementées entre l'assemblage et l'entretien, ni même la charge initiale.[47] Au cours des discussions sur l'expérience acquise par les agences bilatérales et d'exécution dans la mise en œuvre des PGEH, on a conclu qu'il faut bien comprendre ce sous-secteur, car il pourrait faciliter la réduction progressive des HFC, favoriser l'introduction de technologies à faible PRG et faire la promotion des pratiques d'installation sans danger et éconergétiques.

Utilisation de la capacité actuelle d'assistance technique pour la réduction progressive des HFC

73. Les outils d'entretien pour les techniciens devraient demeurer un élément important du secteur de l'entretien de l'équipement de réfrigération. Au lieu d'élaborer une trousse à outils universelle remise à tous les pays, chaque pays visé à l'article 5 devrait déterminer les outils qui répondent le mieux aux besoins de ses techniciens à différentes étapes de la mise en œuvre du projet.

74. Le renforcement des programmes de RRR existants ou la création de nouveaux programmes devrait reposer sur des modèles d'affaires exhaustifs convenant à la situation du pays et des parties prenantes participantes, en tenant compte notamment du prix des frigorigènes vierges et de la quantité de frigorigène à régénérer.[48] La durabilité et l'efficacité à long terme de ces programmes devraient être appuyées par une réglementation sur le confinement obligatoire du frigorigène[49] et des activités de sensibilisation des

[46] Le Comité exécutif a demandé aux agences, lorsqu'elles proposaient des projets liés à l'installation, l'assemblage et le remplissage de la charge, de démontrer que chacune des entreprises participant au projet avait investi dans l'équipement, le développement de produits ou la formation de personnel propre à la technologie de HCFC à un niveau dépassant de loin les investissements dans le secteur de l'entretien et que les activités envisagées pour ces entreprises représentaient des surcoûts.

[47] À titre d'exemple, un pays ayant une consommation moyenne a récemment évalué que jusqu'à 25 p. cent des appareils contenant des frigorigènes avaient été installés par ce sous-secteur.

[48] Par exemple, dans un pays, le prix minimum des frigorigènes vierges pouvant être régénérés était de 7 $US/kg. Il est important, dans l'estimation des quantités à régénérer, de tenir compte du fait que de grandes quantités non consignées de frigorigènes sont régénérées et recyclées sur place en utilisant des filtres, et réutilisées sans passer par un centre de régénération.

[49] Comprenant entre autres une interdiction/réglementation concernant la mise à l'air des frigorigènes pendant l'entretien, les instruments économiques pouvant contribuer à la faisabilité économique de l'opération (p. ex., droits sur les coûts des frigorigènes); l'interdiction d'utiliser des bonbonnes à utilisation unique, la détection obligatoire de

techniciens et des utilisateurs, auxquelles participent les associations de réfrigération. Les politiques proposées pour le remplacement de l'équipement de réfrigération peu efficace devraient comprendre des stratégies pour récupérer les frigorigènes de l'équipement mis hors service.

75. En vertu de l'Amendement de Kigali, le plus grand nombre et la grande diversité des systèmes de réfrigération à base de HCFC et de HFC encore utilisés offrent des occasions accrues de récupération et de régénération des frigorigènes. Il faut examiner, notamment : la capacité de l'équipement et des accessoires (p. ex., bonbonnes, identifiants de frigorigènes) à récupérer, recycler et régénérer les HCFC et les HFC, y compris les mélanges; la bonne gestion de quantités potentiellement à la hausse de gaz inutilisables récupérés (à cause de la grande quantité de mélanges zéotropiques dont la composition se dégrade lors de fuites); une analyse des avantages et des difficultés à récupérer, recycler et régénérer les frigorigènes inflammables (y compris une certitude réglementaire de récupération et de transport sans danger); et une évaluation de la faisabilité économique des installations de régénération, surtout pour les mélanges zéotropiques et leurs éléments constitutifs.

76. Les entreprises du secteur de l'assemblage, de l'installation et du remplissage de la charge initiale, ainsi que les entreprises manufacturières pourraient contribuer à assurer de bonnes pratiques d'entretien et le maintien de l'efficacité énergétique, surtout dans les systèmes de plus grande envergure, ce qui serait également utile lorsque le nombre de techniciens capables d'offrir ce service pour les nouvelles technologies est limité.

Facteurs en lien avec l'efficacité énergétique dans le secteur de l'entretien de l'équipement de réfrigération

77. Bien que le financement de l'amélioration de l'efficacité énergétique de l'équipement de réfrigération n'ait pas encore été approuvé, la consommation d'énergie de cet équipement est entrée en ligne de compte lors de l'élaboration des critères de financement des projets d'élimination des HCFC.[50] De plus, le Comité exécutif a cherché des occasions d'encourager les améliorations de l'efficacité énergétique. L'efficacité énergétique a été un facteur dans le contexte des refroidisseurs lors de l'élimination des CFC. Deux projets ont été approuvés à la 26e et à la 28e réunions, faisant appel à un mécanisme de prêts à des conditions d'extrême faveur (décisions 26/34 et 28/32), et une fenêtre de financement de 15,2 millions $US a été approuvée à la 46e réunion pour des projets de démonstration supplémentaires dans le sous-secteur des refroidisseurs (décision 46/33). Le rapport d'évaluation sur les refroidisseurs remis à la 80e réunion[51] conclut que l'efficacité énergétique et les économies d'énergie sont d'importants moteurs de remplacement des refroidisseurs; il révèle également que les capacités de récupération et de recyclage d'un pays devront être prises en ligne de compte dans le remplacement des refroidisseurs. Bien que le rapport n'ait pas recommandé d'intervenir dans le secteur de l'entretien afin d'encourager un fonctionnement éconergétique, un bon entretien des refroidisseurs est essentiel afin que l'équipement fonctionne de manière efficace.

78. En ce qui concerne les HCFC, le Comité exécutif a décidé d'approuver la démonstration de substances à faible PRG pour remplacer les HCFC; la promotion de l'amélioration de l'efficacité énergétique étant un des critères de sélection de ces projets (décision 72/40 b) i) f)). Ainsi, le Comité exécutif a approuvé, à ses 74e (mai 2015), 75e (novembre 2015) et 76e (mai 2016) réunions, 14 projets de

fuites sur tout équipement ayant une certaine charge de frigorigène; et la consignation et le maintien de dossiers pour les utilisateurs ou des mesures découlant de réglementations existantes (p. ex., produits chimiques ou dangereux, programmes de responsabilité des producteurs).

[50] Paragraphe 11 b) de la décision XIX/6.

[51] UNEP/OzL.Pro/ExCom/80/9

démonstration liés au secteur de la réfrigération et de la climatisation. Les valeurs de l'efficacité énergétique devaient être déclarées parmi les résultats des projets concernés.[52]

79. De plus, certains PGEH approuvés contenaient des conditions spécifiques en lien avec l'efficacité énergétique. Par exemple, le PGEH de la Jordanie[53] exigeait que le plan du secteur de la climatisation comprenne des orientations et des démarches techniques pour améliorer l'efficacité énergétique de l'équipement de climatisation résidentiel, afin de compenser les conséquences sur le climat de l'introduction de la technologie à base de R-410A, et l'engagement du gouvernement à atteindre une consommation énergétique des climatiseurs résidentiels à base de R-410A égale ou inférieure à celle des climatiseurs à base de HCFC-22 qu'ils remplacent (décision 65/40). Le PGEH de la Thaïlande[54] prévoyait une assistance technique pour appuyer l'adoption de produits éconergétiques en sus de ceux visés par la reconversion, et un soutien aux projets d'efficacité énergétique dans les bâtiments.

Pratiques d'installation et d'entretien

80. Les pratiques d'installation et d'entretien jouent un rôle essentiel pour assurer le fonctionnement éconergétique de l'équipement tout au long de sa vie utile. Les politiques et réglementations nationales concernant les pratiques d'entretien et l'efficacité énergétique, surtout les normes de rendement énergétique minimum, soutiennent l'efficacité énergétique pendant l'utilisation de l'équipement.

81. Selon l'Institut international du froid, une optimisation, un suivi et un entretien améliorés de l'équipement de refroidissement pourraient réduire de 30 Gt les émissions de CO_2 d'ici à 2050. Le rapport du Groupe de l'évaluation technique et économique sur les questions entourant l'efficacité énergétique pendant la réduction progressive des HFC, préparé par son Équipe spéciale, révèle que les bonnes pratiques d'entretien peuvent réduire la dégradation du rendement de 50 p. cent et maintenir le niveau d'efficacité tout au long de la vie de l'équipement. L'Agence internationale de l'énergie a compilé les défaillances les plus communes associées à la dégradation de l'efficacité énergétique des pompes à chaleur air-air causées par une mauvaise installation et un mauvais entretien (p. ex., défaillance du ventilateur (26 p. cent des cas), commandes et composants électroniques (25 p. cent) et capteurs de température (16 p. cent)).

82. L'utilisation de frigorigènes incompatibles et surtout de frigorigènes d'appoint inappropriés peut réduire l'efficacité énergétique de l'équipement existant. De plus, l'introduction de frigorigènes à glissement de températures (p. ex., frigorigènes zéotropiques) pourrait aussi réduire l'efficacité énergétique de l'équipement. L'entretien efficace de systèmes de climatisation de taille moyenne et de grande taille reposant sur l'application de bonnes pratiques d'entretien peut aider à assurer un fonctionnement plus efficace de ces systèmes, réduire au minimum les risques pour la sécurité, améliorer le niveau de confort des occupants, réduire les coûts de fonctionnement grâce à un fonctionnement plus éconergétique et réduire les coûts d'investissement pour remplacer l'équipement. [55]

83. Plusieurs bonnes pratiques d'entretien mises en œuvre dans le cadre des PGEH maintiendront le niveau d'efficacité énergétique de l'équipement (tableau 5).[56] Ces mesures devraient demeurer des éléments intégrants des plans de réduction progressive des HFC.

[52] Le document UNEP/OzL.Pro/ExCom/78/6 contient des renseignements détaillés sur les projets de démonstration.
[53] UNEP/OzL.Pro/ExCom/65/39/Rev.1.
[54] UNEP/OzL.Pro/ExCom/68/41.
[55] Rapport du Groupe de l'évaluation technique et économique, décision XXIX/10. Équipe spéciale sur les questions liées à l'efficacité énergétique pendant la réduction progressive des HFC (rapport final actualisé)
[56] UNEP/OzL.Pro/ExCom/77/70. Plusieurs études techniques mettent en évidence le lien entre les bonnes pratiques d'entretien et le fonctionnement éconergétique de l'équipement.

Tableau 5 : Mesures d'entretien et de suivi de l'efficacité énergétique

Détails	Interventions
Installation et entretien de l'équipement	
Formation et renforcement des capacités	• Équipement de détection de fuites pour l'équipement de plus grande capacité • Bonnes pratiques d'installation de l'équipement de climatisation (p. ex., joints très étanches assurant le maintien de la charge complète de frigorigènes pendant le fonctionnement) • Bonnes pratiques d'entretien (p. ex., nettoyage périodique des échangeurs de chaleur) • Vérifications périodiques du fonctionnement et de l'entretien • Entretien de l'équipement assuré par des techniciens formés compétents
Mesures sectorielles et nationales	
Renforcement des normes de fonctionnement	• Introduction de normes et de programmes d'étiquetage du rendement énergétique minimum • Normes d'efficacité énergétique intégrées pour les utilisations, comprenant les pratiques d'installation et d'entretien • Introduction de normes d'utilisation sans danger et efficace de l'équipement, comprenant de bonnes pratiques d'entretien[57]
Normes et politiques de réglementation intégrées	• Élaboration de politiques favorisant l'efficacité énergétique et des normes écologiques pour les frigorigènes • Programmes d'achat en vrac (gouvernementaux et autres) pour un équipement éconergétique utilisant des frigorigènes à PRG nul ou à faible PRG • Interdiction d'exporter de l'équipement ayant des normes d'efficacité énergétique inférieures aux spécifications (p. ex., équipement à base de HCFC ne présentant pas un niveau élevé d'efficacité énergétique, équipement usagé) • Politiques de financement de l'habitation intégrées pour l'adoption d'équipement éconergétique pour les bâtiments existants et nouveaux • Politiques favorisant des technologies éconergétiques et écologiques dans différents segments de l'industrie (p. ex., chaîne de froid, tourisme) • Politique d'élaboration de programmes à l'intention des entreprises de services publics, les encourageant à utiliser de l'équipement éconergétique • Politiques pour l'adoption de technologies pas en nature, si possible

III. ANALYSE DE L'INFORMATION MINIMUM REQUISE POUR L'ÉLABORATION DE PROGRAMMES ET MODULES DE FORMATION ET DE CERTIFICATION FONDÉS SUR LES COMPÉTENCES À L'INTENTION DES TECHNICIENS D'ENTRETIEN ET DES AGENTS DE DOUANE POUR LA TRANSITION À DES TECHNOLOGIES DE REMPLACEMENT

84. Les pays visés à l'article 5 en sont à différentes étapes de la mise en œuvre de leurs plans d'élimination des HCFC, comme mentionné précédemment, et à différents niveaux du renforcement de leurs capacités établies pour l'élimination des substances réglementées dans le secteur de l'entretien de l'équipement de réfrigération.

85. Certains éléments communs pourraient être utilisés par tous les pays pour l'élaboration de programmes de formation pour les techniciens et les douaniers. Les agences bilatérales et d'exécution ont toutefois indiqué qu'il est important que les pays conservent une certaine souplesse, afin qu'ils puissent déterminer leurs priorités en fonction de leur situation actuelle, des secteurs stratégiques, et des institutions et réglementations existantes. De même, les cadres juridiques et les exigences relatives aux permis d'importation/exportation varient d'un pays à l'autre. Dans certains pays, l'élaboration de normes techniques et de programmes de certification relève de certains organes gouvernementaux du secteur de

[57] Bien qu'il n'y ait pas de lien direct avec l'efficacité énergétique, l'efficacité énergétique doit être encouragée par l'adoption sans danger de frigorigènes à PRG nul ou à faible PRG.

l'éducation et de la main-d'œuvre qui émettent la certification, tandis que dans d'autres pays, la certification est accordée par les associations de réfrigération ou est entièrement mise en œuvre par ces associations.

86. Ainsi, bien que les pays puissent profiter de modules techniques communs pouvant servir de référence pour la formation de leurs douaniers et techniciens d'entretien, il est préférable que les pays élaborent des programmes de formation et de certification des douaniers et des techniciens d'entretien qui tiennent compte de leur situation plutôt que d'utiliser une approche unique ou universelle.

Produits développés pour prêter assistance au secteur de l'entretien de l'équipement de réfrigération dans les pays visés à l'article 5

87. L'expérience acquise par les agences bilatérales et d'exécution dans le secteur de l'entretien de l'équipement de réfrigération est intégrée en continu aux manuels de référence pour la formation des douaniers et des techniciens en réfrigération, et dans le code de bonnes pratiques d'entretien des techniciens. Cette expérience a aussi servi à éclairer le choix de la trousse d'outils d'entretien de base pour les techniciens, des trousses d'identification des substances réglementées utilisées principalement par les autorités douanières aux ports d'entrée, et des appareils de récupération et de recyclage économiques.

88. De plus, le Comité exécutif a approuvé le financement pour le développement d'outils, de produits et de services au titre du Programme d'aide à la conformité du PNUE, pouvant être utilisés par tous les pays visés à l'article 5 lors de la mise en œuvre d'activités dans le secteur de l'entretien de l'équipement de réfrigération. Ces produits sont résumés dans le tableau 6 et de plus amples détails sont fournis à l'annexe III.

Tableau 6. Outils, produits et services pour le secteur de l'entretien de l'équipement de réfrigération développés au titre du Programme d'aide à la conformité du PNUE

Produit	Courte description
Fiches d'information/dossier	
Trousse Kigali (20 fiches d'information, affiche et manuel)	Fiches d'information ActionOzone, guides, dossiers de technologie/orientation, afin de sensibiliser les différentes parties prenantes, pouvant être distribuées et utilisées par les pays visés à l'article 5 pour appuyer les projets d'élimination et les activités de collecte de données.
Fiches d'information sur la sécurité	
Classement des frigorigènes (émis tous les six mois)	
Efficacité énergétique dans le secteur de l'entretien de climatiseurs individuels	
Dossiers sur la technologie de la chaîne de froid	
Applications mobiles	
WhatGas ?	Ces applications mobiles d'ActionOzone sont offertes aux pays visés à l'article 5 afin de les aider à identifier les caractéristiques/détails des substances réglementées, calculer les valeurs PAO/PRG et comme outil de soutien à la formation des techniciens en réfrigération.
Calculateur de PRG PAO	
Vidéos sur les climatiseurs individuels	
Petit guide (petit guide électronique sur l'entretien des produits inflammables)	
Série de vidéos sur l'identification des frigorigènes	
Calculateur du volume de la charge de frigorigène	
Outils en ligne	
Connaissances en réfrigération (ASHRAE)	Les pays visés à l'article 5 peuvent faire la promotion de l'utilisation des cours électroniques d'ActionOzone-ASHRAE en appui aux activités de formation auprès des Bureaux nationaux de l'ozone, des parties prenantes, des techniciens en climatisation individuelle, soit au titre des programmes de formation du PGEH et/ou par l'entremise de diverses parties prenantes, p. ex., établissements de formation, associations locales de réfrigération.
Gestion de la réfrigération (ASHRAE)	

Produit	Courte description
Outils de formation en climatisation individuelle	
Vidéos de bonnes pratiques (nouveau : vidéos de théorie et bonnes pratiques attendues en 2019)	Les pays visés à l'article 5 peuvent utiliser les vidéos de bonnes pratiques d'ActionOzone pour soutenir la formation/le renforcement des capacités des techniciens dans le cadre des programmes de formation des PGEH et/ou par l'entremise de diverses parties prenantes, p. ex., instituts de formation, associations locales de réfrigération
Trousse de formation universelle	Les pays visés à l'article 5 peuvent utiliser la trousse mondiale de formation d'ActionOzone (une trousse modulaire complète) en appui aux activités de formation des techniciens en réfrigération dans les instituts/centres locaux de formation, soit dans le cadre du PGEH ou d'autres programmes.
Permis de conduire des frigorigènes (programme mondial de qualification sur la saine gestion des frigorigènes profitant de l'appui d'associations internationales de l'industrie)	Les pays visés à l'article 5 peuvent utiliser le permis de conduire des frigorigènes pour garantir un niveau de compétence et d'habiletés maximum acquis dans le secteur de l'entretien à l'échelle du réseau de la chaîne d'approvisionnement des frigorigènes
Cours universitaire de gestion des frigorigènes (cours facultatif pour les étudiants de premier cycle en génie mécanique, selon les exigences académiques)	Les pays visés à l'article 5 peuvent utiliser le cours universitaire de gestion des frigorigènes d'ActionOzone offert par les départements de génie mécanique des universités et les collèges de formation technique.

IV. FACTEURS DE FINANCEMENT DE LA RÉDUCTION PROGRESSIVE DES HFC

89. Le secteur de l'entretien de l'équipement de réfrigération prendra de plus en plus d'importance dans tous les pays visés à l'article 5 jusqu'à la réalisation des objectifs de conformité au titre de l'Amendement de Kigali en raison de l'augmentation marquée du nombre d'équipements de réfrigération et de climatisation associée à une hausse continuelle de la population mondiale et de l'expansion de la chaîne du froid alimentaire.

Mise en œuvre conjointe des décisions XIX/6 et XXVIII/2 concernant le secteur de l'entretien de l'équipement de réfrigération : Chevauchement des calendriers d'élimination des HCFC et de réduction progressive des HFC

90. Les premières années de la réduction progressive des HFC chevaucheront l'élimination de la consommation résiduelle des HCFC utilisés dans le secteur de l'entretien de l'équipement de réfrigération dans la plupart des pays visés à l'article 5. De plus, selon l'enquête à laquelle ont participé 119 pays visés à l'article 5, le secteur de l'entretien de l'équipement de réfrigération sera responsable de plus de 70 p. cent de la consommation de HFC dans les pays n'étant pas des pays à faible volume de consommation et de plus de 95 p. cent de la consommation dans des pays à faible volume de consommation.[58]

91. Ainsi, le chevauchement des calendriers d'élimination des HCFC et de la réduction progressive des HFC pourrait offrir aux pays visés à l'article 5 l'occasion de planifier des stratégies complètes, économiques et de longue durée pour leur secteur de l'entretien de l'équipement, qui tiendraient compte de la bonne gestion de tous les frigorigènes utilisés (substances de remplacement réglementées et non réglementées) et de la nécessité de renforcer les institutions et les parties prenantes concernées, assurant ainsi le remplacement des frigorigènes appauvrissant la couche d'ozone et/ou à PRG élevé par des substances à faible PRG. Ceci exigerait une stratégie globale et unique de gestion des frigorigènes pour le secteur de

[58] Les plus grands consommateurs, à savoir le Brésil, la Chine et l'Inde, n'ont pas participé à l'enquête sur les substances de remplacement des SAO.

l'entretien, et le renforcement et l'amélioration des infrastructures et des institutions en place, afin d'officialiser le secteur de l'entretien de l'équipement de réfrigération.

92. En particulier :

a) Le développement d'une stratégie globale pour l'introduction par étapes, l'adoption et/ou l'optimisation hâtive des technologies de remplacement à faible PRG dans le secteur de la réfrigération des marchés locaux dans les pays visés à l'article 5, en évitant, si possible, de remplacer les technologies à base de HCFC par des technologies à base de HFC à PRG élevé, réduisant ainsi les besoins de HFC à PRG élevé aux fins d'entretien;

b) Le renforcement de l'introduction de normes et codes pertinents qui facilitent l'adoption, le fonctionnement et l'entretien sans danger de technologies/frigorigènes à faible PRG;

c) Le soutien au développement de cadres de réglementation exhaustifs pour la gestion des frigorigènes comprenant, entre autres choses, la certification des techniciens, les permis des entreprises/ateliers, l'étiquetage, le maintien de dossiers, l'établissement de rapports, l'accès à la vente/achat de frigorigènes, les outils d'application et de suivi, et les programmes de renforcement des capacités pour les autorités et les parties prenantes; et l'évaluation des besoins en émergence et les mécanismes d'application du soutien;

d) L'examen de la matière du programme de formation des douaniers et des policiers portant sur les obligations au titre du Protocole de Montréal et son Amendement de Kigali; le développement d'une matière et de programmes de formation de base communs pouvant être utilisés par toutes les agences bilatérales et d'exécution, et des mises à jour bisannuelles qui incorporeraient les avancées technologiques;

e) Le renforcement des capacités des programmes nationaux de formation professionnelle et des organes nationaux de certification par l'examen de la matière des programmes destinés aux techniciens en réfrigération, afin d'aborder les problèmes liés à la réduction des émissions de frigorigènes dans l'atmosphère, la réduction de la consommation d'énergie grâce à de l'équipement bien entretenu et les questions de sécurité liées à l'inflammabilité et/ou la toxicité des frigorigènes introduits;

f) L'élaboration (ou renforcement si elle existe déjà) d'une solide stratégie de confinement des frigorigènes afin de garantir que l'équipement déjà installé peut continuer à fonctionner jusqu'à la fin de sa vie utile qui tient compte, entre autres choses, de la capacité de l'équipement et des accessoires (p. ex., bonbonnes, identificateurs de frigorigènes) à récupérer, recycler et régénérer à la fois les HCFC et les HFC, y compris les mélanges; du potentiel de réutilisation des mélanges zéotropiques car la composition de ces mélanges se dégrade après une fuite; la bonne gestion d'une quantité potentiellement à la hausse de gaz récupérés non réutilisables (à cause d'un grand nombre de mélanges zéotropiques sur le marché); de l'analyse des bienfaits et des difficultés de récupérer, recycler et régénérer les frigorigènes inflammables; et d'une évaluation de la faisabilité économique des installations de régénération, surtout des mélanges zéotropiques et de leurs éléments constitutifs;

g) Le renforcement du soutien technique accordé au sous-secteur de l'assemblage, de l'installation et du remplissage de la charge initiale, car il pourrait influencer l'introduction de technologies de réfrigération dans les pays visés à l'article 5;

h) L'introduction d'outils de suivi et d'établissement de rapports pouvant mesurer les conséquences des activités et des programmes dans le secteur de l'entretien;

i) L'évaluation de la pérennité des activités mises en œuvre dans le secteur de l'entretien de l'équipement de réfrigération au moyen de modèles d'affaire et/ou de ressources supplémentaires;

j) Le renforcement des associations de réfrigération et de climatisation, garantissant leur engagement à mettre en œuvre les activités et à promouvoir de bonnes pratiques sur les marchés locaux;

k) Le développement d'une base de données/répertoire pour le secteur de l'entretien comprenant les techniciens détenteurs d'un permis et d'une certification, les entreprises, les centres de formation et les distributeurs d'équipement et de frigorigènes;

l) L'utilisation des produits mondiaux développés dans le cadre du Programme d'aide à la conformité du PNUE et par autres organisations internationales, figurant à l'annexe III, afin d'aider le secteur de l'entretien de l'équipement de réfrigération.

Facteurs du financement de la réduction progressive des HFC

93. Les activités dans le secteur de la réfrigération étaient approuvées en tant que projets autonomes jusqu'à l'approbation des lignes directrices pour la préparation des plans de gestion des frigorigènes et du premier groupe de plans de gestion des frigorigènes proposés à la 23e réunion, et financées au cas par cas selon la situation du pays, par exemple la taille de la population et la répartition géographique des activités économiques, le niveau de consommation des substances réglementées dans les appareils de réfrigération et de climatisation utilisés, les caractéristiques des ateliers d'entretien et les habiletés techniques des techniciens d'entretien.

94. Les plans de gestion des frigorigènes étaient des plans d'élimination pluriannuels dans le cadre desquels les pays à faible volume de consommation s'engageaient à réduire de 50 p. cent leur consommation de référence des CFC afin de respecter les obligations de 2005, grâce au financement qui leur avait été approuvé. Le Comité exécutif, à sa 35e réunion (décembre 2001), a décidé d'accorder aux pays à faible volume de consommation engagés à réduire de 85 p. cent leur valeur de référence pour les CFC avant 2007, un soutien financier supplémentaire représentant 50 p. cent du financement accordé pour leur plan de gestion des frigorigènes, afin qu'ils puissent élaborer la mise à jour de leur plan de gestion des frigorigènes (décision 35/57). Par la suite, une assistance supplémentaire a été consentie aux pays à faible volume de consommation à la 45e réunion (avril 2005), pour la période de l'après-2007, afin qu'ils réalisent l'élimination complète des CFC en proposant des plans de gestion de l'élimination finale. Le soutien financier des plans de gestion de l'élimination finale était assujetti à la valeur de référence pour la consommation de CFC établie dans un tableau convenu.[59] Les pays n'étant pas des pays à faible volume de consommation ont reçu de l'assistance dans le cadre de leur plan national d'élimination, basé sur un rapport coût-efficacité de 5 $US/kg, pour réduire leur consommation de CFC dans le secteur de l'entretien de l'équipement de réfrigération.

[59] 205 000 $US pour les pays dont la valeur de référence pour les CFC est inférieure à 15 tonnes PAO, 295 000 $US pour les pays dont la valeur de référence se situe entre 15 et 30 tonnes PAO, 345 000 $US pour les pays dont la valeur de référence pour les CFC se situe entre 30 et 60 tonnes PAO, 520 000 $US pour les pays dont la valeur de référence se situe entre 60 et 120 tonnes PAO et 565 000 $US pour les pays dont la valeur de référence est supérieure à 120 tonnes PAO.

95. Les activités du secteur de l'entretien de l'équipement de réfrigération des pays à faible volume de consommation et des pays n'étant pas des pays à faible volume de consommation ont été intégrées aux PGEH pour l'élimination des HCFC. Le financement de ces activités a été fondé sur l'expérience acquise lors de la mise en œuvre des plans de gestion des frigorigènes, des plans de gestion de l'élimination finale et des plans nationaux d'élimination. Le financement pour les pays n'étant pas des pays à faible volume de consommation a été approuvé à hauteur de 4,50 $US/kg pour la première phase des PGEH et de 4,80 $US/kg pour la deuxième phase des PGEH, tandis que le financement pour les pays à faible volume de consommation a été établi à partir du niveau de consommation dans le secteur de l'entretien, comme indiqué dans le tableau 7.

Tableau 7. Sommes approuvées pour les pays à faible volume de consommation dans le cadre des PGEH (phase II) (décision 74/50 c) xii))

Consommation dans le secteur de l'entretien (tm)	Financement maximum admissible ($ US)		
	Jusqu'en 2020	Jusqu'en 2025	Élimination complète
> 0 < 15	205 625 (*)	396 500	587 500
15 < 40	262 500 (**)	506 250	750 000
40 < 80	280 000	540 000	800 000
80 < 120	315 000	607 500	900 000
120 < 160	332 500	641 250	950 000
160 < 200	350 000	675 000	1 000 000
200 < 320	560 000	1 080 000	1 600 000
320 < 360	630 000	1 215 000	1 800 000

(*) 164 500 $US accordés pour la phase I (décision 60/44) et augmentation pour la phase II (décision 74/50).
(**) 210 000 $US accordés pour la phase I (décision 60/44) et augmentation pour la phase II (décision 74/50).

Facteurs pour déterminer l'assistance pour la réduction progressive des HFC

96. Toutes les catégories de coûts admissibles pour le secteur de l'entretien convenues par le Comité exécutif et à inclure dans le calcul des coûts de la réduction progressive des HFC ont été financées dans le passé dans le cadre de l'assistance consentie au secteur de l'entretien de l'équipement de réfrigération, comme présenté dans ce document. Ces catégories sont : les activités de sensibilisation du public, l'élaboration et la mise en œuvre de politiques, les programmes de certification et de formation des techniciens sur la manipulation sécuritaire, les bonnes pratiques et la sécurité concernant les substances de remplacement, y compris l'équipement de formation, la formation des douaniers, la prévention du commerce illicite, les outils d'entretien, l'équipement de vérification des frigorigènes pour le secteur de la réfrigération et de la climatisation, et le recyclage et la récupération des HFC.

97. Les facteurs préliminaires pour déterminer le niveau et les modalités du financement nécessaire à la réduction progressive des HFC dans le secteur de l'entretien de l'équipement de réfrigération sont :

a) Conformément au paragraphe 16 de la décision XXVIII/2, s'il convient d'augmenter le financement prévu à la décision 74/50 pour le secteur de l'entretien dans les pays à faible volume de consommation (tableau 7) lorsque celui-ci est nécessaire à l'introduction de technologies de remplacement des HCFC à PRG nul ou à faible PRG et en maintenant l'efficacité énergétique dans le secteur de l'entretien/utilisateurs finaux;

b) Conformément au paragraphe 23 de la décision XXVIII/2, s'il convient d'envisager une approbation hâtive de l'assistance technique et du renforcement des institutions afin de faciliter l'adoption sans danger de substances de remplacement à PRG nul ou à faible PRG;

c) Les difficultés supplémentaires résumées dans le présent document, ainsi que les synergies pour la mise en œuvre d'activités qui conviennent à la fois à l'élimination des HCFC et à la réduction progressive des HFC, en tenant compte des niveaux de financement nécessaires pour assurer le respect des étapes de réduction progressive, plutôt qu'une quantité spécifique à éliminer. Une telle approche accorderait aux pays visés à l'article 5 la souplesse nécessaire pour affecter le financement aux priorités stratégiques en fonction de leur consommation (p. ex., soutenir l'introduction de technologies particulières dans des secteurs spécifiques, aborder la question des assembleurs, prioriser des frigorigènes spécifiques aux fins de réduction progressive);

d) S'il convient d'aborder l'efficacité énergétique et l'élimination définitive des frigorigènes non désirés séparément dans les lignes directrices sur les coûts de la réduction progressive des HFC.

V. RECOMMANDATION

98. Le Comité exécutif pourrait souhaiter :

a) Prendre note du document préliminaire UNEP/OzL.Pro/ExCom/82/64 sur tous les aspects du secteur de l'entretien de l'équipement de réfrigération appuyant la réduction progressive des HFC;

b) Prendre le document en considération pour déterminer le niveau et les modalités de l'assistance requise pour la réduction progressive des HFC dans le secteur de l'entretien de l'équipement de réfrigération.

Annex I

RELEVANT DECISIONS RELATED TO THE REFRIGERATION SERVICING SECTOR ADOPTED BY THE EXECUTIVE COMMITTEE AND THE PARTIES TO THE MONTREAL PROTOCOL

Decision Number	Sector/ Sub-sector/Title	Decision Text
12th ExCom meeting (Annex v)	Recovery, reclamation and recycling	The Eighteenth Meeting of the Executive Committee decided to consider the provision of recovery/recycling equipment to commercial refrigeration companies in projects related to servicing and recovery/recycling in the refrigeration sector in the future.
12th ExCom meeting (para 159-160)	Mobile air-conditioning (MAC)	The Twelfth Meeting of the Executive Committee adopted the following recommendations on mobile air conditioners (MAC) project proposals: (a) that Article 5 countries be encouraged to pursue a more aggressive recycling and reclamation programme in the MAC sector, and to convert their CFC-12 MAC production plants to HFC-134a technology for new vehicles. Implementing agencies should be requested to intensify their efforts in the implementation of investment projects and technical assistance activities already approved by the Executive Committee and to prepare new investment projects in those areas. (b) that Article 5 countries be encouraged to develop and adopt regulatory measures for better containment and recycling and conversion of MAC manufacturing to HFC-134a technology. Implementing agencies should provide the necessary assistance in transferring the available knowledge and experience for this particular area within their technical assistance activities. (c) that approval of projects in MAC retrofitting be delayed until the retrofitting technology is proven cost-effective and is adequately mature to be transferred to Article 5 countries. The Executive Committee may wish to request the Secretariat to follow closely the progress in the development of retrofitting technology in the developed countries and to report to the Executive Committee on the state-of-the-art situation. (d) that the Executive Committee should encourage Article 5 countries to adopt necessary measures to regulate import of vehicles with CFC-12 based MACs. The Executive Committee further recommended that in countries where specific data were not available, appropriate pilot studies should be supported by the Fund when presented to facilitate making a cost-effective choice. Such studies should only be undertaken if they were cost-effective.
12th ExCom meeting (para 159-160)	Chillers	The Twelfth Meeting of the Executive Committee adopted the following recommendations on chiller project proposals: (a) that consideration be given to the Total Equivalent Warming Impact (TEWI) in selecting alternative technology in the chiller sector, which would include both direct effects (refrigerant global warming potential) and indirect effects (system energy efficiency), and to human health and safety aspects. (b) that the Executive Committee approves refrigerant containment and better operation and maintenance practices, including recovery/recycling/reclamation as a strategic option in ODS phase-out in the chiller sector in Article 5 countries. Article 5 countries should be encouraged to pursue a more aggressive refrigerant containment programme, including recovery/recycling/reclamation. The Implementing Agencies should be requested to intensify their efforts in formulation of new investment projects in this area. **(c)** that the Executive Committee approves conversion of CFC-based chiller manufacturing facilities as a strategic option of ODS phase-out in the chiller sector. The Implementing Agencies should be requested to increase their activities in identifying and preparing project proposals in this area. (d) that the Executive Committee approves the replacement of CFC chillers as a first priority of strategic options in ODS phase-out in the chiller sector. Implementing agencies should be requested to focus their activities on the replacement options in addressing ODS phase-out in the chiller sector. Energy savings should be taken into consideration when calculating the incremental costs of replacement. (e) that the Executive Committee defer consideration of projects to retrofit chillers, except in special cases and when definite substitutes are used. (f) that the Executive Committee encourages the governments in Article 5 countries to give full consideration to appropriate regulatory and legislative action facilitating the implementation of CFC phase-out projects in the chiller sector. These should include an immediate cessation in the installation of new CFC chillers.
ExCom 17/12	Recovery and recycling of refrigerants	The Seventeenth Meeting of the Executive Committee decided that there should be an investigation of the practicality and implications of taking operating savings resulting from recovery and recycling into account and adjusting at a subsequent meeting of the Executive Committee institutional-strengthening grants or any other Fund-supported activity related to ozone layer protection for the country concerned on the basis of reported quantities of recovered ozone-depleting substances. This would not apply to small demonstration projects, and requested the Secretariat to prepare a paper on the subject for submission to the Committee at its Eighteenth Meeting.

Decision Number	Sector/ Sub-sector/Title	Decision Text
ExCom 20/4	Refrigerant management plans (RMPs)	The Twentieth Meeting of the Executive Committee decided: (a) to request Implementing Agencies, when preparing institutional-strengthening projects for low-volume ODS consuming countries, to give due consideration to the need for formulating a refrigerant management plan, including a recovery and recycling project in the refrigeration sector; (b) that, while the Implementing Agencies could proceed immediately with the disbursement of the first one-year tranche of the funds approved for institutional strengthening in low-volume ODS consuming countries, subsequent disbursements would be contingent on the submission of a report to the Executive Committee on the status of development of a refrigerant management plan, including a recovery and recycling project, for the country concerned.
ExCom 21/40	Training guidelines	The Twenty-first Meeting of the Executive Committee decided: (a) to take note of the discussion paper for the establishment of training guidelines for identification of needs and coordination of activities (UNEP/OzL.Pro/ExCom/21/35), as introduced by the representative of UNEP; (b) to note that, at the Twenty-first Meeting of the Executive Committee, there was insufficient time to have a full discussion of the paper; (c) to invite members of the Committee who wished to do so to submit written comments on the paper to the Secretariat and UNEP; (d) to request UNEP, in consultation with the Secretariat and the other Implementing Agencies, to proceed with the development of the training guidelines in line with the framework proposed in the discussion paper, taking into account the comments received in writing from members of the Committee.
ExCom 21/5	RMPs	The Twenty-first Meeting of the Executive Committee decided: (a) to take note of the 1997 business plans of the Implementing Agencies; (b) to request the Implementing Agencies to revise their 1997 business plans in the light of Executive Committee decision 21/3, subparagraph (b), and in conformity with its decisions 21/11, 21/12, 21/13 and 21/14, on the 1997 work programmes of the Implementing Agencies, and to submit them to the Executive Committee at its Twenty-second Meeting; (c) to request the Implementing Agencies, when implementing their 1997 business plans, to integrate the preparation of projects for national recovery and recycling in low-volume-consuming countries into refrigerant management plans; (d) to request the Secretariat to work with the Implementing Agencies to develop more standardized criteria for evaluating their performance so that it would be possible to examine the relative performance of the agencies prior to consideration of their 1998 business plans; (e) to request the Secretariat to work with the Implementing Agencies to produce a summary status report for each Article 5 country that would, using the latest available data, include information on the consumption of each country, the number of tonnes to be reduced through implementation of projects already approved by the Fund, the status of implementation of such projects, the amount of ODS that was expected to be reduced through planned approvals in 1997, and an indication of the relative difficulty that each country might face in meeting the 1999 freeze and, as far as practicable, subsequent control measures; (f) to request the Secretariat to submit a report to the Executive Committee on the exercises referred to in subparagraphs (d) and (e) above. The Monitoring, Evaluation and Finance Sub-Committee established by decision 21/35 would consider this report and make recommendations to the Executive Committee.
ExCom 22/22	Recycling projects in CFC-producing countries	The Twenty-second Meeting of the Executive Committee decided: (a) to note the potential usefulness of demonstration projects for refrigeration recovery and recycling in other ODS-producing countries; (b) to note that, while in many cases there may be financial benefits in recycling projects, there could be cases in which the operational costs of refrigerant recovery and reclamation projects could exceed their benefits; (c) to note that measures needed to support recovery and recycling projects needed to be appropriate to local circumstances and could involve, for example, incentives affecting the operational level or regulatory measures.
ExCom 22/23	RMPs	The Twenty-second Meeting of the Executive Committee decided: (a) that future refrigerant recovery and recycling projects should be prepared within the context of the refrigerant management plan/strategy of the country concerned; but that small demonstration projects designed to inform a larger country could be considered; (Note: as amended by Decision 23/16). (b) to urge the Implementing Agencies to work with the countries concerned to ensure that the prerequisites for success were put in place before refrigerant recovery and recycling projects were implemented; (c) to request the Implementing Agencies to make available to the consultants responsible for implementation of the proposed Multilateral Fund monitoring and evaluation exercise information on, inter alia, the extent to which refrigerant recovery and recycling projects had succeeded in reducing consumption of ODS and on the lessons learned from their implementation, bearing in mind that the majority of consumption was the result of poor servicing practices; (d) to request UNDP to make available to the Executive Committee, when completed, some of the evaluations that were being carried out by the United Nations Office for Project Services (UNOPS) on ongoing refrigerant recovery and recycling projects. Other Implementing Agencies that had completed recycling projects should also be requested to submit information on the results of those projects; (e) to take note of the view that it was necessary to take account of the costs involved in undertaking the necessary support measures for refrigerant recovery and recycling projects, such as training and efforts to reduce CFC emissions resulting from leakages; (f) to urge the Implementing Agencies to take time at the forthcoming fifteenth meeting of the Open-Ended Working

Decision Number	Sector/ Sub-sector/Title	Decision Text
		Group of the Parties to the Montreal Protocol to reach out to, and develop appropriate assistance requests for, all Parties that had not yet received Fund assistance and might be in danger of not meeting the freeze; (g) to request the Secretariat, the Implementing Agencies, Parties involved in bilateral co-operation activities and other interested members of the Executive Committee to meet before the next meeting of the Committee to elaborate draft guidelines for refrigerant management plan projects for the consideration of the Sub-Committee on Project Review and the Executive Committee at its Twenty-third Meeting.
ExCom 22/24	Development of RMPs	The Twenty-second Meeting of the Executive Committee decided: (a) to request UNEP, in consultation with the Secretariat, the Implementing Agencies and members of the Executive Committee, to review the proposed guidelines for refrigeration management plans and bring forward a revised proposal to the September 1997 meeting of the Sub-Committee on Project Review, with comments from members of the Executive Committee to be provided by the end of June 1997; (b) to authorize low-volume-consuming countries that have approved country programmes and now need to take near-term action in this area to meet the freeze, to submit refrigeration management plans based on the draft guidelines recommended by the Sub-Committee on Project Review (with the input coming from the consultations noted in subparagraph (a) above) along with any associated projects, to the next meeting of the Executive Committee and, in this respect, to approve US $140,000 for UNDP and US $60,000 for UNIDO for this purpose; (c) to urge the Implementing Agencies not to view this discussion as an opportunity to develop recycling programmes, but rather as an opportunity to help countries think through the measures they need to take to facilitate compliance with the Protocol. In this regard, recycling projects should not be proposed unless there are incentives or regulatory measures that will be in place prior to proposed implementation of any proposed recycling projects to ensure that such projects will be sustainable; (d) to request UNEP to adjust country programmes presently under preparation to accommodate the requirements of the draft guidelines for refrigeration management plans as recommended by the Sub-Committee on Project Review and to urgently finish that work; (e) in cases where no country programmes for very-low-/low-volume-consuming Parties have yet to be started, to request UNEP to reach out to those countries to develop refrigeration management plan/country programme combination documents based on the draft guidelines, authorizing US $200,000 for this initial UNEP work and requesting UNEP to report on the status of related activities at the Twenty-third Meeting of the Executive Committee.
ExCom 23/15	RMPs	The Executive Committee decided that the Guidelines for the Preparation of Refrigerant Management Plans be approved, subject to the insertion of the following new section before Section 3 - Principles and Steps in Formulating RMPs: “SECTION 2 OVERALL OBJECTIVE. The overall objective of a Refrigerant Management Plan is to develop and plan a strategy that will manage the use and phase-out of virgin CFC refrigerants for servicing refrigeration and air-conditioning equipment.”
ExCom 23/48	Training guidelines	The Twenty-third Meeting of the Executive Committee decided: (a) to note the Training Guidelines for Identification of Needs and Coordination of Activities contained in UNEP/OzL.Pro/ExCom/23/Inf.4; (b) to authorize UNEP/IE to proceed with their implementation.
ExCom 25/32 (para 64(c)(d))	Training	The Executive Committee, having noted the comments and recommendations of the Sub-Committee on Project Review (UNEP/OzL.Pro/ExCom/25/17, paragraphs 46 to 50), decided: (c)To request that the possibility of carrying out more cost-effective regional training be considered in future projects. (d) to request the Secretariat to undertake further study on the question of the gains arising from recovered and recycled ozone-depleting refrigerants, which would lead to a renewed discussion within the Sub-Committee on the issue of offsetting benefits in large recycling efforts.
ExCom 26/33	Customs training	The Twenty-sixth Meeting of the Executive Committee also decided: (b) to stress the need for each country to obtain and ensure reliable data on imports of ODS, particularly through a system of import licensing and control, and in that context customs training was of special importance; (c) to request the Fund Secretariat to notify the Implementation Committee of the Montreal Protocol of this problem at its next meeting in Cairo and suggest that the Implementation Committee might send letters to the Governments of Malawi and of the United Republic of Tanzania requesting them to provide updated data on ODS consumption.
ExCom 26/34	Installation, assembly and charging subsector	The Sixty-second Meeting of the Executive Committee decided:(a) To request bilateral and implementing agencies, when submitting projects related to the installation, assembly and charging sub-sector, to demonstrate that each of those enterprises participating in the project had invested in equipment, development of products, or training of personnel specific to HCFC technology significantly exceeding the level of such investments prevalent in the service sector; and (b) That the activities foreseen for those enterprises represented incremental costs.
ExCom 27/19	Customs training and legislation	The Twenty-seventh Meeting of the Executive Committee decided: (a) that no funds should be expended on customs-training projects until either the relevant legislation was already in place or substantial progress had been made towards promulgating such legislation; (b) to request Implementing Agencies to transfer to countries that were in the process of preparing legislation information on ODS issues of relevance to customs authorities so that,

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		as stakeholders, they would be able to provide informed inputs into the legislation preparation process; (c) to examine, mindful of its decision 25/32, customs-training projects on a case-by-case basis in order to determine whether or not chemical-identification equipment should be included in them.
ExCom 27/35	Customs training and legislation	The Executive Committee also decided: (a) no funds should be expended on customs-training projects until either the relevant legislation was already in place or substantial progress had been made towards promulgating such legislation; (b) UNEP is requested to transfer to countries in the process of preparing legislation, information on ODS issues of relevance to customs authorities so that, as stakeholders, they would be able to provide informal inputs into the legislation-preparation process.
ExCom 28/10	Recovery, recycling and reclamation	The Twenty-eighth Meeting of the Executive Committee decided to request those Implementing Agencies to report to its Twenty-ninth Meeting on the steps taken at the national level to expedite the provision of the necessary regulatory and legislative measures required for successful recovery and recycling projects.
ExCom 28/44	End-user conversion in commercial refrigeration	The Twenty-eighth Meeting of the Executive Committee decided to adopt the following guidelines for end-user conversion in the commercial refrigeration sector: For an initial period of 18 months, the relevant circumstances which must prevail before priority will be accorded to end-user conversion activities are: · that the country has production and import controls on CFCs and CFC-based equipment in place and effectively enforced, and restricts the deployment of new CFC components; training of refrigeration technicians should be recognized as part of end-user conversion activity in the refrigeration sector; retrofitting of commercial refrigeration equipment would be considered for funding based on the experience gained from implementation of the relevant parts of a refrigerant management plan; for the initial period, pending review, priority should be given to projects for the conversion of cold stores in the agricultural, fisheries or other food-chain industries which are important for the economies of the countries concerned; for the initial period, the costs associated with replacement of the refrigerant, replacement of the oil and minor capital items where necessary, and labour at the local labour rate, will be eligible as incremental costs. More extensive conversions including reconditioning or replacement of compressors and major overhaul of refrigeration systems will not be considered under the initial guidelines. Incremental operating costs and savings should be calculated as for other commercial refrigeration projects for a two-year period; enterprise consumption will be the average annual quantity of CFC refrigerant which can be established as having been added to the refrigeration system as per existing Executive Committee guidelines; no cost-effectiveness threshold needs to be established for this initial period but all existing baseline conditions and eligibility criteria will be applied. The funding for the initial period of 18 months will be limited to US $10 million; these guidelines should be reviewed after being in operation for 18 months. that, at the time of seeking compensation in the form of grants for end-user conversions, the country can establish that its major remaining consumption is for the servicing of refrigeration and air-conditioning equipment; to establish the above, that comprehensive data on the profile of all remaining consumption has been determined and made available to the Executive Committee; that either no other possible activities would allow the country to meet its CFC control obligations, or the comparative consumer price of CFCs, relative to substitute refrigerants, has been high for at least 9 months and is predicted to continue to increase. The guidelines for the initial period of 18 months are: retrofitting of commercial refrigeration equipment should continue to be assessed on a case-by-case basis.
ExCom 31/15	Desk study on recovery and recycling projects	The Thirty-first Meeting of the Executive Committee decided: (a) the Implementing Agencies should seek information from governments and/or national ozone units on the status of all the recovery and recycling projects they have implemented so as to ascertain whether they are in operation. The reports should be based on a standardized format for data collection, both at the individual equipment user level and as summarized information at the project level. This format should be developed by the Senior Monitoring and Evaluation Officer in consultation with the Implementing Agencies and interested national ozone units, and should be presented to the Executive Committee at its 32nd meeting; (b) an evaluation of recovery and recycling projects should be undertaken, particularly for those projects implemented as a component of a refrigerant management plan, as soon as they had been monitored for a reasonable period and data had been collected by the national ozone units and the Implementing Agencies and forwarded to the Multilateral Fund Secretariat. Depending on the information received from the national ozone units and the Implementing Agencies, as well as that contained in the project completion reports, the evaluation could be undertaken under the 2001 or 2002 work programme for monitoring and evaluation. The terms of reference for the evaluation would be presented to the Executive Committee for consideration. The draft terms of reference would take account of comments made by members of the Sub-Committee on Monitoring, Evaluation and Finance at its 11th meeting; (c) the national ozone units together with the Implementing Agencies should also be requested to obtain costing data for recovery and recycling which should include the operating cost of equipment, to arrive at the

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		cost of recovery and recycling, as well as the price trends in refrigerants. The data would permit the conditions for economically viable recycling and recovery operations to be determined, and they should be made available to the Implementing Agency, with a copy to the Multilateral Fund Secretariat.
ExCom 31/17	Training projects	The Thirty-first Meeting of the Executive Committee decided: (a) to take note of the findings and recommendations in the report on the evaluation of training projects prepared by the Senior Monitoring and Evaluation Officer (UNEP/OzL.Pro/ExCom/31/20); (b) to request the members of the Executive Committee to submit their comments on the report within 60 days of the adoption of its decision; (c) to request the Senior Monitoring and Evaluation Officer to circulate the reports on the countries evaluated for their comments; (d) to further request the Senior Monitoring and Evaluation Officer to prepare a recommendation on the matter for the 32nd meeting of the Executive Committee, taking into account the comments made by the members of the Executive Committee, the observations made during the 11th meeting of the Sub-Committee, and the views of the countries covered by the evaluations, as well as any further observations submitted by the Implementing Agencies.
ExCom 31/45	Assembly, installation and servicing of refrigeration equipment	The Executive Committee decided: (a) to adopt, for a period of 18 months, the guidelines for the subsector for assembly, installation and charging of refrigeration equipment contained in Annex IX.23; (b) to pay attention to projects submitted under guidelines 3 and 4, in particular to determine whether there is any eligible incremental cost; (c) to consider projects on a case-by-case basis in order to gain experience.
ExCom 31/48	RMPs	The Executive Committee decided**: A. Already approved refrigerant management plans (RMPs) for low-volume-consuming countries (LVCs)** (a) To request national ozone officers, with the assistance of the implementing agency concerned, to review and assess the content, implementation to date and expected outcomes of their RMPs against their objective to phase out all consumption in the refrigeration sector according to the Montreal Protocol timetable. In undertaking this review, national ozone officers should: (i) Calculate current and forecast future consumption in relation to the freeze, 50% cut in 2005, 85% cut in 2007 and phase-out in 2010 and calculate the size of consumption cuts in the refrigeration sector required to meet these targets; (ii) Include forecast cuts in consumption attributable to the activities already approved under the RMP, including training activities and recovery/recycling; (iii) Ensure that the current and expected future consumption of all subsectors, including the informal sector, small and medium-sized enterprises and mobile air conditioners, are included in the review; (iv) For each activity identified, consider the cost and means of funding, including national financing; (v) Ensure that the RMP and government strategy for delivering phase-out includes adequate provision for monitoring and reporting on progress; (b) That LVCs (or groups of LVCs) with already approved RMPs may submit to the Executive Committee requests for funding additional activities necessary to reduce consumption and thereby ensure compliance with the Protocol. Such additional activities should be essential parts of their comprehensive strategy for phase-out in the refrigeration sector. Additional funding shall not exceed 50% of the funds approved for the original RMP or, where relevant, RMP components. With the possible exception of the post-2007 period noted in subparagraph (d) below, no further funding beyond this level, including funding related to retrofits, would be considered for activities in this sector; (c) That requests for additional funding consistent with subparagraph (b) above should be accompanied by: (i) A justification for the additional activities to be funded in the context of the country's national phase-out strategy; (ii) A clear explanation of how this funding, together with the initial RMP funding and steps to be taken by the government, will ensure compliance with the Protocol's reduction steps and phase-out; (iii) A commitment to achieve, without further requests for funding for the RMP, at least the 50% reduction step in 2005 and the 85% reduction step in 2007. This shall include a commitment by the country to restrict imports if necessary to achieve compliance with the reduction steps and to support RMP activities; (iv) A commitment to annual reporting of progress in implementing the RMP and meeting the reduction steps; (d) That it will review in 2005 whether further assistance is needed for the post-2007 period, and what assistance the Fund might consider at that time to enable full compliance with the Protocol's phase-out requirements; **B. Preparation and approval of new RMPs for LVCs** (e) That the project preparation phase for RMPs should, as intended by the existing guidelines, include a full survey of CFC consumption in all subsectors, the development of a comprehensive government phase-out strategy and a commitment by the government to enact regulations and legislation required for the effective implementation of activities to phase out the use of CFC refrigerants. To enable these preparatory activities, including the development of legislation and regulations, to be completed in full, the funding provided for the project preparation phase should be double the level traditionally provided; (f) That the provisions relating to existing RMPs in section A, subparagraphs (a), (c) and (d) above shall also apply to new RMPs submitted pursuant to this decision; (g) That in lieu of the ability given to already approved RMPs to request additional funds, the total level of funding for the implementation of new RMPs could be increased by up to 50% compared to the level of RMP funding typically approved to date, with flexibility for the country in selecting and

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		implementing the RMP components which it deems most relevant in order to meet its phase-out commitments. With the exception of the post-2007 phase noted in section A, subparagraph (d) above, no further funding beyond this level, including funding for retrofits, would be considered for activities in this sector; (h) That the following text should be added to the RMP guidelines (decision 23/15) after the last bullet in section 3.1: "The elements and activities proposed for an RMP, whether they are to be funded by the Multilateral Fund or the country itself, should reflect the country's particular circumstances and address all relevant sectors including the informal sector. They should be sufficient to ensure fulfilment of the countries' control obligations at least up to and including the 85% reduction in 2007, and should include mechanisms for reporting progress." **C. RMPs for higher-volume-consuming countries** (i) That, taking into account the need for large consuming countries to initiate planning for dealing with this large and complex sector, as well as the related decision of the Meeting of the Parties, it will consider requests for funding the development of long-term strategies for the refrigeration sector for high-volume-consuming countries. High-volume-consuming countries that have not yet undertaken country programme updates should undertake this strategic RMP development in the context of such updates, consistent with any Executive Committee guidance on country programme updates; (j) That future Executive Committee decisions on funding the implementation of the elements of such RMP strategies should take into account the relative priority in national government planning of CFC reductions in the refrigeration sector and the availability of other reduction opportunities in meeting the country's control obligations; (k) That, in that context, the Executive Committee may consider whether certain activities often considered to be part of an RMP (such as training of customs officers) could be initiated before an RMP was developed.
ExCom 32/10 (para.21 (b))	RMPs	The Thirty-second Meeting of the Executive Committee decided to request UNDP to comply with Decision 31/48 for countries which apply for the 50 per cent increase to their current RMP funding level. Funding requests should be accompanied by a justification for the proposed additional activities based on a full assessment as described in Decision 31/48, para. (a), and a clear explanation of how this funding will ensure compliance with the Montreal Protocol phase-out schedule to January 2007.
ExCom 32/16	Recovery, reclamation and recycling	The Thirty-second Meeting of the Executive Committee decided to request the Senior Monitoring and Evaluation Officer to review the objectives of the evaluation exercise with a view to improving the exercise and lightening the burden on respondents. That did not imply that the same procedures would apply to all recovery and recycling projects in the future.
ExCom 32/19	Customs training evaluation	It is recommended: 1. that all future non-investment activities related to the refrigeration servicing sector in low-volume countries (such as training of technicians in good services practices and customs training) should continue to be part of the Refrigerant Management Plan in order to place them in the context of a comprehensive plan for sector phase-out. For non low-volume countries, projects such as training of technicians and training of customs officers would be prepared in the framework of a national long-term strategy for the refrigeration sector and considered in accordance with Decision 31/48, part C. When preparing new RMPs, as well as during implementation of approved RMPs, training activities related to the refrigeration servicing sector and customs officers should build on the results of any earlier training activities. Consideration should be also given to strengthen the relevant industry associations and to involve them more closely in project preparation and implementation. 2. that during the compliance period, the capacity of NOUs for development of national policies and regulations regarding monitoring and controlling consumption and trade of ODS and ODS-based equipment should continue to be enhanced. 3. that countries are encouraged to develop a certification system to recognize those trainees who have successfully participated in training programmes through appropriate regulations or other policies. Such regulations are most effective when they are developed with active industry participation and create common certification requirements across the country, either through national legislation or regulations consistent across states/provinces. 4. that national and regional activities should be planned and implemented in a complementary way. Regional workshops/seminars should focus on issues of common interest and should address priority requests in the region. National training programmes should respond to the specific requirements of countries concerned. 5. that a list of relevant past and planned training events, bilateral and multilateral, should be made available by UNEP as part of its information exchange activities to all Parties. It would enable the Parties to consult such information on a timely basis and eliminate the possible duplication of similar events world-wide. 6. that project proposals should include baseline data and indicators by which the results of the project could be assessed. Adequate monitoring systems should be developed to facilitate subsequent reporting on the results of training activities, and each project should foresee a budget line and adequate time for monitoring and reporting. 7. that the PCR format for non-investment projects used for reporting on training projects should be revised. The PCR should correspond to the related indicators defined for the approved project and should include information on the results and follow-up of training projects. 8. that the model of charging participants' fees for training of technicians, as included in the relevant German (GTZ) bilateral projects, in order to make training programmes sustainable should be closely monitored. If successful,

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		countries should be encouraged to adopt it for future projects. 9. that national training handbooks, similar to the ones prepared for 10 African countries by GTZ, should be produced as part of the training materials for other countries as well, taking into account previous training materials developed. 10. that innovative solutions should be developed to reach out with training to the informal sector.
ExCom 32/27	Licensing systems	The Thirty-second Meeting of the Executive Committee decided that it was prepared to approve project proposals for the development of implementation of licensing schemes. In that process, the Secretariat would be requested, in each case, to seek information from countries on the status of their ratification of the Montreal Amendment, as well as whether they had a licensing system in place, and to report such information to the Executive Committee
ExCom 32/28	RMPs	The Thirty-second Meeting of the Executive Committee decided that project proposals for incentive programmes to encourage retrofitting of refrigeration equipment could be submitted within an RMP, on the understanding that, where the project was to make use of the 50 per cent additional funding for an existing RMP available under Decision 31/48: (a) the Implementing Agency concerned should consult with the country and all other agencies implementing components of the RMP; (b) the country concerned was fully informed about all the investment and non-investment activities which might be available; (c) the timing of the proposed activity was appropriate for the country's circumstances.
ExCom 32/9	Training projects	The Thirty-second Meeting of the Executive Committee, having considered the report on evaluation of training projects decided to adopt the recommendations contained in Annex IX.5.
ExCom 33/13	Funding of updates of RMPs	The Thirty-third Meeting of the Executive Committee decided: (a) proposals to update refrigerant management plans should be in conformity with decision 31/48 and should be accompanied by: (i) a progress report from Implementing Agencies on the status of work being undertaken in the projects approved as part of the refrigerant management plan; and (ii) a written justification from countries for additional activities, explaining how the additional activities were related to the refrigerant management plan and the country's phase-out commitments. (b) the level of funding of such requests could be up to 50 per cent of the level of funding approved prior to the Thirty-first Meeting for the preparation of the original refrigerant management plan; (c) approval of the additional funding would be contingent on submission of the progress reports and the written justification referred to above.
ExCom 33/49	RMPs/ Terminal Phase-out plans (TPMPs)	Having considered the recommendation of the Sub-Committee on Project Review (UNEP/OzL.Pro/ExCom/33/17, paras. 87 and 88), the Executive Committee decided: (a) To invite members to provide comments in writing to the Secretariat on the draft prerequisites and guidelines, as contained in document UNEP/OzL.Pro/ExCom/33/25, for compilation and presentation to the Executive Committee at a future meeting; (b) To use the current draft prerequisites and guidelines, as contained in Annex VII to the present report, in a flexible manner, on a case-by-case basis, for consideration of terminal phase-out proposals related to pending requests to be submitted to future meetings of the Executive Committee.
ExCom 33/51	Customs training	The Thirty-third Meeting of the Executive Committee decided: (a) national customs training for each country should continue to be funded. However, UNEP should look for opportunities to implement regional and sub regional customs training as a cost-effective substitute for national customs training, wherever appropriate, and should look for opportunities to make use of existing regional customs training facilities; (b) in order to reach the large number of customs officers, in the countries concerned in a cost-effective manner, national customs training should be through the "train the trainers" approach and be followed by training of customs officers by trainers; (c) for demonstration purposes, additional sub regional or regional training programmes might be considered for funding where regional trading blocs or trading agreements containing relevant regulatory mechanisms were in place, and after the results of already approved regional and sub regional training programmes had been presented to the Executive Committee for review; (d) regional and sub regional customs training activities and the regional ozone officers networks should be used to conduct outreach to representatives of regional trading blocs and customs associations with a view to encouraging the formation of informal networks for information dissemination and data management.
ExCom 35/57 (para.112(b))	RMPs	The Thirty-fifth Meeting of the Executive Committee also decided that countries shall be provided with country programme update funding that is 75 per cent of the level originally provided to them to do country programmes. Low-volume consuming countries that have done RMPs will be given 50 per cent of the funding provided to develop their original RMP to do RMP updates, but will not be given funding to do country programme updates. New country programmes should, consistent with existing Executive Committee guidelines, continue to include RMPs.
ExCom 35/58	RMPs	In view of the above considerations, the Executive Committee decided at its Thirty-fifth Meeting: (a) to encourage Article 5 countries to take advantage of the opportunity of updating the country programmes to prepare the national strategy for complying with the Montreal Protocol obligations; (b) to provide funding for national efforts in updating the country programme. Taking into consideration Decision 31/48 of the Executive Committee on funding of refrigerant management plans, funding of country programme update should be linked with the funding of RMPs. Specifically: (i) in countries where the remaining controlled substance consumed is confined to CFC refrigeration servicing and the RMP has been funded, updating the country

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		programme/RMP should be accomplished by the countries concerned when requesting the additional funding of 50 per cent of their original RMP funding level. Funding should be provided to enable countries to undertake this exercise; (ii) in countries where the preparation of the RMP or a strategy for the refrigeration sector has been funded and is under way, supplementary funding for country programme update should cover CFC consumption in other sectors and controlled substances other than CFCs; (iii) in countries where the RMP has yet to be prepared, funding of country programme update should be combined with the preparation of the RMP. (c) to request that country programme updating be completed within 12 months, on average, from the time that funding is approved by the Executive Committee; (d) to encourage Article 5 countries to take advantage of the opportunity of updating the country programme to develop performance-based sector-wide or substance-wide phase-out agreements; (e) to adopt the Format for Country Programme Update included in Annex VIII.2 to the present report, which could be augmented by countries according to their strategic planning needs; (f) to invite Implementing Agencies, in finalizing their 2002 business plans, to incorporate to the extent possible, requests for assistance for those Article 5 countries seeking to prepare country programme updates at this time.
ExCom 36/14 (b)(c)	Recovery, recycling and reclamation	The Thirty-sixth Meeting of the Executive Committee decided: (b) to remove institutional strengthening, halon banking, customs training, recovery and recycling, and demonstration projects from the list of projects with implementation delays, but to continue to monitor them, as appropriate; (c) to note that the Secretariat and the Implementing Agencies would take actions according to the assessment of status, i.e., progress, some progress, or no progress, as mandated in Decision 34/13.
ExCom 36/5 (para 38 (f)(ii))	Refrigeration servicing	The Thirty-sixth Meeting of the Executive Committee decided: (f) noting that the overall coordination of projects was the responsibility of the country concerned, that: (ii) implementing and bilateral agencies should coordinate among themselves when preparing activities for phase-out of ODS in the servicing sector, with a view to bringing to the Executive Committee one complete national proposal for the servicing sector, in line with the principles and requirements of Decision 31/48 on Refrigerant Management Plans (RMP);
ExCom 37/19	RMPs	The Thirty-seventh Meeting of the Executive Committee decided that, for RMPs in large-volume-consuming countries, interim steps should not be used in performance agreements unless the use of CFCs for manufacturing had been completely phased out, and that the agreement should result in complete phase-out as if it were part of a national CFC phase-out plan or a sector plan.
ExCom 37/70, (para. 121 (a))	Terminal Phase-out plans (TPMPs)	The Thirty-seventh Meeting of the Executive Committee decided to request the Secretariat, in collaboration with the Implementing Agencies and interested Executive Committee members to prepare a document on the issue of whether RMP activities included in business plans could be submitted as new terminal phase-out management plans if countries requested agencies to do so, taking account of the content of Decision 31/48, for consideration at the 38th Meeting.
ExCom 37/9	Refrigeration servicing	The Twenty-first Meeting of the Executive Committee decided: (a) to take note of the 1997 business plans of the Implementing Agencies; (b) to request the Implementing Agencies to revise their 1997 business plans in the light of Executive Committee decision 21/3, subparagraph (b), and in conformity with its decisions 21/11, 21/12, 21/13 and 21/14, on the 1997 work programmes of the Implementing Agencies, and to submit them to the Executive Committee at its Twenty-second Meeting; (c) to request the Implementing Agencies, when implementing their 1997 business plans, to integrate the preparation of projects for national recovery and recycling in low-volume-consuming countries into refrigerant management plans; (d) to request the Secretariat to work with the Implementing Agencies to develop more standardized criteria for evaluating their performance so that it would be possible to examine the relative performance of the agencies prior to consideration of their 1998 business plans; (e) to request the Secretariat to work with the Implementing Agencies to produce a summary status report for each Article 5 country that would, using the latest available data, include information on the consumption of each country, the number of tonnes to be reduced through implementation of projects already approved by the Fund, the status of implementation of such projects, the amount of ODS that was expected to be reduced through planned approvals in 1997, and an indication of the relative difficulty that each country might face in meeting the 1999 freeze and, as far as practicable, subsequent control measures; (f) to request the Secretariat to submit a report to the Executive Committee on the exercises referred to in subparagraphs (d) and (e) above. The Monitoring, Evaluation and Finance Sub-Committee established by decision 21/35 would consider this report and make recommendations to the Executive Committee.
ExCom 38/38	Recovery, recycling and	Having considered the comments and recommendations of the Sub-Committee on Project Review (UNEP/OzL.Pro/ExCom/38/14, paragraphs 67 and 68), the Executive Committee decided: (a) That in future, in proposing for approval any projects that included a CFC recovery and recycling programme, the implementing agencies would: (i) Examine the possibility of collaboration for leveraging additional financing, for example from the Global Environment Facility (GEF), to fund the acquisition of machinery which could be used for recovery and recycling of both HFCs and CFCs; and (ii) Consistent with

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		previous decisions, not commence the recovery and recycling component of the RMPs until the legislation controlling CFC imports was in place and measures had been taken to ensure that the local market prices of CFCs and non-ODS refrigerants were similar; (b) For projects to phase out CFCs by conversion to HCFC technologies, Governments had officially endorsed the choice of technology and it had been clearly explained to them that no further resources could be requested from the Multilateral Fund for funding any future replacement for the transitional HCFC technology that had been selected.
ExCom 38/64	RMPs / TPMPs	The Executive Committee decided that specific requests for funding of terminal CFC phase-out plans for LVC countries might be considered on a case by case basis, provided that: (a) The country concerned has a licensing system in operation and has enacted or improved legislation to phase-out ODS consumption; (b) The Government concerned is committed to achieve, without further request for funding from the Multilateral Fund, the complete phase out of CFCs in accordance with its obligation under the Montreal Protocol; (c) The Government is committed to annual reporting of progress in implementing the activities proposed and meeting the reduction steps; and (d) Implementing and/or bilateral agency(ies) responsible for implementing the terminal phase-out plan be requested to advise the Government concerned on the financial implications to the country for submitting a terminal phase out plan, and make every effort to assist the Government concerned to achieve phase-out targets specified in the plan.
ExCom 39/16	RMPs	The Thirty-ninth Meeting of the Executive Committee decided: (a) to request agencies to coordinate their project preparation requests associated with RMPs or RMP updates so that the total funding sought remained within the limits established by the guidelines in Decision 31/48; (b) to require, with the first project preparation request, nomination of all the agencies that would be involved in the RMP and the lead agency that would be responsible for overall RMP implementation, including its phase-out objectives, and for reporting on overall progress and on achievement. However, in order to be consistent with the country-driven approach, a country would be entitled to change the agency responsible or request additional support from another agency (within the limits of the approved financing), with the Secretariat then being notified of such changes.
ExCom 40/7	Reorient the approach to RMPs to facilitate compliance	The Fortieth Meeting of the Executive Committee decided to set up an open ended working group to discuss, in the margins of the 41st Meeting of the Executive Committee, ways to reorient the approach to RMPs to better facilitate compliance, with members chosen from both the Sub Committee on Project Review and the Sub-Committee on Monitoring, Evaluation and Finance as well as representatives of the Implementing Agencies.
ExCom 41/100	RMPs	Following a discussion, in recognition of the fact that in certain cases Article 5 countries needed flexibility in implementing refrigerant management plans in order to reflect changing circumstances, the Executive Committee decided: (a) To recommend that bilateral and implementing agencies, in collaboration with Article 5 countries preparing and implementing refrigerant management plans, be given flexibility, within historically agreed funding levels, to implement refrigerant management plan components that are adapted to meet the specific needs of relevant Article 5 countries, and that planned changes to project activities be clearly documented and available for future monitoring and evaluation in accordance with Fund rules; and (b) That in developing appropriate interventions, Article 5 countries and bilateral and implementing agencies should give consideration to: (i) Concentrating support on the development of legislation and coordination mechanisms with industry, where these are not yet in place, and on further training programmes for refrigeration technicians and customs officers, using existing national capacities and providing expert support and resources such as equipment and tools required; this should also include efforts to raise awareness of the value of skilled technicians for end users and for stakeholders; (ii) Also concentrating recovery and reuse of CFC on large-size commercial and industrial installations and mobile air conditioner (MAC) sectors, if significant numbers of CFC-12 based systems still exist and the availability of CFC is strongly reduced by the adoption of effective import control measures; (iii) Further exploring possibilities for facilitating cost-effective retrofitting and/or use of drop-in substitutes, possibly through incentive programmes; (iv) Becoming more selective in providing new recovery and in particular recycling equipment by: a. establishing during project preparation a sounder estimate of the likely demand for recovery and recycling equipment; b. delivering equipment to the country only against firm orders and with significant cost participation by the workshops for equipment provided, using locally-assembled machines to the extent possible; c. procuring, delivering and distributing equipment in several stages, after reviewing the utilization of equipment delivered and verifying further demand; and d. ensuring that adequate follow-up service and information are available to keep the recovery and recycling equipment in service; and (v) Monitoring the use of equipment and knowledge acquired by the beneficiaries, on an ongoing basis, through regular consultations and collection of periodic reports from the workshops, to be carried out by national consultants in cooperation with associations of technicians. Progress reports based on such monitoring should be prepared annually by the consultant and/or the National Ozone Units, in cooperation with the implementing agency, as provided for in Decision 31/48, and sufficient additional resources should be made available to allow for such follow-up and reporting work

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ExCom 41/5, (para. 36(a))	Final report on the evaluation of the implementation of RMPs	The Forty-first Meeting of the Executive Committee decided to note the information provided in document UNEP/OzL.Pro/ExCom/41/7.
ExCom 44/63	Guidelines relating to collection, recovery, recycling and destruction of ODSs	The Forty-fourth Meeting of the Executive Committee recalling decision IV/18 by which the Meeting of the Parties identified, as agreed incremental costs for illustration, the cost of collection, recovery, recycling, and, if cost effective, destruction of ozone-depleting substances, recalling also that decision IV/11 facilitated access to and transfer of approved destruction technologies in accordance with Article 10 of the Protocol, together with provision for financial support under Article 10 of the Protocol for the Parties operating under paragraph 1 of Article 5, noting that decision IV/24 urged the Parties to take all practicable measures to prevent releases of controlled substances into the atmosphere, including, inter alia, the recovery of controlled substances for the purposes of recycling, reclamation or destruction and the destruction of unneeded ozone-depleting substances where economically feasible and environmentally appropriate, noting that decision X/7 requested the Parties to consider promoting appropriate measures to ensure the environmentally safe and effective recovery, storage, management and destruction of halons in preparing halon management strategies, mindful that the Technology and Economic Assessment Panel Task Force on Collection, Recovery and Storage, in its 2002 report, pursuant to decision XII/8, had concluded that the collection, recovery and storage of ozone-depleting substances was technically feasible and economically viable, recognizing that several million ODP tonnes of ozone-depleting substances were estimated to have been installed in equipment and as foams in 2002, according to the report of the Task Force, and were likely to be released into the atmosphere if preventive measures were not taken, decided: (a) to request the Secretariat to collect existing guidelines relating to collection, recovery, recycling and destruction of ozone-depleting substances in the light of paragraph 6 of decision IV/18 of the Meeting of the Parties on the indicative list of categories of incremental costs and to report its findings to the 46th Meeting of the Executive Committee; and (b) to consider whether to elaborate further guidelines for the funding of projects for the collection, recovery, recycling and destruction of ozone-depleting substances while ensuring economically feasible and environmentally appropriate management of ozone-depleting substances at the 46th Meeting on the basis of the report of the Secretariat.
ExCom 45/10	Evaluation of customs officers training and licensing systems projects	The Forty-fifth Meeting of the Executive Committee decided: (a) to take note of the report on the evaluation of customs officers training and licensing system projects contained in document UNEP/OzL.Pro/ExCom/45/11, including the recommendations in Section V of the document; (b) to request the Senior Monitoring and Evaluation Officer to revise the language of the recommendations to make them less prescriptive and more general and to include a section on conclusions; (c) to request the Secretariat: (i) to draft a covering note, for submission to the Parties, reflecting the comments on the report made by members of the Executive Committee at the 45th Meeting, to which the revised report would be annexed; (ii) to post a revised version of the report on its intranet to enable the members to review the text and send in their comments; and (iii) to submit the revised report and the covering note, after approval by the Chair of the Executive Committee, to the 25th Meeting of the Open-ended Working Group.
ExCom 45/54	RMPs / TPMPs	Following a discussion on the need to provide assistance to low-volume-consuming countries for the post-2007 period, the Executive Committee decided: (a) To urge bilateral and/or implementing agencies on behalf of low volume consuming countries without an approved terminal phase out management plan (TPMP) to submit TPMP proposals, on the understanding that: (i) TPMP project proposals should be in conformity with all relevant decisions taken by the Executive Committee; (ii) TPMP project proposals should contain, as a minimum, a commitment by the government concerned to the phased reduction and complete phase-out of the consumption of CFCs in the country according to a specific phase out schedule, which was at a minimum consistent with the Montreal Protocol's control measures; (iii) No additional resources would be requested from the Multilateral Fund or bilateral and/or implementing agencies for activities related to the phase out of CFCs and other ODS where applicable; (iv) The government concerned would have flexibility in utilizing the resources available to address specific needs that might arise during project implementation to facilitate the smoothest possible phase-out of ODS; (v) Annual reporting on the implementation of the activities undertaken in the previous year, as well as a thorough and comprehensive work plan for the implementation of the following year's activities, would be mandatory; and (vi) The roles and responsibilities of the major national stakeholders, as well as the lead implementing agency and the cooperating agencies when applicable, must be defined; (b) That additional funding of up to US $30,000 could be requested for the preparation of a TPMP proposal on the understanding that up to US $10,000 of this funding could be earmarked for the bilateral and/or implementing agencies to report on the implementation and impact of the approved recovery and recycling programme, where applicable, and that this report should be integrated within the resulting TPMP proposal; (c) That future TPMP proposals for the post-2007 period might

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<tr><th>Decision Number</th><th>Sector/ Sub-sector/Title</th><th>Decision Text</th></tr>
<tr><td></td><td></td><td>include requests for funding up to the levels indicated in the table below, on the understanding that individual project proposals would still need to demonstrate that the funding level was necessary to achieve complete phase-out of CFCs. Up to 20 per cent of approved funds should be used by the bilateral or implementing agency and/or country concerned to ensure comprehensive annual monitoring and reporting of the TPMP, including the recovery and recycling programme:

<table><tr><th>CFC baseline(ODP tonnes)</th><th>Funding level (US $)</th></tr><tr><td><15</td><td>205,000</td></tr><tr><td>15 to 30</td><td>295,000</td></tr><tr><td>30 to 60</td><td>345,000</td></tr><tr><td>60 to 120</td><td>520,000</td></tr><tr><td>> 120</td><td>565,000</td></tr></table>
(d) To require, on an annual basis, verification of a randomly selected sample of approved TPMPs for low-volume-consuming countries under implementation (i.e., 10 per cent of approved TPMPs). The costs associated with verification would be added to the relevant work programme of the lead implementing agency; and (e) To approve, on a case-by-case basis, up to US $30,000 for the preparation of a transitional strategy for CFC-MDIs in low-volume-consuming countries where the need for a strategy had been fully demonstrated and documented.</td></tr>
<tr><td>ExCom 46/17</td><td>RMPs / TPMPs</td><td>Following a discussion, the Executive Committee decided to request bilateral and implementing agencies preparing reports under decision 45/54 to prepare the reports in a format similar to the reports currently prepared under decision 31/48 for refrigerant management plan (RMP) updates and to provide a similar comprehensive overview of the implementation of the RMP.</td></tr>
<tr><td>ExCom 46/18, (para. 90 (b))</td><td>RMPs</td><td>The Forty-sixth Meeting of the Executive Committee decided to request Bilateral and Implementing Agencies preparing reports under decision 45/54 to prepare the reports in a format similar to the reports currently prepared under decision 31/48 for refrigerant management plan (RMP) updates and to provide a similar comprehensive overview of the implementation of the RMP.</td></tr>
<tr><td>ExCom 46/36</td><td>Phase-out agreement: flexibility conditions</td><td>The Forty-sixth Meeting of the Executive Committee decided: (a) to note with appreciation the report on the review of guidelines relating to collection, recovery, recycling and destruction of ozone depleting substances in documents UNEP/OzL.Pro/ExCom/46/42 and Corr.1; (b) to request the Secretariat to prepare a paper covering terms of reference, budget and modalities for a study regarding collection, recovery, recycling, reclamation, transportation and destruction of unwanted ODS, taking into account the proposal of Austria and Japan set out in Annex VII.4 to the present report and the comments made at the 46th Meeting of the Executive Committee; and (c) to request the Secretariat to present the paper to the 47th Meeting of the Executive Committee.</td></tr>
<tr><td>ExCom 47/52 (a)(i)(ii)(iii)</td><td>Collection and disposition of non-reusable and unwanted ODS</td><td>The Forty-seventh Meeting of the Executive Committee decided: (a) to request the Secretariat: (i) to organize a meeting of experts in Montreal, Canada, from 22 to 24 February 2006 to assess the extent of current and future requirements for the collection and disposition (emissions, export, reclamation and destruction) of non-reusable and unwanted ODS in Article 5 countries; (ii) to recruit consultants to collect and elaborate as many data as possible on unwanted, recoverable, reclaimable, non-reusable and virgin ODS in Article 5 countries for dissemination to participants in the meeting of experts; (iii) to develop, in cooperation with the consultants, a standard format for reporting data on unwanted, recoverable, reclaimable, non-reusable and virgin stockpiled ODS;</td></tr>
<tr><td>ExCom 48/10</td><td>Evaluation</td><td>Following the discussion, the Executive Committee decided: (a) To note with appreciation the final report on the intermediate evaluation of refrigerant management plans and national phase-out plans in non-low-volume-consuming countries focusing on the refrigeration servicing sector contained in document UNEP/OzL.Pro/ExCom/48/12; and (b) To request the Senior Monitoring and Evaluation Officer to develop a comprehensive and categorized compendium of recommendations relevant to that evaluation, distinguishing between new recommendations and those that had already been approved by the Executive Committee, and to present that compendium to the 49th Meeting of the Executive Committee.</td></tr>
<tr><td>ExCom 48/11</td><td>Customs training</td><td>The Forty-eighth Meeting of the Executive Committee decided: (a) to take note of the recommendations contained in the report of the Executive Committee on the evaluation of customs officers training and licensing system projects to the Twenty fifth Meeting of the Open ended Working Group (follow up to</td></tr>
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Decision Number	Sector/ Sub-sector/Title	Decision Text
		decision XVII/16, paragraph 8, of the Seventeenth Meeting of the Parties to the Montreal Protocol), as contained in document UNEP/OzL.Pro/ExCom/48/13; (b) to submit the recommendations listed under paragraph 8(b) in document UNEP/OzL.Pro/ExCom/48/13, as amended to include the phrase "where feasible" before the words "in cooperation with other relevant government ministries/agencies:" to the Ozone Secretariat in the context of the ongoing studies and discussions on how best to deal with illegal trade in ODS; (c) to request implementing agencies and bilateral agencies to prepare and implement national phase-out plans and terminal phase-out management plans in a manner that would ensure, where feasible, implementation of the recommendations listed under paragraph 8(b), and to implement the recommendations listed under paragraph 8(c) in document UNEP/OzL.Pro/ExCom/48/13; and (d) to request UNEP to implement the recommendations under paragraph 8(d) in document UNEP/OzL.Pro/ExCom/48/13.
ExCom 49/36	Recovery, recycling and reclamation	The Forty-ninth Meeting of the Executive Committee decided: (a) to take note with appreciation of document UNEP/OzL.Pro/ExCom/49/42, which included the proposed terms of reference for a study regarding collection, recovery, recycling, reclamation, transportation and destruction of unwanted ozone-depleting substances; (b) to inform the Parties, through a letter from the Chair of the Executive Committee to the Ozone Secretariat, that: (i) the Executive Committee was discussing the above-mentioned terms of reference and was of the view that there were substantial commonalities between those terms of reference and those being considered by the Parties in relation to decision XVII/17 of the Seventeenth Meeting of the Parties; (ii) the issues raised by both sets of the above-mentioned terms of reference could be considered by the Executive Committee of the Multilateral Fund, given that it had already held substantial discussions and initiated some work with respect to studying the issue of collection, recovery, recycling, reclamation, transportation and destruction of unwanted ozone-depleting substances; (iii) a request could be addressed to the Executive Committee to develop consolidated terms of reference and if agreed by the Executive Committee to initiate a study based on the consolidated terms of reference, and to report to the Nineteenth Meeting of the Parties on the progress made in that respect; and (c) to consider the issue at the 50th Meeting of the Executive Committee, in light of any guidance provided by the Eighteenth Meeting of the Parties.
ExCom 49/6	RMPs / National Phase-out Plans (NPPs)	Following discussion of those modifications, the Executive Committee decided: (a) To recommend that National Ozone Units (NOUs) in planning and implementing refrigerant management plans and national or terminal phase-out plans consider, where feasible and in cooperation with other relevant government ministries/agencies: (i) Updating and complementing ODS-related legislation where additional legal measures were needed and further specification of enforcement mechanisms had been identified, including, for example: Banning the import and export of CFC-based second-hand refrigeration equipment; Mandatory certification of technicians performing professional activities in refrigeration servicing; Specification of a system of sanctions in cases of violation of legal regulations; Improvement of the mechanisms for import and export quota allocations under the licensing system and the monitoring of their actual use; Enhancement of cooperation between the NOU and the customs authorities; (ii) Upgrading the curriculum for technical training in refrigeration, where needed, and providing all training institutions with the latest relevant information with regard to the general application of good practices to significantly reduce usage of ODS and to promote the use of alternatives; (b) To request implementing and bilateral agencies, when implementing ongoing national phase-out plans and when planning new national phase-out plans, to take into consideration decision 41/100 for the recovery and recycling part of national phase-out plans, in particular the following paragraphs: (i) "Concentrating recovery and reuse of CFCs in large-size commercial and industrial installations and mobile air conditioning sectors, if significant numbers of CFC-12-based systems still existed and the availability of CFC was strongly reduced by the adoption of effective import control measures; (ii) Further exploring possibilities for facilitating cost-effective retrofitting and/or use of drop-in substitutes, possibly through incentive programmes; (iii) Becoming more selective in providing new recovery, and in particular recycling, equipment by: a. Establishing during project preparation a sounder estimate of the likely demand for recovery and recycling equipment; b. Delivering equipment to the country only against firm orders and with significant cost participation by the workshops for equipment provided, using locally-assembled machines to the extent possible; c. Procuring, delivering and distributing equipment in several stages, after reviewing the utilization of equipment delivered and verifying further demand; d. Ensuring that adequate follow-up service and information was available to keep the recovery and recycling equipment in service; (iv) Monitoring the use of equipment and knowledge acquired by the beneficiaries, on an ongoing basis, through regular consultations and collection of periodic reports from the workshops, to be carried out by national consultants in cooperation with associations of technicians. Progress reports based on such monitoring should be prepared annually by the consultant and/or the National Ozone Units, in cooperation with the implementing agency, as provided in decision 31/48, and sufficient additional resources should be made available to allow for such follow-up and reporting work" (from decision 41/100); (c) To request bilateral and multilateral implementing agencies, in cooperation with the

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		relevant national institutions: (i) To base the training of technicians on a strategy combining theoretical training with practical exercises during seminars with limited numbers of participants, and assisting in upgrading the curriculum of technical training institutes for refrigeration servicing in countries where it had not yet been done; (ii) To pay full attention to safety aspects and the necessary modification or replacement of electrical components in countries where training in the use of hydrocarbons and particularly retrofitting was carried out; and (iii) To select carefully the type of refrigerant identifiers to be purchased, taking into account preferences for small portable units, suitable for identifying different types of refrigerants, and including a test phase, where feasible, before buying larger numbers. Moreover, the administrative details of their distribution, usage and storage should be planned in advance in order to avoid delays and to increase the effectiveness of their use; (d) To request the Fund Secretariat, in cooperation with bilateral and multilateral implementing agencies, to develop recommendations for indicative lists of appropriate equipment for the main target groups and share information about competitive suppliers, including from Article 5 countries; and (e) To request the Fund Secretariat, in cooperation with bilateral and multilateral implementing agencies, to develop an appropriate reporting format for the tracking of cumulative progress achieved in the annual work programmes, summarizing in standardized overview tables the information requested in decision 47/50, with a view to simplifying and rationalizing the overall reporting requirements and to report back to the 51st Meeting of the Executive Committee. Such assessment should contain a "comparison of what had been planned in the previous annual tranche and what had been achieved. The disbursement information should be provided cumulatively and data concerning actual or planned commitments could also be provided, as appropriate. The information should also specify how the relevant flexibility clause in the agreement was implemented and/or how to allocate unused funds from previous tranches" (from decision 47/50, subparagraph (b)(i)).
ExCom 50/42	Unwanted ODS	The Fiftieth Meeting of the Executive Committee decided: (a) to request the Multilateral Fund Secretariat to develop specific terms of reference for a study on the treatment of unwanted ozone-depleting substances, identifying a contractor and commissioning the study described below by the end of March 2007, if possible. The study would be completed by 1 February 2008. (b) to define the two distinct objectives of the study as follows: (i) to compile information on management approaches in five non-Article 5(1) countries for the equipment, to provide guidance and to describe the applicability of these management approaches to Article 5(1) countries; and (ii) to compile information on management approaches and markets in five non-Article 5(1) countries for the recovery, collection, recycling and reclamation of zone-depleting substances that result in those ODS being locally unusable, and the possible options for the disposition (e.g., reuse in other markets, transformation, destruction) of this locally unusable ODS and describe the applicability of these options for Article 5(1) countries. (c) to request that the detailed activities under the objective in paragraph (b)(i) consist of: (i) selecting five non-Article 5(1) countries that represent a wide spectrum of existing management approaches for the collection, transport and disposal of CFC-containing refrigeration and air-conditioning equipment; (ii) compiling information from the five non-Article 5(1) countries and describing: a. the institutions, technologies and processes involved in all steps of collection, transport and disposal of the equipment; b. the costs of the various steps in collecting, transporting and processing the equipment; c. the legal and regulatory requirements and the voluntary administrative procedures for dealing with the CFCs in the equipment; and d. the volume of equipment collected historically and currently; (iii) using the information compiled from the five non-Article 5(1) countries to describe the economic and financial arrangements among the various individuals and entities in the system for disposing of CFC containing refrigeration and air-conditioning equipment; and (iv) collecting information on experiences regarding management approaches for the collection, transportation and disposal of CFC-containing refrigeration and air-conditioning equipment in eight Article 5(1) countries, to be collected by contacting national and local government officials who will recommend additional contacts in industry and institutions in order to describe challenges that may be posed in translating the non-Article 5(1) countries' experiences to the situation in Article 5(1) countries given domestic, social and economic factors. The selection of the countries should represent a wide spectrum of countries that have already identified challenges and should have regional representation; (d) to request that the detailed activities under the objective in paragraph (b)(ii) consist of: (i) using the data from the Meeting of Experts to Assess the Extent of Current and Future Requirements for the collection and disposition of non-reusable and unwanted ODS in Article 5 countries held in March 2006, data already published in reports from the Technology and Economic Assessment Panel and its subsidiary bodies, and other relevant existing data to describe possible economic incentives and their cost-effectiveness, whether inherent or external to the institutions under the Montreal Protocol, that would encourage disposition (e.g., reuse in other markets, transformation, destruction) of ODS that is locally unusable; (ii) describing the capacity and location of all global existing facilities with destruction technologies approved by the Parties to the Montreal Protocol, comparing this capacity to the estimated volume of ODS predicted to be recovered and locally unusable in the March 2006 Experts' Meeting report, the viability and potential costs of using these existing destruction technologies, and the regulatory requirements for transporting the locally unusable ODS; and (iii) describing opportunities

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		other than existing destruction technologies for the disposition of locally unusable ODS, and the viability and potential costs of using these other approaches; (e) to request the Secretariat to report to the 51st Meeting of the Executive Committee on the status of the process for contracting a consultant for carrying out the study; (f) to consider at the 52nd Meeting of the Executive Committee the content of a progress report to be submitted to the Nineteenth Meeting of the Parties; and (g) to approve a budget for carrying out the study.
ExCom 52/5	Licensing	The Fifty-second Meeting of the Executive Committee decided: (a) to note the report on the status/prospects of Article 5 countries in achieving compliance with the initial and intermediate control measures of the Montreal Protocol as contained in UNEP/OzL.Pro/ExCom/52/7/Rev.1; (b) to request UNDP and El Salvador to expedite the submission of the terminal phase out management plan proposal to the 53rd Meeting; (c) to urge those countries that have not established licensing systems to endeavour to establish such systems as soon as possible; The Fifty-second Meeting of the Executive Committee decided: (a) to note the report on the status/prospects of Article 5 countries in achieving compliance with the initial and intermediate control measures of the Montreal Protocol as contained in UNEP/OzL.Pro/ExCom/52/7/Rev.1; (b) to request UNDP and El Salvador to expedite the submission of the terminal phase out management plan proposal to the 53rd Meeting; (c) to urge those countries that have not established licensing systems to endeavour to establish such systems as soon as possible;
ExCom 52/6	Retrofit	Following the discussion, the Executive Committee decided: (a) To urge Article 5 countries and respective implementing agencies to intensify their efforts to advance the implementation of approved incentive programmes in order to meet the established targets and phase-out schedules; (b) To draw the attention of Article 5 countries for which terminal phase-out management plans had been approved or would be approved in the near future to incentive programmes as a possibility for achieving CFC phase-out in the refrigeration servicing sector, provided the necessary pre-conditions were in place and lessons learned from previous programmes were taken into account; (c) To request the implementing and bilateral agencies concerned to disseminate the lessons learned from the implementation of incentive programmes among Article 5 countries, including through the regional network meetings; (d) To request all bilateral and implementing agencies that were implementing or considering implementing incentive programmes for retrofits to take into account all the elements contained in paragraph (e) below, as they might apply to their programmes; and (e) To request UNDP in cooperation with the Fund Secretariat: (i) To provide, as part of the guidelines, a template for calculating estimated operating savings and efficiency gains resulting from retrofitting or replacing a given refrigeration system, as well as the economic benefits of extending the life time of retrofitted equipment; (ii) To clarify, during the preparation of incentive programmes, the methodology of calculating planned and actual CFC phase-out, taking into account local circumstances; (iii) To include in the guidelines the preparation of country-specific implementation milestones in order to facilitate monitoring and avoid delays; iv) To foresee in the guidelines the possibility of adapting the scale and sequence of payments to local situations and to increase the maximum limit of US $10,000 for large-sized end-users in order to motivate them to proceed with the conversion where the total cost might significantly exceed their maximum entitlement; and (v) To incorporate into the guidelines a preference for the use of drop-in alternatives based on natural substances such as hydrocarbons, and to use HCFC ternary blends as drop-in substitutes for CFC-12 only in exceptional circumstances, taking into account safety issues.
ExCom 52/7, para. 57	Customs training	The Fifty-second Meeting of the Executive Committee decided: (a) to request the Senior Monitoring and Evaluation Officer to reorganize the final report on the evaluation of the Compliance Assistance Programme (CAP), (UNEP/OzL.Pro/ExCom/52/9), around the seven issues identified in paragraphs 9(a) to 9(g) of that document; (b) to request UNEP to consider further regionalization of CAP resources; (c) to request UNEP to focus the CAP on: (i) countries in potential or actual non-compliance, taking into account the likely difficulties of a number of countries in meeting the 85 per cent reduction target for CFC in 2007, to be followed by the total phase-out of CFCs, halons and carbon tetrachloride by 31 December 2009; (ii) latecomers to the Montreal Protocol, in order: a. to strengthen their institutional structures and develop local capacities; b. to facilitate the establishment of appropriate ODS-related legislation and regulations; and c. to support their public awareness activities. (iii) further involving more advanced and experienced Article 5 countries to assist and advise less advanced in the same region; (iv) further strengthening local capacities of trained trainers and partner training institutes formed during the “train the trainers” phase to enable future and continued **training of customs officers** and refrigeration technicians on a sustainable basis. UNEP should also develop a strategy that would integrate the local training capacity created, placing emphasis on national ownership and securing access to appropriate know-how beyond 2010; (v) further promoting collaboration between **customs** and environmental authorities, in cooperation with professional associations, in order to strengthen the enforcement of legal regulations; (vi) assisting, where applicable, the enforcement of unified regulations in regional **customs unions** or other areas of political and economic cooperation; and (d) to urge UNEP and the other agencies to ensure close

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		coordination of activities in order to avoid overlapping actions; in particular, UNEP should always consult with the lead agency for national phase-out plans, terminal phase-out management plans or other phase-out plans and projects before providing technical or policy advice.
ExCom 54/11 (a)	Evaluation of management, monitoring and verification of NPPs in non-LVC countries	The Fifty-fourth Meeting of the Executive Committee decided: (a) to encourage Article 5 countries implementing phase-out plans to consider: (i) issuing decrees (orders usually emanating at the ministerial level), to the extent possible, so as to introduce the needed policies, bans and restrictions, given the complexity and time required to create or amend legislation; (ii) undertaking a comprehensive needs analysis for the further training of customs officers, and developing a training plan utilizing the train the trainer approach and integrating ODS issues into the regular curriculum in order to create sustainable training capacities; (iii) the possibility of eventually charging participants or their employers fees for technician training so as to increase their sense of ownership and generate funds for additional training activities; (iv) using voucher systems to enable workshops to select the recovery and recycling (R&R) equipment that they wanted and needed, while paying for part of the cost both to increase the likelihood of that equipment being used and to allow a greater amount of equipment to be purchased; (v) when developing business plans for reclamation centres, demonstrating how such centres could be made self-sustainable; (vi) undertaking a needs analysis, where not yet done, or at the least an estimate based on best available information or surveys, and developing comprehensive training plans for the remaining numbers of refrigeration technicians to be trained; (vii) routinely monitoring local market-place conditions as prices for CFCs, and their substitutes tended to be good indicators of the potential risk for illegal trade;
ExCom 54/39	Guidelines for preparation of HPMPs	The Fifty-fourth Meeting of the Executive Committee decided to adopt the following guidelines: (a) countries should adopt a staged approach to the implementation of an HCFC phase-out management plan (HPMP), within the framework of their over arching strategy; (b) as soon as possible and depending on the availability of resources, countries should employ the guidelines herein to develop, in detail, stage one of the HPMPs, which would address how countries would meet the freeze in 2013 and the 10 per cent reduction in 2015, with an estimate of related cost considerations and applying cost guidelines as they were developed; (c) the elaboration of stage one of the HPMP and subsequent stages should be developed as follows: (i) for countries with consumption in the servicing sector only: a. to be consistent with existing guidelines for the preparation of RMPs/RMP updates pursuant to decisions 31/48 and 35/57; and, if applicable, with the preparation of TPMPs pursuant to decision 45/54; b. to contain commitments to achieve the 2013 and 2015 HCFC control measures and include a performance-based system for HPMPs based on the completion of activities in the HPMP to enable the annual release of funding for the HPMP; (ii) for countries with manufacturing sectors using HCFCs, HPMPs should contain a national performance-based phase-out plan (NPP) with one or several substance or sector-based phase-out plans (SPP) consistent with decision 38/65 addressing consumption reduction levels sufficient to achieve the 2013 and 2015 HCFC control measures and provide starting points for aggregate reductions, together with annual reduction targets; (d) for countries that chose to implement investment projects in advance of completion of the HPMP: (i) the approval of each project should result in a phase-out of HCFCs to count against the consumption identified in the HPMP and no such projects could be approved after 2010 unless they were part of the HPMP; (ii) if the individual project approach was used, the submission of the first project should provide an indication of how the demonstration projects related to the HPMP and an indication of when the HPMP would be submitted; (e) consideration should be given to providing funding for assistance to include HCFC control measures in legislation, regulations and licensing systems as part of the funding of HPMP preparation as necessary and confirmation of the implementation of the same should be required as a prerequisite for funding implementation of the HPMP; (f) in cases where there were multiple implementing agencies in one country, a lead agency should be designated to coordinate the overall development of stage one of the HPMP; (g) HPMPs should contain cost information at the time of their submission based on and addressing: (i) the most current HCFC cost guidelines at the time of submission; (ii) alternative cost scenarios based on different potential cut-off dates for new capacity if a specific cut-off date had not yet been decided, for funding eligibility of manufacturing facilities as specified in decision 53/37(k), as well as the current policy for a 25 July 1995 cut-off date; (iii) alternative cost scenarios for the operational and capital costs for second conversions; (iv) the incremental costs of regulating import and supply to the market of HCFC dependent equipment once proven alternatives were commercially available in the country and describing the benefits to the servicing sector of associated reduced demand; (v) cost and benefit information based on the full range of alternatives considered, and associated ODP and other impacts on the environment including on the climate, taking into account global-warming potential, energy use and other relevant factors; (h) countries and agencies were encouraged to explore potential financial incentives and opportunities for additional resources to maximize the environmental benefits from HPMPs pursuant to paragraph 11(b) of decision XIX/6 of the Nineteenth Meeting of the Parties; (i) HPMPs should address: (i) the use of institutional arrangements mentioned in decision 53/37(e) and (f); (ii) the roles and responsibilities of associations of refrigeration technicians and other

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<tr><td></td><td></td><td>industry associations and how they could contribute to HCFC phase-out; and (j) HPMPs should, as a minimum, fulfil the data and information requirements, as applicable, listed in the indicative outline for the development of HPMPs, as set out in Annex XIX to the present report.</td></tr>
<tr><td>ExCom 58/6</td><td>Evaluation of TPMPs</td><td>The Fifty-eighth Meeting of the Executive Committee decided: (a) to take note of the final report on the evaluation of terminal phase-out management plans (TPMPs) as presented in document UNEP/OzL.Pro/ExCom/58/8; (b) to request: (i) bilateral and implementing agencies assisting Article 5 countries in implementing TPMPs to provide the National Ozone Units regularly with updated financial reports on fund disbursement and commitments associated with the activities in the TPMP projects so that they would be in a position to account to their respective governments; (ii) Article 5 countries to give due consideration to enhancing their data collection and monitoring systems for control of ODS trade in order to improve the quality and reliability of the import/export data from customs authorities, companies and servicing workshops, where applicable; (iii) bilateral and implementing agencies, when implementing the last tranche(s) of the TPMPs, to advise and assist Article 5 countries in reviewing current ODS regulations, including licensing systems, and in incorporating import/export regulations on HCFCs; (iv) bilateral and implementing agencies and Article 5 countries to consider establishing effective and targeted monitoring and reporting mechanisms, which could include establishment of programme management units if countries chose to do so, in order to ensure adequate assessment, monitoring and reporting of the results of TPMPs, in particular regarding recovery and recycling and end-user projects; (v) bilateral and implementing agencies assisting Article 5 countries to provide information on technical feasibility and economic viability when considering the establishment of new ODS reclamation and recycling centres in future requests for TPMP tranches; (vi) Article 5 countries, when developing and/or designing training programmes for technicians, to include specific modalities for assisting the refrigeration service technicians who had not received formal training; and (c) to encourage Article 5 countries to establish and/or strengthen refrigeration technicians' associations in order to promote good practices in the refrigeration sector through recovery, recycling, leak detection and prevention of unnecessary use of ODS.</td></tr>
<tr><td>ExCom 60/44</td><td>Cost guidelines stage I of HPMPs</td><td>The Sixtieth Meeting of the Executive Committee decided, inter alia: Eligible incremental costs of HCFC phase-out projects HCFC phase-out in the refrigeration servicing sector (xi) Article 5 countries that have total HCFC consumption of up to 360 metric tonnes must include in their HPMP, as a minimum: a. A commitment to meeting, without further requests for funding, at least the freeze in 2013 and the 10 per cent reduction step in 2015, and if the country so decides, the 35 per cent reduction step in 2020. This shall include a commitment by the country to restrict imports of HCFC-based equipment if necessary to achieve compliance with the reduction steps and to support relevant phase-out activities; b. Mandatory reporting, by the time funding tranches for the HPMP are requested, on the implementation of activities undertaken in the refrigeration servicing sector and in the manufacturing sector when applicable, in the previous year, as well as a thorough and comprehensive annual work plan for the implementation of the following activities associated with the next tranche; c. A description of the roles and responsibilities of major stakeholders, as well as the lead implementing agency and the cooperating agencies, where applicable; (xii) Article 5 countries that have total HCFC consumption of up to 360 metric tonnes will be provided funding consistent with the level of consumption in the refrigeration servicing sector as shown in the table below, on the understanding that project proposals will still need to demonstrate that the funding level is necessary to achieve the 2013 and 2015 phase-out targets, and if the country so decides, the 2020 phase-out targets:
<table>
<tr><th>Consumption (metric tonnes)*</th><th>Funding up to 2015 (US$)</th><th>Funding up to 2020 (US$)</th></tr>
<tr><td>>0 < 15</td><td>51,700</td><td>164,500</td></tr>
<tr><td>15 < 40</td><td>66,000</td><td>210,000</td></tr>
<tr><td>40 < 80</td><td>88,000</td><td>280,000</td></tr>
<tr><td>80 < 120</td><td>99,000</td><td>315,000</td></tr>
<tr><td>120 < 160</td><td>104,500</td><td>332,500</td></tr>
<tr><td>160 <200</td><td>110,000</td><td>350,000</td></tr>
<tr><td>200 <320</td><td>176,000</td><td>560,000</td></tr>
<tr><td>320 <360</td><td>198,000</td><td>630,000</td></tr>
</table>
(*) Level of baseline HCFC consumption in the refrigeration servicing sector.</td></tr>
</table>

Decision Number	Sector/ Sub-sector/Title	Decision Text
		(xiii) Article 5 countries that have total HCFC consumption of up to 360 metric tonnes and that receive funding consistent with the above table, will have flexibility in utilizing the resources available to address specific needs that might arise during project implementation to facilitate the smoothest possible phase-out of HCFCs; (xiv) Article 5 countries that have total HCFC consumption of up to 360 metric tonnes, used in both the manufacturing and refrigeration servicing sectors, could submit HCFC phase-out investment projects in accordance with prevailing policies and decisions of the Multilateral Fund, in addition to funding for addressing HCFC consumption in the servicing sector; (xv) Article 5 countries that have total HCFC consumption above 360 metric tonnes should first address consumption in the manufacturing sector to meet the reduction steps in 2013 and 2015. However, if such countries clearly demonstrate that they require assistance in the refrigeration servicing sector to comply with these targets, funding for these activities, such as training, will be calculated at US$4.50/metric kg, which will be deducted from their starting point for aggregate reductions in HCFC consumption. HCFC phase-out in the aerosol, fire extinguisher and solvent sectors (xvi) The eligibility of incremental capital and operating costs for HCFC phase out projects in the aerosol, fire extinguisher and solvent sectors will be considered on a case-by-case basis.
ExCom 72/17	Retrofit to flammable refrigerants	The Seventy-second Meeting of the Executive Committee decided to include in the approval of HCFC phase out management plans, tranches, projects or activities that proposed the retrofit of HCFC based refrigeration and air conditioning equipment to flammable or toxic refrigerants that the Executive Committee notes that, if the country engages in retrofitting HCFC-based refrigeration and air-conditioning equipment to flammable or toxic refrigerants and associated servicing, it does so on the understanding that they assume all associated responsibilities and risks.
ExCom 72/41	Minimizing adverse climate impact of HCFC phase-out in the refrigeration servicing sector	The Seventy-second Meeting of the Executive Committee decided: (a) To take note of documents UNEP/OzL.Pro/ExCom/70/53/Rev.1 and UNEP/OzL.Pro/ExCom/72/42 on minimizing adverse climate impact of HCFC phase-out in the refrigeration servicing sector; (b) To invite relevant bilateral and implementing agencies to consider the information contained in documents UNEP/OzL.Pro/ExCom/70/53/Rev.1 and UNEP/OzL.Pro/ExCom/72/42 when assisting Article 5 countries in the preparation and implementation of activities in the refrigeration servicing sector contained in their HCFC phase-out management plans (HPMPs); and (c) To encourage Article 5 countries, when implementing their HPMPs, to consider, as needed and feasible: (i) The development of regulations and codes of practice, and the adoption of standards for the safe introduction of flammable and toxic refrigerants given the potential risk of accidents and negative effects on health associated with their use; (ii) Measures to limit the import of HCFC-based equipment and to facilitate the introduction of energy efficient and climate-friendly alternatives; and (iii) Focusing activities in the refrigeration servicing sector on training of technicians, good practices, the safe handling of refrigerants, containment, recovery and recycling and reuse of recovered refrigerants rather than retrofitting.
ExCom 73/34	Retrofit to flammable refrigerants	The Seventy-third Meeting of the Executive Committee decided that, if a country were to decide, after taking into account decision 72/17, to proceed with retrofits that used flammable substances in equipment originally designed for non flammable substances, it should be done only in accordance with the relevant standards and protocols.
ExCom 74/50	Cost guidelines stage II of HPMPs	At its Seventy-fourth meeting, the Executive Committee decided, in determining criteria for funding HCFC phase-out in the consumption sector for stage II of the HCFC phase out management plans (HPMPs) in Article 5 countries, *inter alia*: HCFC phase-out in the refrigeration servicing sector, including servicing for all the relevant refrigeration and air conditioning subsectors (xi) Article 5 countries with total HCFC consumption of up to 360 metric tonnes, and former low-volume consuming (LVC) Article 5 countries with HCFC consumption in the refrigeration servicing sector only above 360 metric tonnes, must include in their HPMPs, as a minimum: a. A commitment to meeting, without further requests for funding at least the 35 per cent reduction step in 2020, and, if the country so decided, the 67.5 per cent reduction step in 2025 or the complete phase-out of HCFCs in line or ahead of the Montreal Protocol schedule. This should include a commitment by the country to restrict imports of HCFC-based equipment if necessary to achieve compliance with the reduction steps and to support relevant phase-out activities; b. Mandatory reporting, by the time funding tranches for the HPMP were requested, on the implementation of activities undertaken in the refrigeration servicing sector and in the manufacturing sector when applicable, in the previous year, as well as a thorough and comprehensive annual work plan for the implementation of the activities associated with the next tranche; c. A description of the roles and responsibilities of major stakeholders, as well as the lead implementing agency and the cooperating agencies, where applicable; (xii) Article 5 countries with total HCFC consumption of up to 360 metric tonnes would be provided with funding consistent with the level of consumption in the refrigeration servicing sector, as shown in the table below, on the understanding that project proposals would still need to demonstrate that the funding level was necessary to achieve the 2020 and 2025 phase-out targets, or if the country so decided, later reduction targets:

<table>
<tr><th>Decision Number</th><th>Sector/ Sub-sector/Title</th><th>Decision Text</th></tr>
<tr><td></td><td></td><td>
<table>
<tr><th rowspan="2">Consumption (mt)*</th><th colspan="3">Funding (US $)(**)</th></tr>
<tr><th>Up to 2020</th><th>Up to 2025</th><th>Total phase-out</th></tr>
<tr><td>>0 < 15</td><td>205,625</td><td>396,500</td><td>587,500</td></tr>
<tr><td>15 < 40</td><td>262,500</td><td>506,250</td><td>750,000</td></tr>
<tr><td>40 < 80</td><td>280,000</td><td>540,000</td><td>800,000</td></tr>
<tr><td>80 < 120</td><td>315,000</td><td>607,500</td><td>900,000</td></tr>
<tr><td>120 < 160</td><td>332,500</td><td>641,250</td><td>950,000</td></tr>
<tr><td>160 < 200</td><td>350,000</td><td>675,000</td><td>1,000,000</td></tr>
<tr><td>200 < 320</td><td>560,000</td><td>1,080,000</td><td>1,600,000</td></tr>
<tr><td>320 < 360</td><td>630,000</td><td>1,215,000</td><td>1,800,000</td></tr>
</table>
(*) Level of HCFC baseline consumption in the refrigeration servicing sector.
(**) This represents the maximum funding eligible, including funding already provided.

(xiii) Article 5 countries with HCFC consumption in the refrigeration servicing sector only above 360 metric tonnes would be provided with funding for phase-out activities at US $4.80/metric kilogram; (xiv) Article 5 countries with total HCFC consumption in the servicing sector only of up to 360 metric tonnes would have flexibility in utilizing the resources available to address specific needs that might arise during project implementation to facilitate the smoothest possible phase-out of HCFCs, consistent with Executive Committee decisions; (xv) Article 5 countries with total HCFC consumption of up to 360 metric tonnes, used in both the manufacturing and refrigeration servicing sectors, could submit HCFC phase-out investment projects in accordance with the policies and decisions of the Executive Committee, in addition to funding for addressing HCFC consumption in the servicing sector; (xvi) Article 5 countries with total HCFC consumption above 360 metric tonnes used in both the manufacturing and refrigeration servicing sectors should prioritize consumption in the manufacturing sector to meet the reduction steps in 2020, where possible. Activities in the refrigeration servicing sector for such countries would be calculated at US $4.8/metric kilogram, to be deducted from their starting point for aggregate reductions in HCFC consumption;
</td></tr>
<tr><td>ExCom 80/76</td><td>HFC phase-down cost guidelines</td><td>The Eightieth Meeting of the Executive Committee decided, inter alia (c) To request the Secretariat to prepare a preliminary document for the 82nd meeting, in cooperation with bilateral and implementing agencies, on all aspects related to the refrigeration servicing sector that support the HFC phase-down, taking into account: (i) Previous policy documents, case studies, monitoring and evaluation reviews, and the work undertaken by bilateral and implementing agencies in developing and implementing training and technical assistance programmes, in particular the partnership that the Compliance Assistance Programme had established with world recognized training and certification institutes; (ii) Analysis of the existing capacities in Article 5 countries with the funding approved thus far for the refrigeration servicing sector and how those could be utilized for HFC phase-down, in relation to: a. The results of funded recovery, recycling and reclamation activities and the provision of servicing tools, and their potential to reduce refrigerant emissions; b. The extent of the involvement of the private and/or public sector (e.g. equipment, components and refrigerant suppliers) in introducing and adopting alternatives in the servicing sector; c. Health and safety standards, protocols and equipment (including protective equipment) available for alternatives; d. Training and certification programmes; e. If and how energy efficiency was addressed in the servicing/end-user sector; and (iii) The minimum information needed for the development of training and competency-based certification programmes and modules for service technicians and customs officers for the transition to alternatives.</td></tr>
<tr><td>MOP IV/24</td><td>Recovery, recycling and reclamation</td><td>The Fourth Meeting of the Parties decided: 1. to annul Decision I/12 H of the First Meeting of the Parties ("Imports and exports of bulk used controlled substances should be treated and recorded in the same manner as virgin controlled substances and included in the calculation of the Party's consumption limits"). 2. not to take into account, for calculating consumption, the import and export of recycled and used controlled substances (except when calculating the base year consumption under paragraph 1 of Article 5 of the Protocol), provided that data on such imports and exports are subject to reporting under Article 7. 3. the Parties also agreed on the following clarifications of the terms "recovery", "recycling" and "reclamation": (a) Recovery: The collection and storage of controlled substances from machinery, equipment, containment vessels, etc., during servicing or prior to disposal; (b) Recycling: The re-use of a recovered controlled substance following a basic cleaning process such as filtering and drying. For refrigerants, recycling normally involves</td></tr>
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Decision Number	Sector/ Sub-sector/Title	Decision Text
		recharge back into equipment which it often occurs "on-site"; (c) Reclamation: The re-processing and upgrading of a recovered controlled substance through such mechanisms as filtering, drying, distillation and chemical treatment in order to restore the substance to a specified standard of performance. It often involves processing "off-site" at a central facility. 4. urged all the Parties to take all practicable measures to prevent releases of controlled substances into the atmosphere, including, inter alia: (a) to recover controlled substances in Annex A, Annex B and Annex C of the Protocol, for purposes of recycling, reclamation or destruction, that are contained in the following equipment during servicing and maintenance as well as prior to equipment dismantling or disposal: (i) stationery commercial and industrial refrigeration and air conditioning equipment; (ii) mobile refrigeration and mobile air-conditioning equipment; (iii) fire protection systems; (iv) cleaning machinery containing solvents; (b) to minimize refrigerant leakage from commercial and industrial air-conditioning and refrigeration systems during manufacture, installation, operation and servicing; (c) to destroy unneeded ozone-depleting substances where economically feasible and environmentally appropriate to do so.
MOP IX/8	Licensing	The Ninth Meeting of the Parties decided: 1. that the licensing system to be established by each Party should: (a) assist collection of sufficient information to facilitate Parties' compliance with relevant reporting requirements under Article 7 of the Protocol and decisions of the Parties; and (b) assist Parties in the prevention of illegal traffic of controlled substances, including, as appropriate, through notification and/or regular reporting by exporting countries to importing countries and/or by allowing cross-checking of information between exporting and importing countries; 2. to facilitate the efficient notification and/or reporting and/or cross-checking of information, each Party should inform the Secretariat by 31 January 1998 of the name and contact details of the officer to whom such information and requests should be directed. The Secretariat shall periodically prepare, update and circulate to all Parties a full list of these contact details; 3. that the Secretariat and Implementing Agencies should take steps to assist Parties in the design and implementation of appropriate national licensing systems; 4. that Parties operating under Article 5 may require assistance in the development, establishment and operation of such a licensing system and, noting that the Multilateral Fund has provided some funding for such activities, that the Multilateral Fund should provide appropriate additional funding for this purpose.
MOP VI/19 (b)	Recovery, recycling and reclamation	The Sixth Meeting of the Parties decided with respect to trade in previously used ozone-depleting substances, (d) to request all Parties with reclamation facilities to submit to the Secretariat prior to the Seventh Meeting of the Parties and on an annual basis thereafter a list of the reclamation facilities and their capacities available in their countries;
MOP VII/25	Customs training	The Seventh Meeting of the Parties requested the Executive Committee to provide specific support to low-volume-ODS-consuming countries (LVCs) by: (a) allocating sufficient funds for projects in low-volume-ODS-consuming countries to further strengthen and expand awareness and training programmes, especially in the area of refrigerant management; (b) supporting specialized assistance such as a workshop to establish regulatory and legislative measures required to facilitate the phase-out of ozone-depleting substances; (c) allowing financing of eligible retrofitting projects, in sectors vital to LVC economies on a case-by-case basis where this can be shown to be the best approach; (d) requesting the United Nations Environment Programme, due to its extensive experience with low-volume-ODS-consuming countries (LVCs), to take the lead in preparing an overall approach in addressing these needs; (e) providing funds to low-volume-ODS-consuming countries, on a regional basis, to organize **training workshops for their customs** and other officers on the harmonized system and other systems to control and monitor consumption of ozone-depleting substances; Approval of projects in low-volume-ODS-consuming countries and very low-volume-ODS-consuming countries should be based upon a more appropriate project-appraisal approach reflecting the particular circumstances encountered by the countries referred to above.
MOP VII/5	Recycled CFCs	The Seventh Meeting of the Parties decided, on the status of recycled CFCs and halons under the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, that the international transfers of controlled substances of the Montreal Protocol which are recovered but not purified to usable purity specifications prescribed by appropriate international and/or national organizations, including International Standards Organization (ISO), should only occur if the recipient country has recycling facilities that can process the received controlled substances to these specifications or has destruction facilities incorporating technologies approved for that purpose.
MOP XII/8 (3(a)	Task force on destruction technologies	The Twelfth Meeting of the Parties decided: 3. to request the Technology and Economic Assessment Panel: (a) to evaluate the technical and economic feasibility for the long-term management of contaminated and surplus ozone-depleting substances in Article 5 and non-Article 5 countries, including options such as long-term storage, transport, collection, reclamation and disposal of such ozone-depleting substances;
MOP XIX/12	Licensing	The Nineteenth Meeting of the Parties decided: 1. to remind all Parties of their obligation under Article 4B of the Protocol to establish an import and export licensing system for all controlled ozone-depleting substances; 2. to urge all Parties to fully and effectively implement and actively enforce their

Decision Number	Sector/ Sub-sector/Title	Decision Text
		systems for licensing the import and export of controlled ozone depleting substances as well as recommendations contained in existing decisions of the Parties, notably decisions IX/8, XIV/7, XVII/12, XVII/16 and XVIII/18; 3. that Parties wishing to improve implementation and enforcement of their licensing systems in order to combat illegal trade more effectively may wish to consider implementing domestically on a voluntary basis the following measures: (a) sharing information with other Parties, such as by participating in an informal prior informed consent procedure or similar system; (b) establishing quantitative restrictions, for example import and/or export quotas; (c) establishing permits for each shipment and obliging importers and exporters to report domestically on the use of such permits; (d) monitoring transit movements (trans-shipments) of ozone-depleting substances, including those passing through duty-free zones, for instance by identifying each shipment with a unique consignment reference number; (e) banning or controlling the use of non-refillable containers; (f) establishing appropriate minimum requirements for labelling and documentation to assist in the monitoring of trade of ozone-depleting substances; (g) cross-checking trade information, including through private-public partnerships; (h) including any other relevant recommendations from the ozone-depleting substances tracking study; 4. to request the Ozone Secretariat to continue to collaborate with the World Customs Organization in relation to possible actions by Parties on any new amendments to the Harmonized Commodity Description and Coding System with respect to ozone depleting substances and to report to the Meeting of the Parties on actions taken at the World Customs Organization.
MOP XVII/16	Customs training	The Seventeenth Meeting of the Parties decided: 1. to approve the terms of reference for a study on the feasibility of developing an international system of monitoring the transboundary movement of controlled ozone-depleting substances between Parties, as presented in Annex VI.3 to the present report, and to request the Ozone Secretariat to undertake such a study, to initiate the necessary tenders and to present the results to the Eighteenth Meeting of the Parties to the Montreal Protocol in 2006; 2. to invite the Ozone Secretariat to consult with other conventions or organizations who might benefit from the outcome of that study to contribute towards its work; 3. to urge all Parties, including regional economic integration organizations, to implement fully their obligations under Article 4B of the Montreal Protocol, in particular, the licensing systems for the control of imports, exports, re-exports (re-exports mean exports of previously imported substances) and, if technically and administratively feasible, transit of all controlled ozone-depleting substances, including mixtures containing them, regardless of whether the Party concerned is or is not recognized as the producer and/or importer, exporter or re-exporter of the particular substance or group of substances; 4. to request the Ozone Secretariat to revise the reporting format resulting from decision VII/9 to cover exports (including re-exports) of all controlled ozone-depleting substances, including mixtures containing them, and to urge the Parties to implement the revised reporting format expeditiously. The Ozone Secretariat is also requested to report back aggregated information related to the controlled substance in question received from the exporting/re-exporting Party to the importing Party concerned; 5. to invite Parties to submit information to the Ozone Secretariat by 30 June 2006 on any existing systems for exchanging information on import and export licenses between importing and exporting Parties; 6. to consider additional control measures with regard to the use of controlled ozone depleting substances in particular sectors or in particular applications, as this approach may effectively diminish illegal trade activities; 7. to encourage further work on the Green Customs initiative of the United Nations Environment Programme in combating illegal trade in controlled ozone depleting substances as well as further networking and twinning activities in the framework of regional networks aimed at the exchange of information and experience on both licit and illicit trade in controlled ozone depleting substances between the Parties, including enforcement agencies; 8. to request the Executive Committee to consider at its forty-eighth meeting the recommendations contained in the report of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol on the Evaluation of Customs Officers Training and Licensing System Projects to the twenty-fifth meeting of the Open-ended Working Group", in particular where they relate to customs training and other elements of capacity building that are needed in combating illegal trade in controlled ozone-depleting substances; 9. to approve a maximum amount of $200,000 from the Trust Fund of the Vienna Convention as a one-time measure to facilitate the feasibility study on developing a system for monitoring the transboundary movement of controlled ozone-depleting substances between the Parties.
MOP XVII/17	Implications of the environmentally sound destruction of concentrated and diluted sources of ODSs	The Seventeenth Meeting of the Parties decided: 1. to request the Technology and Economic Assessment Panel to prepare terms of reference for the conduct of case-studies in Parties operating under paragraph 1 of Article 5 of the Protocol, with regional representation, on the technology and costs associated with a process for the replacement of chlorofluorocarbon-containing refrigeration and air conditioning equipment, including the environmentally sound recovery, transport and final disposal of such equipment and of the associated chlorofluorocarbons; 2. that these studies should explore economic and other incentives which will encourage users to phase out equipment and ozone-depleting substances and to reduce emissions, as well as the viability and costs of setting up destruction facilities in countries operating under paragraph 1 of Article 5 of the Protocol, and that the said studies should include a regional analysis relating to the management, transport and destruction of chlorofluorocarbons; 3. also to request the Technology

Decision Number	Sector/ Sub-sector/Title	Decision Text
		and Economic Assessment Panel to review possible synergies with other conventions such as the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and their Disposal, the Rotterdam Convention on the Prior Informed Consent Procedure for Certain Hazardous Chemicals and Pesticides in International Trade and the Stockholm Convention on Persistent Organic Pollutants; 4. to request the Technology and Economic Assessment Panel to adopt the recovery and destruction efficiency parameter proposed in the Panel's report to the Open-ended Working Group at its twenty-fifth meeting as the parameter to be applied in developing the proposed study referred to above; 5. that said terms of reference shall be submitted to the Parties at the twenty-sixth meeting of the Open-ended Working Group, and that provision will be made for resources for this purpose in the 2006–2008 replenishment of the Multilateral Fund.
MOP XVII/18	Collection and disposition of non-reusable and unwanted ODS	The Seventeenth Meeting of the Parties decided to request the Technology and Economic Assessment Panel and its technical options committees to submit to the Multilateral Fund secretariat available data to enable the Multilateral Fund secretariat to assess the extent of current and future requirements for the collection and disposition (emissions, export, reclamation and destruction) of non-reusable and unwanted ozone-depleting substances in Article 5 Parties in pursuance of decision 47/52.
MOP XVIII (annex V)	Recovery, reclamation and recycling	The Eighteenth Meeting of the Executive Committee decided to consider the provision of recovery/recycling equipment to commercial refrigeration companies in projects related to servicing and recovery/recycling in the refrigeration sector in the future.
MOP XVIII/18	Customs training	The Eighteenth Meeting of the Parties decided: 1. to urge all Parties to implement fully Article 4B of the Protocol as well as to take into account recommendations contained in existing decisions of the Parties, notably decisions IX/8, XIV/7, XVII/12 and XVII/16; 2. to encourage all Parties to consider taking effective action to improve monitoring of transboundary movement of controlled ozone-depleting substances including, as appropriate, a better utilization of existing systems under other multilateral agreements for tracking trade in chemicals and to exchange relevant information specifically in the context of trade in ozone-depleting substances between Parties operating under paragraph 1 of Article 5 of the Protocol and Parties not so operating; 3. to encourage all Parties which have experience in using the United Nations commodity trade statistics database, commonly known as "UNComtrade", and the publicly available software Global Risk Identification and Detection, commonly known as "eGRID", which are used to monitor trade in ozone-depleting substances, to provide information on the suitability and costs of those tools to the Ozone Secretariat, which will report such information at the twenty-seventh meeting of the Open ended Working Group and subsequently at the Nineteenth Meeting of the Parties in 2007; 4. to encourage the United Nations Environment Programme's Compliance Assistance Programme to continue its efforts to train ozone officers and customs officers on best practices and to raise awareness and to disseminate examples of best practices for national licensing systems and regional cooperation to combat illegal trade; 5. to invite all Parties to submit written comments by 31 March 2007 to the Ozone Secretariat on the report, focusing in particular on their priorities with respect to the medium- and longer term options listed in the study and/or all other possible options with a view to identifying those cost-effective actions which could be given priority by the Parties both collectively through further action to be considered under the Protocol and at the regional and national levels; 6. to request the Ozone Secretariat to provide a compilation of those comments for consideration at the twenty-seventh meeting of the Open-ended Working Group and subsequently at the Nineteenth Meeting of the Parties in 2007.
MOP XX/7	Environmentally sound management of banks of ozone-depleting substances	The Twentieth Meeting of the Parties decided: 1. to invite Parties, international funding agencies, including the Multilateral Fund and the Global Environment Facility, and other interested agents to enable practical solutions for the purpose of gaining better knowledge on mitigating ozone-depleting substance emissions and destroying ozone-depleting substance banks, and on costs related to the collection, transportation, storage and destruction of ozone depleting substances, notably in Parties operating under paragraph 1 of Article 5 of the Montreal Protocol; 2. to request the Executive Committee of the Multilateral Fund to consider as a matter of urgency commencing pilot projects that may cover the collection, transport, storage and destruction of ozone-depleting substances. As an initial priority, the Executive Committee might consider projects with a focus on assembled stocks of ozone-depleting substances with high net global warming potential, in a representative sample of regionally diverse Parties operating under paragraph 1 of Article 5. It is understood that this initial priority would not preclude the initiation of other types of pilot projects, including on halons and carbon tetrachloride, should these have an important demonstration value. In addition to protecting the ozone layer, these projects will seek to generate practical data and experience on management and financing modalities, achieve climate benefits, and would explore opportunities to leverage co-financing; 3. to encourage Parties to develop or consider further improvements in the implementation of national and/or regional legislative strategies and other measures that prevent the venting, leakage or emission of ozone depleting substances by ensuring: (a) proper recovery of ozone-depleting substances from equipment containing

Decision Number	Sector/ Sub-sector/Title	Decision Text
		ozone depleting substances, during servicing, use and at end of life, where possible in applications such as refrigeration, air conditioning, heat pumps, fire protection, solvents and process agents; (b) the use of best practices and performance standards to prevent ozone-depleting substance emissions at the end of the product life cycle, whether by recovery, recycling, reclamation, reuse as feedstock or destruction; 4. to encourage all Parties to develop or consider improvements in national or regional strategies for the management of banks, including provisions to combat illegal trade by applying measures listed in decision XIX/12; 5. to invite Parties to submit their strategies and subsequent updates to the Ozone Secretariat as soon as possible for the purpose of sharing information and experiences, including with interested stakeholders of other multilateral environmental agreements, such as the United Nations Framework Convention on Climate Change and its Kyoto Protocol and the Basel Convention on the Control of Transboundary Movements of Hazardous Wastes and Their Disposal. The strategies will be placed on the Ozone Secretariat website, which will be updated regularly; 6. to note that any project implemented pursuant to the present decision when applicable should be done in conformity with national, regional, and/or international requirements, such as those mandated by the Basel Convention and Rotterdam Convention; 7. to request the Technology and Economic Assessment Panel to conduct a comprehensive cost-benefit analysis of destroying banks of ozone-depleting substances taking into consideration the relative economic costs and environmental benefits, to the ozone layer and the climate, of destruction versus recycling, reclaiming and reusing such substances. In particular, the report should cover the following elements: (a) consolidation of all available data on ozone-depleting substance banks and summary of this information identifying the sectors where recovery of ozone-depleting substances is technically and economically feasible; (b) respective levels of likely mitigation amounts, based on the categorization of reachable banks at low, medium, and high effort according to substances, sectors, regions, and where possible, sub regions; (c) assessment of associated benefits and costs of respective classes of banks in terms of ozone depleting potential and global warming potential; (d) exploration of the potential "perverse incentives" or other adverse environmental effects that may be associated with certain mitigation strategies, in particular related to recovery and recycling for reuse; (e) consideration of the positive and negative impacts of recovery and destruction of ozone-depleting substances, including direct and indirect climate effects; (f) consideration of the technical, economic and environmental implications of incentive mechanisms to promote the destruction of surplus ozone-depleting substances; 8. to request the Technology and Economic Assessment Panel to provide an interim report in time for dissemination one month before the twenty-ninth meeting of the Open ended Working Group and to provide the final report one month before the Twenty First Meeting of the Parties to the Montreal Protocol; 9. to request the Ozone Secretariat, with the assistance of the Multilateral Fund Secretariat, to consult with experts from the United Nations Framework Convention on Climate Change, the Global Environment Facility, the Executive Board of the Clean Development Mechanism, the World Bank and other relevant funding experts to develop a report on possible funding opportunities for the management and destruction of ozone-depleting substance banks, to present the report to the Parties for review and comments one month prior to the twenty ninth meeting of the Open-Ended Working Group and, if possible, to convene a single meeting among experts from the funding institutions; 10. that the report referred to in paragraph 9 of the present decision would focus on describing possible institutional arrangements, potential financial structures, likely logistical steps and the necessary legal framework for each of the following, if relevant: (a) recovery; (b) collection; (c) storage; (d) transport; (e) destruction; (f) supporting activities; 11. to request the Ozone Secretariat to convene a workshop among Parties that will include the participation of the Montreal Protocol assessment panels, the secretariat of the Multilateral Fund and the Fund's implementing agencies, and seek the participation of the secretariats of other relevant multilateral environmental agreements, non governmental organizations and experts from funding institutions for the discussion of technical, financial and policy issues related to the management and destruction of ozone depleting substance banks and their implications for climate change; 12. that the above workshop will be held preceding the twenty-ninth meeting of the Open ended Working Group and that interpretation will be provided in the six official languages of the United Nations; 13. further to consider, at the twenty-ninth meeting of the Open-ended Working Group, possible actions regarding the management and destruction of banks of ozone-depleting substances in the light of the report to be provided by the Technology and Economic Assessment Panel under paragraph 7 above, the working group report to be provided by the Secretariat under paragraph 9 above and the discussions emanating from the workshop under paragraph 11 above; 14. to request the Ozone Secretariat to communicate the present decision to the Secretariat of the United Nations Framework Convention on Climate Change and its Kyoto Protocol in time for possible consideration at the fourteenth meeting of the Conference of the Parties to the Convention and fourth meeting of the Conference of the Parties serving as the Meeting of the Parties to the Kyoto Protocol on the understanding that the decision is without prejudice to any discussions that may be held on ozone-depleting substance banks within their forum.

Decision Number	Sector/ Sub-sector/Title	Decision Text
MOP XXV/8	Refrigerant servicing	The Twenty-fifth Meeting of the Parties decided: Recalling the parties' decisions on previous terms of reference for studies on the replenishment of the Multilateral Fund for the Implementation of the Montreal Protocol, Recalling also the parties' decisions on previous replenishments of the Multilateral Fund, 1. To request the Technology and Economic Assessment Panel to prepare a report for submission to the Twenty-Sixth Meeting of the Parties, and to submit it through the Open-ended Working Group at its thirty fourth meeting, to enable the Twenty-Sixth Meeting of the Parties to take a decision on the appropriate level of the 2015–2017 replenishment of the Multilateral Fund; 2. That, in preparing the report referred to in paragraph 1 of the present decision, the Panel should take into account, among other things: (f) The need to allocate sufficient resources to the activities in the servicing sector in stage II of hydrochlorofluorocarbon phase-out management plans through technical assistance such as recovery, training and other necessary activities;
MOP XXVIII/2 (para.15 (c))	Guidelines and cost calculation	To request the Executive Committee, in developing new guidelines on methodologies and cost calculations, to make the following categories of costs eligible and to include them in the cost calculation: (c) For the servicing sector: (i) Public-awareness activities; (ii) Policy development and implementation; (iii) Certification programmes and training of technicians on safe handling, good practice and safety in respect of alternatives, including training equipment; (iv) Training of customs officers; (v) Prevention of illegal trade of hydrofluorocarbons; (vi) Servicing tools; (vii) Refrigerant testing equipment for the refrigeration and air-conditioning sector; (viii) Recycling and recovery of hydrofluorocarbons;
MOP XXVIII/2 (para.16)	HFC cost guidelines	To request the Executive Committee to increase in relation to the servicing sector the funding available under Executive Committee Decision 74/50 above the amounts listed in that decision for parties with total hydrochlorofluorocarbon baseline consumption up to 360 metric tonnes when needed for the introduction of alternatives to hydrochlorofluorocarbons with low-GWP and zero-GWP alternatives to hydrofluorocarbons and maintaining energy efficiency also in the servicing/end-user sector;

Annex II

MULTILATERAL FUND EVALUATIONS RELATED TO THE REFRIGERATION SERVICING SECTOR

Title	Description	Key Findings
Desk study on the recovery and recycling projects (PCRs) (UNEP/OzL.Pro/ExCom/31/18)	This document presents a desk study on recovery and recycling (R&R) projects, excluding those that are part of a refrigerant management plan (RMP). For this desk study, 50 completed R&R projects and 41 project completion reports (PCRs) were studied. Field assessments of R&R projects were conducted by consultants during the evaluation of training projects.	The implementation of an RMP in low-volume consuming (LVCs) countries is an efficient means to reduce CFC emissions. Training programmes for trainers, technicians and customs officers are necessary to implement good refrigeration management practices and to efficiently monitor and control the import of ODS. However, the motivation to recover and recycle is still very low because there is no financial benefit, and the limited purchasing power of end users favours the large-scale use of second-hand refrigerators from abroad, which implies frequent repairs resulting in an increase in ODS consumption. Regulations prohibiting the imports of such refrigerators, coupled with customs training, will reduce this incidence. (Decision 31/15)
Report on the evaluation of training projects (UNEP/OzL.Pro/ExCom/31/20)	This report is a synthesis of the desk study and the 10 country studies of training projects. The objective was to review: training strategies; the planning of training projects by IAs and the NOUs; the design and delivery of training; and the results, impact and sustainability of training projects.	Training projects developed for countries have been well defined and developed in collaboration with the NOUs, national experts and associations. The timing and funding for training activities is usually adequate to target most of the trainees in the formal sector. The study recommended to integrate a comprehensive plan for sector phase-out in all future non-investment activities in the sector; to organize a train-the-trainers and a “hands on” training programmes for technicians, along with a certification system; to introduce awareness-raising activities following new policies requirements; to strengthen and involve local associations; and to have innovative solutions to train the informal sector. (Decision 31/17)
Extended desk study on RMP evaluation (UNEP/OzL.Pro/ExCom/39/14)	The desk study evaluation, with selected country visits in LVC countries, was planned to assess the progress achieved in implementing RMPs. It focused on R&R and training activities as well as policy measures in a country compliance context.	The experiences from the countries visited suggested that difficulties in implementing RMPs are fairly similar in LVC countries across the region, including: the price difference between CFCs and alternative substances; the validity and reliability of import/export data; and the implementation complications brought by the informal sector. The report concluded, *inter alia*, that the NOUs play a key role in coordinating and implementing projects, improved by strengthening their institutional basis. Cooperation with the industry and the associations has proven important in achieving compliance. Recycling centres are under-utilised or not utilised at all, but retrofitting programmes can be effective if there is a good import licensing system, a reliable control of the level of CFC consumption, a narrowing price differential between controlled and alternative refrigerants, and the introduction of economic incentives to enterprises.
Final report on the evaluation of the implementation of RMPs (UNEP/OzL.Pro/ExCom/41/7)	The synthesis report of the evaluation of the RMPs reassesses the first phase of the evaluation (desk study and country evaluation reports) and analyzes an additional sample of seven LVC countries. The report presents findings, lessons learned, and recommendations to improve the effectiveness of RMPs and to enhance the capacity of LVC countries to achieve CFC phase-out in the refrigeration servicing sector.	RMPs have played a decisive role in coordinating activities for the reduction of CFC consumption in the servicing sector and in accelerating the phase-out process. Most countries visited had complied with the freeze target by 1999. The most important factors contributing to this progress were enforced legislation, strict import controls reducing the availability of CFCs and adequate training of customs officers and refrigeration technicians. In all countries where such progress can be reported, close cooperation between the NOU and the stakeholders (i.e., importers, distributors and workshops) has been established. Political commitment and the capacity of the NOUs play an important role in successful implementation. (Decision 41/5)

Title	Description	Key Findings
Desk study on the evaluation of customs officer training and licensing system projects (UNEP/OzL.Pro/ExCom/44/12)	The objective of this desk study is to identify the results and impact of the implementation of customs training projects and the adoption of import licensing systems and, subsequently, to identify evaluation issues for further analysis and to prepare the field visits.	ODS import licensing and customs training activities were first funded as stand-alone and regional projects, but their rapid increase saw them included in RMPs. Rigorous application of import licenses and the completion of phase-out projects to reduce demand are the most productive methods of controlling international trade and reducing illegal trade. To overcome the implementation issues these projects face, the evaluation recommended *inter alia* focusing on awareness-raising of customs officers regarding ODS issues, and building a specialized customs team to deal with environmental problems, strengthening local/provincial environment authorities to actively support the control procedures, and relying on technicians, university staff or governmental laboratories to assist customs in identifying suspicious shipments.
Executive Committee Report on the Evaluation of Customs Officers Training and Licensing System Projects (UNEP/OzL.Pro.WG.1/25/6)	The report was prepared in response to decision XIV/7, paragraph 6 of the 14th Meeting of the Parties to the Montreal Protocol and presented to the 25th Meeting of the Open-ended Working Group (OEWG) in June 2005.	The recommendations of the OEWG were: Improving the involvement of customs, including the higher levels of hierarchy, in the ODS phase-out; amending and upgrading the legislation framework in those Article 5 countries where it is incomplete, and improving enforcement and regional cooperation; accelerating and assisting implementation of customs training, including regional activities, where appropriate; and amending training materials and contents and putting supporting information materials and identifiers to effective use.
Extended desk study on the evaluation of national phase-out plans (NPPs) (UNEP/OzL.Pro/ExCom/45/12)	The objective of the evaluation is to undertake a review of experiences under the new modalities (national phase-out plans (NPPs), sector plans and terminal phase-out management plans (TPMPs)) with a view to determining whether the anticipated benefits have accrued and remain useful and relevant, or need adjustment or updating.	The NPPs and TPMPs are designed to accelerate policy development, facilitate implementation and enhance awareness amongst stakeholders. The commitments stipulated in the agreements signed by governments have made the work of the PMUs/NOUs easier when it comes to accelerating the implementation of regulations, and led to inter-departmental cooperation and shared databases that improve monitoring and enforcement. Predictable funding assures a level playing field and allows industries to commit to a specific phase-out plan, while helping them adjust their production and consumption patterns based on the timing of future activities and framework conditions. The phase-out plans improved the implementation of policy and regulations. (Decision 45/11)
Final report on the intermediate evaluation of RMPs and NPPs in non-LVC countries focusing on the refrigeration sector (UNEP/OzL.Pro/ExCom/48/12)	The evaluation of RMPs in non-LVC countries follows the earlier evaluation of RMPs in LVC countries (UNEP/Ozl.Pro/ExCom/41/7). As per decision 46/7, the evaluation of RMPs in non-LVCs and of NPPs was combined and focused on the refrigeration servicing sector and the management aspects of the NPPs.	RMPs have played an important role in establishing legal frameworks and training programmes for technicians and customs officers, which are generally less advanced in countries without a RMP. The NPPs are favoured by the additional management capacities created with the PMUs. The NPPs enabled countries without a RMP to address the servicing sector and related legislation and training requirements in a coordinated way, while increasing equipment, trained technicians and customs officers, and completed legislation and enforcement mechanisms. The results of R&R projects implemented individually or under RMPs have in most cases fallen short of expectations. Certification of technicians and reporting on R&R activities performed by contracted service shops should become mandatory and should be combined with provisions that unused equipment can be taken back and transferred to other users. It is recommended to update legislation for additional legal measures such as: a ban on import and export of CFC-based second-hand refrigeration equipment, specification of a system of sanctions in cases of violation of legal regulations, improvement of the mechanisms of import quota allocations under the licensing system, and enhancement of cooperation between the NOU and Customs. (Decision 48/10)
Desk study on the evaluation of management and monitoring of NPPs (UNEP/OzL.Pro/ExCom/51/13)	This evaluation complements the evaluation of RMPs and NPPs in non-LVCs (UNEP/Ozl.Pro/ExCom/48/12), focusing on the refrigeration sector and	The phase-out programmes reviewed are, in general, on target. The evaluation raised the question of the cost-effectiveness of the project management units (PMU) frameworks, which can either be a sub-set of the NOU or an entirely separated entity working remotely. Therefore, it is essential to ensure that the capacity building, especially working with the private and informal sectors, is not confined to the PMU, but communicated on an on-going basis to the NOU. No lack of coordination

Title	Description	Key Findings
	not analyzing in depth the management, monitoring and verification aspects of the NPPs. The evaluation and the field visits reviewed the indicators for assessing implementation delays and difficulties and analyzed the coordination between several IAs implementing a NPP.	or delays was reported between the agencies. The IAs need to assist the PMU and NOU in the development and implementation of the associated legislation and regulations, supported by capacity building, institutional strengthening, stakeholder participation and development of ownership. It is thus necessary to ensure that the NPP is mainstreamed into the national plans and policies of the country, which requires cooperation with other governmental agencies. (Decision 51/12)
Extended desk study on the incentive programmes for retrofits (UNEP/OzL.Pro/ExCom/52/8)	The objective of the extended desk study is to review the experience available to date in the implementation of the incentive programmes approved as individual activities under existing or new RMPs.	It can be concluded that the objectives of the incentive programmes were achieved for completed projects. The cost-effectiveness of incentive programmes proved to be at par and even more attractive than other activities traditionally included in RMPs, TPMPs and NPPs. Incentive programmes in the refrigeration servicing sector should be considered as one of the priorities, along with training of refrigeration technicians and R&R equipment. Defining boundary conditions for the incentive programme without prescribing a strict methodology allowed the Governments the flexibility to adapt the implementation of the programme to local circumstances and assured success while meeting the conditions. The case studies confirmed that it is essential for a country to meet the pre-requisites established by the Executive Committee for approval of incentive programmes, such as strict enforcement of quotas. (Decision 52/6)
Desk study on the evaluation of terminal phase-out management plans (TPMPs) (UNEP/OzL.Pro/ExCom/55/8)	This evaluation analyzes the role of TPMPs in LVC countries for achieving CFC phase-out in the servicing sectors and enabling compliance with the 85 per cent reduction target for 2007. It evaluates *inter alia,* the coordination between the lead and cooperating agencies, the quality of monitoring and reporting, sustainability of measures and institutional capacities, and lessons learned for the final phase-out of CFCs and the preparation of phase-out plans for HCFCs.	The evaluation noted that the establishment of PMUs in LVC countries has to be considered on a country-by-country basis, as some resulted in direct competition with the NOUs. The review of TPMPs demonstrated the absence of standardized methodology in conducting surveys and collecting ODS consumption data in Article 5 countries and in LVC countries in particular. Achieving early CFC phase-out is possible with: sound design, realistic planning allowing sufficient time to start up activities, commitment and cooperation on the part of the Government and stakeholders, and a full-time staff or a PMU, dedicated to implementing and monitoring the TPMP.
Final report on the evaluation of terminal phase-out management plans (UNEP/OzL.Pro/ExCom/58/8)	This synthesis report summarizes the evaluation reports on the role and the effects of TPMPs, which have been prepared in several LVC countries, and assesses the findings of a sample of country case studies carried out in eight LVC countries.	Early CFC phase-out has generally been achieved through an efficient public-private partnership forum consisting of all stakeholders, a strict implementation of quota system and the development of market conditions rather than through investment activities. The sustainability is ensured by the efficient operation and enforcement of the import licensing system and continued monitoring and public awareness campaigns. Experience with the phase-out of CFCs can and should be used for the development of a strategy of HCFC phase-out. Although none of the countries covered by this sample have established a PMU, they are all in compliance with the TPMP agreement and the CFC phase-out targets. However, they would benefit from strengthening their monitoring to provide regular and reliable data on R&R operations. Most countries benefited from the flexibility clause, which made it possible to shift resources from one activity to another if deemed necessary to achieve targets. (Decision 58/6)

Title	Description	Key Findings
Desk study on the evaluation of the preparatory phase of the phasing out of HCFCS (decisions 68/9 and 69/12) (UNEP/OzL.Pro/ExCom/71/14)	The study aims to evaluate how the guidelines for the preparation of HPMPs have been used for the development of the stage I HPMPs, taking into account the preparation process itself and the resulting HPMPs. It also reviewed the reasons for delays in project preparation, the overarching strategy, main initiatives, policy and regulatory measures, and co-financing issues.	The preparation of stage I of HPMPs has taken significantly longer than the preparation of country programmes, RMPs and TPMPs. Although the most important reasons for delays (i.e., lack of experience with HCFC data collection, lack of guidelines, and the need to complete CFC activities) are not likely to occur again, the evidence suggests that the timely preparation of stage II would benefit from increased technical assistance to low- and medium-volume consuming countries. The technical assistance for the RAC servicing sector requires updated guidelines for technology selection and assessment of associated environmental impact. Policy assistance for stage II for LVC countries should concentrate on far-reaching measures, such as the support of energy efficiency, or the safe use of natural refrigerant alternatives. (Decision 71/25)
Desk study on the evaluation of HCFC phase-out projects in the refrigeration and air-conditioning manufacturing sector (UNEP/OzL.Pro/ExCom/75/9)	The desk study on the evaluation of RAC manufacturing projects has the objective of providing information on the progress made in the phasing-out of HCFCs in this sector and examines projects approved in various RAC sub-sectors in 25 countries, addressing issues related to low-GWP alternatives.	The policy framework for HCFC phase-out is quite homogeneous with regard to the control of import/export and trade of HCFCs and the ban of new production facilities relying on HCFCs. However, the standards for the use of alternative technologies are lacking in some cases and need to be thoroughly addressed. Every country evaluated used energy efficiency as a criterion for selection of the alternative technology, and many used it to establish synergies with other environmental agreements. It proved cost-effective to build on the CFC-related enforcement procedures and monitoring tools to control the use of HCFC. The slow development of national standards for the use of some alternatives has hindered the start of operations and the timely completion of a significant number of conversions towards low-GWP flammable or toxic alternatives. The projects using these alternatives included additional training and safety-related equipment for enterprises and technicians with the corresponding changes in project costs, and took steps towards implementing proper standards and codes. Eighty per cent of projects presented substantial delays mainly due to administrative and project management issues, such as staff rotation at the NOU. The demonstration projects have confirmed the feasibility and acceptability of the new technology and products in the local market of end-users and manufacturers alike. (Decision 75/7)
Final report on the evaluation of HCFC phase-out projects in the refrigeration and air-conditioning manufacturing sector (UNEP/OzL.Pro/ExCom/77/9 & Corrs.1 and 2)	The second phase of the evaluation of RAC manufacturing sector, based on the collection and analysis of information gathered at the enterprise level during field visits in several countries, assessed the progress made in the phasing out of HCFC in the RAC manufacturing sector in projects where the conversion process has been completed or is close to completion.	The evaluation concluded the importance of selecting alternative refrigerants and their operating systems based on a thorough analysis that includes energy efficiency, environmental impact, safety, economic considerations, as well as social consequences. Enterprises should evaluate the availability and/or limitations of equipment and refrigerants before converting. Lack of market demand and the servicing sector's reluctance to deal with flammable refrigerants has resulted in the manufacturing of high-GWP-based equipment in some enterprises, despite the fact that they had completed their conversion and developed prototypes for HFC-32. While large enterprises facing this issue may convert one or several production lines while increasing the production on other lines with high-GWP equipment, smaller enterprises cannot do this, as it would jeopardize their financial viability. It is recommended that countries and IAs report to the Executive Committee on the causes and strategies to address this situation, and enable the enterprises to start manufacturing equipment based on the agreed technology. In some countries, incremental operating costs were paid even if the enterprise was not manufacturing the agreed technology. Thus, sustainability is still an issue with the introduction of particularly R-290 and HFC-32 technologies and equipment. The technology selected to replace HCFC-22 in high ambient temperatures, while maintaining its condensing proprieties, is a critical issue. Countries should introduce licensing and import permits for all chemicals being used as refrigerants, as well as mandatory standards, proper training of servicing technicians and awareness campaigns regarding flammable, toxic and/or high-pressure refrigerants.

Title	Description	Key Findings
		Energy efficiency standards should be made mandatory for RAC equipment, with labelling requirements and, where possible, incentives such as tax exemption should be given. (Decision 77/6)
Desk study for the evaluation of the refrigeration servicing sector (UNEP/OzL.Pro/ExCom/80/10 and Corr.1)	The desk study analyses the progress made in the phase-out of HCFCs in the refrigeration servicing sector, focusing on the contribution of specific activities to reduce HCFCs, on the impact arising from the introduction of low-GWP alternatives, and challenges encountered during project implementation. The evaluation draws lessons from these projects to help future similar activities in the sector and attempts to identify potential issues that could be related to the phasing down of HFCs.	The results of HPMP implementation have been very positive so far. However, the reporting record of some of the countries points to the need for more focused assistance concerning HCFC consumption monitoring and reporting, which may affect future endeavours. Key lessons learned included: the importance of encouraging domestic innovative solutions to HCFC phase-out; the need to support training for handling of flammable or toxic refrigerants and the corresponding regulations and standards; the lack of availability of skilled technicians trained on new alternatives; the need to identify suitable alternatives for high-ambient temperature countries, particularly for the AC industry; the importance of strengthening the bridges between the NOU/PMU and other authorities in the country and empowering them with respect to central governments; the importance of training customs officers on the import/export licensing and quota systems, and ensuring the sustainability of training programmes by including the training modules in the curricula of the customs training institutions; and that refrigerant losses are mainly due to old equipment, which could be reduced and prevented by regular servicing and maintenance. (Decision 80/8)
Preliminary report for the second phase of the evaluation of the refrigeration servicing sector (UNEP/OzL.Pro/ExCom/81/7)	The preliminary synthesis report focused on the contribution of specific activities within servicing sector plans to reduce HCFCs, on the impact on servicing arising from the introduction of low-GWP alternatives, and on challenges encountered during project implementation in the field evaluation visits carried out before the 81st meeting, namely in Chile, Grenada, India, Oman and Samoa.	The HPMP implementation has had outstanding results, which may be attributed to the “cascade effect" of all the initiatives implemented within the HPMPs. It has achieved HCFC consumption reductions beyond countries’ obligations, has leveraged funding resources by building on the infrastructure supported during the CFC phase-out and will, in turn, reinforce the building blocks for the HFC phase-down. Some of the main achievements are: the demonstration projects facilitated the transition to low-GWP technologies by identifying common barriers to the adoption of new technologies; and the local RAC associations and training schools are strategic partners for HPMP design and implementation. Findings also show that there is a need for accessible and early adoption of new standards involving technical and financial support; that technical assistance may be necessary to design business models adapted to local markets for the sustainability of RRR systems; that the adoption of the new alternative technologies is hampered by their high cost, safety and security issues, and the lack of local expertise when dealing with flammable, toxic or high pressured refrigerant; and that there is a general unavailability of equipment and servicing tools in the local market. (Decision 81/5)
Final report on the evaluation of the refrigeration servicing sector (UNEP/OzL.Pro/ExCom/82/11)	The synthesis report aims to provide a thorough analysis of the project implementation in the refrigeration servicing sector in a sample of countries, formulates lessons learned for improving future similar projects, and assesses potential issues that could be related to the phasing down of HFCs in the servicing sector.	The HPMP implementation has achieved HCFC consumption reductions above and beyond the Montreal Protocol obligations. HPMPs have leveraged the Multilateral Fund resources by building on the institutional and physical infrastructure created by the CFC phase-out, which will be emulated for the HFC phase-down. Key findings from the synthesis show that training of RAC technicians is the activity that has had the most impact across all countries. Similarly, the establishment of policy and regulatory frameworks has proven to be a powerful tool for compliance. On the other hand, the establishment of refrigerant R&R networks still needs to provide consistent measurable results and seems to be lacking an attractive and sustainable economic model adapted to each local condition. Projects would benefit from a streamlined administration process and a more independent and stable NOU, benefiting from additional operational assistance. Very low-volume consuming countries reported the need for additional assistance for monitoring and reporting.

Annex III

GLOBAL PRODUCTS DEVELOPED BY UNEP IN COOPERATION WITH INTERNATIONAL ORGANIZATIONS TO ASSIST THE REFRIGERATION SERVICING SECTOR IN ARTICLE 5 COUNTRIES

SUMMARY OF RELEVANT TOOLS

1. UNEP OzonAction has re-focused its clearinghouse activities to develop tools that can be utilized by different stakeholders at the local level. For this purpose, OzonAction partnered with several international organizations and associations to develop products that are technologically up-to-date and easy to use.

2. Table 1 summarizes the list of OzonAction key partnerships against relevant products and tools that can be utilized by A5 countries while implementing their phase-out/phase-down programs and projects.[60]

Table 1. List of OzonAction key partnerships and relevant products and tools

Partner*	Product	Availability	Who could benefit
ASHRAE	Refrigerants Literacy: E-learning course with international certificate	(English) Available	Government officials, buildings owners, NOUs, consultants, other individuals who wish to learn about refrigerant progression, classification, applications and basic good management practices.
		(Spanish) Nov18	
		(French) Feb-19	
	Sound Management of Refrigerants: E-learning course with international certificate	(English) Nov-18	Servicing technicians and engineers as well as servicing contractors and building managers.
		(Spanish) Mar-19	
		(French) Mar-19	
	Refrigerant Management for Future Engineers (University Program)	Available	Engineering students: full-semester elective course on refrigerant management, designed as per academic requirements, offered at engineering universities and colleges.
EPEE	HFCs Outlook Model	Second pilot stage ongoing with eight countries.[61] Available to all countries in early 2019	NOUs that create a scenario model about HFCs vs. HCFCs projection (as substances and products based on those substances) against MP compliance targets.
AREA	Universal Training Kit	Mar-19	Training institutes and centres in A5 countries: the modular training kit can be used directly to build the desired format of any training course (subject/target groups/duration) through an online portal.
AHRI	Refrigerant Driving License (RDL)	Pilot stage ongoing with six countries.[62] Rollout to all countries expected in mid-2019	Industry stakeholders and governments: global industry-based qualification program on sound management of refrigerants, with international certificate recognized by the RAC industry.[63]

[60] It does not include information publications and events/functions that are developed in cooperation with partners, such as factsheets, technology briefs, O2C Roadshows, technical symposia/events that are already listed in the document titled "OzonAction list of products and tools."

[61] Bosnia and Herzegovina, Dominican Republic, Gabon, Guatemala, Honduras, Mali, Senegal and Sri Lanka.

[62] Grenada, Suriname, Trinidad & Tobago, Rwanda, Maldives and Sri Lanka.

[63] RDL Industry supporting group includes: ABRAVA, ACAIRE, AREA, ASHRAE, EPEE, JRAIA, Refrigerant Australia, The Alliance.

Partner*	Product	Availability	Who could benefit
JRAIA	Risk Assessment Model (Roadmap) for use of flammable refrigerants	Part of PRAHA-II project. Ready by April 2019	Participating countries; all regions of the world with high ambient temperatures: a roadmap for building local risk assessment models, analysing risks and measures to be considered when using flammable refrigerants in the logistics (non-manufacturing) process, i.e. installation, operation and servicing of residential AC applications.
GFCCC, IIR, FAO & IEA	Cold Chain Database Model	Feb-19	Countries: A database model assisting in sorting and classifying cold-chain-related applications for better decision making about technology selection and phase-out/phase-down programs. The model will be offered as a tool that can be used during the preparation of Stage II of HPMPs, HFC plans and any relevant local surveys.
BFS	Good Practice Videos & Mobile App	Available	Technicians: a mobile app and a set of short educational videos about best practices in refrigeration servicing.
WCO	Customs E-Learning	Available	Customs and enforcement officers worldwide: a series of interactive training modules on the Montreal Protocol, legal trade facilitation and the prevention of illegal trade in ODS and alternatives.
UNODC / WCO	Customs Training Manual, Risk profiling guide	Available	Customs officers: a comprehensive guide to the Montreal Protocol and illegal trade issues. It provides guidance on the delivery of customs training workshops. The risk profiling guide (in development) provides guidance on applying intelligence-led enforcement to ODS trade.

***** ASHRAE: American Society of Heating, Refrigerating and Air-Conditioning Engineers; EPEE: European Partnership for Energy and Environment; AREA: European association of refrigeration, air conditioning and heat pump (RACHP) contractors; AHRI: Air-Conditioning, Heating and Refrigerating Institute; JRAIA: Japan Refrgeration and Air Conditioning Industry Association; GFCCC: Global Food Cold Chain Council; IIR: International Institute of Refrigeration; FAO: Food and Agriculture Organization; IEA: International Energy Agency; BFS: Bundesfachschule Kälte-Klima-Technik; WCO: World Customs Organization; UNODC: UN Office of Drugs & Crime.

3. The formal framework of cooperation between UNEP and ASHRAE includes joint international and regional technical events; strengthening refrigeration and air-conditioning associations in Article 5 countries; facilitating access of Article 5 countries to ASHRAE's knowledge tools; developing joint e-learning training courses and outreach materials; developing international guidelines (assessment program) for good management of refrigeration and air-conditioning installations; participation in ASHRAE's refrigeration and research committees to ensure that the needs of Article 5 countries are known to ASHRAE for its standards; research and global activities.

4. UNEP has also established partnerships with other international and regional bodies and initiatives, including the Global Refrigerant Management Initiative (GRMI); Bundesfachschule Kälte-Klima-Technik (BFS); the China Household Electric Appliances Association (CHEAA); the China Trust Fund; the Emirates Authority For Standardization and Metrology (ESMA); the European Partnership for Energy and the Environment (EPEE); the Pacific Islands Forum Fisheries Agency (FFA); the Secretariat of the Pacific Community (SPC); the Green Customs Initiative (GCI); the Gulf Cooperation Council (GCC) Secretariat; and the League of Arab States (LAS) Secretariat.

**Refrigeration servicing sector:
UNEP OzonAction tools, products and services**

Introduction

5. For the majority of Article 5 countries, the refrigeration servicing sector continues to be the largest, or only, consumer of ODS and is therefore one of the most important sectors being addressed by the Multilateral Fund. The possibility of addressing HCFC phase-out concurrently with the HFC phase-down could potentially allow for a more holistic, robust and comprehensive approach to assist the sector in reducing consumption, ensuring safe handling and optimal equipment operation, thus reducing energy consumption. Servicing technicians and operators need to be properly trained to safely commission, service, repair and decommission equipment based on alternative technologies (flammable, higher-toxicity, higher-pressure). HPMPs provide countries with an opportunity to make the right technology choices, in favour of non-HCFC and non-HFC, low-GWP refrigerants. Over the last few years, CAP has widened its scope and outreach to forge new partnerships, supporting activities for sustainable technician training and good servicing practices, as well as a harmonized model RAC certification programme for Multilateral Fund-wide use.

6. This document provides an overview and a brief explanation of OzonAction tools, products and services that have already been developed and that are in progress for the refrigeration servicing sector.

I. PUBLICATIONS AND GUIDES

Ozone and Climate Benefits in the RAC Sector

7. A two-volume guide for technical and servicing technicians, and for purchasers/decision makers. The objective is to provide practical guidance on how best practices and operations can be adopted by servicing technicians to achieve ozone and climate benefits, and how these benefits can be measured and evaluated. It also covers issues such as system improvement, reliability, leakage and energy efficiency in the context of installation, commissioning and maintenance. The guide will be available in early 2019.

Good Servicing Practices for Flammable Refrigerants: A Quick Guide

8. The aim of this guide is to provide RAC servicing technicians with quick reference to key safety classifications and technical properties of commercially available flammable refrigerants. Additionally, it provides important safety guidance for the installation and servicing of room air-conditioners designed to use flammable refrigerants. The guide (published in 2018) has been distributed at relevant meetings, and is also available as an interactive e-book for smartphones (details on the OzonAction website).

Good Servicing Practices: Phasing out HCFCs in the Refrigeration and Air-Conditioning Servicing Sector

9. The main objective of this guide for trainers is to provide National Ozone Units and refrigeration and air-conditioning training institutes with a standardized module for delivering training programmes under the HCFC Phase-out Management Plan. It can be used together with web-based slides and interactive animated exercises. The guide (published in 2015) is available on the OzonAction website and has been distributed at relevant meetings.

Safe Use of HCFC Alternatives in Refrigeration and Air-conditioning: An overview for developing countries

10. This publication provides an overview of flammable, higher-toxicity, and high-pressure alternatives to HCFCs and HFCs, their general characteristics and their application in the context of the safety issues. It provides guidance for the National Ozone Units (NOUs), servicing technicians and other interested parties in developing countries on how they can advise and assist national stakeholders in the selection and implementation of alternative refrigerants. The guide (published in 2015) is available on the OzonAction website and has been distributed at relevant meetings.

International Standards in Refrigeration and Air-Conditioning: An introduction to their role in the context of the HCFC phase-out in developing countries

11. This guide provides an introduction to and a simple overview of the issues related to international standards in the refrigeration and air-conditioning sector and how they can be useful in the context of the phase-out of hydrochlorofluorocarbons (HCFCs) in developing countries as required by the Montreal Protocol on Substances that Deplete the Ozone Layer. The guide is available on the OzonAction website and has been distributed at relevant meetings (published in 2014).

II. FACTSHEETS AND INFORMATION NOTES

12. Following the adoption of the Kigali Amendment, UNEP's OzonAction prepared a series of factsheets related to policy and technical issues associated with the Kigali Amendment. In addition, the following factsheets, available on the OzonAction website and distributed at relevant meetings, have been developed:

(a) *Refrigerant designations*: produced by ASHRAE in cooperation with UNEP OzonAction, this factsheet provides information on refrigerants' designation and safety classification. It is updated every six months to indicate refrigerants newly assigned with "r" numbers (ASHRAE designations);

(b) *Safety factsheets*: Three factsheets on the safe use of HCFC alternatives in RAC (flammable refrigerants, higher-pressure refrigerants, higher-toxicity refrigerants);

(c) *Cold Chain Technology Briefs*: A series of concise policy briefs for a range of target audiences, including the RSS. The briefs were developed in cooperation with the International Institute of Refrigeration (IIR) and deal with issues such as refrigeration in food production and processing; cold storage and refrigerated warehouses; transport refrigeration; commercial, professional and domestic refrigeration; and fishing vessel application.

III. MOBILE APPLICATIONS, VIDEOS & WEB-BASED TOOLS

GWP-ODP Calculator

13. This application was designed for the Montreal Protocol National Ozone Units and RSS technicians, and should also be useful for other related stakeholders. The application will automatically perform the conversion between metric tonnes, ODP tonnes and/or CO_2-equivalent tonnes (or kg), and display the corresponding converted values. The app includes both single-component substances and refrigerant blends; components of mixtures and their relative proportions (metric, ODP, CO_2-eq) are also

displayed. The application can be downloaded (at no cost) from the Google Play Store and iTunes/App Store. It is also available in a web version that can be used from the OzonAction website.

"WHAT GAS?"

14. WHAT GAS? is a searchable chemical database of ODS, HFCs and their alternatives. RSS technicians and other stakeholders can quickly obtain additional information on substances of interest. National Ozone Officers, customs and enforcement officers and other stakeholders will find this tool helpful. WHAT GAS? makes it easy to find the following information on any specific refrigerant and other chemicals: chemical name, formula and type; ASHRAE designation; trade names; HS code; CAS and UN numbers; Montreal Protocol annex and control measures; ozone depleting potential (ODP); global warming potential (GWP); blend components; toxicity and flammability class; and main uses. The application can be downloaded (at no cost) from the Google Play Store and iTunes/App Store. It is also available in a web version that can be used from the OzonAction website.

Refrigeration and Air-conditioning Technician Video Series

15. This application consists of a series of short instructional videos on techniques, safety and best practices for refrigeration and air-conditioning (RAC) technicians. It serves as a complementary training tool for technicians to revise and retain the skills acquired during hands-on training. The application can be downloaded (at no cost) from the Google Play Store and iTunes/App Store.

Good Servicing: Flammable Refrigerants Quick Guide

16. This application is an electronic, interactive version of the UNEP OzonAction Quick Guide on Good Servicing Practices for Flammable Refrigerants. It offers easy reference to key safety classification and technical properties of flammable refrigerants available on the market. It also provides important safety guidance for the installation and servicing of room air-conditioners designed to use flammable refrigerants. This interactive guide allows the user to scroll and browse the text, jump to specific chapters, or use the comprehensive dynamic index to locate specific keywords, figures and tables. The application also includes a refrigerant charge size calculator and a room size calculator for flammable refrigerants. It can be downloaded (at no cost) from the Google Play Store and iTunes/App Store.

Refrigerant Identifier Video Series

17. This application provides guidance on the application of a refrigerant identifier. It consists of short instructional videos showing how to use and maintain a refrigerant identifier. It is intended for use by technicians involved in the servicing and maintenance of refrigeration and air-conditioning systems, Montreal Protocol National Ozone Officers, and Customs and Enforcement Officers. The application will be available for download (at no cost) from the Google Play Store and iTunes/App Store (expected in November 2018).

IV. ONLINE TRAINING TOOLS

Refrigerants Literacy e-Learning Course

18. The Refrigerants Literacy e-Learning Course, developed in cooperation with ASHRAE, is the first of its kind for non-specialists. The course is offered to all NOUs and other stakeholders at no cost. The course is currently being translated into Spanish and French and will be offered in both languages by the end of 2018. Feedback on the course has been very positive due to its simplicity and thorough explanations of refrigerant-related issues in a language appropriate to both specialists and non-specialists. The course

includes interactive activities, knowledge checks, audio and video, and a final test. The course is mainly designed for non-specialists in HVAC&R operation and servicing, i.e. NOUs, policy makers, procurement officers, building owners, facility managers, etc., but is also recommended for HVAC&R engineers, consultants and technical people who wish to get a general, holistic overview. This course consists of four lessons on refrigerant types, refrigerant classification, refrigerant selection, and refrigerant management. It is available online on the ASHRAE training platform. ASHRAE creates an account, completes enrolment, and sends an email with instructions on how to access the course (details on the OzonAction website).

Sound management of refrigerants

19. Developed in cooperation with ASHRAE, this will be the first e-learning course for technicians and engineers on the sound management of refrigerants, including all good servicing practices and issues related to new and flammable refrigerants. The course is planned to be completed by the end of 2018.

V. TRAINING PACKAGES AND PROGRAMS

Universal Training Kit

20. The specialised "Universal Training Kit on Alternative Refrigerants" was developed in cooperation with AREA[64] for the use of training institutes and centres in developing countries, with the aim of offering state-of-the-art information and knowledge on the best practices and techniques in managing and handling future, mainly flammable, refrigerants in a sound and safe manner. The modular course can be adapted to suit different sectors and sub-sectors (small and medium, domestic and light commercial workshops, commercial AC, large service companies and workshops, mobile AC, commercial refrigeration, plant operators and managers) and focuses on trainers and master trainers. The modules are: general module; hydrocarbons; and low-GWP HFC/HFO.

21. The course comprises pre-assessment test (to be taken before the training), post-training assessment, venue requirements for training (equipment, tools, aids, consumables, etc.), instructors' minimum qualification; guide for the instructor; checklists and procedures to start and hold a training course; supporting syllabus, textbook, manuals, tables, charts; PowerPoint presentations for instructors; and hand-out Materials for the attendees

22. The Universal Kit will be offered, starting from 2019, to all NOUs and training institutes in A5 countries. A dedicated website portal will be developed to maximize outreach.

The Refrigerant Driving License

23. The objective of the Refrigerant Driving License (RDL), an initiative by UNEP OzonAction and the Air Conditioning, Heating, and Refrigeration Institute (AHRI), is to develop a globally recognised and acceptable qualification program that sets minimum requirements for the proper and safe management of refrigerants in air-conditioning, heating, and refrigeration equipment. In close cooperation with industry and association partners, the initiative will set minimum qualification requirements and seek international recognition of such a program from industry and the governments. The RDL will address the requirements for sound management of different types of current and future refrigerants, including best practices for identifying, handling, charging, recovery and recycling, leak testing, storing, record-keeping, etc. The implementation of the RDL will be achieved through the HVAC&R industry business networks, which over time is expected to lead to its widespread recognition by governments and end users in both public and private sectors. AHRI and UNEP are promoting the RDL to HVAC&R associations via the Global

[64] The European association of refrigeration, air conditioning and heat pump (RACHP) contractors.

Refrigerant Management Initiative (GRMI) and the International Council of Air-Conditioning, Refrigeration, and Heating Manufacturers Associations (ICARHMA) in order to create the right momentum for a globally accepted qualification program. An Advisory Committee has been formed with industry associations that support the RDL to provide technical advice and ensure that it does not conflict with existing certification schemes.[65] The RDL program encompasses three categories of equipment:

(a) Small Applications;

(b) Commercial Refrigeration;

(c) Commercial AC.

24. The RDL Pilot Framework is as follows

(a) Sets Competency (Qualification) Level;

(b) Sets Skills/Tasks Documentation;

(c) Train the Trainers/Assessors Sessions;

(d) Technician Training Sessions;

(e) Technician Testing;

(f) Endorsing the Granting of Certificates.

25. Expected outcomes:

(a) Minimal global qualification programme for servicing technicians (Refrigerant Driving License) developed, launched and operational;

(b) Developing a globally acceptable programme that sets out the minimum qualification requirements for the HVAC&R Supply-Chain network whilst at the same time creating the international recognition of such programs by the industry and the governments;

(c) This unified programme should concomitantly address, but not be limited to, the requirements for sound management of different types of current and future refrigerants;

(d) The global HVAC&R industry will be the catalyst for the programme by ensuring its introduction and enforcement through its business networks;

(e) Resources for the RDL will be sought from different sources including, but not limited to, AHRI, participating associations and societies, and the Multilateral Fund. UNEP foresees that RDL shall be self-sustained in the long term in terms of resources and operation

[65] The Advisory Committee consists of: ABRAVA, ACAIRE, AREA, EPEE, JRAIA, Refrigerants Australia, the Alliance for Responsible Atmospheric Policy, the Russian Union of Refrigeration Enterprises and ASHRAE. ABRAVA: Brazilian trade association that represents refrigeration, air-conditioning, ventilation, heating, and air treatment equipment manufacturers. ACAIRE: Colombian air-conditioning and refrigeration association that represents business, institutes, professional members, technicians, correspondents, and students in the industry. AREA: Air conditioning and Refrigeration European Association. ASHRAE: American Society of Heating, Refrigerating and Air-Conditioning Engineers. EPEE: European Partnership for Energy and the Environment. JRAIA: Japan Refrigeration and Air Conditioning Industry Association.

through a business-model concept which will be part of its core operational mechanism.

The Refrigerant Driving License: Phase II

26. The next stage of the RDL is to complete the documentation of RDL for other categories (Commercial Refrigeration, Commercial AC and Enterprises) and to finalize the organizational and operational arrangements of the RDL I programme for wider application.

Competency Requirements	(A) Small Applications	(B) Commercial AC	(C) Commercial Refrigeration	(D) Enterprises
Basic knowledge (environment, refrigerant classification / types, applications and relevant policies)	X	X	X	
Handling, transportation, storage and management of refrigerant containers	X	X	X	
Servicing skills of leak detection, R&R, evacuation, charging and system tightness	X	X	X	
Logging and record keeping		X	X	X
Tools and equipment for the job	X	X	X	X
Employment skills, training and certification				X

Refrigerant Management: Special Course for Future Engineers

27. The objective of this course, developed in cooperation with the American University in Beirut, is to support the engineering education process at various engineering institutes and colleges by acquainting future engineers with the knowledge and skills required to manage refrigerants soundly, as well as understand the technical and policy aspects associated with the refrigeration and air-conditioning industry. This special course is the first of its kind concerning refrigerant management that offers comprehensive scientific information and knowledge suitable for the academic level. The course was developed in accordance with academic requirements for engineering universities and colleges and it includes a complete set of lecture notes, presentations and activity sheets for a full-semester course (16 weeks). Through cooperation with ASHRAE and its university network of more than 450 engineering colleges and institutes worldwide, the course has been offered since early 2018; more than 40 universities and colleges have expressed interest in offering it. Twenty-four universities have already started offering the course in 2018 (including those in Brazil, Canada, Egypt, India, Indonesia, Lebanon, Pakistan, Peru, Philippines, Singapore, Serbia, Turkey, UAE & USA). The course outline is as follows:

(a) Module 1 (4 weeks): Refrigeration & air-conditioning industry, evolution of refrigerants & environmental impacts;

(b) Module 2 (3.5 weeks): Alternative refrigerants for different sectors & lubricants;

(c) Module 3 (3 weeks): Containment of refrigerants, service & maintenance of air-conditioning & refrigeration systems;

(d) Module 4 (2 weeks): Safe use & handling of refrigerants;

(e) Module 5 (2 weeks): Related standards and codes for systems and substances.

VI. SPECIAL SERVICES IN COOPERATION WITH PARTNERS

Training and Certification Programs

28. The Montreal Protocol funding mechanism has assisted Article 5 governments in developing and introducing different schemes for certifying and qualifying RAC service technicians with the aim to ensure the provision of good service practices and to minimize emissions. The certification schemes differ notably between countries and regions in terms of their structure, comprehensiveness and ability to be adequately enforced. Accordingly, in collaboration with different partners, CAP has introduced different products and tools that can be incorporated into the national programs and HPMPs and complement national programs.

29. The competence of the personnel handling refrigerants is important from both an environmental and safety perspective. It is recommended that only certified technicians be allowed to install, maintain, repair, recover, and dismantle RAC systems and to purchase refrigerants. Certifications can be issued to personnel or enterprises, or to a combination of the two. Certification is the best practical method to verify the competence of personnel handling refrigerants and to ensure the correct installation, maintenance, repair and dismantling of refrigeration, air-conditioning and heat pump systems. OzonAction has developed a guide, "National Certification Schemes for Refrigeration and Air Conditioning Service Technicians," that provides Ozone Officers and RAC associations with examples of strategies and requirements for their establishment and operation. OzonAction also regularly includes discussions on certification programmes in its Regional Network and Thematic meetings.

Risk Assessment Model for high ambient temperature (HAT)

30. OzonAction is building, in cooperation with partners, a comprehensive Risk Assessment Model for the logistics (installation, operation and servicing) of air-conditioning units that operate with lower-GWP refrigerants in high-ambient-temperature (HAT) countries. The project also assesses the technology transfer barriers, to reduce dependency on high-GWP alternatives and technologies. The project outcome will not only benefit the participating countries, but all regions of the world where high ambient temperatures are prevalent. Progress reports of EGYPRA and PRAHA-II projects, including the detailed analysis and comparison of HAT testing projects, have been shared during network meetings and through specific thematic workshops.

HFC Outlook Model

31. UNEP OzonAction teamed up with the European Partnership for Energy and the Environment (EPEE) in a project to develop the "HFCs Outlook Model." The HFCs Outlook Model is a scenario model for comparing local consumption and use of HFCs and HCFCs in different consuming sectors historically and at present. It also presents different projection scenarios for each substance and sector, based on global, regional and local forecasts of technology trends obtained through exhaustive consultation process with local stakeholders and key players. Stage I of the project was piloted successfully in Bahrain and Kuwait, and was presented to all Article 5 parties at the Interregional Networks Meeting (January 2018 in Paris). Accordingly, and as requested by several Article 5 parties, OzonAction and EPEE started the second pilot of the HFCs Outlook Model with a focus on the servicing sector, which will engage additional countries, i.e.: Bosnia and Herzegovina, the Dominican Republic, Gabon, Guatemala, Honduras and Senegal.

Cold Chain Database Model for A5 Countries

32. UNEP OzonAction is developing, in cooperation with the GFCCC[66] and international RAC association partners, a Cold Chain Sector database model for the compilation of information and data about technologies and trends, with a view to pilot it in select Article 5 countries as part of the data collection and analysis work under the Kigali Enabling projects.

Customs and Enforcement: UNEP OzonAction Tools, Products and Services

Introduction

33. As part of CAP's work in assisting countries to comply with their HCFC phase-out commitments and sustaining compliance with prior targets, OzonAction provides support to strengthen national capacity for effective customs & trade controls. This is achieved through the development of a range of materials intended to support customs and enforcement officers in their work to implement national licensing systems for ozone-depleting substances, and future commitments on HFCs under the Montreal Protocol, to detect and prevent illegal trade in these chemicals, and to facilitate legal trade. Many of these materials are produced in cooperation with our partner organizations.

I. PUBLICATIONS AND GUIDES

Training Manual for Customs Officers: Saving the Ozone Layer - Phasing out Ozone-Depleting Substances in Developing Countries - Third Edition

34. The *Training Manual for Customs Officers* provides the necessary guidance and information to effectively monitor and facilitate legal trade in ozone-depleting substances and to combat their illegal trade. It presents information on the international policy context and an overview of technical issues, including information on chemicals and products traded and how these may be smuggled. The manual is intended for use in conducting training programmes for Customs Officers, as well as serving as a stand-alone reference document. Now in its third edition, it takes into account the developments in international trade and provides new material to reflect changes in the Montreal Protocol, Harmonized System codes, licensing systems and other relevant information added since its original publication in 2001 and its second edition in 2008. The guide (published in 2013) is available on the OzonAction website and has been distributed at relevant meetings.

Ozone-depleting substances smuggling and concealment case-study handbook

35. This handbook, which provides information and guidance on commonly used methods of smuggling and concealment of ODS, is intended to promote cooperation between criminal justice agencies within borders, and to strengthen the law enforcement response to illegal trade in chemicals controlled under the Montreal Protocol. The handbook is targeted to enforcement officers and is particularly beneficial to Police, Customs and Border Security Officials. It provides technical information that will reinforce officers' understanding of ODS and assist with the recognition and detection of illegal trade in these chemicals. The Handbook was developed in cooperation with the INTERPOL Environmental Crime Programme. It is available on demand only (due to its enforcement-sensitive content) and has been distributed at relevant meetings (published in 2013).

[66] Global Food Cold Chain Council.

Risk assessment of illegal trade in HCFCs

36. This report provides a summary of recent cases of illegal trade, and lists existing policy measures to combat HCFC smuggling. By considering market conditions for HCFCs and drawing parallels with the context and methods used by smugglers which led to chlorofluorocarbon (CFC) smuggling, the report provides an analysis of the risks of HCFC smuggling becoming entrenched, and makes recommendations on how this illegal trade can be prevented. The report was developed in cooperation with the Environmental Investigation Agency. The guide (published in 2011) is available on the OzonAction website and has been distributed at relevant meetings.

Informal Prior-Informed Consent (iPIC): Supporting compliance through prevention of illegal and unwanted trade in ozone-depleting substances

37. This short booklet briefly describes the mechanism and the advantages of the iPIC system. It provides some information on iPIC's results and successes and encourages countries that are not yet members to join and to begin to reap the benefits of this initiative. The booklet (published in 2015) is available on the OzonAction website and has been distributed at relevant meetings.

Legislative and Policy Options to Control Hydrofluorocarbons

38. This booklet provides developing countries with a suite of different options that they may wish to consider, including both mandatory and voluntary approaches to developing, enacting and enforcing different legislative and policy measures to facilitate a smooth HFC phase-down process. This guide complements the previous OzonAction publication, *HCFC Policy & Legislative Options: A Guide for Developing Countries* (2010). The booklet was published in 2018 and is available on the OzonAction website.

Establishing an HCFC import quota system

39. This booklet provides the necessary information and practical guidance for developing countries to design and implement a workable and effective quota system that will contribute to ensuring the country's compliance with the Montreal Protocol HCFC phase-out schedule. The booklet is available on the OzonAction website and has been distributed at relevant meetings (published in 2012).

II. FACTSHEETS AND INFORMATION NOTES

40. UNEP's OzonAction continues to prepare factsheets providing relevant information and describing the immediate and future challenges to be addressed by the different Parties. The following factsheets and information notes, available on the OzonAction website, are of specific interest to customs and enforcement officers, as well as NOUs:

Customs Poster

41. The updated Customs Poster provides concise information on ODS and alternatives and a short checklist of issues for customs officers to keep in mind when handling ODS shipments (updated in 2016).

Customs Officer's Quick Tool for Screening ODS

42. A quick reference tool for customs and enforcement officers that provides access to key information regarding ODS, their alternatives, and relevant customs codes.

Refrigerant Designations

43. Produced by ASHRAE in cooperation with UNEP OzonAction, this factsheet provides information on refrigerant designation and safety classification, and is updated every six months to indicate new refrigerants which are assigned “R” numbers (ASHRAE designations).

Harmonized System code factsheets:

(a) HS nomenclature (HS codes) for HCFCs and certain other ozone-depleting substances (post-Kigali update);

(b) Commonly traded HCFCs and mixtures containing HCFCs (post-Kigali update);

(c) Commonly used non-ODS substitute refrigerants (post-Kigali update);

(d) Common products and equipment containing or reliant on HCFCs;

(e) HS codes for HFCs: Actions to take ahead of the of the new 2022 HS (in production, with WCO).

Free trade zones and trade in ODS

44. As part of international trade, many ODS shipments pass through Free Trade Zones (FTZ). Lack of proper oversight and controls in such zones can create an environment where illegal trade in ODS can proliferate. This paper provides a brief overview of the subject.

The informal prior-informed consent (iPIC) mechanism

45. The iPIC mechanism is a voluntary and informal system of information exchange on intended trade between the authorities in importing and exporting countries that are responsible for issuing ODS trade licenses. This factsheet gives an overview of how this informal mechanism operates and provides some interesting information on the results of ODS trade control and monitoring, conducted through iPIC.

The Kigali Amendment to the Montreal Protocol: HFC phase-down

46. This short paper provides an overview of the Kigali Amendment and its consequences.

The Kigali Amendment factsheet series and poster

47. Following the adoption of the Kigali Amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer, UNEP's OzonAction prepared a series of factsheets describing the immediate and future challenges to be addressed by the different Parties between now and the time when the Amendment comes into force. A timeline poster is also available.

III. MOBILE APPLICATIONS, VIDEOS & WEB-BASED TOOLS

48. In addition to the apps described in the refrigeration section above ("WHAT GAS?" app and the refrigerant identifier video app), the following products have been developed:

iPIC

49. The online iPIC system provides participating countries with real-time, 24-hour, 7-days-a-week personalized access to key licensing-system data in each of the 100 participating countries. The system provides a standardized and secured repository of iPIC data. Features of the online iPIC include the ability to search specific items of information; an interactive query and information sharing forum; the ability to easily and rapidly generate various reports and statistics; and the ability to update iPIC information with a simple click that will copy the information from a previous year. It is equipped with a FAQ section (which answers basic questions) and a Help section (which thoroughly explains how to use the online system); multi-lingual capability; and an interactive colour-coded map displaying country iPIC information sheet status. iPIC-online is accessible on an invitation-only basis (i.e. not open to the public). The platform is currently being upgraded and streamlined.

Combatting illegal trade in ODS: training video

50. This 26-minute training video provides customs and enforcement officers with an overview of illegal trade in ODS, and shows specific cases and examples from around the world. It provides practical guidance and tips on identifying suspicious shipments and smuggled ODS. The video is available on demand only (due to its enforcement-sensitive content) and has been distributed at relevant meetings (published in 2014).

IV. ONLINE TRAINING TOOLS

E-Learning Modules for Customs Officers

51. OzonAction and the World Customs Organization (WCO) jointly developed an e-learning course in 2009 devoted to the enforcement of the Montreal Protocol. The course has been updated several times since then. The course is based on the *UNEP Training Manual for Customs and Enforcement Officers* (Third Edition) and reflects WCO's expertise in developing and delivering online training to customs officers worldwide. The e-learning modules are hosted and disseminated through the WCO CLIKC platform. Since it is a closed enforcement platform, the modules are accessible on an invitation-only basis to all customs officers and NOUs on request. Updates and maintenance are ongoing.

OzonAction Web pages

52. OzonAction hosts a specific customs and enforcement page with a range of materials intended to support customs and enforcement officers in their work to implement national licensing systems for ODS, to detect and prevent illegal trade in these chemicals, and to facilitate the legal trade.

V. SPECIAL SERVICES IN COOPERATION WITH PARTNERS

World Customs Organization (WCO)

53. UNEP and the WCO have had long-standing cooperation on the issues related to trade (and prevention of illegal trade) in ODS controlled under the Montreal Protocol and in their alternatives. This

cooperation was formalized with an MOU signed in 2003 as a cooperation framework between the two agencies, and has led to specific concrete initiatives, such as:

(a) Developing e-learning modules on the Montreal Protocol and ODS trade with dissemination through WCO CLIKC platform (see above);

(b) Cooperation on specific WCO operations:

(i) The *Sky-Hole Patching* initiative on ozone-depleting substances and hazardous waste (2006 to 2009);

(ii) The *Sky-Hole Patching II* project, in 2010: Customs from over 80 countries conducted a six-month global project to monitor trade and fight ODS smuggling, with support from the WCO, UNEP and National Ozone Units (NOUs); and

(iii) Ongoing operation on waste and ODS.

(c) OzonAction representation at relevant meetings and workshops, including WCO Enforcement Committee, Customs Cooperation Council, Working Group on Commercial Fraud, and WCO Regional Intelligence Liaison Office (RILO) meetings;

(d) Participation of WCO HQ and RILO representatives at OzonAction workshops and training sessions;

(e) Cooperation on ECA and global ozone protection awards;

(f) Survey/evaluation: comprehensive global assessment of customs training methodologies and infrastructure (Montreal Protocol), carried out in cooperation with the WCO;

(g) Communication on issues of HS codes for ODS and alternatives, and other issues for joint factsheets, expert review of OzonAction factsheets and Customs Training Manual, and guidance to countries; and

(h) OzonAction information materials and tools, uploaded on the secure *WCO Environet* platform.

Green Customs

54. OzonAction is a member of the Green Customs Initiative. This initiative, launched in 2004, is a partnership of international organizations cooperating to enhance the capacity of customs and other relevant border-control officers to monitor and facilitate legal trade and to detect and prevent illegal trade in environmentally sensitive commodities covered by relevant trade-related Multilateral Environmental Agreements (MEAs) and international conventions. OzonAction (in cooperation with the Ozone Secretariat) provided a chapter on the Montreal Protocol and illegal trade in ODS to the Green Customs Guide.