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برنامج الأمم المتحدة للبيئة

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اللجنة التنفيذية للصندوق المتعدد الأطراف لتنفيذ بروتوكول مونتريال
الاجتماع الحادي والأربعون
مونتريال ، 17 – 19 كانون الأول/ديسمبر 2003

مقترحات مشروعات : تركيا

تتألف هذه الوثيقة من تعليقات وتوصيات من أمانة الصندوق بشأن مقترحات المشروعات الآتية :

مواد التبخير

• إزالة بروميد الميثيل في المحاصيل المحمية من الطماطم والخيار وزهور القرنفل (الشريحة الثانية)	اليونيدو

إزالة

• خطة الإزالة الكاملة للـ CFC: البرنامج السنوي لعام 2004	البنك الدولي

المذيبات

• خطة إزالة الـ ODS في قطاع المذيبات	اليونيدو

ورقة تقييم المشروع
تركيا

القطاع : الإزالة الـ ODS المستعملة في القطاع (2002) : 280.8 طن ODP

عتبات جدوى التكاليف في القطاع الفرعي : لا ينطبق

(أ) إزالة بروميد الميثيل في المحاصيل المحمية من الطماطم والخيار وزهور القرنفل (الشريحة الثانية)

بيانات المشروع	**إزالة بروميد الميثيل**
استهلاك المنشأة (طن ODP)	
وقع المشروع (طن ODP)	58
مدة المشروع (أشهر)	12
المبلغ المطلوب أصلا (دولار أمريكي)	1 000 000
التكلفة النهائية للمشروع (دولار أمريكي)	
التكلفة الرأسمالية الإضافية (أ)	
تكلفة الطوارئ (ب)	
تكلفة التشغيل الإضافية (ج)	
مجموع تكاليف المشروع (أ+ب+ج)	1 000 000
الملكية المحلية (%)	%100
عنصر التصدير (%)	صفر %
المبلغ المطلوب (دولار أمريكي) (شريحة أولى)	1 000 000
جدوى التكاليف (دولار/كغ)	29 20
هل تأيد تمويل الجهة النظيرة ؟	
الوكالة الوطنية المنسقة	وزراة البيئة
الوكالة المنفذة	اليونيدو

المبلغ الموصي به (دولار أمريكي)	1 000 000
وقع المشروع (طن ODP)	58
جدوى التكاليف دولار/كغ	29 20
تكلفة مساندة الوكالة (دولار أمريكي)	75 000
مجموع التكلفة على الصندوق المتعدد الأطراف (دولار أمريكي)	1 075 000

وصف المشروع

1- إن اللجنة التنفيذية ، في اجتماعها الـ 31 ، وافقت على مبلغ 040 479 دولار أمريكي (البنك الدولي) باعتباره إجمالي الأموال التي ستكون متاحة لتركيا لتحقيق الإزالة الكاملة لبروميد الميثيل المستعمل في قطاع التين المخفف (30 طن ODP) . وفي الاجتماع الـ 35 وافقت اللجنة التنفيذية من حيث المبدأ على مبلغ إضافي قدره 844 408 3 دولار أمريكي (اليونيدو) باعتباره إجمالي الأموال التي ستكون متاحة لتركيا لتحقيق الإزالة الكاملة لبروميد الميثيل المستعمل في المحاصيل المحمية من الطماطم والخيار وزهور القرنفل (292.2 طن ODP إضافية) وخصصت مبلغ 000 000 1 مليون دولار أمريكي لليونيدو كشريحة أولى لإزالة 29.2 طن ODP.

2- في 2002 أبلغت حكومة تركيا ، تحت المادة 7 بإن استهلاكاً إجمالياً من بروميد الميثيل قدره 280.8 طن ODP وهو مبلغ يقل عن الحد الأقصي لاستهلاك بروميد الميثيل المتفق عليه بين الحكومة واللجنة التنفيذية (293.4 طن ODP).

3- وفقاً للمعلومات المقدمة في التقرير المرحلي ، تم تنفيذ الأنشطة التالية في تركيا :

التاريخ	النشاط
27-28 ، فبراير 2003	اجتماع عام مع جميع العاملين في مشروع إزالة بروميد الميثيل (45 شخصاً)
5 مارس 2003	إنشئ مكتب لبروميد الميثيل بمعهد بحوث الحمضيات ومحاصيل الصوبات في أنطاليا
23 يونيه 2003	تغير منسق المشروعات ، وبعض مكونات المشروعات (زيادة العاملين ؛ إنشاء مركز كمبيوتر لتحليل البيانات وتبليغها ؛ وزيادة برنامج التدريب كي يشمل مستعملي بروميد الميثيل في تبخير التربة في البلد كله
26 يونية 2003	اجتماع في معهد البحوث والحمضيات ومحاصيل الصوبات بشأن تطورات مشروع بروميد الميثيل ، واختيار العاملين وإنشاء مجموعات خاصة (للتربية ، للكمبيوتر ، للمعدات التحليلية)
1 يوليه 2003	لقاء تمهيدي مع العاملين في المعهد لتحديد العاملين الجدد في المشروع
7 يوليه 2003	تقييم التطبيقات ومجالات الخبرة للعاملين في المعهد المشار إليه
15 يوليه 2003	تحديد مواصفات الأدوات والمعدات
1-2 سبتمبر 2003	اجتماع عام مع جميع العاملين في المشروع في معهد البحوث المشار إليه
16 سبتمبر 2003	إرسال استمارات الاستبيان إلى جميع الولايات
22 سبتمبر 2003	لقاءات مع المزراعين في أنطليا ومرسين
1-8 أكتوبر 2003	التدريب في أطنة ومغلا وأنطليا
10 أكتوبر 2003	لقاءات مع المزراعين في أنطليا ومغلا

4- قدمت حكومة تركيا طلباً للحصول على تمويل لتنفيذ المرحلة الثانية من مشروع الطماطم والخيار وزهور القرنفل المحمية . وتطلب اليونيدو 000 000 1 مليون دولار أمريكي لإزالة 58.0 طن ODP إضافية من بروميد الميثيل . وأنشطة الإزالة الرئيسية المقترحة تشمل ما يلي : الاستمرار في التبخير البيولوجي واستعمال الكمياويات البديلـــة (000 305 دولار أمريكي) ، الحقن بالأسمدة (000 25 دولار أمريكي) ، إدخال عملية التشميس (000 150 دولار أمريكي) البسترة بالبخار (000 220 دولار أمريكي) ، التدريب (000 200 دولار أمريكي) . أما الـ 000 100 دولار أمريكي الباقية فسوف تحتجز للأنشطة الإضافية بإعتبارها المرحلة الثانية للمشروع .

تعليقات وتوصيات الأمانة

تعليقات

5- ذكرت حكومة تركيا في 2001 استهلاكاً يبلغ 227.4 طن ODP . وزاد في 2002 أستهلاك بروميد الميثيل إلى 292.8 طن ODP (حسب البيانات الواردة في التقرير المرحلي) وفي هذا الصدد سعت الأمانة إلى الحصول على توضيح من اليونيدو عن زيادة إستهلاك بروميد الميثيل . وقالت اليونيدو أنه يبدو أن هناك بعض اللبس حيث رقم 292.8 طن ODP إنما هو الاستهلاك المبلغ عنه عن عام 2000 في قطاع الزهور المقطوفة والخضر . وفي الفترة من أول يناير إلى 15 أكتوبر تم استيراد بقدر إجمالي من بروميد الميثيل يبلغ 163.7 طن ODP في تركيا . وفي نهاية عام 2003 لن يعود استيراد بروميد الميثيل مسموحاً إلا لأغراض الحجر الصحي والتطبيقات السابقة للشحن .

6- طبقاً للتقرير المرحلي لاحظت الأمانة أن الأنشطة المنفذة حتى الآن تتعلق بالتدريب وبتوعية الجمهور أكثر مما تتعلق بالإزالة الفعلية عن طريق الأنشطة الاستثمارية . وقد ذكر أيضاً أن العاملين في المشروع زادوا من 35 إلى 67 عاملاً وأن مركز للكمبيوتر لغرض إيجاد قاعدة بيانات شاملة ووافية بالغرض قد أنشئ . وبينما تمت الموافقة على المشروع على أساس أنه من المفهوم أن " تركيا ستتمتع ، ضمن أمور أخرى ، بمرونة تنفيذ مكونات المشروع التي تراها أشد أهمية في سبيل الوفاء بإلتزامات الإزالة " ، سعت الأمانة إلى الحصول على توضيح من اليونيدو عن الأنشطة الفعلية المبذولة في سبيل الإزالة الفعلية لبروميد الميثيل (نوع المعدات التي تم شراؤها والمساحة التي تم تحويلها إلى التكنولوجيات البديلة وعدد المزراعين الذين يستعملون تلك التكنولوجيات البديلة) .

7- وعلى أثر ذلك قامت اليونيدو بإبلاغ الأمانة أنه على حين أن بعض البنود التي طلبتها المؤسسة القائمة بتنفيذ المشروع لم تكن متوقعة في وثيقة المشروع ، إلا حكومة تركيا استعملت الترخيص بالمرونة بطلب معدات رأت أنها لا غني عنها في سبيل التنفيذ السوي للمشروع ورصده (مثلاً الكمبيوترات للتبليغ اليومي ، ومعدات التحليل للحصول على البيانات بشأن تلوث التربة ، ونجاح العلاجات ، ومعدات التربية والتوعية) .

8- فيما يتعلق بعنصر العاملين في المشروع قامت اليونيدو بإبلاغ الأمانة أن هذا العنصر تمليه ضرورة تغطية جميع المجالات المعنية بالأمر في تركيا طبقاً للاحتياجات التي تولت تقييمها وزرارة الزراعة . ووافقت اليونيدو تماماً على أن عنصر العاملين بعد تنقيحه يدخل تغيرات كبيرة على بنود الميزانية المتوقعة في وثيقة المشروع ، غير أن ذلك يوازي احتياجات تم تبينها في الميدان .

توصية

9- توصي أمانة الصندوق بالموافقة المفرشية على الاقتراح بهذا المشروع ، وما يرتبط به من تكاليف المساندة للوكالة ، بمستويات التمويل المبينة بالجدول الآتي :

	عنوان المشروع	تمويل المشروع (دولار أمريكي)	تكلفة المساندة (دولار أمريكي)	الوكالة المنفذة
(أ)	إزالة بروميد الميثيل في المحاصيل المحمية من الطماطم والخيار وزهور القرنفل (الشريحة الثانية)	1 000 000	75 000	اليونيدو

ورقة تقييم المشروع
تركيا

القطاع : الإزالة الـ ODS المستعملة في القطاع (2002) : 698.9 طن ODP

عتبات جدوى التكاليف في القطاع الفرعي : لا ينطبق

(أ) خطة الإزالة الكاملة للـ CFC : البرنامج السنوي لعام 2004 (الشريحة الثالثة)

بيانات المشروع	**متعدد**
	الخطة الوطنية
استهلاك المنشأة (طن ODP)	* 698.9
وقع المشروع (طن ODP)	** 218.0
مدة المشروع (أشهر)	12
المبلغ المطلوب أصلا (دولار أمريكي)	1 000 000
التكلفة النهائية للمشروع (دولار أمريكي)	
التكلفة الرأسمالية الإضافية (أ)	
تكلفة الطوارئ (ب)	
تكلفة التشغيل الإضافية (ج)	
مجموع تكاليف المشروع (أ+ب+ج)	
الملكية المحلية (%)	100
عنصر التصدير (%)	صفر
المبلغ المطلوب (دولار أمريكي) (شريحة أولى)	1 000 000
جدوى التكاليف (دولار/كغ)	
هل تأيد تمويل الجهة النظيرة ؟	
الوكالة الوطنية المنسقة	وحدة الأوزون الوطنية
الوكالة المنفذة	البنك الدولي

المبلغ الموصي به (دولار أمريكي)	
وقع المشروع (طن ODP)	
جدوى التكاليف دولار/كغ	
تكلفة مساندة الوكالة (دولار أمريكي)	
مجموع التكلفة على الصندوق المتعدد الأطراف (دولار أمريكي)	

* استهلاك الـ CFC في عام 2002في تركيا كما أبلغ إلى أمانة الأوزون

** وقع الشريحة الثالثة هو 218.0 طن ODP

وصف المشروع

برنامج تنفيذ عام 2003 للخطة الوطنية للإزالة الكاملة للـ CFC في تركيا

10- قدم البنك الدولي كي تنظر فيه اللجنة التنفيذية ، تقريراً عن تنفيذ الخطة الوطنية للإزالة الكاملة للـ CFC في تركيا ، للفترة من ديسمبر 2002 حتى آخر ديسمبر 2003 ، مشفوعة بطلب للموافقة على برنامج التنفيذ السنوي لعام 2004 (مرفق بهذه الوثيقة) .

11- إن الاتفاق على الإزالة الكاملة للـ CFC في تركيا تمت الموافقة عليه في الاجتماع الـ 35 للجنة التنفيذية في ديسمبر 2001 بتكلفة إجمالياً قدرها 9.0 ملايين دولار أمريكي . وفي الاجتماع نفسه وافقت اللجنة التنفيذية على إنفاق مبلغ 3.5 مليون دولار أمريكي وتكاليف مساندة للوكالة قدرها 000 295 دولار أمريكي لتنفيذ برنامج عام 2002 الذي يغطي الأنشطة التي بذلت خلال 2002 . وفي الاجتماع الـ 38 في نوفمبر 2002 وافقت اللجنة التنفيذية على برنامج التنفيذ السنوي لعام 2003 بمستوى 000 500 2 دولار أمريكي وتكاليف مساندة للوكالة قدرها 000 175 دولار أمريكي .

12- إن الجزء ألف من التقرير يصف الوضع القائم في تنفيذ الخطة السنوية لعام 2003 فيما يتعلق بالأنشطة التالية :

(أ) استعراض وتعزيز السياسات واللوائح الموجودة حالياً بشأن الإزالة ؛

(ب) إصدار حصص استيراد الـ CFC لعام 2003 (حصص 2002 كانت قد أصدرت للمستوردين بما يتمشى ومشروع الخطة القطاعية) ؛

(ج) استمرار تنفيذ العقود الموقع عليها مع المنشآت الصغيرة والمتوسطة في التبريد التجاري ؛

(د) استمرار تنفيذ إعادة التدريب في صناعة التبريد وفقاً للعقد ؛

(هـ) استمرار تنفيذ برنامج الاسترداد وإعادة التدوير والاستصلاح حسب العقد ؛

(و) بدء تدريب مسؤولي الجمارك ؛

(ز) التوقيع على العقود مع شركات أجهزة تبريد المباني المؤهلة ، كما تم تبينها خلال 2002 و 2003؛

(ح) بداية نهاية برنامج إعادة التهيئة للمستعملين النهائيين .

13- في الجدول الآتي موجز مالي لبرنامج 2003 :

جدول التكاليف

النشاط	المبلغ المخصص لعام 2002 (دولار أمريكي)	المبلغ المتعاقد عليه في 2002(دولار أمريكي)	المبلغ المخصص لـ 2003 (دولار أمريكي)	المبلغ المتعاقد عليه (حتى سبتمبر 2003) (دولار أمريكي)	مجموع المبلغ المخصص لـ 2002+2003 (دولار أمريكي)	مجموع المبلغ المتعاقد عليه (حتى سبتمبر 2003) (دولار أمريكي)
برنامج المنشآت الصغيرة والمتوسطة	1 800 000	1 390 770	250 000	217 530 [1] 100 000	2 050 000	[1] 1 608 300 [1] 100 000
الاسترداد وإعادة التدوير	600 000	1 527 484	1 100 000	10 500 [2] 100 000	1 700 000	1 537 984 [2] 100 000
التدريب الجمركي			200 000	[3] 50 000	200 000	[3] 50 000
استبدال أجهزة تبريد المباني	900 000	485 388	660 000	217 798 [4] 1 050 000	1 560 000	703 186 [4] 1 050 000
المستعملون النهائيون		صفر	90 000	[5] 200 000	90 000	[5] 200 000
أنشطة التدريب	100 000	286 329	100 000		200 000	286 329
برنامج المساعدة التقنية /مكتب إدارة المشروعات	100 000	84 373	100 000	65 000	200 000	149 373
المجموع	3 500 000	3 774 344	2 500 000	2 010 328	6 000 000	5 785 172

1 عقود إضافية يبلغ 000 100 دولار أمريكي كما هو متبع متوقع عليها في أواخر 2003 مع المنشآت الصغيرة والمتوسطة المتبقية
2 معدات إضافية تبلغ 000 100 دولار سيتم شراؤها في أكتوبر 2003 كما هو موضع في البند 3
3 من المزمع صرفها في أواخر 2003 لأنشطة تدريب الجمارك ومعدات الجمارك
4 عقود تبلغ 1.05 مليون دولار أمريكي سيتم التوقيع عليها في أكتوبر 2003 لإستبدال أجهزة تبريد المباني كما هو مشروح في البند 5 .
5 مجموع العقود يبلغ 000 200 دولار أمريكي وسيتم التوقيع عليها في أواخر 2003 كما هو موضح في البند 6 .

14- أن العقد الإجمالي يبلغ 5.784 مليون دولار أمريكي في نهاية سبتمبر 2003 . وتبعاً لذلك يرى البنك الدولي أن أهداف الأداء قد تحققت بنسبة لعام 2003 .

15- يتضمن التقرير المرحلي تقريراً عن التحقق من استهلاك الـ CFC في تركيا في عامي 2002 و 2003 . وأهداف الرقابة لاستهلاك الـ CFC في عام 2002 و 2003 كما جاءت في الاتفاق وكذلك الواردات التي تم التبليغ عنها مبينة فيما يلي :

	2002	2003
حدود استهلاك الـ CFC-12 (طن ODP)	650	334
استيراد الـ CFC-12 المبلغ عنه (طن ODP)	635.2	257
حدود استهلاك الـ CFC-11 (طن ODP)	250	200
استيراد الـ CFC-11 المبلغ عنه (طن ODP)	61.8	106.8
حدود استهلاك الـ CFC-115 (طن ODP)	9	9
استيراد الـ CFC-115 المبلغ عنه (طن ODP)	2.7	لا ينطبق

16- إن تقرير التحقق المقدم من المراجع المستقل بشأن استهلاك الـ CFC في تركيا في 2002 و 2003 يستخلص أن الواردات كانت أقل من الحصص التي تم الترخيص بها وفقاً لحدود الاستهلاك المقرر في الاتفاق . ووفقاً للجدول أعلاه ، كانت الواردات من الـ CFC-12 في 2002 (635.2 طن ODP) قريبة من الحصة الصادرة (650.0 طن ODP) . وكانت واردات الـ CFC-11 أقل بكثير من الحصص المقررة لعام 2002 . وبالنسبة لعام 2003 ، فإن البيانات تم تجميعها عن المدة من أول يناير 2003 إلى 31 أغسطس 2003 . وقال البنك الدولي أن واردات 2003 لن تتعدى حدود الاستهلاك المقرر في الاتفاق .

17- يتضمن التقرير معلومات إضافية في عدة مرفقات متصلة بتنفيذ الخطة .

<u>برنامج تنفيذ 2004</u>

18- إن برنامج التنفيذ السنوي لعام 2004 وارد في الجزء باء . وهو يتضمن إشارات إلى مؤشرات الأداء الرئيسية : المستوى الأقصى للاستهلاك المسموح به من الـ CFC وقيمة العقود الموقع عليها . ويتضمن البرنامج أيضاً وصفاً للأنشطة الداخلة في برنامج تنفيذ عام 2004 ، وهي مقدمة في عدة أقسام : السياسات واللوائح ، حصص الاستيراد ، تحول المنشآت

الصغيرة والمتوسطة ، إعادة التدريب ، خطة الاسترداد وإعادة التدوير ، برنامج استبدال أجهزة تبريد المباني ، التدريب الجمركي ، إعادة تهيئة المستعملين النهائيين والمساعدة التقنية وإدارة البرنامج . ويتضمن البرنامج السنوي جدولاً بالتكاليف يتضمن بيان مفردات المبلغ الإجمالي المطلوب تخصصيه للأنشطة المختلفة المزمعة لعام 2004 .

19- يطلب البنك الدولي الإفراج عن الشريحة الثانية البالغ قدرها 1.0 مليون دولار أمريكي لتنفيذ البرنامج السنوي لتركيا عن عام 2004 وتكاليف مساندة الوكالة المرتبطة بهذا النشاط ، بمقدار 000 150 دولار أمريكي .

تعليقات وتوصيات الأمانة

تعليقات

20- إن تخصيص مبلغ 1.0 مليون دولار أمريكي لبرنامج تنفيذ 2004 يتمشى مع الاتفاق ، بشرط تأييد أن أهداف الإزالة التي كانت منشودة في العام السابق قد تحققت فعلاً وتم التحقق من أن الأنشطة المزمعة للسنة السابقة قد جرت وفقاً لخطة التنفيذ السنوية الأولى .

21- هناك بيان بأن خطة التنفيذ لعام 2003 التي قدمت إلى الأمانة من البنك الدولي في يناير 2002 ، التي بلغت فيها العقود 80% (1.6 مليون دولار أمريكي) من المبلغ المتاح (2.0 مليون دولار أمريكي) ، كانت لازمة للتوقيع قبل الموافقة على خطة تنفيذ عام 2004 . والمعلومات المقدمة في الجدول الوارد في الفقرة 4 أعلاه ، تبين أن عقوداً تبلغ 000 350 1 دولار أمريكي من المتوقع التوقيع عليها بحلول نهاية عام 2003 . إن ذلك يمثل 54% من التمويل الموافق عليه . وطلب من البنك الدولي أن يوضح ما تحقق من تقدم . وتلقت الأمانة منذ ذلك الوقت معلومات من البنك الدولي بأن جميع العقود المتبقية سوف يتم التوقيع عليها في ديسمبر 2003 .

22- إن المعلومات عن الحصص والواردات والمخزون والمبيعات الموجودة واردة في تقرير التحقق (وهو مرفق بالتقرير المرحلي) . ويبدو من المقارنة بين حدود استهلاك الـ CFC المقرر والواردات التي تم التبليغ عنها أن أهداف تخفيض الـ CFC قد تحققت . وتقرير التحقق يعطي معلومات عن المخزون ومجموع الواردات والتوريدات الأخرى وأرصدة الشركات التي تستورد الـ CFCs . وهناك أيضاً أرصدة إيجابية وأرصدة سلبية قد تحدث بسبب أخطاء حسابية وفي توريد الـ CFCs ، من شركات شقيقة ، كما هو مشروح في التقرير . بيد أن البيانات الواردة في الجدول 9 من التقرير تبين أن مبيعات Sentinel's من الـ CFC-12 لمدة ثمانية أشهر في 2003 كانت 81.9 طن ، وهو مقدار يزيد بنسبة محسوسة عن الحصة المقرر البالغة 39.6 طن . وسعت الأمانة إلى الحصول على توضيح من البنك الدولي عن هذا الموضوع . وتم إبلاغ الأمانة أن رصيد Sentinel's يتضمن على الأرجح التوريدات غير المسجلة من الشركة الشقيقة ، ومن المصادر الأخرى في السوق الداخلي . ومن المتوقع أنه ، عند إغلاق حساب مبيعات التوريد عن عام 2003 ، سيكون هذا الفرق قد تمت تسويته في الحساب .

23- طلبت الأمانة معلومات إضافية عن تنفيذ المنهجيات التي يطبقها البنك الدولي فيما يتعلق بالمنهجيات المدرجة في الاقتراح (تأجير المعدات للمنشآت الصغيرة والمتوسطة : نهج العقد الخاص بالإداء بالنسبة لأنشطة الاسترداد وإعادة التدوير والاستصلاح ، والصندوق الدوار لبرنامج أجهزة تبريد المباني وبرنامج إعادة التهيئة . وأوضح البنك الدولي أن نهج تأجير المعدات لا يمكن استعماله حيث أن المنشآت الصغيرة والمتوسطة مترددة جداً في التعاون بشروط التأجير . والعقود بشأن توزيع معدات الاسترداد وإعادة التدوير سوف تكون قائمة على اساس الأداء . وقد طبق نهج الصندوق الدوار في تنفيذ عدة مكونات من خطة إزالة الـ CFC .

توصية

24- قد ترغب اللجنة التنفيذية في أن تنظر في الموافقة على برنامج التنفيذ السنوي لعام 2004 لتركيا لمستوى البرنامج الذي يبلغ 000 000 1 مليون دولار أمريكي زائد 000 150 دولار أمريكي كتكاليف مساندة الوكالة التي هي البنك الدولي.

ورقة تقييم المشروع
تركيا

القطاع : المذيبات الـ ODS المستعملة في القطاع (2002) : 86.7 طن ODP

عتبات جدوى التكاليف في القطاع الفرعي : لا ينطبق

(أ) إزالة الـ ODS في قطاع المذيبات

بيانات المشروع	المذيبات
	خطة الإزالة
استهلاك المنشأة (طن ODP)	
وقع المشروع (طن ODP)	70
مدة المشروع (أشهر)	36
المبلغ المطلوب أصلا (دولار أمريكي)	2 423 303
التكلفة النهائية للمشروع (دولار أمريكي)	
التكلفة الرأسمالية الإضافية (أ)	2 021 690
تكلفة الطوارئ (ب)	173 019
تكلفة التشغيل الإضافية (ج)	228 594
مجموع تكاليف المشروع (أ+ب+ج)	2 423 303
الملكية المحلية (%)	%100
عنصر التصدير (%)	صفر
المبلغ المطلوب (دولار أمريكي) (شريحة أولى)	2 423 303
جدوى التكاليف (دولار/كغ)	35
هل تأيد تمويل الجهة النظيرة ؟	لا ينطبق
الوكالة الوطنية المنسقة	وحدة الأوزون الوطنية
الوكالة المنفذة	اليونيدو

المبلغ الموصي به (دولار أمريكي)	
وقع المشروع (طن ODP)	
جدوى التكاليف دولار/كغ	
تكلفة مساندة الوكالة (دولار أمريكي)	
مجموع التكلفة على الصندوق المتعدد الأطراف (دولار أمريكي)	

وصف المشروع

25- قدمت حكومة تركيا خطة إزالة وطنية للمذيبات التي تحتوى على ODS (وهي CFC-113 ، TCA ، CTC) (خطة المذيبات) كي تنظر فيها اللجنة التنفيذية في اجتماعها الـ 41.

استهلاك المذيبات التي تحوى ODS

26- إن استهلاك المذيبات التي تحوى ODS في تركيا قد تباين على مر السنين . والجدول الآتي يبين استهلاك الفترة 1997-2002 من الـ CFC-113 ، TCA ، وCTC و BCM ، وهي ارقام أبلغتها حكومة تركيا إعمالاً للمادة 7 :

ODS	الاستهلاك (طن ODP)					
	1997	1998	1999	2000	2001	2002
CFC-113	4.8	10.4	0.8	0.0	0.2	0.1
TCA	8.7	45.8	44	صفر	11.4	10.8
CTC	70.4	168.3	90.1	0.3	16.0	13.2
BCM						21.4

27- وفقاً لخطة المذيبات هناك 5.9 طن ODP من الـ CFC-113 و 2.1 طن ODP من الـ TCA استعملتها شركة واحدة (Beta Proses) في إنتاج المواد الإيروسولية التي تزيل الشحومات عن الفلزات ولأغراض التنظيف . وفي أوائل 2003 قامت المنشأة بتحويل إنتاجها إلى تكنولوجيات خالية من الـ ODS (وتطلب الشركة تمويلاً لهذا التحويل ، بأثر رجعي) .

28- إن الـ CTC مستعمل في تركيا في إنتاج طفايات تعمل بالـ CTC تنتجها مؤسسة واحدة (Oknal) . والاستهلاك السنوي لعام 2002 من الـ CTC لدى تلك المنشأة قدر بـ 27.9 طن ODP ، بينما قدر متوسط إستهلاك 2000-2002 بـ 18.6 طن ODP . والقدرة التي تم تركيبها في هذا المرفق لإنتاج طفايات تعمل بالـ CTC من سعة 5 كغ ، هي 10.000 وحدة في السنة . وهناك أيضاً قدر قليل جداً من الـ CTC يستعمل في تطبيقات المعامل .

29- كان TCA واسع الاستعمال في صناعة المنسوجات والملابس في الماضي . بيد أنه ، منذ إدخال نظام الحصص الخاص بالـ ODS ، تزايد سعر الـ TCA ونتيجة لذلك تم استبدال الـ TCA في كثير من التطبيقات بمادة trichloroethylene .

30- وعلى أساس الاستقصاء الذي أجرى لإعداد خطة المذيبات ، هناك تسع شركات في قطاع صناعة المنسوجات والملابس قد أبلغت عن استهلاك إجمالي قدره 15.8 طن ODP من TCA (منها سبع منشآت تستهلك أقل 0.3 كغ ODP من الـ TCA في السنة ويبلغ مجموع أستهلاك المنشآت السبع 0.763 طن ODP . وهناك 30% إضافية (4.7 طن ODP) إضيفت إلى الاستهلاك المقدر لتغطية استعمالات المنشآت الصغيرة والمتوسطة .

31- تم في الأونة الأخيرة تبين منشآتين تستعملان مادة bromochloromethane (BCM) كعامل تصنيع لإنتاج sultamicillin tosylate وهو مشتق نصف تركيبي عن البنسلين . وبدأت أحدى الشركتين عملياتها في 2002 ، ولذا رئي أنها غير مؤهلة للحصول على تمويل .

مشروعات المذيبات بالـ ODS المعتمدة حتى الآن

32- حتى الآن وافقت اللجنة التنفيذية على تمويل إزالة 13 طن ODP من الـ CFC-113 و 25.3 طن ODP من الـ TCA في تركيا . وحتى ديسمبر 2002 كان متبقيا من هذا الاستهلاك الإجمالي 15.4 طن ODP من الـ TCA مطلوب إزالتها ، ولذا ينبغي أن يستنزل هذا المقدار من استهلاك الـ TCA المتبقي المطلوب التصدي لها . واستهلاك الـ TCA المتبقية المطلوب التصدي لها في المشروعات المعتمدة أعلى من استهلاك الـ TCA المبلغ عن عام 2002 .

التكنولوجيات البديلة والتكاليف الإضافية

33- إن عنصر الاستثمار في خطة المذيبات سيتم تنفيذه من خلال توليفة من المشروعات الفرعية الفردية والجماعية. والتكلفة الشاملة لخطة المذيبات قدرت بمبلغ 803 131 2 دولار أمريكي (على أساس مستوى 33.28 دولار أمريكي /كغ) موزعة على النحو الآتي :

(أ) قامت Beta Proses بتحويل إنتاجها إلى قطاع المذيبات الخالية من الـ ODS . والتكلفة المقدرة للتحويل (وهي مطلوبة بأثر رجعي) كانت 665 196 دولار أمريكي (على أساس مستوى 24.67 دولار أمريكي /كغ) ؛

(ب) في سبيل إزالة الـ TCA في صناعة الأنسجة والملبوسات ، إن عامل جدوى التكاليف البالغ قدره 38.5 دولار أمريكي/كغ للـ TCA قد استعمل لتقدير تكلفة التحويل ، حيث أن كثيراً من صغار المستعملين يدخلون في هذا المجال وكثيراً ما تكون الاستثمارات الفردية اللازمة أعلى من قيمة هذه العتبة . وعلى هذا الأساس فإن تكلفة التحويل قدرت بـ 792 792 دولار امريكي ؛

(ج) لإزالة الـ CTC في إنتاج الطفايات اقترحت الشركة استعمال طفايات بالرغاوي ، تتضمن شحنة زائدة من ثاني أكسيد الكربون بإعتبار أن هذه الصيغة هي الصيغة الأقرب إلى صيانة البيئة وإلى الفاعلية (إن طفاية بالرغاوي تزن 9 كغ توازي طفاية بالـ CTC تزن 5 كغ من حيث قدرتها على الإطفاء) . وفي سبيل تحقيق هذا التحويل ، سيقتضي الأمر استعمال اسطوانات إطفاء كبيرة (10 لترات) وصهاريج تخزين من البوليثلين المقوى بالألياف الزجاجية ، ومصانع ملء بالرغاوي وثاني اكسيد الكربون ومعدات مساعدة . والتكلفة الإجمالية للتحويل قدرت بمبلغ 599 155 دولار أمريكي ، تشمل 953 102 دولار أمريكي لتكاليف التشغيل عن سنة واحدة (على أساس 8.37 دولار أمريكي/كغ) ؛

(د) في غيبة أي خبرة في مجال إزالة الـ BCM ، فإن تكلفة التحويل قامت على أساس جدوى التكاليف في المشروعات المعتمدة لإزالة الـ CTC في تركيب 2- nitrobenzyl bromide باستعمال الكلورو بنزين (الهند) مع تطبيق عامل زيادة قدره 10/6 ، حيث أن مقدار الـ BCM المستعمل يمثل مستوى أكبر (60 58 دولار/كغ) وعلى هذا الأساس فإن تكلفة التحويل قدرت بـ 824 986 دولار أمريكي .

<u>إدارة شؤون الخطة القطاعية</u>

34- إن الإدارة العامة لخطة هذا القطاع ستتولاها اليونيدو . وستكون وحدة الأوزون مسؤولة عن رصد تنفيذ الأنشطة المقترحة في خطة المذيبات ، وتقصي تطبيق السياسات والتشريعات الخاصة بالـ ODS في هذا الصدد ، ومساعدة اليونيدو على إعداد خطط التنفيذ السنوية والتقارير المرحلية السنوية التي تقدم إلى اللجنة التنفيذية .

35- إن عناصر الاستثمار في خطة المذيبات سيتم تنفيذها من خلال توليفة من المشروعات الفرعية الفردية والجماعية.

36- إن الخطة السنوية الأولى تتألف من العناصر الرئيسية التالية :

(أ) إنشاء آلية تشغيلية لإدارة ورصد خطة المذيبات ؛

(ب) صياغة شروط تكليف وخطط عمل مفصلة في سبيل المساندة التقنية وعناصر مساندة السياسة والإدارة؛

(ج) إيجاد آلية تشغيلية للمشاركة في خطة المذيبات وللحصول من المنشآت على إلتزامات بالإزالة ؛

(د) عقد ورشة لأنشطة التدريب وبناء القدرة لأصحاب المصلحة في الحكومة والصناعة ولصانعي القرار؛

(هـ) عقد ورشة للمساعدة التكنولوجية للمنشآت المشاركة ؛

(و) عقد ورشة لتوعية الجماهير ونشر المعلومات ؛

تعليقات وتوصيات الأمانة

تعليقات

خطوط الأساس للـ CTC و الـ TCA

37- أن خطي الأساس لـ CTC والـ TCA لامتثال تركيا هي 86.0 طن ODP و 29.9 طن ODP على التوالي ، ولذا يكون أقصي مستوى مسموح به من الـ CTC و TCA المستهلكة في 2005 هي 12.9 طن ODP و 20.9 طن ODP على التوالي . أما الاستهلاك الحالي (2002) من الـ CTC (10.8 طن ODP) والـ TCA (13.2 طن ODP) فهما يقلان فعلاً عن أهداف الإزالة لعام 2005 . وهناك 15.4 طن ODP من الـ TCA الإضافية ستزال بفعل مشروعات معتمدة ولكن غير منفذة بعد .

القضايا المتعلقة بإستهلاك الـ ODS

38- لاحظت الأمانة أن مستويات إزالة الـ CTC و الـ TCA المقترح تمويلها في الخطة القطاعية سوف تتجاوز المستويات المبلغة عن استهلاك عام 2002 ، من حكومة تركيا . وفي حالة CTC مثلاً ، فالاستهلاك التي تتدعيه شركة Oknal (الطفايات) قد تزايد من 11 طن ODP في 2000 إلى 25.3 طن ODP في 2002 . وكذلك فإن استهلاك الـ BCM لدى Mustafa Nevzat قد تزايد من 4.6 طن ODP في 2000 إلى 16.2 طن ODP في 2002 . وقالت اليونيدو أن الأزمة النقدية والاقتصادية الحديثة العهد في تركيا قد أحدثت بعض الزعزعة الاقتصادية في منشآت البلد . فكثير من المنشآت أجلت مشترياتها من الطفايات التي تعمل بالـ CTC ، واستعمل مخزون الـ CTC في الاستهلاك المقدر لعام 2002 . وانقطعت شركات أخرى عن بذل أنشطتها في التصنيع مما أحدث تخفيضاً في استهلاك الـ ODS .

39- فيما يتعلق بإستهلاك الـ TCA ، أشارت الأمانة أنه يبدو أن الاستهلاك الذي تم تبينه (15.8 طن ODP) قد زاد بمقدار مفترض يبلغ 30% (4.7 طن ODP) لتغطية المنشآت الصغيرة التي لم يتم تبينها . والاستهلاك المدعى به في المنشآت التي تم تبينها يفوق فعلاً مقدار الاستهلاك الذي تم التبليغ عنه قبل زيادة الـ 30 في المئة . وقالت اليونيدو أن تقدير الاستهلاك كان يقوم على أساس استقصائها وعلى أساس أن الغرف التجارية وصانعين آخرين مختلفين قد ذكروا استعمالات احتمالية إضافية للـ TCA . وذكرت اليونيدو أنه تم التأكد من أن الاستهلاك في الخطة كان ، إلى حد بعيد ، من مقادير مخزونة ، ولذا لم يظهر في تقارير الاستهلاك المقدمة إعمالاً للمادة 7 .

التمويل بأثر رجعي

40- أن خطة المذيبات تتضمن تمويلاً بأثر رجعي للتكاليف الإضافية لإزالة الـ CFC-113 والاستهلاك المتبقي من الـ TCA لدى Beta Proses . وطلبت الأمانة معلومات إضافية بشأن التأكد من خط أساس المنشأة قبل تحولها ، ومن التكنولوجيات والمعدات التي تم تركيبها وتكاليفها ، والأساس الذي تقوم عليه تكاليف التشغيل الإضافية المطالب بها . وطلب توضيح عن ما إذا كانت المادة الدافعة المستعملة مع الـ CFC-113 والـ TCA قبل التحول كانت تحوي CFC ، أم كانت المنشأة قد تحولت من قبل إلى مادة هيدروكربونية دافعة إيروسولية ، بينما لا تزال تستعمل الـ CFC-113 والـ TCA بإعتبارهما العنصرين النشطين . وفي الحالة الأخيرة ، بين المعدات تكون قد تم تصميمها لملئها بالمواد القابلة للاشتعال . وفي هذا الصدد قالت اليونيدو أن الشركة سبق أن تلقت فعلاً تمويلاً من الصندوق المتعدد الأطراف من خلال البنك الدولي ، لتغطية عنصر الإيروسولات .

41- لاحظت الأمانة أن مشروعات مماثلة اعتمدتها اللجنة التنفيذية قد اعتبرت من مشروعات الإيروسولات ، على الرغم من أن الـ CFC-113 و/أو TCA إنما يتم ملؤها في القوارير بإعتبارهما المادتين النشطتين ، على أساس عتبة جدوى تكاليف تبلغ 4.40 دولار/كغ . وعلى هذا الأساس فإن الحد الأقصي من التمويل المؤهل لمنشأة Beta Proses هو 000 35 دولار أمريكي .

الطفايات التي تعمل بالـ CTC

42- بينت الخطة القطاعية أن الشركة Oknal هي المستعمل الوحيد للـ CTC كعامل إطفاء . وعلى هذا الأساس ينبغي أن يكون المشروع هو المشروع الختامي في صناعة الوقاية من الحريق حيث أن تركيا قد تلقت فعلاً بنوكاً لخزن الهالونات ومن خلال هذا المشروع بينت أنها لن تقدم أي مشروعات جديدة في قطاع الهالونات .

43- إن انقسام الـ CTC الكيماوي عندما يلامس حرارة وفلز ساخن وكذلك أنجذابه إلى أول أكسيد الكربون الذي يمثل منتج فرعي ، قاتلاً للصحة ، هما أمر أدى إلى إزالة هذه المادة بسرعة . وفي هذا الصدد سعت الأمانة إلى الحصول على تأييد بأن طفايات الـ CTC مشروعة في تركيا . وأيدت اليونيدو أن Oknal تحمل ترخيصاً لصنع طفايات الـ CTC .

44- أشارت الأمانة إلى أن عتبة جدوى التكاليف للطفايات هى 1.48 دولار /كغ. ولذا فإن أقصى حد مؤهل من التمويل لهذا النوع من المشروعات القائمة على أساس الاستهلاك المبين في الاقتراح يكون 528 27 دولار أمريكي . وقالت اليونيدو أن هذه العتبة قد وضعت للطفايات التي تعمل بالهالونات ، ولذا ينبغي عدم تطبيقها على طفايات الـ CTC.

45- تبينت أمانة الصندوق أيضاً قضايا أخرى تتصل بتكلفة الأسطوانات وعدد الشهور المستعملة في حساب تكاليف التشغيل . وهذه القضايا لا تزال قيد المناقشة .

الـ TCA لمنشآت النسيج

46- طلبت الأمانة أيضاً بيانات إضافية عن منشآت النسيج التي تستهلك الـ TCA لإيجاد أهلية تلك المنشآت للتمويل (مثلاً تواريخ إنشاء قدرة الإنتاج وطريقة إيجاد خط الأساس الخاص بها) وكذلك المطالبة بتكاليف إضافية للمنشأة (على أساس 38,5 دولار /كغ) . ولاحظت الأمانة أنه في المشروعات التي سبق إعتمادها ، كان مبلغ إسمى قدره 500 دولار أمريكي لكل منشأة قد تم اعتماده لتعزيز التهوية أو لتحسينات مماثلة في مكان العمل ، لتسهيل استعمال مذيبات تنظيف بديلة تستعمل لتنظيف في نقاط محددة ، بالإضافة إلى مساعدة تقنية متواضعة في مجال مواصفات التهوية والإدارية ، في سبيل تسهيل الإزالة .

47- في هذا الصدد قالت اليونيدو أن الخطة القطاعية تقترح تزويد صانعي المنسوجات بمحطات تنظيف ذات جهاز لإخراج العوادم ، بتكلفة تبلغ 000 12 دولار أمريكي وتستعمل مزيجاً مصمماً خصيصاً لهذا الغرض من المواد الهيدروكربونية . وبالنسبة لأثنتين من الشركات ، تتضمن الخطة معدات صممت خصيصاً ، ذات قدرة عالية على التنظيف ، وآلة غسل بتكلفة إجمالية تبلغ 000 800 دولار أمريكي .

48- لاحظت الأمانة أنه حيث أن آخر استهلاك مبلغ عنه (2002) من الـ TCA هو 10.8 طن ODP ، وحيث أن المشروعات المعتمدة ولكن غير المنفذة بعد ستزيل 15.4 طن من الـ TCA ، يبدو أن إزالة مزيد من الـ TCA في تركيا تكون غير مؤهلة للحصول على تمويل . والتمويل المطالب به لقطاع المنسوجات يبدو منطوياً على إزدواجية حسابية .

استعمالات البروموكلوروميتان الخاضعة للرقابة

49- صدقت تركيا على تعديلي مونتريال وبيجنغ لبروتوكول مونتريال في 10 أكتوبر 2003 .

50- أشارت الأمانة إلى أن الـ BCM لم يدرج في المرفق ألف بالمقرر 14/X الصادر عن مؤتمر الأطراف ؛ ولذا فإن أية كميات مستهلكة تعتبر من المواد المستعملة كتموين للإنتاج . وفي هذا الصدد فإن عنصر الـ BCM في خطة المذيبات (824 986 دولار أمريكي) غير مؤهل للتمويل أو لإدراجه في الخطة القطاعية . ولاحظت الأمانة ايضاً أن الأطراف في بروتوكول مونتريال ، في اجتماعها الـ 15 ، قد اعتبرت أن الـ BCM المستعمل إنما هو استعمال لعامل تصنيع خاضع للرقابة ، لإنتاج losartan potassium (وسوف ينظر في هذا التطبيق في الاجتماع الـ 17 للأطراف) .

إدارة شؤون المشروع

51- لاحظت الأمانة أن برنامج المساندة التقنية المقترح أن يضم جانباً تنظيمياً حكومياً ، مثل إصدار معايير وإصدار شهادات ، بالإضافة إلى عنصر المساندة السياسية والإدارية ، يمثل في مجموعه 7.3 % من تكاليف عنصر الاستثمار المقترح

. وهذا المشروع هو جزء من البرنامج الوطني التركي لإزالة الـ ODS ، وعنصر الـ CFC في هذا البرنامج قد سبق اعتماده ، شاملاً التمويل للجوانب المؤسسية والإدارية .

52- في هذا الصدد طلب من اليونيدو أن يبين إلى أي مدى سيتم تنسيق الجانب الإداري في هذا المشروع مع جوانب برنامج الـ CFC ، وإلى أي مدى سيستمد من الخبرة الإدارية الموجودة من قبل . وقالت اليونيدو أن مبلغ 000 198 دولار تطلبه حكومة تركيا لإدارة هذا المشروع .

53- أن أمانة الصندوق واليونيدو لا تزالان تناقشان القضايا المتعلقة بهذا المشروع ، بما في ذلك الاستهلاك والتكاليف الإضافية المؤهلة للتمويل . وسوف يبلغ الاجتماع الـ 41 بنتائج هذه المناقشة .

توصية

يستكمل .

REFRIGERATION SECTOR PLAN TURKEY

2004 ANNUAL PROGRAM

TECHNOLOGY DEVELOPMENT FOUNDATION OF TURKEY
(TTGV), NATIONAL OZONE UNIT (NOU) AND

THE WORLD BANK

November 24, 2003

TABLE OF CONTENTS

Attachment 1. Contracted SME List

Attachment 2 Turkish RSP – SME Conversion – Evaluation Criteria

Attachment 3 Training programme

Attachment 4 Locations of recycling and reclaim centers

Attachment 5 Draft layout for reclaim centers

Attachment 6 Recovery / Recycling Study Tour - Report

Attachment 7 Selection/support criteria for first round of chiller replacement

Attachment 8 Selection/support criteria for second round of chiller replacement

VERIFICATION REPORT FOR THE CFC CONSUMPTION IN TURKEY FOR 2002 & 2003

Introduction

1. In accordance with the Executive Committee's approval of the "Agreement for Turkey, Refrigeration Sector Plan (RSP)" (**Error! Unknown document property name.**, Decision and Annex), Government of Turkey is hereby requesting release of the **third tranche of US$ 1.0 million** for the implementation of the 2004 Annual Program. With this funding, CFC consumption will be limited as per figures given Agreement for Turkey. (**Error! Unknown document property name.**, Decision and Annex). Details of the 2004 annual program are provided in Section B.

2. Within the Sector Plan, Turkey agreed to the following control targets for CFC-11 consumption in the PU foam sector.

National Control Targets of Turkey for CFC-11, CFC-12 and CFC-115 consumption in ODP tones

	1999 Baseline	**2001**	**2002**	**2003**	**2004**	**2005**	**2006**	**2007**	**2008**	**2009**
Maximum allowable CFC-12 consumption (ODP tonnes)	736	700	650	334	166	100	0	0	0	0
Maximum allowable CFC-11 consumption (ODP tonnes)	1,049	300	250	200	150	50	0	0	0	0
Maximum allowable CFC-115 consumption (ODP tonnes)	9	9	9	0	0	0	0	0	0	0
Max allowable total ODP (ODP tonnes)		977	909	534	316	150	0	0	0	0
Total agreed funding (US $ million)		3.5	2.5	1	0.75	0.75	0.5	0	0	0
Agency support costs (US $ million)		0.295	0.175	0.150	0.045	0.03	0.03	0.03	0.03	0.025

Part A

Implementation Status of the 2003 Annual Program
(As the end of September, 2003)

1. Introduction

The refrigeration sector was approved in December 2001. 2002 implementation has been executed as per implementation plan 2002 with some corrections and a status report has been submitted. The second implementation Plan covers the period from December 2002 through December 31, 2003. All targets set by the sector plan after its approval in December 2001.

Taking into account the short time available to reduce the import to zero, a number of activities had to be initiated already in 2002 and 2003 in order to ensure the impact in 2004 and onward.

This second annual plan consists of the following key components: a) review and strengthening of existing phase-out policies and regulations; b) issuance of CFC import quotas for 2003 (quotas for 2002 were issued to importers consistent with the draft sector plan); c) continue the implementation of signed contracts with SME commercial refrigeration companies; d) continue the implementation re-training of the refrigeration industry as per contracted; e) continue the implementation of the recovery/recycling/reclaim program as per contracted; f) start the training of customs officials; g) sign contracts with eligible chiller companies as identified during 2002 and 2003; and h) start the end user retrofit programme.

2. Time Period Covered

December 31 2002 – December 31, 2003

3. Performance Indicators

3.1 ODS Consumption

The maximum allowable CFC consumption in the refrigeration – and foams sector in 2003 is given in the table below.

ODS Substance	**Consumption in refrigeration – and foams sector**
	Year-2003
CFC-12	334
CFC-114 and CFC-115	0
CFC-11 consumption	200
Total ODP consumption	534

All figures in MT.

The release of the third tranche for the 2004 Implementation Plan to be approved at the last meeting in 2003 is contingent on the performance target for 2003 being met.

The 2004 implementation plan will be submitted at the third meeting in 2003 accompanied by a 2002/3 consumption verification report.

3.2 Contracts Signed

In accordance with the agreement between Turkey and the Executive Committee of the Multilateral Fund, the third performance indicator is the value of contracts signed.

It is required that contracts amounting to 80% (US$ 2.0 million) of the available amount (US$ 2.5 million) are signed before the approval of the 2004 Implementation Plan.

4 Implementation in 2003

RSP activities have been carried out during 2003 and the following summarizes the discussions and results: that the performance requirements for 2003 are met.

4.1 Policies and Regulations

In order to support the implementation of the sector plan, the policies and regulations in place, has been reviewed and evaluated in the context of the sector plan by MoEF. If necessary, implementations to amend existing policies, improve the enforcement the existing policies or initiate new policies has been taken.

Under the terms of the Montreal Protocol, Article 5 countries are permitted to continue to produce and consume CFCs and halons untill 2010. The problem of illegal trade in ODSs are significantly exacerbated for this reason and also there are numerous potential sources and it is difficult to detect ODS in transit. Illegal production is not, however, the only possible source of illegal consumption.

MoEF is believed that the most important thing is training than policies and enforcement. Since Turkey has very long border.. This is also not enough for preventing illegal trade. At the International level, MoEF is thought a meeting with her neighbor countries. All developing countries have to be included identification codes for originating plant and labelling systems for ODS-containing equipment. However, MoEF plans to cooperate with customs, security department and judicial authorities in the national level.

4.2 Import Quotas

Quotas are issued to eligible importers on an annual basis. Each importer is entitled to a quota based on his historical imports and adjusted so the aggregate import is within the allowed annual consumption. While the 2002 quotas have been managed in accordance with the approved sector plan, the 2003 quotas was issued during the first quarter of 2003 based on specific requests from the individual importers.

The import license and realized import amounts of CFC11, CFC12, and CFC502 were given in the Verification Report, Table 7.

4.3 SME Conversion

Around 300 companies were identified in 1997-98 when the RSP was prepared. These were interviewed in 1998, 2001 and also in June 2002. Of the initial 300 companies, 40 have shifted to other business. Furthermore around 100 companies refused participation, which leaves 147 companies for the project.

Detailed information for these companies were obtained and reviewed by a technical consultant.

According the RSP, TTGV obtained prices for standardized equipment and standard costs have been applied for grant allocations to the SMEs. Additional criteria were applied for evaluation of each SME. Attachment 2 describes the evaluation criteria applied to evaluate the SME's.

TTGV informed all known SMEs that were eligible for contracting, in 2002. Of these, 61 and 8 companies have signed contracts in 2002 and 2003, respectively. In total, 69 companies have signed contracts with TTGV for a total amount of 1.6 mill US$. as given in Attachment 1. As of September 2003, 1.0 mill US$ has been disbursed to SME's. Additional applications from some other SME's have been received and they will be evaluated in October 2003. Hence, further contracts amounting to 100,000 US$, will be signed ultimately, in 2003, with these SME's. The implementation of sub-projects has taken more time than expected. The reason is that implementation with larger companies is relatively smooth; implementation by smaller companies is more complicated due to lack of management capacity. It is expected, however, that the implementation of all of the sub-projects will be completed by the end of 2004.

4.4 Training

The first component of training was the train-the-trainer seminar. It was performed in 2002. The organization, KOSGEB, has been selected to manage the training as well as the recovery & recycling projects. The contract was signed at the end of October 2002. The total amount of training contract is 274.000 US$.

The training has experienced delays, which can be explained by the change of government in Turkey, subsequent uncertainty on management at KOSGEB and the slow procedure of contracting governmental organizations

Procurement of the equipment to be used for the practical training was started by KOSGEB and will be finalized early October 2003.

KOSGEB has cooperated with Ministry of Education (MoEdu) for the implementation of training programme. 30 teachers will work for training over all Turkey. KOSGEB has contracted an experienced trainer in Turkey, Mr. Nuri Özkol, to conduct the second train-the-trainer seminar. Training materials and handouts are almost ready.

The training programme prepared by KOSGEB and MoEdu is to include a one-day course for technicians servicing smaller refrigerating applications (domestic – and serial produced commercial appliances) and a 5-day course for technicians servicing larger installations. So the training – despite the delays – can be completed by the end of 2004.

The training programme will be implemented and spread widely throughout the Turkish Education System; and will be continued after 2004. The training programme will begin in late October 2003. The training programme is presented in Attachment 3.

30 teachers would also be introduced to the equipment procured for the recovery/recycling project during the second train-the-trainer seminar.

4.5 Recovery/ Recycling/ Reclaim (RRR)

The International Competitive Bidding (ICB) process for the equipment foreseen started during summer 2002. Bid opening was September 6, 2002. Bids were received from RTI (US), ITE (Belgium) and Ekotez (Czech Republic).

Bids have been evaluated and bid evaluation report has been sent to World Bank for no objection. As per the result of Bid evaluation report RTI has been awarded the contract amounting 1.527 mill. US$ by TTGV.

KOSGEB, has also been selected to manage the recovery & recycling projects. The contract was signed at the end of October 2002. The reclaim and recycling centers will be hosted by KOSGEB. Locations have been selected (3 reclaim centers and 24 recycling centers) according to the plan given in Attachment 4. Provision of training-related equipment is being overseen by TTGV.

The equipment from RTI arrived in Turkey in June 2003. It is currently in a warehouse west of Istanbul. The equipment was inspected and no damages were noticed. Further a rough counting verified the quantities. Finally the reclaim equipment were separated and marked for each reclaim center (Istanbul, Izmir and Ankara).

Installation of reclaim centers will be managed by the local RTI representative, PIAS, in Istanbul in October. The plan is, that for the first reclaim center (in Istanbul), PIAS will be assisted by a technical specialist from Germany representing RTI/Agramkow. The remaining two reclaim centers will be installed and commissioned by PIAS.

The Istanbul reclaim center will be located at ISISO (an association for companies involved in manufacture of refrigerating – and heating appliances). ISISO has 270 members and is located west of Istanbul, where all refrigeration companies are concentrated. A draft layout of the reclaim center is provided in Attachment 5.

The reclaim center requires a substantial amount of civil works. This includes also some equipment to facilitate the auxiliary requirements for the reclaim center. 36,000 US$ has been allocated for the civil works and required equipment.

The scope of civil works is expected to cover the following:

- Availability of sufficient electrical power (app. 35 kW);
- Water supply and drainage;
- Voltage regulation (to avoid fluctuations which are common in Turkey) and UPS for laboratory equipment (1 kW, 10 minutes backup);
- Installation of compressed air; and
- General refurbishment of the building.

It was also agreed to procure 27 vacuum pumps to be located at the recycling and reclaim centers. The procurement has been finalized and 27 vacuum pumps were purchased by TTGV from a Turkish company, Cantas, in June 2003.

Since operation and management of a recovery/recycling/reclaim scheme is new in Turkey, TTGV and KOSGEB made a study tour to Czech Republic, Hungary and Georgia, which have different recovery/recycling schemes already in operation in March and April 2003. The main issue is how to motivate the technicians to recover refrigerant and bring it to recycling/reclaim. The report is provided in Attachment 6.

It was decided to amend the scope of equipment for the reclaim centers to facilitate optimal operation.
Amendments relate to storage of contaminated refrigerant, operation of reclaim and cylinder washing units and quality check of reclaimed refrigerant.

- Originally it was foreseen to have a central storage of contaminated refrigerant in Istanbul. For this purpose 5 tanks, a pump and a scale has been purchased. However, this will imply transfer of cylinders from other parts of Turkey. Therefore it was decided to establish smaller storages at the reclaim centers in Ankara and Izmir as well. This will require additional 2 scales and 2 pumps. 3 tanks will be located in Istanbul and one tank in Ankara and Izmir.
- The reclaim unit can operate with both small cylinders and large tanks due to its high capacity. It is found to be more practical if operation is from large tanks to minimize cylinder handling and manpower for operation. This will require additional 2 tanks for each reclaim center (1 tank for CFC-12 and 1 for HCFC-22). The tanks should be equipped with internal float switch to avoid overfilling.
- Prior to cylinder washing the cylinder valve shall be dismantled. A special tool is required for this and such tool is not part of the supply from RTI. The tool can easily be manufactured locally. Further a pump is needed to pump the wastewater through the filtering system. This pump can also be found in local market.
- It was informed during the study tour, that technicians might doubt quality of reclaimed refrigerant and therefore hesitate using it. This will naturally hamper the scheme. It was therefore decided to provide quality certificate with each batch of reclaimed refrigerant (also an argument to operate reclaim unit from tanks rather than small cylinders). Gas chromatographs are purchased to verify chemical composition. However, it was decided to also purchase Karl Fisher titration equipment (for checking of moisture) and equipment to check for residual oil.

The total amendment and its budget is as follows:

• 2 x scales @ 3,000 US$	= 6,000 US$
• 2 x transfer pumps @ 6,000 US$	= 12,000 US$
• 6 x 1000 lbs tanks with level switch @ 1,000 US$	= 6,000 US$
• 3 x Karl Fisher titrators @ 12,000 US$	= 36,000 US$
• 3 x residual oil test equipment @ 333 US$	= 1,000 US$
• 3 x pump for wastewater @ 333 US$	= 1,000 US$
• 3 x tool for valve removal @ 333 US$	= 1,000 US$
TOTAL	= 63,000 US$

Procurement process for the equipment foreseen started during August 2003. It will be completed in early October 2003.

4.6 Customs training

Customs training is planned for 2003. A meeting was held at the end of January 2003 with MoEF and the Customs department in order to determine and agree strategy (phased implementation) and equipment needs.

After the meeting MoEF requested TTGV to only include customs training personnel from official ODS entry points. There are a total of 9 such personnel presently designated (5 x Istanbul, 2 x Izmit, 1 x Izmir and 1 x Ankara). This is considered insufficient, since illegal import/export likely will take place at unofficial customs points. However, the request of MoEF is considered phase I and training for officials at these 9 entry points is planned for early November 2003.

It was decided to purchase 25 refrigerant identifiers with total estimated costs of 40,000 US$. Procurement of refrigerant identifiers, which will be needed for the customs officials, has begun during August 2003. It will be completed in early October 2003.

Phase II of customs training – pending MoEF recommendations – is planned for 2004. This will be more comprehensive and cover all major entry points into Turkey. The second phase will also involve procurement of portable refrigerant identifiers.

4.7 Chiller Replacement

The chiller replacement component has also been accelerated, which turns out to be very beneficial, since the practical chiller replacement needs to take place during winter, where there is no need for cooling.

Since all chiller installations are different and have special features, it has been decided to select a number of chillers representing different applications. It is also a reference for the second round chiller replacement, in fall 2003.

First round chiller replacement criteria have been discussed and agreed. The criteria for first round are provided in Attachment 7.

Application forms have been prepared and sent to the initially selected 5 chiller owners. 3 application forms were received from chiller owners in November 2002. All have been evaluated and contracts amounting to around 710,000 $ were signed in January 2003. The mentioned contracts involved replacement of 6 chillers. As of September 2003, 0.69 mill US$ has been disbursed for the first 3 chiller projects.

A survey was conducted to identify additional CFC chiller installations during February-March 2003. So far, around 80 chillers are potential for coming rounds. The 80 chillers are located at around 50 companies. It was agreed to keep a high profile on environmental issues. This means that interim technologies such as HCFC are not to be considered. Further, energy savings should be kept at a maximum.

Methods / procedures for verification of energy savings were discussed and it was agreed to measure energy savings using the method applied to a similar project in Mexico. This required procurement of some instruments, non-intrusive flow meter, wattmeter and thermometers. The equipment, which cost around 13,000 US$, has been procured. The measured data was inserted into a simulation program and annual energy consumption was estimated. This has been done both with the old chillers and the new chillers. York International has provided the simulation software.

Lessons learned from the first round are:

- Timing is important, since chillers normally are to be replaced in off-season (winter);
- Support so far seems to be more than sufficient, and future support may be slightly reduced;
- Energy efficiency of new chillers has not been the main selection criteria for the participants. The timing factor may have influenced this, since it is of major importance that chillers are installed when cooling season starts.

Preliminary results of the verification from 3 chiller projects shows energy savings of around 20%, but more detailed calculations are required.

Two chiller seminars were conducted in Antalya and Istanbul in June 2003 to provide information about the chiller replacement project and to receive applications from potential chiller owners. Both seminars had 21 participants. The overall impression of the chiller seminars is that chiller owners are interested in such a fund for chiller replacement. Chiller suppliers also participated in the seminars.

Five application forms have been received from an additional 5 chiller owners in early September 2003. One chiller owner postponed its application to 2004. All have been evaluated and contracts amounting to around 1.05 $ will be signed in October 2003. One application has been rejected because the old chillers operate with R-22.

For the second round chiller replacement, preliminary selection criteria are based on the following:

- Application form from chiller owner including proposed financial support;
- Chiller age (according to ICF study chillers with age around 10 years will provide optimum cost effectiveness);
- Chiller type (centrifugal) and refrigerant (only CFC's); and
- Cost effectiveness. A cost effectiveness factor being based on chiller capacity, age and energy efficiency improvements has been formulated.

So, selection criteria have been revised according to the lessons learned as provided in Attachment 8.

4.8 End-user retrofit

As of September 2003 this activity has not started. KOSGEB training was a pre-condition for retrofits done by the SME's. Initially the retrofit cost needs to be verified. Therefore it has been agreed to contact the companies Klimasan and Ugur and offer them participation. Klimasan and Ugur were visited in August 2003 and potential participation in the project was discussed.

Klimasan and Ugur expressed interest and agreed to investigate the potential and provide information on service organization as well as retrofit costs mid October 2003.

It is planned that the total contract amounting 200,000 US$. will be signed with Klimasan and Ugur for retrofitting of its commercial refrigeration products late 2003.

It is also expected that KOSGEB, through their training, would identify other beneficiaries and participants for 2004.

4.9 Technical Assistance & Project Management

US$ 65,000 has been disbursed for the activities of technical assistance & project management office.

4.10 Summaryt

The total contract amount is 5.784 mill.US$ as the end of September 2003 as per the following table. Hence, the performance targets have been met for 2003.

Cost Table

Activity	Amount allocated for 2002 (US$)	Amount Contracted (in 2002) (US$)	Amount allocated for 2003 (US$)	Amount Contracted (as of September 2003) (US$)	Total Amount allocated for 2002+2003 (US$)	Total Amount Contracted (as of September 2003) (US$)
SME program	1,800,000	1,390,770	250,000	,217,530 - 100,000 [1]	2,050,000	1,608,300 - 100,000 [1]
Recovery/recycling	600,000	1,527,484	1,100,000	10,500 - 100,000 [2]	1,700,000	1,537,984 - 100,000 [2]
Customs Training			200,000	50,000 [3]	200,000	50,000 [3]
Chiller replacement	900,000	485,388	660,000	217,798 - 1,050,000 [4]	1,560,000	703,186 - 1,050,000 [4]
End user		0	90,000	200,000 [5]	90,000	200,000 [5]
Training activities	100,000	286,329	100,000		200,000	286,329 -
Technical assistance program/Project management office	100,000	84,373	100,000	65,000 -	200,000	149,373 -
Total	3,500,000	3,774,344	2,500,000	2,010,328 -	6,000,000	5,785,172 -

[1] Further contracts amounting 100,000 US$. is planned to be signed by late 2003 with the remaining SME's.
[2] Additional equipment amounting 100,000 US$ will be purchased in October 2003 as explained in Item 3.
[3] It is planned to be disbursed late 2003 for Custom training activities and equipments.
[4] Contracts amounting 1.05 Mill. US$ will be signed in October 2003 for Chiller replacement as explained in Item 5.
[5] Total contract amounting 200,000 US$. will be signed by late 2003 as explained in Item 6.

MoEF will inform the secretariat by 30th September regarding official 2002 ODS imports. For 2003, licenses will not exceed the quantities specified in the agreement under the RSP.

Part B
2004 Annual Program

1. Introduction
The refrigeration sector was approved in December 2001. 2003 implementation has been executed as per implementation plan 2003 with some corrections and a status report has been submitted. The third implementation Plan will cover the period from December 2003 and through December 31, 2004. The CFC consumption target will be met for 2004 as given in the Implementation Plan (see table below). All targets set by the sector plan after its approval in December 2001.

Taking into account the short time available to reduce the import to zero, a number of activities have to be initiated and continued in 2003 and 2004 in order to ensure the impact in 2004 and onward.

This third annual plan will consist of the following key components: a) review and strengthening of existing phase-out policies and regulations; b) issue CFC import quotas for 2004 (quotas for 2003 were issued to importers consistent with the draft sector plan); c) continue for the implementation signed contracts with SME commercial refrigeration companies; d) continue the implementation re-training of the refrigeration industry as per contracted; e) continue the implementation of the recovery/recycling/reclaim program as per contracted; f) continue the implementation of customs officials training; g) sign contracts with eligible chiller companies as identified during 2003 and 2004; and h) continue the implementation of end user retrofit programme.

2. Time Period Covered
December 31 2003 – December 31, 2004

3. Performance Indicators

3.1 ODS Consumption
The maximum allowable CFC consumption in the refrigeration – and foams sector in 2004 is given in the table below.

ODS Substance	**Consumption in refrigeration – and foams sector**
	Year-2004
CFC-12	166
CFC-114 and CFC-115	0
CFC-11 consumption	150
Total ODP consumption	316

All figures in MT.

The release of the fourth tranche for the 2005 Implementation Plan to be approved at the last meeting in 2004 is contingent on the performance target for 2004 being met.

The 2005 implementation plan will be submitted at the third meeting in 2004 accompanied by a 2003 consumption verification report.

3.2 Contracts Signed

In accordance with the agreement between Turkey and the Executive Committee of the Multilateral Fund, the third performance indicator is the value of contracts signed.

It is required that contracts amounting to 80% (US$ 0.8 million) of the available amount (US$ 1.0 million) are signed before the approval of the 2004 Implementation Plan.

4 Implementation Plan for 2004

The key components of the main activities in the 2004 Implementation Plan are as follows:

4.1 Policies and Regulations

In order to support the implementation of the sector plan, the policies and regulations in place will be reviewed and evaluated in the context of the sector plan. If necessary, implementations to amend existing policies, improve the enforcement the existing policies or initiate new policies will be taken.

4.2 Import Quotas

Quotas are issued to eligible importers on an annual basis. Each importer is entitled to a quota based on his historical imports and adjusted so the aggregate import is within the allowed annual consumption. While the 2003 quotas have been managed in accordance with the approved sector plan, the 2004 quotas will be issued during the first quarter of 2004 based on specific requests from the individual importers.

4.3 SME conversion

Signature of further contracts will be continued by late 2003 with the remaining SME's.

As per the written statements in the signed agreements, project monitoring will be continued and the completed projects will be reported by visiting companies. With this contracts, SME's obliged to report with the documentary evidence that CFC's are no longer used by the company except for service purposes. Agreement also states that company baseline equipment retained for service purposes only (charging units, vacuum pumps, and /or leak detectors) shall not be used for manufacture, assembly or installation of new refrigeration appliances. The projects are planned to be completed at the end of 2004.

4.4 Re-Training

The training of refrigeration technicians will be continued during 2004 as planned.

4.5 Recovery and Recycling Scheme

The equipment from RTI arrived in Turkey in June 2003. Equipment will be distributed to the SME's after they have participated in the training.

The reclaim and recycling centers will be established according to the plan given in Attachment 4 & Attachment 5. The organization, KOSGEB, will be responsible for either hosting the centers or subcontracting suitable companies for hosting.

Finally remaining segments of the Turkish refrigeration sector will receive recovery equipment.

The process will be monitored by KOSGEB and reports of the amounts being recovered/reprocessed will be submitted to TTGV quarterly.

4.6 Chiller Replacement Program

Establishment of the chiller database began during fall 2002. From this database a number of chillers were selected and contracts signed with the chiller owners as the first round (amounts up to the budget allocation). During winter 2002/03 the new chillers were installed and commissioned.

A survey was conducted to identify CFC chiller installations during February-March 2003.. Around 80 chillers have been identified as potential replacements for coming rounds.

After the seminars conducted in Antalya and Istanbul, applications received from chiller owners were evaluated. A number of chillers were selected and contracts will be signed with the chiller owners as the second round. During winter 2003/04 the new chillers will be installed and commissioned.

Signature of further contracts will be continued in 2004 with the identified chiller owners.

4.7 Customs Training

As per the agreed strategy (phased implementation), in Phase I, training for officials at 9 entry points will be realized in early November 2003 and distribution of refrigerant identifiers will be made during the training.. Procurement of 25 refrigerant identifiers, which will be used by the custom officials, will be completed early October 2003.

After getting the result of the 1st phase, with the suggestions of MoEF and Custom Department, Customs Training part will be carried out with the new training and new procurement of refrigerant identifiers for other custom departments.

4.8 End-User Retrofit

As a result of contacting 2 commercial refrigeration producers, Klimasan and Ugur, information on service organization as well as retrofit costs will be provided mid October 2003. So, first phase of end-user retrofit the contracts amounting 200,000 US$. will be signed with Klimasan and Ugur for retrofitting of its commercial refrigeration products late 2003.

The identification of other beneficiaries will start in parallel with the training. KOSGEB will report back on capabilities of the companies, and based on this, beneficiaries will be selected for the second phase end-user retrofit.

A strategy for the end-user retrofit including more detailed information of the cost implications will be made during spring 2004. Based on the strategy a number of companies will be invited to participate in this activity.

Results of first round end-user retrofit will be disseminated during spring 2004 to remaining companies and these will be invited to apply for participation in the subsequent phases of the component.

4.9 Technical Assistance & Project Management

Technical assistance for above activities & operation of the project management office will be continued.

4.10 Cost Table

Activity	Amount allocated for 2004 (US$)	Activity starting	Contracts signing completed	Full ODS impact of activity
Policies and regulations	0			
Quota allocated	0	Dec. 2003	Sept. 2004	
SME program	0	Dec. 2001	Dec. 2003	25% in 2002 75% in 2003 100% in 2004
Recovery/recycling	0	May, 2002	Dec. 2003	2005
Customs training	100,000	April 2003	Dec. 2004	
Chiller replacement	600,000	Jan. 2003	Ongoing	2005
End user	200,000	Jan. 2003	Ongoing	2005
Training activities	50,000	Jan. 2002	Ongoing	NA
Technical assistance program/Project management office	50,000	Jan. 2003	Ongoing	NA
Total	1,000,000			

Attachment 1

TTGV-NO	NAME OF COMPANY	BUDGET (US$)
6	Nurdil Teknik Soğutma San. ve Tic. Ltd. Şti.	53,850
12	Altuğ Soğutma Sistemleri Otomotiv Turizm San. ve Tic. Ltd. Şti.	2,975
14	Buzdon Soğutma Isıtma ve Dayanıklı Tüketim Malları San. ve Tic. Ltd. Şti.	47,925
15	Teknik İş Soğutma ve Isıtma San. Dayanıklı Tüketim Mamülleri Pazarlama Ltd. Şti.	5,305
18	Behzat Makina San. ve Tic. Ltd. Şti.	2,975
19	Alaska Gıda Soğutma Dayanıklı Tüketim Malları San. ve Tic. Ltd. Şti.	2,975
20	Akmaks Soğutma Isıtma Sanayi Tic. Ltd. Şti.	3,450
32	Mega Mutfak Eşyaları ve Ticari Buzdolapları	2,975
38	Gümüş Güneş Ticaret	2,975
44	Yüksel Ticaret Mutfak Cihazları ve Sanayi Buzdolapları	2,975
48	Üçkar Soğutma Mutfak Gereçleri San. ve Tic. Ltd. Şti.	2,975
50	Algaz Mutfak Cihazları San. ve Tic. A.Ş.	4,950
64	Şenol Ticari Buzdolabı Sanayii	6,925
71	Buzkap Soğutma San.Tic.Ltd. Şti.	44,925
75	Termo Ark San. ve Tic. Ltd. Şti.	4,615
77	Burak Pazarlama Gıda San. ve Tic. A.Ş.	2,975
78	Kaysu Su Arıtma San. ve Tic. Ltd. Şti.	127,400
82	Ömür Isı Sanayi ve Tic. A.Ş.	2,975
91	Buzullar Soğutma San. Ltd. Şti.	4,120
94	Ata Makina Isı San.ve Tic.Ltd. Şti.	3,450
104	Termonem Soğutma ve Süpermarket Ekipmanları San. İç ve Dış Tic. Ltd. Şti.	43,975
135	Karsan Buzdolabı San.	44,450
155	Alaska Soğutma Sanayi	2,975
158	Akçay Soğutma Klima ve Havalandırma San. Tic. Ltd. Şti.	45,950
160	Bakaçlar Soğutma San. ve Tic. Ltd. Şti.	4,950
164	Mattaş Endüstriyel Mutfak San. A.Ş.	6,255
165	Ekosan Mutfak ve Soğutma Ekipmanları San. ve Tic. Ltd. Şti.	59,775
166	Yılmaz Soğutma Sanayi	4,950
167	Öz Buz Teknik Soğutma Sanayi	6,925
169	Mertsan Isıtma Havalandırma Klima San. ve Tic. Ltd. Şti.	2,975
177	İkizler Soğutma	2,975
180	Tekso Teknik Soğutma San. Tic. A.Ş.	95,800
181	Tekno Çelik Soğutma ve Mutfak Cihazları San. A.Ş.	8,900
185	DES Soğutma	2,975
187	Buzkar Soğutma	2,975
193	Kaplanlar Soğutma San. ve Tic. Ltd. Şti.	53,850
196	Kevser Soğutma	2,975
206	Capri Soğutma San. ve Tic. Ltd. Şti.	43,975
222	Şanlı Soğutma San. ve Tic. Ltd. Şti.	44,450
226	Gama Soğutma	2,975
229	Mekso Soğutma Sanayi ve Ticaret Ltd. Şti.	49,900
233	Teknik Soğutma	45,950
255	Buz Çelik Soğutma Malzemeleri ve Metal San. ve Tic. Ltd. Şti.	44,785
261	Buzsan Buzdolapları Mühendislik Hizmetleri Kuluçka Makinaları Tekstil Hizmetleri İmalat Sanayi ve Ticaret A.Ş.	2,975
265	Bütaş Klima San. ve Tic Ltd. Şti.	2,975
277	Gültekin Teknik Isıtma Soğutma San. ve Tic. Ltd. Şti	5,425
283	Kartaş Soğutma San.Tic.	43,975
284	Ege Fen Klima Sistemleri ve Turizm San. Tic. Ltd. Şti.	3,450
289	Diktaş Soğutma ve Metal İmalat San. ve Tic. A.Ş.	49,900
294	Kar-Buz Soğutma	45,615
295	Yaz-Kar Klima Soğutma San. Tic. A.Ş.	2,975
300	Ege Soğutmacılık Klima Soğuk Hava Tes.İth. İhr. San.ve Tic. A.Ş.	33,000
302	Doğal Isıtma Soğutma Cihazları	2,975
304	Tamer Soğutma San. ve Tic. A.Ş.	53,850
305	Marso Endüstriyel Soğutma Sanayi ve Ticaret Ltd. Şti.	43,975

306	Güldem Soğutma Sistemleri Klima Tesisat Taahüt Tic. ve San. Ltd. Şti.	2,975
308	Kartek Soğutma Sanayi ve Tic. Ltd. Şti.	2,975
312	ISM Makine Elektrik Sanayi ve Ticaret A.Ş.	41,000
314	Albiso Klima Soğutma San.ve Tic. Ltd. Şti.	3,450
315	Özçil Dayanıklı Tüketim Mal. San. ve Tic. Ltd. Şti.	2,975
317	Korkmaz Soğutma	45,950
318	Teknik Soğutma	2,975
319	Ergül Teknik Soğutma ve Mutfak Dekorasyon San. Ltd. Şti.	43,975
320	Cantek Soğutma Mak. San. ve Tic. Ltd. Şti.	46,425
321	Meltem Klima	2,975
322	Asya Soğutma Isıtma Elem. Ve Gıda İşletmeleri San. Tic. Ltd. Şti.	2,975
323	Ahmet Yar Soğutma San. Tic. A.Ş.	99,200
324	Dört Mevsim Isıtma Soğutma İnş. Taah. San. ve Tic. Ltd. Şti.	56,080
325	Sepkimtaş A.Ş.	3,925
	TOTAL	**1.608.300**

Attachment 2

Turkish RSP – SME Conversion – Evaluation Criteria

1. Background

The most urgent component of the Turkish Refrigeration Sector Plan (RSP) is the conversion of the small and medium sized enterprises (SME), since these have been suffering from the accelerated Turkish ODS phase-out regulation.
Around 300 SME have been identified and interviewed in 1998, 2001 and in 2002. Of the around 300 SME's 147 companies responded to the 2002 survey and they will all be included in the project.
Remaining companies have either refused to participate (98 companies), have shifted to other business or have been closed (41 companies) or were impossible to reach (8 companies).
Application forms for the 147 SME's have been evaluated and their grant allocation determined using the subsequent evaluation criteria.

2. Eligibility Criteria

The following eligibility criteria have been applied:

- All companies using or have been using CFC-11 or CFC-12 are eligible for participation; and
- Companies using only non-CFC (HCFC or HFC) with no reported CFC consumption are eligible for participation and their HCFC / HFC consumption is taken as potential CFC consumption. However, this potential consumption is not taken into account in the final ODS phase-out calculation.

3. ODS Phase-Out Evaluation

The following criteria/methods have been applied for determination of ODS phase-out:

- Baseline for ODS phase-out is taken as either 1999 consumption or average 1997-99;
- Companies not reporting ODS consumption have been evaluated on production volume, production type and number of employees. A standard charge of either 10 kg CFC-12 or 1 kg CFC-12 per unit has been applied. This estimated consumption is not taken into account in the final ODS phase-out calculation; and
- Companies providing data for only 2000 and/or 2001 are evaluated as if 1999 production was similar to 2000 or 2001 production. This may result in a conservative estimate, since Turkey suffered from economical crisis in 2001; This estimated 1999 consumption is not taken into account in the final ODS phase-out calculation.

4. Grant Allocation

Grant allocation have been determined using the following criteria:

- No Cost Effectiveness threshold have been applied;
- Export is not deducted (based on first 45 received applications, where no export exceeded 10%);
- Eligible baseline equipment will be replaced on a one-to-one basis;
- Above-mentioned criteria will be adjusted, so that companies can receive one charging unit, one vacuum pump and one leak detector per 250 units annual production. The rationale for 250 annual produced units is one unit produced per day. Units may be charged on-site and therefore

companies may have difficulties transporting the equipment from one site to another in one working day;

- If a company will be eligible to receive several charging units or vacuum pumps (using above criteria), they have the freedom to spend the money for stationary charging units with higher capacity provided the cost is within the total allocation for charging units and vacuum pumps;
- All companies having manual PU operations are eligible for one PU dispenser;
- The standard PU dispenser will be low pressure (LP) and have a capacity of 60 kg/min. The rationale for dispenser capacity of 60 kg/min is that such capacity will facilitate proper foaming of most commercial refrigerating appliances;
- Companies being eligible for one or two foam dispensers may procure dispensers of different capacity or may procure high pressure (HP) dispenser(s) at their own choice. However, potential additional costs has to be covered by the SME;
- Standard cost for refrigerant equipment is determined as the maximum of 3 quotes obtained. The rationale for using maximum cost is that the equipment should be available within reasonable distance of the SME to ensure future servicing but also to facilitate normal commercial practice by the SME. Standard costs applied are as follows: Charging unit: US$ 1,165; Vacuum pump: US$ 475; Leak detector: US$ 335. (Standard cost evaluation is detailed in Item 6);
- Standard cost for PU equipment amounts to US$ 38,000 as defined by Cannon price quotation;
- All companies are given a grant allocation of US$ 1,000 for chemicals for test and trials of the refrigerating circuit; and
- All companies having PU operations are given a grant allocation of US$ 3,000 for chemicals for test and trials of the foam dispenser.

5. Baseline Disposal

The following rules will be applied for CFC baseline equipment:

- Companies having refrigeration baseline equipment (charging units, vacuum pumps and/or leak detectors) are allowed to keep this equipment for servicing purposes. Companies are committed to refrain from using this equipment for production of refrigerating appliances using CFC; and
- Companies having PU foam dispensers are obliged to dispose these as per Montreal Protocol rules. Documentary evidence for disposal shall be submitted to TTGV.

6. Standard Cost Calculation For Refrigeration Equipment

Price quotations were received from the companies Wigam and Refco, both represented in Turkey. Further the company, ITE, which is about to establish representation in Turkey, provided a price list applicable for Turkey. The price quotations were based on technical requirements sent by TTGV specifying standard equipment for evacuation, charging and leak detection.
The charging unit was specified so that two configurations should be quoted as follows:

- Configuration 1: Compact unit consisting of vacuum pump, filling glass, charging manifold, manometers and hoses; and
- Configuration 2: Separate components comprising vacuum pump, charging manifold, manometers, hoses and charging scale.

The prices obtained were as follows:

Company	Description	Type	Price (US$)
Wigam[1]	Charging unit – configuration 1	SP45D/VR/A6/4	475.40
	Charging unit – configuration 2	EPS42D/V/A6/4/EV	772.60
	Vacuum pump	DIP 402 (Including SW-68 oil for the vacuum pump	266.40
	Leak detector	TIF XP-1	282.30
Refco[2]	Charging unit – configuration 1	10705-RD-4-R-134a	991.30
	Charging unit – configuration 2	12800	708.10
	Vacuum pump	RL-4 (Including P-15-S-1 oil for the vacuum pump)	363.50
	Leak detector	XP-1	276.50
	Leak detector	ZX-1 (not including the spare sensor)	333.80
ITE[1]	Charging unit – configuration 1	CS 4D 4 22/44	1,162.10
	Charging unit – configuration 2	MK 50DS+2805 BC/4+E-348 x 3+ITE 9120	914,30
	Vacuum pump	MK 50DS (including 1 liter 500 P1 oil)	472,70
	Leak detector	ITE-5650A-FP + ITE-573	265,20
Standard cost	**Charging unit**		**1,165.00**
	Vacuum pump		**475.00**
	Leak detector		**335.00**

[1] Prices given in Euro: Conversion: 1 Euro = 0.9905 US$
[2] Prices given in Swiss Franc: Conversion: 1 CHF = 0.6744 US$

Attachment 3

TENTATIVE PROGRAM

Train-the-trainer seminar

Lesson duration: 40 minutes

Course hours: 09:30 (First day, 10:00)-17:30

Lunch break: 12:30 to 13:30

Practical work on used refrigerator

Lecturers: Mr. Nuri OZKOL (Mech.Eng) / Mr. Ole Nielsen (Mech.Eng)

Course Material: Revised translation of UNEP Document

First day

Lesson no.	Description	Background material
1		
2	Start of the seminar Presentation of participants Presentation of the course History of refrigeration Components of Vapor Compression Refrigeration Systems	
3		
4		
Lunch break		
5	Analysis of vapor Compression Refrigeration Cycle on Ph diagram Refrigerants, Types	
6		
7	Lubrication Oils	
8	Contamination of Refrigerant systems (with water,air, noncondensable gases, acids, etc.)	

Second day

Lesson no.	**Description**	**Background material**
1	Description of ozone layer Ozone depletion (cause / results) -skin cancer, cataract, damage on the life, weakening of human immune system	UNEP Document &/or overheads,software
2		
3	Environmental legislation against ozone depletion	"
4	Local legislation about refrigerants	"
Lunch break		
5	Montreal, Beijing, Kyoto protocols	"
6	Control of ozone depleting refrigerants Types of ODR, control Calendar on limiting usage and production of ODS's	"
7		
8	Alternative refrigerants	"

Third day

Lesson no.	**Description**	**Background material**
1	Installation of refrigerant systems	"
2	Service applications on Refrigerant Systems	
3	Service and maintenance equipment of Refrigerant systems, hand tools	
4		
Lunch break		
5	True Applications of servicing Refrigerant Systems	
6	False Applications of servicing Refrigerant Systems - Recovery, flushing, oil change, charging	
7		
8	Discussion	

Fourth day

Lesson no.	**Description**	**Background material**
1	Examination and demonstration of service equipment	Practical sessions
2		
3	Running the equipment	Practical sessions
4	Recovering the refrigerant	Practical sessions
Lunch break		
5	Reclaim / reuse of the refrigerant	
6	Leak detection, evacuation, exchange of components	Practical sessions
7		
8	Discussions and conclusions	

Fifth day

Lesson no.	**Description**	**Background material**
1	Summary of the seminar	
2		
3	Questions	
4	Exam (if required)	
Lunch break		
5	Conclusion	
6	Introduction of technician course notes Explanations on technician training	
7	Presentation of certificates to the participants	
8		

Program model

NO	PROVINCE	2003		2004				TOTAL PERSON	AUTHORIZED SERVICES NUMBER (REFRIGERANT SECTOR)	MINISTRY OF EDUCATION SCHOOLS (Industrial Technical Teachers School)	TRAINER NUMBER	TOTAL COURSE HOUR
		1 DAY (5 Hr)		I. HALF 5 DAY (25 Hr)		II. HALF 5 DAY (25 Hr)						
		Technicians		Technicians		Technicians						
		Course Number	Minimum Person	Course Number	Minimum Person	Course Number	Minimum Person					
1	ADANA	2	20	1	15			**55**	49	Yeşilevler EML	1	35
2	ANKARA	3	20	3	15			**105**	100	Yapı Meslek L	3	90
3	BURSA	2	20	2	15			**70**	64	Atatürk YTEM	1	60
4	DENİZLİ	1	20	1	15			**35**	25	Atatürk Tes. Tek.	1	30
5	G.ANTEP	1	20	1	15			**35**	23	Mehmet Akif Ersoy EML	1	30
6	İSTANBUL 1	11	20	8	15			**680**	694	Küçükçekmece İsmet Aktar EML	2	255
7	İSTANBUL 2	11	20	8	15					Yakacık EML	2	255
8	İZMİR	10	20	4	15			**260**	262	Bornova Seyit Şanlı EML	2	150
9	KAYSERİ	1	20	1	15			**35**	25	Mimar Sinan EML	1	30
10	KONYA	2	20	1	15			**55**	51	Meram EML	1	35
11	SAMSUN	1	20	1	15			**35**	35	Atakum EML	1	30
12	Ş.URFA	1	20	1	15			**35**	23	Şanlıurfa EML	1	30
13	ANTALYA	2	20			2	15	**70**	57	Atatürk EML	1	60
14	AYDIN	2	20			1	15	**55**	43	Mimar Sinan EML	1	35
15	BALIKESİR	2	20			2	15	**70**	56	100.Yıl EML	1	60
16	DİYARBAKIR	1	20			1	15	**35**	26	Burhanettin Yıldız EML	1	30
17	ISPARTA	1	20			1	15	**35**	22	Isparta EML	1	30
18	KOCAELİ	2	20			1	15	**55**	44	Atatürk EML	1	35
19	KÜTAHYA	1	20			1	15	**35**	25	Kütahya EML	1	30
20	MANİSA	2	20			1	15	**55**	48	Manisa EML	1	35
21	MERSİN	2	20			1	15	**55**	53	Mersin EML	1	35
22	MUĞLA	2	20			2	15	**70**	65	Muğla EML	1	60
23	TRABZON	1	20			1	15	**35**	23	Trabzon EML	1	30
24	ZONGULDAK	2	20			1	15	**55**	47	Zonguldak EML	1	35
TOTAL		**66**	**1320**	**32**	**480**	**15**	**225**	**2025**	1860		**29**	**1505**

Attachment 4

Locations of recycling and reclaim centers

Recycling centers will be located in the following cities:

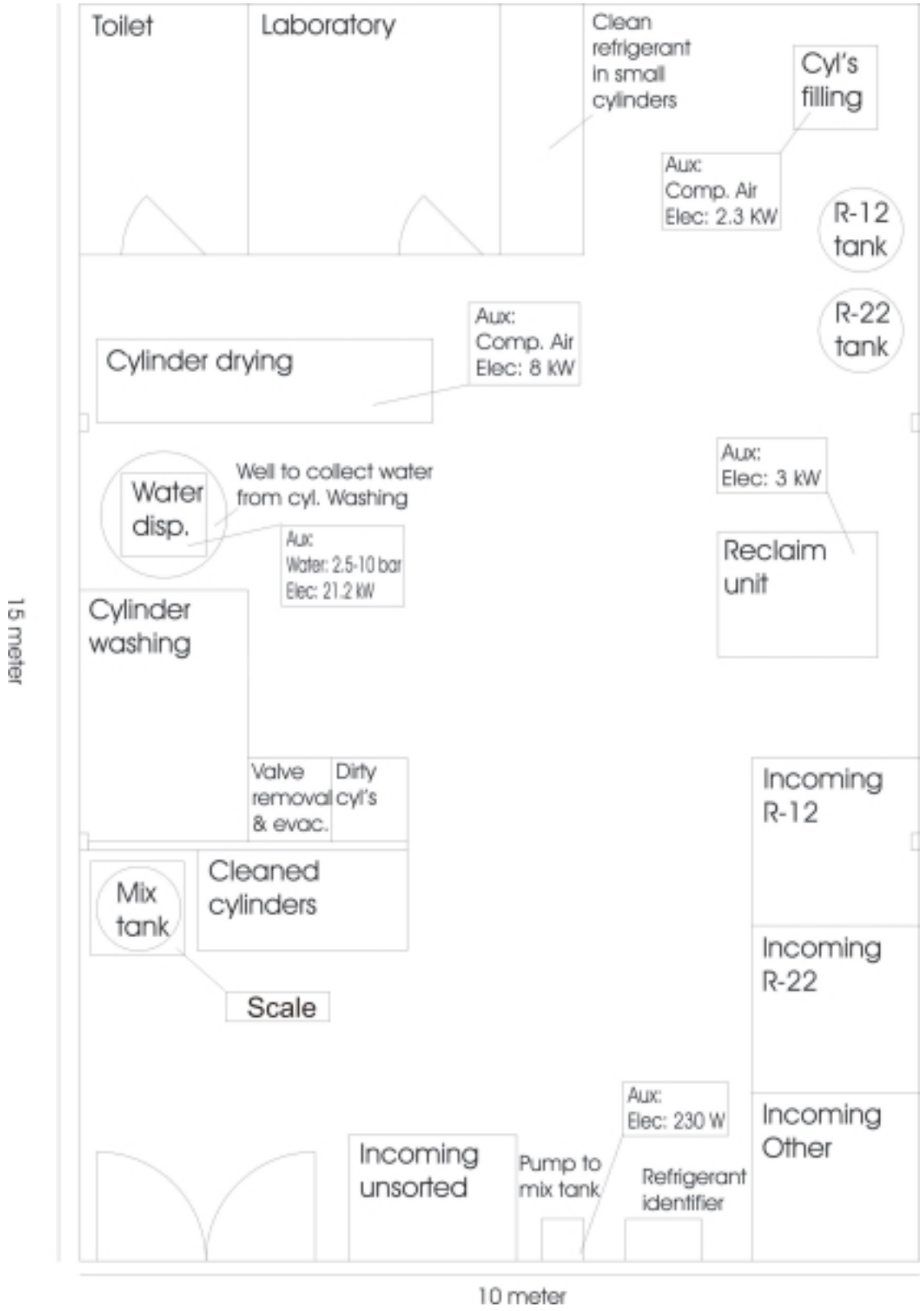
- Adana
- Ankara
- Antalya
- Aydin
- Balikesir
- Bursa
- Diyarbakir
- Gaziantep
- Icel
- Isparta
- Istanbul (2)
- Izmir
- Kayseri
- Kocaeli
- Konya
- Kütahya
- Manisa
- Mugla
- Samsun
- S. Urfa
- Sivas
- Tekirdag
- Zonguldak

Reclaim centers and storages will be located in the following cities:

- Istanbul
- Ankara
- Izmir

Attachment 5

Draft layout for Istanbul reclaim center and storage



Attachment 6

Recovery / Recycling Study Tour - Report

Turkish Refrigeration Sector Plan

In the period March 24 to April 5, 2003 Mr. Senol Ataman / TTGV, Mr. Nusret Özgünaltay / KOSGEB and Mr. Ole R Nielsen / RE-A-CT visited Czech Republic, Hungary and Georgia to collect experiences from implementation and operation of a recovery / recycling scheme as well as experiences from a re-training scheme for refrigeration service technicians.

Mentioned countries were selected, since the R&R schemes have their own specialties as well as each has faced problems during implementation. It is the aim to utilize this experience during implementation of the Turkish R&R and training project.

During the visit to Georgia, a potential cooperation on customs training was also discussed.

The study tour participants wish to express thanks to all persons met for their willingness to share experience as well as help in organizing meetings and site visits.

The following summarizes the discussions and findings:

Czech Republic

Background
The first Czech law on ODS was introduced in 1993. The law was connected with the Czech ODS production closure, which happened by January 1, 1994. According to this law, an environmental tax of 5 US$/kg refrigerant was applied, bringing the CFC-12 price at 6 US$/kg. This high tax led to substantial stockpiling of CFC-12. In 1995 the tax was further increased to 7 US$/kg. This led to a high activity in refrigerant recovery.

Recovery/recycling
The Czech recovery/recycling scheme was one of the first in Eastern Europe approved be the GEF in 1994. The scheme provided for 500 recovery units, 250 pieces with 50% grant support and 250 pieces with 25% grant support. In addition 2,000 recovery cylinders was included in the project (100% grant support). The scheme also included 13 collection centers as well as a refrigerant reclaim center (100% grant support).

Initially no refrigerant was collected. A questionnaire was sent to all companies having received recovery equipment and these confirmed that no refrigerant is recovered. However, if was realized that a certain practice has occurred. The technicians recovered and re-sold the refrigerant “unofficially”. A second survey was conducted where companies were allowed to be anonymous. This showed that the recovery operation actually was ongoing. The weakness of this practice is, that there is no quality control, since “unofficial” recovered refrigerant is either not cleaned or maybe only partly cleaned, which leads to increased failure rate of the refrigerating systems, especially those utilizing hermetic

compressors. It has been proven that the failure rate of hermetic compressors in Czech republic in mid 1990'ies was substantially higher than in other European countries. Therefore it was recommended only to use recovered and recycled refrigerant for semi-hermetic and open-type compressors.
However, with the improvement of the financial situation in Czech republic, the "unofficial" practice became less frequent and an increase of collected amounts of refrigerant was also experienced.

As of today, the only reclaim center, located at the company Ekotez in Prague, has turned out to be a profitable business. Actual profit amounts were shown to the study tour participants, but it was requested not to disclose these. A total of around 3 MT ODS is reclaimed annually.

The quality check at the reclaim center comprises a rough check of incoming refrigerant by means of a refrigerant identifier. Outgoing refrigerant is randomly (3-4 times per month) checked by means of a gas chromatograph and a Karl Fischer titrator (for water content). A more structured quality test, e.g. of all outgoing refrigerant was discussed and the Czech experience has shown, that in the case where a refrigerating system running with reclaimed refrigerant has a failure, the failure may often be claimed to relate to improper quality of the reclamation.

Training
A training manual was also prepared as part of the Czech recovery/recycling project. This manual is used for the technician re-training, which is followed by an exam. If the exam is passed, the technician gets the "green card". The "green card" has been promoted through a public awareness raising campaign. A copy of the training manual was obtained and it was endorsed that exerts from the manual could be used for a Turkish training manual.

Lessons learned
The Czech recovery / recycling scheme has initial problems in getting the proper function. It was experienced that a certain period is required for the technicians to understand the benefits. As for Czech republic, this period was around 5 years.

Czech republic has experienced refrigerating appliances using hydrocarbons as refrigerants. Cases where CFC-12 systems have been retrofitted into hydrocarbons are also reported. Unfortunately some of these retrofits have taken place without any marking of the refrigerating system telling that it contains a highly flammable refrigerant. This malpractice should be avoided through training.

The Czech Refrigeration Association has played an important role in the Czech recovery/recycling scheme, since this organization has regular meetings where initiatives and information can be conveyed.

Hungary

Background
The Hungarian ODS phase-out project was approved by the GEF in 1996. The project included a recovery/recycling/reclaim scheme as well as a training component for refrigeration technicians. The project was initiated prior to approval, so that preparatory work was done when the grant became effective.

Recovery/recycling

The R&R project included initially 650 recovery units, 50 recycling units and 1 reclamation center. However, it was revised during implementation since combined recovery/recycling units were very popular as all operations could be performed on-site. Procurement was very comprehensive (61 companies were invited to bid) and evaluation very complicated. It was decided as a first step to buy only 150 recovery and recycling units.

A second order was placed at another supplier comprising 150 recovery units and 175 recycling units. This procurement went smoother.

A mishandling of the recovery units was experienced. Both types utilize the so-called "oil-less" compressor, which gets it's lubrication from the oils contained in recovered refrigerant. However, if this compressor is used with virgin refrigerant, compressor is left without lubrication and will soon be damaged. Unfortunately this happened in Hungary and more unfortunately both suppliers disappeared from the market, so spare compressors were not available. As of today around 100 recovery units are damaged and not used.

The reclaim center is located at a refrigerant distributor in Budapest. Reclaim facilities include reclaim unit, gas chromatograph and Karl Fischer titrator. So far no major problems were experienced with the reclaim equipment. All incoming and all outgoing refrigerant is tested with above equipment. No information was given on the profitability of the reclaim center, except that around 12 MT refrigerant (CFC-12, HCFC-22 and HFC-134a) was processed annually. However, it was informed, that it was very difficult to sell reclaimed refrigerant since Hungary has extensive illegal import from former Yugoslavia. The price of the illegally imported CFC-12 is around one-third of the price of reclaimed CFC-12, so only larger companies, which are following legislation, do utilize this.

Training

The development of a training program was part of the Hungarian ODS phase-out program. This turned out to be very successful and as of now a total of 5,100 technicians have been trained and subsequently certified by a "green card". The Hungarian Refrigeration has administered the training and has now started to renew the "green cards". Of the 5,100 certified technicians it is expected that around 3,000 are active in servicing refrigerating appliances.

The "green card" was strongly supported by a public awareness raising campaign – also part of the Hungarian ODS phase-out program.

Lessons learned

Hungary faced two major problems. First is related to the procured equipment, where both suppliers disappeared. Second problem was the illegal import of CFC-12, which emphasizes the importance of a comprehensive customs training program.

The reclaim operation seems costly, since both incoming and outgoing refrigerant is subjected to laboratory tests. Incoming refrigerant should only be screened for mixtures, which will reduce the operational costs of the reclaim center.

The trend in Hungary is, that former large state-owned service companies are not split-up into small companies. These small companies do lack time for education/training purposed and might also not see the need, since ODS operations can continue with illegally imported CFC-12.

The Hungarian Refrigeration Association has been the key player in both recovery/recycling project as well as the training project.

Georgia

Background
Georgia was originally a non-Article 5 country due to it being part of Soviet Union in 1987 when Montreal Protocol was agreed upon. In 1996 Georgia request re-classification and was subsequently "granted" A-5 status. Since Georgia has no manufacturing industries using ODS, the Montreal Protocol activities so far has been a refrigerant management plan (RMP) implemented by UNEP/UNDP; a customs training project – under implementation with UNEP and a Methyl Bromide project jointly implemented by UNIDO and Government of Canada. Recently an end-user project was approved – to be implemented by UNDP.

Recovery/recycling
The Georgian recovery/recycling project was relatively small. A total of 2 recycling units, 15 recovery units and 45 manual recovery pumps were procured. The recycling units are located at the Georgian Refrigeration Association (in Tbilisi and Kutaisi) and the recovery equipment distributed among service companies. Companies receiving equipment are obliged – through their contract - to recovery at least 150 kg (recovery unit) or 25 kg (manual recovery pump) annually. Some companies were not able to meet these requirements and some went out of business and equipment was returned to the Georgian Refrigeration Association. This returned equipment (6 recovery units and 5 manual recovery pumps) can now be rented on a daily basis for technicians in need of such equipment. Rent is between 0.5 and 1 US$ per day.

The recycling units are processing around 1 MT CFC-12 in total per year. It was informed that there is a demand for recycling of HCFC-22, but the equipment supplier, RTI, has informed that this is not possible with the equipment delivered. The recycling center offers two options: a) Centers can recycle for technicians: price is 1.5 US$ per kg; and b) Recycling center can buy refrigerant: Price 1.5 US$ per kg. When recycling centers sell recycled refrigerant sales price is 3.5 US$ per kg. Virgin refrigerant is 4.5 US$ per kg. As of today around 100 kg contaminated refrigerant is stored. However, Georgia does not have any facility for refrigerant incineration.

It was informed, that since the Georgian recovery/recycling project is small, there is no RTI representative in Georgia, which makes spare parts very expensive. Spare parts are especially filters for the recycling units.

It was also informed that some refrigerant cylinders have leakages and finally some refrigerant identifiers were supposed to give wrong results.

However, a decrease in CFC-12 import has been realized which indicates that recovery actually happens.

Training
The Georgian Refrigeration Association has implemented training. A total of 30 training workshops covering around 300 technicians have been conducted. Each workshop had a duration of 30 hours basically following the UNEP training manual: "Good Practices in Refrigeration". It is planned to update the training with improved methods for retrofit. The trainees were all certified and this certificate is now supported by legislation (May 8, 2002). The training was advertised on boards, Internet and through a public awareness raising campaign (part of the institutional strengthening project). The certificate has a validity of 3 years. Further it is planned to require a certificate for persons handling ODS. This will also be supported by legislation; however, the law is not signed yet.

Customs training
Georgia is currently implementing a customs training program in cooperation with UNEP. The customs train-the-trainer seminar is scheduled for April 30 to May 2, 2003. Georgia has also substantial illegal import and customs training has high priority at MoE. Cooperation with the Turkish customs training component was discussed and it was agreed that this should happen through direct contacts between MoE's. Turkish representatives were invited to the Georgian train-the-trainer seminar.

End-user retrofit
Georgia expressed interest in the Turkish end-user retrofit component, which will commence during 2003. Whereas situations in Turkey may be different from Georgia, where majority of refrigerating installations are Russian, retrofit procedures and experience exchange can be valuable for both countries. It was therefore agreed to keep contact on this subject.

Lessons learned
The Georgian recovery/recycling project has problems with equipment service and costly spare parts since the supplier is not represented in Georgia. The Turkish recovery/recycling project may improve situation, since RTI will be represented in Istanbul.

Equipment reliability is important. Georgia has faced problems with refrigerant identifiers (low cost model) and do not fully trust results.

Legislative support and active role of MoE is an important factor in successful implementation.

The Georgian Refrigeration Association has played a central role in implementation of both the recovery/recycling as well as the training project.

Findings

The study tour provided good advise on both training and recovery/recycling. Findings are as follows:

Training
All countries performed very well in respect to training of technicians. Each trainee – after examination – was provided with a certificate. Such practice should also be adopted for Turkey. The public should be aware that technicians are educated and should ask for certified technicians when in need for service of their refrigerating appliances. Such awareness should be raised through

advertisements or campaign. Furthermore a legislative support, e.g. by allowing only certified technicians to handle ODS, is also strongly recommended.

Customs training

Except for Czech Republic, all countries reported major problems with illegal import of ODS, which hampers the operation of the recovery/recycling scheme. Such situation could also appear in Turkey. Therefore it's recommended to make the customs training component as comprehensive as possible. Furthermore, it's recommended to cooperate with neighboring countries on such activities. Georgia has already invited Turkey to participate the Georgian customs training. Turkey should take initiative to share with other countries as well.

Recovery/recycling

Countries visited have all different kind of problems with the equipment. Czech Republic has only partly funding of equipment; Hungary had major problems with after-sales service; and Georgia has problems with spare-part availability. None of these issues are expected for Turkey.

Acceptance by the technicians of the quality of recycled/reclaimed refrigerant has been problematic in all countries visited. This will reduce the amounts of refrigerants collected for recycling. It is therefore recommended that the 3 Turkish reclaim centers provide certificates for all refrigerant reclaimed. In order to make certification feasible, it is proposed to invest in additional equipment for the reclaim centers as follows:

- 3 pcs of Karl Fischer titrators (one for each center); and
- 12 pcs of 500 kg refrigerant tanks (4 for each center: 2 for incoming refrigerant, e.g. CFC-12 and HCFC-22; and 2 for reclaimed refrigerant).

Costs for this additional equipment is estimated at around 50,000 US$.

The 24 recycling centers should advice that recycled refrigerant is particular useful for refrigerating installations having semi-hermetic or open-type compressors.

Motivation of the technicians is very important in order to have the recovery/recycling scheme working. All countries visited reported, that the recycling/reclaim centers could buy recovered refrigerant from technicians. This option should also be considered by KOSGEB. In any case, if illegal import is minimized, the recycling/reclaim operation can be profitable.

April 15, 2003
Ole Reinholdt Nielsen

Attachment 7

Selection/support criteria for first round of chiller replacement

For the demonstration part of the project, it's proposed to select chillers and determine financial support as follows:

- Only chillers running with CFC's are eligible for participation. All CFC's are eligible, i.e. CFC-11, CFC-12, CFC-113, R-500 or others if present.
- Only chillers using turbo/centrifugal compressors are eligible for participation, since the energy saving potential is related to the improved design of these compressors.
- Only chillers that are in operation are eligible for support. Chillers, which are physical present but not operated, cannot be supported.
- The funding level will be determined based on either installed capacity or required capacity whichever is the lowest. It should be noted, that chiller owners having overcapacity are not encouraged to request replacement of this overcapacity, since overcapacity means that the chiller will run part-load more frequent, which will substantially worsen the energy efficiency.
- Funding per chiller is determined by the following:
    - Low pressure chillers: Nominal capacity upto 2,500 kW:
      Support = 40 $ x nominal capacity (in kW) + 70,000 $
      Nominal capacity above 2,500 kW
      Support = 68 $ x nominal capacity (in kW)
    - High pressure chillers: 75 % of the support for low pressure chillers.
- Funding level is determined such, that HFC-134a technology can be utilized. This means that for low pressure chillers a complete chiller replacement is foreseen. For high pressure chillers retrofit is foreseen. The rationale for such criteria is, that HCFC-123 is an interim technology and the Montreal Protocol already controls HCFC's.
- The funding level is planned to cover all required costs, including freight, installation and refrigerant /oil costs.
- Chillers having seasonal load profile, which are basically chillers used for comfort cooling will also be offered funds for frequency regulation. Each company participating the project can only have one frequency regulator no matter how many chillers they have installed. The funding is determined by:
    - Support = 7.5 $ x nominal capacity (in kW) + 16,250 $
- The total support resulting from above is the maximum funding. Actual funding will be adjusted according to the capacity of the new chillers being installed.
- Funding will be a combination of grant and soft loan. The grant part is 25 %.

Pay-back terms

The soft loan support will be paid back utilizing the energy savings. However, for practical reasons, pay back will be in fixed installments. The following apply: After chiller replacement completion, pay back period starts. Payback period will be 3 years with a grace period of 6 months followed by 5 equal installments.

Attachment 8

Selection/support criteria for second round of chiller replacement

- Only chillers running with CFC's are eligible for participation. All CFC's are eligible, i.e. CFC-11, CFC-12, CFC-113, R-500 or others if present.
- Only chillers using turbo/centrifugal compressors are eligible for participation, since the energy saving potential is related to the improved design of these compressors.
- Only chillers that are in operation are eligible for support. Chillers, which are physical present but not operated, cannot be supported.
- Project participants are requested to submit a proposal for financial support. This proposal will be evaluated and ranked according to the following criteria:
    - Funding level: The requested financial support will be compared to standard chiller costs and lowest requests will be given priority;
    - Chiller age: Environmental impact is reverse proportional to chiller age according to an American survey done by ICF Kaiser. Therefore "young" chillers will be given priority. 10 years of age will be used as reference;
    - Chiller efficiency: The main aim of the project is to apply technical solutions that would ensure energy savings. Therefore energy efficient solutions will be given priority. Chillers having constant annual load profile will be evaluated only on the COP (Coefficient Of Performance), whereas chillers with seasonal load profile will be evaluated on both COP and NPLV (Non-standard Part Load Values). Chiller efficiencies shall be specified at normalized conditions according to ARI 550/590. COP of 0.6 kW/TR and NPLV of 0.5 kW/TR will be used as reference.
    - A ranking factor incorporating above criteria will be calculated (the lower factor – the higher ranking).
- Standard chiller costs will be determined on either installed capacity or required capacity whichever is the lowest.
- Standard chiller costs are determined such that HFC-134a technology can be utilized. This means that for low-pressure chillers a complete replacement is foreseen, whereas for high-pressure chillers retrofit is foreseen. Interim technologies, e.g. HCFC-123, will not be considered eligible for support.
- Determination of standard chiller costs for chillers with seasonal load profile will include allocation for improvement of part load operation, e.g. by means of frequency regulated motor for one chiller.
- Support will be a combination of grant (25%) and soft loan (75%).
- Payback terms for the loan part will be 5 equal installments in USD, first one due 6 months after completion of the project. Interest rate is 0%.

VERIFICATION REPORT FOR THE CFC CONSUMPTION IN TURKEY FOR 2002 AND 2003

PREPARED BY

Prof. Dr. A. Metin GER

KARAR Consultants Ltd.

September 2003

This report was prepared to document the findings of the series of tasks carried out for the verification of annual CFC (11, 12, and 502) consumption in Turkey for the years 2002 and 2003.

To this purpose,

- the Ministry of Environment,
- the CFC 11, 12 importer companies
- the CFC 502 importer companies (even though importation of the material is not permitted after 2002, interviews were made to check the sales and the stocks)
- a polyol supplier to the foam industry
- companies which completed or are carrying out MLF projects (present and past consumers)

were contacted. In Table 1, the details about the contacts are summarized.

Table 1. The contacts made for the verification report

Date of Visit	**Company**	**Person(s) Interviewed**	**Category**	**Mode of contact**
August 20, 2003	Ministry of Environment and Forestry, ANKARA	Mrs. Rezzan Katircioglu	Ministry	Interview
August 25, 2003	CETINEL Sogutma San. ve Tic. A.S. Kurabiye Sok. No:21 Beyoglu ISTANBUL Phone: 0 212 252 58 58 Fax: 0 212 251 75 19	Mr. Jirayir Dagdevirenel Mr. Sinan Ozkaratas	Importer CFC11 CFC12 CFC502	Interview
August 25, 2003	TERMO Sogutma San. Tic. A.S. Kurabiye Sok. No:21 Beyoglu ISTANBUL Phone: 0 212 252 58 58 Fax: 0 212 251 75 19	Mr. Jirayir Dagdevirenel Mr. Sinan Ozkaratas	Importer CFC11 CFC12 CFC502	Interview
August 25, 2003	ANATEKS Isitma ve Sog. Sis. San. Dis. A.S. Tarlabasi Cad. No: 80 Taksim ISTANBUL Phone: 0 212 256 00 33 Fax: 0 212 235 68 18	Mr. Metin Terzibasiogullari Ms. Hulya Kizir	Importer CFC12	Interview
August 25, 2003	TEKNION San. Mam. Paz. Tic. A.S. Tarlabasi Cad. No: 80 Taksim ISTANBUL Phone: 0 212 256 00 33 Fax: 0 212 235 68 18	Mr. Metin Terzibasiogullari Ms. Hulya Kizir	Importer CFC12	Interview
August 25, 2003	FLOGAZ Florlu Gazlar San. ve Tic. A.S. Yapi Kredi Plaza C Blok Kat 18 Levent IST Phone: 0 212 279 70 71 Fax: 0 212 279 07 36	Mr. Aksel Keribar	Importer CFC12	Interview
August 25, 2003	MESPA End. Paz. Ltd. Sti. Tarlabasi Cad. Yaya Alt. Geçidi No:1-3 Taksim ISTANBUL Phone: 0 212 235 70 64 Fax: 0 212 256 98 34	Mr. Taner Senkardes	Importer CFC12	Interview

August 26, 2003	SOGUK TEKNIK San ve Tic. A.S. Tarlabasi Cad. No: 48 Taksim ISTANBUL Phone: 0 212 250 05 72 Fax: 0 212 250 87 76	Mr. Murat Yılmaz Mr. Ali Turhan	Importer CFC11 CFC12 CFC502	Interview
August 26, 2003	TURA Sog. San. Tic. A.S. Dereboyu Cad. No: 27 Dolapdere ISTANBUL Phone: 0 212 237 50 00 Fax: 0 212 255 58 65	Mr. Murat Yılmaz Mr. Ali Turhan	Importer CFC11 CFC12 CFC502	Interview
August 26, 2003	BIRSAN Mak. San. Tic. A.S. Sadabat Cad. No: 6 Kagıthane ISTANBUL Phone: 0 212 294 11 00	Mr. Murat Yılmaz Mr. Ali Turhan	Importer CFC12	Interview
August 26, 2003	BIRMAK Sogutma. San. Tic. A.S. Sadabat Cad. No: 6 Kagıthane ISTANBUL Phone: 0 212 294 11 00	Mr. Murat Yılmaz Mr. Ali Turhan	Importer CFC12	Interview
August 26, 2003	CANTAS Ic ve Dis Tic. Sog. Sis. San. A.S. Dolapdere Cad., No:155 Pangalti ISTANBUL Phone: 0 212 232 91 22 Fax: 0 212 225 81 11	Mr. Erim Eksioglu	Importer CFC11 CFC12 CFC502	Interview
------	Uzman Demir Celik Sanayi A.S. Fazlipasa Cad. No:8 Topkapi ISTANBUL Phone: 0 212 567 65 63	Mr. Suat Yildiz	Importer CFC12	Contact cannot be established
------	TEKGAZ Tek. Gaz. ve Mal. San. Mum. A.S. Fazlipasa Cad. No:8 Topkapi ISTANBUL Phone: 0 212 567 65 63	Mr. Suat Yildiz	Importer CFC12	Contact cannot be established
August 27, 2003	TEKPOL Poliuretan San. Tic. A.S. Eski Ankara Cad. No: 54 Seyhli Pendik IST Phone: 0 216 378 64 51 Fax: 0 216 378 64 56	Ms. Nergis Demir Ms. Arzu Kapıkıran	Importer CFC11	Interview
August 27, 2003	ELASTOGRAN Poliuretan San. ve Tic. Ltd. Sti. Eski Ankara Cad. No:54 Seyhli, Pendik ISTANBUL Phone: 0 216 378 64 43 Fax: 0 216 378 64 56	Ms. Nergis Demir Ms. Binnur Tulumbacı	Polyol Supplier	Interview
September 1, 2003	AKCAY Sogutma, Klima ve Havalandırma San. Tic. Ltd. Sti Trabzon Organize Sanayi Bölgesi, Arsin, TRABZON Phone: 0.462.223.26.58 Fax: 0.462.223.03.75	Mr. Serdar Akcay Mr. Kadir Akcay Mr. Ahmet Salih Akcay	Ongoing MLF project	Fax
September 1, 2003	EKOSAN Mutfak ve Sogutma	Mr. M. Serdar Koç	Ongoing	Fax

	Ekipmanlari San. ve Tic. Ltd. Sti. Küçükbalikli Mahallesi, Fevzibey Caddesi No:25, BURSA Phone: 0.224.215.92.00/01 Fax: 0.224. 215.92.02	Mr. Vehbi Varlik	MLF project	
September 1, 2003	CAPRI Sogutma San. ve Tic. Ltd. Sti. Cali Sanayi Bolgesi, Cakalinleri Sok., No:8, Cali, BURSA Phone: 0.224.271.01.50/51/52 Fax: 0.224.482.39.13/14	Mr. Mehmet Topak Ms. Ayse Topak	Ongoing MLF project	Fax
September 1, 2003	TEKNIK SOGUTMA Yenimahalle, 643 Sok., No:18, MERSIN Phone: 0.324.231.46.91 0.324.233.73.36 Fax: 0.324.232.09.04	Mr. Abdulkadir Kil	Ongoing MLF project	Fax
September 1, 2003	DORT MEVSIM Isıtma Sogutma Ins. Taah. San. ve Tic. Ltd. Sti. 1145/9 Sok., No:3/D 35110 Yenisehir, IZMIR Phone: 0.232.459.65.01 0.232.469.25.22 0.232.231.84.22 Fax: 0.232.459.65.19	Mr. Yilmaz Pala	Ongoing MLF project	Fax

During these visits, except the one with Ms. Rezzan Katircioglu of Ministry of Environment and Forestry, the import licenses and custom records were collected/reviewed, quotas and realized import amounts were determined, the sources of import were questioned, the sales and stocks were determined, and the general comments of the persons interviewed on different aspects of the quota system, illegal imports, etc. were taken. It must be noted that the data on the sales and stocks were provided by the importer companies themselves and could not be double-checked due to time limitation. The outputs based on these data/information were organized in a way to verify the annual CFC (11, 12, and 502) consumption in Turkey for the years 2002 and 2003 and assess the strengths and weaknesses of the present quota system in the following sections.

During the interviews, the copies of the import licenses were obtained and reviewed. The import figures gathered from the importer company records were also compared with the records of the Custom Office and the Ministry of the Environment for confirmation. The import amounts from all these sources (company, Custom Office and the Ministry of the Environment's records) were in good agreement.

The Tables 2-5 summarizes the import licenses and realized import figures for CFC11 and CFC12 for 2002 and 2003.

Table 2. The Import License and Realized Import Amounts of CFC11 for 2002

THE IMPORT LICENSE (QUOTA) AND IMPORT REALIZATION IN KGS FOR CFC11 FOR 2002					
COMPANY	COUNTRY OF IMPORT	LICENSE NUMBER	IMPORT LICENSE / QUOTA (kg)	REALIZATION source MoEF (kg)	REALIZATION source company (kg)
CANTAS İç ve Dış Tic. Soğ. Sis. San. A.Ş.	GREECE	169	79754,0	18000,0	18000,0
ÇETİNEL Soğutma San. ve Tic. A.Ş.	BELGIUM	172	34094,0	24640,0	24640,0
SOĞUK TEKNİK San ve Tic. A.Ş.	ITALY	168	34352,0	19200,0	19200,0
TEKGAZ Tek. Gaz. ve Mal. San. Mum. A.Ş.	-	170	12500,0	0,0	0,0
TEKPOL Poliüretan San. Tic. A.Ş.	-	171	76800,0	0,0	0,0
UZMAN Demir Çelik Sanayi A.Ş.	-	167	12500,0	0,0	0,0
TOTAL			250000,0	61840,0	61840,0

Table 3. The Import License and Realized Import Amounts of CFC11 for 2003, as of 31st August.

THE IMPORT LICENSE (QUOTA) AND IMPORT REALIZATION IN KGS FOR CFC11 FOR 2003					
COMPANY	COUNTRY OF IMPORT	LICENSE NUMBER	IMPORT LICENSE / QUOTA (kg)	REALIZATION source MoEF (kg)	REALIZATION source company (kg)
CANTAS İç ve Dış Tic. Soğ. Sis. San. A.Ş.	GREECE	222	50000,0	-	36000,0
ÇETİNEL Soğutma San. ve Tic. A.Ş.	ITALY	217	24983,0	19040,0	19040,0
TEKPOL Poliüretan San. Tic. A.Ş.	GERMANY	218	57120,0	-	38080,0
TERMO Soğutma San. Tic. A.Ş.	ITALY	216	11897,0	11760,0	11760,0
TURA Soğ. San. Tic. A.Ş.	SPAIN	220	2000,0	-	2000,0
TOTAL			146000,0	30800,0	106880,0

Table 4. The Import License and Realized Import Amounts of CFC12 for 2002

THE IMPORT LICENSE (QUOTA) AND IMPORT REALIZATION IN KGS FOR CFC12 FOR 2002					
COMPANY	COUNTRY OF IMPORT	LICENSE NUMBER	IMPORT LICENSE / QUOTA (kg)	REALIZATION from MoEF (kg)	REALIZATION from Company (kg)
ANATEKS Isıtma ve Soğ. Sis. San. Diş. A.Ş.	ENGLAND	181	29875,0	29866,0	29866,0
BİRSAN Mak. San. ve Tic. A.Ş.	-	-	10000,0	9996,0	9996,0
CANTAS İç ve Diş Tic. Soğ. Sis. San. A.Ş.	GREECE	179	150647,0	150647,5	150647,5
ÇETİNEL Soğutma San. ve Tic. A.Ş.	BELGIUM	185	78043,0	78036,8	78036,8
FLOGAZ Florlu Gazlar San. ve Tic. A.Ş.	ENGLAND	182	98246,0	84320,0	84320,0
MESPA End. Paz. Ltd. Şti.	INDIA	178	75292,0	75276,0	75276,0
SOĞUK TEKNİK San ve Tic. A.Ş.	ITALY	176	113191,0	113180,0	113180,0
TEKGAZ Tek. Gaz. ve Mal. San. Mum. A.Ş.	INDIA, SPAİN, ENGLAND	173	36662,0	36448,0	36448,0
TEKNİON San. Mam. Paz. Tic. A.Ş.	ENGLAND	180	19946,0	19938,0	19938,0
TERMO Soğutma San. Tic. A.Ş.	BELGIUM	183	12871,0	12865,6	12865,6
TURA Soğ. San. Tic. A.Ş.	ITALY	184	13790,0	13776,8	13776,8
UZMAN Demir Çelik Sanayi A.Ş.	INDIA, SPAİN, ENGLAND	175	11478,0	10880,0	10880,0
TOTAL			650041,0	635230,7	635230,7

Table 5. The Import License and Realized Import Amounts of CFC12 for 2003, as of 31st August.

THE IMPORT LICENSE (QUOTA) AND IMPORT REALIZATION IN KGS FOR CFC12 FOR 2003					
COMPANY	COUNTRY OF IMPORT	LICENSE NUMBER	IMPORT LICENSE / QUOTA (kg)	REALIZATION from MoEF (kg)	REALIZATION from Company (kg)
ANATEKS Isıtma ve Soğ. Sis. San. Diş. A.Ş.	ITALY	236	14531,0	0,0	14524,8
BİRMAK Soğutma San. ve Tic. A.Ş.	SPAIN	234	2000,0	0,0	1992,2
BİRSAN Mak. San. ve Tic. A.Ş.	SPAIN	233	3621,0	0,0	3917,6
CANTAS İç ve Diş Tic. Soğ. Sis. San. A.Ş.	GREECE	232	79796,0	79796,0	79796,0
ÇETİNEL Soğutma San. ve Tic. A.Ş.	ITALY	231	39608,0	31824,0	31824,0
FLOGAZ Florlu Gazlar San. ve Tic. A.Ş.	FRANCE	229	50360.8	50360,8	50360,8
MESPA End. Paz. Ltd. Şti.	SPAIN	227	35906,0	0,0	32640,0
SOĞUK TEKNİK San ve Tic. A.Ş.	ITALY	230	55483,0	0,0	35890,0
TEKGAZ Tek. Gaz. ve Mal. San. Mum. A.Ş.	-	228	17783,0	0,0	0,0
TEKNİON San. Mam. Paz. Tic. A.Ş.	-	226	8781,0	0,0	0,0
TERMO Soğutma San. Tic. A.Ş.	-	225	5539,0	0,0	0,0
TURA Soğ. San. Tic. A.Ş.	ITALY	224	6151,0	0,0	6147,2
TOTAL			269199,0	161980,8	257092,6

In Table 6, the import licenses and realized import figures for CFC502, are summarized only for 2002, since the import of CFC502 is not permitted beginning from 2003.

Table 6. The Import License and Realized Import Amounts of CFC502

THE IMPORT LICENSE (QUOTA) AND IMPORT REALIZATION IN KGS FOR CFC502 FOR 2002					
COMPANY	COUNTRY OF IMPORT	LICENSE NUMBER	IMPORT LICENSE / QUOTA (kg)	REALIZATION soource MoEF (kg)	REALIZATION source company (kg)
BİRMAK Soğutma San. ve Tic. A.Ş.	-	-	500,0	0,0	-
BİRSAN Mak. San. ve Tic. A.Ş.	-	-	500,0	0,0	-
CANTAS İc ve Diş Tic. Soğ. Sis. San. A.Ş.	CHINA	191	1889,0	1876,0	1876,0
ÇETİNEL Soğutma San. ve Tic. A.Ş.	BELGIUM	192	2037,0	2026,4	2026,4
SOĞUK TEKNİK San ve Tic. A.Ş.	ITALY	197	8551,0	1360,0	1360,0
TERMO Soğutma San. Tic. A.Ş.	BELGIUM	193	500,0	489,6	489,6
TURA Soğ. San. Tic. A.Ş.	-	195	4022,0	0,0	-
TOTAL			17999,0	5752,0	5752,0

As depicted in Tables 2, 4, and 6the agreement between the realizations as reported by MoEF and importers/companies, for the year 2002, is 100%. Yet, for the year 2003, there is a disagreement between the realizations as reported by MoEF and importers/companies as depicted in Tables 3 and 5. This is due the fact that there is a time lag of 1 to 3 months between the import of the materials by the importers/companies and receipt and processing of this information by Customs and MoEF. However, a verification study that will be carried after March 2004, will prove that the agreement between the realizations reported by MoEF and importers/companies for the year 2003 is acceptable, if not 100%, as is the case for the year 2002.

The import license (quota) and realized import amounts, and ratio of realized import to quota were given in Table 7.

Table 7. The Import License and Realized Import Amounts of CFC11, CFC12, and CFC502

	2001			2002			2003		
	QUOTA (kgs)	IMPORT (kgs)	IMPORT (% of quota)	QUOTA (kgs)	IMPORT (kgs)	IMPORT (% of quota)	QUOTA (kgs)	IMPORT (kgs)	IMPORT (% of quota)
CFC11	260040,0	108500,0	41,7	255000,0	61840,0	24,3	146000,0	106880,0	73,2
CFC12	700000,0	662810,0	94,7	650041,0	635230,7	97,7	269199,0	257092,6	95,5
CFC502	-	6868,0	#	17999,0	5752,0	32,0	-	-	-

There is no quota to compare and/or all imports were realized prior to the quota limitations

Examination of the percentage realization of CFC11 and CFC12, one may conclude that the market is adapting to the quota system well. It is clear from Table 7 that the quota values set for CFC 11 are well over the Turkey's need; the ratio of realized import to quota for CFC11 changes between 24.3% to 73.2% of the quota of the respective years with an average value of almost 50% of the quota. The import realization for CFC12 is almost 100% of the quota, ranging between 94.7% to 97.7% of the quota of the respective year. This may be due to the fact that CFC11 and CFC12 are consumed for different purposes. While CFC11 is used mostly for foam productions for which there are feasible alternative technologies of production, CFC12 is still in demand for the service of coolers and refrigerators of former technologies. Furthermore, it is worth noting that the company officials stated that CFC12 is the only CFC in the quota system the demand for which is higher than the quota. Note that the quota system was implemented on May 2002 for CFC502 and the import figures for CFC502 before the implementation of the quota system in May 2002 are not covered in this report mainly due to the difficulty of collecting consistent and reliable data during the time frame of the study.

Furthermore, any source of CFC import other than the legally permitted sources was investigated during the interviews conducted at the importer companies; there was no evidence of illegal import of CFC.

During the company visits, the stocks of the companies were also recorded for January 1, 2002 and 2003 and as of August 31st 2003 and tabulated in Table 8-10.

Table 8. The stocks and sales for CFC11 for 2002 and 2003

COMPANY	STOCK AS OF 01.01.2002	TOTAL IMPORT DURING 2002 (kg)	OTHER PROCURE-MENTS DURING 2002 (kg)	TOTAL SALES DURING 2002 (kg)	STOCK AS OF 01.01.2003	TOTAL IMPORT DURING 2003 (kg)	OTHER PROCURE-MENTS DURING 2003 (kg)	TOTAL SALES DURING 2003 (kg)	STOCK AS OF 31.07.2003	BALANCE
CANTAS İç ve Dış Tic. Soğ. Sis. San. A.Ş.	0,0	18000,0	0,0	18000,0	0,0	36000,0	0,0	24000,0	12000,0	0
ÇETİNEL Soğutma San. ve Tic. A.Ş.	324,0	24640,0	0,0	21751,6	9638,9	19040,0	0,0	32634,0	7735,0	-18117
SOĞUK TEKNİK San ve Tic. A.Ş.	0,0	19200,0	0,0	19200,0	0,0	0,0	0,0	0,0	0,0	0
TEKPOL Poliüretan San. Tic. A.Ş.	54600,0	0,0	0,0	44100,0	10500,0	38080,0	0,0	26740,0	21840,0	0
TERMO Soğutma San. Tic. A.Ş.	15680,0	8595,0	0,0	0,0	0,0	11760,0	0,0	11760,0	0,0	24275
TURA Soğ. San. Tic. A.Ş.	612,0	0,0	21569,6	10716,8	11464,8	0,0	0,0	6582,4	4882,4	0

Table 9. The stocks and sales for CFC12 for 2002 and 2003

COMPANY	STOCK AS OF 01.01.2002	TOTAL IMPORT DURING 2002 (kg)	OTHER PROCURE-MENTS DURING 2002 (kg)	TOTAL SALES DURING 2002 (kg)	STOCK AS OF 01.01.2003	TOTAL IMPORT DURING 2003 (kg)	OTHER PROCURE-MENTS DURING 2003 (kg)	TOTAL SALES DURING 2003 (kg)	STOCK AS OF 31.07.2003	BALANCE
ANATEKS Isıtma ve Soğ. Sis. San. Diş. A.Ş.	2584,0	29866,0	0,0	16864,0	15585,6	14524,8	0,0	16864,0	8160,0	5086,8
BİRMAK Soğutma San. ve Tic. A.Ş.	0,0	0,0	0,0	0,0	0,0	1999,0	0,0	1999,2	0,0	-0,2
BİRSAN Mak. San. ve Tic. A.Ş.	0,0	9996,0	0,0	9996,0	0,0	3617,6	0,0	3617,6	0,0	0,0
CANTAS İç ve Diş Tic. Soğ. Sis. San. A.Ş.	0,0	150647,5	0,0	150647,5	0,0	79796,0	0,0	79796,0	0,0	0,0
ÇETİNEL Soğutma San. ve Tic. A.Ş.	3890,0	78036,8	0,0	83816,8	367,2	31824,0	0,0	81994,0	2216,8	-54276,8
FLOGAZ Florlu Gazlar San. ve Tic. A.Ş.	53108,0	84320,0	0,0	82724,0	35170,0	50360,8	0,0	31050,0	54440,8	19574,0
MESPA End. Paz. Ltd. Şti.	1523,0	75276,0	0,0	98042,0	612,0	32640,0	13200,0	44961,0	1686,0	-22050,0

SOĞUK TEKNİK San ve Tic. A.Ş.	1849,6	113179,2	12852,0	127812,8	68,0	35890,0	5752,8	39589,6	2121,6	-0,4
TEKGAZ Tek. Gaz. ve Mal. San. Mum. A.Ş.	!	36448,0	!	!	!	0,0	!	!	!	!
TEKNİON San. Mam. Paz. Tic. A.Ş.	4950,0	19938,0	15803,0	39712,0	979,2	0,0	18373,6	19352,8	0,0	-0,2
TERMO Soğutma San. Tic. A.Ş.	367,0	12865,6	0,0	12865,6	0,0	0,0	0,0	0,0	0,0	367,0
TURA Soğ. San. Tic. A.Ş.	17544,0	13776,8	75833,6	107154,0	0,0	6147,2	33578,4	35849,6	3876,0	0,4
UZMAN Demir Çelik Sanayi A.Ş.	!	10880,0	!	!	!	0,0	!	!	!	!

! No contact could have been made

Procurements of CFC12 listed above other than the quotas were found to be domestic exchange between the sister companies such as Anateks-Termo Sogutma, and Birsan-Birmak-Tura-Soguk Teknik.

Table 10. The stocks and sales for CFC502 for 2002 and 2003

COMPANY	STOCK AS OF 01.01.2002	TOTAL IMPORT DURING 2002 (kg)	OTHER PROCURE-MENTS DURING 2002 (kg)	TOTAL SALES DURING 2002 (kg)	STOCK AS OF 01.01.2003	TOTAL SALES DURING 2003 (kg)	STOCK AS OF 31.07.2003	BALANCE
CANTAS İc ve Diş Tic. Soğ. Sis. San. A.Ş.	0,0	1876,0	0,0	1876,0	0,0	0,0	0,0	0,0
ÇETİNEL Soğutma San. ve Tic. A.Ş.	1659,0	2026,4	0,0	1564,0	391,2	1068,0	1128,8	-75,4
SOĞUK TEKNİK San ve Tic. A.Ş.	27,0	1360,0	2053,6	2162,4	1278,4	380,0	897,6	0,6
TERMO Soğutma San. Tic. A.Ş.	0,0	489,6	0,0	489,6	0,0	0,0	0,0	0,0
TURA Soğ. San. Tic. A.Ş.	612,0	0,0	21569,6	10716,8	11464,8	6582,4	4882,4	0,0

In evaluating the balances between the realized import amounts, stocks and the sales for 2003, it must be noted that this report does not cover the last three months of the year. A verification report to cover 2003 as a whole must be conducted on March 2004, the earliest. In evaluating the results given in Tables 1-10, it is worth noting that all the sales and stock records were provided by the companies and cannot be double-checked by reviewing their records. This is simply due to the fact that, as seen in Table 1, within a very short period of time, effectively 2 ½ days, there were quite a few companies visited such that on the average 1 ½ hours were spent per visit. Therefore, the existing imbalances for some of the companies must further be investigated with a more comprehensive study.

Based on the data presented in Tables 2-10, it is possible to drive some conclusions.

- Examination of the percentage realization of CFC11 and CFC12, one may conclude that the market is adapting to the quota system well.
- The quota values set for CFC 11 are greater than the need suggesting that the alternative technologies and/or materials have diminished the demand for CFC11.
- The import realization for CFC12 is almost 100% of the quota, suggesting that CFC12 will be still in demand for the service of coolers and refrigerators of former technologies, for some time in the future.
- Note that the amount of reported sales of CFC-502 is larger than the total quotas. This is due to import of these materials prior to the implementation of quotas.

Furthermore, any source of CFC import other than the legally permitted sources was investigated during the interviews conducted at the importer companies; there was no evidence of illegal import of CFC.

Polyol suppliers and consumers have also been contacted. ELASTOGRAN Poliuretan San. ve Tic. Ltd. Sti., an example of polyol supplier to the foam industry, was the only one visited while others were reached by using some other means. ELASTOGRAN imports a small amount, only 10% of their polyol consumption preblended, while they blend 90% of it with HCFC. Ms. Nergis Demir and Ms. Binnur Tulumbacı of ELASTOGRAN stated that Huntsman-Shell imports all its consumption as preblended from Italy. Moreover, a fax message from Shell-Turkey stated that Shell has no CFCs in any of its products.

The companies which completed or are carrying out MLF projects (present and past consumers) were also contacted in order to confirm whether the market are procuring from the legal importers. The companies contacted were also listed in Table 1. Among five of these companies, only Teknik Sogutma used, for service purposes, total of 285 kg of CFC12 during 2002 and 2003 to date. The origin of the material is Tura Sogutma San. ve Tic. Sti., a legal importer.

During the company visits, the persons interviewed stated their general comments of on different aspects of the quota system, illegal imports, etc. These comments are summarized below:

- For CFC12 a greater portion of the imported amount is used by small scale service providers rather than in manufacturing industry. This is due to large number of refrigerators in use which use CFC12; this demand for CFC12 for servicing is not expected to decrease significantly in the near future.

- Companies with completed or ongoing MLF projects use almost no CFC11, 12 or 502 for production purposes.

- The smaller foam producers are suspected to use CFC11. It is understood that large foam manufacturers, if not already use water or pentane based technologies, use HCFC.

- There is an illegal transport of CFC12 into Turkey. This illegal traffic into the country is suspected to be mainly from the Southeastern border via Syria. It is claimed to be mostly from India. Another suspected illegal input is from Dubai.

- It is believed that illegally imported CFC's are mostly manufactured in India. Yet, it is suggested that there are illegal imports of origin of Italy, Germany and USA.

- The most common mode of the illegal transport of CFC12 is by passenger busses in disposable containers (Atoken-France and Refron-India). Some of the containers are not labeled at all. Some of them are labeled as generic refrigerant. The labels may also be in Arabic.

- The price of the illegally imported CFC12 is compatible with that of legally imported CFC12 while the CFC12 alternatives are relatively expensive.

- Five Turkish importer companies filed a complaint in 1999 to let the Turkish legal authorities know this situation and make them take the necessary precautions to prevent this illegal input. Yet, as stated, the situation did not change and the illegal input of CFC12 is still a reality.

- It is also stated that the rate of this illegal import gets higher especially towards the end of the year when the quota limits get lower.

- The illegal input is mainly consumed locally in the South East region.

- Even though there are no concrete figures, the total amount is thought to be significant and may be about 35% of the quotas.

- It is suggested that illegal traffic of CFC's into Turkey can be stopped if the use of disposable containers is banned as is the case in Europe.

- Some importer company officials pointed out that a considerable amount of CFCs are imported to free zones in Turkey which are not covered in the quota system. Then, they are sold to countries like Bulgaria, Kosova, Azerbaijan, Romania, etc.

- Some of the CFC12 which is imported legally under the quota system to Turkey is exported mainly to Bulgaria and some other European countries.