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执行蒙特利尔议定书
多边基金执行委员会
第五十九次会议
2009年11月10日至14日，埃及迦里卜港

工发组织 2009 年工作方案修正案

基金秘书处的评论和建议

1. 工发组织要求执行委员会核准修正其 2009 年工作方案所需的 1,898,031 美元以及机构支助费用 142,352 美元。
2. 工发组织工作方案修正案拟议的活动如下文表 1 所示：

表 1：工发组织工作方案修正案

国家	活动/项目	所需数额 (美元)	建议数额 (美元)
A 节：建议一揽子核准的活动			
A1. 延长体制建设项目：			
阿拉伯利比亚民众国	体制建设（第二阶段）	73,702	73,702
塞尔维亚	体制建设（第三阶段）	71,121	71,121
A1 小计：		144,823	144,823
A2. 额外的氟氯烃淘汰管理计划(HPMP)项目编制：			
厄瓜多尔	额外的氟氯烃淘汰管理计划经费	75,000	75,000[1]
伊拉克	额外的氟氯烃淘汰管理计划经费	65,000	65,000
巴基斯坦	额外的氟氯烃淘汰管理计划经费	45,000	45,000
苏丹	额外的氟氯烃淘汰管理计划经费	120,000	120,000
A2 小计：		305,000	305,000
A3. 氟氯烃淘汰管理计划项目编制（投资部分）：			
阿尔及利亚	关于空调制造与泡沫行业投资活动的项目编制	100,000	100,000
巴基斯坦	关于制冷与泡沫行业投资活动的项目编制	200,000	200,000
菲律宾	关于泡沫行业投资活动的项目编制	70,000	70,000
南非	关于泡沫行业投资活动的项目编制	150,000	150,000
苏丹	关于空调制造与泡沫行业投资活动的项目编制	100,000	100,000
A3 小计：		620,000	620,000
B 节：建议个别审议的活动			
B.1 延长体制建设项目：			
卡塔尔	体制建设（第三阶段）	48,208	*
B1 小计：		48,208	
B.2 氟氯烃示范项目的项目编制			
中国	聚苯乙烯行业烷烃发泡剂技术示范项目	30,000	[2]
B2 小计：		30,000	
B3. 关于消耗臭氧层物质处理试点项目的项目编制：			
阿尔及利亚	关于消耗臭氧层物质处理试点项目的项目编制	85,000	*
喀麦隆	关于消耗臭氧层物质处理试点项目的项目编制	40,000	[2]
中国	关于消耗臭氧层物质处理试点项目的项目编制	85,000	*
埃及	关于消耗臭氧层物质处理试点项目的项目编制	60,000	[2]
伊朗	关于消耗臭氧层物质处理试点项目的项目编制	60,000	[2]
尼日利亚	关于消耗臭氧层物质处理试点项目的项目编制	60,000	[2]
阿拉伯叙利亚共和国	关于消耗臭氧层物质处理试点项目的项目编制	60,000	[2]
B3 小计：		450,000	

B4. 技术援助:			
全球	调动资源以解决氟氯烃淘汰中的共同气候惠益	300,000	*
	B4 小计:	300,000	
A 节和 B 节小计:		1,898,031	1,069,823
机构支助费用 (7.5%用于项目编制和体制建设, 用于费用超过 250,000 美元的其他活动, 9%用于费用低于 250,000 美元的其他活动):		142,352	80,236
共计:		2,040,383	1,150,059

* 供个别审议或暂停的项目

[1]根据 UNEP/OzL.Pro/ExCom/59/4 号文件审议

[2]根据 UNEP/OzL.Pro/ExCom/59/11 号文件审议

A 节: 建议一揽子核准的活动

A1. 延长体制建设项目:

- (a) 阿拉伯利比亚民众国 (第二阶段): 73,702 美元
- (b) 塞尔维亚 (第三阶段): 71,121 美元

项目说明

3. 工发组织提交了关于延长上文所列两个国家的体制建设项目的申请。本文附件一对这两个国家的申请进行了说明。

秘书处的评论

4. 基金秘书处审查了该机构代表以上国家提交的关于延长申请的体制建设最终报告和行动计划, 并认为报告符合要求。

5. 秘书处在审查这些项目时, 考虑了第 57/36(b)号决定, 其中委员会决定“在 2010 年 12 月底之前继续按现有数额为延长体制建设项目的申请供资, 待执行委员会第五十八次会议就此事项做出最后决定”。这是执行委员会在第五十八次会议上通过第 58/16 号决定重申的事项, 根据该项决定, “核准截至 2010 年 12 月 31 日的体制建设延长申请。”考虑到上述决定, 建议为延长体制建设提供的资金仅按比例计算到 2010 年 12 月。

秘书处的建议

6. 基金秘书处建议按照本文表 1 所示供资数额一揽子核准阿拉伯利比亚民众国和塞尔维亚关于延长体制建设的申请。谨建议执行委员会向这两国政府转达本文附件二所载评论。

A2. 额外的氟氯烃淘汰管理计划编制经费：

伊拉克：额外的氟氯烃淘汰管理计划编制经费： 65,000 美元

巴基斯坦：额外的氟氯烃淘汰管理计划编制经费： 45,000 美元

苏丹：额外的氟氯烃淘汰管理计划编制经费： 120,000 美元

项目说明

7. 工发组织提交了伊拉克、巴基斯坦和苏丹关于额外的氟氯烃项目编制资金的申请，数额分别为 65,000 美元、45,000 美元和 120,000 美元。第五十五次会议核准了氟氯烃淘汰管理计划编制的经费。提交上述申请是因为这些国家报告的 2007 年第 7 条数据显示其消费了一定数量的氟氯烃，它们因而有资格根据第 56/16 号决定获得额外的氟氯烃淘汰管理计划项目编制的经费。

秘书处的评论

8. 秘书处注意到这些呈件与第 56/16 号决定相符，该决定规定，各国资格按 2007 年第 7 条官方数据获得氟氯烃淘汰管理计划编制经费。苏丹和伊拉克在第五十五次会议获得 30,000 美元的资金，它们在召开会议时尚未提交氟氯烃的官方数据，因而属于零氟氯烃数据的国家类别。它们的 2007 年第 7 条氟氯烃消费数据表明，它们有资格根据第 56/16 号决定获得额外供资。

9. 巴基斯坦根据其氟氯烃消费量在第五十五次会议获得了 150,000 美元的经费。自此，巴基斯坦修订了 2007 年数据，并且正在申请增加 45,000 美元供资，因为所报告的氟氯烃数据将这一国家列入第 56/16 号决定项下有资格申请额外经费的类别。以下三个国家报告的 2007 年第 7 条数据为上述申请提供支持：

国家	第 7 条氟氯烃消费量(2007 年) (ODP 吨)		
	HCFC-22	HCFC-141b	共计
伊拉克	106.6	2.8	109.4
巴基斯坦	116.25	67.43	183.7
苏丹	2.64	6.16	8.8

秘书处的建议

10. 基金秘书处建议按照上表 1 所示供资数额一揽子核准伊拉克、巴基斯坦和苏丹关于为编制氟氯烃淘汰管理计划额外供资的申请。

A3. 氟氯烃淘汰管理计划投资部分的项目编制

阿尔及利亚	关于空调制造与泡沫行业投资活动的项目编制	100,000
巴基斯坦	关于空调制造与泡沫行业投资活动的项目编制	200,000
菲律宾	关于泡沫行业投资活动的项目编制	70,000
南非	关于泡沫行业投资活动的项目编制	150,000
苏丹	关于空调制造与泡沫行业投资活动的项目编制	100,000

项目说明

11. 工发组织为上述已核准氟氯烃淘汰管理计划编制经费的五个国家申请筹备投资活动的额外经费。工发组织在其呈件中介绍了有关国家氟氯烃消费情况与使用氟氯烃的行业基本信息，以及这些行业计划如何与多个机构共同执行计划的国家的全面氟氯烃淘汰管理计划等联系起来的问题。支持每项申请的信息列于本文所附的工发组织工作方案修正案中。

秘书处的意见

12. 秘书处详细审查了工发组织的呈件，并要求工发组织在必要时进行说明。秘书处在审查中发现，工发组织为上文列出的每个国家提交的信息以及申请的经费均符合第 56/16 号决定的要求。秘书处还特别注意到，工发组织征求了与这些国家合作编制氟氯烃淘汰管理计划的其他机构的意见，并且对每个机构的责任划分有一个明确的了解。

13. 就菲律宾而言，秘书处的评论与开发署要求做出的评论相同，并且最后得出结论，此项申请可提交批准，因为该国有资格根据第 56/16 号决定获得经费。

秘书处的建议

14. 秘书处建议按照本文表 1 所示供资数额一揽子核准阿尔及利亚、巴基斯坦、菲律宾、南非和苏丹关于筹备氟氯烃淘汰管理计划投资活动的申请。

B 节： 建议个别审议的活动

B1. 延长体制建设项目：

(a) 卡塔尔（第三阶段）： 48,208 美元

项目说明

15. 工发组织提交延长卡塔尔体制建设项目的申请。此项申请的说明列于本文附件一。

秘书处的评论

16. 秘书处审查了该机构为支持延长申请而代表卡塔尔提交的体制建设最终报告和行动

计划，并发现该报告符合有关要求。

17. 秘书处在审查这一项目时，考虑了第 57/36(b)号决定，其中委员会决定“在 2010 年 12 月底之前继续按现有数额为延长体制建设项目的申请供资，待执行委员会第五十八次会议就此事项做出最后决定”。这是执行委员会在第五十八次会议上通过第 58/16 号决定重申的事项，根据该项决定，“核准截至 2010 年 12 月 31 日的体制建设延长申请。”考虑到上述决定，建议为延长体制建设提供的资金仅按比例计算到 2010 年 12 月。

18. 然而，秘书处注意到卡塔尔尚未提交本应在 2009 年 5 月 1 日提交的 2008 年国家方案数据。第 52/5(f)号决定指出，“作为核准和发放项目资金的前提条件，必须在当年最后一次会议及其后的会议之前提交国家方案执行数据。”鉴于卡塔尔未提供数据，执行委员会提出对该项申请进行个别审议。

秘书处的建议

19. 考虑到第 52/5(f)号决定，谨建议执行委员会审议该项申请，如果卡塔尔在第五十九次会议之前将 2008 年国家方案数据正式提交给多边基金秘书处，便核准其延长体制建设的申请。若核准该申请，还建议执行委员会向卡塔尔政府提出评论意见，有关评论列于本文附件一。

B2. 氟氯烃示范项目的项目编制

中国：关于聚苯乙烯泡沫行业用碳氢化合物代替氟氯烃的示范项目的项目编制（30,000 美元）

秘书处的评论和建议

20. 工发组织代表中国政府提交了聚苯乙烯泡沫行业用碳氢化合物代替氟氯烃的示范项目的项目编制申请。秘书处通知工发组织，该项目并未列入执行委员会在第 57/6 号决定中同意的示范项目清单，也未纳入 2009 年业务计划。考虑到上述决定，秘书处请求工发组织撤销该项目。工发组织通知秘书处，这是中国正式申请的项目，因此不可能撤销该项目。

21. 秘书处在 UNEP/OzL.Pro/ExCom/59/11 对项目审查期间发现的问题的概述中已谈到这一问题。谨建议执行委员会根据该文件提供的信息考虑对聚苯乙烯泡沫行业用碳氢化合物代替氟氯烃的示范项目进行项目编制。

B3. 关于消耗臭氧层物质处理试点项目的项目编制

阿尔及利亚：关于消耗臭氧层物质处理试点项目的项目编制： 85,000 美元

喀麦隆：关于消耗臭氧层物质处理试点项目的项目编制： 40,000 美元

中国：关于消耗臭氧层物质处理试点项目的项目编制： 85,000 美元

埃及：关于消耗臭氧层物质处理试点项目的项目编制： 60,000 美元

伊朗：关于消耗臭氧层物质处理试点项目的项目编制： 60,000 美元

尼日利亚：关于消耗臭氧层物质处理试点项目的项目编制： 60,000 美元

阿拉伯叙利亚共和国：关于消耗臭氧层物质处理试点项目的项目编制： 60,000 美元

背景

22. 执行委员会在第五十八次会议上根据缔约方会议第 XX/7 号决定第 2 段核准了一套为消耗臭氧层物质处理示范项目供资的临时准则。在第 58/19 号决定中，执行委员会还同意“多边基金将根据（同一项决定中列示的）具体条件为数量有限的示范项目提供经费。”

23. 如果申请项目编制经费，希望呈件中包括以下信息：

- (a) 注明消耗臭氧层物质处理（收集、运输、储存和销毁）的活动类别，这些将列入项目提案中；
- (b) 注明与其他多边环境协定有关的化学品处理方案是目前在该国实施还是计划在不久的将来实施，以及是否可以协同实施；
- (c) 估算计划在本项目内处理的每种消耗臭氧层物质的数量；
- (d) 估计消耗臭氧层物质数量的依据；此项估计应以已收集的现有存货或在现阶段正在建设的后期存档齐全的阶段已做出的收集工作为依据；
- (e) 收集关于正在建设的后期阶段现有或在不久的将来开展可靠收集工作和实施方案的信息，以及本项目项下与其有关的活动信息；
- (f) 对于至少部分关注四氯化碳或哈龙的活动，说明此项活动可能如何发挥其重要的示范作用；

24. 工发组织提交了在七个国家进行消耗臭氧层物质处理项目的项目编制申请，仅阿尔及利亚和中国符合第 58/19(a)(iv)号决定中列示的最低信息要求，因而以下段落仅介绍这两个国家的情况。

25. 秘书处注意到，这七个国家都没有纳入执行委员会在第 57/6 号决定中同意的消耗臭氧层物质处理试点项目优先名单，但是在执行委员会第五十七次会议报告的附件三中有所体现，该附件列出了各机构 2009 年业务计划中删除的除阿尔及利亚以外的所有消耗臭氧层

物质处理试点项目。秘书处已针对消耗臭氧层物质处理试点项目的七份呈件中的五份论及有关第 58/19 号决定信息要求的问题，作为 UNEP/OzL.Pro/ExCom/59/11 号文件中的一个政策问题，该文件对审查期间确认的问题进行了综述。谨建议执行委员会根据该文件中提出的信息审议有关事项。

阿尔及利亚：消耗臭氧层物质处理项目的项目编制（85,000 美元）

项目说明

26. 阿尔及利亚政府拟议的消耗臭氧层物质处理试点项目将考虑在该国销毁 150 ODP 吨不必要的消耗臭氧层物质的办法。其中包括在该国实施回收和再循环方案中收集的 CFC-11 和 CFC-12 的混合物。根据该提案，这个数字为可供销毁的消耗臭氧层物质总量的 13%，收集消耗臭氧层物质的工作由阿尔及利亚政府承担。

27. 工发组织在其项目编制申请中表明，这将为阿尔及利亚提供在本国运输和销毁消耗臭氧层物质的最佳技术、政策和战略的全面经验。同时将通过碳融资探索共同筹资的可能性。

28. 该提案没有具体说明将要论证的技术，但是将考察向该国提供的具有成本效益的选择方案，包括出口销毁，以及可以在当地转变为销毁设施的现有设施。该项目将包括对已确定的消耗臭氧层物质数量的运输、储存和销毁（或出口销毁）。工发组织表明，意大利政府已表示有兴趣在编制和实施阶段合作开展这一项目，作为其双边方案的一部分。

29. 有关申请的详细信息见本文附件一：工发组织的工作方案。

秘书处的评论

30. 秘书处依照第 58/19 号决定所要求的信息审查了这一项目。工发组织的初次呈件中缺乏该决定所要求的数据信息，秘书处要求工发组织说明项目编制申请以什么方式考虑了收集活动。工发组织解释，整个收集计划将由阿尔及利亚政府根据国家专门拨给节能设备引进的资金来供资。可能提高收集计划有效性的各种因素，因与拟议的试点处理项目有关，故将在编制过程中进行考察。秘书处还注意到，提案中列出了已制定的明确监管和立法措施，这些措施的目的是支持阿尔及利亚收集消耗臭氧层物质。

31. 工发组织还通知秘书处，正在与意大利政府进行商讨，因其表示对通过双边援助共同为项目供资感兴趣。工发组织说，项目编制工作将使得阿尔及利亚能够关注与技术、排放控制、核实已销毁的消耗臭氧层物质的具体数额等有关的必要因素。

32. 考虑到上述反应和讨论，工发组织提交了一份经修订的提案，其中考虑了秘书处根据第 58/19 号决定提出的评论和意见。修订后的提案作为本文附件三供委员会审议。秘书处还注意到，正在申请的项目编制数额是合理的，并且与早先核准的这类项目编制经费一致。

秘书处的建议

33. 谨建议执行委员会根据以上提供的信息审议阿尔及利亚消耗臭氧层物质处理试点项目的项目编制申请，并根据第 58/19 号决定核准该项申请。

中国：消耗臭氧层物质处理项目的项目编制（85,000 美元）

项目说明

34. 拟议的中国项目编制包括能够销毁山东省 150 ODP 吨消耗臭氧层物质废物的试点项目。这些不必要的消耗臭氧层物质由新世界公司收集，新世界是政府指定的废旧电器再循环和回收中心。收集和运输这些旧家电的工作由该中心和地方当局共同筹资，依照 2011 年 1 月生效的一项规定进行，该项规定授权回收和处理废旧家用电器。尽管目前这项规定尚未出台，但积极收集这类废物的工作正在进行中。

35. 消耗臭氧层物质处理试点项目还注意改进新世界燃气回转炉的运作，燃气回转炉用于销毁该中心收集的无害废弃物，其最初的试验也论证了销毁 CFC-11 和 CFC-12 的能力。项目编制活动将对新世界公司销毁消耗臭氧层物质的设施进行详细分析，以确定若进行改造是否可以根据当前可接受的销毁标准确保销毁旧设备中的各类氟氯化碳。同时关注详细的管理标准，以管理消耗臭氧层物质废物收集和运输以及销毁的过程，包括监测、检查与核查程序。此外，还考察不经萃取，而是通过焚化泡沫本身，销毁泡沫中不必要的各类氟氯化碳的可能性。

36. 工发组织在其项目编制申请中表明，该试点项目将利用新世界公司为试点，解决山东省整个消耗臭氧层物质废物管理系统各个方面的问题。根据试点结果，可能会制定更大规模的销毁程序，这可能协助中国解决消耗臭氧层物质废物的问题，中国设备中含有大量不必要的消耗臭氧层物质。

37. 项目编制活动还将考察替代性供资机制和金融业的经营模式，以利于该国消耗臭氧层物质销毁工作的可持续性。申请的详细信息见本文附件三：工发组织的工作方案。

秘书处的评论

38. 秘书处根据第 58/19 号决定要求的信息审查了本项目。要求工发组织说明新世界的运作方式，并描述当前正在使用的处理办法。还要求工发组织解释通过焚化泡沫来销毁各类氟氯化碳的过程。工发组织说明，新世界现有的回转炉主要用于处理其他固体废物，而且目前的运作容量达到最大限度。由于这一设备也可用于处理消耗臭氧层物质，试点项目将探讨这么做的有效方式。工发组织还提及这样一个事实：该公司还负责收集不需要的设备，因此当前的回转炉可用于处理氟氯化碳，并且将列为优先事项。

39. 工发组织还通知秘书处，虽然可能将泡沫整体焚化，但是这一办法既不节能也不具有成本效益，因此将探讨更加有效的方式。工发组织还补充说，日本政府有意合作开展这一

项目，因其在销毁消耗臭氧层物质废物方面有着广泛的经验。秘书处进一步指出，正在申请的项目编制数额是合理的，并且符合早先对这类项目编制经费核准的条件。

秘书处的建议

40. 谨建议执行委员会根据以上提供的信息审议中国消耗臭氧层物质处理试点项目的项目编制申请，并根据第 58/19 号决定进行核准。

B4. 技术援助

全球：调动资源以促进氟氯烃淘汰和共同气候惠益：300,000 美元

项目说明

41. 工发组织向第五十七和第五十八次会议提交技术援助项目的申请，旨在调动资源，实现氟氯烃淘汰气候惠益的最大化，供资数额为 300,000 美元。该项申请由工发组织重新提交供本次会议审议。提案中包括描述项目目标、活动和预期成果的构想说明。重新提交的提案未对提交给第五十八次会议的申请作任何修改。

42. 根据该提案，有关项目将制定由多边基金承担的额外费用的计算构想和方法，这可能与产生共同气候惠益的替代方案或做法一致。上述额外费用可能主要与制造期间能效的改进有关，并且随后在运行期间使设备产生更大的能效。这项研究将探讨上述额外费用可能如何由全球环境基金等通过多边基金内部一个专门机构来支付的问题，以便更多地核准具有共同气候惠益的淘汰项目，而无需使用当前资金补充项下提供的有限资金。

43. 此项技术援助产生的预期成果将包括：（a）如果在选择氟氯烃替代物时全面考虑一项具体技术的气候效益，计算将产生的额外费用的方法；（b）关注正常管理和销毁不必要的消耗臭氧层物质所产生的共同气候惠益计算的方法。工发组织还计划将这些方法用于其在约旦的两个试点项目，以及一个拟议的有关销毁消耗臭氧层物质的示范项目。

44. 下表介绍了工发组织所申请的 300,000 美元的分类细目：

国际顾问	72,000
本国顾问	48,000
差旅	30,000
设备	100,000
管理、监督和培训	50,000
共计	300,000

秘书处的评论

45. 第 54/39 号决定中同意的氟氯烃淘汰管理计划编制指南，包括第 5 条国家在其最终氟

氯烃淘汰管理计划中考虑财政奖励和共同筹资的机会，这可能与根据缔约方的第 XIX/6 号决定第 11(b)段的规定确保氟氯烃淘汰产生效益有关。

46. 秘书处注意到，工发组织拟议的研究成果在 100 多个第 5 条国家编制氟氯烃淘汰管理计划时，可协助各国考察其共同筹资的选择方案。此外，秘书处还注意到，执行委员会尚未针对氟氯烃淘汰的气候效益如何计算，以及这些费用是否可视为多边基金管理的递增费用提供指导。秘书处还指出，工发组织的提案描述从全球环境基金获得共同筹资的方法的制定情况。

47. 秘书处在审查拟议的项目经费时注意到，工发组织在其预算中包含 100,000 美元的设备费用。工发组织在说明添加设备部分时通知秘书处，该提案在一、两家企业中进行试点，以论证将制定的方法，并且在试点阶段需要这种设备。秘书处对于该资源调动项目情况下的设备要求有些疑问。

48. 执行委员会在第五十七次会议上讨论了从贷款和其他来源获得额外收入的能力（UNEP/OzL.Pro/ExCom/57/64 号文件），并在第 57/37 号决定中同意，秘书处应该进一步分析这种能力，供委员会第五十八次会议审议。

49. 执行委员会在第五十八次会议上做出了第 58/37 号决定，其中包括将该提案和另一项类似提案推迟到下一次会议审议。因此，第五十八次会议没有讨论这项提案。秘书处注意到，根据本次会议议程项目 11 关于利用贷款和其他来源获得额外收入的特别融资机制的进一步概念文件的讨论，将该提案重新提交给第五十九次会议供执行委员会审议。

秘书处的建议

50. 谨建议执行委员会根据以上提供的信息，并根据议程项目 11 关于利用贷款和其他来源获得额外收入的特别融资机制的进一步概念文件的讨论，审议为氟氯烃淘汰和共同气候惠益调动资源提供技术援助的申请。

附件一

体制建设项目提案

卡塔尔：延长体制建设

项目摘要和国家概况	
执行机构：	工发组织
以前核准的体制建设供资数额（美元）：	
第一阶段：1999年3月	64,171
第二阶段（第1年）：2003年12月	43,285
第二阶段（第2年）：2006年7月	44,500
共计	151,956
延长所需的数额（第三阶段）（美元）：	48,208
第三阶段建议核准数额（美元）：	48,208
机构支助费用（美元）：	3,616
多边基金体制建设第三阶段总费用（美元）：	51,824
由于体制建设第三阶段，同等数量氟氯化碳淘汰成本为12.1美元/公斤（ODP吨）：	暂缺
国家方案核准日期：	1999年
国家方案报告的消耗臭氧层物质消费量（1999年）（ODP吨）：	0
受控物质基准消费量（ODP吨）：	
(a) 附件A 第一类物质（氟氯化碳）（1995-1997年平均数）	101.4
(b) 附件A 第二类物质（哈龙）（1995-1997年平均数）	10.7
(c) 附件B 第二类物质（四氯化碳）（1998-2000年平均数）	0
(d) 附件B 第三类物质（甲基氯仿）（1998-2000年平均数）	0
(e) 附件E（甲基溴）（1995-1998年平均数）	0
根据第7条报告的消耗臭氧层物质最新消费量（2007年）（ODP吨）：	
(a) 附件A 第一类物质（氟氯化碳）	13
(b) 附件A 第二类物质（哈龙）	0
(c) 附件B 第二类物质（四氯化碳）	0
(d) 附件B 第三类物质（甲基氯仿）	0
(e) 附件E（甲基溴）	0
(f) 附件C 第一类物质（氟氯烃）	23.5
共计	36.5
报告的国家方案执行数据的年份：	2007年
核准的项目供资数额（美元）：	1,112,453
支付数额（截至2009年9月）（美元）：	709,962
将淘汰的消耗臭氧层物质（ODP吨）：	89.2
已淘汰的消耗臭氧层物质（截至2009年9月）（ODP吨）：	86.3

1. 活动摘要及执行委员会核准的供资数额：

活动摘要		核准的供资数额（美元）
(a)	投资项目：	242,500
(b)	体制建设：	151,956
(c)	项目编制、技术援助、培训和其他非投资项目：	717,997
	共计：	1,112,453

进度报告

2. 与体制建设有关的活动方案构成卡塔尔以控制和具有成本效益的方式淘汰消耗臭氧层物质消费的承诺的一部分。在体制建设最后阶段，通过配额制、许可证制度和进口许可证以及在执行最终淘汰管理计划资格认定方案方面，特别努力监督消耗臭氧层物质的进口和消费情况。卡塔尔还在执行其最终淘汰管理计划中取得进展。国家臭氧机构也开展了一系列提高认识的活动，为决策者、海关官员、投资者、工作人员和公众提供指导。

行动计划

3. 国家臭氧机构将在接下来的阶段严格执行配额制和许可证制度的监督工作，对消耗臭氧层物质的进口进行监督。卡塔尔致力于将这种势头保持到 2010 年度，并通过启动氟氯烃淘汰管理计划的编制工作，努力实现下一个氟氯烃淘汰目标。

塞尔维亚：延长体制建设

项目摘要和国家概况		
执行机构：		工发组织
以前核准的体制建设供资数额（美元）：		
	第一阶段：1998 年 7 月	151,500
	第二阶段：2004 年 12 月	131,300
	共计	282,800
延长所需的数额（第三阶段）（美元）：		71,121
第三阶段建议核准数额（美元）：		71,121
机构支助费用（美元）：		5,334
多边基金体制建设第三阶段总费用（美元）：		76,645
由于体制建设第三阶段，同等数量氟氯化碳淘汰成本为 12.1 美元/公斤（ODP 吨）：		暂缺
国家方案核准日期：		1998 年
国家方案报告的消耗臭氧层物质消费量（1998 年）（ODP 吨）：		0

受控物质基准消费量 (ODP 吨) :	
(a) 附件 A 第一类物质 (氟氯化碳) (1995-1997 年平均数)	849.2
(b) 附件 A 第二类物质 (哈龙) (1995-1997 年平均数)	3.8
(c) 附件 B 第二类物质 (四氯化碳) (1998-2000 年平均数)	18.8
(d) 附件 B 第三类物质 (甲基氯仿) (1998-2000 年平均数)	0
(e) 附件 E (甲基溴) (1995-1998 年平均数)	8.3
根据第 7 条报告的消耗臭氧层物质最新消费量 (2008 年) (ODP 吨)	
(a) 附件 A 第一类物质 (氟氯化碳)	76.7
(b) 附件 A 第二类物质 (哈龙)	1.8
(c) 附件 B 第二类物质 (四氯化碳)	2.1
(d) 附件 B 第三类物质 (甲基氯仿)	0
(e) 附件 E (甲基溴)	0
(f) 附件 C 第一类物质 (氟氯烃)	7.4
共计	88
报告的国家方案执行数据的年份:	2008 年
核准的项目供资数额 (美元) :	7,488,430
支付数额 (截至 2009 年 9 月) (美元) :	5,152,349
将淘汰的消耗臭氧层物质 (ODP 吨) :	848
已淘汰的消耗臭氧层物质 (截至 2009 年 9 月) (ODP 吨) :	773.4

4. 执行概要及执行委员会核准的供资数额:

活动摘要		核准的供资数额 (美元)
(a)	投资项目:	5,947,831
(b)	体制建设:	282,800
(c)	项目编制、技术援助、培训和其他非投资项目:	1,257,799
	共计:	7,488,430

进度报告

5. 已核准塞尔维亚体制建设的两个阶段。国家臭氧机构正在监督和协调全国各地《蒙特利尔议定书》所涵盖的所有部门的转产和淘汰方案。对于最后两个阶段,国家臭氧机构特别努力通过严格执行配额制和国家许可证制度对消耗臭氧层物质的进口和消费进行监督。国家臭氧机构还开展了一系列活动,对决策者、海关官员、投资者、工作人员和公众进行指导。塞尔维亚 2008 年的氯氟化碳消费量显示其符合《蒙特利尔议定书》的各项目标。

行动计划

6. 国家臭氧机构设在环境与空间规划部大气保护科。体制建设项目中描述的各项活动被纳入政府和部委的国家计划,通过这些计划,根据环境和空间规划部及其空气保护处的核心目标调整各种项目和活动。塞尔维亚致力于将这一势头保持到 2010 年度,并通过启动氟氯烃淘汰管理计划的编制工作,努力实现下一个氟氯烃淘汰目标。

阿拉伯利比亚人民社会主义民众国：延长体制建设

项目摘要和国家概况	
执行机构：	工发组织
以前核准的体制建设供资数额（美元）：	
第一阶段：2000年12月	157,000
共计	157,000
延长所需的数额（第二阶段）（美元）：	73,702
第二阶段建议核准数额（美元）：	73,702
机构支助费用（美元）：	5,528
多边基金体制建设第二阶段总费用（美元）：	79,230
由于体制建设第二阶段，同等数量氟氯化碳淘汰成本为12.1美元/公斤（ODP吨）：	暂缺
国家方案核准日期：	2000年
国家方案报告的消耗臭氧层物质消费量（2000年）（ODP吨）：	1052.4
受控物质基准消费量（ODP吨）：	
(a) 附件A 第一类物质（氟氯化碳）（1995-1997年平均数）	716.7
(b) 附件A 第二类物质（哈龙）（1995-1997年平均数）	633.1
(c) 附件B 第二类物质（四氯化碳）（1998-2000年平均数）	0
(d) 附件B 第三类物质（甲基氯仿）（1998-2000年平均数）	0
(e) 附件E（甲基溴）（1995-1998年平均数）	94.1
根据第7条报告的消耗臭氧层物质最新消费量（2007年）（ODP吨）	
(a) 附件A 第一类物质（氟氯化碳）	57.5
(b) 附件A 第二类物质（哈龙）	291.5
(c) 附件B 第二类物质（四氯化碳）	0
(d) 附件B 第三类物质（甲基氯仿）	0
(e) 附件E（甲基溴）	67.6
(f) 附件C 第一类物质（氟氯烃）	36.5
共计	453.1
报告的国家方案执行数据的年份：	2008年
核准的项目供资数额（美元）：	6,511,080
支付数额（截至2009年9月）（美元）：	4,136,312
将淘汰的消耗臭氧层物质（ODP吨）：	1,567.3
已淘汰的消耗臭氧层物质（截至2009年9月）（ODP吨）：	667.4

7. 执行概要及执行委员会核准的供资数额

活动摘要		核准的供资数额（美元）
(a)	投资项目：	5,668,241
(b)	体制建设：	157,000
(c)	项目编制、技术援助、培训和其他非投资项目：	685,839
	共计：	6,511,080

进度报告

8. 与体制建设有关的活动方案成为阿拉伯利比亚人民社会主义民众国以控制和具有成本效益的方式淘汰消耗臭氧层物质消费的承诺的一部分。国家臭氧机构负责执行保护臭氧层的国家政策，与《蒙特利尔议定书》相符。其职责是正式回答个人、公司和机构有关控制消耗臭氧层物质的问题。特别努力对消耗臭氧层物质的进口和消费进行监督。国家臭氧机构开展了一系列提高认识的活动，向决策者、海关官员、投资者、工作人员和观众提供指导。在地区一级，阿拉伯利比亚民众国是地区网络的积极成员。尽管人事变动，国家臭氧机构继续履行职能，并且拥有明确的授权，以协调有关消耗臭氧层物质淘汰方案的国家措施。如有具体需要和技术援助，国家臭氧机构自 2006 年起拥有专门的工作人员和专业顾问，旨在协助国家臭氧机构开展工作。

行动计划

9. 国家臭氧机构是消耗臭氧层物质管理结构的核心，被纳入环境总局，并且可直接与局长和部长联系。在这一新阶段，利比亚正在计划到 2010 年批准所有修正案，减少氟氯化碳的消费量，启动有关控制和淘汰氟氯烃的积极措施。

附件二

执行委员会对提交第五十九次会议的延长体制建设项目的看法

卡塔尔

1. 执行委员会审查了随同卡塔尔体制建设项目延长申请提交的报告，并赞赏地注意到其符合《蒙特利尔议定书》的规定。执行委员会还注意到卡塔尔在体制建设框架内，已采取重要步骤淘汰其消耗臭氧层物质的消费量；尤其是在不同行业执行消耗臭氧层物质淘汰战略，并继续通过许可证制度和配额制实施其管制工作。执行委员会极大地支持卡塔尔减少氟氯化碳消费量的努力，并鼓励卡塔尔通过制定氟氯烃淘汰管理计划，启动对氟氯烃消费量的控制工作。

塞尔维亚

2. 执行委员会审查了随同塞尔维亚体制建设项目延长申请提交的报告，并赞赏地注意到塞尔维亚符合淘汰程序及其在《蒙特利尔议定书》第 4 和第 7 条项下的报告义务。执行委员会还注意到塞尔维亚在体制建设框架内，已采取重要步骤，促进能力建设，淘汰其消耗臭氧层物质的消费量；尤其是在不同行业执行消耗臭氧层物质淘汰战略，并继续通过许可证制度和配额制实施其管制工作。执行委员会因此希望塞尔维亚继续实施其国家方案和国家淘汰管理计划活动并取得巨大成功。

阿拉伯利比亚人民社会主义民众国

3. 执行委员会审查了随同阿拉伯利比亚人民社会主义民众国体制建设项目延长申请提交的报告，并赞赏地注意到符合其向臭氧秘书处和多边基金秘书处报告第 7 条情况和 2008 年度国家方案进展执行数据的义务。执行委员会还注意到阿拉伯利比亚民众国在体制建设框架内已采取重要步骤强化国家臭氧机构的办事处。执行委员会支持阿拉伯利比亚民众国批准《蒙特利尔议定书》的北京和蒙特利尔修正案以及减少氟氯化碳消费量的努力。



UNITED NATIONS INDUSTRIAL DEVELOPMENT ORGANIZATION

59th Executive Committee of the
Multilateral Fund for the Implementation
of the Montreal Protocol

UNIDO Work Programme

59th ExCom

UNIDO

Work Programme - 59th ExCom Revision 1 (18 September 2009)

Introduction

The UNIDO Work Programme for the consideration of the 59th ExCom of the Multilateral Fund has been prepared based on the ongoing and planned activities and following receipt of government requests. The Work Programme will support the implementation of UNIDO's three year Rolling Business Plan 2009-2011.

Focus has been put on preparatory activities for the phase-out of HCFCs in Article 5 countries as well as on the preparation of ODS disposal demonstration projects following the criteria set by ExCom Decision 58/19.

The renewal of institutional strengthening support will be required for Libya, Qatar and Serbia, in line with the UNIDO Rolling Business Plan 2009 - 2011. As per the decision taken at the 58th ExCom Meeting, these requests are for the period until end 2010.

Following the established practice, UNIDO is listing in the work programme its Core Unit Funding request for 2010 amounting to US\$ 1,913,365. However, the complete submission of the Core Unit Funding request is submitted to the Multilateral Fund Secretariat separately.

The document comprises the following sections:

Section 1

Gives in a tabulated form by project types and country a consolidated list of activities foreseen for HCFC, ODS disposal and institutional strengthening.

Funding is requested as follows:

- Institutional strengthening: US\$ 207,509 including 7.5% A.S.C.;
- Project preparation (ODS disposal and HCFC related activities): US\$ 1,510,375 including 7.5% A.S.C.;
- Global Project on resource mobilization: US\$ 322,750 incl. 7.5 % ASC
- Core Unit Funding for 2010: US\$ 1,913,365
- Total: **US \$ 3,953,748** including A.S.C.

Section 2

Provides the corresponding project concepts indicating some details and funding requirements.

UNIDO

Work Programme - 59th ExCom
Revision 1 (18 September 2009)

Section 1

Consolidated table giving project
preparation and non-investment
projects in all countries and sectors

Country	Type	Substance	Title of Project	Requested amount USD	A.S.C USD	Total (incl ASC) USD	A.S.C . %	P. D.	Remarks
Institutional Strengthening									
Libya	INS	All	Institutional Strengthening, Renewal.	73,702	5,527	79,230	7.5	13	07/09 to 12/10
Qatar	INS	All	Institutional Strengthening, Renewal.	48,208	3,615	51,824	7.5	13	07/09 to 12/10
Serbia	INS	All	Institutional Strengthening, Renewal.	71,121	5,334	76,455	7.5	13	07/09 to 12/10
			Institutional Strengthening Total	193,031	14,476	207,509			
Project preparation for ODS disposal demonstration projects									
Algeria	PRP	CFC11/12	ODS destruction demo project	85,000	6,375	91,375	7.5	18	
Cameroon	PRP	CFC12	ODS destruction demo project	40,000	3,000	43,000	7.5	12	
China	PRP	CFC11/12	ODS destruction demo project	85,000	6,375	91,375	7.5	18	
Egypt	PRP	CFC11/12 Halons	ODS destruction pilot project	60,000	4,500	64,500	7.5	12	
Iran	PRP	CFC11/12 Halons	ODS destruction pilot project	60,000	4,500	64,500	7.5	12	
Nigeria	PRP	CFC12/Halons	ODS destruction demo project	60,000	4,500	64,500	7.5	12	
Syria	PRP	CFC11/12 Halons	ODS destruction pilot project	60,000	4,500	64,500	7.5	12	
			ODS DISPOSAL - TOTAL	450,000	33,750	483,750			
Project preparation for HCFC phase-out investment and demonstration projects									
Algeria	PRP	HCFC	Refrigeration and A/C manufacturing sectors	60,000	4,500	64,500	7.5	12	
Algeria	PRP	HCFC	PU foam sector	40,000	3,000	43,000	7.5	12	
China	PRP	HCFC	Technology demonstration project for HC blowing agent in the XPS sector	30,000	2,250	32,250	7.5	18	
Pakistan	PRP	HCFC	Refrigeration and A/C manufacturing sectors	120,000	9,000	129,000	7.5	12	
Pakistan	PRP	HCFC	PU foam sector	80,000	6,000	86,000	7.5	12	
South Africa	PRP	HCFC	PU foam sector	150,000	11,250	161,250	7.5	12	
Sudan	PRP	HCFC	Refrigeration manufacturing sector	60,000	4,500	64,500	7.5	12	
Sudan	PRP	HCFC	PU foam sector	40,465	3,035	43,500	7.5	12	
			HCFC INV-PRP TOTAL	580,000	43,500	623,500			

Additional funding for HPMP preparation (HPMP)

Ecuador	PRP	HCFC	HPMP preparation	75,000	5,625	80,625	7.5	12	
Iraq	PRP	HCFC	Additional funding HPMP preparation	65,000	4,875	69,875	7.5	12	
Pakistan	PRP	HCFC	Additional funding HPMP preparation	45,000	3,375	48,375	7.5	12	
Philippines	PRP	HCFC	HPMP preparation - foam sector plan	70,000	5,250	75,250	7.5	12	
Sudan	PRP	HCFC	Additional funding HPMP preparation	120,000	9,000	129,000	7.5	12	
			Additional funding for HPMP - Total	375,000	28,125	403,125			

Technical assistance for funds mobilization

Global	TAS	SEV	Funds mobilization	300,000	22,750	322,750	7.5	12	
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Core Unit Funding for 2010

Global	TAS	SEV	Core Unit Funding - 2010	0	1,913,365	1,913,365			
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UNIDO

Work Programme - 59th ExCom
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Section 2

Project concepts

Project Concept

Country: Libya

Title: Extension of Institutional Strengthening Project for the Montreal Protocol related activities (Phase II)

Project Duration: 18 months

Project Budget: 126,581 (including US\$ 8,831 representing 7.5% Agency Support Costs)

Implementing Agency: UNIDO

Coordinating Agency: NOU/ Ministry of Environment

Project Summary

UNIDO received the official Government request from the Ministry of Environment / NOU in Libya for the renewal of the institutional strengthening support.

The project objective aims to improve capacity of government structures responsible for Ozone Depleting Substances Phase-out with a specific view to achieve compliance in HCFCs phase-out.

The NOU will monitor all the project activities as per the Country Programme, including the collection of consumption data and reporting as required, with a specific view to HCFCs phase-out schedule for Article 5 countries.

Project Concept

Country: Qatar

Title: Extension of Institutional Strengthening for the implementation of Montreal Protocol in State of Qatar (phase III)

Project Duration: 18 months

Project Budget: 37,625 (including US\$ 2,625 representing 7.5% Agency Support Costs)

Implementing Agency: UNIDO

Coordinating Agency: Ozone Unit/ Ministry of Environment

Project Summary

The project aims at institutional strengthening and capacity building of the Ministry of Environment / Ozone Unit and will ensure helping the Government meet its obligations under the Montreal Protocol on the substances that deplete the ozone layer.

In this context, the National Ozone Office will be assisted in monitoring and identifying ozone-depleting substances consumption and up-dating the needed national policies and regulations, with a focus on HCFCs consumption.

The NOU will monitor all the project activities as per the Country Programme, including the collection of consumption data and reporting as required, with a specific view to HCFCs phase-out schedule for Article 5 countries.

Project Concept

Country: Serbia

Title: Renewal of Institutional Strengthening Support, Phase III, (in line with decision 58/16 approving institutional strengthening renewals up to 31 December 2010)

Project Duration: 18 months

Project Budget: 106,667 (including US\$ 7,442 representing 7.5% Agency Support Costs)

Implementing Agency: UNIDO

Coordinating Agency: National Ozone Unit, Ministry of Environment and Spatial Planning

Project Summary

The project aims at institutional strengthening and capacity building of the National Ozone Unit, Ministry of Environment and Spatial Planning and will ensure helping the Government meet its obligations under the Montreal Protocol on the substances that deplete the ozone layer.

In this context, the National Ozone Office will be assisted in monitoring and identifying ozone-depleting substances consumption and up-dating the needed national policies and regulations, with a focus on HCFCs consumption.

The NOU will monitor all the project activities as per the Country Programme, including the collection of consumption data and reporting as required, with a specific view to HCFCs phase-out schedule for Article 5 countries.

Project Concept

Country: Algeria

Title: Preparation ODS disposal pilot projects

Project Duration: 12 months

Project Budget: US\$ 85,000 plus US\$ 6,375 agency support cost

Implementing Agency: UNIDO

Coordinating Agency: National Ozone Bureau - Ministère de l'Aménagement du Territoire de l'Environnement

Project Background

Following Decision XX/7 of the Meeting of the Parties the Executive Committee decided at its 58th Meeting in July 2009 (Dec. 58/19) to fund a limited number of demonstration projects for the disposal of ODSs.

Despite the number of demonstration project approved by the Executive Committee at its 57th meeting, there are no projects as such financed in North-African Countries. The objective of this project proposal is to gain experiences on destruction of ODSs, which could be beneficial to all other countries in the region.

UNIDO received a government request from Algeria to prepare a demonstration project for the collection, transportation, storage and destruction of unwanted or obsolete ODSs.

This project will be implemented with the assistance of the Government of Italy, which has expressed the interest to finance bilateral project.

This paper sets out a proposal for project preparation for an ODS destruction demonstration project in Algeria and includes information on existing stock of unwanted ODSs destroyed as well as estimation of amount of ODSs that could be easily collected to be destroyed.

Amount of ODSs available in Algeria for destruction

Algeria is a large populated country with 35 million people. The industrialization trend in Algeria has been positive over the past

years with an average of 4% and the social wellness is growing fast as well.

A recent survey conducted has highlighted that the amount of ODSs easily available to be destroyed in Algeria is huge. This is due to the fact that there are still many equipment and installation (mainly refrigeration and air conditioning systems) relying on CFC 12 as refrigerant and having CFC11 contained in the foam.

Some of the installations are in limited number and have high capacities in terms CFC12 charge, such as the "Chalets", the "Big Cold Chambers" and big buildings (e.g. hospitals, public buildings, etc). The access to these amounts is estimated to be very easy and the collection should require limited efforts.

However, the largest amount of CFC12 and CFC11 to be collected and destroyed is contained in household refrigerators and freezers. The collection of ODSs from these appliances should be designed properly in order to ensure the highest rate of recovery.

Finally, the survey identified stocks of unwanted ODSs available for destruction. Indeed, manufacturing companies assisted in the reconversion from CFCs to non-CFCs technologies (in particular in the foam sector), have still cylinders of ODSs that should be destroyed.

The table below shows the results of the preliminary survey indicating the amount of CFC11 and CFC12, which could be easily collected and destroyed.

For each sector, a coefficient of recovery of the total amount of ODS in the country has been estimated. This coefficient takes into account various parameter, including the accessibility and the difficulties in the logistic arrangements for the recovery.

Application	Number	CFC12 (Kg)	CFC11 (Kg)	Total ODSs (Kg)	Co-efficient for recovery	ODS expected (Kg)
<i>Domestic Refrigerators</i>						
	2100000	0.25	0.6	1785000	0.5	892,500
<i>Commercial refrigerators</i>						
	8250	1.5	0	12375	0.75	9,281
<i>Cold Chambers</i>						
	100	200	0	20000	0.8	16,000
<i>MAC</i>						
	10000	2.5	0	25000	0.2	5,000
<i>Chalets</i>						
	200	500	0	100000	0.9	90,000
<i>Buildings</i>						
	20000	10	0	200000	0.5	100,000
<i>Existing stocks</i>						
	1	0	300	300	1	300

Total	2,142,675	1,113,081
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Legislation in place and existing experiences in the sector

Algeria has a strong legislation with regard to the use of ODSs in manufacturing sectors.

The main regulations and decrees in the refrigeration and AC sectors are the following:

- Décret exécutif N°2000-73 du 1er avril 2000, complétant le décret exécutif n°93-165 du 10 juillet 1993 réglementant les émissions atmosphériques de fumées, gaz, poussière, odeurs et particules solides des installations fixes
- Décret exécutif N°06-104 du 28 février 2006 fixant la nomenclature des déchets, y compris les déchets dangereux
- Décret exécutif N°07-144 du 19 mai 2007 fixant la nomenclature es installations classées pour la protection de l'environnement
- Décret exécutif N°07-207 du 30 juin 2007 réglementant l'usage des substances qui appauvrissent la couche d'ozone, de leurs mélanges et des produits qui en contiennent

There are also national programmes in place for the development an adoption of energy efficient technology in Algeria. The main national legislation in this regard is the "Loi sur la maîtrise de l'énergie ; No. 99 -09 de 1999" and its various executive decrees such as the "Décret exécutif du 11 Janvier 2005 relatif à l'efficacité énergétique" and the "Arrêté interministériel du 29 Novembre 2008 relatif à la classification énergétique des réfrigérateurs et climatiseurs".

Furthermore, a national funds on Energy Efficiency (Fonds National pour la Maîtrise de l'Energie - FNME).

L'Agence Nationale pour la Promotion et la Rationalisation de l'Utilisation de l'Energie (APRUE) has recently developed a programme financed by the FNME for the introduction of energy-efficient technologies in different sectors, including Air conditioning and refrigeration sectors.

Collection scheme

Due to the very large territory of Algeria, five recovery centers will be established, mainly in the northern part of the country where the most important industrial and civil centers are located. Four centers will act as regional centers for the local collection of ODS while one center will be in charge of the centralized final storage of the ODSs as well as of the destruction procedure.

The location of the centers will be as follows:

- Center 1: located in Algiers (North)

- Center 2: located in Constantine (East)
- Center 3: located between Hassi R'Mel and Hassi Messaoud (South)
- Center 4: located in Oran (West)
- National center: located in the Haut Plateaux (center)

The centralized center is expected to:

- receive cylinders of ODSs already collected in the four regional centers (see below);
- treat the end-of-life equipment;
- treat the foams received from the regional centers;
- store the store the cylinders with ODSs;
- arrange for the shipment to the destruction facility.

The center will be fully equipped for the full dismantling of the end-of-life appliances, including extraction of ODSs from the foams.

The plants for the recovery of the end-of-life electrical and electronic equipment (e.g. domestic and commercial fridges, air condition systems, chillers, washing machines) represents an advanced environmental solutions for the recovery of HCFCs and CFCs which are both substances that deplete the ozone layer and greenhouses gases with a negative impact on climate. The treatment of the end-of-life electrical and electronic equipment provides also the opportunity to recover other raw materials such as polyurethane, plastics, glass, ferrous metals and non ferrous metals as aluminum and copper. In addition the recovery of those substances has a positive impact in terms of the minor quantities of generated waste.

The regional recovery centers will be in charge for the collection of ODSs in liquid and gas forms and to put them in safe and thigh cylinders in order to prevent any leakages.

The centers will be in charge of collecting the refrigerants fluids from existing appliances identified above (i.e. industrial refrigerators, cold chambers, chalets, buildings, MAC, remaining stocks). Furthermore, the centers will collect refrigeration fluids from domestic refrigerators as well as recovery and extract foams (from appliances and other sources) to be send to the centralized center for treatment.

The transport of the cylinder containing ODSs as well as foam and equipment to the regional centers and from them to the centralized center and to the destruction facility will be done in strict observation of the existing laws regulating the transport of liquefied compressed gases and in accordance to all the safety procedures applicable to high pressure gas cylinders.

Selection of destruction technology

During the project preparation, additional information will be collected in order to select the most promising alternative for the destruction of the collected ODSs.

The selection of the technology will include the following consideration:

- Evaluation of cost-efficiency for the shipment to destruction facility in EU;
- Presence of existing plants in Algeria that could be converted or used for ODSs treatment;
- Break even point in terms of quantity of ODSs necessary to ensure sustainability to the project;
- Monitoring, inspection and verification procedures;
- Analysis of the financial operating model and the commercial viability of similar schemes;
- Confirmation of impact of regulatory and policy measures;
- Analysis of alternative funding schemes including carbon financing (see below for more details);
- Synergies with other environmental plans and strategies for the disposal of hazardous wastes.

Funds mobilization

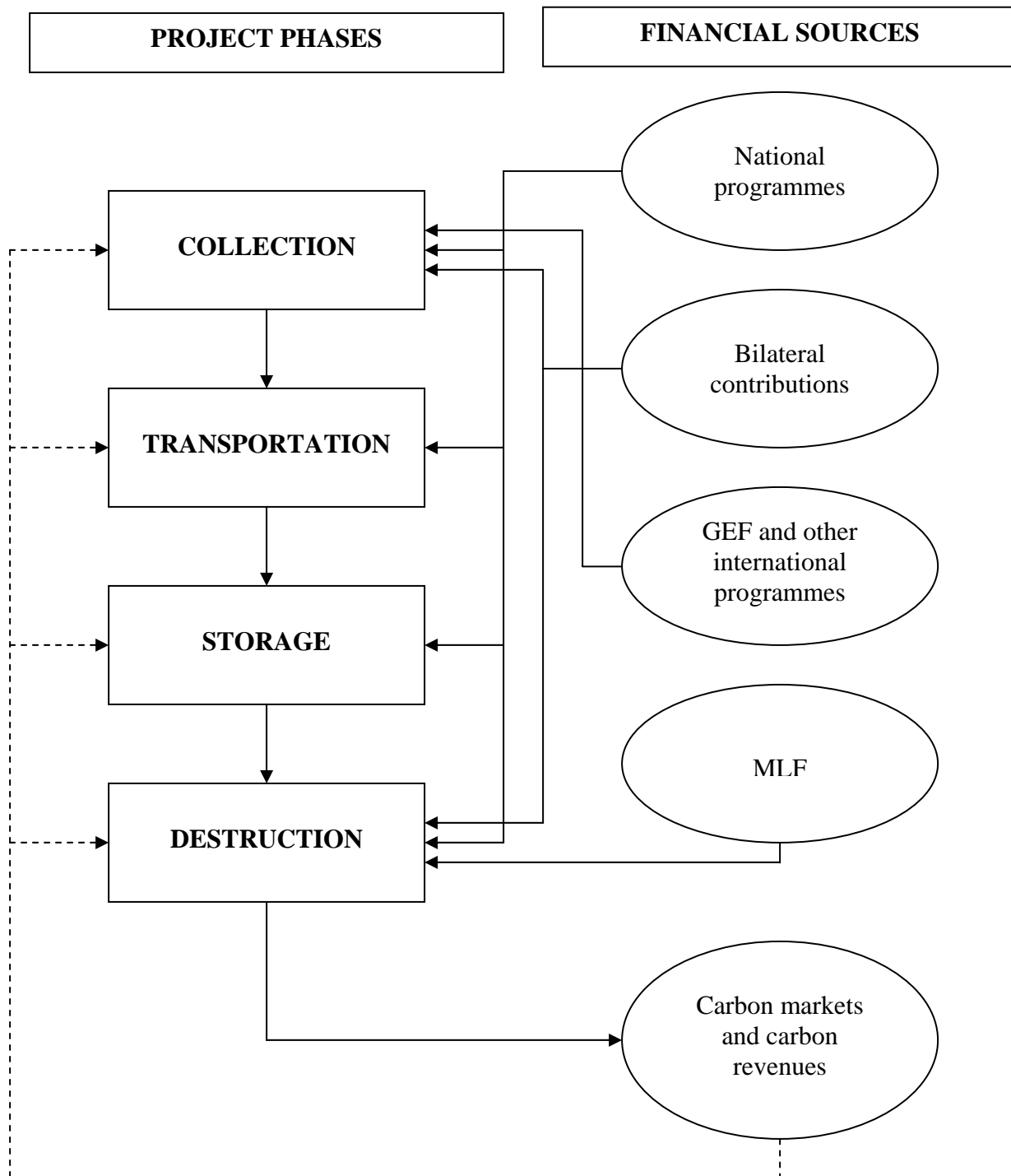
The project for the recovery, transportation and destruction of ODSs in Algeria will be designed in strict coordination with the HPMP preparation.

Indeed, the HPMP activities would involve servicing operations on existing equipment, which would be supported by the MLF.

Furthermore, the demonstration project will explore possibility to mobilize national sources as well as sources from international programmes, both multilateral and bilateral.

Finally, main attention will be put in the selection of the best opportunity to mobilize funds from the monetization of the climate benefits generated under this activity.

Overview of funds mobilization scheme



Project Concept

Country: The Republic of Cameroon

Title: Preparation of an ODS disposal pilot project

Project Duration: 12 months

ODS to be destructed (estimate): 27.35 tonnes

Project Budget: US\$ 40,000 plus US\$ 3,000 agency support cost

Implementing Agency: UNIDO

Coordinating Agency: Ministry of Environment and Protection of Nature (MEPN)

Project Summary

Following Decision XX/7 of the Meeting of the Parties, the Executive Committee decided at its 58th Meeting in July 2009 (Dec. 58/19) to fund a limited number of demonstration projects for the disposal of ODSs.

UNIDO received a government request from Cameroon to prepare a demonstration project for the disposal of ODSs.

This paper sets out a proposal for project preparation for an ODS destruction demonstration project in Cameroon.

The two major sectors of the ODS destruction project, i.e. refrigerant servicing, end-of-life fridges and ACs de-manufacturing contribute to the 27.35 MT of ODSs, which will be destructed annually within the frame of the subject disposal project.

I. Background

Cameroon's baseline average consumption of Annex A, Group I substances amounted to 257 ODP tonnes. Halons' baseline consumption is 2.4 ODP tonnes. Cameroon has no CFC production.

In the past, the ODS consumption (CFC-11, CFC-12 and HCFC-22) occurred mainly in the flexible foam sub-sector and in the maintenance and repair of domestic and commercial refrigeration and stationery air-conditioning equipment.

Refrigerant servicing sector

Out of 257 ODP tonnes in the foam and refrigeration servicing sectors, the amount of 137 MT was consumed in 1999 and 2000 in the refrigeration servicing sector.

According to the RMP, 60% of CFCs recovered can be recycled and the annual quantity of recycled CFC-12 would be up to 28 tonnes per year when the RMP is fully operation (Source: Terminal CFC/TCA phase out plan for Cameroon). Assuming that 10% of this amount would be destructed, 2.8 MT can be destructed annually.

In 2001 in the commercial servicing refrigeration sector, the amount of 16.5 MT was used, MACs service and repair - 4.2 MT of CFCs and in the industrial refrigeration sector - 12.2 MT of CFCs. (Source: Terminal CFC/TCA phase out plan for Cameroon). Assuming that 10% of the amount of CFCs used for servicing purposes, we shall receive the amount of 3.3 ODP tonnes. Therefore, the total for the refrigeration and MAC servicing sector can be considered as 6.1 ODP tonnes.

Consumption of CFC-12 in domestic refrigeration (end-of-life refrigerators)

The total number of domestic refrigerators and freezers in Cameroon is estimated to be more than 2.000.000 units. No information is available on the number of Air Conditioning units.

If we take that the duration of life time of a refrigerator is 15-20 years we could assume that 100,000 refrigerators were to be annually disposed of. During the first year of the project implementation UNIDO wanted to introduce a Producer Responsibility Program in Cameroon dealing with the increase of the cost of imported or produced refrigerators in Cameroon to get funds for destruction of old fridges and ACs at the end of their operation. It would be easy to initiate the collection of at least 50,000 old refrigerators securing a slow increase in fridges collection up to 100,000. If we take into consideration 70-300g of CFC R-12 available in the cooling circuit and compressor (pre-treatment) and 200-800g CFC R-11 in the polyurethane foam insulation (final treatment) we could agree that after the recovery, one refrigerator could provide 230-1100g of CFCs, an average of about 850g. From 50,000 refrigerators we could recover 42.5 MT of CFCs bearing in mind that the technology available from SEG, Germany would allow us a recovery up to 98% of CFC-12. We have also to accept that only 50% of these refrigerators could have a full charge. As a result up to 21.25 MT of CFCs can be recovered per year. This figure could be higher in the first year of the project implementation and lower in

the consequent years.

We assume that the quantity of Halons from fire protection equipment will be minimal. The quantity of ACs is not known, therefore, the project will concentrate on the two major sectors, i.e. domestic refrigeration and commercial refrigeration's servicing sectors and CFC recovery and destruction from end-of-life domestic refrigerators.

Overall CFC quantities for annual destruction

The overall CFC quantities for annual destruction in refrigeration, MACs/ACs servicing sub-sectors and in end-of-life refrigeration/ACs sectors in Cameroon is as follows:

End-of-life refrigerators/ACs	21.25	MT
Servicing sector ACs/MACs and domestic/commercial refrigeration	6.1	MT
Total	27.35	MT

Project Concept

Country: The People's Republic of China

Title: Preparation of a CFC destruction pilot project for Shandong Province in China

Project Duration: 18 months

Project Budget: US\$ 85,000 plus US\$ 6,375 agency support cost

Implementing Agency: UNIDO

Coordinating Agency: Ministry of Environmental Protection (MEP)

Project Summary

Following Decision XX/7 of the Meeting of the Parties the Executive Committee decided at its 58th Meeting in July 2009 (Dec. 58/19) to fund a limited number demonstration projects for the disposal of ODSs.

UNIDO received a government request from China to prepare a demonstration project for the disposal of ODSs.

This paper sets out a proposal for project preparation for an ODS destruction demonstration project in Shandong Province China.

Background

Legal Framework

On 15 February 2009, the State Council of China issued the Regulation on the Recovery and Disposal of Waste Household Appliances and Electronic Equipment, which will come into effect on 1 January 2011.

The regulation sets out the requirements of the bill and the obligations of the central and local government and enterprises involved in disposal. The Ministry of Environmental Protection (MEP) is responsible for implementing the regulations, including the management and monitoring of the disposal of discarded appliances. It is stipulated that only authorized enterprises can conduct the disposal of waste appliances. Enterprises dealing with the disposal of household appliances must report the disposal data

to the local Environment Protection Bureaus (EPBs).

In addition to this, the State Council of China issued the Notice of Used Domestic Appliances and Automobiles Replacement on 1 June 2009. This bill aims to encourage the purchase of new domestic environmentally friendly appliances by providing financial incentive for consumers when purchasing new appliance or automobile if they recycle their old one. The regulation stipulates that discarded appliances and automobiles should be treated only by authorized enterprises in an environmentally friendly manner meeting the requirements of the respective regulations.

The scheme has been initiated in pilot provinces and cities as follows: Beijing, Shanghai, Shandong, Tianjin, Jiangsu, Zhejiang, Guangdong, Fuzhou and Changsha.

The regulations establish a legal framework and consumer incentive to dispose domestic electrical appliances in an approved manner. The collection and transport of the discarded household appliances, which meet the demands stipulated in the regulations, will be jointly funded by the central and the local government to cover part of the costs. ODS used in refrigeration appliances are required to be recovered and disposed of in accordance with the environmental protection requirements.

Shandong Province collection and destruction scheme

Established in 1994, Qingdao New World specializes in waste water and flue gas emissions control and diversified into solid waste disposal and hazardous waste treatment.

With government support, New World has established the Shandong Solid Waste Information Exchange and a collection and distribution network, which allows customers to trade used products and scrap materials.

In 2008, a specialized recycling plant was built in Qingdao to dismantle a range of discarded products including computers, televisions and domestic appliances, such as refrigerators, freezers and room air conditioners. Goods are dismantled on a number of processing lines and recyclable materials are recovered and sold. Non-hazardous waste is disposed of in landfill sites operated by the company and hazardous waste is disposed of in a new gas fired rotary kiln, which was installed in August 2008 and commissioned in 2009. Initial trials, which altogether destructed 25kg gaseous CFC-12 indicated that the kiln is capable of destroying CFC-11 and CFC-12.

The new dismantling plant is now on line and the collection network is beginning to feed significant numbers of appliances to the dismantling plant. According to a detailed survey carried out by

the Shandong Government and New World, the total number of refrigerators in use in whole Shandong province adds up to 19,500,000 units, among which about 3,510,000 are CFC-based. In view of the aging CFC refrigerators stock as well as the incentives introduced by the Government, a large portion of CFC-based refrigerators will be discarded in the coming 5-7 years. For this reason, it is necessary to take immediate actions to destroy the ODS contained in the appliances being discarded. The experience shows that the average CFC content of the discarded refrigerators amounts to 70g CFC-12 and 650g of CFC-11. In light of the above and taking into consideration a very conservative collection rate of 30% the destruction facility will need to be able to handle at least 150 tonnes of CFC-11 and CFC-12 per year.

New World is the only company appointed as recycling center for the discarded household appliances in Shandong Province. The majority of the required infrastructure for ODS destruction in Shandong province has been put in place including the legislative framework, rural and regional collection network and a central dismantling facility with a line specifically designed to deal with refrigerators, freezers and air conditioners.

The recycling enterprise is also generating revenue through the sale of recovered material. However, it is of tremendous difficulty for New World to cover all the costs related to requirements for the environment protection by the revenue. New World is very encouraged by the new incentives provided by the government for the collection of discarded appliances. This will ensure constant flow of disposed refrigerators, which constitutes a solid basis for the long-term sustainability of the project.

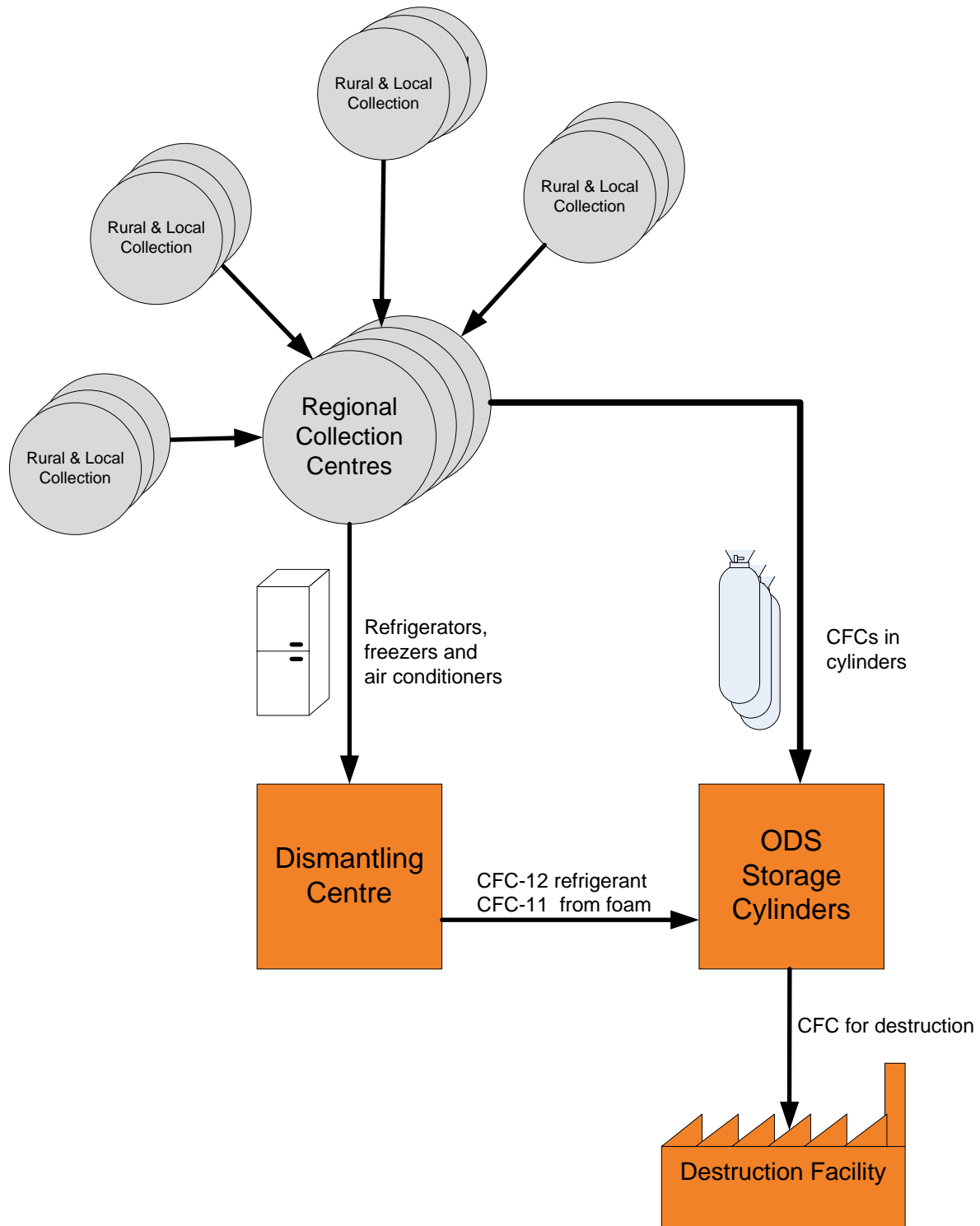
However, the current facility of New World is not able to withdraw CFC-11 from polyurethane insulation foam of the refrigerators. Tests have indicated that it is possible to destroy the foam as a whole in the existing kiln, however, the existing capacity is not sufficient to deal with all the wastes and ODSs being collected. Thus, New World also intends to upgrade its facilities to dispose CFC-11 contained in the insulation foam.

The Government of China is therefore keen to demonstrate an operating model of ODS destruction, which can benefit the environment to the possible largest extent by taking into full consideration the technical and financial conditions.

Project preparation funding is therefore sought to prepare a detailed demonstration project to make a full technical and economical analysis of the Shandong Provincial collection and destruction scheme and to prepare detailed proposals for:

- Detailed analysis of the ODS destruction capability of New World company;
- Upgrading of the existing facility at New World in a cost-effective way to ensure destruction of CFCs contained in refrigerators being discarded in Shandong Province;
- Development of detailed management criteria in order to regulate the process of ODS collection, transportation and destruction, including monitoring, inspection and verification procedures;
- Analysis of the financial operating model and the sustainability of ODS destruction;
- Analysis of alternative funding mechanisms including carbon financing.

Overview of collection, transport, storage and destruction scheme:



Project Concept

Country: The Republic of Egypt

Title: Preparation of an ODS disposal pilot project

Project Duration: 12 months

ODS to be destructed (estimate): 95.7 tonnes

Project Budget: US\$ 60,000 plus US\$ 4,500 agency support cost

Implementing Agency: UNIDO

Coordinating Agency: Egyptian Environmental Affairs Agency (EEAA)

Project Summary

Following Decision XX/7 of the Meeting of the Parties, the Executive Committee decided at its 58th Meeting in July 2009 (Dec. 58/19) to fund a limited number demonstration projects for the disposal of ODSs.

UNIDO received a government request from Egypt to prepare a demonstration project for the disposal of ODS, and is discussing possible bilateral cooperation with Japan for its implementation.

This paper sets out a proposal for project preparation for an ODS destruction demonstration project in Egypt.

The three major sectors of the ODS destruction project, i.e. refrigerant servicing, end-of-life fridges and MAC de-manufacturing and halons servicing sector contribute to the 95.7MT of ODSs, which will be destructed annually within the frame of the subject disposal project.

I. Background

There are no specific laws regarding the collection of refrigerators and air conditioners in some areas in Egypt. The Egyptian legislation is very general, (<http://www.eeaa.gov.eg/English/main/law4.asp>, Art. 29-33 Law 4 and Art. 25-33 Regulations). However, since household appliances and electronic equipment have some hazardous waste, the hazardous streams are the ones which fall under the above articles in the

Law. Additionally, as stated in the Law, every Ministry should publish their own lists of hazardous wastes. For example, Ministerial Decree No. 176 of 2002 issued on 5/9/2002 by the Ministry of Industry specifically mentions electronic appliances and any hazardous streams from it. It covers the items which are related to appliances wastes:

- 15) Unclassified batteries;
- 16) Waste resulting from electric or electronic assembly processes or scrap containing elements of banned batteries and the switches with mercury conductors and glass tubes constructed by cathode rays and others activated glass and PCB condensers or condensers which are polluted by any of the hazardous elements with concentrations showing its hazardous properties;
- 21) Asbestos waste;
- 49) ***Waste containing or composing of CFCs.***

Egypt's baseline average consumption of Annex A, substances for the period from 1995 to 1997 amounted to 1,668 ODP tones. The country has always been in compliance with the Montreal Protocol control measures for CFCs since 1999.

Refrigerant servicing sector

Egypt has phased out all use of CFCs in the production of domestic refrigerators and freezers through 24 conversion projects implementing non-ozone depleting refrigerants and foam blowing agents. The biggest continuing use of CFCs was in the refrigeration service sector, which consumed approximately 704.0 tonnes including refrigerator manufacturing in 2004.

The refrigeration servicing sector in 2007 included commercial refrigeration in service shops consuming in 2004 215.7 MT of CFC-12, domestic refrigeration in service shop - 221.1 MT, refrigerated transportation - 45 MT, industrial refrigerators - 49.9 MT, chillers - 210.0 MT and MAC - 56.0 MT totaling 713.6 of CFC-12 in 2004 (source: the NPP in Egypt).

If the ODS disposal project is well organized with introduction of some incentives for the staff of the centralized ODS recovery facilities and bearing in mind that 5% of the whole annual demand would be destructed every year, the total estimate for destruction could be $713.6 \times 0.05 = 35.7$ MT of CFC-12 in all sub-sectors. In the first year of the ODS disposal project a system for CFC-12 recovery and recycling needs to be established that would allow the collection of unwanted CFC-12 on the regular basis.

End-of-life fridges and MAC de-manufacturing sector

It is estimated that as of 2004 there were around 8 million CFC-based domestic refrigerators in operation. The proportion of non-CFC refrigerators was increasing rapidly due to the conversion of the manufacturing base, but approximately 800,000 to a million repairs to CFC-based units were carried out in 2004 (source: the NPP in Egypt).

If we take that the duration of life time of a refrigerator is 15-20 years we could assume that 400,000 refrigerators were annually disposed of. During the first year of the Project implementation, UNIDO wanted to introduce a Producer Responsibility Program in Egypt dealing with the increase of the cost of imported or produced refrigerators in Egypt to get funds for the destruction of old fridges at the end of their operation. It is easy to initiate the collection of at least 100,000 of old refrigerators, securing a slow increase in the collection of fridges up to 400,000.

If we take into consideration 70-300g of CFC R-12 available in the cooling circuit and compressor (pre-treatment) and 200-800g of CFC R-11 in the polyurethane foam insulation (final treatment) we can agree that the recovery of one refrigerator could yield 230-1100g of CFCs, an average of about 850g. From 100,000 refrigerators we could recovery 85 MT of CFCs bearing in mind that the technology available from SEG, Germany, would allow us a recovery up to 98% of CFC-12. We also have to accept that only 50% of these refrigerators could have a full charge. As a result, we could recover up to **42.5** MT of CFCs. This figure could be higher in the first year of the project implementation and lower in the consequent years.

Based on data provided by the transportation authorities in Egypt, there were 325,000 licensed vehicles with CFC air-conditioning in operation in 2004.

The average charge for a passenger car is between 0.9 and 1.5 kg. The NPP survey confirms that in 2004 about 60 tonnes of CFC-12 was used in servicing MAC systems only. Bearing in mind the life time span for MAC as 20 years we could assume that $325,000 : 20 = 16,250$ MAC need to be destroyed every year, if one MAC has 50% charge we would have about **8.0** MT of CFC-12 to be recovered for destruction.

The total end-of-life fridges and MAC de-manufacturing_sector would provide about **50 MT** of CFCs per year for further destruction.

The European Directives on the Recovery and Disposal of Waste Household Appliances and Electronic Equipment would be used to develop similar ODS recovery and destruction procedures in Egypt. The regulation will set out the requirements of the bill and the obligations of the central and local governments and enterprises

involved in disposal of ODS-containing equipment. The Egyptian Environmental Affairs Agency (EEAA) Ministry of Environmental Protection (MEP) will be responsible for implementing the regulations, including the management and monitoring of the disposal of the waste appliance and only the authorized enterprises can conduct the disposal of the waste appliances. Enterprises dealing with the disposal of household appliances must report the data to local Environment Protection Bureaus (EPBs).

Halons servicing sector

The Halons baseline consumption in Egypt is 705 ODP MT of two Halons 1211 and 1301 or 120 ODS tonnes. We could consider the installed capacity of halons in Egypt as 120 ODS MT. According to the Danish Military Halons Centre 8-12% of the installed capacity could be considered for annual destruction. In our case 10.0 ODS MT could be considered for disposal of on the annual basis.

The project will deal with the destruction in the three sectors. They are:

1. Refrigerant servicing sector - 35.7 MT
2. End-of-life fridges and MAC de-manufacturing sector - 50 MT
3. Halons servicing sector -10 MT

Total - 95.7 MT of ODSs

II. Project scope

1. The future project for ODS destruction in Egypt will include the following chapters:

- a) Unwanted ODS inventory
- b) Status of Regulations on ODS Disposal
- c) Assessment of ODS quantities for destruction in different sectors
- d) Screened-in technologies and selection of destruction methods for ODS destruction
- e) Training programme
- f) Project cost analyses including the climate benefit component.

2. Unwanted ODS inventory

Surveys will be conducted on unwanted ODS in the specific use sectors (refrigerants and halons). Destruction of foams can be considered later on after collecting data on landfills. As a result of the surveys the project defines number of tonnes of unwanted ODS as per use sector excluding the foam sector. The

Central Halon Banking and Refrigerant Banking (RMP) facilities will be analyzed to define the quantities of ODS for destruction.

3. Status of Regulations on ODS Disposal

Sector-wise regulations (refrigerants, foams, halons, solvents, unwanted ODS, hazardous waste regulations and ODS destruction regulations). Destruction standards will be developed at the time of the ODS destruction project implementation.

4. Assessment of ODS quantities for destruction in different sectors

Each sector will be carefully studied and the European Directives on the Recovery and Disposal of Waste Household Appliances and Electronic Equipment would be used to develop similar ODS recovery and destruction procedures in Egypt. Finally a carbon trading mechanism would be applied to generate possible funds for project implementation, for which precise quantities of ODS need to be determined after the introduction of local legislation on the disposal of ODS-containing equipment.

5. Screened-in technologies and selection of destruction methods for ODS destruction

The selection of destruction equipment is based on its internal destruction capacity and the required number of tonnes to be destructed.

6. Training programme

A training programme needs to be developed, which brings all the elements of local ODS destruction, new local regulations on ODS destruction developed during the time of this project, and destruction methods.

7. Project cost analyses

The project costs include the costs of all the above components and equipment, whose destruction capacity will proportionally meet the ODS quantities (halons, CFC-11 and CFC-12) available in Egypt.

Project Concept

Country: The Islamic Republic of Iran

Title: Preparation of an ODS disposal pilot project

Project Duration: 12 months

ODS to be destructed (estimate) 97.45 tonnes

Project Budget: US\$ 60,000 plus US\$ 4,500 agency support cost

Implementing Agency: UNIDO

Coordinating Agency: Department of Environment (DoE)

Project Summary

Following Decision XX/7 of the Meeting of the Parties, the Executive Committee decided at its 58th Meeting in July 2009 (Dec. 58/19) to fund a limited number demonstration projects for the disposal of ODSs.

UNIDO received a government request from the Islamic Republic of Iran to prepare a demonstration project for the disposal of ODSs.

This paper sets out a proposal for project preparation for an ODS destruction demonstration project in Iran.

The three major sectors of the ODS destruction project, i.e. refrigerant servicing, end-of-life fridges and MAC de-manufacturing and halons servicing sector contribute to the 97.45 MT of ODSs, which will be destructed annually within the frame of the subject disposal project.

I. Background

1. Refrigerant servicing sector

The national survey carried out within the preparation of the National CFC Phase out Plan for Iran, has estimated the CFC consumption in the refrigeration servicing sub-sectors as shown in the table below:

**CFC consumption in the refrigeration servicing sectors in 2002,
by sub-sector (Metric tonnes)**

Sub-sector	Servicing
Mobile Air Conditioning	350.00
Commercial: Heavy duty commercial equipment, e.g., cold rooms, condensing units And light duty commercial equipment, e.g., show cases, freezers	135.00
Domestic: Domestic refrigerators and freezers	450.00
Total	935.00

Source: Iran's National CFC Phase-out Plan

The total number of commercial refrigerators in Iran need to be repaired is estimated to be 2 million units, 5% of which still run on CFC-12, with an average of 1.35 kg of CFC-12 per service. 135 MT of CFC-12 is required for servicing purposes and can be destructed. We can estimate that 5% of this quantity, **6.75** MT, needs to be destructed.

The CFC consumption in the servicing sector in 2002 was reported as 935.00, 450 tonnes were in the domestic refrigeration sector excluding MAC units. The fleets of CFC-based refrigeration equipment that are currently in use and are serviced on an annual basis consist of: (i) 1.6 million domestic refrigerators or about 8% of all units, requiring an average 250g CFC per service; (ii) 80,000 commercial -refrigerator units, or 20% of the total number would require about 1,000 g per unit; and (iii) all 1,500 industrial and large cold store units in the country, charged **twice** a year with an average of 100 kg per charge. Furthermore, there are an estimated 2,000 lorries and trucks that are equipped with cold rooms for carrying frozen foods, of which 20% have the CFC-12 refrigerant. These vehicles are charged **twice** a year with an average charge of 5.0 kg per unit.

The total number of domestic refrigerators in Iran is estimated to be 22 million, of which 25% (5,500,000) still run on CFC-12. The annual CFC consumption in the domestic servicing sector is 450 MT. Upon request from UNIDO the Department of Environment has confirmed that the total number of CFC-12 based domestic refrigerators in Iran needed to be repaired is estimated to be 825,000 units per year, and they likely require service with an average of 250g of CFC-12 per service. This results in total requirements of 206 metric tonnes of CFC-12 for servicing in the domestic refrigeration sub-sector. We could assume that 10% (about **20** MT) of this annual CFC consumption needs to be destructed.

In the MAC sector we have 700,000 mobile air conditioning units which still run on CFC-12. Assuming that the average amount of CFC used for each servicing procedure is 1.0 kg and that each car requires servicing every year, the total estimated amount of refrigerant needed for MAC servicing is estimated in 7.0 metric tonnes of CFC-12. And 10% of this amount, **0.7 MT** would be destructed.

2. End-of-life fridges and MAC de-manufacturing sector

Assuming that the average amount of CFC used for each servicing procedure is 1.0 kg and that the life time span for cars could be accepted as 20 years we would have 35,000 pieces of MACs to be destructed every year. From 35,000 MACs we could recover 35 MT of CFCs bearing in mind that the technology available from SEG, Germany would allow us a recovery up to 98% of CFC-12. We do accept that only 50% of these MACs could have a full charge. As a result we could get up to **17.5 MT** of CFCs to be recovered. This figure could be higher in the first year of the project implementation and lower in the consequent years.

As mentioned earlier, the total number of domestic refrigerators in Iran is estimated to be 22 million, of which 25% (5,500,000) still run on CFC-12. If we take that the duration of life time of a refrigerator is 15-20 years we could assume that 275,000 refrigerators were annually disposed of. During the first year of the project implementation UNIDO will introduce a Producer Responsibility Program in Iran dealing with the increase of the cost of imported or produced refrigerators in Iran to get funds for the destruction of old fridges at the end of their life. It would be easy to initiate the collection of at least 100,000 old refrigerators, securing a slow increase in the collection of fridges up to 275,000 within the frame of the project implementation.

If we take into consideration of 70-300g of CFC R-12, which are available in the cooling circuit and compressor (pre-treatment) and 200-800g CFC R-11 in the polyurethane foam insulation (final treatment) we could agree that after the recovery from one refrigerator, the yield could be around 230-1100g of CFCs, an average of about 850g. From 100,000 refrigerators we could recovery 85 MT of CFCs bearing in mind that the technology available from SEG, Germany would allow us a recovery up to 98% of CFC-12. We also have to accept that only 50% of these refrigerators could have a full charge. As a result we could recover up to **42.5 MT** of CFCs. This figure could higher be in the first year of the project implementation and lower in the consequent years.

The Department of Environment of Iran confirmed that at least about 660,000 of old refrigerators need to be de-manufactured on the annual basis. After introduction of the Producer Responsibility Program in Iran it would be possible to make final calculations on the quantity of old fridges to be destructed. However, it is understandable that UNIDO is considering more than 100,000 units based on the calculations above. However, the level of CFCs available in old fridges on average is not known so far. This can only be confirmed within one month's time of the pilot destruction project after the first batches have been destructed. Therefore, UNIDO considered the most conservative figure of 42.5 MT of CFCs for the destruction of 100,000 units in the end-of-life fridges de-manufacturing sector.

3. Halons servicing sector

Iran reported a consumption of zero ODP tonnes of halons in year 2008.

The consumption of halons in the I.R. of Iran was reported as 1,420 ODP tonnes in 2001. The consumption of 1,420 ODP tonnes, which is in line with the baseline, consists of 120 ODP tonnes of halon-1211, and 1,300 ODP tonnes of halon-1301. The Executive Committee approved at its 28th Meeting, in July 1999, the "National Halon Management Programme (NHMP) and the phase-out impact of the project was estimated at 2,434 ODP tonnes".

According to Iran's Country Programme Update (CPU) approved in 2003, approximately one third of halon consumption in the I.R. of Iran is for the Defense Department, and the rest is in large and commercial buildings. The critical users of halon in the I.R. of Iran are defense, civil aviation, shipping, power supply, oil and gas industry and telecommunication. There are also some charging and servicing centers, which are responsible for manufacturing and servicing fire extinguishers.

According to Iran's Halon Banking Center, about 30%-50% of the annual halon consumption of halons for refilling the fire protection units or systems can be considered for destruction purposes. The same figure of 30%-50% was confirmed to UNIDO by other Halon Banking Centers. If the total installed capacity in Iran is 2.55 tonnes of Halon 1211 in 2007 and 21.54 tonnes of Halon 1301, about **7.0-10.0** ODS MT can be considered every year for destruction as figures confirmed by the Halon Banking Center in Iran.

The project will deal with the destruction in the three sectors. They are:

1. Refrigerant servicing sector (Domestic refrigeration) - 20.0 MT

2. Refrigerant servicing sector (Commercial refrigeration) - 6.75 MT
3. MAC servicing sector - 0.7 MT
4. End-of-life fridges de-manufacturing sector - 42.5 MT
5. MAC de-manufacturing sector - 17.5 MT
6. Halons servicing sector - 10.0 MT

Total - **97.45 MT** of ODSs

II. Project strategy

The future project for ODS destruction in Iran will include the following chapters:

- a) Unwanted ODS inventory
- b) Status of Regulations on ODS Disposal
- c) Assessment of ODS quantities for destruction in different sectors
- d) Screened-in technologies and selection of destruction methods for ODS destruction
- e) Training programme
- f) Project cost analyses including the climate benefit component.

2. Unwanted ODS inventory

Surveys will be conducted on unwanted ODS in the specific use sectors (refrigerants and halons). Destruction of foams can be considered later on after collecting data on landfills. As a result of the surveys the project defines number of tonnes of unwanted ODS as per use sector excluding the foam sector. The Central Halon Banking and Refrigerant Banking (RMP) facilities will be analyzed to define the quantities of ODS for destruction.

3. Status of Regulations on ODS Disposal

Sector-wise regulations (refrigerants, foams, halons, solvents, unwanted ODS, hazardous waste regulations and ODS destruction regulations). Destruction standards will be developed at the time of the ODS destruction project implementation.

4. Assessment of ODS quantities for destruction in different sectors

Each sector will be carefully studied and the European Directives on the Recovery and Disposal of Waste Household Appliances and Electronic Equipment would be used to develop similar ODS recovery and destruction procedures in Iran. Finally a carbon trading mechanism would be applied to generate possible funds for project implementation, for which precise quantities of ODS need to be determined after the introduction of local legislation on the disposal of ODS-containing equipment.

5. Screened-in technologies and selection of destruction methods for ODS destruction

The selection of destruction equipment is based on its internal destruction capacity and the required number of tonnes to be destroyed.

6. Training programme

A training programme needs to be developed, which brings all the elements of local ODS destruction, new local regulations on ODS destruction just developed during the time of this project, and destruction methods.

7. Project cost analyses

The project costs will include the costs of all the above components and equipment, whose destruction capacity will proportionally meet the ODS quantities (halons, CFC-11 and CFC-12) available in Iran.

Project Concept

Country: Nigeria

Title: Preparation of ODS disposal demonstration project

Project Duration: 12 months

Project Budget: US\$ 60,000 plus US\$ 4,500 agency support cost

Implementing Agency: UNIDO

Coordinating Agency: NOO, Ministry of Environment

Project Summary

Following Decision XX/7 of the Meeting of the Parties, the Executive Committee decided at its 58th Meeting in July 2009 (Dec. 58/19) to fund a limited number of demonstration projects for the disposal of ODSs.

UNIDO received a government request from Nigeria to prepare a demonstration project for the disposal of ODSs.

This paper sets out a proposal for project preparation for an ODS destruction demonstration project in Nigeria.

Background

In line with the Criteria and Guidelines for the selection of ODS disposal projects and provisions for the requests on project preparation funding set up by the ExCom Decision 58/19, paragraph (iv) the Government has submitted the following information and data.

It has been anticipated that the ODS disposal demonstration project to be developed will include activities related to ODS collection, transportation, storage and delivery to the destruction facility.

For the time being there is the Africa Stockpile Program (ASP) funded by CIDA. The program has a three-year span and is designed to identify Nigeria's needs on obsolete chemicals disposal to prevent further accumulation of obsolete pesticides in the country. There is also a UNDP project proposal on Energy Efficiency and Climate Change pending approval and funding by GEF. A similar

project in Ghana has an ODS disposal component. A synergy with ASP and the GEF project would be possible.

There are two main ODSs, which are suggested to be handled under the ODS disposal demonstration project, namely: CFC-12 refrigerant and halons.

The main source of CFC-12 is located in the refrigeration installations of the oil industry. A pilot project implemented at one of the oil companies had identified an installed stock of about 15 MT of CFC-12 from which 500 kg have been already recovered and stored for the subsequent destruction. There are another 5 similar oil companies with the estimated stock of 80 MT of CFC-12. It has to be noted that all installations in the oil industry have been converted to non-ODS technology. Thus, for the time being about 95 MT of CFC-12 is available for recovery, storage, transportation and destruction.

It is expected that additional quantities of CFCs for destruction can be collected from the refrigeration servicing sector after the completion of the on-going RMP project, which is providing the respective training to the refrigeration service technicians followed by distribution of R&R equipment among the national Refrigeration Associations.

The survey carried out in 2003/2004 identified a significant stock of halons installed in the fire fighting equipment. The established halon bank is designed for recovery/recycling of halon-1301 for essential use. According to the established inventory there is an installed stock of 200 MT of halon-1301. The respective TEAP's report estimates that about 80% of halons in the African region are too contaminated for recycling. Thus, at least 150 MT of halon-1301 are expected to be handled under the ODS disposal project.

The halon bank does not process halon-1211. However, the cylinders charged with halon-1211 are collected and stored for the subsequent destruction. Based on the findings of the survey mentioned above, the installed stock of halon-1211 is about 300 MT.

Project Strategy

The project will deal with the destruction in the following sectors:

1. Oil industry - 95 MT
2. Refrigeration, air-conditioning and MAC servicing sector - **to be determined**
3. Halon servicing sector - 450 MT

Total - about **545 MT** of ODSs.

The future project for ODS destruction in Nigeria will include the following chapters:

- a) Unwanted ODS inventory
- b) Status of Regulations on ODS Disposal
- c) Assessment of ODS quantities for destruction in different sectors
- d) Screened-in technologies and selection of destruction methods for ODS destruction
- e) Training program
- f) Project cost analyses including the climate benefit component.

Project Concept

Country: The Syrian Arab Republic

Title: Preparation of an ODS disposal pilot project

Project Duration: 12 months

ODS to be destructed (estimate) 81.55 tonnes

Project Budget: US\$ 60,000 plus US\$ 4,500 agency support cost

Implementing Agency: UNIDO

Coordinating Agency: Ministry of Local Administration and Environment (MLAE)

Project Summary

Following Decision XX/7 of the Meeting of the Parties the Executive Committee decided at its 58th Meeting in July 2009 (Dec. 58/19) to fund a limited number of demonstration projects for the disposal of ODSs.

UNIDO received a government request from Syria to prepare a demonstration project for the disposal of ODSs.

This paper sets out a proposal for project preparation for an ODS destruction demonstration project in Syria.

The three major sectors of the ODS destruction project, i.e. refrigerant servicing, end-of-life fridges and MAC de-manufacturing and halons servicing sector contribute to the 81.55 MT of ODSs, which will be destructed annually within the frame of the subject disposal project.

I. Background

Syria's baseline average consumption of Annex A, Group I substances for the period from 1995 to 1997 amounted to 2,224.65 ODS tonnes.

Refrigerant servicing sector

The estimation regarding existing CFC-based equipment in operation in 2004 throughout the country has provided following results:

- *domestic refrigerators and freezers; 4,000,000 units*
- *commercial refrigeration units ; 300,000 units*
- *air conditioners; 150,000 units*
- *transport refrigeration units; 3,000 units,*
- *industrial refrigerators and chillers with CFC; 800 units (200 units with CFC-12),*
- *MAC with CFC-12; 300,000 units (total number of vehicles; 600,000)*

a. Consumption of CFC-12 in domestic refrigeration (end-of-life refrigerators): The total number of domestic refrigerators and freezers is more than 4.000.000 units. Assuming that approximately 15 percent of these units require service annually, and that each unit consumes about 300g of CFC-12 in the process of recharging, the total CFC-12 consumption in domestic refrigeration servicing is 180 tonnes. Assuming that 10% will be destructed annually, that amounts to **18.0 MT**.

If we take that the duration of life time of a refrigerator is 15-20 years we could assume that 200,000 refrigerators were annually disposed of. During the first year of the Project implementation UNIDO wanted to introduce a Producer Responsibility Program in Syria dealing with the increase of the cost of imported or produced refrigerators in Syria to get funds for the destruction of old fridges at the end of their operation. It is easy to initiate the collection of at least 100,000 of old refrigerators, securing a slow increase in fridges collection up to 200,000.

If we take into consideration of 70-300g CFC R-12 which are available in the cooling circuit and compressor (pre-treatment) and 200-800g CFC R-11 in the polyurethane foam insulation (final treatment) we can agree that the recovery of one refrigerator could yield 230-1100g of CFCs, an average of about 850g. From 100,000 refrigerators we could recovery 85 MT of CFCs bearing in mind that the technology available from SEG, Germany, would allow us a recovery up to 98% of CFC-12. We have also to accept that only 50% of these refrigerators could have a full charge. As a result we could get up to **42.5 MT** of CFCs to be recovered. This figure could be higher in the first year of the project implementation and lower in the consequent years.

b. Consumption of CFC-12 in commercial and transport refrigeration: This sub-sector includes the use of CFCs as refrigerant in display cabinets, food storage equipment, transport refrigeration (containers) and commercial cold storage facilities. Commercial refrigeration is crucial to Syria since it is primarily used for food storage and transport. The total number of 300,000 food stores, chest freezers, display cabinets, cold rooms and other commercial refrigeration units are in operation. Assuming that 10 percent of the total is to be serviced annually, each unit requiring an average 0.75 kg of CFC-12 in the process of recharging, the total amount of CFC-12 consumed annually in the commercial sub sector is 22.5 tonnes. Also assuming that 10% of this annual consumption needs to be destructed, the final amount is **2.25 MT**.

c. Consumption of CFC in industrial refrigeration sub-sector: Chillers and industrial refrigerators are providing large centralized cooling services, and are usually used for cooling for industrial processes. They are also used for air conditioning in larger buildings, installed in different industries, hospitals, hotels, commerce buildings and others. The majority of these units are between 15 and 20 years old and most of them are expected to reach the end of their operational lifetimes beyond 2010. Due to poor maintenance, these units could be a source of leaks and may need special attention in future NPP. The survey estimated that about 200 industrial refrigerators and 21 chillers with CFC-12 are in use in Syria, with overall annual consumption of about 40 tonnes of CFC-12 for maintenance and servicing. The estimated CFC consumption for industrial service including chillers is 40 ODP tonnes and 10% will be considered for destruction, **4.0 MT**.

d. Consumption of CFC-12 in mobile air-conditioning (MAC) sub-sector: Based on data provided by the transportation department, there were approximately 600,000 registered vehicles in Syria in 2004. It is estimated that half of this number is equipped with air conditioner using CFC-12 and require annual service. Knowing that each unit requires 1.3 kg of CFC-12 for recharging service, the annual consumption of CFC-12 in this sub-sector is around 78 tonnes. As 10% is estimated for destruction, that amounts to **7.8 MT**. Almost all vehicles with MAC and MAC for local assembly after 1999 are using HFC-134a.

Halons servicing sector

Syria has already phased out the consumption of Halons with assistance from the Multilateral Fund through establishing a Halon bank. The Halons baseline consumption in Syria was about 420 ODP MT of two Halons 1211 and 1301, 40 ODS tonnes of Halon 1211 and 30 ODS tonnes of Halon 1301, respectively. We could consider the installed capacity of halons in Syria as 70 ODS MT. According to the Danish Military Halons Centre 8-12% of the installed capacity could be considered for annual destruction. In our case **7.0** ODS MT could be considered for disposal of on the annual basis.

Overall CFC quantities for annual destruction

The overall CFC quantities for annual destruction in refrigeration, AC/Mac and halon servicing sub-sectors and in end-of-life refrigeration sector in Syria could be confirmed as:

End-of-life refrigerators	42.5 MT
Servicing sector	
Domestic refrigeration	18.0 MT
Commercial and transportation refrigeration	2.25 MT
Industrial refrigeration	4.0 MT
Mac sector	7.8 MT
Halon servicing	7.0 MT
Total	81.55 MT

II. Project scope

The future project for ODS destruction in Syria will include the following chapters:

- a) Unwanted ODS inventory
- b) Status of Regulations on ODS Disposal
- c) Assessment of ODS quantities for destruction in different sectors
- d) Screened-in technologies and selection of destruction methods for ODS destruction
- e) Training programme
- f) Project cost analyses including the climate benefit component.

2. Unwanted ODS inventory

Surveys will be conducted on unwanted ODS in the specific use sectors (refrigerants and halons). Destruction of foams can be considered later on after collecting data on landfills. As a result of the surveys the project defines number of tonnes of unwanted ODS as per use sector excluding the foam sector. The Central Halon Banking and Refrigerant Banking (RMP) facilities will be analyzed to define the quantities of ODS for destruction.

3. Status of Regulations on ODS Disposal

Sector-wise regulations (refrigerants, foams, halons, solvents unwanted ODS, hazardous waste regulations and ODS destruction regulations). Destruction standards will be developed at the time of the ODS destruction project implementation.

4. Assessment of ODS quantities for destruction in different sectors

Each sector will be carefully studied and the European Directives on the Recovery and Disposal of Waste Household Appliances and Electronic Equipment would be used to develop similar ODS recovery and destruction procedures in Syria. Finally a carbon trading mechanism would be applied to generate possible funds for project implementation, for which precise quantities of ODS need to be determined after the introduction of local legislation on the disposal of ODS-containing equipment.

5. Screened -in technologies and selection of a destruction methods for ODS destruction

The selection of destruction equipment is based on its internal destruction capacity and the required number of tonnes to be destructed.

6. Training programme

A training programme needs to be developed, which brings all the elements of local ODS destruction, new local regulations on ODS destruction developed in the time of this project, and destruction methods.

7. Project cost analyses

The project costs include the costs of all the above components and equipment, whose destruction capacity will proportionally meet the ODS quantities (halons, CFC-11 and CFC-12) available in Syria.

Project Concept

Country: Algeria

Title: Preparation of investment projects for the phase-out of HCFCs in the refrigeration, A/C and foam manufacturing sectors

Project Duration: 12 months

Project Budget 1: 64,500 (including 7.5% Agency Support Costs) for the refrigeration and Air-to-Air AC sectors

Project Budget 2: 43,000 (including 7.5% Agency Support Costs) for the foam sector

Implementing Agency: UNIDO

Coordinating Agency: National Ozone Bureau - Ministère de l'Aménagement du Territoire de l'Environnement

Project Summary

Algeria's reported HCFCs consumption for the year 2007 was 12.1 ODP tonnes including consumption of HCFC-22 and HCFC-141b. Algeria is therefore eligible for receiving up to US\$ 100,000 for the preparation of investment projects for the phase out of HCFCs in the manufacturing sector.

Algeria has not yet received funds for the preparation of investment projects for the HCFC phase out and it was agreed with the Government that all the eligible funds would be allocated to address the refrigeration, air-conditioning and foam manufacturing sectors under UNIDO's responsibility.

A recent survey confirmed that the HCFC consumption in the manufacturing sectors is for the production of HCFC based equipment in the AC, commercial and domestic refrigeration sectors as well as producing foam. The survey confirmed indeed that there are several companies involved in the mentioned manufacturing sectors. Although the HCFC survey has not yet been completed and it will be finalized during the preparation of the HCFC phase-out management plan, the Government estimated significant HCFC consumption in all the mentioned sectors.

Funding will be used to prepare investment activities addressing the refrigeration, air-conditioning and foam manufacturing sectors, which is in line with the HPMP under development. Investment projects will be prepared to help Algeria to achieve the 2013 and 2015 reduction targets in line with the priorities established in the HPMP.

Project Concept

Country: The People's Republic of China

Title: Technology demonstration project for HC blowing agent in the XPS sector

Project Duration: 18 months

Project Budget: US\$ 30,000 plus US\$ 2,250 agency support cost

Implementing Agency: UNIDO

Coordinating Agency: Ministry of Environmental Protection (MEP)

Project Summary

The extruded polystyrene board (XPS) sector is experiencing a rapid development in China. It is estimated that there are currently about 500 XPS enterprises with about 800 production lines. The XPS production capacity amounts to approximately 8 million cubic meters consuming thirty thousands tons of HCFC. The products are used for building insulation.

The recent survey carried out in the framework of the preparation of the HPMP and the ensuing technical workshop held in Beijing in September revealed the following problems encountered by the industry in China:

1. The enterprises consider CO₂ technology, which is used in many developed countries;
2. The advantage of CO₂ technology is the very low GWP of the foaming agent, thus it is a long term solution;
3. However, the CO₂ technology is very complex and requires extended technical skills and expensive new equipment to accommodate the high pressure of CO₂ blowing agent. Furthermore, the thermal insulation of the CO₂ blown foam does not reach the one of the HCFC-22/HCFC-142b blown foams and there is a significant aging of insulation and strength after a short period of time. It is also very difficult to produce board with thicknesses above 60 mm;
4. Most of the XPS enterprises in China use high ratio of recycled materials of sometimes poor quality for XPS

production. The CO₂ technology seems to be sensitive in this respect.

5. In contrast to the practice of many developing countries, Japan elaborated a hydrocarbon (HC) technology and the entire XPS board sector in Japan has been converted to hydrocarbon (isobutane) many years ago;
6. The hydrocarbon technology is also a final solution; the GWP of isobutane is 4. The Japanese experience shows that the insulation properties of HC blown XPS foam boards are 10% better than the same of the CO₂ blown ones; ageing is negligible and thicker boards can be produced as well. The equipment itself is not much different from the current one;
7. However, isobutane is a flammable material, which requires appropriate precautions and safety modifications and equipment in the storage, transportation, handling and processing of the blowing agent.
8. A further problem is the flammability of the product, which however can be controlled by appropriate fire retardant additives (similar ones need to be used for CO₂ blown foams as well, due to the methanol used as co-blowing agent).
9. The fire safety regulations of China are quite stringent, which might constitute an additional problem.
10. Selected and controlled recycled materials are used in Japan or XPS production.
11. XPS manufacturers in China don't use hydrocarbon-related mixtures, especially hydrocarbon alone as blowing agents.
12. In view of the diversity of producers in China, which include large but also many small and medium scale enterprises operating in various conditions, it is reasonable to investigate the advantages and adaptability of HC technology in the XPS board production sector.

In view of the above, a demonstration project is proposed to help in the selection of appropriate technology for the phase out of HCFCs in the sector.

The said project is aimed to demonstrate the application of hydrocarbon or hydrocarbon mixture as substitutes of HCFCs blowing agents.

An existing XPS manufacturer will be selected to implement this

project.

UNIDO will approach Japanese industry to assist in the technological and fire safety issues, including streamlining of standards and regulations.

The project activities/cost will consist of the following:

- Technology development and validation;
- Installation of hydrocarbon storage tank and handling equipment;
- Retrofitting and/or replacing parts of existing foaming equipment for the use of hydrocarbon;
- Installation of safety equipment;
- Technical assistance and training;
- Trial production, testing, field trials.

Information of the candidate enterprise:

Name: Shanghai Xinzhao Co.Ltd.

Location: Shanghai

Year of establishment: 2002

Project Concept

Country: Pakistan

Title: Preparation of investment activities for the phase-out of HCFCs in the PU Foam and Refrigeration manufacturing sectors

Project Duration: 12 months

Project Budget 1: US\$ 129,000 (incl. 7.5% Agency Support Costs) for the refrigeration manufacturing and A/C sectors

Project Budget 2: US\$ 86,000 (incl. 7.5% Agency Support Costs) for the Foam sector

Implementing Agency: UNIDO

Coordinating Agency: Ministry of Environment of Pakistan - National Ozone Cell

Project Summary

Pakistan's 2007 consumption of HCFCs according to Article 7 report amounted to 183.7 ODP tonnes. With this, Pakistan is a country with an annual consumption higher than 100 ODP tonnes.

Pakistan received US\$ 150,000, split between UNIDO and UNEP, for HPMP preparation. Preliminary results of the survey confirmed that there is high consumption of HCFC 141b in the foam and refrigeration manufacturing sectors and HCFC 22 in the refrigeration (air conditioning) manufacturing sector.

19 companies were so far identified consuming HCFC 141b and HCFC 22 in the refrigeration manufacturing sectors (domestic and commercial refrigeration, air conditioning). Twenty companies have been identified in the PU insulation foam manufacturing sector, consuming HCFC 141b.

Visited manufacturing companies, Haier, Varioline, Shadman Electronics, Pakistan insulation - Eagle Star were found eligible for funding and hence immediately nominated to be potential project beneficiaries under HPMP. Total consumption of HCFC 141b only at these initially verified production facilities has been estimated at the level of 110, 5 MT of HCFC 141b.

Based on the 2007 Country Programme data the following sector HCFC-

consumption (in metric Tonnes) is reported.

	Manufacturing Foam sector	Manufacturing Refrigeration sector	Refrigerati on servicing sector	Total
Annex C Group I				
HCFC-22	-	1,831.6	282.2	2,113.8
HCFC-141b	613	-		613
HCFC-123				
HCFCs Total Consumption	613	1,831.6	282.2	2,726.8

Based on the reported consumption and the above facts, Pakistan is eligible for funding for the preparation of investment projects for the phase out of HCFCs in the manufacturing sectors.

In order to ensure that Pakistan meets the 2013 and 2015 HCFC reduction targets urgent actions are required in the manufacturing sectors.

The Government of Pakistan requested UNIDO to submit funding requests for the preparation of sector plans for the following sectors:

- PU Foam sector
- Refrigeration manufacturing sector

Sector strategies and investment projects will be prepared by UNIDO in cooperation with the government institutes to enable Pakistan to achieve the 2013 freeze as well as the 2015 reduction target.

Project Concept

Country: South Africa

Title: Preparation for the phase out the use of HCFC- 22 and HCFC- 141b in the polyurethane foam sector

Project Duration: 12 months

Project Budget: US \$150,000 plus US \$11,250 agency support cost

Implementing Agency: UNIDO

Coordinating Agency: Department of Environmental Affairs

Background

In September 2007 the Parties to the Montreal Protocol at their Nineteenth Meeting agreed to accelerate the phase-out of production and consumption of HCFCs by 10 years as per Decision XIX/6. The September 2007 adjustments to the Montreal Protocol oblige countries to take action as soon as possible to freeze their base line HCFC production and consumption levels (average of the years 2009-2010) in 2013, and reduce by 10 percent their production and consumption of HCFCs by 2015.

The Executive Committee, in its decision 54/39, established clear guidance on how to proceed with investment projects addressing HCFC phase out;

For countries that chose to implement investment projects in advance of completion of the HPMP:

(i) The approval of each project should result in a phase-out of HCFCs to count against the consumption identified in the HPMP and no such projects could be approved after 2010 unless they were part of the HPMP;

(ii) If the individual project approach was used, the submission of the first project should provide an indication of how the demonstration projects related to the HPMP and an indication of when the HPMP would be submitted;

The Government of South Africa is currently finalizing the HPMP, however in order to meet the 2013 freeze and 2015 reduction steps it will be necessary to take urgent action to curtail HCFC consumption. In this respect UNIDO has received a government

request from the Republic of South Africa to identify potential projects which will form part of the HPMP currently being formulated that can be initiated ahead of the approval of the HPMP. This paper sets out a proposal for project preparation for HCFC phase out projects in the foam sector

Project Summary

The project aims to identify a number of suitable projects in the polyurethane foam production sector that will allow South Africa to meet its Montreal Protocol phase out obligations in respect of HCFCs; the 2013 freeze target and the and 2015 first reduction target.

An initial assessment of the sector has identified 17 potential project counterparts (Table 1) in the foam production sector manufacturing a range of products including

- Rigid insulation panels
- Domestic appliance insulation
- Rigid polyurethane slab stock
- Display cabinets
- Integral skin foams
- Rigid moulded foam components
- Buoyancy aids
- Systems house.

The total HCFC consumption (in 2008) of the enterprises identified was approximately 1,300 metric tonnes of HCFC-141b and 1,230 tonnes of HCFC-22.

The project proposes a fully integrated approach to the assessment of HCFC alternatives for ODS phase out with the use of low-GWP alternatives for the investment component. This will require detailed life cycle climate impact analysis of technical alternatives particularly in refrigeration and air conditioning, taking into account the potential climate benefits of the adoption of more energy efficient technology.

The technology being considered includes hydrocarbon and methyl formate and blends.

Project preparation funds are requested to make a detailed assessment of each of the potential counterpart enterprises with the aim of identifying a number of projects which will phase out HCFC-141b and HCFC-22 in the foam sector, thereby ensuring compliance with Montreal Protocol targets.

Table 1 Initial Assessment of Polyurethane Foam production Sector in South Africa

	Name of Company	Location	Description of Products and Services	Consumption in 2008/ MT		Type of foaming machines in use
				HCFC-141b consumption 2008 /MT	HCFC-22 consumption 2008 /MT	
1	Industrial Urethanes	Kempton Park, Johannesburg	Rigid Insulation	200	600	HP, LP
2	CHC Elastogran	Elandsfontein, Johannesburg	polyurethanes	40	200	HP
3	Owen Corning	Johannesburg		30	0	HP
4	Aerothane Applications	Cape Town		50	0	HP
5	Iso Foam	Cape Town		80	0	HP
6	I.U.	Durban	System House	480	200	Blenders
7	Whirlpool	Durban	Appliance	150	70	HP
8	Zero	JHB	Appliance	5	0	HP
9	Defy	Durban	Appliance	160	80	HP
10	Just	Durban	Panel	20	10	LP
11	Kwikspace	Johannesburg	Panel	20	10	LP
12	Insulated	Johannesburg	Panel	18	10	LP
13	Concorde	Durban	Display	10	5	LP
14	Harveys	Port Elizabeth	Gen. Moulding	10	5	LP
15	J. Maserow	Johannesburg	Simulated Wood	10	5	LP
16	Europlastifoam	Pretoria	Integral Skin	5	0	LP
17	Bumbo Limited	Rosslyn, Gauteng	Integral Skin	20	5	HP
			Total	1308	1200	

Project Concept

Country: Sudan

Title: Preparation of investment activities for the phase-out of HCFCs in the PU Foam sector and Refrigeration manufacturing sector

Project Duration: 12 months

Project Budget 1: US\$ 43,000 (incl. 7.5% Agency Support Costs) for the PU Foam sector

Project Budget 2: US\$ 64,500 (incl. 7.5% Agency Support Costs) for the Refrigeration manufacturing sector

Implementing Agency: UNIDO

Coordinating Agency: Ministry of Industry of Sudan - National Ozone Unit

Project Summary

Sudan's 2007 consumption of HCFCs according to Article 7 report amounted to 8.6 ODP tonnes.

Sudan is one of the countries, which had not been reporting HCFC consumption before 2007. Thus according to the Decision 56/16 c) the country received only US\$ 30,000 to prepare an HPMP. UNIDO initiated the preparation of the HPMP subsequently. The preliminary results of the survey are indicating that there is a significant consumption of HCFC 141b in the foam and refrigeration production sectors and HCFC 22 in refrigeration servicing sector.

UNIDO fact finding visits were organized to domestic refrigerators & freezers producing companies and also to rigid PUR sandwich panels manufacturing companies.

Three production lines of Amin Factories for Insulation Panels and two production companies operating in the sector of domestic refrigeration, Modern Refrigeration Company and Coldair Engineering Company were found eligible for funding and hence immediately nominated to be potential project beneficiaries under the HPMP. Total consumption of HCFC 141b only at these initially identified production facilities has been estimated at the level of 150 MT of HCFC 141b.

In order to ensure that Sudan meets the 2013 and 2015 HCFC reduction targets urgent actions are required in all manufacturing sectors.

The Government of Sudan requested UNIDO to submit funding requests for the preparation of investment projects in the following sectors:

- PU Foam sector
- Refrigeration manufacturing sector

Based on the reported consumption, according to the Decision 56/16 d), Sudan is eligible for investment preparation funding in total amount of U\$ 100,000 for the preparation of investment projects to phase out HCFCs from the manufacturing sectors, to achieve the 2013 and 2015 control targets.

An assessment of the country consumption data shows that 90% of the HCFCs consumption in Sudan is used for the production of insulating material in the refrigeration and PU insulation panels manufacturing sectors and for this reason, a sector strategic approach is critical in achieving the consumption reduction steps.

Sector strategies and investment projects will be prepared by UNIDO in cooperation with the Governmental institutions support, to enable Sudan to achieve the 2013 freeze as well as 2015 reduction target, in line with the priorities of the HPMP.

Project concept

Additional funding for HPMP preparation

Country: Ecuador, Iraq, Pakistan, Philippines and Sudan

Title: Additional funding for HPMP preparation

Project Duration: 12 months

- 1) **Project budget Ecuador:** US\$ 80,625 (including 7.5% Agency Support Costs of US\$ 5,625)
- 2) **Project Budget Iraq:** US\$ 69,875 (including 7.5% Agency Support Costs of US\$ 4,875)
- 3) **Project Budget Pakistan:** US\$ 48,375 (including 7.5% Agency Support Costs of US\$ 3,375)
- 4) **Project Budget Philippines:** US\$ 75,250 (including 7.5% Agency Support Costs of US\$ 5,250)
- 5) **Project Budget Sudan:** US\$ 129,000 (including 7.5% Agency Support Costs of US\$ 9,000)

Implementing Agency: UNIDO

Coordinating Agency: National Ozone Units

Project Summary

In response to Decision 56/16 UNIDO is submitting three requests for additional funds for the HPMP preparation in Iraq, Pakistan and Sudan. In addition, the Government of Ecuador decided that it wished to change the implementing agency for HPMP implementation to UNIDO and UNEP.

1) Ecuador received US\$ 150,000 through the World Bank for HPMP preparation at the 55th ExCom Meeting. On 8 September 2009, the Government of Ecuador has informed the MLF Secretariat about its decision to change the implementing agency to UNEP and UNIDO. In light of the above, UNIDO is requesting US\$ 75,000 for the preparation of the HPMP in Ecuador. UNEP is requesting the same amount of funding.

2) Iraq received US\$ 30,000 through UNIDO for HPMP preparation at the 55th ExCom Meeting based on zero HCFC consumption reported at that time. Iraq has completed its country programme preparation including HCFC consumption. Based on the reported consumption of over 100 ODP tonnes, Iraq is eligible for additional US\$ 165,000 for HPMP preparation in line with ExCom Decision 56/16. It has been agreed with the Government of Iraq and UNEP that UNIDO would request at the 59th ExCom Meeting US\$ 65,000, while UNEP would request the remaining US\$ 100,000.

In light of the above, UNIDO is requesting US\$ 65,000 plus support cost as additional HPMP preparation funding for Iraq.

3) Pakistan's 2007 consumption of HCFCs according to Article 7 report amounted to 183.7 ODP tonnes. With this, Pakistan is a country with annual consumption higher than 100 ODP tonnes. As per Decision 56/16, Pakistan is eligible for HPMP preparation funding amounting to US\$ 195,000. Pakistan received in total US\$ 150,000, split between two implementing agencies (UNIDO and UNEP), for HPMP preparation.

In light of the above, US\$ 48,375 including US\$ 3,375 support cost is requested as additional HPMP preparation funding for Pakistan.

4) The Philippines reported an HCFC consumption of 180.2 ODP tonnes in 2007 and received \$195,000 at the 55th ExCom Meeting through the World Bank for the preparation of an HPMP. The Government has requested to designate the preparation of a foam sector plan to UNIDO.

In light of the above, UNIDO is requesting US\$ 70,000 for the preparation of a foam sector plan in the phase-out of HCFCs.

5) Sudan's 2007 consumption of HCFCs according to Article 7 report amounted to 8.6 ODP tonnes. With this, Sudan is a country with medium consumption between 6 and 100 ODP tonnes a year according to classification as stipulated in the Decision 56/16 c.

Sudan received US\$ 30,000, to prepare HPMP. The preparation of the Plan was initiated subsequently and the preliminary consumption figures at the enterprise level indicate that there is quite extensive use of HCFCs in the country, mostly in the manufacturing of insulating materials in the refrigeration and foam sectors.

In light of the above US\$ 120,000 plus support cost is requested as additional HPMP preparation funding for Sudan.

Project Concept

Country: Global

Title: Mobilizing additional funds through the special facility under the MLF to count for the climate co benefits of the HCFCs phase out projects

Project Duration: 12 months

Project Budget: 322,750 (including 7.5% Agency Support Costs)

Implementing Agency: UNIDO

Project Summary

Reference: the MLF facility for resource mobilization funding

This proposal has reference to the resource mobilization funding that UNIDO included in its business plan.

The proposal takes into account the discussions about the issue held in Montreal during the coordination meeting on 26-27 Jan. 09. Furthermore, the below considerations have been taken into account in developing this proposal:

- GEF provides funding for projects in the thematic areas of interest, such as those relating to the UNFCCC, UNBDC and UNDDC. Projects aiming at energy saving and increase the energy efficiency are usually funded.
- GEF operates through national Focal Points (NFP) within governments and in most cases the projects proponents or counterparts are governmental entities (Energy Ministry, Agricultural Ministry, transportation Ministry, etc).
- GEF has limited access/experience in working with individual companies in the private sector especially if they are SMEs.
- GEF confounding requirements made more complex for developing countries to fully benefit from the GEF. And this is more apparent when SMEs were concerned.
- MLF has the mandate to provide funding and assistance for covering the incremental costs relating to the ODS phase out.

- MLF and IAs have a long history of successful cooperation with A5 countries conversion projects at national and enterprise level (over than 5000) projects have been implemented so far). MLF has been successful in building partnership with A5 countries and in developing a good system to deal with big number of national and individual projects in a very smooth and cost effective manner.
- MLF has been successful in achieving remarkable results in the reduction of GHG emissions as a by-product of ODSs phase out projects. However, the generation of climate benefits is not mandated by the MP and therefore associated costs are not covered by MLF.
- Partnership between the GEF and MLF would serve the purposes of both bodies and make use of the strength of each other specifically in the HCFCs phase out era, taking into account the decisions of the MOP and ExCom to adopt alternatives that generate climate and environment co benefits where applicable.

Proposal:

To develop a concept and methodology to calculate the additional costs to be born by the MLF corresponding to the introduction of alternatives or practices that generate climate co benefits. Such additional costs are mostly related to the improvements of the energy performance during manufacturing and subsequently increased energy efficiency of equipments during operation. This is due to the fact that in the refrigeration and A/C equipment, the indirect emissions are dominant in most cases.

Such additional costs could be then covered by the GEF through a special facility at the MLF to allow for more approvals of phase out projects with co climate benefits without jeopardizing the limited funds under the current replenishment.

It is needless to mention that such additional costs will be definitely less compared to costs to be paid by GEF to achieve the same results through their current way of business to implement stand alone projects with the objective to increase the energy efficiency of production and equipments at a designated manufacturing facility (estimated at 15- 20% of the total project).

A conversion project funded by the MLF covers usually the remaining costs relating to activities that are required any way to enable manufacturing enterprises to improve their energy performance.

One should consider that in most developing countries, equipments manufacturers are not required to improve the energy efficiency of their products if it means additional

costs to be born by them either due to modification of process or materials costs. As savings generated due to increased energy efficiency would be usually beneficial to end-users and subsequently to developing countries governments due to reducing of required investments in power generation to meet the national growing demands.

UNIDO is therefore requesting 300,000 US\$ to workout the methodology and concept in collaboration with GEF and apply it to one of its pilot projects at PETRA Co. in Jordan.

The idea is to avoid the very complicated and lengthy procedure relating to the calculation of Co2 emission reductions and validating of CERs. The anticipated methodology should enable both UNIDO and GEF calculate the climate co benefits in an easy and straightforward manner and agree on the contribution to the special facility.

Similarly, UNIDO plans to use part of the above requested funds for developing a methodology for the calculation of climate co benefits (maybe in CERs form) resulted from the implementation of one of its pilot projects on proper environmental management and destruction of unwanted ODSs in A5 countries. The concept shall also streamline MLF funds with available funding from other institutions for similar activities (FAO funds for the proper management of unwanted chemicals: insecticides and pesticides).

The concepts and methodologies to be developed could be then used as model for replication with other similar activities and projects.

The application of the methodologies in two of UNIDO pilot projects is planned to apply in our HCFCs phase out project at Petra Co. in Jordan and on one of the management and destruction projects.

Cost breakdown (in US\$):

International Consultants	72,000
National Consultants	48,000
Travel	30,000
Equipment (for demonstration)	100,000
Management, monitoring and training	50,000
Total	300,000