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执行蒙特利尔议定书
多边基金执行委员会
第九十三次会议
2023年12月15日至19日，蒙特利尔
临时议程项目9(c)和(d)¹

开发计划署 2023 年工作计划修正案

¹ 环境署/OzL.Pro/ExCom/93/1

基金秘书处的评论和建议

1. 开发计划署请执行委员会为表 1 所列其 2023 年工作计划修正案核准 5,117,814 美元，外加机构支助费用 358,247 美元。提交的文件附于本文件之后。

表 1: 开发计划署 2023 年工作计划修正案

| 国家 | 活动/项目 | 申请数额 (美元) | 建议数额 (美元) |
|---|------------------------|--------------|--------------|
| A 节: 建议一揽子核准的活动 | | | |
| A1: 续延体制建设项目 | | | |
| 哥伦比亚 | 续延体制建设项目(第十四期) | 730,230 | 730,230 |
| 哥斯达黎加 | 续延体制建设项目(第十五期) | 372,304 | 372,304 |
| 印度 | 续延体制建设项目(第十四期) | 988,909 | 988,909 |
| 马来西亚 | 续延体制建设项目(第十五期) | 740,563 | 740,563 |
| 巴基斯坦 | 续延体制建设项目(第十二期) | 594,748 | 594,748 |
| 乌拉圭 | 续延体制建设项目(第十五期) | 399,560 | 399,560 |
| A1 小计 | | 3,826,314 | 3,826,314 |
| 机构支助费用 | | 267,842 | 267,842 |
| A1 共计 | | 4,094,156 | 4,094,156 |
| A2: 氢氟氯烃淘汰管理计划的项目编制 | | | |
| 秘鲁 | 编制氢氟氯烃淘汰管理计划(第三阶段) | 40,000 | 40,000 |
| 南苏丹 ^a | 编制氢氟氯烃淘汰管理计划(第二阶段) | 10,000 | 10,000 |
| A2 小计 | | 50,000 | 50,000 |
| 机构支助费用 | | 3,500 | 3,500 |
| A2 共计 | | 53,500 | 53,500 |
| A3: 基加利氢氟碳化合物执行计划(KIPs) 的项目编制 | | | |
| 巴西 ^b | 编制 KIPs (第一阶段) | 126,500 | 126,500 |
| 哥伦比亚 | 编制空调制造行业 KIPs 投资项目 | 50,000 | 50,000 |
| 哥伦比亚 | 编制制冷制造行业 KIPs 投资项目 | 150,000 | 150,000 |
| 埃及 ^c | 编制 KIPs (第一阶段) | 40,000 | 40,000 |
| 黎巴嫩 | 编制制冷制造行业 KIP 投资项目 | 70,000 | 70,000 |
| 马里 ^a | 编制 KIP (第一阶段) | 35,000 | 35,000 |
| 斯里兰卡 | 编制制冷制造行业 KIPs 投资项目 | 80,000 | 80,000 |
| A3 小计 | | 551,500 | 551,500 |
| 机构支助费用 | | 38,605 | 38,605 |
| A3 共计 | | 590,105 | 590,105 |
| A4: 编制用过的或不需要的受控物质的国家清单以及收集、运输和处置此类物质的计划² | | | |
| 古巴 | 编制用过的或不需要的受控物质的国家清单和计划 | 90,000 | 90,000 |
| 埃及 | 编制用过的或不需要的受控物质的国家清单和计划 | 100,000 | 100,000 |
| 牙买加 | 编制用过的或不需要的受控物质的国家清单和计划 | 90,000 | 90,000 |
| 秘鲁 | 编制用过的或不需要的受控物质的国家清单和计划 | 90,000 | 90,000 |
| 特立尼达和多巴哥 | 编制用过的或不需要的受控物质的国家清单和计划 | 90,000 | 90,000 |
| 乌拉圭 | 编制用过的或不需要的受控物质的国家清单和计划 | 90,000 | 90,000 |
| A4 小计 | | 550,000 | 550,000 |

²这里所指的是编制用过的或不需要的受控物质的国家清单和计划

| 国家 | 活动/项目 | 申请数额 (美元) | 建议数额 (美元) |
|--|---|--------------|--------------|
| | 机构支助费用 | 38,500 | 38,500 |
| | A4 共计 | 588,500 | 588,500 |
| A5: 编制一个在逐步淘汰氢氟碳化物时保持或提高替代技术和设备的能效的试点项目³ | | | |
| 智利 | 编制一个保持或提高工业制冷行业能效的试点项目 | 30,000 | 30,000 |
| | A5 小计 | 30,000 | 30,000 |
| | 机构支助费用 | 2,100 | 2,100 |
| | A5 共计 | 32,100 | 32,100 |
| B 节: 建议个别考虑的活动 | | | |
| B1: 基加利氢氟碳化物执行计划(KIPs) 的项目编制 | | | |
| 印度 | 编制一个汽车空调(MAC)制造行业的压缩机制造的示范项目 | 30,000 | * |
| | B1 小计 | 30,000 | * |
| | 机构支助费用 | 2,100 | * |
| | B1 共计 | 32,100 | * |
| B2: 编制一个在逐步淘汰氢氟碳化物时保持或提高替代技术和设备的能效的试点项目 | | | |
| 全球 | 编制一个在哥伦比亚、黎巴嫩、巴拿马、斯里兰卡以及特立尼达和多巴哥的数字监测和管理工具的使用从而提高空间制冷和冷链行业的能效并减少温室气体排放的示范项目 | 80,000 | * |
| | | 80,000 | * |
| | | 5,600 | * |
| | | 85,600 | * |
| | A1, A2, A3, A4, A5, B1, B2 共计 | 5,117,814 | 5,007,814 |
| | A1, A2, A3, A4, A5, B1, B2 机构支助费用 | 358,247 | 350,547 |
| | 总计 | 5,476,061 | 5,358,361 |

^a 环境署担任牵头执行机构

^b 德国政府和工发组织担任协作机构

^c 工发组织担任执行机构

* 建议个别考虑

A 节: 建议一揽子核准的活动

A1: 续延体制建设项目

项目说明

2. 开发计划署提交了表 1 中 A1 节所列各国续延体制建设项目的申请。这些项目的说明载于本文件附件一。

秘书处的评论

3. 秘书处参照有关资格和供资数额的准则⁴和相关决定, 审查了开发计划署代表有关国家政府提交的六个续延体制建设项目的申请。秘书处对照前一阶段的原始体制建设工作计划、国家方

³这里所指的是编制一个保持或提高能效的试点项目

案和第 7 条数据、氢氟氯烃淘汰管理计划执行情况最新报告、执行机构的进展报告以及缔约方会议的任何相关决定审查了这些申请。秘书处注意到，这六个国家都提交了 2022 年国家方案数据，并履行了《蒙特利尔议定书》规定的控制目标，报告的年度氢氟氯烃消耗量未超过与执行委员会签订的氢氟氯烃淘汰管理计划协定中的年度最高允许消耗量。此外，提交的申请均按照第 91/63 号决定(b)段要求，列入了对绩效指标、项目风险和可持续性的评估，以及体制建设目标的实现。

秘书处的建议

4. 秘书处建议一揽子批准哥伦比亚、哥斯达黎加、印度、马来西亚、巴基斯坦和乌拉圭的基加利氢氟碳化物执行计划的项目编制，供资数额如本文件表 1 中 A1 节所示。执行委员会不妨向上述各国政府表达本文件附件二所载的评论。

A2: 氢氟氯烃淘汰管理计划的项目编制

项目说明

5. 开发计划署为两个第 5 条国家提出了氢氟氯烃淘汰管理计划新阶段的项目编制申请，开发计划署担任其中一个国家的指定行机构，另一个国家是由环境署担任牵头执行机构，由开发计划署担任协作机构，如表 1 中 A2 节所示。

6. 环境署作为南苏丹的主要执行机构，申请 20,000 美元，外加机构支助费用 2,600 美元，并在其 2023 年工作计划修正案⁵中说明了南苏丹氢氟氯烃淘汰管理计划第二阶段项目编制所列的活动和每项活动的相应费用；秘书处的评论也载入其中。

7. 开发计划署说明了为支持秘鲁氢氟氯烃淘汰管理计划第三阶段项目编制而计划开展的活动，其中包括：申请项目编制经费的理由；氢氟氯烃淘汰管理计划第三阶段的执行进展报告；按照申请氢氟氯烃淘汰管理计划项目编制的格式，列出项目编制期间要进行的活动清单，以及相应的预算。

秘书处的评论

8. 秘书处在审查这一请求时考虑了第 71/42 号决定所载为第 5 条国家编制氢氟氯烃淘汰管理计划提供资金的准则，氢氟氯烃淘汰管理计划的第二阶段进展情况和截至本文件编写时各次付款的执行情况；第 84/46 号决定(e)段⁶。秘书处注意到，供资申请符合第 71/42 号决定，根据第 82/45 号决定，国家可以在氢氟氯烃淘汰管理计划⁷第二阶段结束日期前两年提交第三阶段的项目编制申请。

9. 开发署确认，秘鲁氢氟氯烃淘汰管理计划第三阶段将在 2030 年 1 月 1 日前百分之 100 淘汰氢氟氯烃基准消耗量。

⁴第 91/63 号决定：(b)批准最终报告和续延体制建设的供资申请的修订格式，以及相应的业绩指标；并(c)请第 5 条国家，通过双边机构和执行机构，自 2023 年执行委员会第一次会议起，对所有续延体制建设项目的申请使用上文(b)分段提及的修订格式。

⁵环境署/OzL.Pro/ExCom/93/36

⁶只有那些被核准了氢氟氯烃淘汰管理计划第二阶段且削减目标低于 2025 年履约目标的国家，才允许将氢氟氯碳淘汰管理计划第三阶段纳入业务计划。

⁷秘鲁政府与执行委员会关于氢氟氯烃淘汰管理计划第二阶段的协定附录 2-A 中规定了最高允许总消耗水平的最后一年是 2025 年。

秘书处的评论

10. 秘书处建议按照表 1 中 A2 节所示的供资水平，一揽子核准秘鲁氢氟氯烃淘汰管理计划第三阶段和南苏丹氢氟氯烃淘汰管理计划第二阶段的项目编制申请。

A3: 基加利氢氟碳化合物执行计划的项目编制

项目说明

11. 开发计划署为三个第 5 条国家提交了编制 KIP 第一阶段的申请，其中一个国家作为牵头执行机构，德国政府和工发组织作为协作机构；两个国家作为协作机构，工发组织作为埃及的牵头执行机构，环境署作为马里的牵头执行机构。开发计划署还提交了四份关于在三个国家作为指定执行机构编制 KIP 第一阶段投资项目的申请，一份是关于空调制造行业的申请，三份是关于制冷制造行业的申请。这些申请如表 1 中 A3 节所示。

12. 工发组织作为埃及的牵头执行机构和巴西的协作机构，在其 2023 年工作计划修正案⁸中申请 243,500 美元，外加机构支助费用 17,045 美元的，并说明了为埃及编制 KIP 所需的各项活动以及每项活动的相应费用；秘书处的评论也载于其中。作为巴西的协作机构，德国政府申请 40,000 美元，外加双边协作⁹项下 5,200 美元的机构支助费用。作为马里的主要执行机构，环境署已申请 135,000 美元，外加 17,550 美元的机构支助费用，并在其 2023 年工作计划修正案¹⁰中说明了为该国编制 KIP 所需的各项活动以及每项活动的相应费用，秘书处的评论也载于其中。

秘书处的评论

13. 在审查这些申请时，秘书处考虑到了第 87/50 号决定所载的 KIP 编制准则、拟议的项目编制活动及其与相关国家的扶持活动和其他氢氟碳化合物相关项目的联系。

14. 开发计划署作为牵头执行机构，采用 KIP 项目编制申请的格式，说明了编制巴西 KIP 总体战略所需的各项活动。提交的材料包括 2020 年至 2022 年氢氟碳化合物和氢氟碳化合物混合物的消耗量数据。项目编制活动包括一项关于氢氟碳化合物消耗量的全国调查、数据收集和磋商；氢氟碳化合物和替代品使用情况的行业分析；按制冷剂类型和能效等级对制冷和空调设备进行的全国调查；审查技术标准、技术人员认证计划和最低能效性能标准；制定全面的氢氟碳化合物逐步淘汰战略、利益攸关方磋商和验证；以及制定沟通和外联计划。秘书处注意到，巴西政府已经批准了《基加利修正案》¹¹并提供了一封承诺信，表明其打算就逐步减少氢氟碳化合物采取行动。秘书处进一步指出，所申请的资金是按照第 87/50 号决定(c)段提出的。

15. 开发计划署提供了为三个国家编制 KIP 投资项目所需活动的说明。所有四个项目编制申请都包括与潜在受益企业氢氟碳化合物和替代品消耗量数据收集、供应链评估、与企业磋商和实地考察、KIP 投资项目提案定稿以及利益攸关方验证有关的活动。秘书处注意到，所有提交申请的国家都批准了《基加利修正案》，并提供了支持项目编制申请的背书，所有三个国家都收到了用于编制在前几次会议上批准的 KIP 总体战略的供资。秘书处进一步指出：

- (a) 在哥伦比亚的两项 KIP 投资项目编制申请是针对空调制造行业和制冷制造行业。

⁸ 环境署/OzL.Pro/ExCom/93/37

⁹ 环境署/OzL.Pro/ExCom/93/32

¹⁰ 同上。

¹¹ 《基加利修正案》批准日期：2022 年 10 月 19 日

在制冷制造行业，该项目将涵盖可能使用 HFC-134a、R-404A 和 R-507A 的 7 家大型企业和 20 家中小型企业(SMEs)；在空调制造行业，已确定四家使用 R-410A 制造空调设备的企业。开发计划署表示，KIP 第一阶段计划于 2024 年提交。根据第 87/50 号决定(f)(v)段，为哥伦比亚编制 KIP 第一阶段制造业投资项目的最高供资限额为 200,000 美元。随着这一申请的批准，该国将不再有资格为编制 KIP 第一阶段的投资项目申请资金。

- (b) 黎巴嫩商业制冷制造行业 KIP 投资项目的项目编制申请确定了可能的 40 家使用 HCFC-134a 和 R-404A 的制造企业；这些企业似乎大多是中小企业。第 87 次会议核准了为黎巴嫩 KIP 第一阶段总体项目编制提供的资金，数额为 190,000 美元，外加开发计划署的机构支助费用；第 88 次会议批准为住宅空调行业 KIP 第一阶段投资项目的编制提供 30,000 美元的资金，外加机构支助费用。秘书处告知开发计划署，根据第 87/50 号决定(f)(v)段，为编制黎巴嫩 KIP 第一阶段投资项目供资的最高限额为 100,000 美元，开发计划署相应地将其申请金额从 150,000 元调整为 70,000 美元。随着这一申请的批准，该国将不再有资格为编制 KIP 第一阶段的投资项目申请供资。
- (c) 斯里兰卡制冷制造行业 KIP 投资项目的项目编制申请确定了可能的 10 至 15 家使用 HFC-134a 和 R-404 的制冷制造企业。根据第 87/50 号决定(f)(v)段，第 87 次会议核准了为斯里兰卡 KIP 总体项目编制提供的资金，数额为 170,000 美元，外加机构支助费用¹²；为斯里兰卡编制 KIP 第一阶段投资项目的最高供资限额为 100,000 美元。KIP 第一阶段的申请计划于 2024 年提交。一旦该申请获得批准，该国将有不超过 20,000 美元的资金用于编制 KIP 第一阶段另外的投资项目。

秘书处的建议

16. 秘书处建议一揽子批准巴西、埃及和马里的基加利氢氟碳化合物执行计划(KIPs)第一阶段的项目编制申请，哥伦比亚制冷制造行业和空调制造行业以及黎巴嫩和斯里兰卡制冷制造行业投资项目的编制申请，作为这些国家 KIP 第一阶段的一部分，供资水平如表 1 中 A3 节所示。

A4: 编制用过的或不需要的受控物质的国家清单以及收集、运输和处置此类物质的计划

项目说明

17. 作为指定的执行机构，开发计划署为六个国家提交了编制已使用的或不需要的受控物质国家清单的申请，如表 1 中 A4 节所示。

秘书处的评论

18. 在审查这些申请时，秘书处考虑到了第 91/66 号决定所载的编制国家计划和已使用或不需要的受控物质国家清单的标准；拟议的项目编制活动及其与该国国家淘汰/逐步淘汰计划（即氢氟氯烃淘汰管理计划或 KIPs）的联系。秘书处指出，每项供资申请都符合第 91/66 号决定。

19. 作为指定的执行机构，开发计划署使用项目提案的相关提交格式，说明了为古巴、埃及、牙买加、秘鲁、特立尼达和多巴哥以及乌拉圭编制已使用或不需要的受控物质国家清单所需的活 动，以及每项活动的相应费用。

¹² 开发计划署 135,000 美元以及环境署 35,000 美元

20. 为这六个国家提交的供资申请中的活动包括编制国家清单、行动计划和最终报告；与相关利益攸关方磋商、举办讲习班和提高认识；从已确定的设备类型和来源收集和分析未使用或不需要的制冷剂的数量数据，并进行核查；对处理和处置废物管制物质的备选方案进行技术和经济评估；以及将性别观点纳入主流的考虑。除了上述活动外，这些国家中的某些国家的活动还包括审查现行法规，以确定额外的政策以支持对不需要的消耗臭氧层物质和氢氟碳化合物进行环境友好型管理。

21. 开发计划署还表示，由此产生的古巴国家清单将有助于查明该国潜在的废物流，将促进该国先前核准的消耗臭氧层物质处置试点项目中作为销毁设施建立的水泥窑的继续运行。在编制国家清单和计划期间，该国将开展的一项额外活动将会是测试水泥窑在销毁过程中的排放量，以确保这些排放量符合现行排放标准。

秘书处的建议

22. 秘书处建议一揽子批准为古巴、埃及、牙买加、秘鲁、特立尼达和多巴哥以及乌拉圭编制一份已使用或不需要的管制物质国家清单，并制定一项收集、运输和处置此类物质的计划，资金申请情况见表 1 中 A4 节。

A5: 编制一个试点项目，在逐步淘汰氢氟碳化合物方面保持或提高替代技术和设备的能源效率

项目说明

23. 如表 1 中 A5 节所示，作为指定执行机构，开发计划署为智利提出了编制一个试点项目的申请，以保持或提高能源效率。该申请是根据第 91/65 号决定提出的。

24. 这项申请是为在智利乳制品加工行业的工业制冷综合热泵系统中使用 R-744（二氧化碳（CO₂））和 R-717（氨（NH₃））作为替代制冷剂的试点项目编制的，该项目将作为 KIP 第一阶段的一部分来执行。该项目的目标是在智利乳制品加工业的既独立又联合的两个试点项目中设计、安装和运行两种不同的应用程序，具有不同的加热和冷却能力，一个使用 R-744，另一个使用 R-717，智利该行业目前使用高-GWP 氢氟碳化合物制冷剂。

25. 该项目旨在通过实施这些集成热泵系统，在乳制品和动物蛋白加工的工业制冷中，将目前的使用 R-404A/R-507A 的设备转型为使用 CO₂ 和 NH₃，从而有助于履行国家减少氢氟碳化合物消费量的义务。由于一体化热泵系统是节能的，该试点项目也将有助于提高该国工业制冷部门的能源效率。

26. 项目编制活动包括分析工业制冷部门因使用热泵而减少的氢氟碳化合物消耗量，就试点项目的设计与技术专家进行磋商，与潜在受益方和利益攸关方举行会议，并最终确定项目提案；所申请的供资将用于招聘国际和国内的顾问和会议费用（22,000 美元）以及差旅和其他费用（8,000 美元）。试点项目提案预计将提交给第 94 次会议，并将纳入本次会议提交的 KIP 第一阶段。

秘书处的评论

27. 秘书处根据第 91/65 号决定所规定的标准审查了项目提案，并注意到该申请属于(b)(i)c 段，用于大型商业和工业制冷、空调和热泵设备¹³的组装和安装活动。

28. 秘书处指出，虽然世界各地的不同行业已经采用热泵系统，但在第 5 条国家的工业制冷行业，热泵系统的使用并不普遍，尤其是在结合使用 CO₂ 或 NH₃，以示范这些系统的能效方面。因此，试点项目在成功实施后可能得以复制。

29. 在讨论项目编制的申请时，开发计划署表示，智利政府将确保将这项技术纳入 KIP 的第一阶段，并指出，工业制冷部门使用的高 GWP 氢氟碳化合物，按二氧化碳当量吨计，占该国氢氟碳化合物消耗总量的百分之 34。开发计划署还指出，该国在第 94 次会议上提交完整的供资申请时，将确保满足第 91/65 号决定(b)(iv)段的要求。

30. 秘书处注意到，目前提交的项目编制申请符合第 91/65 号决定，由于编制的项目将纳入 KIP，因此是在该国逐步淘汰氢氟碳化合物的背景下提出的。

秘书处的评论

31. 秘书处建议一揽子核准为智利结合逐步淘汰氢氟碳化合物编制一个试点项目的申请，以保持或提高替代技术和设备的能效，申请的供资情况如以表 1 中 A5 节所示。

B 节: 建议个别考虑的活动

B1: 基加利氢氟碳化合物执行计划的编制

项目说明

32. 开发计划署提交了一项编制在汽车空调 (MAC) 制造行业的带有双回路二次冷却系统的汽车热系统中使用 R-290 的示范项目申请，作为印度第一阶段 KIP 的一部分，如表 1 中 B1 部分所示。

33. 项目编制是为印度最大的一家汽车冷凝器的一个生产企业 Subros 有限公司 (Subros) 申请的。由此编制的项目将展示使用辅助冷却剂回路的智能微处理器系统如何通过使用电动汽车电池组来维持客舱温度，从而允许在 MAC 装置中安全使用天然制冷剂 (R-290)。预计该项目的结果还将影响国家市场状况，并为未来在新的 MAC 系统中减少百分之 50 的 HFC-134a 奠定基础（考虑到 Subros 是大约百分之 50 的全国 MAC 装配/制造行业的供应商），允许该行业采纳天然制冷剂替代品。

34. 项目编制活动将包括数据收集、与利益攸关方和专家的磋商以及关于使用 R-290 和双二次回路热系统减少汽车空调对环境影响的可行性研究。

¹³ 大型商业和工业制冷、空调和热泵设备的组装和安装活动。将优先考虑涉及为组装和安装设备提供技术援助的项目，这些项目将导致在从氢氟碳化合物转型的同时采用保持或提高能源效率的技术，并示范在国家或地区的可复制性和可推广性。

秘书处的评论

35. 在审查该申请时，秘书处考虑了第 87/50 号决定中所载的 KIP 编制指南，为项目编制拟议的活动，及其与该国扶持活动、总体 KIP 和其他 HFC 相关项目的联系。

36. 秘书处指出，该国已批准《基加利修正案》¹⁴，并为该项目提供了背书函。印度政府尚未为编制第一阶段 KIP 总体战略申请资金，但在第 92 次会议上获批了编制第一阶段 KIP 投资项目的资金，其中包括两个制冷制造行业的项目和一个空调制造行业的项目，费用达 90,000 美元外加机构支持费用；印度第一阶段 KIP 投资项目编制限额为 40 万美元。¹⁵ 开发署确认，这一申请是根据第 87/50(f)号决定作为第一阶段 KIP 投资项目编制资金的一部分提出的。

37. 秘书处进一步指出，虽然印度政府可以采用由国家推动的方法，将项目编制资金用于第一阶段 KIP 优先考虑行业的投资项目，但除了属于第 92/36 号决定范围内的终端用户项目外，执行委员会尚未就作为 KIP 的一部分编制示范项目提供指导。此外，秘书处还观察到，虽然 Subros 是 MAC 系统最大的压缩机制造商，并向印度大多数汽车制造商供货，但该企业除了测试外并不直接使用 HFCs。

38. 对此，开发署解释说，根据 2022 年的统计数据，印度汽车工业的产量位居世界第四，而且由于国内和出口需求，印度汽车工业将继续增长。在印度，MAC 行业是 HFC 使用量最高的行业之一，预计使用 HFC-134a 作为 MAC 制冷剂的高需求将持续。实施该项目将展现 R-290 在 MAC 中使用的潜力，并适当考虑其易燃性和安全性。在 Subros 的领导下，该项目如果成功，可能会生产出不含 HFC 的 MAC 压缩机，并促进汽车行业向非 HFC 替代品过渡。

39. 秘书处还指出，作为第二组国家，印度的初步削减义务将是到 2028 年冻结氢氟碳化合物消耗量。

秘书处的建议

40. 执行委员会不妨考虑批准开发计划署在汽车空调行业编制一个示范项目，作为印度第一阶段基加利氢氟碳化合物执行计划的一部分，金额为 30,000 美元，外加 2,100 美元的机构支持费用。

B2: 编制一个在逐步淘汰氢氟碳化合物时保持或提高替代技术和设备能源效率的试点项目

项目说明

41. 开发计划署提交了一项申请，要求为五个国家的支助方案编制一个全球试点项目，以试点监测和管理空调和冷链系统的数字工具，以减少温室气体（GHG）排放，减少能源消耗和相关电力成本，并作为指定的执行机构积极改善冷却系统的总体维护，如表 1 中 B2 节所示。该申请是按照第 91/65 号决定提出的。

42. 项目编制申请介绍了总体目标及其如何符合第 91/65 号决定中的标准，该决定指出，数字工具提供了宝贵的洞察力和控制能力，可以显著提高冷却系统的能源效率，减少 GHG 排放，并可识别出单元、设施、社区和城市多层面的节能机会。并进一步指出，数字化是一种创新方法，可以通过监测现有和新的冷却设备和系统的能源性能、识别氢氟碳化合物制冷剂泄漏（从而减少氢氟碳化合物的消耗）以及优化系统设置以提高能源效率，为实施《基加利修正案》做出贡献。

¹⁴ 《基加利修正案》批准日期：2021 年 9 月 27 日

¹⁵ 第 87/50 号决定(f)段

由此产生的项目旨在利用开发计划署的数字战略¹⁶，该战略的愿景是到 2030 年支持 100 个国家的数字化，以及借鉴在冠状病毒病大流行期间成功使用数字工具应对疫苗分发挑战的经验。开发计划署还表示，数字工具为那些缺乏强大的能源效率监测、测试和报告系统的国家提供了解决方案。

43. 项目编制活动包括评价受益国可能实施的三个优先项目类型，考虑到它们在冷链空调和冷却系统（即小岛屿发展中国家的渔业行业和一些国家的零售/超市行业）方面的具体特点和优先事项。申请的资金将用于招聘空调和冷链技术的国际顾问及数字工具方面的专家（46,000 美元）以及差旅费用（34,000 美元）。试点项目提案预计将提交到第 94 次会议。

秘书处的评论

44. 秘书处根据第 91/65 号决定规定的项目标准审查了该项目提案，并注意到该申请可能属于 (b)(i)c 段¹⁷。用于大型商业和工业制冷、空调和热泵设备的组装和安装活动。

45. 在审查了项目编制申请之后，秘书处注意到，这项申请是独特和创新的，代表了在《蒙特利尔议定书》背景下审查能源效率的新的和前瞻性的方法。在与开发计划署讨论这一问题时，问及该项目将带来的直接和实际产出，如何使五个参与的国家受益，以及如何在其他第 5 条国家复制。开发计划署解释说，直接结果将是总结各国使用的监测和管理工具、物联网（IoT）传感器网络和数据收集系统的评估结果的报告；每个国家试点活动的报告将包含有关节能和减排的数据，试点不同应用中数字工具的成本，当地技术人员和操作员的培训材料，以及关于支持冷链行业空调和冷却系统数字化的节能做法和激励措施的政策简报。

46. 关于复制的可能性，开发计划署强调，在项目执行期间，将全面记录各项活动，包括吸取的经验教训和最佳做法，将作为在其他区域复制的资源。该项目还将培养地方专家的能力，使项目能够在不同地点轻松复制，并使用现成的开源工具，鼓励更广泛地采用和复制。

秘书处的建议

47. 执行委员会不妨审查关于为支持五个国家编制一个全球试点项目的申请，以试点监测和管理空调和冷链系统的数字工具，从而减少温室气体排放，减少能源消耗和相关电力成本，并积极改进冷却系统的整体维护，金额为 80,000 美元，外加开发计划署 5,600 美元的机构支助费用。

¹⁶ <https://digitalstrategy.undp.org>

¹⁷ 大型商业和工业制冷的组装和安装活动，空调和热泵设备（c）将优先考虑为设备的装配和安装提供技术援助的项目，这些项目将导致从氢氟碳化合物转型为采用保持或提高能源效率的技术，并证明在该国或地区的可复制性和可扩展性。

Annex I
INSTITUTIONAL STRENGTHENING PROJECT PROPOSALS¹

Colombia: Renewal of institutional strengthening

| Summary of the project and country profile | | |
|---|-------------|----------------|
| Implementing agency: | | UNDP |
| Amounts previously approved for institutional strengthening (US \$): | | |
| | Phase I: | Mar-94 317,790 |
| | Phase II: | Mar-98 212,000 |
| | Phase III: | Mar-00 212,000 |
| | Phase IV: | Nov-02 275,596 |
| | Phase V: | Apr-05 275,586 |
| | Phase VI: | Jul-07 275,283 |
| | Phase VII: | Jul-09 275,587 |
| | Phase VIII: | Jul-11 275,600 |
| | Phase IX: | Jul-13 275,444 |
| | Phase X: | May-15 275,592 |
| | Phase XI: | Jul-17 352,768 |
| | Phase XII: | May-19 352,768 |
| | Phase XIII: | Nov-21 352,768 |
| | Total: | 3,728,782 |
| Amount requested for renewal (phase XIV) (US \$): | | 730,230 |
| Amount recommended for approval for phase XIV (US \$): | | 730,230 |
| Agency support costs (US \$): | | 51,116 |
| Total cost of institutional strengthening phase XIV to the Multilateral Fund (US \$): | | 781,346 |
| Date of approval of country programme: | | 1994 |
| Date of approval of HCFC phase-out management plan: | | 2010 |
| Baseline consumption of controlled substances (ODP tonnes for ODS/CO ₂ -eq tonnes for HFCs): | | |
| (a) Annex B, Group III (methyl chloroform) (average 1998-2000) | | 0.6 |
| (b) Annex C, Group I (HCFCs) (average 2009-2010) | | 225.6 |
| (c) Annex E, (methyl bromide) (average 1995-1998) | | 110.1 |
| (d) Annex F (HFCs) (average 2020-2022 plus 65% of HCFC baseline) | | 8,652,982 |
| Latest reported ODS consumption (2022) (ODP tonnes) as per Article 7: | | |
| (a) Annex B, Group III (methyl chloroform) | | 0.00 |
| (b) Annex C, Group I (HCFCs) | | 17.88 |
| (c) Annex E, (methyl bromide) | | 0.00 |
| | Total: | 17.88 |
| Latest reported Annex F (HFCs) consumption (2022) (CO ₂ -eq tonnes) as per Article 7 | | 9,242,759 |
| Year of reported country programme implementation data: | | 2022 |
| Amount approved for projects (as at June 2023) (US \$): | | 37,853,771 |
| Amount disbursed (as at December 2022) (US \$): | | 36,040,743 |
| ODS to be phased out (as at June 2023) (ODP tonnes): | | 2,063.2 |
| ODS phased out (as at December 2022) (ODP tonnes): | | 2,018.1 |

1. Summary of activities and funds approved by the Executive Committee:

| Summary of activities | Funds approved (US \$) |
|---|------------------------|
| (a) Investment projects: | 25,982,853 |
| (b) Institutional strengthening: | 3,728,782 |
| (c) Project preparation, technical assistance, training, and other non-investment projects: | 8,142,137 |

¹ Data as at December 2022 are based on document UNEP/OzL.Pro/ExCom/93/16.

| Summary of activities | Funds approved (US \$) |
|---|------------------------|
| Total: | 37,853,771 |
| (d) HFC activities funded from additional voluntary contributions | 250,000 |

Progress report

2. During phase XIII of its institutional strengthening project, Colombia continued implementation of the Montreal Protocol and ODS phase-out activities; reported consumption data to both the Fund and Ozone Secretariats; continued implementation of its HCFC phase-out management plan (HPMP) and coordinated with stakeholders; and raised awareness of issues relating to ozone-depleting substances. Colombia also continued participation in regional and global Montreal Protocol meetings. The country fully achieved six performance indicators and partially achieved one during the current phase.

Plan of action

3. In the upcoming phase, Colombia will work towards achieving and maintaining the 87 per cent reduction of HCFC consumption from the year 2025 and achieving first measures of stage I of its KIP. Colombia will reinforce inter-institutional coordination with the customs authority; monitor trade, coordinate the collection, analysis, verification, and submission of progress reports on the implementation of country programmes; and strengthen the legal framework to control and monitor HCFC consumption through import/export licensing and quota systems and new regulations. The national ozone unit (NOU) will continue active participation in the regional and global meetings of the Montreal Protocol.

Sustainability and risk assessment

4. The results achieved by the institutional strengthening project, including those achieved in the previous phases, have been sustainable due to regulatory measures and national coordination with related national policies and strategies. The risks will be evaluated, and their management plan will be proposed according to UNDP procedures. However, according to lessons learned from previous phases, high and medium probability risks are not expected.

Costa Rica: Renewal of institutional strengthening

| Summary of the project and country profile | UNDP |
|--|----------------|
| Implementing agency: | UNDP |
| Amounts previously approved for institutional strengthening (US \$): | |
| Phase I: | Oct-92 213,160 |
| Phase II: | Feb-97 108,087 |
| Phase III: | Mar-99 105,568 |
| Phase IV: | Dec-01 104,224 |
| Phase V: | Dec-03 139,737 |
| Phase VI: | Nov-05 138,068 |
| Phase VII: | Nov-07 127,917 |
| Phase VIII: | Nov-09 140,502 |
| Phase IX: | Nov-11 140,513 |
| Phase X: | Dec-13 140,513 |
| Phase XI: | Nov-15 179,659 |
| Phase XII: | Nov-17 174,459 |
| Phase XIII: | Dec-19 179,857 |
| Phase XIV: | Nov-21 179,857 |
| Total: | 2,072,121 |
| Amount requested for renewal (phase XV) (US \$): | 372,304 |
| Amount recommended for approval for phase XV (US \$): | 372,304 |
| Agency support costs (US \$): | 26,061 |

| Summary of the project and country profile | |
|---|------------|
| Implementing agency: | UNDP |
| Total cost of institutional strengthening phase XV to the Multilateral Fund (US \$): | 398,365 |
| Date of approval of country programme: | 1992 |
| Date of approval of HCFC phase-out management plan: | 2011 |
| Baseline consumption of controlled substances (ODP tonnes for ODS/CO ₂ -eq tonnes for HFCs): | |
| (a) Annex B, Group III (methyl chloroform) (average 1998-2000) | 0.0 |
| (b) Annex C, Group I (HCFCs) (average 2009-2010) | 14.1 |
| (c) Annex E (methyl bromide) (average 1995-1998) | 342.5 |
| (d) Annex F (HFCs) (average 2020-2022 plus 65% of HCFC baseline) | 1,450,799 |
| Latest reported ODS consumption (2022) (ODP tonnes) as per Article 7: | |
| (a) Annex B, Group III (methyl chloroform) | 0.0 |
| (b) Annex C, Group I (HCFCs) | 3.83 |
| (c) Annex E (methyl bromide) | 0.0 |
| Total: | 3.83 |
| Latest reported Annex F (HFCs) consumption (2022) (CO ₂ -eq tonnes) as per Article 7 | 1,578,209 |
| Year of reported country programme implementation data: | 2022 |
| Amount approved for projects (as at June 2023) (US \$): | 13,259,754 |
| Amount disbursed (as at December 2022) (US \$): | 12,540,004 |
| ODS to be phased out (as at June 2023) (ODP tonnes): | 810.1 |
| ODS phased out (as at December 2022) (ODP tonnes): | 799.4 |

5. Summary of activities and funds approved by the Executive Committee:

| Summary of activities | Funds approved (US \$) |
|---|-------------------------------|
| (a) Investment projects: | 8,150,076 |
| (b) Institutional strengthening: | 2,072,121 |
| (c) Project preparation, technical assistance, training, and other non-investment projects: | 3,037,556 |
| Total: | 13,259,754 |
| (d) HFC activities funded from additional voluntary contributions | 150,000 |

Progress report

6. Under phase XIV of the institutional strengthening project for Costa Rica achievements included: the reduction of HCFC imports by 74 per cent in 2022 compared to the 2013 baseline; control of illicit trafficking of ODS; reporting of the country programme and Article 7 data to the Fund and Ozone Secretariats, respectively; development of a proposal for a "Regulation to implement an import quota mechanism for the gradual reduction of the use of Hydrofluorocarbons (HFCs), or controlled substances of Annex F of the Montreal Protocol"; and the celebration of World Ozone Day, where specific issues were addressed to support the sector. The NOU also implemented online training courses, encouraged the acquisition of eco-efficient equipment and raised awareness among customs agencies about the importance of carrying out rigorous control of imports. The NOU also developed campaigns for the recovery of refrigerant gases for destruction, which has contributed to the recovery of about 1,117.45 kg of refrigerants, preventing their release into the atmosphere; and the creation of an online awareness module on human rights, with an emphasis on gender equity. In general, Costa Rica fully achieved five and partially achieved two institutional strengthening objectives during phase XIV.

Plan of action

7. During phase XV, Costa Rica commits to implement all the actions proposed in the seven goals, giving special emphasis to the implementation of the Kigali Amendment, the freezing of the HFC baseline, the implementation of the quota system and the promotion of the energy efficiency of equipment. In addition, the country will continue implementing its HPMP activities relating to efficient and sustainable refrigeration and

air-conditioning (RAC), including the formation of a technical decision-making team, also for the implementation of the Kigali Amendment. Coordination will continue to strengthen other technical training centres, providing tools and training on the safe handling of new technologies with natural refrigerants, as well as the development of new campaigns for the recovery of gases for destruction. Activities relating to the integration of the Multilateral Fund's gender policy in all Montreal Protocol projects will be a focus during this phase. The commemoration of World Ozone Day will be a key activity to continue raising public awareness on the protection of the ozone layer and climate over the next three years.

Sustainability and risk assessment

8. Sustainability and risk assessment is an exercise that has been practiced in previous phases and will continue to be carried out within the framework of the project on a permanent basis, to foresee any situation that may affect its execution. There is strong institutional support to the work under the Montreal Protocol in Costa Rica, which is exemplified by the number of government-paid staff that are involved with the implementation of the Montreal Protocol in DIGECA / MINAE. The Director of DIGECA has good access to the decision-making level of the Ministry, and there is a strong political support for the implementation of the Montreal Protocol in Costa Rica. The main risk is the relatively low baseline for HFCs because of a depressed economy in 2020 and 2021. The high imports in 2022 (and 2023) indicate that the country has now an HFC consumption that is above the freeze level, which could potentially increase the risk of illegal trade in the coming years. There is a strong collaboration between the NOU, the Foreign Trade Promoter, the General Directorate of Customs and importers of RAC equipment and refrigerants, which helps to mitigate such risks. The newly established HFC quota system is crucial for this.

India: Renewal of institutional strengthening

| Summary of the project and country profile | | | |
|---|-----------------|--|---------------|
| Implementing agency: | | | UNDP |
| Amounts previously approved for institutional strengthening (US \$): | | | |
| Phase I: | Oct-92 | | 428,929 |
| Phase II: | Oct-96 | | 287,100 |
| Phase III: | Mar-99 | | 287,100 |
| Phase IV: | Jul-01 | | 285,796 |
| Phase V: | Dec-03 | | 370,310 |
| Phase VI: | Nov-05 | | 373,230 |
| Phase VII: | Apr-08 | | 373,230 |
| | Apr-10 & Nov-11 | | 373,230 |
| Phase VIII: | | | |
| Phase IX: | Apr-12 | | 373,230 |
| Phase X: | May-14 | | 236,392 |
| Phase XI: | May-16 | | 477,682 |
| Phase XII: | Dec-19 | | 477,734 |
| Phase XIII: | Nov-21 | | 477,734 |
| | Total: | | 4,821,697 |
| Amount requested for renewal (phase XIV) (US \$): | | | 988,909 |
| Amount recommended for approval for phase XIV (US \$): | | | 988,909 |
| Agency support costs (US \$): | | | 69,224 |
| Total cost of institutional strengthening phase XIV to the Multilateral Fund (US \$): | | | 1,058,133 |
| Date of approval of country programme: | | | 1993 |
| Date of approval of HCFC phase-out management plan: | | | 2012 |
| Baseline consumption of controlled substances (ODP tonnes for ODS/CO ₂ -eq tonnes for HFCs): | | | |
| (a) Annex B, Group III (methyl chloroform) (average 1998-2000) | | | 122.2 |
| (b) Annex C, Group I (HCFCs) (average 2009-2010) | | | 1,608.2 |
| (c) Annex E (methyl bromide) (average 1995-1998) | | | 0.0 |
| (d) Annex F (HFCs) (average 2020-2022 plus 65% of HCFC baseline) | | | Not available |

| Summary of the project and country profile | |
|---|-------------|
| Latest reported ODS consumption (2022) (ODP tonnes) as per Article 7: | |
| Annex B, Group III (methyl chloroform) | 0.0 |
| Annex C, Group I (HCFCs) | 342.5 |
| Annex E (methyl bromide) | 0.0 |
| Total: | 342.5 |
| Latest reported Annex F (HFCs) consumption (2022) (CO ₂ -eq tonnes) as per Article 7 | 57,219,531 |
| Year of reported country programme implementation data: | 2022 |
| Amount approved for projects (as at June 2023) (US \$): | 305,490,805 |
| Amount disbursed (as at December 2022) (US \$): | 289,905,660 |
| ODS to be phased out (as at June 2023) (ODP tonnes): | 24,719.5 |
| ODS phased out (as at December 2022) (ODP tonnes): | 29,036.5 |

9. Summary of activities and funds approved by the Executive Committee:

| Summary of activities | Funds approved (US \$) |
|--|-------------------------------|
| a) Investment projects: | 285,115,182 |
| b) Institutional strengthening: | 4,821,697 |
| c) Project preparation, technical assistance, training, and other non-investment projects: | 15,553,926 |
| Total: | 305,490,805 |
| d) HFC activities funded from additional voluntary contributions | 0 |

Progress report

10. Under phase XIII, India continued its efforts in the implementation of the Montreal Protocol and ODS phase-out activities to meet the Montreal Protocol obligations. The Ozone Cell successfully achieved the 2021 and 2022 compliance obligations of the accelerated phase-out schedule of the Montreal Protocol and in line with the Government's Agreement with the Executive Committee. During the phase, India enforced the complete phase-out of HCFC-141b, and the institutional strengthening project provided competency enhancement to support the national compliance targets and national policies. The Ozone Cell also carried out a comprehensive awareness campaign at national and state levels; competency enhancement of customs and enforcement agencies; developed knowledge products, including "The Montreal Protocol - India's Success Story"; participated in Montreal Protocol meetings and contributed significantly during the meetings on key policy issues. Fiscal measures covering customs and excise duty exemptions on capital goods for establishment of industry with non-ODS technology also continued. India achieved all seven of the institutional strengthening objectives.

Plan of action

11. Phase XIV will continue effective implementation of ODS phase-out activities, sustaining the ODS phase-out and coordinating actions to facilitate the completion of stage II of the HPMP and the smooth transition towards implementation of stage III, including supporting the institutional matters required to enact and enforce the ban on HCFC-22 in manufacturing of new RAC equipment. The Ozone Cell will assist, coordinate, consult and engage with stakeholders for implementation of the Montreal Protocol and national regulations; allow for planning and implementation of information outreach activities through active involvement of all stakeholders and coordinate actions for the design of a national strategy for phase-down of HFCs in close coordination with all concerned stakeholders.

Sustainability and risk assessment

12. The upcoming phase will be implemented following UNDP's National Implementation Modality which provides the Government of India total ownership of project results. The UNDP country office provides support to the Government of India by providing ERP and IT tools required for project execution tasks, as well as applying UNDP Financial and Procurement Rules and Regulations which are expected to address any risks related to delays in project execution. UNDP will co-chair the Project Board (Project Steering Committee- PSC). The Government of India, through its Ozone Cell set up under the MoEF&CC, will continue to be the project Implementing Partner (IP), co-chairing the PSC and having full accountability over the project intended results and outputs.

Malaysia: Renewal of institutional strengthening

| Summary of the project and country profile | | |
|---|--------------------|------------|
| Implementing agency: | | UNDP |
| Amounts previously approved for institutional strengthening (US \$): | | |
| | Phase I: Mar-93 | 306,817 |
| | Phase II: Oct-96 | 209,477 |
| | Phase III: Nov-98 | 178,116 |
| | Phase IV: Dec-00 | 204,006 |
| | Phase V: Nov-02 | 262,367 |
| | Phase VI: Dec-04 | 279,500 |
| | Phase VII: Nov-07 | 277,499 |
| | Phase VIII: Jul-09 | 279,268 |
| | Phase IX: Jul-11 | 279,500 |
| | Phase X: Jul-13 | 279,500 |
| | Phase XI: Nov-15 | 357,760 |
| | Phase XII: Nov-17 | 357,760 |
| | Phase XIII: Dec-19 | 357,760 |
| | Phase XIV: Nov-21 | 357,760 |
| | Total: | 3,987,090 |
| Amount requested for renewal (phase XV) (US \$): | | 740,563 |
| Amount recommended for approval for phase XV (US \$): | | 740,563 |
| Agency support costs (US \$): | | 51,839 |
| Total cost of institutional strengthening phase XV to the Multilateral Fund (US \$): | | 792,402 |
| Date of approval of country programme: | | 1992 |
| Date of approval of HCFC phase-out management plan: | | 2011 |
| Baseline consumption of controlled substances (ODP tonnes for ODS/CO ₂ -eq tonnes for HFCs): | | |
| (a) Annex B, Group III (methyl chloroform) (average 1998-2000) | | 49.5 |
| (b) Annex C, Group I (HCFCs) (average 2009-2010) | | 515.8 |
| (c) Annex E (methyl bromide) (average 1995-1998) | | 14.6 |
| (d) Annex F (HFCs) (average 2020-2022 plus 65% of HCFC baseline) | | 26,703,074 |
| Latest reported ODS consumption (2022) (ODP tonnes) as per Article 7: | | |
| (a) Annex B, Group III (methyl chloroform) | | 0.00 |
| (b) Annex C, Group I (HCFCs) | | 187.07 |
| (c) Annex E (methyl bromide) | | 0.00 |
| | Total: | 187.07 |
| Latest reported Annex F (HFCs) consumption (2022) (CO ₂ -eq tonnes) as per Article 7 | | 27,487,984 |
| Year of reported country programme implementation data: | | 2022 |
| Amount approved for projects (as at June 2023) (US \$): | | 64,871,259 |
| Amount disbursed (as at December 2022) (US \$): | | 62,792,678 |
| ODS to be phased out (as at June 2023) (ODP tonnes): | | 7,046.1 |
| ODS phased out (as at December 2022) (ODP tonnes): | | 6,915.6 |

13. Summary of activities and funds approved by the Executive Committee:

| Summary of activities | Funds approved (US \$) |
|--|------------------------|
| (a) Investment projects: | 51,493,044 |
| (b) Institutional strengthening: | 3,987,090 |
| (c) Project preparation, technical assistance, training, and other non- investment projects: | 9,391,124 |
| Total: | 64,871,259 |
| (d) HFC activities funded from additional voluntary contributions | 250,000 |

Progress report

14. Malaysia has steadfastly upheld its commitments to the Montreal Protocol during phase XIV of its institutional strengthening project, successfully meeting the 2021 and 2022 compliance obligations. The institutional strengthening project played a crucial role, providing tools for coordinated efforts and complementary actions in implementation of Montreal Protocol activities including reporting and monitoring for compliance. The NOU participated and contributed to various Montreal Protocol meetings; worked closely with the RAC and foam sectors ensuring phase-out of HCFCs as committed; ensured proactive measures were taken to phase out HCFC-141b; developed a robust online import/export control system to ensure compliance; and comprehensive awareness campaigns were carried out at both national and state levels to sensitize stakeholders regarding ODS phase-out across various sectors, as well as national regulations and policies. The successful organization of World Ozone Day celebrations in 2022 and 2023 highlighted Malaysia's commitment to ozone layer protection and environmental sustainability. All seven institutional strengthening objectives were fully achieved.

Plan of action

15. Phase XV of the institutional strengthening project for Malaysia aims to achieve the following objectives: continue the effective implementation of ODS phase-out and HFC phase-down activities; facilitate coordinated actions to enable the successful completion of stage II of the HPMP and the implementation of stage III of the HPMP and stage I of the KIP; actively assist, coordinate, consult, and engage with relevant line ministries, organizations, bodies, industry associations, and other stakeholders to facilitate the implementation of the Montreal Protocol and national regulations; and plan and execute information outreach activities involving all stakeholders, and coordinate efforts to design a national strategy for the gradual reduction of HFCs, closely collaborating with all relevant parties.

Sustainability and risk assessment

16. Phase XV will continue implementation with the NOU within the Department of Environment as the implementing partner under UNDP's National Implementation Modality. As required, UNDP will support the Government of Malaysia during the implementation. The institutional strengthening project is administered by a PSC (Project Steering Committee) headed by the Deputy DG of the Ministry. The project document will include identified risks and its mitigation measures. The learning from previous institutional strengthening phases will be incorporated while assessing risks. Project risks can be amended during implementation by the implementing partner and can be updated through the PSC mechanism at any point in time.

Pakistan: Renewal of institutional strengthening

| Summary of the project and country profile | | |
|---|-------------------|------------------|
| Implementing agency: | | UNDP |
| Amounts previously approved for institutional strengthening (US \$): | | |
| Phase I: | Sept-94 | 254,958 |
| Phase II: | Dec-01 | 172,564 |
| Phase III: | Dec-03 | 221,991 |
| Phase IV: | Mar-07 and Nov-07 | 112,233 |
| Phase V: | Apr-09 | 94,663 |
| Phase VI: | Dec-10 | 224,467 |
| Phase VII: | Dec-12 | 224,467 |
| Phase VIII: | Nov-14 | 224,467 |
| Phase IX: | Dec-16 | 224,467 |
| Phase X: | Dec-18 | 286,749 |
| Phase XI: | Jul-21 | 287,318 |
| | Total: | 2,615,662 |
| Amount requested for renewal (phase XII) (US \$): | | 594,748 |
| Amount recommended for approval for phase XII (US \$): | | 594,748 |
| Agency support costs (US \$): | | 41,632 |
| Total cost of institutional strengthening phase XII to the Multilateral Fund (US \$): | | 636,380 |
| Date of approval of country programme: | | 1996 |
| Date of approval of HCFC phase-out management plan: | | 2010 |
| Baseline consumption of controlled substances (ODP tonnes for ODS/CO ₂ -eq tonnes for HFCs): | | |
| (a) Annex B, Group III (methyl chloroform) (average 1998-2000) | | 2.30 |
| (b) Annex C, Group I (HCFCs) (average 2009-2010) | | 248.11 |
| (c) Annex E, (methyl bromide) (average 1995-1998) | | 14.00 |
| (d) Annex F (HFCs) (average 2020-2022 plus 65% of HCFC baseline) | | Not available |
| Latest reported ODS consumption (2022) (ODP tonnes) as per Article 7: | | |
| (a) Annex B, Group III (methyl chloroform) | | 0.00 |
| (b) Annex C, Group I (HCFCs) | | 119.09 |
| (c) Annex E, (methyl bromide) | | 0.00 |
| | Total: | 119.09 |
| Latest reported Annex F (HFCs) consumption (2022) (CO ₂ -eq tonnes) as per Article 7 | | Not available |
| Year of reported country programme implementation data: | | 2022 |
| Amount approved for projects (as at June 2023) (US \$): | | 34,901,112 |
| Amount disbursed (as at December 2022) (US \$): | | 30,739,978 |
| ODS to be phased out (as at June 2023) (ODP tonnes): | | 2,632.3 |
| ODS phased out (as at December 2022) (ODP tonnes): | | 2,610.3 |

17. Summary of activities and funds approved by the Executive Committee:

| Summary of activities | Funds approved (US \$) |
|---|-------------------------------|
| (a) Investment projects: | 27,350,844 |
| (b) Institutional strengthening: | 2,615,662 |
| (c) Project preparation, technical assistance, training, and other non-investment projects: | 4,934,606 |
| | Total: |
| | 34,901,112 |
| (d) HFC activities funded from additional voluntary contributions | 0 |

Progress report

18. Pakistan, under phase XI of its institutional strengthening project, has successfully sustained the ODS phase-out through effective enforcement of regulations, monitoring, and collaboration with key stakeholders. The NOU also worked closely with other national agencies and stakeholders to ensure the monitoring of ODS phase-out. Pakistan successfully implemented activities under stage II of the HPMP. The institutional

strengthening project was instrumental in providing administrative and policy level support to Montreal Protocol activities such as the HCFC phase-out strategy in Pakistan and helped the government to meet its international commitments relating to the Montreal Protocol.

Plan of action

19. Phase XII of the institutional strengthening project will continue supporting the activities for stages II and III of the HPMP in order to sustain the HCFC reduction as agreed under the Montreal Protocol. Awareness raising and technology-driven campaigns for industries, importers, public sector, and the general public will be held regularly to keep stakeholders updated regarding the harmful effects of ozone-depleting substances, progress done by the global community to address related issues, efforts being made by the Montreal Protocol under the guidance of Scientific Assessment and Technical Panels as well as the positive linkage to climate change. Close coordination will be maintained with academia (focusing on environmental sciences/engineering and climate change) and all relevant stakeholders for awareness raising amongst the public, especially youth. The next phase will enable Pakistan to continue the process of preparing for the HFC phase-down, as well as ratification of the Kigali Amendment.

Sustainability and risk assessment

20. As part of UNDP requirement, capacity assessment is carried out for investment projects, risks are assessed, and mitigation measures are developed. To mitigate risks, the implementing agency established regular monitoring mechanisms in coordination with the NOU. The key lessons learned include that risk assessment and continuous monitoring are essential to project success. Also, building partnerships with key stakeholders is vital in addressing compliance obligations and fostering project sustainability.

Uruguay: Renewal of institutional strengthening

| Summary of the project and country profile | | UNDP |
|---|--|-----------|
| Implementing agency: | | |
| Amounts previously approved for institutional strengthening (US \$): | | |
| Phase I: | Jun-93 & May-96 | 202,800 |
| Phase II: | Oct-96 | 116,000 |
| Phase III: | Jul-98 | 115,981 |
| Phase IV: | Jul-00 | 115,804 |
| Phase V: | Jul-02 | 150,800 |
| Phase VI: | Jul-04 | 150,800 |
| Phase VII: | Jul-06 | 150,800 |
| Phase VIII: | Nov-08 | 150,800 |
| Phase IX: | Nov-11 | 150,797 |
| Phase X: | Dec-13 | 150,800 |
| Phase XI: | Nov-15 | 193,024 |
| Phase XII: | Nov-17 | 192,729 |
| Phase XIII: | Dec-19 | 193,024 |
| Phase XIV: | Nov-21 | 193,024 |
| Total: | | 2,227,183 |
| Amount requested for renewal (phase XV) (US \$): | | 399,560 |
| Amount recommended for approval for phase XV (US \$): | | 399,560 |
| Agency support costs (US \$): | | 27,969 |
| Total cost of institutional strengthening phase XV to the Multilateral Fund (US \$): | | 427,529 |
| Date of approval of country programme: | | 1993 |
| Date of approval of HCFC phase-out management plan: | | 2011 |
| Baseline consumption of controlled substances (ODP tonnes for ODS/CO ₂ -eq tonnes for HFCs): | | |
| (a) | Annex B, Group III (methyl chloroform) (average 1998-2000) | 0.0 |
| (b) | Annex C, Group I (HCFCs) (average 2009-2010) | 23.4 |
| (c) | Annex E (methyl bromide) (average 1995-1998) | 11.2 |

| Summary of the project and country profile | |
|---|------------|
| (d) Annex F (HFCs) (average 2020-2022 plus 65% of HCFC baseline) | 1,012,431 |
| Latest reported ODS consumption (2022) (ODP tonnes) as per Article 7: | |
| (a) Annex B, Group III (methyl chloroform) | 0.00 |
| (b) Annex C, Group I (HCFCs) | 12.82 |
| (c) Annex E (methyl bromide) | 0.00 |
| Total: | 12.82 |
| Latest reported Annex F (HFCs) consumption (2022) (CO ₂ -eq tonnes) as per Article 7 | 571,556 |
| Year of reported country programme implementation data: | 2022 |
| Amount approved for projects (as at June 2023) (US \$): | 10,096,282 |
| Amount disbursed (as at December 2022) (US \$): | 8,615,260 |
| ODS to be phased out (as at June 2023) (ODP tonnes): | 545 |
| ODS phased out (as at December 2022) (ODP tonnes): | 453.8 |

21. Summary of activities and funds approved by the Executive Committee:

| Summary of activities | Funds approved (US \$) |
|---|-----------------------------------|
| (a) Investment projects: | 4,754,381 |
| (b) Institutional strengthening: | 2,227,183 |
| (c) Project preparation, technical assistance, training, and other non-investment projects: | 3,114,718 |
| Total: | 10,096,282 |
| (d) HFC activities funded from additional voluntary contributions | 150,000 |

Progress report

22. Phase XIV of the institutional strengthening project for Uruguay was successfully implemented. Uruguay is completing stage II of its HPMP and implementing stage III, in close collaboration with local authorities and stakeholders, including training of RAC technicians on low-GWP alternatives and application of good refrigeration practices. The preparation of the Kigali HFC implementation plan (KIP) is underway; HCFC import, export and transit controls are fully operational; advancement is progressing in the design of the HFC quota system and the licensing system has been fully implemented. The NOU also actively participated in regional and global meetings relevant to the implementation of the Montreal Protocol.

Plan of action

23. During phase XV of the institutional strengthening project, the Government of Uruguay will maintain the ban on CFCs and halons and the reductions made in HCFC consumption. In this phase, the government will establish its HFC quota system and will guide importers in the application of their quota. In addition, the NOU will work with public and private entities to enforce the control measures on HCFC and HFC consumption. The NOU will also oversee the implementation of stage III of the HPMP which will include a training programme on good refrigeration practices and continued public awareness activities. The Government of Uruguay will complete the process for the preparation of the KIP and start the implementation of its first tranche. The Government of Uruguay will also continue to actively participate in the regional and global network meetings of the Montreal Protocol, to exchange information and experiences that favour the implementation of national policies and strategies for the protection of the ozone layer.

Sustainability and risk assessment

24. The NOU is located within the Ministry of Environment, which ensures that the policies and activities implemented by the NOU have the institutional support and consider the national priorities and strategies. The NOU works with different stakeholders from the public and private sector, which facilitates the long-term

effects of its interventions. Although there will be general elections in October 2024, Uruguay has strong institutions and is politically stable, so it is expected that the transition will not impact the project implementation. On the risks associated with the availability of alternatives to HCFC and HFC, the NOU works with importers and technology suppliers to monitor the market and promote the availability of alternatives.

附件二

执行委员会就续延体制建设项目发表的意见草案 提交到第 93 次会议

哥伦比亚

1. 执行委员会审查了为续延哥伦比亚体制建设项目（第十四期）的申请提交的报告，并赞赏地注意到，哥伦比亚政府向臭氧秘书处报告了 2021 年和 2022 年第 7 条数据，向基金秘书处报告了国家方案数据，表明该国履行了《蒙特利尔议定书》。执行委员会注意到，哥伦比亚已采取淘汰消耗臭氧层物质消耗量的步骤；具体来说，通过许可证和配额制度执行氢氟氯烃进口管制，以及培训海关官员和制冷技术人员。执行委员会还赞赏地注意到为促进执行《基加利修正案》而启动的活动。执行委员会认可哥伦比亚政府所作的努力，因此希望在今后三年内，该国将继续执行氢氟氯烃淘汰管理计划，编制基加利执行计划第一阶段并成功执行体制建设项目活动，以实现并保持自 2021 年 1 月 1 日以来所要求的、也是 2024 年和 2025 年的控制目标，将氢氟氯烃消耗量减少百分之 65。

哥斯达黎加

2. 执行委员会审查了随续延哥斯达黎加体制建设项目（第十五期）的申请而提交的报告，赞赏地注意到哥斯达黎加政府正在遵守其削减目标，并向臭氧秘书处报告了 2021 年和 2022 年第 7 条数据，向基金秘书处报告了国家方案数据。执行委员会还注意到，该国政府已采取了淘汰消耗臭氧层物质消耗量的步骤；具体来说，通过许可证和配额制度实施氢氟氯烃进口管制，以及培训海关官员和制冷技术人员。执行委员会还赞赏地注意到为执行《基加利修正案》而启动的活动。执行委员会认可哥斯达黎加的努力，因而希望哥斯达黎加在今后三年内继续执行氢氟氯烃淘汰管理计划，编制基加利氢氟碳化合物执行计划并成功实施体制建设项目活动，保持自 2021 年 1 月 1 日以来所要求的将氢氟氯烃消耗量削减百分之 65，为实施《基加利修正案》奠定基础。

印度

3. 执行委员会审查了关于续延印度体制建设项目（第十四期）申请的报告。执行委员会赞赏地注意到印度批准了《基加利修正案》，持续致力于消耗臭氧层物质的淘汰，包括各种政策、监管、技术转移和提高认识的举措。执行委员会认可印度政府为证明该国履行《蒙特利尔议定书》所作的努力，因而希望在未来三年内，该国将完成其氢氟氯烃淘汰管理计划的第二阶段，并开始执行第三阶段，以及开展基加利氢氟碳化合物执行计划的第一阶段，并成功执行体制建设项目活动。

马来西亚

4. 执行委员会审查了关于申请续延马来西亚体制建设项目（第十五期）的报告，并对马来西亚政府在监测和管理消耗臭氧层物质的淘汰和编制氢氟碳化合物逐步淘汰项目方面所做的辛勤努力表示赞赏，包括政策、监管、技术转让，以及提高认识的举措。执行委员会注意到，马来西亚及时分别向臭氧秘书处和基金秘书处提交了 2021 年和 2022 年第 7 条和国家方案数据，表明该国履行了《蒙特利尔议定书》。执行委员会还注意到，尽管新冠病毒大流行带来挑战，马来西亚仍然致力于执行其消耗臭氧层物质淘汰计划，批准了《基加利修正案》，并启动了逐步淘汰氢氟碳化合物的行动。执行委员会期待该国在未来三年继续参与《蒙特利尔议定书》的活动，包括完成氢氟氯烃淘汰管理计划第二阶段、制定和实施第三阶段以及实施基加利氢氟碳化合物执行计划第一阶段，以及成功地实施体制建设项目活动。

巴基斯坦

5. 执行委员会审查了关于续延巴基斯坦体制建设项目（第十二期）的申请的报告，并赞赏地注意到该国政府通过各种政策和管理活动以及提高认识活动，努力监测和控制消耗臭氧层物质的淘汰。执行委员会还注意到，巴基斯坦政府确保履行《蒙特利尔议定书》，并及时提交了第 7 条和国家方案数据；执行了氢氟氯烃淘汰管理计划第二阶段，提交并获得了氢氟氯烃管理计划第三阶段的批准，并为批准《基加利修正案》和逐步淘汰氢氟碳化合物做了准备。执行委员会认可巴基斯坦政府所作的努力，因而希望在今后三年内，该国将继续与其他的国家机构和利益攸关方协调，执行政策和条例，以持续消耗臭氧层物质的淘汰，并继续执行《蒙特利尔议定书》的活动，包括执行氢氟氯烃淘汰管理计划第三阶段，编制基加利氢氟碳化合物执行计划和成功地实施体制建设项目。

乌拉圭

6. 执行委员会审查了申请续延乌拉圭体制建设项目（第十五期）的报告，赞赏地注意到乌拉圭政府向臭氧秘书处报告了 2021 年和 2022 年第 7 条数据，并向基金秘书处报告了国家方案数据，表明该国履行了《蒙特利尔议定书》。执行委员会还注意到，乌拉圭政府已采取步骤逐步淘汰消耗臭氧层物质的消耗量，具体来说，通过许可证和配额制度执行氢氟氯烃进口管制，以及培训海关官员和制冷技术人员。执行委员会还赞赏地注意到通过编制《基加利氢氟碳化合物执行计划》（KIP）为促进《基加利修正案》的执行而启动的活动。执行委员会认可乌拉圭政府在履行《蒙特利尔议定书》方面所作的努力，并希望在今后三年内，该国将继续执行氢氟氯烃淘汰管理计划，编制 KIP 并成功实施体制建设项目活动，以实现《蒙特利尔议定书》的减排目标。



**93rd Meeting of the Executive Committee of the Multilateral Fund
for the Implementation of the Montreal Protocol**

(15 – 19 December 2023)

**UNDP
2023 WORK PROGRAMME AMENDMENT**

2023 WORK PROGRAMME AMENDMENT

I. EXECUTIVE SUMMARY

The present document constitutes UNDP's 2023 Work Programme Amendment and is being submitted for consideration of the Executive Committee (ExCom) at its 93rd Meeting. The list of submissions for all funding requests (including investment projects) that will be submitted by UNDP to the 93rd ExCom meeting in Annex 1 to this document is provided for information. Project documentation such as tranche requests under multi-year agreements (MYA), investment and demonstration project proposals and other individual proposals are not included in this document and are submitted separately as per normal practice. Only the following (non-investment) submissions are part of this document.

II. FUNDING REQUESTS PART OF THE WORK PROGRAMME

Institutional Strengthening Extensions

UNDP is submitting the requests for funding the extension of institutional strengthening projects to the 93rd ExCom Meeting as tabulated below. Relevant terminal reports and requests for extension of funding are being submitted separately.

| Country | Type | Title | Duration (months) | Amount | Agency Fee | Total |
|---------------------------|------|---|-------------------|------------------|----------------|------------------|
| Colombia | INS | Institutional Strengthening Renewal (Phase XIV) | 36 | 730,230 | 51,116 | 781,346 |
| Costa Rica | INS | Institutional Strengthening Renewal (Phase XV) | 36 | 372,304 | 26,061 | 398,365 |
| India | INS | Institutional Strengthening Renewal (Phase XIV) | 36 | 988,909 | 69,224 | 1,058,133 |
| Malaysia | INS | Institutional Strengthening Renewal (Phase XV) | 36 | 740,563 | 51,839 | 792,402 |
| Pakistan | INS | Institutional Strengthening Renewal (Phase XII) | 36 | 594,748 | 41,632 | 636,380 |
| Uruguay | INS | Institutional Strengthening Renewal (Phase XV) | 36 | 399,560 | 27,969 | 427,529 |
| Total (6 requests) | | | | 3,826,314 | 267,842 | 4,094,156 |

Preparation funding request for HPMP stage II

UNDP is submitting the following funding requests for the preparation of stage II and stage III of HPMP to the 93rd ExCom meeting. Annex 2 contains the submission for Peru. The request for South Sudan will be submitted by UNEP as a Lead Agency.

| Country | Type | Title | Duration (months) | Amount | Agency Fee | Total |
|---------------------------|------|----------------------------|-------------------|---------------|--------------|---------------|
| Peru | PRP | Stage III HPMP Preparation | 18 | 40,000 | 2,800 | 42,800 |
| South Sudan | PRP | Stage II HPMP Preparation | 12 | 10,000 | 700 | 10,700 |
| Total (2 requests) | | | | 50,000 | 3,500 | 53,500 |

Preparation funding requests for HFCs phase down and control of HFC-23 emissions

UNDP is submitting the following funding requests for the preparation of Kigali Implementation Plans and an investment project to control HFC-23 by-product emissions to the

93rd ExCom meeting. Annex 3 contains the submissions. The KIP PRP request for Egypt will be submitted by UNIDO as a Lead Agency and the KIP request for Mali will be submitted by UNEP as a Lead Agency.

| Country | Type | Title | Duration (months) | Amount | Agency Fee | Total |
|---------------------------|------|---|-------------------|----------------|---------------|----------------|
| Brazil | PRP | Preparation of Stage I of the Kigali HFC implementation plan | 12 | 126,500 | 8,855 | 135,355 |
| Colombia | PRP | Preparation of stage I of the Kigali HFC implementation plan in the air-conditioning manufacturing sector | 12 | 50,000 | 3,500 | 53,500 |
| Colombia | PRP | Preparation of stage I of the Kigali HFC implementation plan in the refrigeration manufacturing sector | 12 | 150,000 | 10,500 | 160,500 |
| Egypt | PRP | Preparation of Stage I of the Kigali HFC implementation plan | 12 | 40,000 | 2,800 | 42,800 |
| India | PRP | Preparation of the demonstration project with use of R290 in automotive thermal Systems with double loop secondary cooling system | 24 | 30,000 | 2,100 | 32,100 |
| Lebanon | PRP | Preparation of stage I of the Kigali HFC implementation plan in the manufacturing sector | 18 | 70,000 | 4,900 | 74,900 |
| Mali | PRP | Preparation of Stage I of the Kigali HFC implementation plan | 12 | 35,000 | 2,450 | 37,450 |
| Sri Lanka | PRP | Preparation of stage I of the Kigali HFC implementation plan in the manufacturing sector | 18 | 80,000 | 5,600 | 85,600 |
| Total (8 requests) | | | | 581,500 | 27,755 | 424,255 |

Project preparation (PRP) requests for national inventories of banks for used and/or unwanted controlled substances and a plan for the collection, transport and disposal of such substances

Pursuant to the ExCom decision 91/66, UNDP is submitting the following requests for the preparation of national inventories of banks of used or unwanted controlled substances and a plan for the collection, transport and disposal of such substances, including consideration of recycling, reclamation and cost-effective destruction. Annex 4 contains the submissions.

| Country | Type | Title | Duration (months) | Amount | Agency Fee | Total |
|---------------------|------|--|-------------------|---------|------------|---------|
| Cuba | PRP | Preparation for an inventory of banks of used or unwanted controlled substances and a plan for their collection, transport, and disposal | 24 | 90,000 | 6,300 | 96,300 |
| Egypt | PRP | Preparation for an inventory of banks of used or unwanted controlled substances and a plan for their collection, transport, and disposal | 24 | 100,000 | 7,000 | 107,000 |
| Jamaica | PRP | Preparation for an inventory of banks of used or unwanted controlled substances and a plan for their collection, transport, and disposal | 24 | 90,000 | 6,300 | 96,300 |
| Peru | PRP | Preparation for an inventory of banks of used or unwanted controlled substances and a plan for their collection, transport, and disposal | 24 | 90,000 | 6,300 | 96,300 |
| Trinidad and Tobago | PRP | Preparation for an inventory of banks of used or unwanted controlled substances and a plan for their collection, transport, and disposal | 24 | 90,000 | 6,300 | 96,300 |

| Country | Type | Title | Duration (months) | Amount | Agency Fee | Total |
|---------------------------|------|--|-------------------|----------------|---------------|----------------|
| Uruguay | PRP | Preparation for an inventory of banks of used or unwanted controlled substances and a plan for their collection, transport, and disposal | 24 | 90,000 | 6,300 | 96,300 |
| Total (6 requests) | | | | 550,000 | 38,500 | 588,500 |

Project preparation (PRP) requests for pilot projects to maintain and/or enhance energy efficiency of replacement technologies and equipment in the context of HFC phase-down

Pursuant to the ExCom decision 91/65, UNDP is submitting the following requests for the preparation of pilot projects to maintain and/or enhance energy efficiency of replacement technologies and equipment in the context of HFC phase-down. Annex 5 contains the submissions.

| Country | Type | Title | Duration (months) | Amount | Agency Fee | Total |
|---------------------------|------|--|-------------------|----------------|--------------|----------------|
| Chile | PRP | Preparation of a pilot project for the use of R-744 (carbon dioxide) as an alternative refrigerant in heat pumps in industrial refrigeration | 12 | 30,000 | 2,100 | 32,100 |
| Global | PRP | Demonstrating digital monitoring and management tools to enhance energy efficiency and reduce emission of green-house gases in the space cooling and cold chain sectors in Colombia, Lebanon, Panama, Sri Lanka, and Trinidad and Tobago | 12 | 80,000 | 5,600 | 85,600 |
| Total (2 requests) | | | | 110,000 | 7,700 | 117,700 |

III. SUMMARY OF FUNDING REQUESTS (WORK PROGRAMME)

The table below summarizes the funding requests for non-investment activities and proposals being submitted to the 93rd ExCom Meeting as part of UNDP's Work Programme Amendment for 2023:

| Country | Type | Title | Duration (months) | Amount | Agency Fee | Total |
|------------|------|--|-------------------|---------|------------|---------|
| Brazil | PRP | Preparation of Stage I of the Kigali HFC implementation plan | 12 | 126,500 | 8,855 | 135,355 |
| Chile | PRP | Preparation of a pilot project for the use of R-744 (carbon dioxide) as an alternative refrigerant in heat pumps in industrial refrigeration | 12 | 30,000 | 2,100 | 32,100 |
| Colombia | INS | Institutional Strengthening Renewal (Phase XIV) | 36 | 730,230 | 51,116 | 781,346 |
| Colombia | PRP | Preparation of stage I of the Kigali HFC implementation plan in the air-conditioning manufacturing sector | 12 | 50,000 | 3,500 | 53,500 |
| Colombia | PRP | Preparation of stage I of the Kigali HFC implementation plan in the refrigeration manufacturing sector | 12 | 150,000 | 10,500 | 160,500 |
| Costa Rica | INS | Institutional Strengthening Renewal (Phase XV) | 36 | 372,304 | 26,061 | 398,365 |

| Country | Type | Title | Duration (months) | Amount | Agency Fee | Total |
|----------------------------|------|--|-------------------|------------------|----------------|------------------|
| Cuba | PRP | Preparation for an inventory of banks of used or unwanted controlled substances and a plan for their collection, transport, and disposal | 24 | 90,000 | 6,300 | 96,300 |
| Egypt | PRP | Preparation of Stage I of the Kigali HFC implementation plan | 12 | 40,000 | 2,800 | 42,800 |
| Egypt | PRP | Preparation for an inventory of banks of used or unwanted controlled substances and a plan for their collection, transport, and disposal | 12 | 100,000 | 7,000 | 107,000 |
| Global | PRP | Demonstrating digital monitoring and management tools to enhance energy efficiency and reduce emission of green-house gases in the space cooling and cold chain sectors in Colombia, Lebanon, Panama, Sri Lanka, and Trinidad and Tobago | 12 | 80,000 | 5,600 | 85,600 |
| India | INS | Institutional Strengthening Renewal (Phase XIV) | 36 | 988,909 | 69,224 | 1,058,133 |
| India | PRP | Preparation of the demonstration project with use of R290 in automotive thermal Systems with double loop secondary cooling system | 24 | 30,000 | 2,100 | 32,100 |
| Jamaica | PRP | Preparation for an inventory of banks of used or unwanted controlled substances and a plan for their collection, transport, and disposal | 12 | 90,000 | 6,300 | 96,300 |
| Lebanon | PRP | Preparation of stage I of the Kigali HFC implementation plan in the manufacturing sector | 18 | 70,000 | 4,900 | 74,900 |
| Malaysia | INS | Institutional Strengthening Renewal (Phase XV) | 36 | 740,563 | 51,839 | 792,402 |
| Mali | PRP | Preparation of Stage I of the Kigali HFC implementation plan | 12 | 35,000 | 2,450 | 37,450 |
| Pakistan | INS | Institutional Strengthening Renewal (Phase XII) | 36 | 594,748 | 41,632 | 636,380 |
| Peru | PRP | Stage III HPMP Preparation | 18 | 40,000 | 2,800 | 42,800 |
| Peru | PRP | Preparation for an inventory of banks of used or unwanted controlled substances and a plan for their collection, transport, and disposal | 24 | 90,000 | 6,300 | 96,300 |
| South Sudan | PRP | Stage II HPMP Preparation | 12 | 10,000 | 700 | 10,700 |
| Sri Lanka | PRP | Preparation of stage I of the Kigali HFC implementation plan in the manufacturing sector | 18 | 80,000 | 5,600 | 85,600 |
| Trinidad and Tobago | PRP | Preparation for an inventory of banks of used or unwanted controlled substances and a plan for their collection, transport, and disposal | 12 | 90,000 | 6,300 | 96,300 |
| Uruguay | INS | Institutional Strengthening Renewal (Phase XV) | 36 | 399,560 | 27,969 | 427,529 |
| Uruguay | PRP | Preparation for an inventory of banks of used or unwanted controlled substances and a plan for their collection, transport, and disposal | 12 | 90,000 | 6,300 | 96,300 |
| Total (24 requests) | | | | 5,117,814 | 358,247 | 5,476,061 |

ANNEX 1

List of all UNDP submissions for funding to the 93rd ExCom Meeting

| No | Country | Type | Description | Funding Request to the 93 rd ExCom (US\$) | | |
|----|--------------------|------|--|--|------------|-----------|
| | | | | Amount | Agency Fee | Total |
| 1 | Brazil | PRP | Preparation of Stage I of the Kigali HFC implementation plan | 126,500 | 8,855 | 135,355 |
| 2 | Cambodia | KIP | Stage I KIP - 1st tranche | 123,810 | 11,143 | 134,953 |
| 3 | Chile | KIP | Stage I KIP - 1st tranche | 752,607 | 52,682 | 805,289 |
| 4 | Chile | PRP | Preparation of a pilot project for the use of R-744 (carbon dioxide) as an alternative refrigerant in heat pumps in industrial refrigeration | 30,000 | 2,100 | 32,100 |
| 5 | China | PHA | Stage II Industrial and Commercial Refrigeration (ICR) Sector Plan - 5th tranche | 8,000,000 | 560,000 | 8,560,000 |
| 6 | China | PHA | Stage II Solvents Sector Plan - 6th tranche | 2,000,000 | 140,000 | 2,140,000 |
| 7 | Colombia | PRP | Preparation of stage I of the Kigali HFC implementation plan in the air-conditioning manufacturing sector | 50,000 | 3,500 | 53,500 |
| 8 | Colombia | PRP | Preparation of stage I of the Kigali HFC implementation plan in the refrigeration manufacturing sector | 150,000 | 10,500 | 160,500 |
| 9 | Colombia | PHA | Stage III HPMP - 2nd tranche | 479,688 | 33,578 | 513,266 |
| 10 | Colombia | INS | Institutional Strengthening Renewal (Phase XIV) | 730,230 | 51,116 | 781,346 |
| 11 | Costa Rica | INS | Institutional Strengthening Renewal (Phase XV) | 372,304 | 26,061 | 398,365 |
| 12 | Cuba | KIP | Stage I KIP - 1st tranche | 180,000 | 12,600 | 192,600 |
| 13 | Cuba | PRP | Preparation for an inventory of banks of used or unwanted controlled substances and a plan for their collection, transport, and disposal | 90,000 | 6,300 | 96,300 |
| 14 | Dominican Republic | KIP | Stage I KIP - 1st tranche | 272,774 | 19,094 | 291,868 |
| 15 | Egypt | PRP | Preparation of Stage I of the Kigali HFC implementation plan | 40,000 | 2,800 | 42,800 |
| 16 | Egypt | PRP | Preparation for an inventory of banks of used or unwanted controlled substances and a plan for their collection, transport, and disposal | 100,000 | 7,000 | 107,000 |
| 17 | Ghana | KIP | Stage I KIP - 1st tranche | 158,500 | 11,095 | 169,595 |
| 18 | Global | TAS | Core Unit Support | 2,157,835 | 0 | 2,157,835 |
| 19 | Global | PRP | Demonstrating digital monitoring and management tools to enhance energy efficiency and reduce emission of green-house gases in the space cooling and cold chain sectors in Colombia, Lebanon, Panama, Sri Lanka, and Trinidad and Tobago | 80,000 | 5,600 | 85,600 |
| 20 | Grenada | KIP | Stage I KIP - 1st tranche | 19,670 | 1,770 | 21,440 |
| 21 | Guyana | PHA | Analysis of EE gains on the Commercial RAC Sector in Guyana | 100,000 | 9,000 | 109,000 |
| 22 | India | INV | Demonstration-cum conversion of R-404A and R-407C by CO2 trans critical heat pump technology in the Food Processing and Cold Storage Refrigeration Equipment Manufacturing Sector at Mech Air Industries, Vadodara | 322,452 | 22,572 | 345,024 |

| No | Country | Type | Description | Funding Request to the 93rd ExCom (US\$) | | |
|----|---------------------|------|---|--|------------|-----------|
| | | | | Amount | Agency Fee | Total |
| 23 | India | INV | Conversion of the manufacturing of commercial refrigeration appliances at Rockwell Industries Limited, Hyderabad to replace HFC-134a for Propane (R-290) as a refrigerant | 1,385,201 | 96,964 | 1,482,165 |
| 24 | India | INV | Conversion from the use of refrigerants R-407C and R-410A to the use of refrigerant HFC-32 in the manufacturing line of light commercial air conditioning –packaged and ducted air conditioning units at Voltas Limited, Vadodara | 933,537 | 65,348 | 998,885 |
| 25 | India | INS | Institutional Strengthening Renewal (Phase XIV) | 988,909 | 69,224 | 1,058,133 |
| 26 | India | PRP | Preparation of the demonstration project with use of R290 in automotive thermal Systems with double loop secondary cooling system | 30,000 | 2,100 | 32,100 |
| 27 | Jamaica | PRP | Preparation for an inventory of banks of used or unwanted controlled substances and a plan for their collection, transport, and disposal | 90,000 | 6,300 | 96,300 |
| 28 | Kyrgyzstan | KIP | Stage I KIP - 1st tranche | 51,000 | 4,590 | 55,590 |
| 29 | Lebanon | PHA | Stage III HPMP - 1st tranche | 605,129 | 42,359 | 647,488 |
| 30 | Lebanon | PRP | Preparation of stage I of the Kigali HFC implementation plan in the manufacturing sector | 70,000 | 4,900 | 74,900 |
| 31 | Malaysia | INS | Institutional Strengthening Renewal (Phase XV) | 740,563 | 51,839 | 792,402 |
| 32 | Mali | PRP | Preparation of Stage I of the Kigali HFC implementation plan | 35,000 | 2,450 | 37,450 |
| 32 | Mexico | KIP | Stage I KIP - 1st tranche | 3,454,500 | 241,815 | 3,696,315 |
| 33 | Mozambique | PHA | Stage II HPMP - 1st tranche | 80,000 | 7,200 | 87,200 |
| 34 | Nigeria | PHA | Stage II HPMP - 3rd tranche | 2,600,000 | 182,000 | 2,782,000 |
| 35 | Pakistan | INS | Institutional Strengthening Renewal (Phase XII) | 594,748 | 41,632 | 636,380 |
| 36 | Panama | KIP | Stage I KIP - 1st tranche | 247,500 | 17,325 | 264,825 |
| 37 | Peru | KIP | Stage I KIP - 1st tranche | 250,250 | 17,518 | 267,768 |
| 38 | Peru | PRP | Stage III HPMP Preparation | 40,000 | 2,800 | 42,800 |
| 39 | Peru | PRP | Preparation for an inventory of banks of used or unwanted controlled substances and a plan for their collection, transport, and disposal | 90,000 | 6,300 | 96,300 |
| 40 | South Sudan | PRP | Stage II HPMP Preparation | 10,000 | 700 | 10,700 |
| 41 | Sri Lanka | PRP | Preparation of stage I of the Kigali HFC implementation plan in the manufacturing sector | 80,000 | 5,600 | 85,600 |
| 42 | Trinidad and Tobago | KIP | Stage I KIP - 1st tranche | 545,107 | 38,157 | 583,264 |
| 43 | Trinidad and Tobago | PHA | Stage II HPMP - 2nd tranche | 665,008 | 46,551 | 711,559 |
| 44 | Trinidad and Tobago | PRP | Preparation for an inventory of banks of used or unwanted controlled substances and a plan for their collection, transport, and disposal | 90,000 | 6,300 | 96,300 |
| 45 | Uruguay | INS | Institutional Strengthening Renewal (Phase XV) | 399,560 | 27,969 | 427,529 |

| No | Country | Type | Description | Funding Request to the 93rd ExCom (US\$) | | |
|----------------------------|---------|------|--|--|------------------|-------------------|
| | | | | Amount | Agency Fee | Total |
| 46 | Uruguay | PRP | Preparation for an inventory of banks of used or unwanted controlled substances and a plan for their collection, transport, and disposal | 90,000 | 6,300 | 96,300 |
| Total (47 requests) | | | | 30,502,382 | 1,991,608 | 32,493,990 |

Notes:

- a. All amounts in are in US dollars.
- b. Special reports due (delays, balances, status reports, etc.) as well as other projects not part of the WPA will be submitted separately.

ANNEX 2

Preparation funding request for stage III HPMP

1. Peru

**MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
HPMP PROJECT PREPARATION REQUEST FORM
HCFC PHASE-OUT MANAGEMENT PLAN (OVERARCHING STRATEGY)**

Part I: Project Information

| | | |
|----------------------------------|--|-----------------------------------|
| Project title: | Request for Project Preparation Proposal for the Third Stage of the HPMP of Peru | |
| Country: | Peru | |
| Lead implementing agency: | UNDP | |
| Implementation period: | 2025-2030 | |
| Funding requested: | | |
| Agency | Sector | Funding requested (US \$)* |
| UNDP | Overarching | 40,000 |

*Details should be consistent with information provided in the relevant sections below.

Part II: Prerequisites for submission

| Item | Yes | No |
|--|-------------------------------------|--------------------------|
| 1. Official endorsement letter from Government specifying roles of respective agencies (where more than one IA is involved) | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| 2. Written confirmation – balances from previous PRP funding approved for stage I HPMP had been returned / will be returned (Decision 71/42(i)) | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| <ul style="list-style-type: none"> Specify meeting at which PRP funding balance had been returned/will be returned | Click or tap here to enter text. | |

A. Information required to support PRP funding (Overarching strategy)

| | | | |
|---|------|--|---|
| 1. Montreal Protocol compliance target to be met in <input type="checkbox"/> stage II / <input checked="" type="checkbox"/> stage III of the HPMP | | | |
| Phase-out commitment (%) | 100% | Year of commitment | 2030 |
| <input checked="" type="checkbox"/> Servicing only | | <input type="checkbox"/> Manufacturing only | <input type="checkbox"/> Servicing and manufacturing |
| 2. Brief background on previous stage of the HPMP | | | |
| <ul style="list-style-type: none"> Please provide a brief background on the previous stage of the HPMP-I, when it was approved, a brief description of the progress in implementation of the previous stage of the HPMP to demonstrate that substantial progress had been made. | | | |
| <p>The Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol, at its 68th Meeting, approved the stage I of the HCFC Phase-out Management Plan (HPMP) for Peru, for the period from 2012 to 2015 to reduce HCFC consumption by 10 per cent of the baseline, with total funding of USD 310,110 (including support costs) divided as:</p> <p>(a) USD 232,671 plus USD 20,940 of support costs for UNDP implementation; and</p> <p>(b) USD 50,000 plus USD 6,500 of support costs for UNEP implementation.</p> <p>The Government of Peru committed to the following control measures with the support of funding and technical assistance from the Multilateral Fund and implementing agency:</p> <p>(a) Freeze the consumption of HCFCs, in 2013, as per agreed baseline; and</p> <p>(b) Reduce 10% of baseline consumption of HCFCs, in 2015.</p> <p>HCFC consumption as the baseline of 26.88 ODP tonnes, calculated using actual consumption of 27.30 ODP tonnes and 26.45 ODP tonnes reported for 2009 and 2010, respectively, under Article 7 of the Montreal Protocol.</p> <p>The main activities developed are describing in the next Table:</p> | | | |

| Component/Activity | Progress | Agency |
|--|--|----------------|
| Legal framework for reduction of imports of HCFC | <p>The Government of Peru has established a quota zero (0) for the import of HCFC-141b effective from January, 1st 2017 (Resolution 545-2016)</p> <p>As per reported under the Article 7, Peru is in compliance with its obligations in front of the Montreal Protocol.</p> | UN Environment |
| Training programme for customs officers to facilitate monitoring and enforcement import controls | <p>In January 2016, a Harmonized Manual on ODSs and ODSs-based equipment import procedures was developed, which allowed the operationalization of the Licensing and Quota System. This manual become the basis for the subsequent Customs Officers sensitization meetings undertaken by the NOU among Customs Representatives from: Moquegua, Callao, Lima, and Arequipa districts.</p> <p>Furthermore, two additional training took place in September 2016 and May 2017, in with 56 Customs Officers were trained in several aspects of the HCFCs control and Quota System, as well as methodologies for the ODSs control. Furthermore, 25 Customs Brokers updated on the revised ODSs controls and banning as well as on HCFC Customs Codes.</p> <p>From 22 to 25 of August 2017, two Customs Officers from the laboratory are trained in a regional workshop carried out in Mexico. The main objectives of the workshop were showing analysis technical for detecting HCF-141b in pre-blended polyols, refrigerants sampling from iso-tanks and proper final disposal of seized ODSs and ODSs-based equipment.</p> <p>Further training on ODSs illegal trade prevention is to be delivered in the third quarter of 2017 by an international expert already recruited. A set of modules for implementing the train the trainer's modules are to be jointly developed among NOO, Customs and the international expert.</p> <p>Three (3) sets of multi-refrigerant identifiers were procured and are expected to be delivered by the second half of 2017.</p> | UN Environment |
| Technical Assistance and Training for the Refrigeration and Air Conditioning sector | <p>After review and reception of equipment listed under TPMP, activities have been developed as follows:</p> <ul style="list-style-type: none"> - Purchase and distribution of equipment for National Training Centers in good practices on RAC (Institutes GAMOR, SENATI, Universidad Nacional Mayor de San Marcos)). - Definition and purchase of equipment for education institutions (to be purchased in 2017) - Continued strengthening of strategic partnership with private sector through a collaboration with <i>Asociación Peruana de Refrigeración, aire acondicionado y ventilación (APRAC)</i> for the development of flushing equipment for technicians. - Two international consultants conducted 5 missions for training in good practices. - Hiring of a National Refrigeration Expert. - 14 awareness-raising workshops with technicians and stakeholders. 1000 technicians and 70 trainers trained. | UNDP |

| | | |
|--|---|------|
| | <ul style="list-style-type: none"> - 12 workshops in new technologies for flushing and best practices on RAC for technicians and trainers. Total of 77 technicians and 41 trainers trained. - Since January 2017, technical monthly trainings for HCFC 141b replacement and use of alternatives. - Creation and awareness of training videos (to be published on PRODUCE's website) and brochures for the introduction of alternatives to HCFCs on flushing. - Development of All-women training sessions with international experts on RAC and flushing alternatives with an international consultant. 30 technicians. | |
| Implementation, Monitoring and Reporting | <p>Reporting: The General Directorate of Environmental Affairs, is currently responsible for monitoring and reporting. Information is collected from importers, technicians, technology institutes and Customs department for comparison and compilation on refrigerant importation and use.</p> <p>Implementation & Monitoring: the implementation includes the delivery of all operational support to the NOU and field consultants in order to achieve the results expected, such as facilitation of contacts with stakeholders, preparation of meetings, hiring process, organization of seminars, workshops and trainings, organization of meeting and etc.</p> <p>The Programme Management Unit also has consolidated all information generated and reported to the NOU and UNDP Senior staff, in order to maintain a proper oversight and accountability of actions.</p> | UNDP |

3. Current progress in implementation of previous stage of the HPMP-II

The Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol, at its 80th Meeting, has approved the stage II of the HCFC Phase-out Management Plan (HPMP) for Peru, for the period from 2017 to 2025 to reduce HCFC consumption by 35 per cent of the baseline, with total funding of USD 1,483,730 (including support costs) divided as:

- USD\$1,167,000 plus USD\$81,690 of support costs for UNDP implementation; and
- USD\$208,000 plus USD\$27,040 of support costs for UNEP implementation.

The Stage 2 of the HPMP in Peru has developed the next main activities:

| Activity | Description | Implementing agency |
|----------------------------|--|---------------------|
| Legal/regulatory framework | Review of the national legislation and risk analysis of the illegal trade of controlled substances (Training of 70 custom officials directly involved in import procedures for HCFCs and HCFC-based equipment); Continued Monitoring for the application of an updated quota and license system for HCFC imports and exports; HFCs were included in the licensing system; Workshop for improved application of the harmonized customs code system conducted; | UNEP |

| | | |
|---|--|-------------|
| <p>Program for the Strengthening of the Legal and Institutional Sectors Responsible for the Regulations Related to Montreal Protocol Implementation</p> | <ul style="list-style-type: none"> ✓ Update and reinforce the legal framework to strengthen regulatory procedures of the compliance HCFC strategy ✓ Continued Monitoring for the application of an updated quota and license system for HCFC imports and exports ✓ Continued monitoring for enhanced effectiveness of a harmonized customs code system | <p>UNEP</p> |
| <p>Refrigeration servicing sector</p> | <ul style="list-style-type: none"> ✓ Monitoring of the 5 RRR Centers (3 in Lima-Callao, 1 in Piura and 1 in Arequipa). Virtual and in person assistance from an international consultant. Training of 150 technicians on R&R Purchase of equipment: <ul style="list-style-type: none"> • Rechargeable cylinders of different sizes to store and transport refrigerant gases. • Refrigerant Reclaim Machine • Refrigerant identifier for refrigerant blends • Electronic load scales • Weigh Scales • Vacuum Pumps • Set of two-way gauges ✓ Procurement process and distribution of equipment and tools for safe HC handling ✓ Training of 100 technicians through 4 workshops on Good Practices for the safe handling of HC refrigerants. ✓ Promote low-GWP alternatives for the Cold Chain: Conduct training seminars for end users, Development of a brochure with information about good RAC servicing practices for Supermarkets, Agroindustry, and Warehouses (including a selection of case studies), develop a cost-benefit analysis in order to determine the best option in each case, and promote volunteer agreements with end users for conservation, conversion, and appropriate disposal of HCFC-based selected equipment ✓ Ten (10) training workshops (6 in Lima and 4 in the province) based on the Training Program designed for instructors and technicians in RAC (including 1 workshop for women, 1 workshop for instructors, 150 technicians and 10 trained instructors) ✓ Design and print material related to good refrigeration practices and procedures in the use of hydrocarbon refrigerants. ✓ 5 Train the trainers seminars ✓ 5 Technical seminars ✓ Procurement of equipment and tools for selected institutions ✓ Training for formal education technical institutes. | <p>UNDP</p> |
| <p>Programme for Public Awareness to promote the Phase-out of HCFC</p> | <ul style="list-style-type: none"> ✓ Awareness -raising campaigns on HCFC phaseout | <p>UNDP</p> |

| | | | | |
|--|--|-------------|---------------|-------------|
| Project for coordination and management | <ul style="list-style-type: none"> ✓ One (1) verification report presented ✓ Annual implementation reports performed | UNDP | | |
| 4. Overview of current HCFC consumption in metric tonnes by substance (last three years) | | | | |
| Substance | Sector | 2019 | 2020 | 2021 |
| HCFC-22 | RAC servicing | 292.76 | 223.75 | 169.39 |
| HCFC-123 | RAC servicing | 0.0 | 0.84 | 0.79 |
| HCFC-124 | RAC servicing | 0.0 | 0.0 | 0.00 |
| HCFC-141b | RAC servicing | 0.0 | 0.0 | 0.0 |
| HCFC-142b | RAC servicing | 2.41 | 0.0 | 0.93 |
| HCFC-141b in imported pre-blended polyols | Manufacturing-Foam PU | 132.9 | 43.7 | 26.5 |
| 5. Based on the consumption data given above, please provide a description of the sector/sub-sector that use HCFCs in the country, including a short analysis and explanation of the consumption trends (i.e., increasing or decreasing) | | | | |
| <p>HCFC consumption in Peru has experienced a progressive decrease in the consumption of HCFC-22, which has allowed the country to easily remain in compliance with its Montreal Protocol obligations with respect to HCFCs. Consumption in the foam sector is related to the use of HCFC-141b in fully formulated polyols. The decrease in this sector of HCFC-141b could be related to the COVID pandemic, but also to the gradual replacement of polyols by HFCs.</p> | | | | |
| 6. Description of information that needs to be gathered and updated. Explain why this has not been undertaken during preparation for the previous stage of the HPMP. | | | | |
| Information needed | Description | | Agency | |
| Updated data on HCFC consumption in manufacturing/servicing sector | Peru will only have HCFC consumption in its servicing sector after the Stage 2, and HCFC-22 is the main HCFC consumed. The national survey for Stage 3 will thus focus on further analyzing the consumption and trends in the servicing sector and the main actors involved. | | UNDP | |
| New information on ODS regulations | It will review the status of ODS regulations and the need to adapt them. | | UNDP | |
| Others, specify. | An analysis of the specific phase-out targets by substance and/or subsector will be conducted, in order to meet upcoming obligations. | | UNDP | |
| Others, specify. | Assessment of the HPMP strategy and amend it based on the outcome of Stage 2. | | UNDP | |
| 7. Activities to be undertaken for project preparation and funding | | | | |
| Activity | Indicative funding (US \$) | | Agency | |
| Assessment of current situation and needs of stakeholders (Survey update, Data analysis, Institutional coordination, etc.) | 15,000 | | UNDP | |
| Technical support and updating of overall strategy for Stage 2, as well as specific strategy for the Servicing sector (International Consultant). | 15,000 | | UNDP | |
| Stakeholders' meetings (2) | 2,000 | | UNDP | |
| Reporting and monitoring | 8,000 | | UNDP | |
| TOTAL | 40,000 | | | |
| 8. How will activities related to implementation of the Kigali Amendment to phase down HFCs be considered during project preparation for stage III of the HPMP? | | | | |
| <p>The surveys will strive to collect the information on HFC when possible. The stage III preparation will also take into account how imports of HFC-based equipment will impact the strategy for the servicing sector for the HPMP, being cognizance of similar activities for the servicing sector whether equipment uses HFC or HCFC.</p> | | | | |

In addition, it's important to note that Peru is preparing the KIP and the country may decide to develop a strategy to phase out the use of HFCs and HCFC-141b as pre-blended polyols. Data collection on this matter will be undertaken during the preparatory phase.

ANNEX 3

Preparation funding requests for HFCs phase down and control of HFC-23 emissions

- 2. Brazil**
- 3. Colombia**
- 4. India**
- 5. Lebanon**
- 6. Sri Lanka**

**MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
KIGALI-HFC IMPLEMENTATION PLAN (KIP) PROJECT PREPARATION (PRP)
KIGALI HFC PHASE DOWN PLAN (OVERARCHING STRATEGY)**

PLEASE ADJUST THE TEXT IN THE ANNEX IN LINE WITH THE TEXT IN THE GUIDE

Part I: Project information

| | | |
|---|--|-----------------------------------|
| Project title: | Kigali Implementation Plan Preparation | |
| Country: | Brazil | |
| Lead implementing agency: | UNDP | |
| Cooperating agency (1): | UNDP | Click or tap here to enter text. |
| Cooperating agency (2): | UNIDO | Click or tap here to enter text. |
| Cooperating agency (3): | Other (Bilateral), specify. | GIZ |
| Implementation period for stage I of the KIP: | from January 2026 to December 2030 | |
| Duration of PRP implementation (i.e., time (in months) from the approval of PRP to submission of the KIP (please specify): | | |
| Funding requested: | | |
| Agency | Sector | Funding requested (US \$)* |
| UNDP | Overarching | 126,500.00 |
| UNIDO | Overarching | 63,500.00 |
| Other (Bilateral) | Overarching | 40,000.00 |
| (select) | (select) | Click or tap here to enter text. |

*Details should be consistent with information provided in the relevant sections below.

Part II: Prerequisites for submission

| Item | Yes | No |
|--|-------------------------------------|--------------------------|
| Official endorsement letter from Government, indicating the specifying roles of respective agencies (where more than one IA is involved) | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

B. Information required for PRP funding request for the overarching strategy of the KIP

| | | | |
|--|------------|---|---|
| 9. Montreal Protocol compliance target to be met in <input checked="" type="checkbox"/> stage I of the KIP | | | |
| Phase-out commitment (%) | 10% | Year of commitment | 2029 |
| <input type="checkbox"/> Servicing only | | <input type="checkbox"/> Manufacturing only | <input checked="" type="checkbox"/> Servicing and manufacturing |
| 10. Brief background/description/information on approved relevant projects and multi-year agreements as follows: | | | |
| <ul style="list-style-type: none"> The current progress in implementation of any funded HFC-related project (enabling activities or stand-alone HFC investment projects) The current progress in ongoing HCFC phase-out management plan (HPMPs) Consideration of integrating HFC phase-down activities with HPMP activities taking into account previously approved HFC-related projects, if this information is available. | | | |
| The Brazilian HCFC Phase-out Management Plan (Brazilian HPMP) established that the actions to phase out the HCFCs in the country should be implemented in stages. Stage I, approved at the 64th meeting of the Executive Committee (ExCom) of the Multilateral Fund (MLF), held in July 2011, established guidelines, objectives, and specific targets for reducing the consumption of 220.3 tonnes (t) of Ozone Depletion Potential (ODP) of HCFCs by 2015, through industrial conversion activities, technical assistance, training and regulatory actions in the PU (polyurethane) foam manufacturing and refrigeration and air conditioning (RAC) servicing sectors. With the implementation of Stage I of the HPMP, Brazil reduced 16.6% of its consumption | | | |

of HCFCs, in relation to the baseline, in 2015. The resources granted enabled the support to the conversion of 249 enterprises in the PU foam sector to technologies free of substances that deplete the ozone layer and low global warming potential, including 226 small and medium-sized enterprises, and the training of 4,800 refrigeration technicians in best practices in the area of commercial refrigeration in supermarkets and 100 refrigeration technicians in best practices in split-type air conditioning systems.

Stage II of the HPMP, approved at the 75th ExCom Meeting in November 2015, with implementation deadline of 2025, provides for actions aimed at the progressive elimination of 464.06 ODP tonnes of HCFCs through industrial conversion activities, technical assistance, training and regulatory actions in the PU Foams manufacturing and RAC manufacturing and servicing sectors. In 2020, the country achieved the target of reducing HCFC consumption by 39.3% compared to the baseline by banning the import of HCFC-141b for the PU foam manufacturing sector and, in 2021, achieved a reduction of 51.6%. The progress achieved in the above-mentioned sectors is presented below:

Project for the polyurethane foam sector: 138 final beneficiaries converted: 16 individual investment project enterprises (Ananda Metais, Ártico, Cold Air, Gelopar, IBF, Furgão Ibiporã, Isar, Niju, Refrimate, São Rafael, Thermjet/Thermotilha, Isosister, Klimaquip, Rocktec, PMI), 8 systems houses (Amino, Ariston, Eco Blaster, Flexível, M. Cassab, PolyUrethane, Purcom and U-Tech) and 117 end users. 92.37 ODP tonnes of HCFC-141b were eliminated. Currently, one individual enterprise is in the process of conversion: Bulltrade and 7 contracts under the Long Term Agreement between UNDP and the running systems houses (Amino, Ariston, Flexível, Poly Urethane, Purcom, Shimtek and Univar) and five contracts are in negotiation phase: Eletrofrio, Tecpur, M.Cassab, Comfibras and Polisystem. Additionally, the project for the foam sector invests heavily in disseminating information about the importance of the sector's technological conversion to options that do not destroy the ozone layer and have a low potential for global warming. All enterprises that join the project, upon completing their industrial conversion process, receive a “Commemorative Board” of the project recognizing and thanking the effort made. Videos and other promotional materials are also produced, such as electronic folders, among others. In 2022, a series of videos were produced with testimonials from representatives of the beneficiary enterprises supported by the project, with the aim of recognizing the effort made, as well as motivating other enterprises to join the project. The videos were sent electronically to enterprises in the foam sector, also being available on the UNDP website ([Série de vídeos apresenta resultados do Programa Brasileiro de Eliminação do HCFCs para setor de espumas/United Nations Development Programme \(undp.org\)](#)) and on the website dedicated to the Brazilian HCFC Phase-out Management Plan ([www.protocolodemontreal.org.br](#)). Under the service contracts in effect, UNDP works closely with the System Houses, carrying out technical training with the sales team to support the dissemination of the project. In 2023, it was planned to hold virtual seminars with the system houses and their customers, to strengthen the dissemination of information about the project and the impacts of the end of production of HFC365/227 for the polyurethane foam sector in Brazil.

Project for the refrigeration manufacturing sector: Two manufacturers of large refrigeration systems for the supermarket sector were converted (Eletrofrio and Plotter Racks), for the production of modular chillers with R-290 refrigerant fluid. The chillers developed have been successfully tested in two supermarkets. The projects generated performance information, two illustrative videos and a technical bulletin. This project has already provided that the technology with the use of the refrigerant R-290 in indirect expansion systems in commercial refrigeration is in operation in more than ten supermarkets in Brazil. Two companies producing beverage refrigerators were converted (Chopeiras Memo and Aquagel), and started the production of equipment with the refrigerant R-290. By the end of 2022, 500 equipment had been sold and 20 were installed at strategic points for monitoring. The expectation for 2023 is the insertion in the market of at least 1200 new converted equipment from both companies. Twelve commercial refrigeration SMEs have started the conversion, three of which (JJ, Refrimate and Kitfrigor) have already completed their projects. The other nine companies (Klima, CCITTI, Mecalor, Refriac, Fricolor, Fricon, Sulfrio, Zero Grau and Peracchi) are in the process of conversion. Six of these companies are expected to complete their projects in 2023, and three in 2024. Technical videos were produced, some of them in Portuguese and English, about the projects executed and the workshops carried out. To date, eight workshops have been held, reaching approximately 500 technicians in the refrigeration sector and three technical bulletins have been published for technicians in the refrigeration sector, with information on the alternative fluids R-290, CO₂ and HFOs and which have been publicized online. A total of 16.13 ODP tonnes of HCFC-22 were eliminated.

Project for the air conditioning manufacturing sector: Two workshops were held on alternative fluids for the residential air conditioning sector. A summary of the UNEP/TEAP report on alternatives to high-GWP HCFCs and HFCs was published. A market study on alternative fluids was conducted, focusing on R-290 and

R-32. The three eligible companies, included in Brazil HPMP Stage II, converted their production lines to R-410A using their own resources. A total of 45.31 ODP tonnes of HCFC-22 were eliminated.

Project for the RAC servicing sector: Training and Capacity Building for better HCFC-22 Containment:

Educational material (presentations and handbooks on best practices) for training of refrigeration technicians updated and published; Tools and components for demonstrations and practical training purposes (educational kits) were purchased and delivered to the selected regional training institutions; Twelve “Train the Trainer” workshops were conducted and 135 trainers trained; 7.516 technicians trained in best practices for split and window type air conditioning systems; 1.419 technicians trained in best practices for commercial refrigeration; monitoring of training courses; monitoring of courses. Training and Capacity Building for Safe Use of low GWP alternatives: Training handbooks and presentations on the safe use of CO₂ and propane under development; Two technical training institutions for the training project for the safe use of CO₂ and propane in commercial refrigeration systems selected and contracted; Tender for the acquisition of two mini-supermarkets, which will be installed in the two training institutions selected for the training of refrigeration technicians and mechanics on the safe design, installation, operation and maintenance of commercial refrigeration systems operating with the natural refrigerants CO₂ and propane carried out and supplier contracted; Acquisition of tools and additional equipment for the two mini-supermarkets, which will be installed in the two selected training institutions for the training of refrigeration technicians and mechanics on the safe design, installation, operation and maintenance of commercial refrigeration systems operating with the natural refrigerants CO₂ and propane carried out and equipment delivered to beneficiaries; Five technical training institutions for the training project for the safe use of flammable refrigerants in air conditioning systems selected and contracted (one training institutions in each region of Brazil); Tender process for the acquisition of R-290 air conditioner for the training in the safe use of flammable refrigerants in air conditioning systems carried out and suppliers contracted; Elaboration of educational material for the training in the safe use of flammable refrigerants in air conditioning systems ongoing. Outreach: Updating and operation of the project website (www.boaspraticasrefrigeracao.com.br); Operation of the Project fan page on Facebook (<https://www.facebook.com/camadadeozonioerefrigeracaoclima>); Photos of the activities implemented published on Flickr:

<https://www.flickr.com/photos/147992141@N07/collections/72157690669896345/>; Interviews with participants of the best practice training courses performed, and testimonials published and disseminated; Three best practice handbooks (Leak Control, Sealed System Design, Planned Preventive Maintenance) printed and disseminated; Poster on the “10 Golden Rules for the Maintenance of RAC Systems” prepared, printed and disseminated; Technical rulers for the quick conversion of pressure and temperature developed, produced and distributed; Stickers/labels for dissemination of best practices for RAC systems developed and distributed; Educational video for leak reduction in the servicing sector produced (three versions are available: original video with Portuguese audio, video with English subtitles, and video with Portuguese subtitles); Project folder and posters developed, printed and distributed; Card listing the specific gravity of refrigerants developed, produced and distributed; Video for awareness raising of end users towards contracting appropriate services for air conditioning systems produced (three versions are available: original video with Portuguese audio, video with English subtitles, and video with Portuguese subtitles); Video for dissemination of best practices in the commercial refrigeration sector produced (three versions are available: original video with Portuguese audio, video with English subtitles, and video with Portuguese subtitles); Two videos of the series “Capacity Building in Focus”, whose purpose is depicting the life and work of refrigeration professionals who disseminate best practices and new technologies in the sector for the protection of the environment, were produced (two more videos are currently under production); Five videos of the series “Best Practices in Minutes” were produced and two more videos are currently under production (it is a series of educational videos bringing together technology and audio-visual communication to convey knowledge to technicians of the refrigeration and air conditioning sector throughout Brazil); Participation in trade shows, events, seminars, etc., of the sector and partners.

Currently, the country is in the process of preparing Stage III of the HPMP, which will direct actions to eliminate the consumption of HCFCs by 2030.

Additionally, the import quota system for HCFCs and mixtures containing HCFCs, created and regulated by IBAMA Normative Instruction No. 14, of December 20, 2012, and updated by Normative Instruction No. 04, of February 14, 2018, combined with the actions being implemented under the Brazilian HPMP, has ensured compliance with the commitment assumed by the country in phasing out the HCFCs consumption. Furthermore, within the scope of the HPMP, the Brazilian Government and the implementing agencies - UNDP, UNIDO and GIZ - have been supporting the Brazilian Association of Technical Standards (ABNT) in the elaboration and discussion of specific technical standards that ensure, at the national level, the

standardization of the handling, installation, and maintenance of equipment that use flammable substances as alternative to HCFCs.

It is important to point out that the implementation of ozone layer protection projects for the polyurethane foam manufacturing sectors and refrigeration and air conditioning equipment, among others, has enabled the country to eliminate the use of ODS in these production processes, reflecting in relevant changes in the national policy of banning/restricting the importation and use of ODS in recent decades, in accordance with the international commitments assumed by the Brazilian Government under the Montreal Protocol.

However, there are currently ODS banks which remain present as a refrigerant in previously produced equipment and which may be released into the atmosphere at some point in the equipment's life cycle, causing damage to the ozone layer. Regarding older equipment, which does not support adaptation with another type of substance, there is still the consumption of ODS for its maintenance, which should last until the end of the useful life of each machine. In contrast, the growing demand for refrigeration and air conditioning systems and the search for ODS-free technologies that offer greater energy efficiency have been observed in Brazil.

In 2022, Brazil completed the Demonstration Project for the Management and Final Disposal of ODS Waste, which constituted a relevant initiative for the country by confirming the feasibility of the experience initiated within the scope of the National CFC Phase-out Management Plan, of a management system, with emphasis on the operability of the final destination of ODS waste, as well as it allowed identifying the challenges of ODS management in the country and the challenges to promote the sustainability of this Management System with the enterprises that will operate in this market and the environmental agencies that will control and supervise these banks.

Considering that in the coming years the country will start implementing the HFCs consumption reduction schedule, through the implementation of the Kigali Amendment in Brazil, the strengthening of the system for the environmentally sound management of both ODS and HFCs will be of great importance to guarantee the availability of quality recycled or reclaimed substances and, once the life cycle of these substances is completed, that the final destination occurs in an environmentally appropriate manner.

11. Overview of current HFC consumption in metric tonnes by substance (last three years)

Current consumption (difference between imports and exports of HFCs) in Brazil is presented in the table below. There is no production of HFCs in Brazil and there are very low exports.

| Substance | Sector | 2020 | 2021 | 2022 |
|------------------|--|-------------|-------------|-------------|
| HFC-32 | Refrigeration and Air Conditioning Manufacturing / Servicing | 1,729.47 | 2,937.08 | 4,334.94 |
| HFC-41 | --- | 0.00 | 0.00 | 0.00 |
| HFC-125 | Fire Fighting* / Refrigeration and Air Conditioning Manufacturing | 1,978.50 | 2,940.89 | 6,057.84 |
| HFC-134 | --- | 0.00 | 0.00 | 0.00 |
| HFC-134a | Aerosol** / Other Manufacturing** / Refrigeration and Air Conditioning Manufacturing / Servicing / Other | 9,435.71 | 10,583.20 | 16,222.11 |
| HFC-143 | --- | 0.00 | 0.00 | 0.00 |
| HFC-143a | Other Manufacturing **/Refrigeration and Air Conditioning Manufacturing | 54.00 | 18.00 | 789.20 |
| HFC-152 | Other | 0.00 | 0.00 | 1.89 |
| HFC-152a | Other Manufacturing ***Refrigeration and Air Conditioning Manufacturing / Servicing / Other | 0.00 | 1.00 | 30.79 |
| HFC-227ea | Fire Fighting | 0.00 | 1.00 | 47.89 |
| HFC-236cb | --- | 0.00 | 0.00 | 0.00 |
| HFC-236ea | --- | 0.00 | 0.00 | 0.00 |
| HFC-236fa | Fire Fighting | 0.0 | 0.00 | 2.39 |
| HFC-245ca | --- | 0.00 | 0.00 | 0.00 |
| HFC-245fa | Foam | 5.49 | 0.00 | 28.67 |
| HFC-365mfc | --- | 0.00 | 0.00 | 0.00 |
| HFC-43-10mee | Solvent | 1.16 | 1.57 | 1.12 |
| HFC-23 (use) | Servicing | 0.00 | 0.00 | 0.44 |

| Total | --- | 13,204.33 | 16,482.74 | 27,517.28 |
|--|---|------------------|------------------|------------------|
| Blend | Sector | 2020 | 2021 | 2022 |
| R-404A (HFC-125 = 44%, HFC-134a = 4%, HFC-143a = 52%) | Refrigeration and Air Conditioning Manufacturing / Servicing | 2,360.08 | 2,465.65 | 5,645.04 |
| R-407A (HFC-32 = 20%, HFC-125 = 40%, HFC-134a = 40%) | Servicing | 0.00 | 4.52 | 4.52 |
| R-407C (HFC-32 = 23%, HFC-125 = 25%, HFC-134a = 52%) | Refrigeration and Air Conditioning Manufacturing / Servicing | 333.96 | 434.62 | 506.50 |
| R-407F (HFC-32 = 30%, HFC-125 = 30%, HFC-134a = 40%) | Servicing | 5.67 | 0.00 | 13.37 |
| R-410A (HFC-32 = 50%, HFC-125 = 50%) | Refrigeration and Air Conditioning Manufacturing / Servicing | 3,541.29 | 4,960.08 | 6,730.18 |
| R-507A (HFC-125 = 50%, HFC-143a = 50%) | Servicing | 21.56 | 57.99 | 187.65 |
| R-508B (HFC-23 = 46%, PFC-116 = 54%) | Servicing | 0.19 | 9.45 | 9.32 |
| R-413A (HFC-134a= 88% PFC-218= 9% HC 600 a= 3%) | Servicing | 122.52 | 856.70 | 0.00 |
| R-417A (HFC-125= 46,6% HFC-134a= 50% HC-600= 3,4%) | Servicing | 10.44 | 7.24 | 10.44 |
| R-422D (HFC-125= 85,1% HFC-134a= 11,5% HC-600 a = 3,4%) | Servicing | 2.72 | 1.36 | 2.27 |
| R-437A (HFC-125= 19,5% HFC= 134a = 78,5% HC-600= 1,4% HC-601= 0,6%) | Servicing | 9.49 | 7.86 | 10.93 |
| R-438A (HFC-32= 8,5% HFC-125= 45% HFC= 134a = 44,2% HC-600= 1,7% HC-601= 0,6%) | Servicing | 32.69 | 34.90 | 40.86 |
| R-444B (HFC-32=41,5% HFC-152= 10%, HFO-1234ze= 48,5%) | Servicing / Refrigeration and Air Conditioning Manufacturing * | 0.00 | 0.40 | 2.25 |
| R-448A (HFC-32=26,00%, HFO-1234yf=20,00%, HFC-125=26,00%, HFO-1234ze=7,00%, HFC-134a=21,00%) | Servicing | 0.00 | 0.00 | 1.36 |
| R-449A (HFC-125=24,7% HFC-134a = 25,7% HFC-32 24,3% HFO1234yf= 25,3%) | Servicing | 7.26 | 15.44 | 44.49 |
| R-449C (HFC-125=20,00%, HFC-134a=29,00%, HFO-1234yf=31,00%, HFC-32=20,00%) | Export / Servicing | - 0.19**** | 0.00 | 4.35 |
| R-451A (HFC-134a = 44% HFO1234yf= 56%) | Servicing | 1.82 | 1.63 | 0.54 |
| R-452A (HFC-32= 11%, HFC-125= 59%, HFO1234yf= 30%) | Servicing | 0.00 | 3.09 | 2.27 |
| R-454B (HFC-32=68,90%, HFO-1234yf=31,10%) | Refrigeration and Air Conditioning Manufacturing | 0.00 | 0.1 | 0.19 |
| R-454C (HFO-1234yf=78,50%, HFC-32=21,50%) | Refrigeration and Air Conditioning Manufacturing | 0.00 | 0.02 | 0.60 |
| R-455A (HFO-1234yf=75,50%, HFC-32=21,50%, R-744=3,00%) | Other | 0.00 | 0.00 | 0.27 |
| R-513A (HFC-134a=44,00%, HFO-1234yf=56,00%) | Refrigeration and Air Conditioning Manufacturing | 0.00 | 0.00 | 0.12 |

| | | | | |
|--|-----------------|-----------------|-----------------|------------------|
| R-515B (HFO-1234ze(E)=91,10%, HFC-227ea=8,90%) | Other | 0.00 | 0.00 | 0.22 |
| Solvay (HFC-365 = 50%, HFC-227 = 7%) | Foam / Solvent* | 453.20 | 729.60 | 553.48 |
| PFC 1102 HC (HFC-125 =24%, HFC-236fa=26%, R-14=21%, R-740=10%, HFC-23=19%) | Servicing | 0.00 | 0.00 | 0.18 |
| Placebo Fostair DPI (HFC-134a = 88%) | Other | 0.00 | 0.00 | 0.11 |
| HFC-32 = 21,5%, HFO-1234yf = 78,5% | Servicing | 0.00 | 0.02 | 0.00 |
| HFC-32 = 68,9%, HFO-1234yf = 31,1% | Servicing | 0.00 | 0.10 | 0.00 |
| R-514A (HFO-1336mzz = 74.7%, /trans-1,2-dichloroethylene (t-DCE) = 25.3%) | Export | 0.00 | -0.64 | 0.00 |
| Total | --- | 6,902.70 | 9,590.13 | 13,771.51 |

* Only 2022

** 2020 and 2021

*** Only 2021

**** Only export

12. Based on the consumption data given above, please provide a description of the sector/sub-sector that use HFCs in the country, including a short analysis and explanation of the consumption trends (i.e., increasing or decreasing).

The main HFCs used in the country are HFC-134a, HFC-410A, HFC-125, HFC-404A and HFC-32.

HFC-134a is the most consumed substance, and its main applications are in automotive air conditioning equipment, such as light cars, buses, trucks and other vehicles, both for manufacturing and maintenance, and in domestic, commercial and industrial refrigeration. It is estimated that 60% of the **HFC-134a** is currently used in the Brazilian automotive air conditioning sector (manufacturing and maintenance). The remaining 25% is distributed in the domestic refrigeration sector (manufacturing and maintenance) and 15% is utilized by the commercial refrigeration sector (manufacturing and maintenance).

HFC-404A is also used in commercial refrigeration systems and in refrigerated transportation, both in manufacturing and equipment maintenance.

In the scope of commercial refrigeration, **HFC-404A** and **HFC-134a** are predominantly used in self-display equipment, which is characterized by a low refrigerant charge; and in air condensing units, which demand a medium refrigerant charge. **HFC-404A** can be applied in cooling and freezing systems, while **HFC-134a** can only be used in cooling systems. However, despite being more energy efficient in the cooling system, **HFC-134a** is often preferred over **HFC-404A** due to the high cost of the compressors that use it.

In Brazil, most medium and large supermarkets have indirect expansion systems in display units and refrigerated cold chambers, which promote a minimum reduction of 70% in the refrigerant charge when compared to the direct expansion system; and the island freezers are predominantly stand-alone units using **HC-290**.

It is possible to find refrigeration systems and displays that use **HFC-404A**, **HFC-410A** and **R-744 (CO₂)**, related to indirect expansion systems with 35% aqueous propylene glycol solution as secondary fluid. For central systems installations, operating at medium temperature (cooling), there are systems with **HFC-134a** with direct or indirect expansion, **HFC-410A** in a chiller to cool glycol and **HFC-404A**. At low temperature (freezing) **HFC-404A** is predominant.

Industrial refrigeration in Brazil uses various types of chillers in the food industry, in cold stores, overhead cranes and manufacturing processes, with prevalence of the use of refrigerants such as **HFC-134a**, **HFC-410A**, **HCFC-22** and **R-717 (ammonia)**.

In the industrial sector, **HFC-134a** is mostly used in chillers, of all capacity ranges, when compressors are not of the scroll type, being the most comprehensive refrigerant adopted by all manufacturers, in all capacities. In refrigeration systems that use compressor RACKs, its applicability is reduced due to the greater need for displaced refrigerant volume, thus it is less competitive than other refrigerants, such as **HFC-404A**.

Regarding refrigerated transport, it is estimated that 20% of the **HFC-404A** brought to Brazil is used in this sector, distributed between manufacturing and maintenance. However, from 2022, the use of **HFO-452A** was also observed. Smaller systems, such as the parking cooler, operate on **HFC-134a**.

For automotive air conditioning (light vehicles, trucks, buses, etc.) in Brazil, in 1995, the conversion of CFC-12 took place directly to **HFC-134a** and, currently there is a prevalence of this HFC in the sector, and the presence of imported vehicles with **HFO-1234yf**. The technology conversion is already being discussed in the ambit of ANFAVEA (Brazilian Association of Automotive Vehicle Manufacturers).

Currently, Brazil has a considerable industrial park, with many manufacturing enterprises with high technological level to produce air conditioning devices and equipment. This park is responsible for the local production of window and split type air conditioners; so-called commercial systems, such as VRFs or VRVs (Variable Refrigerant Flow), in addition to medium and large equipment such as chillers (liquid coolers), used in chilled water central air-conditioning systems.

From 2000, **HFC-410A** and **HFC-407C** began to be used as alternatives to HCFC-22 in the production of compact air conditioners (domestic, commercial rooms and small spaces) and, from 2015, **HFC-32** began to be tested as an alternative, gaining more relevance from 2020.

HFC-407C reached the Brazilian market to replace HCFC-22, being used in the retrofit and maintenance of equipment in the air conditioning sector that were manufactured with HCFC but, currently, registers decreasing consumption. In the manufacturing sector, the market opted for **HFC-410A** for domestic window and split air conditioning equipment and heat pumps.

The consumption of **HFC-410A** is intended for the servicing and manufacturing sector, since this refrigerant is the main alternative adopted in Brazil for the replacement of HCFC-22 by the low and medium capacity residential and commercial air conditioning industry, and has registered a growing and stable consumption, accompanying the national economic growth.

Regarding central and commercial air conditioning, the Brazilian chiller manufacturers produce equipment containing **HFC-134a**, **HFC-407C** and **HFC-410A** refrigerants. Currently, most manufacturing enterprises produce chillers with **R-410A** refrigerant. The same occurs with manufacturers of VRFs or VRVs systems, where most of their production uses **R-410A** refrigerant, but products that use **HFC-134a** and, more recently, **HFC-32** are also identified. Several commercial establishments are choosing to use chillers with **HFC-410A** due to the HCFC phase-out schedule that is being implemented in the country and, it is worth mentioning that, in many cases, there is evidence that these establishments will opt for the replacement of the chiller type system by VRF, also with **HFC-410A** refrigerant.

Regarding the use in other sectors, such as propellant and solvent for cleaning circuits and electronic boards, various industrial uses, fine metallurgy and mold release agents, it is currently observed a transition from HCFC-141b to HFCs, especially to **HFC-134a**, as propellant, and to **HFC-43-10mee**, HFE (Hydrofluorether) and HFO (Hydrofluoroolefin), as solvent.

After the ban of the use of CFCs in Brazil, the fire extinguishing sector started to use powder-based extinguishing agents with monoammonium phosphate, sodium bicarbonate, potassium bicarbonate, among others, in addition to the use of nitrogen, carbon dioxide and water. Some models started to use HFCs and, today migrated to Hydrofluorether (HFE). **HFC-227ea** became widely used in lines that suppress flames by extinguishing O₂, as well as **HFC-236fa**, used in IT rooms, dielectric systems and even museums.

The **HFC-365mfc/HFC-227ea** blend is imported into Brazil to produce fully formulated polyols. Additionally, the country does not import fully formulated polyols containing this mixture. Finally, should be highlighted the announcement by the producer of this mixture that it will end production as of September 1, 2023.

| <p>The data presented above indicates an increasing trend in the consumption of HFCs over the next couple of years. The consumption of HFCs in the servicing sector has been growing sharply due to the growing demand for new equipment, mainly in the air conditioning sector, since HFC-410A is currently the most used refrigerant in the manufacturing industry of residential window and split type air conditioning equipment and in commercial appliances such as multi-split and chillers. In general, there is a fear from the Brazilian manufacturers in the use of flammable refrigerants as alternatives to F-Gases, due to the shortage of qualified labor in this area.</p> | | |
|---|---|-------------------|
| <p>13. Description of information that needs to be gathered during project preparation. Explain how this data will be gathered</p> | | |
| Information needed | Description | Agency |
| Data on HFC consumption in manufacturing/servicing sector | General survey on HFCs (pure and mixtures) consumption in Brazil, detailed profile of HFCs consumption in the sectors of air conditioning, foams, propelling agents / aerosol, solvents, firefighting and proposal of strategies for each sector, survey on the gender mainstreaming in the aforementioned sectors. Regarding HFC waste management, identifying bottlenecks and proposing a strategy to improve the market's ability to recover, recycle, reclaim, and dispose of HFCs, assess the availability of recovery machines for larger volumes and modernize equipment for leakage control and recovery of HFCs. | UNDP |
| HFC sectoral consumption information | Survey on market trends and use of substances alternatives to HFCs, identification of existing barriers to the use of low-GWP alternatives and proposition of a strategy to overcome the barriers identified for the aforementioned sectors. | UNDP |
| Analysis of types of equipmentt using HFCs | Data collection on the amount of equipment / type of fluid / energy efficiency class, especially in the air conditioning sector. | UNDP |
| New information on ODS regulations | Update, in coordination with relevant stakeholders, the information on the country's legal framework for the subject. | UNDP |
| Data on HFC consumption in manufacturing/servicing sector | General diagnosis on the consumption of HFCs (pure and blends) in Brazil, detailed profile of HFC consumption in the commercial refrigeration, industrial refrigeration, domestic refrigeration, transport refrigeration (including road and maritime transport) sectors; and proposition of strategies for each of these sectors; survey on gender integration in the aforementioned sectors, identification of barriers and proposal of strategy to improve the market's capacity to replace. | UNIDO |
| HFC sectoral consumption information | Diagnosis on market trends and use of alternative substances to HFCs, identification of existing barriers to the use of low-GWP alternatives, and proposition of strategy to overcome the identified barriers for the above mentioned sectors. | UNIDO |
| Analysis of types of equipmentt using HFCs | Data collection on the amount of equipment / type of fluid / energy efficiency class, in particular in the commercial, industrial, and residential refrigeration sectors. | UNIDO |
| Data on HFC consumption in manufacturing/servicing sector | General survey on the refrigeration and air conditioning servicing sector in Brazil, addressing the following elements: 1) Data collection on the consumption of HFCs in the refrigeration and air conditioning servicing sector; 2) Analysis of the current situation and market trends regarding the use of alternative substances in the | Other (Bilateral) |

| | | |
|---|---|-------------------|
| | refrigeration and air conditioning servicing sector, with a special focus on refrigeration circuit cleaning practices (flushing); 3) Analysis of current practices and market trends regarding tools used in the installation, maintenance and repair of HFCs-based equipment; 4) Survey and analysis of specific practices in the servicing sector aimed at energy efficiency of appliances. | |
| Others, specify. | Updating, in coordination with relevant interlocutors, and analysis of technical standards and minimum energy efficiency performance standards available and applied in the country in the refrigeration and air conditioning sector. | Other (Bilateral) |
| Others, specify. | Collection of information on infrastructure for the implementation of a Qualification, Certification and Registration (QCR) scheme for refrigeration and air conditioning technicians. | Other (Bilateral) |
| 14. Activities to be undertaken for project preparation and funding (decision 87/xx(b)) | | |
| Activity | Indicative funding (US \$) | Agency |
| Carry out a comprehensive diagnosis, consult with stakeholders; data collection, detail the HFCs consumption profile in air conditioning, foams, propelling agents / aerosol, solvents, firefighting; assess gender integration in the aforementioned sectors and propose a strategy for the gradual reduction of HFCs consumption in those sectors. Carry out a diagnosis on market trends and the use of alternative substances to HFCs, identify and propose a strategy to overcome the barriers identified in the aforementioned sectors. Carry out a survey on the amount of equipment / type of fluid / energy efficiency class, especially in the air conditioning sector. Propose a strategy for disseminating information and strengthening the ODS management system to include HFCs within the scope of the KIP; consolidate strategies (overarching strategy) for all subsectors to be included in the KIP. | 126,500.00 | UNDP |
| To conduct general diagnostic with stakeholder consultations, data collection and analysis, interviews and field visits to establish the consumption profile of HFCs (pure and blends) in the sectors of commercial refrigeration, industrial refrigeration, domestic refrigeration and transport refrigeration (including road and maritime transport). Assess gender mainstreaming in the target sectors, and propose a strategy for the gradual reduction of HFC consumption in these sectors, as well as identify barriers to promoting gender equality in these sectors. Carry out a diagnosis on market trends and the use of alternative substances to HFCs, identify and propose strategies to overcome the barriers identified for the target sectors of the diagnosis. To carry out data collection on the amount of equipment / type of fluid / energy efficiency class, in the commercial, industrial, and residential refrigeration sectors. To propose strategy to enable the dissemination of information. | 63,500.00 | UNIDO |
| Carry out general survey on the consumption of HFCs in the refrigeration and air conditioning servicing sector and specific practices aimed at energy efficiency of the appliances; Stakeholder consultations; Data collection; Data collection on technical standards, existing certification schemes, minimum energy efficiency performance standards, which are available and applied in the country in the refrigeration and air conditioning sector; Elaboration of | 40,000.00 | Other (Bilateral) |

| | | |
|--|--|-------------------|
| strategy to address the RAC servicing sector in the KIP considering complementarity with ongoing activities and lessons learned under the HPMP, and always prioritizing activities that promote safe and energy efficient use of low GWP refrigerants. | | |
| Click or tap here to enter text. | | (select) |
| Click or tap here to enter text. | | (select) |
| TOTAL | | 230,000.00 |
| 15. How will activities related to preparing the KIP be linked to the current stages of the HPMP being implemented in the country? (OPTIONAL) | | |
| <p>Brazil is on the way to eliminate HCFCs consumption. Stage III of the HPMP, which is currently being developed and will soon be submitted to the ExCom, will phase out 97.5% of HCFCs by 2030. The activities will focus on the sustainable phase-out of HCFCs and, as far as possible, promote the safe use of low-GWP alternatives. Brazil will make efforts to ensure synergy between the HPMP and the KIP. It is important to highlight that the phase out of HCFCs can be achieved, in many cases, through the application of currently available non-flammable and non-toxic technologies. However, the gradual reduction of HFCs is a more complex task, as it requires the introduction of flammable refrigerants. The safe handling of these substances is a complex task, which will require, not only the training, certification and capacity building of technicians, but also the adaptation of manufacturing structures of RAC equipment and the updating/introduction of safety standards, guidelines, regulations, norms, for safe and efficient handling, in addition to intensifying the dissemination of information covering the entire lifecycle of equipment containing HFCs and alternative substances.</p> <p>Brazil has been working on strengthening the Management System for the Final Disposal of ODS Waste and other substances controlled by the Montreal Protocol, which is expected to remain operational in the coming years, either to meet the demand arising from the maintenance of older equipment that cannot be adapted to another type of substance or to ensure environmentally sound final disposal, once the lifecycle of these substances is completed.</p> <p>It is worth noting that, within the scope of the HPMP, the Brazilian Government, together with UNDP, UNIDO and GIZ, has already been promoting awareness campaigns on the safe handling of low-impact alternatives to the global climate system that present some degree of flammability. Furthermore, it has supported the Brazilian Association of Technical Standards (ABNT) in the development and discussion of specific technical standards to ensure, at the national level, the standardization of handling, installation and maintenance of equipment that use flammable alternatives to HCFCs and HFCs. Among the initiatives it is important to highlight the revision of the ABNT NBR 16069 Standard on “Safety in refrigeration systems”; the translation of the international standard ISO 5149; the adaptation of the international standard ISO 22712 and the development of a technical standard on the terminology of refrigerants.</p> | | |

**MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
KIGALI-HFC IMPLEMENTATION PLAN (KIP) PROJECT PREPARATION (PRP)
KIP (INV - REF)
KIP (INV - A/C)**

Part I: Project information

| | | |
|--|--|-----------------------------------|
| Project title: | PRP for Investment projects in the RAC Manufacturing sector. | |
| Country: | Colombia | |
| Lead implementing agency: | UNDP | |
| Implementation period for stage I of the KIP: | 2024 - 2029 | |
| Duration of PRP implementation (i.e., time (in months) from the approval of PRP to submission of the KIP (please specify): 12 Months. | | |
| Funding requested: | | |
| Agency | Sector | Funding requested (US \$)* |
| UNDP | INV - REF | 150,000 |
| UNDP | INV - AC | 50,000 |

*Details should be consistent with information provided in the relevant sections below.

Part II: Prerequisites for submission

| Item | Yes | No |
|--|-------------------------------------|--------------------------|
| Official endorsement letter from Government, indicating the specifying roles of respective agencies (where more than one IA is involved) | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

A. Information required for PRP funding request for investment projects/sector plans as part of or in advance of the KIP

| | |
|---|--|
| 1. Agency: | UNDP |
| 2. Sector: | Refrigeration |
| 3. HFC consumption in item #2 reported under country programme data? | <input checked="" type="checkbox"/> Yes , please specify reported amount and year: [REDACTED] <input type="checkbox"/> No |
| 4. Does the enterprise commit to phase out the HFC consumption associated with the proposed investment project, if approved by the Executive Committee? | <input checked="" type="checkbox"/> Yes , please provide support letter. Support letters will be collected during the preparation of the project; discussions have been already carried out with most of the companies and have expressed their support and interest. <input type="checkbox"/> No |
| 5. If the project preparation is requested in advance of the KIP, did the Government provide a written commitment that the consumption associated with these investment projects, once approved, will be deducted from the country's starting point, once established? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No . The written commitment will be collected during the preparation of the project. |
| 6. Please explain briefly how the investment project would relate to the overarching strategy for the country, and when the final KIP will be submitted (decision 87/50(e)) | The adoption of low-GWP, energy efficient alternatives is one of the pillars of the design of the KIP, so it is important for the country to support the transition to alternatives of low-GWP technologies in the manufacturing sector. Reduction in manufacturing will support the country to reduce the consumption of virgin HFC and HFC blends, avoid growth and the long-term demand of this refrigerants. |

| | | The Stage I of the KIP is planned to be submitted in 2024. | | | |
|---|----------------------------|---|------|------|---|
| 7. Information on sector consumption (2022) | | | | | |
| Substance | | Consumption (metric tonnes) | | | |
| HFC-134a | | 150.01 | | | |
| R-404A | | 104.49 | | | |
| R-507A | | 123.81 | | | |
| 8. Information on enterprise(s) for which funding is being sought | | | | | |
| Enterprise | Year established | HFC consumption (metric tonnes) (last three years) | | | HFC phase-out to be achieved (metric tonnes and CO ₂ -eq. tonnes) |
| | | 2020 | 2021 | 2022 | |
| Weston | 1963 | Detail information will be available during this preparation project. | | | |
| Sefrío | 1983 | | | | |
| Danval | 2006 | | | | |
| Rojas Hermanos | 1968 | | | | |
| Frigrite America | 1990 | | | | |
| Industrias Wonder | 2004 | | | | |
| Supernórdico | 1942 | | | | |
| 20 SME has been identified during the preparation of the KIP. | | | | | |
| 9. Activities to be undertaken for preparation of the investment project and funding requested | | | | | |
| Activity | Indicative funding (US \$) | Bilateral/implementing agency | | | |
| Data collection for development of KIP Manufacturing plan, consultation with enterprises including site visits for collecting data, and information related to equipment and processes | 75,000 | UNDP | | | |
| Review of the data and validation | 15,000 | UNDP | | | |
| Alternatives and supply chain assessment: Assess the viability of proposed alternatives and their supply chain, and propose other options to the enterprises, considering the information collected | 30,000 | UNDP | | | |
| Stakeholders Consultation. Final consultation with enterprises and with relevant stakeholders and finalization of KIP refrigeration manufacture projects | 30,000 | UNDP | | | |
| TOTAL | 150,000 | | | | |

B. Information required for PRP funding request for investment projects/sector plans as part of or in advance of the KIP

| | |
|---|---|
| 10. Agency: | UNDP |
| 11. Sector: | Air-conditioning |
| 12. HFC consumption in item #2 reported under country programme data? | <input checked="" type="checkbox"/> Yes, please specify reported amount and year: [REDACTED] <input type="checkbox"/> No |
| 13. Does the enterprise commit to phase out the HFC consumption associated with the proposed investment project, if approved by the Executive Committee? | <input checked="" type="checkbox"/> Yes, please provide support letter. Support letter will be collected during the preparation of the project; discussions have been already carried out with most |

| | of the companies and have expressed their support and interest. | | | |
|--|---|---|-------------------------------|--|
| | <input type="checkbox"/> No | | | |
| 14. If the project preparation is requested in advance of the KIP, did the Government provide a written commitment that the consumption associated with these investment projects, once approved, will be deducted from the country's starting point, once established? | <input checked="" type="checkbox"/> Yes | | | |
| | <input type="checkbox"/> No | | | |
| 15. Please explain briefly how the investment project would relate to the overarching strategy for the country, and when the final KIP will be submitted (decision 87/50(e)) | The adoption of low-GWP, energy efficient alternatives is one of the pillars of the design of the KIP, so it is important for the country support the transition to alternatives of low GWP technologies in the manufacturing sector. Reduction in manufacturing will support the country to reduce the consumption of virgin HFC and HFC blends, avoid growth and the long-term demand of this refrigerants. The final KIP is planned to be submitted in 2024. | | | |
| 16. Information on sector consumption (specify previous year HFC consumption) | | | | |
| Substance | | Consumption (metric tonnes) | | |
| R-410A | | 54.11 | | |
| 17. Information on enterprise(s) for which funding is being sought | | | | |
| Enterprise | Year established | HFC consumption (metric tonnes) (last three years) | | HFC phase-out to be achieved (metric tonnes and CO ₂ -eq. tonnes) |
| | | Detail information will be available during this preparation project. The market share of each company was used to determine the estimated consumption in 2022. | 2022 | |
| Thermotar | 1978 | | 24.35 | |
| Tecam | 1963 | | 13.53 | |
| Comfort fresh | 2016 | | 4.3 | |
| MTC | 2006 | | 6.48 | |
| | | | | |
| 18. Activities to be undertaken for preparation of the investment project and funding requested | | | | |
| Activity | | Indicative funding (US \$) | Bilateral/implementing agency | |
| Data collection for development of KIP Manufacturing plan, consultation with enterprises including site visits for collecting data, and information related to equipment and processes | | 25,000 | UNDP | |
| Review of the data and validation | | 5,000 | UNDP | |
| Alternatives and supply chain assessment: Assess the viability of proposed alternatives and their supply chain, and propose other options to the enterprises, considering the information collected | | 10,000 | UNDP | |
| Stakeholders Consultation. Final consultation with enterprises and with relevant stakeholders and finalization of KIP refrigeration manufacture projects | | 10,000 | UNDP | |
| TOTAL | | 50,000 | | |

**MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
KIGALI-HFC IMPLEMENTATION PLAN (KIP) PROJECTS PREPARATION (PRP)
KIP (INV-OTHER)**

Part I: Project information

| | | |
|---|--|-----------------------------------|
| Project title: | Demonstration project with use of R290 in automotive thermal Systems with double loop secondary cooling system | |
| Country: | India | |
| Lead implementing agency: | UNDP | |
| Cooperating agency (1): | (select) | Click or tap here to enter text. |
| Cooperating agency (2): | (select) | Click or tap here to enter text. |
| Cooperating agency (3): | (select) | Click or tap here to enter text. |
| Implementation period for stage I of the KIP: | 2029-2032 | |
| Duration of PRP implementation (i.e., time (in months) from the approval of PRP to submission of the KIP (please specify): 24 Months | | |
| Funding requested: | | |
| Agency | Sector | Funding requested (US \$)* |
| UNDP | INV - Mobile AC | 30,000 |
| UNDP | (select) | Click or tap here to enter text. |
| (select) | (select) | Click or tap here to enter text. |
| (select) | (select) | Click or tap here to enter text. |

*Details should be consistent with information provided in the relevant sections below.

Part II: Prerequisites for submission

| Item | Yes | No |
|--|-------------------------------------|--------------------------|
| Official endorsement letter from Government, indicating the specifying roles of respective agencies (where more than one IA is involved) | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

A. Information required for PRP funding request for the overarching strategy of the KIP

| | | | |
|--|-----|---|---|
| 1. Montreal Protocol compliance target to be met in <input checked="" type="checkbox"/> stage I of the KIP | | | |
| Phase-out commitment (%) | 10% | Year of commitment | 2032 |
| <input type="checkbox"/> Servicing only | | <input type="checkbox"/> Manufacturing only | <input checked="" type="checkbox"/> Servicing and manufacturing |
| 2. Brief background/description/information on approved relevant projects and multi-year agreements as follows: | | | |
| <ul style="list-style-type: none"> The current progress in implementation of any funded HFC-related project (enabling activities or stand-alone HFC investment projects) The current progress in ongoing HCFC phase-out management plan (HPMPs) Consideration of integrating HFC phase-down activities with HPMP activities taking into account previously approved HFC-related projects, if this information is available. | | | |
| <p>India ratified the Kigali Amendment to the Montreal Protocol on 27 September 2021. The Kigali Amendment came into force for India on 26 December 2021. As per the provisions of the Montreal Protocol, licensing system has been put in place before 26 March 2022. Data reporting on HFCs and blends containing HFCs for the year 2021 was also done during 2022 and will continue. India is in the process of developing a National Strategy including policy framework for HFC phase down in the country, which is expected to be completed by 2023. Three HFC phase down projects have been submitted for consideration of the ExCom at its 93rd meeting scheduled to be held in December 2023.</p> | | | |
| <p>Regarding HCFC phase out, India has met the 2013, 2015 and 2020 compliance targets as per the accelerated phase out schedule of the Montreal Protocol through implementation of HPMP Stage-1 and HPMP Stage-2 as well as through the policy and regulatory framework put in place for HCFC phase out. India also complied</p> | | | |

| | | | |
|--|---|---------------|-------------|
| <p>with the provisions of agreement with the ExCom both for HPMP Stage-1 and HPMP Stage-2. The stage-3 of the HPMP was approved in the 91st meeting of the ExCom of the MLF, to meet the 2025 and 2030 HCFC compliance targets and to be implemented from 2023 to 2030, with complete phase out of HCFCs in the manufacturing sectors by 31.12.2024. Activities in the servicing sector will continue till 2030.</p> <p>Since there is no previous experience of implementing any HFC phase down projects and also considering that the national strategy and policy framework for HFC phase down in line with the Kigali Amendment to the Montreal Protocol is being developed, presently India has not considered integrating HFC phase-down activities with HPMP activities. This aspect could be examined once the national strategy and policy framework for HFC phasedown is ready.</p> | | | |
| 3. Overview of current HFC consumption in metric tonnes by substance (last three years) | | | |
| Substance/blend | Sector | 2020 | 2021 |
| (select) | (select) | | |
| (select) | (select) | | |
| (select) | (select) | | |
| (select) | (select) | | |
| (select) | (select) | | |
| (select) | (select) | | |
| (select) | (select) | | |
| (select) | (select) | | |
| (select) | (select) | | |
| Data on HFCs for the years 2021 and 2022 is enclosed at Annexure – 1 | | | |
| 4. Based on the consumption data given above, please provide a description of the sector/sub-sector that use HFCs in the country, including a short analysis and explanation of the consumption trends (i.e., increasing or decreasing) | | | |
| As part of development of national strategy for HFC phase down, sector specific questionnaires have been developed for collection of HFC data, to be used to analyze the trends of HFC production and consumption. Keeping in view that HFCs have been brought under licensing system only in March 2022, HFC data for the previous years is not readily available. The information is likely to be available by the end of 2023 | | | |
| 5. Description of information that needs to be gathered during project preparation. Explain how this data will be gathered | | | |
| Information needed | Description | Agency | |
| Data on HFC consumption in manufacturing/servicing sector | While the data collection as part of national strategy will give only sector wise information, category wise information in the sector would also be needed for project preparation | UNDP | |
| Analysis of the types of equipment using HFCs | The equipment currently used, and the modifications needed | UNDP | |
| Others, specify. | Viability for the proposed alternatives need to be examined taking into account global experiences as well as national circumstances | UNDP | |
| 6. Activities to be undertaken for project preparation and funding (decision 87/xx(b)) | | | |
| Activity | Indicative funding (US \$) | Agency | |
| Develop template for data collection for developing project proposal | 5,000 | UNDP | |
| Consultation with stakeholders including national and international experts | 7,500 | UNDP | |
| Feasibility study on dual secondary loop thermal systems for reducing the environmental impact of automotive air conditioning. And reduction of direct and indirect CO2 emissions | 10,000 | UNDP | |

| | | |
|---|---------------|------|
| Analysis of the information collected and development draft project proposal | 5,000 | UNDP |
| Consultation with nodal line ministries/departments, related stakeholders and finalization of the project proposal | 2,500 | UNDP |
| TOTAL | 30,000 | |
| 7. How will activities related to preparing the KIP be linked to the current stages of the HPMP being implemented in the country? (OPTIONAL) | | |
| As mentioned above, since there is no previous experience of implementing any HFC phase down projects and also considering that the national strategy and policy framework for HFC phase down in line with the Kigali Amendment to the Montreal Protocol is being developed, presently India has not considered integrating HFC phase down activities with HPMP activities. This aspect could be examined once the national strategy and policy framework for HFC phasedown is ready. | | |
| 8. How will the Multilateral Fund gender policy be considered during project preparation? | | |
| In line with the decision 84/92, the operational policy on gender mainstreaming would be applied wherever feasible in the preparation of the project including in the following activities (a) Encouraging participation in the consultative meetings. (b) Promoting awareness to develop staff competency and awareness on gender mainstreaming as part of the consultation exercise. (c) Share experiences and lessons learned on gender mainstreaming. | | |

B. Information required for PRP funding request for investment projects/sector plans as part of or in advance of the KIP

| | |
|---|--|
| 1. Agency: | UNDP |
| 2. Sector: | Mobile Air-conditioning |
| 3. HFC consumption in item #2 reported under country programme data? | <input checked="" type="checkbox"/> Yes, please specify reported amount and year: 2022 <input type="checkbox"/> No |
| 4. Does the enterprise commit to phase out the HFC consumption associated with the proposed investment project, if approved by the Executive Committee? | <input checked="" type="checkbox"/> Yes, please provide support letter <input type="checkbox"/> No |
| 5. If the project preparation is requested in advance of the KIP, did the Government provide a written commitment that the consumption associated with these investment projects, once approved, will be deducted from the country's starting point, once established? | <input checked="" type="checkbox"/> Yes <input type="checkbox"/> No |
| 6. Please explain briefly how the investment project would relate to the overarching strategy for the country, and when the final KIP will be submitted (decision 87/50(e)) | Proposed smart microprocessor-based system employs a secondary coolant loop to maintain the passenger cabin temperature, Battery pack temperature (in case of Electric 7 Hydrogen fuel cell vehicle) allowing the safe use of natural refrigerant (R290). The project will enable reduction of refrigerant quantity by at least 50%. Additionally, instead of using air cooled condenser, a water-cooled condenser is used to further reduce the refrigerant charge quantity and increase the system's Coefficient of performance. Overall, smart dual secondary loop thermal systems offer a promising solution for reducing the environmental impact of automotive air conditioning. Smart dual secondary loop thermal system for automotive air conditioning can |

| | | | | | |
|---|--|---|--------------------------------------|-------------|---|
| | | greatly reduce direct and indirect CO2 emissions produced by air conditioning units in automotive sector. | | | |
| 7. Information on sector consumption (specify previous year HFC consumption) | | | | | |
| Substance | | Consumption (metric tonnes) | | | |
| Others, specify | | Details given at Annexure – 1 | | | |
| Others, specify. | | | | | |
| Others, specify. | | | | | |
| | | | | | |
| 8. Information on enterprise(s) for which funding is being sought | | | | | |
| Enterprise | Year established | HFC consumption (metric tonnes) (last three years) | | | HFC phase-out to be achieved (metric tonnes and CO₂-eq. tonnes) |
| | | 2019 | 2020 | 2021 | |
| Subros Limited | The information will be collected as part of the questionnaire to be developed for data collection and included in the project proposal for each enterprise. | | | | |
| 9. Activities to be undertaken for preparation of the investment project and funding requested | | | | | |
| Activity | | Indicative funding (US \$) | Bilateral/implementing agency | | |
| Click or tap here to enter text. | | | | | |
| Click or tap here to enter text. | | | | | |
| Click or tap here to enter text. | | | | | |
| Click or tap here to enter text. | | | | | |
| Click or tap here to enter text. | | | | | |
| Click or tap here to enter text. | | | | | |
| TOTAL | | | | | |

Annexure – 1

HFC Data 2022 (Article-7)

| HFCs | | Production | Import | Export | Consumption |
|--------------|------------------------|-------------------|---------------|---------------|--------------------|
| HFC-32 | Mt | 9590.20 | 8994.68 | 2391.383 | 16193.497 |
| | mt CO ₂ -eq | 6473385 | 6071409 | 1614183.525 | 10930610.48 |
| HFC-125 | Mt | 8754.751 | 122.26 | 4874.95 | 4002.061 |
| | mt CO ₂ -eq | 30641628.5 | 427910 | 17062325 | 14007213.5 |
| HFC-134a | Mt | 14727.82 | 9125.191 | 6112.542 | 17740.469 |
| | mt CO ₂ -eq | 21060782.6 | 13049023.13 | 8740935.06 | 25368870.67 |
| HFC-152a | Mt | | 2940.478 | 4.970 | 2935.508 |
| | mt CO ₂ -eq | | 364619.272 | 616.28 | 364002.992 |
| HFC-227ea | Mt | | 263.973 | 0.415 | 263.558 |
| | mt CO ₂ -eq | | 849993.06 | 1336.3 | 848656.76 |
| HFC-236fa | Mt | | 72.584 | 0.155 | 72.429 |
| | mt CO ₂ -eq | | 712049.04 | 1520.55 | 710528.49 |
| HFC-245fa | Mt | | 1064.839 | 0 | 1064.839 |
| | mt CO ₂ -eq | | 1096784.17 | 0 | 1096784.17 |
| HFC-365MFC | Mt | | 38.4 | 0 | 38.4 |
| | mt CO ₂ -eq | | 30489.6 | 0 | 30489.6 |
| HFC-43-10mcc | Mt | | 0.6 | 0 | 0.6 |
| | mt CO ₂ -eq | | 984 | | 984 |
| HFC-23 | Mt | | 0 | 0 | 0 |
| | mt CO ₂ -eq | | 0 | 0 | 0 |
| R-404A | Mt | | 1265.6 | 227.334 | 1038.266 |
| | mt CO ₂ -eq | | 4963683.2 | 891603.948 | 4072079.252 |

| HFCs | | Production | Import | Export | Consumption |
|----------------------|------------------------|------------|------------|-------------|-------------|
| R-407C | Mt | | 718.92 | 274.371 | 812.049** |
| | mt CO ₂ -eq | | 1275364.08 | 486734.154 | 1440574.926 |
| R-407F | Mt | | 1.452 | | 1.452 |
| | mt CO ₂ -eq | | 2649.9 | | 2649.9 |
| R-410A | Mt | | 3887.67 | 4627.717 | 3814.326** |
| | mt CO ₂ -eq | | 8117454.96 | 9662673.096 | 7964312.688 |
| R-426A | Mt | | 20 | 0 | 20 |
| | mt CO ₂ -eq | | 30160 | | 30160 |
| R-438A | Mt | | 200 | 0 | 200 |
| | mt CO ₂ -eq | | 452800 | | 452800 |
| R-467A | Mt | | 0 | 37.800 | 0 |
| | mt CO ₂ -eq | | | 51370.2 | |
| R-454B | Mt | | 0.176 | 0 | 0.176 |
| | mt CO ₂ -eq | | 81.84 | 0 | 81.84 |
| R-454C | Mt | | 0.073 | 0 | 0.073 |
| | mt CO ₂ -eq | | 10.585 | 0 | 10.585 |
| R-455A | Mt | | 0.8 | 0 | 0.8 |
| | mt CO ₂ -eq | | 116 | 0 | 116 |
| R-513A | Mt | | 0.684 | 0 | 0.684 |
| | mt CO ₂ -eq | | 430.236 | 0 | 430.236 |
| HFC-365mfc/HFC-227ea | Mt | | 115.2 | 0 | 115.2 |
| | mt CO ₂ -eq | | 132480 | 0 | 132480 |

**As per Article-7 and Country Programme Progress Report, no need to report the production of mixtures/blends. However, the consumption is calculated considering R-407C production= 367.5 MT and R-410A production= 4554.373 during the year 2022.

HFC Data 2021 (Article-7)

| HFCs | | Production | Import | Export | Consumption |
|--------------|------------------------|-------------|------------|-------------|-------------|
| HFC-32 | Mt | 9598.75 | 6700.24 | 3578.71 | 12720.28 |
| | mt CO ₂ -eq | 6479156.25 | 4522662.00 | 2415629.25 | 8586189 |
| HFC-125 | Mt | 4993.53 | 25.409 | 2010.47 | 3008.469 |
| | mt CO ₂ -eq | 17477355.00 | 88931.50 | 7036645 | 10529641.5 |
| HFC-134a | Mt | 11580.59 | 4911.208 | 6450.12 | 10041.678 |
| | mt CO ₂ -eq | 16560243.70 | 7023027.44 | 9223671.6 | 14359599.54 |
| HFC-152a | Mt | | 2672.8 | | 2672.80 |
| | mt CO ₂ -eq | | 331427.20 | | 331427.2 |
| HFC-227ea | Mt | | 157.8906 | | 157.8906 |
| | mt CO ₂ -eq | | 508407.73 | | 508407.732 |
| HFC-236fa | Mt | | 532.792 | | 532.792 |
| | mt CO ₂ -eq | | 5226689.52 | | 5226689.52 |
| HFC-245fa | Mt | | 587.207 | | 587.207 |
| | mt CO ₂ -eq | | 604823.21 | | 604823.21 |
| HFC-43-10mee | Mt | | 1.901 | | 1.901 |
| | mt CO ₂ -eq | | 3117.64 | | 3117.64 |
| HFC-23 | Mt | | 11.1565 | | 11.1565 |
| | mt CO ₂ -eq | | 165116.20 | | 165116.2 |
| R-404A | Mt | | 820 | 188.38 | 631.62 |
| | mt CO ₂ -eq | | 3216040 | 738826.36 | 2477213.64 |
| R-407A | Mt | | | 32.00 | 32.00 |
| | mt CO ₂ -eq | | | 67424 | 67424 |
| R-407C | Mt | | 2266.1 | 988.531 | 1277.569 |
| | mt CO ₂ -eq | | 4020061.4 | 1753653.994 | 2266407.406 |
| R-410A | Mt | | 3712.285 | | 3712.285 |
| | mt CO ₂ -eq | | 7751251.08 | | 7751251.08 |
| R-422B | Mt | | | 77.29 | 77.29 |

| | | | | | |
|--------|-----------|--|------------|-----------|------------|
| | mt CO2-eq | | | 195234.54 | 195234.54 |
| R-426A | Mt | | 60 | | 60 |
| | mt CO2-eq | | 90480 | | 90480 |
| R-438A | Mt | | 40 | | 40 |
| | mt CO2-eq | | 90560 | | 90560 |
| R-467A | Mt | | | 56.00 | 56.00 |
| | mt CO2-eq | | | 76104 | 76104 |
| R-507A | Mt | | 1.2712 | | 1.2712 |
| | mt CO2-eq | | 5065.732 | | 5065.732 |
| R-508B | Mt | | 1.8778 | | 1.8778 |
| | mt CO2-eq | | 12784.0624 | | 12784.0624 |

**MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
KIGALI-HFC IMPLEMENTATION PLAN (KIP) PROJECT PREPARATION (PRP)
KIP (INV - REF)**

PLEASE ADJUST THE TEXT IN THE ANNEX IN LINE WITH THE TEXT IN THE GUIDE

Part I: Project information

| | | |
|---|--|-----------------------------------|
| Project title: | KIP Stage I Preparation / Sector Plan for Manufacturing Sector | |
| Country: | Lebanon | |
| Lead implementing agency: | UNDP | |
| Cooperating agency (1): | (select) | |
| Cooperating agency (2): | (select) | Click or tap here to enter text. |
| Cooperating agency (3): | (select) | Click or tap here to enter text. |
| Implementation period for stage I of the KIP: | June 2024-December 2030 (estimated) | |
| Duration of PRP implementation (i.e., time (in months) from the approval of PRP to submission of the KIP (please specify): | 24 months | |
| Funding requested: | | |
| Agency | Sector | Funding requested (US \$)* |
| UNDP | INV - REF | 70,000 |
| (select) | (select) | Click or tap here to enter text. |
| (select) | (select) | Click or tap here to enter text. |
| (select) | (select) | Click or tap here to enter text. |

*Details should be consistent with information provided in the relevant sections below.

Part II: Prerequisites for submission

| Item | Yes | No |
|--|-------------------------------------|--------------------------|
| Official endorsement letter from Government, indicating the specifying roles of respective agencies (where more than one IA is involved) | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

A. Information required for PRP funding request for the overarching strategy of the KIP

| | | | |
|---|-----------------------|---------------------------|--------------------------------------|
| 1. Montreal Protocol compliance target to be met in <input checked="" type="checkbox"/> stage I of the KIP | | | |
| Phase-out commitment (%) | Freeze and 10% | Year of commitment | 2024 and 2029 |
| <input type="checkbox"/> Servicing only | | Manufacturing only | X Servicing and manufacturing |
| 2. Brief background/description/information on approved relevant projects and multi-year agreements as follows: | | | |
| <ul style="list-style-type: none"> The current progress in implementation of any funded HFC-related project (enabling activities or stand-alone HFC investment projects) The current progress in ongoing HCFC phase-out management plan (HPMPs) Consideration of integrating HFC phase-down activities with HPMP activities taking into account previously approved HFC-related projects, if this information is available. | | | |
| <p>This KIP preparation proposal for Overarching strategy and RAC Servicing sector plan for submitted and approved at the 87th ExCom meeting. This request is in addition to the KIP preparation project approved. The preparation fund for manufacturing sector was requested along with KIP preparation request. The KIP preparation activities are being implemented, and data collection is on its final stage. Lebanon has a consumption profile in which HFCs are mostly used in servicing sector. However, during the process of data collection, it was found that there are about 40 RAC manufacturing enterprises in Lebanon using HFCs. Majority of these companies are SMEs operating in the commercial refrigeration manufacturing sector, however detailed information at company level was not possible to be cross-checked and verified given limited funding available. Hence this additional request for preparation is requested to allow the Government of Lebanon to assess HFCs use information at company level, collect baseline data and develop Investment Plan/Project Strategies to assist the phase-down in this sector.</p> | | | |

| 3. Overview of current HFC consumption in metric tonnes by substance (last three years) | | | | |
|---|---|---------------|-------------|-------------|
| Substance/blend | Sector | 2020 | 2021 | 2022 |
| (select) HFC-32 | Other, specify. | 37.6 | 53 | 43.25 |
| (select) HFC-134a | Other, specify. | 637.65 | 548 | 505.0 |
| (select) HFC-227ea | (select) | 17.5 | 9.5 | 5.65 |
| (select) R-404A | (select) | 135.65 | 132 | 130.0 |
| (select) R-407C | (select) | 35.48 | 51 | 47.35 |
| (select) R-410A | (select) | 72.32 | 70.2 | 62 |
| (select) R-507A | (select) | | | 9 |
| (select) R-408A | (select) | | | 1.68 |
| (select) HFC-365mfc | (select) | 4.5 | | |
| 4. Based on the consumption data given above, please provide a description of the sector/sub-sector that use HFCs in the country, including a short analysis and explanation of the consumption trends (i.e., increasing or decreasing) | | | | |
| <p>In addition to analysis of RAC servicing sector submitted along with KIP preparation request, during the survey of KIP preparation, it was found that there are about 40 refrigeration manufacturing companies are using R-134a and R-404 A. The above data is based on the survey, which shows that there is consumption of HFC in the manufacturing sector, however detailed assessments at company level are needed to fully determine sector-wise use and demands. Under this PRP request project, consultants will collect additional data by visiting each company, verify baseline equipment and eligibility and assess alternatives' landscape and supply chain to support the Government of Lebanon to determine the best phase-down strategy for the manufacturing sector. Upon this validation, the proper analysis of the trends of HFC consumption in manufacturing sector will be possible to be made.</p> <p>It may be noted that Lebanon went through the severe economic crisis in 2020, 2021 and 2022 and that has affected the refrigerant consumption in addition to all other imports. The above data is from A7 Report. However, more precise data and trend will be available after implementation of this preparation project.</p> | | | | |
| 5. Description of information that needs to be gathered during project preparation. Explain how this data will be gathered | | | | |
| Information needed | Description | Agency | | |
| Data on HFC consumption in manufacturing/servicing sector | Collect specific HFC use data at company level for three years, cross-check and validate consumption with Importers/distributors | UNDP | | |
| Analysis of the types of equipment using HFCs | Based on data, conduct analysis of company production profile, production output and assess baseline manufacturing equipment as well as review needs and estimate costs for the modifications needed for technology conversion need | UNDP | | |
| Others, specify. | Analysis of available of alternatives and supply chain | UNDP | | |
| (select) | Click or tap here to enter text. | (select) | | |
| 6. Activities to be undertaken for project preparation and funding (decision 87/xx(b)) | | | | |
| Activity | Indicative funding (US \$) | Agency | | |
| | | | | |
| | | | | |
| | | | | |
| Click or tap here to enter text. | | (select) | | |

| |
|--|
| TOTAL |
| 7. How will activities related to preparing the KIP be linked to the current stages of the HPMP being implemented in the country? (OPTIONAL) |
| |
| 8. How will the Multilateral Fund gender policy be considered during project preparation? |
| <p>The Government of Lebanon is aware of the Multilateral Fund gender policy contained in ExCom document 84/73, and the related Executive Committee decision 84/92. The RAC sector is crucial to all countries in the successful phaseout of HCFCs and forthcoming phase-down of HFCs under the Montreal Protocol. The fast-growing RAC sector in Lebanon also can offer a wide variety of interesting and fulfilling careers for women as well as men. During the project preparation, gender considerations and actions on gender mainstreaming will be assessed and a Gender Management Plan is to be included in the HFC phase down over-arching strategy: The following actions are expected to be carried in the preparation phase:</p> <ul style="list-style-type: none"> • Look into introduction of gender considerations when designing components and activities • Assess barriers or bottlenecks for women engagement in the sector • To establish a baseline of women technicians in RAC sector and compare it with the number of women involved in NOU RAC activities • To incorporate gender aspects in the recruitment of staff for the PRP and consultants (emphasizing that female candidates are welcome and encouraged to apply) • Draft a Gender Management Plan to be supported as part of the HFC phase down management plan - over-arching strategy |

B. Information required for PRP funding request for investment projects/sector plans as part of or in advance of the KIP

| | | | |
|--|---|---|-------------------------------------|
| 10. Agency: | UNDP | | |
| 11. Sector: | Refrigeration | | |
| 12. HFC consumption in item #2 reported under country programme data? | <input type="checkbox"/> Yes, please specify reported amount and year: <input checked="" type="checkbox"/> No | | |
| 13. Does the enterprise commit to phase out the HFC consumption associated with the proposed investment project, if approved by the Executive Committee? | <input checked="" type="checkbox"/> Yes, please provide support letter <input type="checkbox"/> No | | |
| 14. If the project preparation is requested in advance of the KIP, did the Government provide a written commitment that the consumption associated with these investment projects, once approved, will be deducted from the country's starting point, once established? | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | | |
| 15. Please explain briefly how the investment project would relate to the overarching strategy for the country, and when the final KIP will be submitted (decision 87/50(e)) | <p>As mentioned above, there are about 40 manufacturing companies using HFCs for manufacturing of refrigeration equipment. The investment project(s) will support these companies to transfer to alternative low GWP technologies. Reduction in manufacturing will support the country to reduce the consumption and avoid growth. However, the commitment of enterprises will be known during preparation of these projects.</p> | | |
| 16. Information on sector consumption (specify previous year HFC consumption) | | | |
| Substance | Consumption (metric tonnes) 2020 and 2021 consumption in MT in manufacturing sector | | |
| HFC-134a | To be determined | | |
| Others, specify. R 404A (select) | To be determined | | |
| 17. Information on enterprise(s) for which funding is being sought | | | |
| Enterprise | Year established | HFC consumption (metric tonnes) (last three years) | HFC phase-out to be achieved |

| | | 2019 | 2020 | 2021 | (metric tonnes and CO ₂ -eq. tonnes) |
|--|--|----------------------------|------|-------------------------------|---|
| <i>Data to be obtained as result of this preparation project.</i> | | | | | |
| 18. Activities to be undertaken for preparation of the investment project and funding requested | | | | | |
| Activity | | Indicative funding (US \$) | | Bilateral/implementing agency | |
| Data collection for development of KIP Manufacturing plan | | 43,000 | | UNDP | |
| Peer review and validation | | 10,000 | | UNDP | |
| Alternatives and supply chain assessment | | 7,000 | | UNDP | |
| Stakeholders Consultation | | 10,000 | | UNDP | |
| Click or tap here to enter text. | | | | | |
| Click or tap here to enter text. | | | | | |
| TOTAL | | 70,000 | | | |

**MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL
KIGALI-HFC IMPLEMENTATION PLAN (KIP) PROJECT PREPARATION (PRP)
KIP (INV - REF)**

PLEASE ADJUST THE TEXT IN THE ANNEX IN LINE WITH THE TEXT IN THE GUIDE

Part I: Project information

| | | |
|--|--|--|
| Project title: | KIP Stage I Preparation (for Manufacturing sector) | |
| Country: | Sri Lanka | |
| Lead implementing agency: | UNDP | |
| Cooperating agency (1): | UNEP | UNEP is the cooperating agency for the RAC servicing sector. |
| Cooperating agency (2): | (select) | Click or tap here to enter text. |
| Cooperating agency (3): | (select) | Click or tap here to enter text. |
| Implementation period for stage I of the KIP: | June 2024-December 2028 | |
| Duration of PRP implementation (i.e., time (in months) from the approval of PRP to submission of the KIP (please specify): 6 months | | |
| Funding requested: | | |
| Agency | Sector | Funding requested (US \$)* |
| UNDP | INV - REF | 80,000 |
| (select) | (select) | Click or tap here to enter text. |
| (select) | (select) | Click or tap here to enter text. |
| (select) | (select) | Click or tap here to enter text. |

*Details should be consistent with information provided in the relevant sections below.

Part II: Prerequisites for submission

| Item | Yes | No |
|--|-------------------------------------|--------------------------|
| Official endorsement letter from Government, indicating and specifying roles of respective agencies (where more than one IA is involved) | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

A. Information required for PRP funding request for the overarching strategy of the KIP

| | | | |
|--|-----------------------|---------------------------|--------------------------------------|
| 1. Montreal Protocol compliance target to be met in <input checked="" type="checkbox"/> stage I of the KIP | | | |
| Phase-out commitment (%) | Freeze and 10% | Year of commitment | 2024 and 2029 |
| <input type="checkbox"/> Servicing only | | Manufacturing only | X Servicing and manufacturing |
| 2. Brief background/description/information on approved relevant projects and multi-year agreements as follows: | | | |
| <ul style="list-style-type: none"> The current progress in implementation of any funded HFC-related project (enabling activities or stand-alone HFC investment projects) The current progress in ongoing HCFC phase-out management plan (HPMPs) Consideration of integrating HFC phase-down activities with HPMP activities taking into account previously approved HFC-related projects, if this information is available. | | | |
| <p>This KIP preparation proposal for Overarching strategy and RAC Servicing sector plan for submitted and approved at the 87th ExCom meeting. This request is in addition to the KIP preparation project approved. The preparation funding for manufacturing sector was requested along with KIP preparation request. However, PRP request for manufacturing sector was withdrawn as required data related to manufacturing was not available and there was not much clarity about manufacturing sector. The KIP preparation activities were implemented, and data collection was done. The HFCs are used mainly in RAC servicing sector in Sri Lanka. However, during the process of data collection, it was found that there are about 10-15 RAC manufacturing enterprises in Sri Lanka using HFCs. Hence this additional request for preparation is requested to deep dive in this sector and to prepare a relevant manufacturing sector phase down plan.</p> | | | |
| 3. Overview of current HFC consumption in metric tonnes by substance (last three years) | | | |

| Substance/blend | Sector | | 2020 | 2021 |
|---|---|------------------|------|------|
| (select) | Manufacturing-REF | HFC 134a | 0.13 | 0.13 |
| (select) | Manufacturing-REF | R 404 A | 22.8 | 8.03 |
| (select) | (select) | | | |
| (select) | (select) | | | |
| (select) | (select) | | | |
| (select) | (select) | | | |
| (select) | (select) | | | |
| (select) | (select) | | | |
| (select) | (select) | | | |
| 4. Based on the consumption data given above, please provide a description of the sector/sub-sector that use HFCs in the country, including a short analysis and explanation of the consumption trends (i.e., increasing or decreasing) | | | | |
| <p>In addition to analysis of RAC servicing sector submitted along with KIP preparation request, during the survey of KIP preparation, it was found that there are a few (10-15) refrigeration manufacturing companies using R-134a and R-404 A. The above data is based on the survey, which shows that there is consumption of HFC of about 10-20 MT by manufacturing sector. Under this project, manufacturing enterprises data will be deep dived to understand the usage, trend and market scenario. Upon this validation, the proper analysis of the trends of HFC consumption in manufacturing sector will be possible to be made.</p> <p>It may be noted that Sri Lanka went through the economic crisis in 2021 and that has affected the refrigerant consumption badly in addition to all other imports. The above data is from survey of KIP. However, more precise data and trend will be available after implementation of this preparation project.</p> | | | | |
| 5. Description of information that needs to be gathered during project preparation. Explain how this data will be gathered | | | | |
| Information needed | Description | Agency | | |
| Data on HFC consumption in manufacturing/servicing sector | Collect specific HFC use data at company level for three years, cross-check and validate consumption with Importers/distributors | UNDP | | |
| Analysis of the types of equipment using HFCs | Based on data, conduct analysis of company production profile, production output and assess baseline manufacturing equipment as well as review needs and estimate costs for the modifications needed for technology conversion need | UNDP | | |
| Others, specify. (select) | Analysis of available alternatives and supply chain Click or tap here to enter text. | UNDP (select) | | |
| 6. Activities to be undertaken for project preparation and funding (decision 87/xx(b)) | | | | |
| Activity | Indicative funding (US \$) | Agency | | |
| Click or tap here to enter text. | | (select) | | |
| Click or tap here to enter text. | | (select) | | |
| Click or tap here to enter text. | | (select) | | |
| Click or tap here to enter text. | | (select) | | |
| Click or tap here to enter text. | | (select) | | |
| TOTAL | | | | |
| 7. How will activities related to preparing the KIP be linked to the current stages of the HPMP being implemented in the country? (OPTIONAL) | | | | |
| 8. How will the Multilateral Fund gender policy be considered during project preparation? | | | | |

B. Information required for PRP funding request for investment projects/sector plans as part of or in advance of the KIP

| | |
|-------------------|------|
| 1. Agency: | UNDP |
|-------------------|------|

| 2. Sector: | | Refrigeration | | | |
|---|----------------------------|---|------|------|--|
| 3. HFC consumption in item #2 reported under country programme data? | | <input type="checkbox"/> Yes, please specify reported amount and year: <input checked="" type="checkbox"/> No | | | |
| 4. Does the enterprise commit to phase out the HFC consumption associated with the proposed investment project, if approved by the Executive Committee? | | <input type="checkbox"/> Yes, please provide support letter <input checked="" type="checkbox"/> No | | | |
| 5. If the project preparation is requested in advance of the KIP, did the Government provide a written commitment that the consumption associated with these investment projects, once approved, will be deducted from the country's starting point, once established? | | <input type="checkbox"/> Yes <input checked="" type="checkbox"/> No | | | |
| 6. Please explain briefly how the investment project would relate to the overarching strategy for the country, and when the final KIP will be submitted (decision 87/50(e)) | | As mentioned above, there are 10-15 manufacturing companies using HFCs for manufacturing refrigeration equipment. The investment project will support these companies to transfer to alternative low GWP technologies. Reduction in manufacturing will support the country to reduce the consumption and avoid growth. However, the commitment of enterprises will be known during preparation of these projects. The final KIP is planned to be submitted in 2024. | | | |
| 7. Information on sector consumption (specify previous year HFC consumption) | | | | | |
| Substance | | Consumption (metric tonnes) 2020 and 2021 consumption in MT in manufacturing sector | | | |
| HFC-134a | | 0.13 | 0.13 | | |
| Others, specify. R 404A (select) | | 22.8 | 8.03 | | |
| 8. Information on enterprise(s) for which funding is being sought | | | | | |
| Enterprise | Year established | HFC consumption (metric tonnes) (last three years) | | | HFC phase-out to be achieved (metric tonnes and CO ₂ -eq. tonnes) |
| | | 2019 | 2020 | 2021 | |
| Will be available during this preparation project. KIP PRP survey found 10-15 manufacturing enterprises. | | | | | |
| | | | | | |
| | | | | | |
| 9. Activities to be undertaken for preparation of the investment project and funding requested | | | | | |
| Activity | Indicative funding (US \$) | Bilateral/implementing agency | | | |
| Data collection for development of KIP Manufacturing plan, consultation with enterprises including site visits for collecting data, and information related to equipment and processes | 40,000 | UNDP | | | |
| Review of the data and validation | 15,000 | UNDP | | | |
| Alternatives and supply chain assessment: Assess the viability of proposed alternatives and their | 10,000 | UNDP | | | |

| | | |
|---|--------|------|
| supply chain, and propose other options to the enterprises, considering the information collected | | |
| Stakeholders Consultation. Final consultation with enterprises and with relevant stakeholders and finalization of KIP Manufacturing and Assembly sector plan | 15,000 | UNDP |
| Click or tap here to enter text. | | |
| Click or tap here to enter text. | | |
| TOTAL | 80,000 | |

ANNEX 3

Project preparation (PRP) requests for national inventories of banks for used and/or unwanted controlled substances and a plan for the collection, transport and disposal of such substances

- 1. Cuba**
- 2. Egypt**
- 3. Jamaica**
- 4. Peru**
- 5. Trinidad and Tobago**
- 6. Uruguay**

GOVERNMENT OF THE REPUBLIC OF CUBA

**FUNDING REQUEST FOR THE PREPARATION OF NATIONAL
INVENTORIES OF BANKS OF USED OR UNWANTED CONTROLLED
SUBSTANCES**

Lead Implementing Agency: **UNDP**

National Executing Agency: **National Ozone Unit, CUBAENERGIA**
– Ministry of Science, Technology and Environment

October 2023

Part I: Project information

| | |
|--|--|
| Project title: | Preparation of national inventories of banks of used or unwanted controlled substances |
| Country: | Cuba |
| Lead implementing agency: | UNDP |
| Meeting where request is being submitted | 93rd |
| Implementation period | December 2023 – November 2025 |
| Duration of implementation (i.e., time (in months)) from the approval of PRP to submission of the national inventory and action plan (please specify): 24 | |
| Funding requested: | |
| Agency | Funding requested (US \$) |
| UNDP | 90,000 |

Part II: Prerequisites for submission

| Item | Yes | No |
|---|-------------------------------------|-------------------------------------|
| Official endorsement letter from Government, indicating roles of respective agencies (where more than one IA is involved), and that the national inventory/action plan will be completed within 24 months from the date of project approval | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Project included in the bilateral/IA business plan? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| UNDP's business plan for 2023 was submitted prior to the 91st ExCom when the funding window was established. | | |

A. Information required for PRP funding request for the national inventories of banks of used or unwanted controlled substances and a plan for the collection, transport and disposal of such substances, including consideration of recycling, reclamation and cost-effective destruction.

| |
|--|
| <p>1. Brief overview of the concept, methodology and approach to be taken for the preparation of the national inventory and / or action plan and how it is linked to other activities in the country (i.e., national plans like the KIP), in particular those activities in the refrigeration servicing sector such as recovery, recycling, and reclamation programmes.</p> |
| <p>The Government of the Republic of Cuba is requesting funding for the preparation of the national inventories of banks of used or unwanted controlled substances. The project complies with the criteria established by Decision 91/66.</p> <p>ODS banks are defined as the 'total amount of substances contained in existing equipment, chemical stockpiles, foams and other products not yet released to the atmosphere' (IPCC/TEAP, 2005). Thus, ODS can either be quantified in an aggregated manner such as bulk/cylinder (stockpiles) or estimated via ODS-containing equipment.</p> <p>A sound understanding of ODS banks at the country level is the basis for any action and policy decisions in the field of ODS bank management. In particular, the inventory is important to:</p> <ul style="list-style-type: none"> • Assess the general need for action in the field of ODS bank management. • Assess the potential environmental benefits to the ozone layer and the climate. • Decide whether to export ODS or to find a local destruction solution. • Design optimal capacities for destruction technology in case of local destruction options. • Assess long-term availability of ODS to guarantee economic viability of a destruction plant. • Design appropriate policy measures. • Design appropriate collection systems. <p>Key elements of responsible ODS/HFC management:</p> <ul style="list-style-type: none"> • Promote onsite recycling. • Use of reusable cylinders. • Adopt a take-back obligation with a deposit-and-refund scheme. • Ensure accessible collection points for refrigerants or waste appliances. |

- Ensure reclamation and destruction facilities.
- Building a quality infrastructure based on informed decision-making.

The case of Cuba has the following unique features:

- Cuba is a developing country with low ODS/HFC consumption with an ODS destruction facility in place in a cement plant.
- The opportunity to leverage market-based finance mechanisms will be explored for the conversion of environmental services of avoided ODS emissions into carbon assets. Methodology and standards and the critical issues (technical, regulatory and financial risks) will be discussed.
- This proposal will review and evaluate the development and implementation of the ODS and HFC destruction strategy in place.
- The main challenge in Cuba is related to setting up the logistic framework and cost-effective infrastructure for transport, storage and destruction of ODS/HFC.

2. Description of activities that will be implemented during the preparation of the national inventories/action plans of banks for used and/or unwanted controlled substances and an indication of the estimated costs for the activities described broken down per agency

| Activity | Description | Agency |
|---|---|--------|
| Others, specify. Data collection and analysis | Elaboration of an inventory to cover the equipment in-service and predictive analysis to estimate the rate it reaches EOL(End-of-life) inclusive of national capability to maintain it and update the initial EOL management plan | UNDP |
| Stakeholder consultations | Conducting interviews, organizing workshops and stakeholders' consultations for the integration of national regulations and procedures and the harmonization with national waste management regulation to accommodate EOL ODS/HFCs. | UNDP |
| Others, specify. Analysis and evaluation of the disposal system of refrigerant waste in place. | Assessment of options for the final disposal of refrigerant waste in the country. | UNDP |
| Preparation of inventory report/national plan | Delivery of inventory report and national plan for the collection, transport and disposal of such substances, including consideration of recycling, reclamation and cost-effective destruction. | UNDP |
| Communication and outreach plan preparation and development of awareness-raising activities | Awareness raising of relevant stakeholders on ODS/HFC banks and EOL management and disposal. | UNDP |

3. Funding for the activities described in 2 above

| Activity | Indicative funding (US \$) | Agency |
|---|----------------------------|--------|
| Data collection and analysis | 20,000 | UNDP |
| Stakeholder consultations | 20,000 | UNDP |
| Analysis and evaluation of the disposal system of refrigerant waste in place. | 15,000 | UNDP |
| Preparation of inventory report/national plan | 25,000 | UNDP |
| Communication and outreach plan preparation and development of awareness-raising activities | 10,000 | UNDP |
| TOTAL | 90,000 | |

4. How will the Multilateral Fund gender policy be considered during project preparation?

The objective of the gender policy of the Multilateral Fund is to promote gender mainstreaming (gender equality and women's empowerment - GEWE) in the preparation and implementation of projects funded by the Multilateral Fund, consistent with the gender policies of the implementing agencies.

The Cuban Government promotes a program for the inclusion of women in line with the MLF gender policy contained in ExCom document 84/73 and special effort will be made to involve females in data collection and analysis of inventory of ODS/HFC bank as well as on EOL management of RAC equipment. The project preparation will aim to advocate the importance of the leadership of women technicians in awareness-raising activities. Also, this project preparation will ensure that both women and men can provide input, access and participate in all activities (e.g., through outreach / invitations of female technicians to participate in stakeholder consultations, expert recruitment etc.).

**MULTILATERAL FUND FOR THE
IMPLEMENTATION OF THE MONTREAL PROTOCOL**

**FUNDING REQUEST FOR THE PREPARATION OF NATIONAL INVENTORIES OF
BANKS OF USED OR UNWANTED CONTROLLED SUBSTANCES AND A PLAN
FOR THE COLLECTION, TRANSPORT AND DISPOSAL OF SUCH SUBSTANCES,
INCLUDING CONSIDERATION OF RECYCLING, RECLAMATION & COST-
EFFECTIVE DESTRUCTION**

Part I: Project information

| | | |
|---|--|--|
| Project title: | Preparation of national inventory and action plan for banks of controlled substances | |
| Country: | EGYPT | |
| Lead implementing agency: | UNDP | |
| Meeting where request is being submitted | 93rd ExCom | |
| Implementation period | 1 Jan 2024 – 31 Dec 2025 | |
| Duration of implementation (i.e., time (in months)) from the approval of PRP to submission of the national inventory and action plan (please specify): | 24 months | |
| Funding requested: | | |
| Agency | Funding requested (US \$)* | |
| UNDP | \$100,000 | |

*Details should be consistent with information provided in the relevant sections below.

Part II: Prerequisites for submission

| Item | Yes | No |
|---|-------------------------------------|-------------------------------------|
| Official endorsement letter from Government, indicating roles of respective agencies (where more than one IA is involved), and that the national inventory/action plan will be completed within 24 months from the date of project approval | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Project included in the bilateral/IA business plan? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| If NO , please provide explanation: UNDP's business plan for 2023 was submitted prior to the 91st ExCom when the funding window was established. | | |

A. Information required for PRP funding request for the national inventories of banks of used or unwanted controlled substances and a plan for the collection, transport and disposal of such substances, including consideration of recycling, reclamation and cost-effective destruction.

| |
|---|
| <p>1. Brief overview of the concept, methodology and approach to be taken for the preparation of the national inventory and / or action plan and how it is linked to other activities in the country (i.e., national plans like the KIP), in particular those activities in the refrigeration servicing sector such as recovery, recycling, and reclamation programmes.</p> |
| <p>The objective proposed for preparation of EGYPT national inventory and action plan for the management of End of Life (EOL) controlled substances is to define the measures needed now and into the future to prevent their emission.</p> <p>This will be achieved through development of national plan and program for the systematic capture, retention, and ultimately environmentally sound treatment and/or destruction of controlled substances. The overall strategy selected for this to build on the knowledge base developed through implementation of previous MLF programs associated with HPMPs and current initiation of the country's Stage 1 KIPs into which it will be closely associated with linked upon implementation.</p> <p>Additionally, it applies an approach that prioritizes the capture and retention of EOL controlled substances in the RACHP sector and on initially focusing on capture and retention of EOL ODS/HFCs at source and managing it in the first instance within the refrigeration servicing sector through build on its existing capacity and capability. This proposal to develop for preparation of the national inventory and action plan is presented</p> |

in the expectation it being a first step and forming the basis for more detailed proposals for MLF funding in the event that decisions are made to provide support for such programming.

The methodology applied for implementing this proposal is based on systematically following through a series of steps that start with defining a country specific baseline for relevant to above objective, then undertaking the detailed data collection and associated analysis required to develop a detailed inventory of banked controlled substances in use and estimates of annual generation of what reaches EOL in accessible form and finally undertaking the planning development work to develop a formal national plan for policy endorsement and be ready for implementation. This process would incorporate the linkages that this work will have with other MLF programs and including KIPs, as well as national program and policy initiatives on waste management and circular economy promotion. Additionally, each step will include stakeholder engagement for purposes of increasing awareness, identifying issues & obtaining information. The following elaborates on each of these steps.

Step 1 - Defining Egypt specific baseline: This step will involve largely desk study work to assemble existing baseline data and information including; i) relevant data from inventories and related studies developed for previous convention driven and MLF funded projects such as refrigerant management plans, the current HPMP, and the Stage I KIP work being initiated; ii) the current policy and regulatory framework for controlled substances and more broadly related to chemical/hazardous waste management; iii) a profile of the present business structure, existing relevant management capacity and infrastructure particularly in the RACHP servicing sector, equipment and chemicals supply/distribution operations, and waste management sector; iv) stakeholder identification and initial awareness engagement. Also undertaken in the stage would be initial identification of issues and challenges that will have to be addressed in subsequent stages and ultimately in the implementation of a national plan.

Step 2 - Preparation of detailed data collection and analysis for Egypt national inventory: This step will cover the work required to collect the data and supporting information required and undertake the analytical work that will generate and validate the detailed national inventory of banked controlled substances in use and estimates of annual generation of what reaches EOL in accessible form, as well as any controlled substance stockpiles that may exist. The method for doing so will be based on the hybrid option with bottom-up/equipment based and top-down/chemicals approach, as relevant. The concluding part of this step will be preparation of the Egypt National Inventory Report as a principal project deliverable. This will include an analysis of the results in terms of information and capacity gaps including those associated with policies and regulations, financial capacity/incentives and the physical and human resource capacity deficits that need to be addressed in the next plan preparation step.

Step 3: Preparation of Egypt national action plan: This stage involves the work to develop, document and obtain key stakeholder consensus and national policy commitment to the national action plan for EOL controlled substance management. The key aspects of this planning process will involve: i) development of an overall strategy for implementing action on the issue taking into account the information and priorities identified in the results from the national inventory; ii) developing a program to fill identified gaps in national policy, regulatory, and institutional framework required for management of EOL controlled substance management in Egypt; iii) determining the general scope in terms of components and scale applicable to the required operational infrastructure envisioned as requiring development including indicative costs.

With respect to implementation arrangements, the work will be undertaken over a 24-month project period directly by the NOU staff and national consultants, supported by UNDP country office and regional Hub experts. Monitoring and reporting will be consistent with current MLFS and UNDP procedures.

2. Description of activities that will be implemented during the preparation of the national inventories/action plans of banks for used and/or unwanted controlled substances and an indication of the estimated costs for the activities described broken down per agency.

| Activity | Description | Agency |
|-----------------|---|--------|
| Data collection | <ul style="list-style-type: none"> Based on existing baseline inventory data and relevant experience/studies, initiate the collection of inventory data required support for the selected controlled substance bank estimate method using hybrid method of a bottom-up/equipment and top-down/chemicals method based on reported consumption, as relevant. | UNDP |

| | | |
|---|--|------|
| | <ul style="list-style-type: none"> • Assemble documentation on the resulting data sets differentiated by controlled substance (primarily ODS/HFCs) by application sub-sectors and controlled substances and estimate the current inventory of equipment and products in use. • Identify by survey and experience-based references the age profile of the equipment and products in use, typical useful life in use to estimated determine the year over year rate of generation of EOL controlled substances. • Collect data on current refrigeration servicing sector capacity and recovery and recycling performance. | |
| Analysis of data collected | <ul style="list-style-type: none"> • Undertake validation procedures on inventory data collected. • Finalize the bank inventory and EOL data sets in a form that can provide realistic estimates of EOL waste streams available for management. • Based on final inventory and EOL generation data determine priority application sub-sectors and ODS/chemicals in terms of developing management capability considering volume accessibility and environmental impact of emissions. • Evaluate challenges and risks associated with proposed national plan implementation. • Identification and analysis of approaches used in the collection and management of EOL controlled substances undertaken at a national level. • Identify required policy and regulatory measures and financial mechanisms. • Evaluate realistic near and long-term options for treatment/reclaim and destruction including assessment of financial feasibility. • Develop indicative cost estimate for key plan measures considered. • Evaluate business models and financing options to incentivize and sustainably fund the various operational components of a potential EOL management system. | UNDP |
| Preparation of inventory report/national plan | <ul style="list-style-type: none"> • Finalization of the National Inventory Report including printing and presentation • Prepare and finalize the proposed National Plan including presentation and policy commitment, as well as provide an analysis of implementation challenges and risks. | UNDP |
| Stakeholder consultation | <ul style="list-style-type: none"> • As part of the initial base line step, identify key stakeholders and their interests. • Prepare a stakeholder consultation and outreach plan for the project. • Undertake stakeholder and public awareness raising activities, consultations, and outreach at each implementation step in the national inventory and action plan development to ensure the input, acceptance and commitment participation of all relevant stakeholders and partners and facilitate the collection of accurate | UNDP |

| | | |
|---|---|---------------|
| | data and the development of a robust and widely accepted plan of activities including national policy commitment. | |
| 3. Funding for the activities described in 2 above | | |
| Activity | Indicative funding (US \$) | Agency |
| Data collection | 40,000 | UNDP |
| Analysis of data collected | 25,000 | UNDP |
| Preparation of Inventory Report and National Plan | 20,000 | UNDP |
| Stakeholder consultation | 10,000 | UNDP |
| Others (miscellaneous) | 5,000 | UNDP |
| TOTAL | 100,000 | |
| 4. How will the Multilateral Fund gender policy be considered during project preparation? | | |
| <p>The project will adopt practices and measures based on the direction provided by ExCom, the MLFS and guidance provided by UNDP. This will include adoption of mandatory requirements and performance indicators consistent with ExCom decision 92/40 and ExCom document 92/51 applicable to projects submitted at ExCom 94 and thereafter. Gender considerations and actions on gender mainstreaming will be assessed during the development of the national inventory and action plan. The following actions are expected to be carried out: i) consideration of the need and collection of gender-disaggregated data; ii) consultations with gender experts in the development of the action plan, and iii) development of the gender management plan as part of the action plan (as agreed by stakeholders)</p> | | |

GOVERNMENT OF JAMAICA

**FUNDING REQUEST FOR THE PREPARATION OF NATIONAL
INVENTORIES OF BANKS OF USED OR UNWANTED CONTROLLED
SUBSTANCES**

Lead Implementing Agency: **UNDP**

National Executing Agency: **National Ozone Unit (NOU)**
– National Environment and Planning Agency,
(NEPA)
Jamaica

October 2023

Part I: Project information

| | |
|--|--|
| Project title: | Preparation of national inventories of banks of used or unwanted controlled substances |
| Country: | Jamaica |
| Lead implementing agency: | UNDP |
| Meeting where request is being submitted | 93rd |
| Implementation period | December 2023 – November 2025 |
| Duration of implementation (i.e., time (in months)) from the approval of PRP to submission of the national inventory and action plan (please specify): 24 | |
| Funding requested: | |
| Agency | Funding requested (US \$) |
| UNDP | 90,000 |

Part II: Prerequisites for submission

| Item | Yes | No |
|---|-------------------------------------|-------------------------------------|
| Official endorsement letter from Government, indicating roles of respective agencies (where more than one IA is involved), and that the national inventory/action plan will be completed within 24 months from the date of project approval | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Project included in the bilateral/IA business plan? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| UNDP's business plan for 2023 was submitted prior to the 91st ExCom when the funding window was established. | | |

A. Information required for PRP funding request for the national inventories of banks of used or unwanted controlled substances and a plan for the collection, transport and disposal of such substances, including consideration of recycling, reclamation and cost-effective destruction.

| |
|--|
| <p>1. Brief overview of the concept, methodology and approach to be taken for the preparation of the national inventory and / or action plan and how it is linked to other activities in the country (i.e., national plans like the KIP), in particular those activities in the refrigeration servicing sector such as recovery, recycling, and reclamation programmes.</p> |
| <p>The Government of Jamaica is requesting funding for the preparation of the national inventories of banks of used or unwanted controlled substances. The project complies with the criteria established by Decision 91/66. ODS banks are defined as the 'total amount of substances contained in existing equipment, chemical stockpiles, foams and other products not yet released to the atmosphere' (IPCC/TEAP, 2005). Thus, ODS can either be quantified in an aggregated manner such as bulk/cylinder (stockpiles) or estimated via ODS-containing equipment.</p> <p>A sound understanding of ODS banks at the country level is the basis for any action and policy decisions in the field of ODS bank management. In particular, the inventory is important to:</p> <ul style="list-style-type: none"> • Assess the general need for action in the field of ODS bank management. • Assess the potential environmental benefits to the ozone layer and the climate. • Decide whether to export ODS or to find a local destruction solution. • Design optimal capacities for destruction technology in case of local destruction options. • Assess long-term availability of ODS to guarantee economic viability of a destruction plant. • Design appropriate policy measures. • Design appropriate collection systems. <p>Key elements of responsible ODS/HFC management:</p> <ul style="list-style-type: none"> • Promote onsite recycling. • Use of reusable cylinders. • Adopt a take-back obligation with a deposit-and-refund scheme. • Ensure accessible collection points for refrigerants or waste appliances. |

- Ensure reclamation and destruction facilities.
- Building a quality infrastructure based on informed decision-making.

The case of Jamaica has the following unique features:

- Jamaica is a developing country with low ODS/HFC consumption with no ODS destruction facilities in place. The potential of at least one destruction technology will be analyzed through private operators using their existing waste management expertise and infrastructure versus shipping ODS to other countries for destruction.
- If export for destruction is identified as the most cost-effective disposal option, the plan should contain an indication that national legislation and policies are consistent with the requirements of the relevant conventions, particularly in relation to the transboundary movement of those wastes.
- If the local destruction of ODS waste is found to be viable in Jamaica, the feasibility of importing ODS wastes from neighboring Caribbean countries will be explored. The risks and barriers (economic, legal, Basel and Rotterdam conventions stipulations, etc.) for such interventions will be identified and means for mitigation will be formulated.
- The opportunity to leverage market-based finance mechanisms will be explored for the conversion of environmental services of avoided ODS emissions into carbon assets. Methodology and standards and the critical issues (technical, regulatory and financial risks) will be discussed.
- This proposal would be a primary study for the development, evaluation, and implementation of an ODS and HFC destruction strategy to be developed in the second stage of the KIP.
- The main challenge in Jamaica is related to setting up the logistic framework and cost-effective infrastructure for transport, storage and destruction of ODS.

2. Description of activities that will be implemented during the preparation of the national inventories/action plans of banks for used and/or unwanted controlled substances and an indication of the estimated costs for the activities described broken down per agency

| Activity | Description | Agency |
|---|---|---------------|
| Others, specify. Data collection and analysis | Elaboration of initial bank inventory work to cover the whole bank of in-service equipment and predictive analysis to estimate the rate it reaches EOL(End-of-life) inclusive of national capability to maintain it and update the initial EOL management plan | UNDP |
| Stakeholder consultations | Conducting interviews, organizing workshops and stakeholders' consultations for the integration of national regulations and procedures: <ul style="list-style-type: none"> • Harmonization with national waste management regulation to accommodate EOL ODS/HFCs. • Capacity to manage waste import/export in accordance with international practice (Basel Convention) as required. • Fiscal measures that would operationally support sustained capture and consolidation. | UNDP |
| Others, specify. Analysis and definition of the most cost-effective disposal option | Decide on export for destruction or the local destruction of ODS/HFC wastes. In each case analyze technical, regulatory and financial risks and barriers. | UNDP |
| Preparation of inventory report/national plan | Delivery of inventory report and national plan for the collection, transport and disposal of such substances, including consideration of recycling, reclamation and cost-effective destruction. | UNDP |
| Communication and outreach plan preparation and development of awareness-raising activities | Awareness raising of relevant stakeholders and several people on ODS/HFC banks and EOL management and disposal. | UNDP |

3. Funding for the activities described in 2 above

| Activity | Indicative funding (US \$) | Agency |
|------------------------------|-----------------------------------|---------------|
| Data collection and analysis | 20,000 | UNDP |
| Stakeholder consultations | 20,000 | UNDP |

| | | |
|---|---------------|------|
| Analysis and definition of the most cost-effective disposal option | 15,000 | UNDP |
| Preparation of inventory report/national plan | 25,000 | UNDP |
| Communication and outreach plan preparation and development of awareness-raising activities | 10,000 | UNDP |
| TOTAL | 90,000 | |

4. How will the Multilateral Fund gender policy be considered during project preparation?

The objective of the gender policy of the Multilateral Fund is to promote gender mainstreaming (gender equality and women's empowerment - GEWE) in the preparation and implementation of projects funded by the Multilateral Fund, consistent with the gender policies of the implementing agencies.

The Jamaica Government intends to promote a program for the inclusion of women in line with the MLF gender policy contained in ExCom document 84/73 and special effort will be made to involve females in data collection and analysis of inventory of ODS/HFC bank as well as on EOL management of RAC equipment.

The project preparation will aim to advocate the importance of the leadership of women technicians in awareness-raising activities.

Also, this project preparation will ensure that both women and men can provide input, access and participate in all activities (e.g., through outreach / invitations of female technicians to participate in stakeholder consultations, expert recruitment etc.).

GOVERNMENT OF THE REPUBLIC OF PERU

**FUNDING REQUEST FOR THE PREPARATION OF NATIONAL INVENTORIES OF
BANKS OF USED OR UNWANTED CONTROLLED SUBSTANCES**

Lead Implementing Agency:

UNDP

National Executing Agency:

**DGAAMI - Dirección Nacional de Asuntos
Ambientales de la Industria,
Ministry of Production of Peru (PRODUCE)**

October 2023

Part I: Project information

| | |
|--|--|
| Project title: | Preparation of national inventories of banks of used or unwanted controlled substances |
| Country: | Peru |
| Lead implementing agency: | UNDP |
| Meeting where request is being submitted | 93rd |
| Implementation period | December 2023 – November 2025 |
| Duration of implementation (i.e., time (in months)) from the approval of PRP to submission of the national inventory and action plan (please specify): 24 | |
| Funding requested: | |
| Agency | Funding requested (US \$) |
| UNDP | 90,000 |

Part II: Prerequisites for submission

| Item | Yes | No |
|---|-------------------------------------|--------------------------|
| Official endorsement letter from Government, indicating roles of respective agencies (where more than one IA is involved), and that the national inventory/action plan will be completed within 24 months from the date of project approval | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Project included in the bilateral/IA business plan? | <input checked="" type="checkbox"/> | <input type="checkbox"/> |

C. Information required for PRP funding request for the national inventories of banks of used or unwanted controlled substances and a plan for the collection, transport and disposal of such substances, including consideration of recycling, reclamation and cost-effective destruction.

| |
|--|
| <p>16. Brief overview of the concept, methodology and approach to be taken for the preparation of the national inventory and / or action plan and how it is linked to other activities in the country (i.e., national plans like the KIP), in particular those activities in the refrigeration servicing sector such as recovery, recycling, and reclamation programmes.</p> |
| <p>The Government of the Republic of Peru is requesting funding for the preparation of the national inventories of banks of used or unwanted controlled substances. The project complies with the criteria established by Decision 91/66.</p> <p>ODS banks are defined as the ‘total amount of substances contained in existing equipment, chemical stockpiles, foams and other products not yet released to the atmosphere’ (IPCC/TEAP, 2005). Thus, ODS can either be quantified in an aggregated manner such as bulk/cylinder (stockpiles) or estimated via ODS-containing equipment.</p> <p>A sound understanding of ODS banks at the country level is the basis for any action and policy decisions in the field of ODS bank management. In particular, the inventory is important to:</p> <ul style="list-style-type: none"> • Assess the general need for action in the field of ODS bank management. • Assess the potential environmental benefits to the ozone layer and the climate. • Decide whether to export ODS or to find a local destruction solution. • Design optimal capacities for destruction technology in case of local destruction options. • Assess long-term availability of ODS to guarantee economic viability of a destruction plant. • Design appropriate policy measures. • Design appropriate collection systems. <p>Key elements of responsible ODS/HFC management:</p> <ul style="list-style-type: none"> • Promote onsite recycling. • Use of reusable cylinders. • Adopt a take-back obligation with a deposit-and-refund scheme. • Ensure accessible collection points for refrigerants or waste appliances. • Ensure reclamation and destruction facilities. |

- Building a quality infrastructure based on informed decision-making.

The case of Perú has the following unique features:

- Peru is a developing country with considerable ODS/HFC consumption with no ODS destruction facilities in place. At least one destruction technology will be analyzed against shipping ODS to other countries through private operators using their existing waste management expertise and infrastructure.
- If export for destruction is identified as the most cost-effective disposal option, the plan should contain an indication that national legislation and policies that were consistent with the requirements of the relevant conventions, particularly in relation to the transboundary movement of those wastes.
- If the local destruction of ODS waste is found to be viable in Peru, the feasibility of importing ODS wastes from neighboring Latin American countries will be explored. The risks and barriers (economic, legal, Basel and Rotterdam conventions stipulations, etc.) for such interventions will be identified and means for mitigation will be formulated.
- The opportunity to leverage market-based finance mechanisms will be explored for the conversion of environmental services of avoided ODS emissions into carbon assets. Methodology and standards and the critical issues (technical, regulatory and financial risks) will be discussed.
- This proposal would be a primary study for the development, evaluation, and implementation of an ODS and HFC destruction strategy to be developed in the second stage of the KIP.
- The main challenge in Peru is related to setting up the logistic framework and cost-effective infrastructure for transport, storage and destruction of ODS.

17. Description of activities that will be implemented during the preparation of the national inventories/action plans of banks for used and/or unwanted controlled substances and an indication of the estimated costs for the activities described broken down per agency

| Activity | Description | Agency |
|---|---|---------------|
| Others, specify. Data collection and analysis | Elaboration of initial bank inventory work to cover the whole bank of in-service equipment and predictive analysis to estimate the rate it reaches EOL(End-of-life) inclusive of national capability to maintain it and update the initial EOL management plan | UNDP |
| Stakeholder consultations | Conducting interviews, organizing workshops and stakeholders' consultations for the integration of national regulations and procedures: <ul style="list-style-type: none"> • Harmonization with national waste management regulation to accommodate EOL ODS/HFCs. • Capacity to manage waste import/export in accordance with international practice (Basel Convention) as required. • Fiscal measures that would operationally support sustained capture and consolidation. | UNDP |
| Others, specify. Analysis and definition of the most cost-effective disposal option | Decide on export for destruction or the local destruction of ODS/HFC wastes. In each case analyze technical, regulatory and financial risks and barriers. | UNDP |
| Preparation of inventory report/national plan | Delivery of inventory report and national plan for the collection, transport and disposal of such substances, including consideration of recycling, reclamation and cost-effective destruction. | UNDP |
| Communication and outreach plan preparation and development of awareness-raising activities | Awareness raising of relevant stakeholders and several people on ODS/HFC banks and EOL management and disposal. | UNDP |

18. Funding for the activities described in 2 above

| Activity | Indicative funding (US \$) | Agency |
|------------------------------|-----------------------------------|---------------|
| Data collection and analysis | 20,000 | UNDP |
| Stakeholder consultations | 20,000 | UNDP |

| | | |
|---|---------------|------|
| Analysis and definition of the most cost-effective disposal option | 15,000 | UNDP |
| Preparation of inventory report/national plan | 25,000 | UNDP |
| Communication and outreach plan preparation and development of awareness-raising activities | 10,000 | UNDP |
| TOTAL | 90,000 | |

19. How will the Multilateral Fund gender policy be considered during project preparation?

The objective of the gender policy of the Multilateral Fund is to promote gender mainstreaming (gender equality and women's empowerment - GEWE) in the preparation and implementation of projects funded by the Multilateral Fund, consistent with the gender policies of the implementing agencies.

The KIP project Phase I includes a line of action for the evaluation of a gender study in the RAC sector. The Peru Government intends to promote a program for the inclusion of women in line with the MLF gender policy contained in ExCom document 84/73 and special effort will be made to involve females in data collection and analysis of inventory of ODS/HFC bank as well as on EOL management of RAC equipment.

This project preparation will aim to advocate the importance of the leadership of women technicians in awareness-raising activities.

Also, it will ensure that both women and men can provide input, access and participate in all activities (e.g., through outreach / invitations of female technicians to participate in stakeholder consultations, expert recruitment etc.).

GOVERNMENT OF THE REPUBLIC OF TRINIDAD AND TOBAGO

**FUNDING REQUEST FOR THE PREPARATION OF NATIONAL
INVENTORIES OF BANKS OF USED OR UNWANTED CONTROLLED
SUBSTANCES**

Lead Implementing Agency: **UNDP**

National Executing Agency: **National Ozone Unit (NOU)**
– Ministry of Planning and Development,
Trinidad and Tobago

October, 2023

Part I: Project information

| | |
|--|--|
| Project title: | Preparation of national inventories of banks of used or unwanted controlled substances |
| Country: | Trinidad and Tobago |
| Lead implementing agency: | UNDP |
| Meeting where request is being submitted | 93rd |
| Implementation period | December 2023 – November 2025 |
| Duration of implementation (i.e., time (in months)) from the approval of PRP to submission of the national inventory and action plan (please specify): 24 | |
| Funding requested: | |
| Agency | Funding requested (US \$) |
| UNDP | 90,000 |

Part II: Prerequisites for submission

| Item | Yes | No |
|---|-------------------------------------|-------------------------------------|
| Official endorsement letter from Government, indicating roles of respective agencies (where more than one IA is involved), and that the national inventory/action plan will be completed within 24 months from the date of project approval | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Project included in the bilateral/IA business plan? | <input type="checkbox"/> | <input checked="" type="checkbox"/> |
| If NO , please provide explanation: UNDP's business plan for 2023 was submitted prior to the 91st ExCom when the funding window was established. | | |

A. Information required for PRP funding request for the national inventories of banks of used or unwanted controlled substances and a plan for the collection, transport and disposal of such substances, including consideration of recycling, reclamation and cost-effective destruction.

| |
|---|
| <p>1. Brief overview of the concept, methodology and approach to be taken for the preparation of the national inventory and / or action plan and how it is linked to other activities in the country (i.e., national plans like the KIP), in particular those activities in the refrigeration servicing sector such as recovery, recycling, and reclamation programmes.</p> |
| <p>The Government of Trinidad and Tobago is requesting funding for the preparation of the national inventories of banks of used or unwanted controlled substances. The project complies with the criteria established by Decision 91/66.</p> <p>ODS banks are defined as the ‘total amount of substances contained in existing equipment, chemical stockpiles, foams and other products not yet released to the atmosphere’ (IPCC/TEAP, 2005). Thus, ODS can either be quantified in an aggregated manner such as bulk/cylinder (stockpiles) or estimated via ODS-containing equipment.</p> <p>A sound understanding of ODS banks on the country level is the basis for any action and policy decisions in the field of ODS bank management. In particular, the inventory is important to:</p> <ul style="list-style-type: none"> • Assess the general need for action in the field of ODS bank management. • Assess the potential environmental benefits to the ozone layer and the climate. • Decide whether to export ODS or to find a local destruction solution. • Design optimal capacities for destruction technology in case of local destruction options. • Assess long-term availability of ODS to guarantee economic viability of a destruction plant. • Design appropriate policy measures. <p>Key elements of responsible ODS/HFC management:</p> <ul style="list-style-type: none"> • Promote onsite recycling. • Use of reusable cylinders. • Adopt a take-back obligation with a deposit-and-refund scheme. • Ensure accessible collection points for refrigerants or waste appliances. |

- Ensure reclamation and destruction facilities.
- Building a quality infrastructure based on informed decision-making.

The case of Trinidad and Tobago has the following unique features:

- Trinidad and Tobago is a developing country with considerable ODS/HFC consumption with no ODS destruction facilities in place. The potential of at least one destruction technology will be analyzed through private operators using their existing waste management expertise and infrastructure versus shipping ODS to other countries for destruction.
- If export for destruction is identified as the most cost-effective disposal option, the plan should contain an indication that national legislation and policies that were consistent with the requirements of the relevant conventions, particularly in relation to the transboundary movement of those wastes.
- If the local destruction of ODS waste is found to be viable in Trinidad and Tobago, the feasibility of importing ODS wastes from neighboring Caribbean countries will be explored. The risks and barriers (economic, legal, Basel and Rotterdam conventions stipulations, etc.) for such interventions will be identified and means for mitigation will be formulated.
- The opportunity to leverage market-based finance mechanisms will be explored for the conversion of environmental services of avoided ODS emissions into carbon assets. Methodology and standards and the critical issues (the technical, regulatory and financial risks) will be discussed.
- This proposal would be a primary study for the development, evaluation and implementation of an ODS and HFC destruction strategy to be developed in the second stage of the KIP.
- The main challenge in Trinidad and Tobago is related to setting up the logistic framework and cost-effective infrastructure for transport, storage and destruction of ODS.

2. Description of activities that will be implemented during the preparation of the national inventories/action plans of banks for used and/or unwanted controlled substances and an indication of the estimated costs for the activities described broken down per agency

| Activity | Description | Agency |
|---|---|--------|
| Others, specify. Data collection and analysis | Elaboration of initial bank inventory work to cover whole bank of in-service equipment and predictive analysis to estimate the rate it reaches EOL(End-of-life) inclusive of national capability to maintain it and update the initial EOL management plan | UNDP |
| Stakeholder consultations | Conducting interviews, organizing workshops and stakeholders' consultations for the integration of national regulations and procedures: <ul style="list-style-type: none"> • Harmonization with national waste management regulation to accommodate EOL ODS/HFCs. • Capacity to manage waste import/export in accordance with international practice (Basel Convention) as required. • Fiscal measures that would operationally support sustained capture and consolidation. | UNDP |
| Others, specify. Analysis and definition of the most cost-effective disposal option | Decide on export for destruction or the local destruction of ODS/HFC wastes. In each case analyze technical, regulatory and financial risks and barriers. | UNDP |
| Preparation of inventory report/national plan | Delivery of inventory report and national plan for the collection, transport and disposal of such substances, including consideration of recycling, reclamation and cost-effective destruction. | UNDP |
| Communication and outreach plan preparation and development of awareness-raising activities | Awareness raising of relevant stakeholders and several people on ODS/HFC banks and EOL management and disposal. | UNDP |

3. Funding for the activities described in 2 above

| Activity | Indicative funding (US \$) | Agency |
|------------------------------|----------------------------|--------|
| Data collection and analysis | 20,000 | UNDP |
| Stakeholder consultations | 20,000 | UNDP |

| | | |
|---|---------------|------|
| Analysis and definition of the most cost-effective disposal option | 15,000 | UNDP |
| Preparation of inventory report/national plan | 25,000 | UNDP |
| Communication and outreach plan preparation and development of awareness-raising activities | 10,000 | UNDP |
| TOTAL | 90,000 | |

4. How will the Multilateral Fund gender policy be considered during project preparation?

The objective of the gender policy of the Multilateral Fund is to promote gender mainstreaming (gender equality and women's empowerment - GEWE) in the preparation and implementation of projects funded by the Multilateral Fund, consistent with the gender policies of the implementing agencies.

This is why the Trinidad and Tobago government wants to promote a program for the inclusion of women in line with the MLF gender policy contained in ExCom document 84/73 and special effort will be made to involve females in data collection and analysis of inventory of ODS/HFC bank as well as on EOL management of RAC equipment.

The project preparation will aim to advocate the importance of the leadership of women technicians in awareness-raising activities.

Also, this project preparation will ensure that both women and men can provide input, access and participate in all activities (e.g., through outreach / invitations of female technicians to participate in stakeholder consultations, expert recruitment etc.).

GOVERNMENT OF THE REPUBLIC OF URUGUAY

**FUNDING REQUEST FOR THE PREPARATION OF NATIONAL
INVENTORIES OF BANKS OF USED OR UNWANTED CONTROLLED
SUBSTANCES**

Lead Implementing Agency: UNDP

**National Executing Agency: National Ozone Unit – Ministry of
Environment**

October 2023

Part I: Project information

| | |
|--|--|
| Project title: | Preparation of national inventories of banks of used or unwanted controlled substances |
| Country: | Uruguay |
| Lead implementing agency: | UNDP |
| Meeting where request is being submitted | 93rd |
| Implementation period | December 2023 – November 2025 |
| Duration of implementation (i.e., time (in months)) from the approval of PRP to submission of the national inventory and action plan (please specify): 24 | |
| Funding requested: | |
| Agency | Funding requested (US \$) |
| UNDP | 90,000 |

Part II: Prerequisites for submission

| Item | Yes | No |
|---|-------------------------------------|-------------------------------------|
| Official endorsement letter from Government, indicating roles of respective agencies (where more than one IA is involved), and that the national inventory/action plan will be completed within 24 months from the date of project approval | <input checked="" type="checkbox"/> | <input type="checkbox"/> |
| Project included in the bilateral/IA business plan? | <input checked="" type="checkbox"/> | <input checked="" type="checkbox"/> |
| UNDP's business plan for 2023 was submitted prior to the 91st ExCom when the funding window was established. | | |

A. Information required for PRP funding request for the national inventories of banks of used or unwanted controlled substances and a plan for the collection, transport and disposal of such substances, including consideration of recycling, reclamation and cost-effective destruction.

| |
|--|
| <p>1. Brief overview of the concept, methodology and approach to be taken for the preparation of the national inventory and / or action plan and how it is linked to other activities in the country (i.e., national plans like the KIP), in particular those activities in the refrigeration servicing sector such as recovery, recycling, and reclamation programmes.</p> |
| <p>The Government of the Republic of Uruguay is requesting funding for the preparation of the national inventories of banks of used or unwanted controlled substances. The project complies with the criteria established by Decision 91/66.</p> <p>ODS banks are defined as the 'total amount of substances contained in existing equipment, chemical stockpiles, foams and other products not yet released to the atmosphere' (IPCC/TEAP, 2005). Thus, ODS can either be quantified in an aggregated manner such as bulk/cylinder (stockpiles) or estimated via ODS-containing equipment.</p> <p>A sound understanding of ODS banks at the country level is the basis for any action and policy decisions in the field of ODS bank management. In particular, the inventory is important to:</p> <ul style="list-style-type: none"> • Assess the general need for action in the field of ODS bank management. • Assess the potential environmental benefits to the ozone layer and the climate. • Decide whether to export ODS or to find a local destruction solution. • Design optimal capacities for destruction technology in case of local destruction options. • Assess long-term availability of ODS to guarantee economic viability of a destruction plant. • Design appropriate policy measures. • Design appropriate collection systems. <p>Key elements of responsible ODS/HFC management:</p> |

- Promote onsite recycling.
- Use of reusable cylinders.
- Adopt a take-back obligation with a deposit-and-refund scheme.
- Ensure accessible collection points for refrigerants or waste appliances.
- Ensure reclamation and destruction facilities.
- Building a quality infrastructure based on informed decision-making.

The case of Uruguay has the following unique features:

- Uruguay is a developing country with low ODS/HFC consumption.
- The opportunity to leverage market-based finance mechanisms will be explored for the conversion of environmental services of avoided ODS emissions into carbon assets. Methodology and standards and the critical issues (technical, regulatory and financial risks) will be discussed.
- This proposal will review and evaluate the development and implementation of the ODS and HFC destruction strategy in place.
- The main challenge in Uruguay is related to setting up the logistic framework and cost-effective infrastructure for transport, storage and destruction of ODS/HFC.

2. Description of activities that will be implemented during the preparation of the national inventories/action plans of banks for used and/or unwanted controlled substances and an indication of the estimated costs for the activities described broken down per agency

| Activity | Description | Agency |
|---|---|--------|
| Others, specify. Data collection and analysis | Elaboration of an inventory to cover the equipment in-service and predictive analysis to estimate the rate it reaches EOL(End-of-life) inclusive of national capability to maintain it and update the initial EOL management plan | UNDP |
| Stakeholder consultations | Conducting interviews, organizing workshops and stakeholders' consultations for the integration of national regulations and procedures and the harmonization with national waste management regulation to accommodate EOL ODS/HFCs. | UNDP |
| Others, specify. Analysis and evaluation of the disposal system of refrigerant waste in place. | Assessment of options for the final disposal of refrigerant waste in the country. | UNDP |
| Preparation of inventory report/national plan | Delivery of inventory report and national plan for the collection, transport and disposal of such substances, including consideration of recycling, reclamation and cost-effective destruction. | UNDP |
| Communication and outreach plan preparation and development of awareness-raising activities | Awareness raising of relevant stakeholders on ODS/HFC banks and EOL management and disposal. | UNDP |

3. Funding for the activities described in 2 above

| Activity | Indicative funding (US \$) | Agency |
|---|----------------------------|--------|
| Data collection and analysis | 20,000 | UNDP |
| Stakeholder consultations | 20,000 | UNDP |
| Analysis and evaluation of the disposal system of refrigerant waste in place. | 15,000 | UNDP |
| Preparation of inventory report/national plan | 25,000 | UNDP |
| Communication and outreach plan preparation and development of awareness-raising activities | 10,000 | UNDP |
| TOTAL | 90,000 | |

4. How will the Multilateral Fund gender policy be considered during project preparation?

The objective of the gender policy of the Multilateral Fund is to promote gender mainstreaming (gender equality and women's empowerment - GEWE) in the preparation and implementation of projects funded by the Multilateral Fund, consistent with the gender policies of the implementing agencies.

The Uruguayan Government promotes a program for the inclusion of women in line with the MLF gender policy contained in ExCom document 84/73 and special effort will be made to involve females in data collection and analysis of inventory of ODS/HFC bank as well as on EOL management of RAC equipment.

The project preparation will aim to advocate the importance of the leadership of women technicians in awareness-raising activities.

Also, this project preparation will ensure that both women and men can provide input, access and participate in all activities (e.g., through outreach / invitations of female technicians to participate in stakeholder consultations, expert recruitment etc.).

ANNEX 4

Project preparation (PRP) requests for pilot projects to maintain and/or enhance energy efficiency of replacement technologies and equipment in the context of HFC phase-down

- 1. Chile**
- 2. Global**

Chile: Energy Efficiency window with focus in Industrial Refrigeration. Project Preparation Fund Request

Title of project: Demonstration project for the use of R-744 (Carbon Dioxide) and R-717 (Ammonia) as alternative refrigerants in Heat Pumps applied in industrial refrigeration in Chile.

Objective: The objective of this project is to design and conduct the installation, start up and operation of two independent pilot projects in two different applications and two different heat and cooling capacities of integrated refrigeration, freezing, cooling, air conditioning and heating system through heat pumps, using non-HFC refrigerant, in principle one with R-744 (Carbon Dioxide- CO₂) and other with R-717 (Ammonia- NH₃), in the sector of handling and processing of dairy process in two different regions and size of operations in Chile.

Through this project the possible advantages of the use of these technologies in terms of reduction of use of energy, the performance of the new refrigerants, the quality of the process, if possible, the reduction in food loss, and finally the reduction in operative costs will be demonstrated.

Funding Window: Energy Efficiency window with the focus on the industrial refrigeration sector

Estimated Funding for this project: US\$ 1,000,000

Requested PRP funding: US\$30,000

Justification of the project:

The use of integrated cold/heat pumps opens up important opportunities to significantly reduce the consumption of HFCs in the country and also to improve the efficiency in the use of high-impact resources in the economical equations of food industries (energy among others). We will follow the examples and concrete information and solutions applied in other countries for years in the industries of interest, to have a guide to reliable and proven successful solutions.

Within the global context, industry is responsible for around 25-30% of the world's demand for primary energy, and around two thirds of it are used for heating and cooling. Several recent innovations can improve the efficiency of thermal energy and allow intelligent utilization of the sun and/or surplus heat in various plants, however they are not well known and therefore rarely used.

Nevertheless, heat pump systems are already being introduced in different sectors worldwide, but there are not sufficient and proven experiences in the industrial sectors in Article 5 countries; including direct heat exchange with CO₂ or NH₃, multi-ejectors, solutions to prevent implosion in CO₂ or NH₃ refrigeration systems at low ambient temperature, integration with high temperature heat pumps (up to 75°C), ground condensers and optimal insulation. Some of these technologies are implemented, some are under construction, and some remain at the concept level. In our case we will focus on those implemented and tested successfully.

The energy dimension in kW and kg of HFCs involved worldwide, and the positive impact that these solutions have on both variables have generated a massive and broad development of the technology, which in turn implies that they will be standard for use in the future, and there will be security of supply of components, equipment, and training, since they are aimed at being a business with high and growing volumes.

Separated heat pumps and traditional refrigeration systems both with HFCs, normally do not take advantage of the heat or cold that they extract from the production process. A large part of these systems today use refrigerant gases as cooling fluid, and separately use gas or oil to operate boilers to heat water.

The integrated CO₂ or NH₃ hot / cold pumps, as the name indicates, allow using a natural refrigerant in a single piece of equipment to simultaneously produce and satisfy the cooling and heating needs of a series of industrial processes that take heat from the area to be cooled and deliver it to the area or fluid that needs to be heated and vice versa. For this purpose, a single source of energy (electrical) is used, avoiding to a large extent sending the heat or cold to the environment that is generated in traditional systems mentioned in the previous paragraph that currently waste this resource.

There are various industrial processes that meet the conditions to make full use of cold and heat, avoiding releasing them into the atmosphere and significantly increasing the coefficient of energy performance -COP- and the replacement of HFCs. The dairy industry and the processing of animal proteins fully meet these conditions, so we will focus on these to define the application to be developed and used.

As shown in the figure below, these integrated solutions can simultaneously operate in an operating range from freezing at -30°C to heating at $+70^{\circ}\text{C}$ and above.

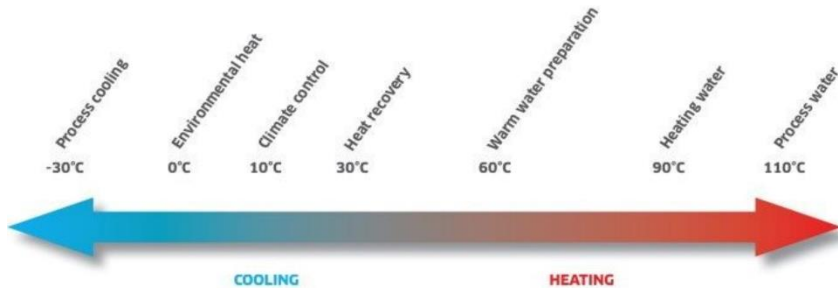


Figure 1. Application temperature range of a heat pump

Although heat pumps are technically more complex in that they are integrated and must produce and take advantage of cold and heat at the same time, as shown in the following figure:

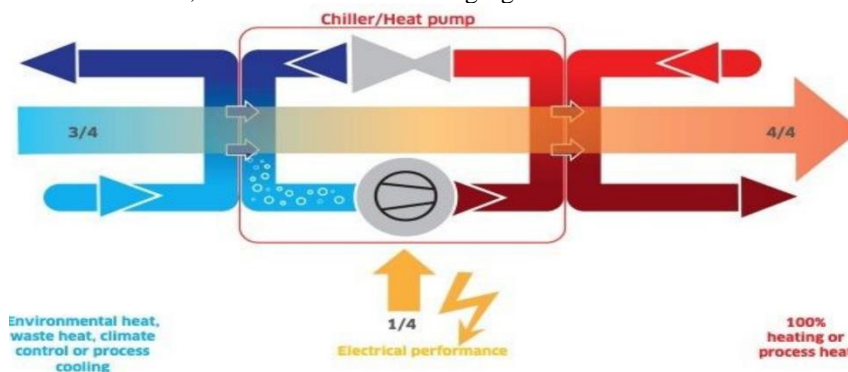


Figure 2. Scheme of the heat pump process

Finally, the aim and objective of this project is to demonstrate that integrated heat pumps are able to provide several relevant benefits and advantages over traditional solutions, where the main ones are listed below:

- It would be applicable and replicable at different scales, for example, from small milk producers to large processors of chickens and pigs.
- In technological conversions of current solutions it replaces relevant amounts of HFCs (which in many cases are the industry standard), providing an environmentally sustainable option over time, and compliance with the Kigali amendment to the Montreal Protocol.
- They are energetically much more efficient than the solutions normally in use (e.g. fossil fuels, gas or carbon), as the resulting a Coefficient of Performance (COP) is almost the sum of the COP of the heat side plus that of the cold side, improving the economic equation of installation and operative costs (i.e. operational cost) and making companies who use this new technology more competitive and efficient.
- Decreases the use of fossil fuels usually used in many traditional applications in the industries of interest.

Potential Beneficiaries

The selection of beneficiaries for the demonstration projects is based on several criteria including the capacity to install the new systems, willingness and interest to implement such project, , availability of data, and alignment with priority of Energy Efficiency and HFC phase-down policies in the country.

Estimated Budget

The cost of both demonstration projects for heat/cooling integrated systems can range from relatively affordable options for small-scale applications to more expensive solutions for larger and more complex systems.

It is important to demonstrate the potential cost savings and benefits that integrated heat-cooling systems with non-HFC refrigerants can provide. It is important to mention that the capital costs of these systems are relatively expensive, nevertheless this type of technology can be more affordable if the capacity is increased, but the most common capacity is in medium sizes, and its replicability can reach more users. It is expected that 20-30% of energy saving could be achieved. The detailed budget of the project will be analyzed at the preparation stage with a tentative estimation of project fund at 1 million US dollars. It will be considered a provision of co-financing by the beneficiaries, that will be one of the criteria for their selection.

Estimated budget for the preparation stage:

| Items | Budget Unit | REMARK | Subtotal |
|--------------------------|--------------------|-----------------|-----------------|
| International consultant | US\$ 400/day | 15 working days | US\$ 6,000 |
| National consultants | US\$ 400/day | 40 working days | US\$ 16,000 |
| Travel costs | US\$ 6,000 | | US\$ 6,000 |
| Sundries | US\$ 2,000 | | US\$ 2,000 |
| Total | | | US\$ 30,000 |

Project Concept

Title of project: Demonstrating digital monitoring and management tools to enhance energy efficiency and reduce emission of green-house gases in the space cooling and cold chain sectors in Colombia, Lebanon, Panama, Sri Lanka, and Trinidad and Tobago

Objective: Supporting program countries to pilot digital tools for monitoring and managing air conditioning and cold chain systems to reduce emission of the green-house gases, reduce energy consumption and associated electricity costs, and improve overall maintenance of cooling system proactively.

Funding Window: Energy Efficiency window with the focus on the servicing sector

Estimated Funding for this project: US\$ 1,000,000

Requested PRP funding: US\$80,000

Justification of the project:

Cooling provided by air conditioning and refrigeration systems is essential for sustainable development. Cooling systems help mitigate the impacts of rising temperatures caused by climate change on human health by maintaining comfortable indoor temperatures and reducing the risk of heat-related illnesses. Cold Chain plays a crucial role in preserving food, reducing food waste, ensuring the safe storage of medicines for their effectiveness and availability. Cooling and heating technology also contribute to many industrial processes.

Despite its importance to human health and economic growth, cooling also generated a serious carbon footprint, directly and indirectly, due to the emissions of GHG refrigerants, and to the consumption of electricity. According to the International Energy Agency, space cooling currently consumes 20% of the electricity used in buildings around the world and the sales of air conditioning are expanding rapidly. Without action to address energy efficiency, energy demand for space cooling will more than triple by 2050 – consuming as much electricity as all of China and India today¹.

Digital tools provide valuable insights, and control capabilities that can significantly enhance the energy efficiency of cooling systems, reducing emission of green-house gases, identifying energy saving opportunities at unit, facility, community, and city levels. The unit and facility's level correspond to a typical cooling system, while the community and society's level correspond to all types of refrigeration and air-conditioning systems installed in a neighborhood or a municipality. Digital solutions could contribute to sustainable urban planning for a smart and integrated infrastructure and operation strategy that includes space cooling, cold chain and other energy supply and demands.

Digital tools offer the following advantages:

- Digital sensors and monitoring systems can collect real-time data on energy consumption, pressures and temperatures, and performance of equipment. IoT and AI technologies enable real-time monitoring and analysis, early detection of leaks, predictive maintenance, and improved overall system performance, ultimately leading to reduced refrigerant leakage and reduction of energy consumption.
- Digital platforms and software can integrate cooling system management in the communities into a centralized energy management system in the city. This allows for better coordination and optimization of energy usage, resulting in improved overall efficiency. The platform has the potential to advance “cooling as a service - CaaS” model for affordable cooling in low-income countries and rural communities.

Digitalization is an innovative approach that can contribute to the implementation of the Kigali Amendment by monitoring the energy performance of existing and new installed cooling equipment and system, identifying HFC refrigerant leakage and consequently reduce HFC consumption, and optimizing system setting and design for energy efficiency. **Digital solution is relevant to the decision 91/65 of the Ex. Com of the MLF with respect to energy efficiency, in line with of the criteria for assembly and servicing sectors as the technical assistance**

¹ IEA report, The Future of Cooling, 2018

activities and has broad replicability and scalability potential in the country and region during the implementation of KIPs. Especially, digital tools provide a solution for the countries that don't have a robust monitoring, testing, and reporting system on energy efficiency.

Figure 1 illustrates a flowchart detailing the process of digital data collection. In this setup, the operational machinery (or complex plant) is equipped with a selection of appropriate sensors and data acquisition systems to conduct real-time measurements. Subsequently, the collected data can be stored and analyzed for various purposes, whether on local platforms or remotely through a network.



Figure 1 Flow chart of digital data collection (source: IIR, 55th Informatory Note on Refrigeration Technologies, 2023)

IoT and digitalization offer substantial advantages in managing energy for building air conditioning, especially for energy-intensive facilities. The trend is moving towards "smart entities." This entails installing and utilizing building technology systems comprising sensors, controllers, actuators, controllable valves, pumps, cameras, and microphones interconnected through a building management system (BMS). This integration facilitates efficient energy management and enhanced comfort solutions.

IoT has been used in retail, and most equipment has been IoT-ready for some time. It performs vital functions to ensure safety compliance by monitoring temperature, maintaining equipment reliability to prevent food waste and enabling traceability for insurance purposes. IoT operates at both the product and equipment level.

Despite refrigeration and air conditioning accounting for a significant share of global energy consumption, the application of digitalization to these areas has so far received less attention than for other household appliances and mobility devices². Therefore, it is important to conduct demonstration projects to accumulate experiences for replication in more countries.

Activities predicted to be carried out in the pilot project

Three priority project types will be assessed for potential implementation in the demonstration country, taking into account the specific characteristics of each country, including air conditioning, cold chain (fishing sector in SIDS), and retail sector (supermarket). The activities include:

Stakeholder Engagement:

- Organization of workshops to disseminate the benefits of RAC digitalization and to engage with relevant stakeholders, including government agencies, utilities, businesses and end-users.
- Establishment of partnerships to leverage resources and expand the project.

Technology Assessment:

- Identify and evaluate existing digital monitoring and management tools and technologies relevant to energy efficiency and refrigerant emission reduction.
- Explore potential adaptations or innovations specific to the local context.

Pilot Implementation:

- Selection of space cooling and cold chain representative installations for pilot testing of the chosen digital tools and technologies.
- Implement energy-efficient equipment, IoT sensors, and monitoring systems.
- Collect data on energy consumption and emissions before and after implementation.

Capacity Building:

² IIR, 55th Informatory Note on Refrigeration Technologies, USE OF INTERNET OF THINGS AND ARTIFICIAL INTELLIGENCE IN REFRIGERATION AND AIR CONDITIONING, 2023

- Provide training to local utilities, assembly companies, technicians and operators on using the digital tools and managing energy-efficient systems.
- Foster knowledge transfer and skills development among local technical community.

Monitoring and Evaluation

- Continuously monitor and collect data from the pilot site to assess the impact on energy efficiency and emissions reduction.
- Analyze the data to make necessary adjustments and improvements.

Awareness:

- Raise awareness about the project's benefits and share success stories.

Expected Deliverables

Reports with contents below:

- I) Technology assessment about monitoring and management tools, IoT sensor networks and data collection systems.
- ii) Pilot implementation reports with data on energy savings and emission reductions including cost of digital tools in different applications.
- iii) Training Materials: Training manuals and materials for local technicians and operators.
- Iv) Policy Recommendations: policy briefs advocating for energy-efficient practices and incentives for the digitalization in the space cooling and cold chain sectors.

Replication of the project

To ensure the sustainability and replication of the project, the project team will pay attention to the following points in the implementation:

- Creation of comprehensive documentation of the activities, including lessons learned and best practices. This will serve as a valuable resource for replication in other regions.
- Stressing of building local capacity, so that trained professionals can replicate the project in different locations.
- Using open-source tools to ensure free availability and encourage wider adoption and replication.

Pilot countries

The selection of demonstration countries is based on several criteria including the willingness of respective governments, relevant experience and capacity of local partner, relevant initiatives in the cooling sector in respective countries, availability of data, and alignment with priority of government policies related to digitalization and national cooling and cold chain strategy.

Based on above criteria, recommendations made by UNDP for the demonstration countries of digital tools include Sri Lanka, Trinidad and Tobago, Panama, Lebanon, and Columbia.

Why UNDP?

UNDP has extensive experience in working with governments across all geographies and levels, providing neutral expertise and independent support on diverse aspects of their digital transformation, from strategy to technology procurement, as well as convening across public and private sectors and capacity building. UNDP developed its [Digital Strategy](#) with a vision to support the digitalization in 100 countries by 2030.

UNDP has been successfully using digital tools to address the challenges in the distribution of vaccines during the covid-19 pandemic. UNDP Indonesia has helped develop and scale up the cloud-based [SMILE digital system](#) which manages tracking of vaccine inventory for the national immunization programme. Similarly, the [CoWIN](#) system in India does all that SMILE does, as well as the ability to identify, register, monitor and certify vaccine recipients. Several UNDP COs have supported the used of [DHIS-2](#) for logistics and stock management for health. All these solutions are open-source and open-license, can be freely adopted in countries. UNDP has the experience and technical know-how to support countries in customizing and scaling up similar digital tools.

UNDP chemical and waste hub/Montreal Protocol Unit has extensive experience in the cooling sector as one of the implementing agencies of the Multilateral Fund since 1991 and has active programs and pipelines in more than 50 countries to support the transition of cooling sector to low global warming, energy-efficient technologies. The hub developed sustainable cooling offer which aims to promote integrated programs for the refrigerant

transition and energy efficiency, enabled by innovative finance, green technologies, and digital tools to accelerate the transition and amplify the impact. UNDP could build upon the on-going programs such as HCFC Phase-out Management Plan (HPMP), Kigali Implementation Plan (KIP) and other relevant initiatives, demonstrate the power of digital solutions in the cooling sector, and roll out to 50 countries by 2025.

Estimated Budget

The cost of digital monitoring software and tools for cooling systems can range from relatively affordable options for small-scale applications to more expensive solutions for larger and more complex cooling systems. It is important to demonstrate the potential cost savings and benefits that digital monitoring tools can provide. It is worth noting that the cost of these tools has been decreasing over time as technology advances and becomes more accessible at scale. It is expected that 20-30% of energy saving could be achieved by the digital tools, and even more depending on the context of pilot site. The detailed budget of the project will be analyzed at the preparation stage with a tentative estimation of project fund by the Multilateral Fund at 1 million US dollars. UNDP will provide co-financing for some technical assistance activities in this pilot project to achieve desired outcomes in a short period.

Estimated budget at preparation stage:

| Items | Budget Unit | REMARK | Subtotal |
|--|--------------------|-----------------|--------------------|
| International Consultant on air conditioning and cold chain technology | US\$ 600/day | 25 working days | US\$ 15,000 |
| International consultant of digital experts | US\$ 600/day | 25 working days | US\$ 15,000 |
| National consultants | US\$ 200/day | 80 working days | US\$ 16,000 |
| Travel cost | US\$ 34,000 | | US\$ 34,000 |
| Total | | | US\$ 80,000 |