



**Programa de las
Naciones Unidas
para el Medio Ambiente**



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COMITÉ EJECUTIVO DEL FONDO MULTILATERAL
PARA LA APLICACIÓN DEL
PROTOCOLO DE MONTREAL
Septuagésima sexta Reunión
Montreal, 9 – 13 de mayo de 2016

PROPUESTA DE PROYECTO: MALDIVAS

El presente documento consta de las observaciones y la recomendación de la Secretaría del Fondo sobre la propuesta de proyecto siguiente:

Refrigeración

- Proyecto de demostración sobre alternativas sin HCFC y bajo PCA para la refrigeración en el sector de la pesca PNUD

HOJA DE EVALUACIÓN DE PROYECTO – PROYECTOS PLURIANUALES**MALDIVAS****TÍTULO DEL PROYECTO****ORGANISMO BILATERAL/DE EJECUCIÓN**

a) Proyecto de demostración sobre alternativas sin HCFC y bajo PCA para la refrigeración en el sector de la pesca	PNUD
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ORGANISMO DE COORDINACIÓN NACIONAL

Unidad nacional del ozono

ÚLTIMOS DATOS NOTIFICADOS SOBRE EL CONSUMO DE SAO OBJETO DEL PROYECTO**A: DATOS CON ARREGLO AL ARTÍCULO 7 (TONELADAS PAO, 2014, EN ABRIL DE 2016)**

HCFC	3,32
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B: DATOS SECTORIALES DEL PROGRAMA DE PAÍS (TONELADAS PAO, 2015, EN ABRIL DE 2016)

HCFC-22	2,45
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Consumo restante de HCFC admisible para la financiación (toneladas PAO)

0

ASIGNACIONES DEL PLAN ADMINISTRATIVO DEL AÑO EN CURSO		Financiación (\$EUA)	Toneladas PAO para eliminación
	a)	321.000	0,6

TÍTULO DEL PROYECTO:	
Uso de SAO en la empresa (toneladas PAO):	n/d
SAO que se eliminarán (toneladas PAO):	n/d
SAO que se agregarán (toneladas PAO):	0
Duración del proyecto (meses):	24
Monto inicial solicitado (\$EUA):	144.000
Costos finales del proyecto (\$EUA):	
Costo adicional de capital:	141.000
Imprevistos (10 %):	0
Costo operativo adicional (\$EUA):	0
Costo total del proyecto:	141.000
Propiedad local (%):	100
Componente de exportación (%):	0
Donación solicitada (\$EUA):	141.000
Relación costo-eficacia (\$EUA/kg):	n/d
Gastos de apoyo al organismo de ejecución (\$EUA):	12.690
Costo total del proyecto para el Fondo Multilateral (\$EUA):	153.690
Situación de la financiación de contraparte (S/N):	N
Hitos de supervisión del proyecto incluidos (S/N):	S

RECOMENDACIÓN DE LA SECRETARÍA

Para consideración individual

DESCRIPCIÓN DEL PROYECTO

1. En nombre del Gobierno de Maldivas, el PNUD, designado como organismo de ejecución, ha presentado a la 76ª reunión una solicitud de financiación de un proyecto de demostración sobre alternativas sin HCFC y bajo potencial de calentamiento atmosférico (PCA) para la refrigeración en el sector de la pesca, por un monto de 144.000 dólares de los Estados Unidos, más gastos de apoyo al organismo de 12.960 dólares, según la propuesta original¹.

Objetivo del proyecto

2. Maldivas tiene un nivel de base de consumo de HCFC de 76,4 toneladas métricas (mt), de las cuales 20% se consumen en el sector de la pesca. El país procura acelerar la eliminación de los HCFC a fin de suprimir por completo su consumo para 2020, por lo que deberá convertir sus equipos de refrigeración basados en HCFC-22 a alternativas sin esa sustancia, en particular los que se utilizan en la industria de la pesca. Debido a la falta de refrigerantes de bajo PCA para la retroadaptación de equipos de refrigeración basados en HCFC-22 en la industria de la pesca, Maldivas ha convertido algunos de sus buques pesqueros a refrigerantes que utilizan R-438 (PCA=2.265), como solución provisional.

3. Sobre esta base, el proyecto de demostración busca encontrar tecnologías alternativas a los HCFC de bajo PCA para su uso en equipos de refrigeración con una carga de refrigerante de entre 150 y 200 kg en el sector de la pesca². La empresa beneficiaria del proyecto de demostración será seleccionada durante la aplicación del mismo.

Puesta en marcha del proyecto

4. En el proyecto de demostración, se investigarán y analizarán las opciones de tecnología actuales utilizadas tanto en los equipos de refrigeración marítimos como en aplicaciones de procesamiento y almacenamiento terrestres³; se llevará a cabo una evaluación técnica de las opciones con bajo PCA en cuanto a su viabilidad como refrigerantes sustitutos de uso inmediato, así como opciones de reemplazo; se pondrá a prueba el rendimiento de los sustitutos, en particular mediante la optimización de los sistemas de sustitución inmediata o reemplazo; y se demostrará el uso de los sustitutos seleccionados.

5. El proyecto se propone convertir los equipos de refrigeración basados en HCFC-22 de tres buques pesqueros a tecnologías con bajo PCA, evaluar su rendimiento y valorar si son adecuadas. Sobre la base de la evaluación, se difundirán las tecnologías adecuadas en la industria pesquera durante el proceso de eliminación de los HCFC. Durante el proyecto, se dejarán de utilizar 0,6 mt de HCFC-22 en buques pesqueros.

¹ Se aprobaron fondos para la preparación de este proyecto por un monto de 15.000 dólares, más gastos de apoyo al organismo de 1.050 dólares, en el entendimiento de que su aprobación no suponía la aprobación del proyecto o su nivel de financiación cuando fuese presentado (decisión 74/26).

² En la 75ª Reunión, cuando se solicitó la aprobación del tercer tramo del plan de gestión de la eliminación de los HCFC, se pidió al PNUD que continuara ayudando al Gobierno en la búsqueda de alternativas de bajo PCA para el sector de la pesca (decisión 75/62).

³ El ensayo tendría en cuenta, entre otras cosas, los siguientes parámetros: capacidad de enfriamiento, eficiencia energética, compatibilidad de los HFO con el aceite de compresor y otros componentes, tasas de fuga y medidas para reducirlas, cambio de aceite y otras cuestiones operativas.

Presupuesto del proyecto

6. El costo total del proyecto se estimó en 146.000 dólares, tal como se muestra en el cuadro 1.

Cuadro 1. Costo estimado del proyecto para la conversión de tres sistemas (\$EUA)

Descripción	Costo
Costos del compresor y el aceite	18.000
Dispositivos de seguridad eléctrica	900
Evaporador y condensadores	3.000
Tuberías y accesorios	600
Costo del refrigerante (estimación)	18.000
Costos laborales y de otro tipo	10.500
Apoyo técnico para la ejecución del proyecto	35.000
Taller nacional sobre divulgación de las conclusiones	10.000
Consultor técnico (evaluación del desempeño, manual de retroadaptación, buenas prácticas para minimizar fugas de refrigerante)	30.000
Gestión y coordinación del proyecto	20.000
Costo total	146.000

7. El proyecto será gestionado y coordinado por la unidad nacional del ozono (UNO), con la asistencia del PNUD. Se espera que el proyecto se complete en 24 meses, teniendo en cuenta la disponibilidad de refrigerantes de bajo PCA (p. ej., HFO).

OBSERVACIONES Y RECOMENDACIÓN DE LA SECRETARÍA**OBSERVACIONES**

8. El proyecto brinda la oportunidad de examinar la conveniencia de introducir refrigerantes de bajo PCA en equipos basados en HCFC-22 en el sector de la pesca. Aumentará los conocimientos en la aplicación de la tecnología, el funcionamiento y el mantenimiento del sistema objeto de conversión, así como su rendimiento, lo cual representa un avance en términos tecnológicos. Si se concluye que los refrigerantes de bajo PCA son idóneos, podrían utilizarse en otros buques pesqueros de las Maldivas, así como en otros países que operan al amparo del artículo 5 y que también tienen ese tipo de consumo. La información que aporte el proyecto de demostración se divulgará a través de talleres, reuniones de redes y conferencias y ferias regionales e internacionales.

9. Si bien la demostración se realizará en buques pesqueros, la evaluación de la idoneidad abarcará tanto a embarcaciones marítimas como a equipos de refrigeración terrestres. Sobre la base de las investigaciones y los análisis existentes, es probable que las tecnologías seleccionadas utilicen HFO o mezclas de HFO. Sin embargo, si surgen mejores tecnologías con bajo PCA, también serán incluidas.

10. Los posibles riesgos y obstáculos relacionados con la introducción de refrigerantes de bajo PCA en el sector de la pesca tienen que ver con la disponibilidad de HFO, las dificultades del diseño técnico y el correcto funcionamiento del sistema de refrigeración convertido. Para reducir al mínimo estos riesgos, el equipo de ejecución hará un estrecho seguimiento de la disponibilidad de HFO con sus proveedores, así como con expertos técnicos a fin de que colaboren en el diseño y el proceso de conversión.

11. A la luz de la decisión 74/21 c), la Secretaría sugirió al PNUD que considerara la posibilidad de racionalizar los costos del proyecto de demostración. En respuesta a esta sugerencia, el PNUD recalzó que los costos del proyecto eran moderados, habida cuenta de que solo se adquirirían y entregarían una pequeña cantidad de refrigerante y unos pocos equipos a larga distancia. Además, el precio de los refrigerantes objeto de ensayo son muy elevados (entre 30 dólares/kg y 85 dólares/kg), al igual que los costos de envío. La UNO de Maldivas tiene capacidad limitada para gestionar el proyecto de inversión y,

por ende, se necesitarán más recursos para la gestión y la coordinación del proyecto. Sobre esta base, el PNUD acordó descontar 5.000 dólares, que se traduce en un costo total de 141.000 dólares más los gastos de apoyo al organismo. La propuesta de proyecto revisada figura en el anexo I del presente documento.

Conclusión

12. El proyecto de demostración se ha vinculado a las actividades de eliminación propuestas en el plan de gestión de la eliminación de los HCFC para Maldivas. Si tiene éxito, el proyecto ofrecerá una solución de tecnología para sustituir el HCFC-22 utilizado en los sistemas de refrigeración de buques pesqueros. Esta tecnología no se ha ensayado nunca en ningún país y ofrecerá una alternativa viable de bajo PCA para su utilización en la industria pesquera.

RECOMENDACIÓN

13. El Comité Ejecutivo quizás desee considerar:
- a) El proyecto de demostración de tecnologías sin HCFC y de bajo PCA en la refrigeración del sector de la pesca en Maldivas, en el contexto de su examen de propuestas para proyectos de demostración de alternativas de bajo PCA a los HCFC, tal como se establece en el documento sobre Reseña de problemas detectados durante el examen de los proyectos (UNEP/OzL.Pro/ExCom/76/12);
 - b) La aprobación del proyecto de demostración de tecnologías sin HCFC y bajo PCA para la refrigeración en el sector de la pesca en Maldivas, por un monto de 141.000 dólares más gastos de apoyo al organismo de 12.690 dólares para el PNUD, en consonancia con la decisión 72/40; y
 - c) La posibilidad de instar al Gobierno de Maldivas y al PNUD a que completen el proyecto en 24 meses, según lo planificado, y a que presenten un informe final exhaustivo poco después de finalizado el proyecto.

Annex I

DRAFT DOCUMENT TO BE FINALISED - 76th Meeting of the Executive Committee for the Implementation of the Montreal Protocol

MULTILATERAL FUND FOR THE IMPLEMENTATION OF THE MONTREAL PROTOCOL ON SUBSTANCES THAT DEplete THE OZONE LAYER

PROJECT COVER SHEET - NON-MULTI-YEAR INVESTMENT PROJECTS

COUNTRY: Maldives

PROJECT TITLE:

Demonstration Project for HCFC free low GWP alternatives in refrigeration in fisheries sector in Maldives

IMPLEMENTING AGENCY:

UNDP

PROJECT DATA

Sector:	Refrigeration	
Sub-sector:	Fisheries refrigeration applications	
ODS use in sector (2015 metric tonnes):		44.8
Project impact (metric tonnes):		10
Project duration:		24 months
Project Costs:	Incremental Capital Costs(including contingencies):	US\$ 141,000
	Incremental Operating Costs:	US\$ 0
	Total Costs:	US\$ 141,000
Local ownership:		100%
Exports to non-A5 countries:		0%
Request grant		US\$ 141,000
Counterpart fund		US\$ NA
Cost-effectiveness (US\$/kg-ODS):		
Implementing agency support costs:		US\$ 12,690
Total Cost to Multilateral Fund:		US\$ 153,690
Status of counterpart funding (Yes/No):		Yes
Project monitoring milestones included (Yes/No):		Yes

**Preliminary data based on ongoing surveys*

PROJECT SUMMARY

This demonstration project, upon successful completion, will identify and establish suitability of HCFC free low GWP alternatives in fisheries applications in Maldives. Currently, the fishing industry and particularly, fishing vessels use HCFC-22 for refrigeration and freezing applications during sea borne fishing operations. These vessels due to maintenance conditions as well as rough sea conditions experience significant loss of refrigerants while at sea. This results in higher levels of consumption of HCFC-22 in the country.

The project will identify low GWP alternatives that can be used in these vessels in place of HCFC-22, processes for replacing HCFC-22 based refrigeration equipment used in fishing vessels, good practices that can be adopted for reducing refrigerant consumption and policies that can help in reducing HCFC-22 use in fishing vessels.

If successful, the demonstration project will contribute towards reduction in HCFC-22 consumption in existing fishing vessels and long term reduction in HCFC-22 consumption in fishing industry. The experiences and knowledge gained in this project would be helpful for countries that use HCFC-22 in fishing industry applications.

Prepared by: UNDP in consultation with National Ozone Unit and industry

Date: March 2016

Demonstration Project for HCFC free low GWP alternatives in refrigeration in Fisheries sector in Maldives

Objective

The main objective of the project is to demonstrate low-GWP HCFC free alternative for use by fishing industry in Maldives. The project results can be used in other countries that have similar HCFC use in fishing industry and thus help the countries addressing challenges in fishing industry, particularly sea-borne vessels' HCFC refrigerant use.

Sector Background

Maldives is a small island country and consumes HCFC-22 in refrigeration and air-conditioning applications. As per survey report of HPMP, about 76 MT of HCFC-22 was consumed in Maldives in the year 2008. The consumption of HCFC-22 in the year 2015 is about 45 MT. The main reason for decrease in consumption is national activities and regulations that has reduced supply and use of HCFC-22. Of this total consumption, fisheries sector applications consume about 15-20% of the total consumption.

Fisheries sector is an important sector for Maldives economy. This sector is the second largest contributor to Maldives' economy and employs a very significant population of Maldives. The fish catch of Maldives is stored and processed and exported to different countries across the globe. HCFC-22 is consumed in fisheries sector in a range of applications and predominantly in fishing vessels, processing and storage applications. Many of these equipment still have an economic life, though old and need continued use of HCFCs for their operations. Given that fishing vessels operate in sea and many times under rough sea / weather conditions, it is difficult to control leakage and adopt servicing practices as in other equipment like refrigeration equipment using HCFCs in land.

Under HPMP Stage-I, targeted projects addressing consumption of HCFCs in fishing vessels were implemented. Due to technological constraints and given the need for compliance of the country, they had to adopt ODS free alternatives which have GWP as retrofit / drop-in substitutes. Fishing industry has agreed with the Government of Maldives to continue their efforts to convert to low GWP alternatives that are technically feasible and economically viable, as and when such alternatives are available in the market. The need for identifying and promoting usage of low GWP alternatives in fishing industry was also emphasized by several Excom members (refer para 242 and 243 of the 75 Excom report).

It is noted that availability of HCFC free low-GWP alternative technologies that can substitute HCFCs are available in refrigeration applications. It must also be noted that many of these options cannot be direct drop-in substitutes and/or retrofit options with minimum changes in the existing equipment. Depending upon the type of use, the specific option for existing fishing vessels would need to be chosen and adopted.

In this proposed project, demonstration of low-GWP alternatives for retrofitting equipment using HCFCs is proposed to be undertaken. Replacement options for fishing vessels which are HCFC free would also be considered for demonstration projects. Technical information on retrofit and replacement technologies would be provided for the benefit of industry. This will not only assist Maldives in adoption of such technologies and promote their low GWP low carbon growth policy, but also help other countries which have a significant consumption of HCFCs in fishing industry – mainly in refrigeration applications, switch over to low GWP alternatives.

In different reports and meetings, the issue of non-availability of such drop-in substitutes for refrigeration applications in fisheries industry has been highlighted. Thus this project is expected to have a significant impact on (a) HCFC phase-out in the country with low-GWP alternatives and (b) scaled up adoption of HCFC free alternatives in countries with large fishing industry consuming HCFCs including Maldives (e.g., Fiji, PICs)

Alternative Technology

The following factors need to be considered for selection of the alternative technology for replacement / retrofitting in existing fishing industry applications:

Technical factors

- Functionality in end-product
- Proven and mature technology
- Energy efficiency

Commercial factors

- Cost-effectiveness
- Reliable availability

Health and safety factors

- Low risk for occupational health
- Low risk for physical safety (flammability, etc.)

Environmental factors

- Direct ozone impacts
- Direct and indirect climate impacts

Some of the zero-ODP alternatives to HCFC-22 currently available for refrigeration applications are given below.

Substance	GWP	Application
R-407C	1774	Medium / High-temp applications
R-424A	2440	Medium / High – temp applications
R-438A	2268	Low / Medium / High – temp applications
R-417A	2346	Medium temp ref. applications
R-422D	2729	Low/Medium/High temp applications – ref.
HFC-32	675	Low/Medium temperature
HFOs	<10	Low/Medium/High temp applications – ref.

Source: Industry research reports. Rows marked in red color relate to alternatives that are having a GWP of greater than 1000.

As per the TEAP report that made an assessment of low GWP options in different applications (2014), the following options can be used in refrigeration applications. It must be noted that these options include a range of refrigerants that can be “potentially used” not necessarily actually in use due to a range of technical and commercial considerations.

Status	Refrigerants
Limited trials	HC-600a, HFC-1234yf, HFC-1234ze(E), “L-40”
Potentially feasible	R-444B “L-41” “DR-5” R-450A “XP-10” HFC-32

Source: Executive Committee document no. 74/49

They are either at stage where they “are potentially feasible” or “have undergone limited trials”. It must be noted that these alternatives are not strictly “drop-in” substitutes and would need modification in equipment at varying scales.

This aspect needs to be studied. The options shown in green color are low GWP options but are flammable. The options not in green have a GWP ranging from 290 to 716.

Project Background

The project primarily aims at undertaking detailed technical assessment of the available low GWP options in terms of their feasibility in being used in HCFC-22 based refrigeration equipment in fishing industry – primarily as drop-in substitutes and as alternatives and demonstration of use of these alternatives by the industry. As explained earlier, given the limited information available on actual performance of different technical options, the project will include both detailed research and analysis of existing options available and designing project interventions for testing performance of substitutes that are drop-ins or “near” drop-ins involving soft optimization.

Project Description

The primary objective of the project would be to identify low GWP substitutes to HCFC-22 in the existing refrigeration equipment using HCFC-22. The equipment capacity would be in the range of 100 kgs to 150 kgs per unit in terms of HCFC-22 initial charge.

Research and analysis of alternative technologies

The research and analysis activities on alternative technologies would cover the said equipment. As mentioned above, the primarily focus will be on sea-borne vessels. It will, however, also cover storage and processing applications.

It is known that in Maldives, the storage and processing applications for land based applications have alternatives such as ammonia and HFCs in use depending upon the nature of use. All attempts would be made to identify possible low GWP options that could substitute HFCs, if feasible.

Identification of technical options

Based on the above research and analysis, drop-in substitutes / substitutes with minimum retrofit of existing equipment by the industry for the identified applications. This would take into consideration technical feasibility, economic viability particularly timing of commercial availability and safety in operations. As of now with the available information, the options that are likely to be available are HFOs or low GWP HFO blends.

Demonstration of technical options

Demonstration of use of low GWP alternatives in identified users in these applications that would include drop-in as well as replacement options. The specific number of units for demonstration would be decided by NOU in close consultation with fishing industry. For the purposes of estimation, it is proposed to undertake demonstration of technologies at 3 units or equivalent.

The equivalent quantity of refrigerant that would be replaced in the system is expected to be about 200 kg per unit of HCFC-22. Based on cost equivalent of equipment, the estimated incremental costs for materials is estimated to be about USD 17,000 per equipment. An overview of estimated cost breakdown is given below.

Items	USD
Compressor and oil costs	6,000
Electrical safety devices	300
Evaporator and condensers	1,000
Pipes and accessories	200
Refrigerant cost (estimated)	6,000
Labour and miscellaneous costs	3,500
Sub-total	17,000
Unit costs for 3 units estimated at USD 17,000 per unit	51,000
Technical support for project implementation	35,000
Sub-total	86,000

Source: Best estimates based on industry data

Outreach and dissemination activities

The findings of the above demonstration project would be documented and disseminated to countries in the region. UNEP CAP program would be used as one of the platforms for dissemination of this information. In addition, global / sub-regional meetings will also be used for dissemination of information.

The estimated total cost information outreach activities for dissemination of the findings of the survey are given below.

Items	USD
National workshop on dissemination of findings	10,000
Technical consultant – manual on technical performance documentation, retrofit manual and good practices for minimising refrigerant leakage	30,000
Total	40,000

Equipment using HCFC free low GWP technologies will not be procured. Information on such technologies will be collected by the technical expert during the research phase and during manual development phase. This will be shared with industry, Government and other national stakeholders in Maldives.

Summary

The conversion will be carried out in close consultation with NOU and the industry personnel. Technical consultants would provide technical backstopping and guidance for project implementation.

Project Costs and Financing

The total funding request from MLF amounts to US\$ 146,000 including project management and coordination support. Details are provided in Annex-I. The project envisages co-financing from industry and Government personnel which is in-kind (i.e., time and resources spent for the project). The estimated amount relating to this is not included in the proposal. Annex 2 presents a summary of how this project conforms with conditions specified in decision 72/40.

Implementation

Project Monitoring Milestones

The project milestones and timelines from the date of receipt of funds is given in the table below. The estimated period over which the project would be completed is 30 months i.e., 10 quarters.

MILESTONE/QUARTERS	Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8
Start-up of project activities	X							
Technology research and analysis	X	X						
Technology choice and retrofit options using low GWP technologies		X	X	X	X			
Compilation of findings of demonstration project and information dissemination				X	X	X	X	X
Project Monitoring and management	X	X	X	X	X	X	X	X

Management

The project will be under the overall management and coordination of the National Ozone Unit, Government of Maldives. UNDP will be the implementing agency for the project, which will provide international coordination and technical assistance as needed.

The project would employ Performance-based Payment (PBP) mechanism in its implementation. Under the PBP mechanism, The project activities would be assessed on achievement of different milestones and payments would be made against those milestones.

The procurement shall be organized fully in line with procedures followed by Government, so that the goods and services procured are high quality, most reasonable price and suitable for the purposes of the project activity. The detailed arrangement on procurement will be defined in the contract between Government of Maldives and UNDP. After testing, the equipment will be (please mention the purpose of use).

Verification

- 1) **Periodical Performance Verification.** Before each payment, NOU of Maldives and UNDP will review the progress of activities based on documents and site visits/site visit reports. Upon satisfactory completion of the project.
- 2) **Technical Assessment.** Before the last installment of payment, NOU and UNDP will invite subject specialist expert(s) to verify the project performance and outcomes.

Impact

The successful implementation of this demonstration project will provide information on performance of a low GWP and cost-effective alternative for fisheries industry. The results of the project would also be shared with other countries across the globe with similar operating conditions.

Annex 1
Funding request from MLF for the project

	Item	Value in USD
1	Technical consultant research and analysis of alternative technologies	35,000
2	Procurement of equipment for retrofit options	51,000
3	Information dissemination and capacity building for retrofit	40,000
4	Project Management and Coordination	15,000
	Total	141,000

Annex 2

Check on conformance with decision 72/40 on demonstration project

MFS criteria	Remarks relating to the project
In terms of a low-GWP alternative technology, concept or approach or its application and practice in an Article 5 country, representing a significant technological step forward;	Yes – the project promotes the technology options are low GWP which are new to the market and have a potential to replace HCFC-22 and high GWP impact refrigerants. Fisheries sector is urgently looking for such options so that they can avoid high GWP refrigerants to the extent feasible when they adopt low GWP options.
The technology, concept or approach had to be concretely described, linked to other activities in a country and have the potential to be replicated in the medium future in a significant amount of activities in the same sub-sector;	Replication potential exists in Maldives and other countries with HCFC-22 consumption in fishing industry. The project results will facilitate adoption of these technologies in different countries – as a result of market factors and technical performance.
For conversion projects, an eligible company willing to undertake conversion of the manufacturing process to the new technology had been identified and had indicated whether it was in a position to cease using HCFCs after the conversion;	Not applicable – testing at site. Products are available and are proposed to be procured through international competitive bidding.
The project proposals should prioritize the refrigeration and air-conditioning sector, not excluding other sectors;	Yes – refrigeration sector
They should aim for a relatively short implementation period in order to maximize opportunities for the results to be utilized for activities funded by the Multilateral Fund as part of their stage II HCFC phase-out management plans (HPMPs);	Timeframe for implementation is driven by time for completing different steps. From a period of about 12 months, the test results would be available. Total implementation timeframe for the project is estimated to be 24 months.
The project proposals should promote energy efficiency improvements, where relevant, and address other environmental impacts;	Energy efficiency performance of the product will be reviewed. However, the main purpose of this project is to demonstrate low GWP HCFC free technologies that could serve as retrofit options.