



联合国



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执行蒙特利尔议定书
多边基金执行委员会
第三十一次会议
2000年7月5日至7日，日内瓦

项目提案：委内瑞拉

本文件包括基金秘书处关于下列项目提案的评论和建议：

泡沫塑料

- 在 Friobox 的硬聚氨酯泡沫塑料板生产中用 HCFC-141b 淘汰 CFC-11 工发组织
- 在 Nevecor 的硬聚氨酯泡沫塑料板生产中用 HCFC-141b 淘汰 CFC-11 工发组织

项目评价表 委内瑞拉

部门： 泡沫塑料 本行业的 ODS 消费量（1999 年）： 256.06 ODP 吨
次级行业成本效益阈值： 硬泡沫塑料 7.83 美元/公斤

项目名称：

- (a) 在 Friobox 的硬聚氨酯泡沫塑料板生产中用 HCFC-141b 淘汰 CFC-11
(b) 在 Nevecor 的硬聚氨酯泡沫塑料板生产中用 HCFC-141b 淘汰 CFC-11

项目数据	硬泡沫塑料	硬泡沫塑料
	Friobox	Nevecor
企业消费量（ODP 吨）	18.50	40.90
项目影响（ODP 吨）	16.50	36.40
提议的项目期限（月）	18	18
原申请经费数额（美元）	128,387	198,374
最后项目经费（美元）：		
增支资本费用(a)	64,000	86,000
酌处资金(b)	4,900	105,274
增支经营费用(c)	59,487	7,100
项目费用总额（a+b+c）	128,387	198,374
地方所有权（%）	100%	100%
出口比重（%）	0%	0%
申请经费数额（美元）	128,387	198,374
成本效益值（美元/公斤）	7.81	5.45
对应出资是否已经确认？		
国家协调机构	Fondoin	Fondoin
执行机构	工发组织	工发组织

秘书处的建议：		
建议供资额（美元）	128,387	198,374
项目作用（吨 ODP）	16.50	36.40
成本效益值（美元/公斤）	7.81	5.45
执行机构支助费（美元）	16,690	25,789
多边基金的费用总额（美元）	145,077	224,163

项目说明

行业背景

— 可以得到的 ODS 总消费量最新数字（1999 年）*	2,385.59 ODP 吨
— 附件 A 一类物质（各类 CFC）基准消费量	3,321.00 ODP 吨
— 1999 年附件 A 一类物质消费量	2,207.57 ODP 吨
— 泡沫塑料行业 CFC 基准消费量	615.30 ODP 吨
— 1999 年泡沫塑料行业 CFC 消费量	242.04 ODP 吨
— 截至 1999 年底为泡沫塑料行业投资项目核准的经费	2,785,703.00 美元
— 截至 1999 年底泡沫塑料行业投资项目应淘汰的 CFC 数量	455.18 ODP 吨
— 截至 1999 年底泡沫塑料行业投资项目已淘汰的 CFC 数量	332.60 ODP 吨
— 1999 年核准的泡沫塑料行业投资项目应淘汰的 CFC 数量	99.70 ODP 吨
— 1999 年为泡沫塑料行业投资项目核准的经费	771,670.00 美元

* 2000 年 4 月上报基金秘书处的数字。

硬泡沫塑料

1. 这两家公司（Friobox 和 Nevecor）生产硬聚氨酯泡沫塑料隔温板，每家公司使用两台低压机。Friobox 公司使用一台 120 公斤/分钟和 200 公斤/分钟 Vickitalia 机器，分别安装于 1983 年和 1990 年；Nevecor 公司使用一台 60 公斤/分钟 Decker DB30 机器和一台 80 公斤/分钟 Decker DB40 机器，分别安装于 1985 年和 1990 年。根据本项目，将在生产中改用 HCFC-141b 技术。改造费用包括改装现有的机器。这项费用在 Friobox 公司为 49,000 美元，在 Nevecor 公司则为 71,000 美元。这些费用包括启用和试车费用。增支经营费用为期两年，在 Friobox 公司为 59,487 美元，在 Nevecor 公司为 105,274 美元。

使用 HCFC-141b 的理由

2. 工发组织表示，已经向两个公司说明了选择 HCFC-141b 作为替代物质在环境、技术和经济方面产生的影响。然而，这两家公司仍然选择 HCFC-141b 技术作为临时解决办法，以待可以得到零 ODP 技术。

3. 工发组织还根据第 27/13 号决定提交了委内瑞拉政府的一封信，其中对两家公司的技术选择表示支持。工发组织提出的理由和委内瑞拉政府的信已作为附件附于本文件之后。

项目的作用

4. 两个项目将淘汰 52.9 ODP 吨 CFC，占委内瑞拉附件 A 一类物质基准消费量的 1.6%，占该国 1999 年总消费量的 22%。

秘书处的评论和建议

评论

1. 基金秘书处和工发组织讨论了提出资料，说明项目的执行和监测阶段指标问题，工发组织经过讨论对这项资料进行了订正，以使其符合现行的格式。就项目费用达成了协议。

建议

4. 基金秘书处建议一揽子核准 Friobox 和 Nevecor 公司的项目，其供资额和相关支助费用如下表所示。

	项目名称	项目费用 (美元)	支助费用 (美元)	执行机构
(a)	在 Friobox 的硬聚氨酯泡沫塑料板生产中 用 HCFC-141b 淘汰 CFC-11	128,387	16,690	开发计划署
(b)	在 Nevecor 的硬聚氨酯泡沫塑料板生产中 用 HCFC-141b 淘汰 CFC-11	198,374	25,789	开发计划署

ANNEX I

ADDITIONAL JUSTIFICATION FOR USING HCFC TECHNOLOGY AT FRIOBOX, VENEZUELA

The UNIDO technical expert appraised the enterprises in this project prior the preparation of this project document in March 2000, and had discussions with the company's representatives about the choice of technology for replacing CFC-based technology. The enterprise was briefed in detail about the following:

- a) An overview of the available interim (low ODP) and permanent (zero ODP) replacement technologies.
- b) The "techno-economic impact" of each technology on the products manufactured, and the process and practices employed.
- c) Possible implications of each technology, in terms of its known impact on environment, health and safety, such as ozone depleting potential, global warming potential, occupational health, etc.
- d) It was emphasized to the company that HCFC technologies are interim technologies due to their residual ODP and therefore may continue to adversely affect the environment, although at a lower rate than CFC's.
- e) It was further explained that HCFCs may become controlled substances under present or future international conventions and will therefore also need to be phased out at a future date, and any investment required for their phase-out and for conversion to a permanent technology will have to be borne by the enterprise itself.

The main conclusions reached by the enterprise through discussions with the UNIDO technical expert were:

- 1. The use of HCFC-141b is the only currently feasible option for the rigid P.U. foam production.
- 2. Water blown technology at this point results in a product that could not be sold commercially, its density increases by 20-30% with a reduction in insulation value of 35-40%.
- 3. The companies are not prepared, as per today, to operate with inflammable and explosive materials. Their industrial safety, alarm monitoring and training system has been established in accordance with the relevant requirements of the existing production programme.
- 4. Many types of mechanical works, including welding are carried out in the production building, restricting application of flammable blowing chemicals.
- 5. Hydrocarbons are too expensive to be implemented for the small scale production of foams.

In view of the above, among the solutions mentioned, HCFC-141b based systems in the interim technology selected until new developments (water or HFC-based systems) or new relocation of the factories allows the use of zero ODP technologies.

PROJECTED TECHNO-ECONOMIC IMPACT OF ZERO-ODP TECHNOLOGIES

FRIOBOX, VENEZUELA

The projected impact of applying various zero-ODP technologies with respect to the selected technology (HCFC-141b) in this project is summarized below:

The only currently available zero-ODP technology is **water-based** systems. Water based systems are however, more expensive than other CFC-free technologies due to reductions in insulation value (requiring larger thickness) and lower cell stability (requiring higher thickness). Water based systems can be applied where insulation performance is relatively less critical, but in case of the enterprises in this project, which manufacture foam for thermal insulation application, thermal conductivity is crucial.

Presently, suitable water-based formulations are not technically mature or economical. If such formulations become available in the future, it is expected that there would still be some drawbacks related to performance and costs. The net additional impact on project costs due to increased densities, with water based systems, is conservatively expected to be about US \$175,000 with respect to HCFC-141b technology.

HFC-134a based systems are not offered in the applicable regional area and are not a feasible zero-ODP option.

Liquid HFC based systems do not meet requirements on maturity and availability at present time.

Thus, the selection of **HCFC-141b** based systems, as the preferred conversion technology, are justified taking into account all the technical, commercial and cost factors.

ADDITIONAL JUSTIFICATION FOR USING HCFC TECHNOLOGY AT NEVECOR, **VENEZUELA**

The UNIDO technical expert appraised the enterprises in this project prior the preparation of this project document in March 2000, and had discussions with the company's representatives about the choice of technology for replacing CFC-based technology. The enterprise was briefed in detail about the following:

- a) An overview of the available interim (low ODP) and permanent (zero ODP) replacement technologies.
- b) The "techno-economic impact" of each technology on the products manufactured, and the process and practices employed.
- c) Possible implications of each technology, in terms of its known impact on environment, health and safety, such as ozone depleting potential, global warming potential, occupational health, etc.
- d) It was emphasized to the company that HCFC technologies are interim technologies due to their residual ODP and therefore may continue to adversely affect the environment, although at a lower rate than CFC's.
- e) It was further explained that HCFCs may become controlled substances under present or future international conventions and will therefore also need to be phased out at a future date, and any investment required for their phase-out and for conversion to a permanent technology will have to be borne by the enterprise itself.

The main conclusions reached by the enterprise through discussions with the UNIDO technical expert were:

- 1. The use of HCFC-141b is the only currently feasible option for the rigid P.U. foam production.
- 2. Water blown technology at this point results in a product that could not be sold commercially, its density increases by 20-30% with a reduction in insulation value of 35-40%.
- 3. The companies are not prepared, as per today, to operate with inflammable and explosive materials. Their industrial safety, alarm monitoring and training system has been established in accordance with the relevant requirements of the existing production programme.
- 4. Many types of mechanical works, including welding are carried out in the production building, restricting application of flammable blowing chemicals.
- 5. Hydrocarbons are too expensive to be implemented for the small scale production of foams.

In view of the above, among the solutions mentioned, HCFC-141b based systems in the interim technology selected until new developments (water or HFC-based systems) or new relocation of the factories allows the use of zero ODP technologies.

PROJECTED TECHNO-ECONOMIC IMPACT OF ZERO-ODP TECHNOLOGIES

NEVECOR, VENEZUELA

The projected impact of applying various zero-ODP technologies with respect to the selected technology (HCFC-141b) in this project is summarized below:

The only currently available zero-ODP technology is **water-based** systems. Water based systems are however, more expensive than other CFC-free technologies due to reductions in insulation value (requiring larger thickness) and lower cell stability (requiring higher thickness). Water based systems can be applied where insulation performance is relatively less critical, but in case of the enterprises in this project, which manufacture foam for thermal insulation application, thermal conductivity is crucial.

Presently, suitable water-based formulations are not technically mature or economical. If such formulations become available in the future, it is expected that there would still be some drawbacks related to performance and costs. The net additional impact on project costs due to increased densities, with water based systems, is conservatively expected to be about US \$225,000 with respect to HCFC-141b technology.

HFC-134a based systems are not offered in the applicable regional area and are not a feasible zero-ODP option.

Liquid HFC based systems do not meet requirements on maturity and availability at present time.

Thus, the selection of **HCFC-141b** based systems, as the preferred conversion technology, are justified taking into account all the technical, commercial and cost factors.

FONDOIN

FONDO VENEZOLANO DE RECONVERSION INDUSTRIAL Y TECNOLOGICA

Caracas, March 7th, 2000

Messrs.
UNDIDO
Vienna

Attn.: Mr. Enrique Puerto Ferre.
Subject: Commitment Letters of Projects involving HCFCs

Dear Mr. Puerto Ferre,

In line with the decision 27/13 of the Executive Committee and in recognition of Article 2F of the Montreal Protocol, the Government of Venezuela:

- a) Verifies that it had reviewed the specific situation at the enterprises (NEVECOR, FRIO BOX) as well as its HCFC commitments under the article 2F;
- b) States that based on the prevailing circumstances at (NEVECOR, FRIO BOX) at the present time the conversion of these enterprises requires the use of HCFC-141b for the interim period as stipulated in the Montreal Protocol;
- c) Confirms that the Government and the recipient enterprises understood that no funding would be available from the Fund for the future conversion from HCFCs for the said companies whenever such a conversion to other alternatives will be required.



Yours sincerely,

Luis Hernández Muñoz
Luis Hernández Muñoz
President of FONDOIN

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