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The World Bank

Report No: ICR00001576

IMPLEMENTATION COMPLETION AND RESULTS REPORT
(MULT-54980/54981)

ON

OZONE PROJECTS TRUST FUND GRANTS IN THE AMOUNT OF
USD MILLION 17

(USD 17,000,000 GRANT)

TO THE

REPUBLIC OF VENEZUELA

FOR

Ozone Depleting Substances Phase out Project

June 22, 2010

Sustainable Development Department
Bolivia, Chile, Ecuador, Peru and Venezuela Country Management Unit
LATIN AMERICA AND CARIBBEAN REGION

CURRENCY EQUIVALENTS

(Exchange Rate Effective Date)

Currency Unit = Bolívar Fuerte

1.00 = USD

USD 1.00 = 4.29465 Bolívar

Fiscal Year January 1 – December 31

ABBREVIATIONS AND ACRONYMS

CAS	Country Assistance Strategy
CDM	Clean Development Mechanism
CFC	Chlorofluorocarbons
CP	Country Program
EXCOM	Executive Committee of the Multilateral Fund
FONDOIN	*Fundación Fondo Venezolano de Reconversión Industrial y Tecnológica*
GoV	Government of Venezuela
IA	Implementing Agency
IBRD	International Bank for Reconstruction and Development
HCFC	Hydro chlorofluorocarbons
MLF	Montreal Protocol Multilateral Fund
MP	Montreal Protocol
MT	Metric Tons
NPP	National Phase-out Plan
ODS	Ozone Depleting Substances
ODP	Ozone Depleting Potential
PIM	Project Implementation Manual
PMU	Project Management Unit
PRODUVEN	*Productos Halogenados de Venezuela, C.A.*
SA	Special Account
SOE	Statement of Expenses
UNDP	United Nations Development Program
UNEP	United Nations Environment Program
UNIDO	United Nations Industrial Development Organization
WB	World Bank

Vice-President:	Pamela Cox
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Venezuela
Ozone Depleting Substances Phase out (Montreal Protocol)

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A. Basic Information

Country:	Venezuela, Republica Bolivariana de	Project Name:	OZONE LAYER PROTECTION PROJECT
Project ID:	P075502	L/C/TF Number(s):	TF-54980,TF-54981
ICR Date:	06/28/2010	ICR Type:	Core ICR
Lending Instrument:	SIL	Borrower:	
Original Total Commitment:	USD 17.0M	Disbursed Amount:	USD 16.5M
Revised Amount:	USD 17.0M		
Environmental Category: C		**Global Focal Area: O**	

Implementing Agencies:
Fondo de Reconversion Industrial y Tecnologica (FONDOIN)
Productos Halogenados de Venezuela (PRODUVEN)

Cofinanciers and Other External Partners:

B. Key Dates

Process	Date	Process	Original Date	Revised / Actual Date(s)
Concept Review:	03/08/2005	Effectiveness:		05/05/2005
Appraisal:	04/13/2005	Restructuring(s):		
Approval:	05/05/2005	Mid-term Review:	03/14/2008	
		Closing:	01/01/1950	12/31/2009

C. Ratings Summary

C.1 Performance Rating by ICR

Outcomes:	Satisfactory
Risk to Global Environment Outcome	Low or Negligible
Bank Performance:	Satisfactory
Borrower Performance:	Satisfactory

C.2 Detailed Ratings of Bank and Borrower Performance

Bank	Ratings	Borrower	Ratings
Quality at Entry:	Moderately Satisfactory	Government:	Satisfactory
Quality of Supervision:	Satisfactory	Implementing Agency/Agencies:	Satisfactory
Overall Bank Performance:	Satisfactory	**Overall Borrower Performance:**	Satisfactory

C.3 Quality at Entry and Implementation Performance Indicators			
Implementation Performance	**Indicators**	**QAG Assessments (if any)**	**Rating**
Potential Problem Project at any time (Yes/No):	Yes	Quality at Entry (QEA):	None
Problem Project at any time (Yes/No):	No	Quality of Supervision (QSA):	None
GEO rating before Closing/Inactive status	Moderately Satisfactory		

D. Sector and Theme Codes

	Original	Actual
Sector Code (as % of total Bank financing)		
Central government administration	50	50
Other industry	50	50
Theme Code (as % of total Bank financing)		
Other environment and natural resources management	100	100

E. Bank Staff

Positions	At ICR	At Approval
Vice President:	Pamela Cox	David de Ferranti
Country Director:	Carlos Felipe Jaramillo	Marcelo Giugale
Sector Manager:	Karin Erika Kemper	John Redwood
Project Team Leader:	Gabriela Arcos	Juan Lopez-Silva
ICR Team Leader:	Gabriela Arcos	
ICR Primary Author:	Juan Lopez-Silva	

F. Results Framework Analysis

Global Environment Objectives (GEO) and Key Indicators(as approved)

Phase out, by December 2006, all production of CFC in Venezuela, thereby advancing the implementation of Venezuela#s Country Program for the Phase Out of Ozone Depleting Substances under the Montreal Protocol.

Revised Global Environment Objectives (as approved by original approving authority) and Key Indicators and reasons/justifications

The GEo was not revised.

(a) GEO Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	CFC 11 and 12 completely phase-out by December 2006.			
Value (quantitative or Qualitative)	4,400 tons of ODS produced annually	O tons of ODS produced		O tons of ODS produced
Date achieved	05/05/2005	12/31/2006		12/31/2006
Comments (incl. % achievement)	100% achieved and Venezuela fully complies with the Montreal Protocol.			

(b) Intermediate Outcome Indicator(s)

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
Indicator 1 :	Equipment used in CFC-11/12 production is dismantled, retrofitted or disposed according to good environmental practices as per the Environmental Management Plan and the Equipment Disposal Plan (EDP).			
Value (quantitative or Qualitative)	PRODUVEN operates a swing plants to produce CFCs and HCFCs	CFC Production equipment totally dismantled		CFC Production equipment totally dismantled
Date achieved	05/05/2005	12/31/2006		12/31/2006
Comments (incl. % achievement)	100% achieved. Destruction of CFC12&11 producing equipment took place, which prevented reversing the process in the future.			
Indicator 2 :	The GoV sets production caps and bans ODS imports			
Value (quantitative or Qualitative)	No regulation exist to set up the limits for ODS production and imports	Regulations to set up the limits for ODS production and imports is		Decree 4335 was enacted in 2006, setting limits for ODS production

		developed and enacted.		and imports starting 2007.
Date achieved	05/05/2005	06/30/2006		06/30/2006
Comments (incl. % achievement)	100% achieved. The application of this Decree was crucial to secure the early CFC production closure and was key to reduce the ODS availability in the market, so that projects to eliminate ODS consumption could be better sustained.			
Indicator 3 :	The GoV has the technical capacity to monitor CFC import/export of illegal substances			
Value (quantitative or Qualitative)	Officers at the Ministry of Commerce and Customs not capable of controlling ODS.	Government officers, including customs staff, duly trained on the detection of illegally traded ODS.		Government officers, including customs staff, duly trained on the detection of illegally traded ODS.
Date achieved	05/05/2005	06/30/2009		06/30/2009
Comments (incl. % achievement)	100% achieved. Training activities involved no less that 30 GoV staff at the national level, including customs officers in the detection of illegally traded ODS, and workshops for various participants in the Phase-out Plan			
Indicator 4 :	Public awareness on the harmfulness of CFCs and other ODS increases.			
Value (quantitative or Qualitative)	No public awareness in relation to CFC phase-out plan importance	Public awareness campaign designed and implemented		Public awareness campaign designed and implemented
Date achieved	05/05/2005	06/30/2009		06/30/2009
Comments (incl. % achievement)	100% achieved. This activity included the development of several awareness events at the national and regional level and the production and distribution of materials such as videos, posters, brochures and radio spots.			

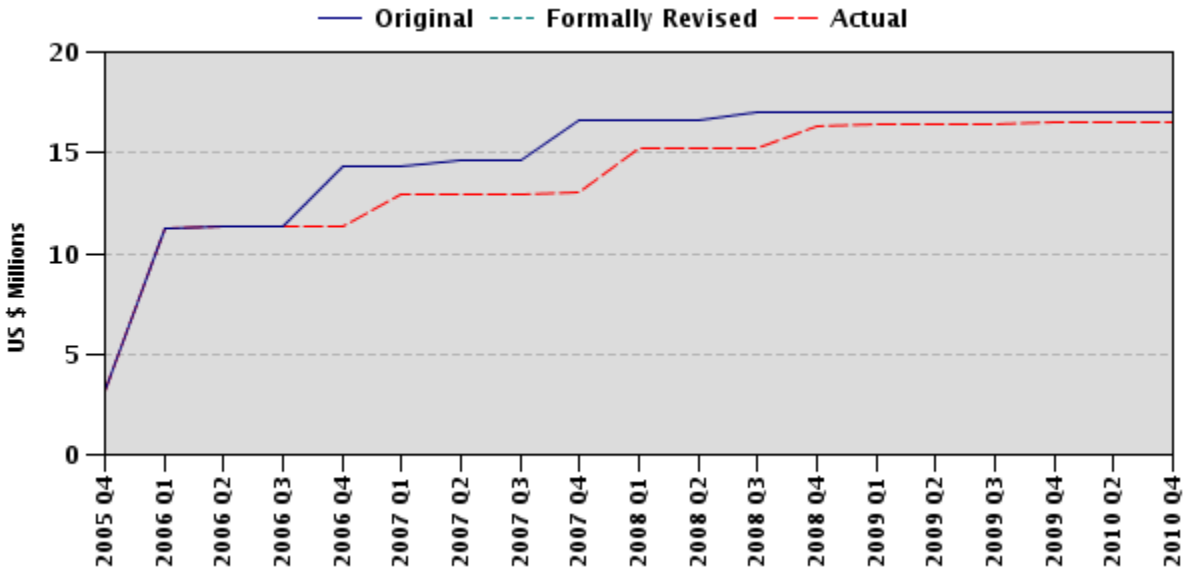
G. Ratings of Project Performance in ISRs

No.	Date ISR Archived	GEO	IP	Actual Disbursements (USD millions)
1	06/19/2006	Satisfactory	Satisfactory	11.30
2	12/30/2006	Satisfactory	Satisfactory	12.95
3	06/25/2007	Satisfactory	Satisfactory	13.00
4	12/27/2007	Satisfactory	Satisfactory	15.25
5	06/12/2008	Satisfactory	Satisfactory	15.30
6	11/10/2008	Satisfactory	Satisfactory	16.41
7	05/29/2009	Moderately Satisfactory	Moderately Satisfactory	16.44
8	12/19/2009	Moderately Satisfactory	Moderately Satisfactory	16.49
9	05/17/2010	Satisfactory	Satisfactory	16.49

H. Restructuring (if any)

Not Applicable

I. Disbursement Profile



1. Project Context, Global Environment Objectives and Design

1. The objective of the Venezuela's Ozone Depleting Substances Phase-out Project was to enable, by the end of 2006, the phase-out of CFC production in Venezuela, through a compensation program for profit losses, accompanied by the enforcing of institutional and legal mechanisms. The Project financed the phase-out of Venezuela's production of CFC-11 and CFC-12, in the context of country's commitments under the Montreal Protocol on Substances that Deplete the Ozone Layer. The total amount of CFCs phased-out was 4,400 metric tons.

2. In 2004, the MLF ExCom approved a total amount of US $16.5 million for the CFC production sector alone, of which US $450,000 was allocated to FONDOIN for the implementation of technical assistance activities associated with the production sector closure. Additional US $500,000 were allocated for the implementation of a chiller replacement program under the UNIDO-Venezuela National CFC Phase-out Plan to be implemented by the World Bank.

3. Two Grant Agreements were signed under this Project: (i) one between the Bank and PRODUVEN, for the enterprise compensation of US$16.05 million; and (ii) another between the Bank and FONDOIN for the Chillers replacement program and the Technical assistance component, for a total amount of US$0.95 million. Disbursements under the Grant Agreements were subject to the final approval of fund tranches by the MLF Executive Committee.

4. The financing for the UNIDO's program was approved in tranches and based on the priority given to the agreed activities. By the closing of the Project, the MLF Executive Committee had not approved the financing for the chillers program, therefore, it was not implemented by the Bank. When the project closed, the main component related to the Phase-out plan was fully completed, representing 97% of the financing approved for the Bank. Additional limitation for the implementation of the chillers programs is further explained sin Section 1.4.

5. The sections below describe the country context at appraisal and the objectives, components, and main outcomes of this operation.

1.1 Context at Appraisal

6. The Montreal Protocol (MP) on Substances that Deplete the Ozone Layer was adopted in 1987, as an international treaty to eliminate the production and consumption of ozone-depleting chemicals including chlorofluorocarbons (CFCs), halons, carbon tetrachloride (CTC), methyl chloroform (TCA), and methyl bromide (MeBr). Scientific theory and evidence suggest that these compounds, once emitted to the atmosphere, could significantly deplete the stratospheric ozone layer that shields the planet from

damaging ultraviolet radiation. Under this treaty, developed countries must have phased-out ODS by the year 2000 (2005 for TCA and MeBr). Developing countries, also known as Article 5 countries in the context of the protocol, benefit from a 10-year grace period. Table 1 below shows the phase out schedule for Article 5 countries.

7. The Republic of Venezuela ratified the Montreal Protocol on February 6, 1989, and the London, Copenhagen, Montreal and Beijing Amendments in 2003, 1997, 2001 and 2006 respectively. Venezuela has been classified as a country operating under Article 5, paragraph 1 of the Protocol and as such is eligible for financial support from the Multilateral Fund for the Implementation of the Montreal Protocol (hereafter the "Fund" or 'MLF'), to cover the incremental costs of meeting Protocol requirements. As can be seen in the table below, under the Montreal Protocol, Venezuela was to reduce consumption of CFCs by 50% in 2005, and completely cease consumption by 2010.

8. These groups represent the different types or categories of consumed ODS. Since Venezuela´s annual calculated level of consumption of controlled substances listed in Annex A of the Montreal Protocol was less than 0.3 Kg, per capita, it fell under paragraph 1 of Article 5 of the Protocol, and therefore qualified for financial and technical assistance, including transfer of technologies, through the financial mechanism of the Protocol, in order to permit compliance with the control measures of the Protocol.

Table 1. Phase out schedule for Article 5 countries

Date	Ozone Depleting Substance (Annex and Group)					
	Annex A Group I* CFCs	**Annex A Group II Halons**	**Annex B Group II CTC**	**Annex B Group III TCA**	**Annex E MeBr**	**Annex C Group I HCFC**
Jul. 1999	Freeze consumption					
Jan. 2002		Freeze consumption			Freeze consumption	
Jan. 2003				Freeze consumption		
Jan. 2005	Reduce by 50%	Reduce by 50%	Reduce by 85%	Reduce by 30%	Reduce by 20%	
Jan. 2007	Reduce by 85%					
Jan. 2010	Reduce by 100%	Reduce by 100%	Reduce by 100%	Reduce by 70%		
Jan. 2013						Freeze consumption *
Jan. 2015				Reduce by 100%	Reduce by 100%	Reduce by 10%
Jan. 2020						Reduce by 35%
Jan. 2025						Reduce by 67.5%
Jan. 2030						Reduce by 97.5% **
Jan. 2040						Reduce by 100%

Source: World Bank, based on Montreal Protocol

**** at average 2009/2010 levels***
***** allowance for an annual average of 2.5% for servicing purposes during the period 2030-2040.***

ODS Phase out Institutional Structure and Project Background

9. In Venezuela, FONDOIN ("*Fundación Fondo Venezolano de Reconversión Industrial y Tecnológica*") was established as the National Ozone Unit (NOU) and has since been responsible for implementing the Montreal Protocol. Venezuela was one of the first countries to start implementation of the Protocol. In 1992 at its 6th meeting, the EXCOM approved the preparation of Venezuela's Country Program (CP), where the country strategy to implement the Montreal Protocol was initially set out. Under such program, which was oriented to early phase out of ODS consumption at the large companies, the Bank had completed a number of operations in the foam, chiller and refrigeration sectors in Venezuela. In 1992, the 7th EXCOM approved a grant amount of US$ 1,261,678 to implement the conversion of a CFC–12 polystyrene foam production

facility to the use of hydrocarbons as blowing agent at *Plasticos Molanca*. Later, the Bank implemented two small grants for chiller retrofits at *Clinica Atlas* (US$ 115,000) and *Instituto de Prevencion Social del Medico* (US$ 69,000). These operations were later followed by two Bank-assisted operations in the Mobile Air Conditioning (MAC) sub sector: a) *Fabrica de Aparatos de Aire Acondicionado S.A.* (FAACA); and b) *Aire Acondicionado Integral S.A.* (AAISA) for grant amounts of US$ 3,100,000 and US$ 4,420,000, respectively. In these latter projects, in addition to retooling of the fabrication line, the grants covered related training, technical assistance and licensing fees for transfer of technical data and design specifications.

10. In addition, prior 2004, Venezuela implemented at least 35 projects before 2004, through grants to the companies undertaking the industrial conversion process needed to eliminate CFC consumption. These projects were broken down as follows: 3 were bilateral with the United Stated Environmental Protection Agency, 10 with UNDP as the implementing agency and 22 with UNIDO.

11. The importance of this project relies on the fact that the country was able to come to a total closure of CFC production sector and consumption, as part of the National Phase-out Strategy. The National Phase-out Strategy is country specific, this means that each country which will qualify for this type of assistance will have a unique framework in face of ODS phase-out. This approach ensures that the country is fully engaged in the final stages of ODS elimination and that its special circumstances which impact phase-out are fully addressed. In addition, the Strategy would provide flexibility in how governments phase out ODS, thereby allowing countries to decide how funding should be allocated while developing and strengthening their institutional capacities. This flexibility opens up possibilities for introducing innovative projects and conversion technologies. Finally, the Third, the Strategy would be comprehensive and absolute and would aim to address all remaining ODS consumption in a given country.

ODS Production and Consumption

12. At the time of project appraisal, Venezuela produced an average of 2000 MT of CFC-11 and CFC-12 annually at PRODUVEN's facility, which was consumed domestically by the foam and refrigeration sectors. The table below shows CFC-11& 12 production and consumption data, for the period 1995-2004:

Table 2: CFC-11 & 12 production and consumption figures in metric tons, 1995 - 2004

Year	1995	1996	1997	1998	1999	2000	2001	2002	2003	2004
Consumption*	3,220	3,050	3,704	3,213	2,188	2,706	2,546	1,554	1,389	2,943
Production	4,483	4,435	5,649	3,739	2,864	2,264	2,721	1,637	2,024	3,564

**** Less than 1% corresponds to CFC-113+114+115***

13. With regards to CFC consumption, refrigeration servicing (mobile air conditioning, domestic, industrial, and commercial refrigeration, as well as chillers) represented almost 80% of the country's total CFC annual consumption at the time of project preparation. With support from MLF, Venezuela had begun to phase out remaining ODS consumption in 1994 under its National Country Program for Phase-out of Ozone Depleting Substances. With this program, most of the consumption would be addressed.

14. Prior to the implementation of this project, PRODUVEN was the only CFC producing company in Venezuela, and one of the three facilities doing so in the Americas. PRODUVEN has also produced HCFC-22 (CFC alternative chemical). This project compensated PRODUVEN for the closure of their CFC production facility by the end of 2006. The plant, located in Moron-Coro in the state of Carabobo, first started commercial production in 1976. It was originally established as a joint venture between Pequiven (then IVP, of Venezuela) and Atofina (then Elf Atochem, of France). In 2002, Atofina sold its interest to GRUPO QUIMICO ENVIORTECH S.A. of Venezuela and PRODUVEN became a fully owned Venezuelan company.

15. The production of CFCs by PRODUVEN remained as the most important goal to attain by the time the project was being prepared, since local production would keep Venezuela's internal consumption supplied at relatively favorable prices, supported by the GoV, World Bank and MLF efforts to reduce CFC consumption at local industries. Moreover, PRODUVEN's capacity to export would affect the regional strategies for CFC phase-out supported by the Bank and other MLF implementing agencies.

Rationale for Bank support

16. The Bank had the experience and resources to respond to the GoV's requests for assistance by combining policy advice, investment financing and financing of technical assistance (TA). The Bank is recognized for its comparative advantage in ODS production closure projects, including its ability to leverage the financing, its access to leading technical expertise and because it was the first implementing agency to develop, design and submit projects addressing ODS supply through a performance-based, country-driven approach under the MLF.

1.2 Original Global Environmental Objectives (GEO) and Key Indicators (as Approved)

17. The objective of the Project, as originally approved was to enable early phase-out of CFC production in Venezuela (by the end of 2006), through a compensation program for profit losses, accompanied by enforcing institutional and legal mechanisms. The objective would be achieved through a cost-effective and efficient manner, without harming industrial and economic growth or consumer interests in affected sectors. Policies, incentives, technical assistance and awareness raising measures were used to support and promote the phase-out of CFC production.

18. The project was approved by the Regional Vice President for Latin America, as recommended by the Country Director. The project documentation did not require a

Project Appraisal Document (PAD), but a Memorandum of Director (MOD), which in line with OP/BP 10.21 on Investment Operations financed by the MLF, intended to simplify procedures for this type of grant operation, mostly consisting of a disbursement schedule against performance of objectives.

19. The key indicators established for this project were mainly related to the production levels attained by PRODUVEN as mandated by the following agreed CFC production phase-out schedule:

Calendar year of production	Production ceilings: maximum production allowed per year (total CFCs in metric tons)
2004	4400.00
2005	2913.00
2006	2913.00
2007 and beyond	0.00

Other indicators included:

Indicator	**By When**	**Means of Verification**
Equipment used in the production of CFC-11&12 is dismantled, retrofitted, or disposed according to good environmental operating practices (the Environmental Management Plan and the Equipment Disposal Plan).	December 31, 2006	Technical audits confirming the dismantling and retrofitting.
The GoV sets production caps and bans ODS imports.	June 30, 2009	Procedures and regulations approved and implemented.
The GoV has the technical capacity to monitor CFC import/export of illegal substances.	June 30, 2009	Training events.
Public awareness on the harmfulness of CFCs and other ODS increases.	June 30, 2009	Dissemination materials and public awareness events.

Revised GEO and Key Indicators (as Approved by Original Approving Authority) and Reasons/Justification

20. The main original project objective, consisting of achieving early phase-out of CFC production was not revised, and implementation was successful.

1.3 Main Beneficiaries, Original and Revised

21. The main beneficiary of this grant was the global population, as the negative effect over the stratospheric ozone layer was reduced. Global benefits resulted from the elimination of ODS, as depletion of stratospheric ozone could lead to significant increases in UV radiation reaching the Earth's surface. Increased ultraviolet radiation could in turn lead to adverse human and animal health effects, as well as ecosystem impacts. The ozone layer protects the biosphere from this type of radiation.

22. The direct beneficiaries of this grant were (i) Venezuelan enterprise PRODUVEN (94.5% of the resources); and (ii) FONDOIN as recipient of a technical assistance grant to effect proper CFC production elimination (2.6% of funding),

1.4 Original Components (as Approved)

23. The Project involved two main components as shown in the table below:

Table 3 – Project Components as originally approved

Component	Indicative Costs (US Dollars)
Component 1: **Phase-out of CFC Production**	16,050,000
Component 2: **Technical Assistance to FONDOIN and Chiller replacement program.**	950,000
	17,000,000

24. Two grant agreements were signed: i) Grant Agreement between the Bank and FONDOIN for channeling the funds required for supporting the CFC production phase-out component (USD 950,000); and ii) Grant Agreement between the Bank and PRODUVEN, for USD 16,050,000, to make performance based disbursements, as the ODS production closure progressed.

Component 1: CFC-11&12 Production Phase-Out (*USD16,050,000*)

25. This component ensured that Venezuela's CFC production at PRODUVEN would cease earlier than mandated by the Montreal Protocol, through a compensation program. Additionally, this component ensured the GoV would have the capacity to monitor and enforce the CFC production closure program in the long term. The agreed amount to be phased-out under the Montreal Protocol was 4,400 tons.

26. Prior to the implementation of this project, PRODUVEN was the only CFC producing company in Venezuela, and one of the three facilities doing so in the Americas. PRODUVEN has also produced HCFC-22 (CFC alternative chemical). This project compensated PRODUVEN for the closure of their CFC production facility by the end of 2006. The plant, located in Moron-Coro in the state of Carabobo, first started commercial production in 1976. It was originally established as a joint venture between Pequiven (then IVP, of Venezuela) and Atofina (then Elf Atochem, of France). In 2002, Atofina sold its interest to GRUPO QUIMICO ENVIORTECH S.A. of Venezuela and PRODUVEN became a fully owned Venezuelan company.

27. For this component, the Bank directly signed a Grant Agreement (GA) with PRODUVEN, whereby a compensation of US$16.05 million was to be disbursed according to compliance with pre-set production reduction levels. Funds were approved by MLF on December 2004, at EXCOM's 44th meeting. As stated in the GA, funds were to be payable directly to PRODUVEN in five annual tranches (2004-2008). This sub-project grant package would compensate PRODUVEN for profit loss and for providing labor compensation in case workers should be laid off due to CFC production closure. PRODUVEN would gradually reduce production of CFCs, while keeping production of HCFC-22. Remaining equipment not used for HCFC22 production would be dismantled or destroyed by the end of 2006 (the date of completion of this component). Because PRODUVEN was designed as a swing plant very little dismantlement was required for the plant to function properly as an HCFC-22 unit.

ODS phase-out and disbursement plan

28. The Project timetable below details the ending of CFC production in Venezuela by the end of 2006. Funding was disbursed in installments in the exact amounts specified in the table below (which are based on the performance-based agreement between the MLF EXCOM and the GoV). The first payment was conditional upon effectiveness of the Grant Agreement. Subsequent payments were made provided that the maximum production ceilings had not been exceeded. The 2nd payment was also conditional upon adoption of a satisfactory monitoring plan, and the 4th and 5th tranche were not paid until approval or implementation of an equipment disposal plan satisfactory to the Bank.

Table 4: Phase-out schedule as per the Agreement with the EXCOM:

Year	2004	2005	2006	2007	2008	TOTAL
Max. annual allowable production (MT)	4,400	2,913	2,913	0	0	10,226
TOTAL MLF grant (US$ million)	3.30	8.1	1.75	2.3	1.05	16.50
PRODUVEN * (US million)	3.2	8	1.65	2.2	1	16.05
FONDOIN (US million)	0.1	0.1	0.1	0.1	0.05	0.45
Agency fees	0.2475	0.6075	0.1312	0.1725	0.0787	1.2375

* Labor compensation was paid according to the requirements of the Venezuelan laws, and was absorbed by PRODUVEN.

Component 2: Technical Assistance for FONDOIN (US $ 450,000)

29. This sub-component comprised activities related to CFC production phase-out, including the design and implementation of policies and regulations, public awareness campaigns, and proper auditing and enforcement of the CFC production closure program. FONDOIN locally supervised the project's execution, together with the World Bank. The responsibilities of FONDOIN included, inter-alia: (i) administration of payments to individual consultants and firms for technical support in monitoring the CFC production phase-out at PRODUVEN; (ii) management of the special account and of disbursements; (iii) preparation of progress reports; and (iv) record keeping.

30. Training activities involved GoV staff, including customs officers in the detection of illegally traded ODS, and workshops for various participants in the Phase-out Plan, with more intensive activities over the first two years of project implementation and some additional training in the later years as relevant issues emerged. Provisions of training in recovery and recycling of CFCs was also included.

31. The project carried out two annual audits, comprising a financial audit for the project account by an independent auditor and a performance (technical) audit of the project itself to assess the country's compliance with the CFC phase-out commitments under the Montreal Protocol.

32. As a result of this component, FONDOIN accomplished the following:

a) Proper contracting and monitoring of international audits, required to inform MLF of PRODUVEN's advancement with the CFC production phase-out program, and to trigger payments by the Bank according to the pre-set and agreed schedule. Audits verified production data logs, inventories of feed stocks and products (CFC & HCFC) at PRODUVEN.

b) Decree 4335 was enacted in 2006, setting limits for ODS production and imports starting 2007
c) Customs received equipment and training to detect CFCs, and prevent illegal trading
d) Public awareness materials were produced and published, including a video in 2007, posters, brochures, and radio spots.

33. Specifically, the following activities were completed under this component:

Table 5-Technical Assistance activities implemented by FONDOIN

Activity	Disbursement (USD)
Supporting the GoV to strength technical capacity of local staff to develop standards and procedures for recovery and destruction of ODS	65.000
Public Awareness Campaign	80.000
Development of environmental guidelines for dismantling PRODUVEN´s CFC production capacity	20.000
Study about the Impact of PRODUVEN's Plant Early Closing and program to assist affected PRODUVEN workers	83.000
PRODUVEN's Audits and other Specialized Consultancies	63.000
Public Awareness. Supporting Second International Fair of Clean Technologies (FITEL 2009)	36.000
Monitoring and assessment of the identification of CFCs End Users in Venezuela	18.000
Capacity Strategies for Study and Implementation of CFC Recovery System	15.000
End Users Study to identify alternatives	15.000
Designs and implementation of export control instruments and the licensing system for CFCs and raw materials for CFC production and training of custom officers in the detection of illegally traded ODS.	55.000
TOTAL	**450.000**

Chiller Replacement Program (USD 500,000)

34. This component involved setting up a national mechanism for the replacement of chillers through the use of a revolving fund scheme. At its 42nd meeting in March of 2004, the EXCOM approved the National CFC Phase-Out Plan for Venezuela (NPP) to be implemented by UNIDO, including the funding for the Chillers Replacement Program. By the closing of the Project, the funding for this program has not been approved by the MLF Executive Committee, therefore, it was not implemented by the Project.

35. The Chiller Replacement Program would (a) characterize the criteria used by chiller owners in the country in deciding to replace a chiller before the end of its remaining lifetime (e.g., perceptions of regulatory pressure, financing constraints, perceptions of electricity savings, performance and reliability, and environmental effects); (b) develop a menu of financing options to test acceptability by various types of chiller owners; (c) develop the incentive framework for chiller suppliers and installation firms to provide integrated services and increase reliability and performance in terms of

electricity savings; (d) provide financing to chiller owners to support the replacement of units; (e) develop a monitoring and evaluation protocol; and (f) disseminate the experience in Venezuela and elsewhere.

36. Due to internal market difficulties during the project implementation period, the chiller replacement component could never get to a solid ground, due to the following reasons:

- Restrains for foreign currency management during the project early phase made difficult for banks or other financial intermediaries to set up a revolving fund for acquiring imported chiller equipment for the project.
- In Venezuela there is no institution or program designed to promote and provide energy-saving equipment or monitor energy consumption in the medium to long term.
- Different to other MP grants received in the past, the chiller replacement component consisted of a revolving fund. This meant that final beneficiaries would not receive a grant, but a non-interest loan to partially fund a chiller equipment, which would be eventually paid out by the energy savings achieved. FONDOIN did not have experience in this type of projects.
- The main project component was performance based and was implemented and disbursed according to the agreed schedule in 2008.
- The USD 500,000 grant for this component was approved by MLF as part of the National ODS Phase-out Plan. Since this project was implemented by UNIDO, there was a lack of ownership and management maneuverability for the Bank staff in charge of implementing the project. Funds did not ever flow onto the Bank's account.

Revised Components

34. The components were not revised over the implementation period.

1.6 Other Significant Changes

Not applicable.

2. Key Factors Affecting Implementation and Outcomes

2.1 Project Preparation, Design and Quality at Entry

Lessons learned were incorporated

35. Based on the Bank's experience in CFC production closure projects in China, India and Argentina, the following lessons learned were incorporated into the design of the project, contributing to its overall quality and success.

- With regards to the CFC Production Phase-out component, the most important lesson incorporated from other projects was that there was no need to dismantle the whole plant since PRODUVEN produced both CFC 11 & 12 as well as HCFC-22. The CFC reaction/purification equipment and related feedstock would be dismantled, while storage/handling equipment could be reconfigured to be used for HCFC-22 raw materials. Instruments, display meters, switches, storage tanks, etc, could be used elsewhere, as long as a record of such a disposal or transition was kept.

- To avoid past disagreements between the country and the MLF independent auditors' report on the remaining life of the plant, it was agreed beforehand that the compensation model would be based entirely on the parameters established by the MLF techno-economic audit.

Risks and Mitigation Measures

36. The following matrix lists and assesses the risk of failure associated with non-achievement of the project's stated objectives and how risk mitigation was addressed.

Table 6: Risks and Mitigation measures

Risk	Mitigation
a. Non compliance with the annual maximum production caps.	The Bank monitored production on a quarterly basis to closely follow the annual production trend. As stated in the Agreement with the EXCOM, if the annual maximum cap was surpassed PRODUVEN would be penalized
b. Lack of transparency in the labor compensation package due to PRODUVEN's production of HCFC-22.	The Bank closely monitored the number of affected workers due to CFC plant closure to ensure compliance with the Venezuelan labor regulatory framework.
c. Uncertainty on whether energy savings would allow chiller replacements.	FONDOIN carried out a study to assess different economic incentives to ensure proper sustainability of the chiller replacement program.
d. Institutional changes in FONDOIN could hinder the implementation of the phase-out program.	Two separate Grant Agreements were made: one with PRODUVEN for the phase-out plan and another with FONDOIN for TA activities
e. Delays in fiduciary arrangements and disbursements.	The task team was to ensure due diligence.

2.2 Implementation

37. The GoV has shown a strong commitment to adhere to its Montreal Protocol phase out schedule. GoV started as early as in 1992 to implement ODS phase-out projects involving industries, and information and public campaigns to raise public awareness. Most important, GoV achieved an early compliance with the required ODS production and consumption schedules.

38. Implementation of the CFC production closure project was satisfactory, without any delays. The Project design for this main component has proved successful, and very effective. Early CFC production closure was key to reduce the ODS availability in the market, so that projects to eliminate ODS consumption could be better sustained. The effect was to be felt not only in Venezuela, but in other Latin American countries long dependent on PRODUVEN's CFC imports. The project was then instrumental to achieve the ultimate Montreal Protocol goals in the region.

39. As per the Chiller replacement program, the Bank underestimated the difficulties related to the lack of proper institutions at the local level to develop this type of programs. Not only is it necessary to have experience and knowledge of energy savings, but also the capacity to finance and collect repayments so that a revolving fund can work effectively. Fortunately enough, the Bank was cautious and did not spend any resources in the absence of a proper institutional arrangement. In any case, TA efforts were rightly oriented to ensure that the main component could be successfully implemented. Since the resources to implement the chiller replacement program were approved by MLF as part of the National CFC Phase-out Program, to be implemented through by UNIDO, one of the MP implementing agencies, it will be easy for FONDOIN to ensure that the component be executed under a future ODS phase-out operation.

40. Although not formalized through a Mid Term Review, FONDOIN requested UNIDO to implement the chiller replacement component under the National ODS project. This arrangement was acceptable to the Bank, considering the difficulties encountered to its implementation, and taking into account that the main project component to phase-out production at PRODUVEN, was already successfully completed. Out of the USD17 million, 97.6% of the funds had already been disbursed. FONDOIN was unable to coordinate specific actions with UNIDO to implement this component by the closing of the project.

2.3 Monitoring and Evaluation (M&E) Design, Implementation, and Utilization

41. PRODUVEN was not allowed to exceed the allocated yearly production cap and would be subject to monitoring of its production. The excess of production was to be penalized pursuant to the Agreement between the GoV and the MLF Executive Committee. To monitor and enforce the CFC production phase-out plan, PRODUVEN was asked to adopt a monitoring plan and report quarterly CFC production figures and raw material volumes to FONDOIN and the Bank. The Plant was subject to annual

verification by independent auditors contracted by FONDOIN under terms of reference approved by the Bank, and was subject to periodic visits from FONDOIN staff to check production information and activities, including monitoring of operations on CFC and HCFC-22 production. This assessment was also supervised by the Ministry of the Environment. To facilitate this, PRODUVEN made available to inspection teams, details of feed stocks such as CTC, AHF and chloroform use, as well as the tonnage of CFC11 and CFC12, and of HCFC-22 produced, checked in inventory stocks and through daily logs of plant operations. Since feed stocks (CTC, chloroform and AHF) have to be imported into Venezuela, FONDOIN accepted Customs Office documentation as part of the paper trail. FONDOIN and the Bank monitored and supervised implementation of the CFC production phase-out schedule. Importers and distributors reported CFC management to the GoV, any enterprise giving false information or delaying the presentation of reports was sanctioned according to the country´s legal framework. FONDOIN, on the other hand, submitted semi-annual progress reports outlining results on the agreed performance indicators and on the status of subproject processing and implementation. The results of the international audits were also made known to MLF, as part of their implementation follow-up.

2.4 Safeguard and Fiduciary Compliance

42. The Project was rated as category C, however, an Environmental Assessment and Management Plan (EMP) were developed to secure a careful management and good practices for dismantling, removal and disposal of the reaction equipment and materials. PRODUVEN was a swing plant, therefore it could only produce HCFC or CFC at a single time. Since both chemicals required different feed stocks, the plant reactors needed thorough purges before engaging in a different chemical production campaign. For this reason, the EMP included a chemical residual management plan with detailed description of institutional roles and responsibilities and procedures for the removal of the antimony chlorofluoride catalyst from PRODUVEN's plant reactor.

43. The annual verification audits confirmed that the equipment dismantling at PRODUVEN took place according to the Equipment Disposal Plan (EDP), and hazardous substances were managed through the application of adequate environmental practices to avoid any exposure to the environment.

44. The project did not trigger the Bank's social safeguard policies (Involuntary Resettlement and Indigenous Peoples).

45. Regarding fiduciary compliance, the project carried out procurement and financial management according to the provisions of the Grant Agreements. Financial audit reports were timely delivered and followed the procedures established in the terms of reference approved by the Bank and all expenditures were reported as eligible.

2.5 Post-completion Operation/Next Phase

46. The MPMF finances incremental operational and capital costs for sub-projects. In the cases where anticipated sub-projects took place, equipment purchased was fully paid for by each company (in some cases, firms contributed their own resources) to enable ODS substitute technologies. The CFC production closure helped reduce the local supply of ODS in the country. Sustainability of the project as a whole has been guaranteed by establishing a Law for the Control of Ozone Depleting Substances (2007), to limit imports of ODS and prevent new companies from coming into the market and resuming the use of these substances. In any case, once CFC production was closed, the licensing system and the import quotas generate a barrier to avoid ODS imports outside the MP phase-out targets. Although the country has faced an unstable political period and timelines for project implementation and institutional strengthening activities have been postponed, activities have advanced and concluded.

47. FONDOIN has been strengthened enough to implement and monitor the MP phase-out for the years to come, provided institutional strengthening funding from MPMF is available. Once the country has complied with the complete phase-out of CFCs in 2010, it is now committed to start a new phase for the elimination of HCFC (Hydrocloro-fluorocarbons). The UNIDO supported implemented National CFC Phase-out Project will ensure that final conversions to non-ODS technologies take place.

3. Assessment of Outcomes

3.1 Relevance of Objectives, Design, and Implementation

48. Venezuela’s Reduction of ODS Project objectives were in line with (i) Venezuela's obligations under the Montreal Protocol and its Amendments; (ii) the Country Program; (iii) recommendations made by the Executive Committee's Sub-group on the Production sector; (iv) data collected from producing and user enterprises; (v) the independent techno-economic audit in the CFC production sector carried out by the MLF; and (vi) field visits carried out by an international expert in CFC production and the World Bank team.

49. The table below summarizes the phase out schedule as per the Agreement between the EXCOM and the GoV, and the actual production according to audit reports. The CFC Production Phase-out Plan was consistent with the MLF principles and guidelines for calculating incremental costs; the methodology adopted to calculate complete phase-out costs was based on Venezuela’s understanding of the draft guidelines for production phase-out.

Table 7: CFC Phase-out schedule as per the Agreement with EXCOM:

Year	2004	2005	2006	2007	2008	TOTAL
Max. annual allowable production (MT)	4,400	2,913	2,913	0	0	**10,226**
Actual production (MT)	3,565	2,451.4	2,876	0	0	**8,892.4**
Montreal Protocol Control Measures	5,341	2,913	2,913	1,214	1,214	**n/a**
TOTAL MLF grant (US$ million)	3.30	8.1	1.75	2.3	1.05	**16.50**
PRODUVEN (US $ million)	3.2	8	1.65	2.2	1	**16.05**
FONDOIN (US $ million)	0.1	0.1	0.1	0.1	0.05	**0.45**
Agency fees (US $ million)	0.2475	0.6075	0.1312	0.1725	0.0787	**1.2375**

50. The maximum annual allowable production was to decrease by 82% in 2004 from the baseline figure of 5,341, and production would be limited to 41% of the baseline in 2005 and 2006. This would provide a stockpile for residual uses through 2010, both domestically and in export to other Article 5 countries. The main reason to explain the production level drop in PRODUVEN, as compared to the agreed levels, is the demand reduction from industries already converted to non-ODS technologies. Also there was an economic recession in 2004-2005, which caused demand and production to contract. By 2007 production was phased-out completely. This effectively aided Venezuela to comply with its MP obligations three years earlier than mandated.

51. The Project was fully successful in supporting Venezuela to fully comply with the Phase-out plan of ODS as established under the Montreal Protocol. While market forces and government intervention have also determined this trend, the Project ensured that the conversion to non-ODS technologies was sustainable and prevented a recurrence of ODS use over the long term. Technical assistance to improve FONDOIN capacity ensured adequate monitoring and detection of illegally traded ODS. A public information campaign, a study of the market effects of the phase-out, information management systems, and control systems contributed towards achieving the targets sustainably. The performance-based approach used in the project, where PRODUVEN would receive compensation according to internationally monitored phase-out of its production, proved to be a cost-effective approach, not common under Montreal Protocol projects. Besides, synchronizing demand and supply phase-out helped effectively achieve the objectives set out in Venezuela's MP Country Program.

52. Although the component for the establishment of a national mechanism for replacement of chillers through a revolving fund scheme was not implemented, this failure cannot hinder the overall's Project success. The CFC production phase-out component deployed USD16.45 million to eliminate about 2400 tons CFC per year. On the other hand the USD0.5 million were to eliminate as much as 20 tons CFC per year. The introduction of the component was to add capacity for implementing self sustainable mechanisms as a revolving fund.

3.2 Achievement of Global Environment Objectives

53. Project success is deemed **Satisfactory**, as the overall main project objective, to early phase-out CFC production was properly achieved. Production of about 2400 tons of CFC per year was completely closed. First, the fundamental objective of the project was to accelerate compliance with the obligations of the GoV under the Montreal Protocol by early phasing-out CFC production. PRODUVEN effectively ceased production of CFC-11 and CFC-12 by the end of 2006, resulting in a strong positive impact in the global supply market of CFCs. This was achieved through an efficient policy-based management system, without unduly harming industrial and economic growth or consumer interests. The project built institutional capacity to bring long-term benefits to Venezuela.

54. Among the actions that contributed to the decrease in the demand of CFCs, was the agreement between the GoV and PRODUVEN to apply a price policy of CF 11 and 12. This policy allowed a smooth conversion of equipment to start using substitute substances.

3.3 Efficiency

55. Implementation of the CFC production closure project was satisfactory, with no delays, therefore, the project was fully implemented within the agreed time table, in a cost-effective manner. The main criterion that determines the level of eligible funding for these projects is cost-effectiveness (CE). Projects' cost effectiveness must fall within pre-established CE thresholds for the different sectors to be eligible. This means that all approved MP projects are expected to comply with that pre-set indicator of efficiency.

56. Although no cost-effectiveness thresholds were established by MLF for ODS production closure projects, it may be said that the Project cost effectiveness is very high, and well beyond the thresholds presented in Table 8 below. For example, the Project initially contemplated a reduction of 3369 MT, with a cost of US$ 4,897/ton. The actual reduction was 4702,6 MT, therefore the real cost was US$ 3,508.70/ton. The cost per ton was reduced in 28%.

57. The cost effectiveness is a measure of how efficient the project has been in utilizing funds put at its disposal to meet its objectives. The most common method used

to calculate cost-effectiveness is to calculate the total incremental costs of a project, excluding cost of safety where applicable, divided by the amount of its Ozone Depleting Potential (ODP) to be phased out (More details in Annex 3).

Table 8. Cost effectiveness by sub-sector

Sub-sector	Funds disbursed	Approved ODP phase out	Cost effectiveness
Mobile air conditioning	1,344,742	137	9.82
Sterilization	81,579	7.6	10.73
Rigid Foams	795,705	91	8.71
Refrigeration	305,052	24	12.87
Total	**3,085,883**	**259.6**	**9.73**

3.4 Justification of Overall Outcome Rating

Rating: Satisfactory

58. The project's objective was met through the following outcomes:

a) PRODUVEN ceased completely CFC production by the end of 2006, which allowed Venezuela to fulfill its commitments to the Montreal Protocol ahead of schedule.
b) The equipment used in the production of CFC-11&12 was totally dismantled, retrofitted, and disposed according to good environmental operating practices (the Environmental Management Plan and the Equipment Disposal Plan).
c) Labor compensation for PRODUVEN staff was carried out according to Venezuelan law requirements.
d) The GoV established production caps and bans for ODS imports and developed export/import control based on a license/quota system.
e) The GoV developed technical capacity to monitor CFC import/export of illegal substances.
f) A public awareness campaign was designed and implemented on the harmfulness of CFCs and other ODS increases.

4. Assessment of Risk to Global Environment Outcome

Rating: Low

59. The risk to the global environmental outcome is minimal; project sustainability is rated as likely. Venezuela has shown a strong commitment to adhering to its Montreal Protocol obligations and should completely phase out ODS by 2010. The 2005 data show

that the country has been meeting its obligations and is well on its way to meeting the 2010 deadline. In addition, the GoV has raised public awareness of the need to protect the ozone layer, and consumers are interested in purchasing non-ODS products. Proper disposal and dismantling of CFC producing equipment was achieved as confirmed by audit reports. Since PRODUVEN was designed as a "swing plant" several of the pumps, heat exchangers, instruments and storage facilities are usable to produce HCFC-22.

5. Assessment of Bank and Borrower Performance

5.1 Bank

(a) Bank Performance in Ensuring Quality at Entry

60. Rating: Moderately Satisfactory

61. Throughout the project life, Bank staff worked closely with FONDOIN and PRODUVEN to ensure proper identification, preparation, and implementation of the project. The Bank provided valuable support to the GoV in the strategic policy design and during its negotiations at the EXCOM meetings and hired highly specialized consultants to support the GoV in key sectors. The Bank's Assistance Strategy for Venezuela, was to engage in a dialogue with the government to help the country comply with the Montreal Protocol. The Bank developed close working relationships with all stakeholders, thereby enhancing its credibility and the acceptability of its technical assistance (TA) advice.

62. As per the Chiller replacement program, the Bank failed in the design of the Project due to the following reasons: i) this small activity was placed at the level of a component, it only represented 3% of the total cost and its contribution to the phase-out Plan was marginal; and ii) the Bank underestimated the difficulties related to the lack of proper institutions at the local level to develop this type of programs; not only is it necessary to have experience and knowledge of energy savings, but also the capacity to finance and collect repayments so that a revolving fund can work effectively.

(b) Bank's Quality of Supervision

63. Rating: Satisfactory

64. Supervision was adequate, as Bank staff worked closely with FONDOIN to conduct periodic supervision missions during the project. The Bank supervised overall implementation of the strategy and reported to the EXCOM on implementation progress. Continual reports, including Progress Reports, were prepared and submitted to the Bank and the MPMF Secretariat.

65. Procurement proved satisfactory, as well as financial audits. With regard to safeguard policies, the Bank team assessed the implementation of the Environmental management Plan and the Equipment Disposal plan to secure that hazardous substances

were properly managed and not released to the environment. The verification reports confirmed that good environmental practices were applied. The project did not trigger the social safeguards.

(c) Justification of Rating for Overall Bank Performance

66. Rating: Satisfactory

67. The project helped Venezuela meet its ODS production and consumption commitments under the Montreal Protocol. ODS production ceased completely by 2006, three years in advance of MP targets. The Bank's proactive involvement to help the GoV phase-out production was very important, so that initial delays could be surmounted and implementation could advance fast while ensuring industrial and economic growth was not unduly harmed and consumer interests were protected.

5.2 Borrower

(a) Government Performance

68. Rating: Satisfactory

69. FONDOIN was responsible for developing Annual Operative Plans acceptable to the Bank, detailing operating procedures and project targets, and setting up disbursement schedules. FONDOIN implemented a monitoring and reporting system to track the Phase-out Plan's execution, and verified CFC phase-out by PRODUVEN in an effective way. The activities under the agreement with FONDOIN were developed appropriately and successfully, completely adhered to the ODS phase-out schedule of the Montreal Protocol. Hence its performance is assessed as satisfactory.

(b) Implementing Enterprise

70. Rating: Satisfactory

71. PRODUVEN's role as the implementing enterprise was done in a satisfactory manner, as it effectively phased-out CFC production according to schedule. PRODUVEN reported CFC production figures to FONDOIN, and was readily available to periodic visits from FONDOIN staff and independent auditors for inspection.

(c) Justification of Rating for Overall Borrower Performance

72. Rating: Satisfactory

73. The high level of collaboration and commitment by FONDOIN and PRODUVEN for the implementation of the Project, allowed Venezuela to comply with the country commitments under the Montreal Protocol.

74. Proper contracting and monitoring of international audits was carried out to inform MLF on PRODUVEN's advancement with the CFC production phase-out program. Audits verified production data logs, inventories of feed stocks and products (CFC & HCFC). Decree # 4335 was enacted by GoV in 2006, setting limits for ODS production and imports starting 2007, also substantially contributing to overall Project objective compliance.

75. The destruction of CFC12&11 producing equipment by PRODUVEN prevented reversing the process in the future. This included destruction of decanters, pumps, activated carbon column, vapor line from carbon steel reactor, and a silica dryer. Other equipment such as containers and an exchanger were converted to work with the HCFC production process.

6. Lessons Learned

76. The main lessons that can be drawn from this project are:

Sectoral Approach

77. The performance based, disbursement oriented project design for CFC production closure proved to be very well designed and successful. This approach enabled PRODUVEN to flexibly arrange for its own implementation procedures, which at the end were less costly and more efficient.

Institutional strengthening

78. An integrated approach for capacity building ensures that conversion to non-ODS technologies is sustainable and prevents a recurrence of ODS use over the long term. Training on the control of illegally trades ODS should cover all the relevant institutions, for this reason, the project provided training to officers from the Ministry of Commerce and Industries , as well as customs staff. Customs were also equipped to accurately detect imports of ODS.

79. As to complementary actions, a public information campaign, a study of the market effects of the phase-out, information management systems, and control systems, also contributed towards achieving the targets sustainably.

Import Control

80. In addition, by establishing a well managed and enforced ODS Import Licensing System, GoV was able to set import quotas according to the ODS phase-out targets. These levels of imports, coupled with the industrial conversion, proved the need to collaborate amongst sectors (i.e., industry and commerce) to ensure compliance and sustainability.

Chiller Replacement component

81. An institutional analysis should have taken place before the implementation of this program to have information on the existing weaknesses and incorporate into the project design specific mechanisms to tackle with these issues.

7. Comments on Issues Raised by Borrower/Implementing Agencies/Partners

(a) Borrower/implementing agencies

See detailed comments in Annex 7.

(b) Co-financiers

Not applicable.

(c) Other partners and stakeholders

Not applicable.

Annex 1. Project Costs and Financing

(a) Project Cost by Component (in USD M equivalent)

Component	Appraisal estimate (USD M)	Actual/latest estimate (USD M)	Percentage of appraisal (*)
SUBPROJECTS	16.05	16.05	100.00%
AGENT FEES, ADMINISTRATION AND TA	0.45	0.42	93.33%
Total Baseline Cost	**17.00**	**16.47**	96.88%
Physical Contingencies	0.0	0.0	0.00
Price Contingencies	0.0	0.0	0.00
Total Project Costs	**17**	**16.47**	96.88%
Project Preparation Facility (PPF)	0.0	0.0	0.0
Front-end fee IBRD	0.0	0.0	0.0
Total Financing Required	**17.00**	**16.47**	96.88%

(*) The appraisal level DOES NOT correspond to actual IBRD financing. It is a grant agreement allowance as actual funds come approved by the MP MLF based on specific projects, which are prepared and approved over the life of the Bank's operation.

(b) Financing

Source of funds	Type of co-financing	Appraisal estimate (USD M)	Actual/latest estimate (USD M)	Percentage of appraisal
BORR		0.5	0	0%
MP		17	16.47	96.88%

Annex 2. Outputs by Component

Outcome and Output Indicators by Component: Venezuela ODS Phase-out Project

Note: In line with OP/BP 10.21 on investment operations financed by the MLF, the project only required a Memorandum of Director, not a PAD, consisting of a disbursement schedule against performance of objectives, it did not include a monitoring framework. For this reason, the table of indicators is based on the information contained in the grant agreements signed with FONDOIN and PRODUVEN.

Indicator	Baseline Value	Original Target Values (from approval documents)	Formally Revised Target Values	Actual Value Achieved at Completion or Target Years
The objective of the Project was to phase out, by December 2006, all production of CFC in Venezuela, thereby advancing the implementation of Venezuela's Country Program for the Phase Out of Ozone Depleting Substances under the Montreal Protocol.				
Component 1: Phase-out of CFC Production **Outcome indicator:** CFC 11 and 12 completely phase-out by December 2006.				
Output Indicator # 1	Venezuela fully complies with the ODS phase-out commitments under the Montreal Protocol.			
Value (quantitative or Qualitative)	4400 tons ODP annually	0 tons of ODP produced annually	N/A	CFC 11 and 12 production completely phased out by December 2006 (i.e., zero production in-country). Audit reports dated February 2007, February 2008, February 2009 and December 2010, confirmed that production ceased on December 31, 2006.
Date achieved	2004	December 31, 2006	N/A	December 31, 2006
Comments (incl. % achievement)	100% achieved and Venezuela fully complies with the Montreal Protocol. Proper contracting and monitoring of international audits was carried out to inform MLF on PRODUVEN's advancement with the CFC production phase-out program, Audits verified production data logs, inventories of feed stocks and products (CFC & HCFC).			

Output Indicator # 2	Equipment used in CFC-11/12 production is dismantled, retrofitted or disposed according to good environmental practices as per the Environmental Management Plan and the Equipment Disposal Plan (EDP).			
Value (quantitative or Qualitative)	PRODUVEN originally equipped with machinery and systems related to the production of CFC 11/12 and HCFC-22. Dismantling of CFC related systems should take place by December 2006.	CFC 11/12 production systems dismantled by December 2006.	N/A	PRODUVEN was designed as a swing plant, therefore dismantling took place on CFC related systems following the EDP.
Date achieved	2004	December 31, 2006		December 31, 2006
Comments (incl. % achievement)	100% achieved. Destruction of CFC12&11 producing equipment took place, which prevented reversing the process in the future. This included destruction of decanters, pumps, activated carbon column, vapor line from carbon steel reactor, and a silica dryer. Other equipment such as containers and an exchanger were converted to work with the HCFC production process.			
Component 2: Technical Assistance to FONDOIN **Outcome indicator:**				
Output Indicator # 3	The GoV sets production caps and bans ODS imports			
Value (quantitative or Qualitative)	No regulation exist to set up the limits for ODS production and imports	Regulations to set up the limits for ODS production and imports is developed	N/A	Decree 4335 was enacted in 2006, setting limits for ODS production and imports starting 2007.

		and enacted.		
Date achieved	2005	June 30, 2006	N/A	June 30, 2006
Comments (incl. % achievement)	100% achieved. The application of this Decree was crucial to secure the early CFC production closure and was key to reduce the ODS availability in the market, so that projects to eliminate ODS consumption could be better sustained.			

Output Indicator # 4	The GoV has the technical capacity to monitor CFC import/export of illegal substances			
Value (quantitative or Qualitative)	Officers at the Ministry of Commerce and Customs not capable of controlling ODS.	Government officers, including customs staff, duly trained on the detection of illegally traded ODS.	N/A	
Date achieved	2005	June 30, 2009		June 30, 2009
Comments (incl. % achievement)	100% achieved. Training activities involved no less that 30 GoV staff at the national level, including customs officers in the detection of illegally traded ODS, and workshops for various participants in the Phase-out Plan, with more intensive activities over the first two years of project implementation and some additional training in the later years as relevant issues emerged. Customs also received equipment to detect CFCs and prevent illegal trading.			

Output Indicator # 5	Public awareness on the harmfulness of CFCs and other ODS increases.			
Value (quantitative or Qualitative)	No public awareness in relation to CFC phase-out plan importance	Public awareness campaign designed and implemented	N/A	Overall public awareness has been raised. One national workshop and 3 regional workshops were developed.
Date achieved	2005	June 30, 2009	N/A	June 30, 2009

Annex 3 . Economic and Financial Analysis

1. Montreal Protocol projects do not apply an economic analysis. The criteria applied was the Cost-Effectiveness Threshold (CER=Grant Amount (US$)/Kg ODP eliminated) calculated for each sub-project funding proposal. The cost effectiveness of this financial mechanism is a measure of how efficient it has been in utilizing funds put at its disposal to meet its objectives. The most common method used to calculate cost-effectiveness is to calculate the total incremental costs of a project, excluding cost of safety where applicable, divided by the amount of its Ozone Depleting Potential (ODP) to be phased out. Cost effectiveness is defined by the following formula:

$$C = \frac{IC + 10}{M\,[ODP]}$$

where:

C = Cost-effectiveness
IC = Incremental capital costs (covered by the Fund)
10 = Net incremental operating costs (covered by the Fund)
M [ODPI = Amount of ODS to be phased out annually (weighted kg ODP)

2. The following sector and subsector cost-effectiveness threshold values (measured in US$/kg ODP) were applied to determine the maximum eligible OTF Grant 054980 (PRODUVEN) amounts for subprojects:

Table 12 – Cost Effectiveness Thresholds

Sector	US $/Kg ODP
Aerosol	
Hydrocarbon	4.40
Foam	
General	9.53
Flexible polyurethane	6.23
Integral skin	16.86
Polystyrene/polyethylene	8.22
Rigid polyurethane	7.83
Halon	
General	1.48
Refrigeration (factory conversions)	
Commercial	15.21
Domestic	13.76
Solvent	
CFC-113	19.73
TCA	38.50

3. Although no cost-effectiveness thresholds were established by MLF for ODS production closure projects, it may be said that the project cost effectiveness is very high, at USD0.16/k ODP, well beyond the thresholds presented in the table above.

Annex 4 Bank Lending and Implementation Support/Supervision Processes

a) Task Team members

Names	Title	Unit	Responsibility/ Specialty
Lending			
Juan Lopez-Silva	Sr Environmental Spec.	LCSEN	TTL
Supervision/ICR			
Juan Lopez-Silva	Sr Environmental Spec.	LCSEG	TTL
Roberto Gabriel Aiello	Sr Energy Spec.	LCSEG	TTL
Horacio Terraza	Sr Environmental Spec.	LCSEN	TTL
Renán Poveda	Sr Environmental Spec.	LCSEN	TTL
Andrea Semaan	Consultant	LCSEN	Consultant
Gabriela Arcos	Environmental Spec.	LCSEN	TTL
Hernan M. Gonzalez Figueroa	Consultant	LCSEN	Consultant

(b) Staff Time and Cost

Stage of Project Cycle	Staff Time and Cost (Bank Budget Only)	
	No. of staff weeks	USD Thousands (including travel and consultant costs)
Lending		
FY04	10	20.0
FY05	5	10.0
Total:		30.0
Supervision/ICR		
FY06	5	10.0
FY07	8	16.0
FY08	5	10.0
FY09	3	6.0
FY10	3	6.0
Total:		48.0

Annex 5. Beneficiary Survey Results

Not applicable.

Annex 6. Stakeholder Workshop Report and Results

Not applicable.

Annex 7. Summary of Borrower's ICR and/or Comments on Draft ICR

The following comments were submitted by PRODUVEN:

1. In table 2, the production of CFC 11 and 12 for 2000 should be rectified as 2,706 MT.

Comment has been addressed in Table 2.

2. Section 2.3 indicates that the technical audit (production verification) was carried out by FONDOIN and the Bank, we suggest to include the Ministry of the Environment and one of the control entities.

Addressed in section 2.3.

3. Data in Table 4 is not consistent with data in Table 7, the maximum annual production should be 4,400, 2,913 and 2,913 MT.

Addressed in Table 4

4. In table 7, the following issues should be rectified:

- Actual production for 2005 indicates 2261 MT, it was actually 2451,4 MT, therefore, the total amount is 8892,4 MT.
  Rectified in Table 7. Page 20.

- Actual ODP production (CFC 11 and 12) should be the same as the produced MT multiplied by 1.

  Addressed in table 7.

5. We suggest to clearly show the Project's efficiency according to the production reduction compared to the maximum ODS allowed by the Montreal Protocol, it could be added to Table 5 or in other section of the text. The amount allowed by MP was 13, 595 MT ODP, while the actual production was 8892,4 MT ODP, this represents a saving of 4702,6 MT or a reduction of 34.59%.

6. Similarly, the document could indicate that the Project contemplated a reduction of 3369 MT, with a cost of US$ 4,897 per ton. Given that the actual reduction was 4702,6 MT, the real cost was US$ 3,508.70. The cost per ton was reduced in 28%.

Comments in paragraphs 5 and 6 above have been addressed in section 3.3.

7. Section 3.2 under the description of Component 1, it should be added that among the actions that contributed to the decrease in the demand of CFCs, was the agreement between the GoV and PRODUVEN to apply a price policy of CF 11 and 12. This policy allowed a smooth conversion of equipment to start using substitute substances.

Addressed in section 3.2

FONDOIN did not provide additional comments and indicated its concurrence with PRODUVEN's comments.

Annex 8. Comments of Cofinanciers and Other Partners/Stakeholders

Not applicable.

Annex 9. List of Supporting Documents

1. Aide memoires and project status reports
2. Audit reports
3. Project Operative Plans developed by FONDOIN
4. Financial and Procurement information from FONDOIN
5. Grant Agreement, Venezuela's Ozone Depleting Substances Phase Out, World Bank, December
6. Grant Agreement,
7. Subgrant agreements, MAVDT, ACCI and beneficiary companies
8. Project Document, prepared by World Bank Regional Team, Strategy for Gradual Phase-out of CFC-11 & CFC-12 Production in Venezuela, 2004
9. MOD for ODS Reduction Project, 2005
10. Progress reports prepared by FONDOIN
11. On-Site Inspection and Audit Reports for PRODUVEN