Brazilian HCFC Phase-Out Management Programme - HPMP

Final Project Evaluation: BRA/12/G76

HPMP – Stage 1– PU Foam Sector

Product 3: Final Report

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1. Introduction

This report aims to present the Final Report of the Project Evaluation, referring to the [1]consulting service contracted on March 12, 2020 to carry out the final evaluation of Brazilian HCFC Phase-Out Management Programme – HPMP - Project BRA/12/G76 - Stage 1 - Foam Sector.

The scope of the final evaluation contracted refers to the analysis of the actions carried out by the project, through the components: Component 1: Regulatory Actions, Component 2: Investment Projects for the technological conversion of enterprises in the foam sector and Component 4: Monitoring and Evaluation Unit.

The main objective of the Report is to present the final evaluation of the project, based on the collection of secondary data made available, as well as meetings and interviews with key people of the institutions directly involved in the project (UIM/UNDP, MMA and IBAMA) and with representatives of enterprises (direct beneficiaries).

This report is structured as follows: 1. Introduction; 2. Acronyms and abbreviations; 3. Tables and Figures; 4. Executive Summary; 5. Presentation of the Project, 5.1 Objectives and structure of the Project, 5.2 Planned Results vs. Outputs, 5.3 Stakeholders and Institutional Arrangement, 5.4 Benefited Enterprises, 5.5 Organizational Structure, 5.6 Deadline and Financing and 5.7 Contracts executed.

In items 6 and 7, the Methodology used and the Project Evaluation are being presented, subdivides into the following items: 7.1 Main indicators: Efficiency and effectiveness, 7.2 General Framework of Indicators, 7.3 Project Relevance Analysis, 7.4 Project Efficiency Analysis, 7.5 (Outcomes/Outputs and Impacts), 7.6 Dissemination of Information and Communication, 7.7 Sustainability and Lessons Learned and 7.8 Project Results Matrix (Logical Framework).

In item 8, Conclusions and Recommendations and in item 9, Annexes.

The following documents have been annexed to this report: Appendix (1) Reference Documents; Appendix (2) Bibliographic References; Appendix (3) Profile of enterprises (beneficiaries of the project); Appendix (4) Number of enterprises converted (end users) by Regions, States and Municipalities; Appendix (5) Responsibility Assignment Matrix; Appendix (6) Project risk assessment (June/2019); Appendix (7) Roadmap (Interviews with beneficiaries); Appendix (8) Questionnaires (UIM/UNDP and ABC); Appendix (9) Attendance list of the initial meetings (UIM/UNDP, MMA and IBAMA);

[1] Special Services Contract - IC n° BRA10-38057

Appendix (10) Attendance list (Interviews: Direct beneficiaries); Appendix (11) Attendance list (Interviews: ABC and UNDP) and Appendix (12) Final Status Report: Final Evaluation of the Project (3/12/20 to 6/30/20).

2. Acronyms and abbreviations

ABNT	Brazilian Association of Technical Standards
ABEMA	Brazilian Association of State Environmental Entities
ABINEE	Brazilian Association of the Electrical and Electronic Industry
ABIQUIM	Brazilian Chemical Industry Association
ABRAS	Brazilian Supermarket Association
ABRAVA	Brazilian Association of Refrigeration, Air Conditioning, Ventilation and Heating
ABRIPUR	Brazilian Polyurethane Industry Association
ABC/MRE	Brazilian Cooperation Agency/Ministry of Foreign Affairs
CNI	National Confederation of Industry
COC	Certificate of Completion
CAP	Project Monitoring Committee
ELETROS	National Association of Manufacturers of Electronic Products
ExCom	Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol
FFS	Fully Formulated System
FMF	Flexible Moulded Foam
FML	Multilateral Fund for the Implementation of the Montreal Protocol
GEE	Greenhouse Gases
GWP	Global Warming Potential
GIZ	Deutsche Gesellschaft für Internationale Zusammenarbeit GmbH, within the framework of German Cooperation for Sustainable Development
GPCO	Ozone Layer Protection Management
HCFC	Hydrochlorofluorocarbon
HC	Hydrocarbon
HFC	Hydrofluorocarbon
HFO	Hydrofluorolefin
IC	Individual Contract
IOC	Incremental Operating Cost
IBAMA	Brazilian Institute of The Environment and Renewable Natural Resources
IN	Normative Instruction
ISF	Integral Skin Foam
LTA	Long-Term Agreement

MAPA	Ministry of Agriculture, Livestock and Supply
MCTIC	Ministry of Science, Technology, Innovations and Communications
ME	Ministry of Economy
MMA	Ministry of the Environment
MS	Ministry of Health
SDG	Sustainable Development Goals
PBH	Brazilian HCFCs Elimination Program
PCR	Project Completion Report
ODP	Ozone Destruction Potential
SME	Small and Medium Enterprise
PMI®	Project Management Institute
UNDP	United Nations Development Programme
PROZON	Interministerial Executive Committee for the Protection of the Ozone Layer
PU	Polyurethane
PUR	Rigid polyurethane foams
PR	Progress Report
ODS	Ozone Depleting Substance
SIGAP	Project Monitoring Management Information System
SMCQ	Secretary of Climate Change and Environmental Quality
TDR	Reference Term
UIM	Implementation and Monitoring Unit
UNIDO	United Nations Industrial Development Organization

3. Tabelas e Figuras

4. Executive Summary

Background

As of the XIX/6 decision agreed at the 19th meeting of the parties to the [2]Montreal Protocol on Annex C, Substances of Group I, the Parties agreed to anticipate the schedule for eliminating the production and consumption of HCFCs.

For countries supported by [3]Article 5 of the Montreal Protocol, which included Brazil, the following total reduction targets were agreed: (a) 10% by 2015; (b) 35% by 2020; (c) 67.5% by 2025; (d) 97.5% by 2030; (e) Allow the annual average of 2.5% for maintenance services during the period 2030 - 2040.

The strategy defined for Brazil, contemplated in a first phase the freezing of the baseline in 2013, considering the average consumption of 2009 and 2010 (maximum consumption of 1,327.30 t ODP) and in 2015 a total reduction of 16.60% (1,107.00 t ODP) in relation to the baseline. In addition, a reduction rate of 32.36% was defined for HCFC-141b and 6.51% for HCFC-22, according to [4]IN IBAMA No. 14, of December 20, 2012.

The targets were successfully met and as of February 14, 2018, IBAMA published an [5]IN no. 4, maintaining the total quota for elimination of HCFCs at 16.60% until the year 2019.

As of January 2020, the total elimination quota of HCFCs was reduced to 39.30% (806.10 t ODP) compared to baseline, with 100% elimination projection by 2040 and the specific quota of HCFC-141b, reduced to 90.03%, in addition to the ban on the [6]import of HCFC-141b into the foam manufacturing sector in 2020.

[2] Montreal Protocol on Substances that Deplete the Ozone Layer: International Treaty that entered into force on January 1, 1989 and which currently presents universal adoption with 198 States Parties. The document signed by the States Parties imposes specific obligations, in particular, the progressive reduction of the production and consumption of Ozone Depleting Substances (ODSs) until their total elimination. Brazil acceded to the Protocol through Decree No. 99,280 of June 6, 1990, becoming a Party.

[3] Any Party whose annual consumption of the Substances in Annex A to the Montreal Protocol is less than 300 grams per capita on the date of entry into force of the Protocol or in any period before 1 January 1999.

[4] Normative Instruction No. 14, of December 20, 2012. IBAMA.

[5] Normative Instruction No. 4, of February 14, 2018. IBAMA.

[6] Criterion for defining import quotas: sums of the specific quotas of HCFCs, controlled by IBAMA, through the consent of import licenses.

The Project: Brazilian HCFC Phase-Out Management Programme – HPMP - Stage 1 - Foam Sector

The results of the evaluation presented in this report show that the objectives of the project contributed to the achievement of the results proposed by the [7]2030 Agenda.

The five of seventeen sustainable development goals – SDGs proposed by the [8]2030 Agenda were directly or indirectly impacted by the project, namely: SDG 3: Ensuring a healthy life and promoting well-being for all, at all ages; SDG 9: Building resilient infrastructure, promoting inclusive and sustainable industrialization and fostering innovation; SDG 12: Ensure sustainable production and consumption patterns; SDG Sonia Prota (Consultant) 13: Take urgent action to combat climate change and its impacts and SDGs: 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development.

As for effectiveness, the Brazilian HCFC Phase-Out Management Programme – HPMP - BRA 12/G76 Project - Stage 1 - Foam Sector, started in September 2012, exceeded the revised goal for the elimination of HCFC-141b consumption by 1.0%, resulting in 164.38 t ODP (Ozone Destruction Potential) eliminated.

The initial target provided for the elimination of [9]168.88 t ODP from HCFC-141b, in the polyurethane foam manufacturing sector until 2020, and was revised later to [10]162.88 t ODP, due to three investment projects initially planned and not carried out, but the difference was eliminated through normative instruments established by the Brazilian Government, thus achieving the goal agreed with the Montreal Protocol.

The [11]strategy initially adopted defined that of the total of 168.8 tons ODP: 32.35 tons ODP corresponded to individual projects, with application in continuous panels; 86.81 tons ODP, to individual and group projects with applications in Integral Skin Foam and Molded Flexible Foam and 49.60 tons ODP, to projects in groups, with applications in Rigid Polyurethane (water heaters, pipe in pipe, thermoware and packaging).

The result was achieved through the technological conversion of 249 enterprises that consumed HCFC-141b and opted for new technological alternatives, with Zero

[7] Global action plan to change the world by 2030. The ONU led process involved its 193 Member States and global civil society.
[8] http://www.agenda2030.org.br/
[9] Planned: 168.8 t ODP. Annex XXI: Agreement between the Government of Brazil and the Executive Committee of the Multilateral Fund for the reduction of HCFCs consumption. Appendix 2-A: The Targets, and Funding (4.2.1).
[10] Revised target: 162.88 t ODP. 3rd Progress Report. Ata Reunion Tripartite. May/2015.
[11] Strategy to reduce the consumption of HCFCs - Stage 1 of the HPMP, approved in 2011, at the 64th ExCom Meeting of the FML.

Potential for Destruction of the Ozone - ODP, in addition to low Global Warming Potential - GWP and refer to the actions implemented by Component 2 - Investment projects for the technological conversion of enterprises in the foam sector.

The actions were implemented through 43 service contracts with the beneficiary enterprises, which corresponded to a total of [12]23 investment projects, of which 21 were completed and 2 [13]partially completed.

Of the 23 investment projects, 09 corresponded to Projects of the type Systems Houses, 14 of the type individual projects and that resulted in a total of 249 converted enterprises.

Of the total number of enterprises converted, 90.76% corresponded to 226 end users converted through Systems Houses.

Enterprises that received technical and financial support from the Multilateral Fund of the Montreal Protocol through the project are legally established in Brazil, and have opted for zero ODP technological alternatives, as well as low GWP.

In addition, they met two eligibility criteria, regarding the year of foundation of the company (prior to [14]September 21, 2007) and the composition of the share capital, total or partial, of a developing country, in accordance with Article 5 of the Montreal Protocol.

In the implementation strategy, the eligible enterprises that presented technical condition for immediate conversion (Systems Houses and Individual Projects) were initially considered (first two years) providing a more adequate time for the SMEs associated with the Systems Houses to establish internal actions necessary to carry out the technology transfer, such as: negotiation of deadlines with suppliers , acquisition of raw materials necessary for the development of formulations, initiation of laboratory tests and optimization of formulations, validation of safety measures and administrative and environmental licenses, with the competent bodies, among others.

The strategy was successful, regarding the initial conversion of the Systems Houses, making them facilitators of the process of technological transfer to end users. In parallel, end users have the time to prepare for the technological conversion of their plants, with mitigated impact in terms of business.

[12] Component 2: Investment Projects for the technological conversion of enterprises in the foam sector. Output 3 of the Project Results Matrix (Logical Framework).

[13] Partially: Converted System Homes and Unconverted End Users (End-User Conversion will be part of HPMP - Stage 2).

[14] In 2007, the Montreal Protocol began a new phase, through a faster schedule aimed at eliminating the production and consumption of ODS known as HCFCs.

Another favorable point in relation to the implementation strategy adopted was the scope of the market, where the spraying of the sector could pose a challenge, because the goal initially established included approximately 400 enterprises, but the scenario was not consolidated, since, at the time of implementation of the project with end users (SMEs), some enterprises had closed their activities, others went through the process of acquisitions and mergers , among other situations, impacted by the scenario of economic crisis, which the country was going through.

From a new diagnosis, the target was revised to [15]270 enterprises. In relation to the new target, the project achieved a result of 92.22%, which corresponded to a total of 249 converted enterprises.

Of the total number of enterprises converted by regions and states, the State of São Paulo accounted for 47.79% of the total number of enterprises converted to use HCFC-141b and low GWP free technologies, evidencing the estimate indicated in the initial study conducted by the project (47%), followed by Minas Gerais, which accounted for 17.67% of the converted enterprises.

Thus, the project implementation strategy was satisfactory and essential to achieve the goal, considering a number of enterprises distributed in the five regions of Brazil, where: 71.88% of the converted enterprises are present in the southeast region, 18.87% in the south, 3.62% in the central-west, 3.20% in the northeast and 2.40% in the north.

Regarding the efficiency of the management model, the project had the engagement of several stakeholders, through an institutional arrangement that enabled the technical, administrative and financial execution of the project.

This arrangement, formed by the Ministry of the Environment - MMA, responsible for the general coordination of the Brazilian Program for the Elimination of HCFCs - HPMP as a whole, by the Brazilian Institute of the Environment and Renewable Natural Resources - IBAMA as responsible for the supervision and control of ozone-depleting substances, and for the United Nations Development Program - UNDP, as The Leading Implementing Agency, through its Implementation and Monitoring Unit - UIM.

Strategically, the Brazilian Government received technical and financial support from the Multilateral Fund for the Implementation of the Montreal Protocol, having defined UNDP as the implementing agency of the project for the foam sector. UNDP, in turn,

[15] Ata Reunion Tripartite. August/2017. Changes in the number of enterprises, due to changes in the PU market, impacted by the scenario of economic crisis in the country.

enabled the implementation of the project, through actions that facilitated the technological conversion of enterprises that operated PU production line using HCFC-141b and, in some cases, HCFC-22, thus using technologies free of ozone depleting substances and with low potential for global warming.

The costs associated with technological conversion included possible adaptations and/or modifications in the plant, the production line and process and/or equipment, technical assistance, acquisition and/or improvements in equipment, development of formulation, safety adjustments, incremental operating costs, among other activities.

In return, the enterprises involved undertook to finance the excess costs of conversion and the irrevocable elimination of ODS, in particular HCFC-141b, from their polyurethane foam manufacturing process and the use of high GWP alternatives.

Regarding the effectiveness in terms of the number of investment projects implemented with the beneficiary enterprises and financial resources realized (amounts disbursed and committed), the project presented a high performance until June 2020, considering the expected targets, which corresponded to a physical advance of [16]92.30% and financial advance of [17]86.73%.

As for the efficiency in relation to the implementation period, there were delays, impacting on compliance with the expected initial schedule (expected initial duration of 3 years and 3 months), with an expected end date of December 2015. The project went through two requests for a deadline extension, impacting a delay of 4 years and 9 months for its completion, leading the project to a real duration of 7 years and 9 months, with a closing date scheduled for June 2020.

The performance in terms of execution period was impacted by unman controllable factors, among them: instability in the economic scenario at the beginning of the project (2012-2013) and political-economic crisis in Brazil (2014-2016).

Such situations promoted fluctuations in the market (foam sector) leading companies to delay their decisions as to the best time to perform technological conversions, but this factor turned out to be an opportunity for companies to prepare for the necessary changes.

[16] Total: 21 of 23 completed investment projects and 2 partially completed investment projects (unconverted end users will be part of Stage 2 – HPMP).
[17] Progress Report 2019/2020. 85th FML ExCom Meeting for Implementation of the Montreal Protocol, 84th FML ExCom Meeting. Sep,2019.

In addition, other internal factors impacted the project schedule, such as the decision on the most appropriate legal mechanism that would enable the transfer of financial resources from the UNDP Implementing Agency to the beneficiary enterprises to carry out their investment projects.

This process generated a delay of 10 months, from the signing of PRODOC (September 2012) to the effective beginning of the implementation of the industrial conversion projects of the companies, through the signing of the first contract with the beneficiary enterprise, in July 2013.

During the period preceding the formalization of the first contract for the implementation of an industrial conversion project, several field missions were carried out in order to gather and disseminate information about the project, as well as negotiation of initial action plans with the public of beneficiaries.

Another determining factor for the initial delay, which suggests the impact on the final duration, was the lack of knowledge on the part of the enterprises regarding the alternative technology proposed by the project (Methyl Formate), as well as the impact for their business, which required the inclusion of scope (not foreseen), for the transfer of information related to the selection of the most appropriate technology for each enterprise.

Thus, UIM/UNDP together with MMA developed new mechanisms for information transfer to train those involved (enterprises) regarding the technical and financial knowledge promoted by the project. For this action, institutional videos, publications, newsletters were developed.

In addition to intensifying the meetings with the participation of an international consultant to support the implementation of investment projects with enterprises, through action plans.

Events were promoted in parallel, with thematic panels to collaborate in the dissemination of knowledge, seeking to facilitate the process of understanding and adherence of direct beneficiaries (enterprises).

Given the difficulties presented, it was found the need for a longer period for the negotiation of contracts with the beneficiary enterprises, involving the planning of awareness actions and dissemination of knowledge in the initiation phase of investment projects.

In 2015, the deadline was compromised, requiring subsequent extensions, so that they could support the implementation of investment projects, since they were in several stages of implementation in the beneficiary enterprises.

From a broader analysis, it was found that the delay in terms of time can be attributed to the very anticipation of the schedule of elimination of ODS, especially HCFC-141b. With this decision, the time estimated in the initial schedule became insufficient for the preparation of the project, since strategies for the execution of actions through the UIM/UNDP were in the process of being defined, such as a broader diagnosis of the PU market and the mechanism for transferring financial resources to the beneficiary enterprises.

In addition, the beneficiary enterprises were not prepared to receive the project's support, since awareness actions, dissemination of information about the project and technical knowledge about new substances and their impacts in commercial, financial and environmental terms were incipient at that time.

It was attributed as critical success factors of the project:

i) the alignment of its strategic guidelines with the purpose of the HPMP, designed based on the principles of the Montreal Protocol, providing the engagement of stakeholders, through an articulated institutional arrangement and an organizational structure, with a clear definition of roles and responsibilities between the participating institutions (MMA/IBAMA, UIM/UNDP and ABC);

ii) communication and marketing strategies adopted throughout the project, providing visibility and awareness of enterprises in relation to their role in creating a better world, from the use of free technologies of HCFC-141b and low GWP;

iii) technical implementation strategy, which counted on the effective collaboration of an international consultant and the expressive participation of Systems Houses as facilitators of the process of technological conversion of enterprises (end users);

iv) management model of UIM/UNDP that effectively met the needs of beneficiary enterprises, through contract management processes and permanent monitoring mechanisms, in addition to the fast and concise response time to all stakeholders involved (enterprises and interlocutors of the project).

Actions are underway to eliminate 300.9 tons ODP of HCFC-141b, by 2020, however, in relation to the polyurethane foam manufacturing sector, Brazil, and specifically Component 1 of the project, related to regulatory actions, met the goal with

the publication of the Normative Instruction, which prohibits the importation of HCFC-141b into the foam sector as of [18]January 1, 2020.

The results of the completion of Stage 1 of the PBH were positive for the direct beneficiaries (enterprises) in that they provided absorption of new knowledge related to environmental awareness and the application of new alternative technologies to ODS in the production of polyurethane foams.

In addition, they promoted improvements in the production process of enterprises with the improvement of the infrastructure and safety of operation of industrial plants in the foam sector and in the dissemination of environmentally appropriate technologies throughout the production chain.

Another favorable point highlighted through the interviews with the beneficiary companies was the sharing of knowledge between competing companies, provided by the project through Technical Events, promoting the development of a more collaborative and participatory performance in the construction of appropriate solutions for all involved of the PU sector.

Due to the strategic importance of the project for Brazil, for Stage 2, it is suggested to carry out new studies that can deepen and/or complement this evaluation, such as a study directed to groups of enterprises that were converted in Stage 1 (end users), in order to consolidate lessons learned by different profiles of enterprises, transforming them into multiplier agents for other end users, through the dissemination of acquired knowledge, since they represent a quantitative of 226 enterprises.

It is also suggested, the creation of a network of dissemination of knowledge, where, in addition to the Systems Houses, end users can exchange experiences with enterprises that have not yet started the process of technological conversion, supporting the process of implementation of Stage 2 and enabling the creation of new business models and partnerships, for the production chain of the polyurethane market.

[18] Normative Instruction No. 4, of February 14, 2018. IBAMA.

5. Presentation of the Project

5.1 Project objectives and structure

General objective of the Brazilian HCFC Phase-Out Management Programme - HPMP

Develop actions to eliminate the consumption of HCFCs, substances of Group I, Annex C, of the Montreal Protocol, in accordance with the guidelines of Decision XIX/6, agreed at the 19th Meeting of the Parties to the Montreal Protocol. This decision refers to the anticipation of the elimination of the production and consumption of HCFCs for the countries considered to be developing, with a freeze in 2013 in relation to the average consumption between 2009 and 2010; as well as a 10% reduction in 2015, followed by staggered reductions until total elimination in 2040.

Specific Objectives of the Project: Brazilian HCFC Phase-Out Management Programme - HPMP - Stage 1 - Foam Sector:

a) Eliminate the total of 170.3 t ODP of ozone depleting substances (ODS) by 2015, being;

   a1) 168.8 tons related to HCFC-141b, through technological conversion projects in the sectors of molded integral and flexible skin foams, as well as rigid PU foams in continuous panels, water heaters, piping, thermoware and packaging applications;

   a2) 1.5 tons of HCFC-22, through Component 1 - Regulatory actions.

HPMP Structure - BRA 12/G76 Project (Stage 1) - Foam Sector

It began in September 2012, with a real duration of 7 years and 9 months and was structured in components, outcomes and outputs, according to table 1:

Table 1: Project Structure: PRODOC (planned) vs. Results Chart (redefined):

COMPONENTS	OUTCOMES	OUTPUTS Planned	OUTPUTS Investment Matrix (redefined)
COMPONENT 1: Regulatory Actions	RESULT 2: Draft Regulatory Actions prepared	PRODUCT 1: Drafts of instruments and legal rules related to the elimination of HCFCs prepared	
COMPONENT 2: Investment projects for technological conversion of companies in the foam sector	RESULT 3: Investment Projects and Industrial Conversion Implemented	PRODUCTS: Total: 32 Investment projects (System Houses, Individual Projects and end users)	PRODUCTS Total: [19]25 Investment projects (System Houses, Individual Projects and end users)
COMPONENT 4: Monitoring and Implementation Unit	RESULT 1: Adaptive management implemented	PRODUCT 1: Technical, operational, physical and financial execution performed. PRODUCT 2: Plans and reports prepared and presented to ExCom. PRODUCT 3: Implementation and Monitoring of Investment Projects carried out PRODUTO 4: Annual Data Verification carried out	

[19] Scope Change: Substantive Revisions: Investment Project 5 - Dow, has been cancelled; Investment Projects 25 to 32 were grouped in Investment Project 33; Investment Project 34 - Blitz, was included in the Logical Framework. Thus, of 32 investment projects planned, 9 were changed (excluded and/or grouped) and 2 Investment Projects were added, so the Logical Framework was redesigned contemplating the total of 25 investment projects.

5.2 Outcomes Planned vs. Outcomes Achieved

Table 2 presents the results predicted and performed for the project, referring to Stage 1 of the HPMP, according to the prioritized conversion strategy, in terms of quantitative elimination of the consumption of HCFC-141b and HCFC-22.

Table 2: Outcomes Planned vs. Outcomes Achieved (t ODP eliminated):

HPMP - Project BRA/12/G76: STAGE 1 – FOAM SECTOR				
Component 2: Investment projects for the technological conversion of enterprises in the PU manufacturing sector	**ODS**	**Sector**	**[20]Consumption to be eliminated (t ODP)[21]**	**Consumption eliminated (t ODP) *(June 2020)***
	HCFC-141b	Continuous Panels	32,4	29,39
		Integral Skin / Flexible Molded	86,8	80,04
		Rigid PU	49,6	54,95
		Subtotal (Planned)	**168,8**	**164,38**
Consumption to be eliminated (redefined)			**162,8[22]**	**164,38**
Component 1: Regulatory Actions	HCFC-22	Refrigeration and Air Conditioning	1,5	1,5
Components (1 + 2)		Total (Planned)	**170,30**	**165,88**
Components (1 + 2)		Total (goal redefined)	**164,30**	**165,88**

Table 3 presents the expected results (PRODOC) and carried out for the project, in terms of the amounts of beneficiaries achieved through technological conversion investment projects.

[20] HPMP - Stage 1_2011. Goals: 2013-2015.

[21] Data Base Year: 2009, funded by the FML.

[22] Ata Reunion Tripartite. May/2015. Reduction of the consumption target to be eliminated due to the cancellation of three investment projects. It was agreed to eliminate the difference of (6.0 t ODP) through Normative Instruments established by the Brazilian Government.

Table 3: Number of project beneficiaries: Planned (PRODOC) vs. Performed:

Sector	**Number of investment projects / number of enterprise converted** ***(Planned PRODOC)***	**Type of Investment Project**	**Number of investment projects / number of enterprise converted** ***Performed (June 2020)***
Continuous Panels	4 / 4	Individual Projects	[23] 11 projects / 14 enterprises converted
Integral Skin / Flexible Molded	8 / 11	Individual Projects	
Rigid PU	[24]8 / 8	Individual Projects	
Integral Skin / Flexible Molded	6 / 280	Group Projects	[25] 10 projects/ 09 Converted System Houses and 226 end users
Rigid PU	6 / 144	Group Projects	
Planned (total)	32 / ≅ 400	Total Investment Projects / Total Beneficiary Enterprises	[26]23 (Investment Projects) 249 (Total Beneficiary Enterprises)
Redefined (total)	[27]25 / [28]270		

[23] Considered that the Spandy Group is formed by a set of interconnected companies (four enterprises were converted: Spandy, Espumauto, MPU Poliuretano and PTP Peças).

[24] The eight individual projects (Rigid PU) foreseen in initial planning were grouped (4th substantive revision) into a single Investment Project (Investment Project 33, included in the Logical Framework). Inclusion of an individual project (RIGID PU): Blitz Enterprise (Investment Project 34, included in the Logical Framework).

[25] Arinos (Univar), became ineligible throughout the process, but support in the implementation of end-user conversions was thus considered as an investment project implemented.

[26] Of the total of 23 investment projects: 21 were completed and 2 partially completed (Converted System Houses and unconverted end users).

[27] Ata Reunion Tripartite. May 2015. Changes in the logical matrix of the project: Two investment projects not implemented and one project canceled; grouping of six investment projects into a single investment project.

[28] Ata Reunion Tripartite. August/2017. Changes in the number of companies, due to changes in the PU market, impacted by the scenario of economic crisis in which the country was going through at the time.

5.3 Stakeholders and Institutional Arrangement

From the survey of project information obtained through its documentation, HPMP stakeholders were identified, who contributed directly and indirectly to the project, as shown in Figure 1.

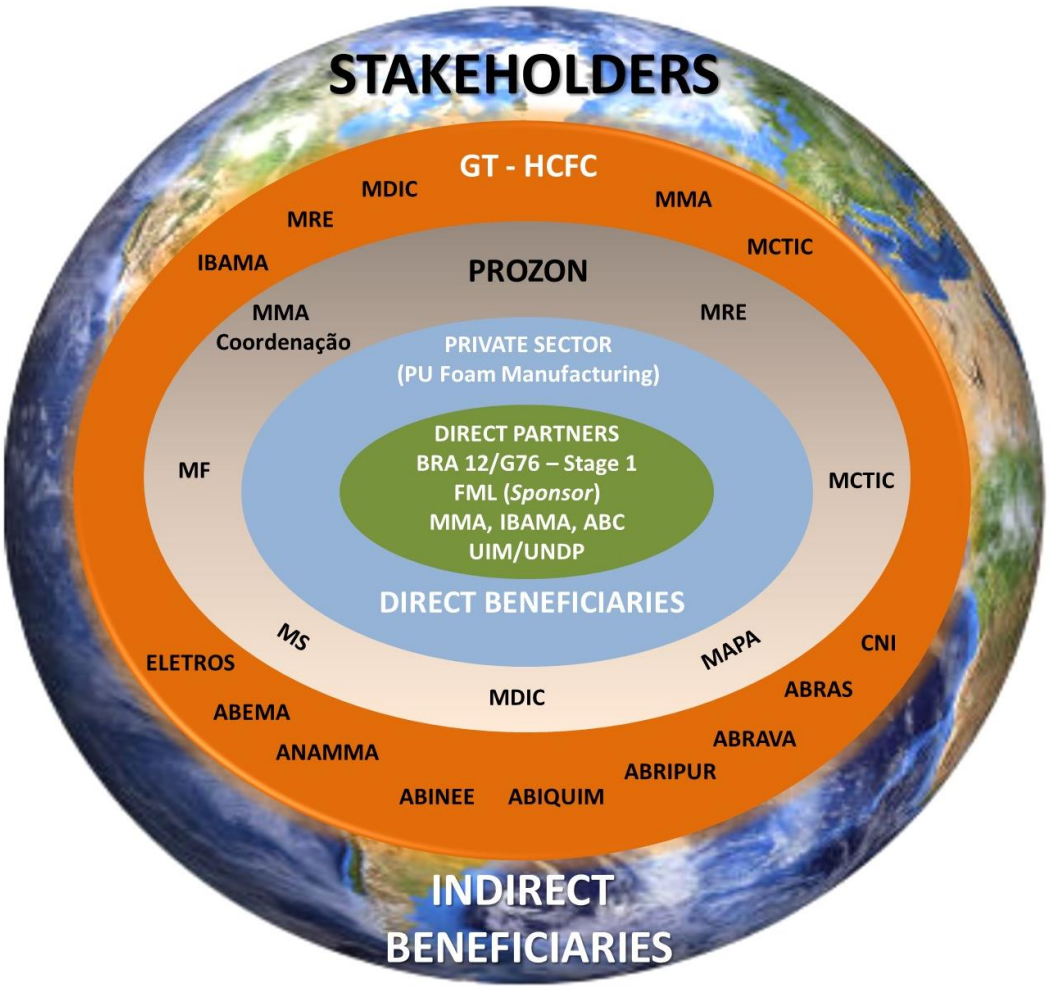


Figure 1: *Stakeholders*

An Interministerial Executive Committee for the Protection of the Ozone Layer was established in 1995 ([29][30]Prozon), with the objective of establishing guidelines and coordinating the activities of protection of the ozone layer, coordinated by the Ministry of the Environment and composed of six ministries: 1. Ministry of Foreign Affairs (MRE). 2. Ministry of Health (MH), 3. Ministry of Agriculture, Livestock and Supply (MAPA), 4.

[29] Creation of PROZON: http://www.planalto.gov.br/ccivil_03/DNN/2003/Dnn9844.htm
[30] Update of the Decree. May/2018. PROZON: https://www.mma.gov.br/images/arquivo/80179/Decreto_9398_de_4_de_junho_de_2018_Altera_decreto_Prozon.pdf

Ministry of Finance (MF), 5. Ministry of Development, Foreign Trade and Services (MDIC) and 6. Ministry of Science, Innovation and Communications (MCTIC).

In addition, a [31] Working Group GT- HCFCs, through Ordinances No. 41, of February 25, 2010 and No. 179 of June 24, 2015, which had as main objective, to assist the Brazilian Government in the preparation and implementation of the HPMP, being composed of representatives of public and private entities, which contributed to:

i) Implementation of ozone layer protection actions;

ii) Meeting the goals set by the Montreal Protocol;

iii) Encouraging the use of non-ozone-deplete substances and low-impact technologies for the global climate system;

iv) Development and implementation of the Brazilian HCFCs Elimination Program (HPMP) and its respective projects.

The Interministerial Executive Committee for the Protection of the Ozone Layer - PROZON and the Working Group GT - HCFC were extinguished through the publication of the [32] Decree No. 9,759 of April 11, 2019 that extinguished and established guidelines, rules and limits for the collegiate bodies of the federal public administration.

Engagement of project stakeholders

In the HPMP project document (BRA 12/G76) - Stage 1 - Foam Sector, the strategies developed for the proper engagement of stakeholders were evidenced, allowing an alignment of expectations of each institution participating in the project in achieving the objectives defined in the [33] result matrix (Logical Framework).

Based on the relationships defined between stakeholders, a stakeholder engagement model is being presented in Figure 2.

[31] https://www.mma.gov.br/images/arquivo/80179/Regimento%20GT%20HCFC%20FINAL.pdf
[32] http://www.planalto.gov.br/ccivil_03/_Ato2019-2022/2019/ Decree /D9759.htm
[33] PRODOC Project Document. Logical framework.

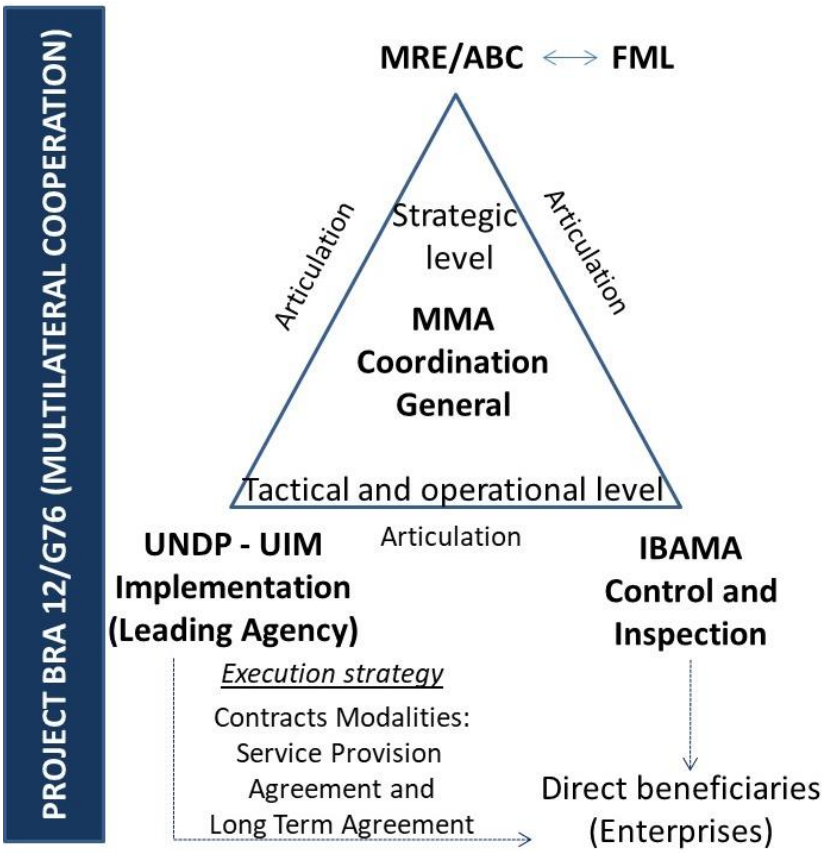


Figure 2: Project stakeholder engagement model

The institutional arrangement of the project was composed of four institutions, ABC/MRE; MMA; IBAMA and UNDP/UIM that acted as pillars in institutional articulation, general coordination, control and supervision and implementation of the project; Respectively.

The engagement of the beneficiaries of the project took place through the conclusion of [34] Service Contracts, specific with companies (Systems Houses and Individual Companies) and from July 2019 contracts in the modality of Long-Term Agreement in order to give greater agility to the implementation of the same and greater flexibility for the conversion of end users, considering the alternation of suppliers (Systems Houses), characteristic of the polyurethane foam production sector.

[34] Enterprise Contracts (Models): Poly-Urethane (Group project); MBP Isoblock (Individual Project).

5.4 Direct beneficiaries achieved

Characterization of enterprises

The enterprises that received resources are legally established in Brazil, and have opted for technological alternatives of zero ODP, as well as low GWP.

In addition, they met two eligibility criteria (Year of foundation of the enterprise, prior to September 21, 2011). [35]2007; and composition of the share capital, total or partial, of a developing country, in accordance with Article 5 of the Montreal Protocol).

The eligible enterprises selected to start the implementation of the activities in the first two years were the ones that presented technical condition for immediate conversion (Systems Houses and Individual Projects).

The strategy adopted aimed to provide flexibility and time to small and medium-sized enterprises associated with the System Houses for the establishment of internal actions necessary to carry out the transfer of technology, such as: negotiation of deadlines with technology suppliers, acquisition of raw materials necessary for the development of formulations, initiation of laboratory tests and optimization of formulations, among others.

In addition, the strategy provided the development of engineering plans for the receipt of new technologies, such as: inspection of baseline equipment, preparation of technical specifications, preliminary price quotation, civil works, safety measures and validation of administrative and environmental licenses, with the competent agencies.

In Annex (3) the profile of enterprises benefited by the project, Systems Houses, Individual Enterprises and End Users, converted through Systems Houses.

Table 4 presents the enterprises benefited by the project (Individual Systems houses and Enterprises) by sectors, amount of consumption eliminated and alternative technologies adopted.

[35] Date on which the Montreal Protocol began a new phase aimed at eliminating the production and consumption of ODS for HCFCs. Through Decision XIX/6, states parties to the Montreal Protocol established a new elimination schedule.

Table 4 - Profile of Individual Enterprises and Systems Houses

SECTOR	ENTERPRISES	Consumption eliminated HCFC-141b (t ODP)	Conversion technology (defined)
Continuous Panels	1 – Isoeste	4,95	Hydrocarbon
	2 – MBP Isoblock	16,78	Hydrocarbon
	3 - Danica	7,66	Hydrocarbon
Integral Skin / Flexible Flexible Moulded Foam (ISF/FMF)	1 – Luguez	13,20	Methylal
	2 – Frisokar	7,06	Methyl Formate
	3 - Cairu	3,3	Methylal
	4 – Cantegrill	0,84	Methylene Chloride
	5 – Duoflez	3,04	Methylal
	6 – Spandy (Espumauto, PTP e MPU)	3,53	Methyl Formate
	7 – Espumatec	11,98	HFO
	8 – Kalf	4,4	Methyl Formate
	9 – Termolar	2,53	HFO
Systems Houses (ISF/FMF e Rigid PU)	1 – Arinos (Univar Solutions)	11,2	Methyl Formate and Methylal
	2 – Purcom	25,86	Methyl Formate
	3 – Ariston	6,59	Methyl Formate and Methylal
	4 – Amino	9,37	Methyl Formate
	5 – Ecoblaster	11,08	Methyl Formate
	6 – Shimtek	1,25	HFO
	7 – Mcassab	[36]1,1	Methyl Formate
	8 – Ecopur (atual Rodza)	[37]0,51	Methyl Formate
	9 – Poly-Urethane	14,93	Methyl Formate
	10 - Utech	3,22	Methyl Formate in place of the HCFC-141b e HFO in place of the HCFC-22
	TOTAL	**164,38 t ODP**	

[36] Partially implemented project (converted only the System House, the end users were not converted), however, it was agreed with the MCassab enterprise not to use the HCFC-141b, and 1.1 t ODP of HCFC-141b was effectively eliminated.

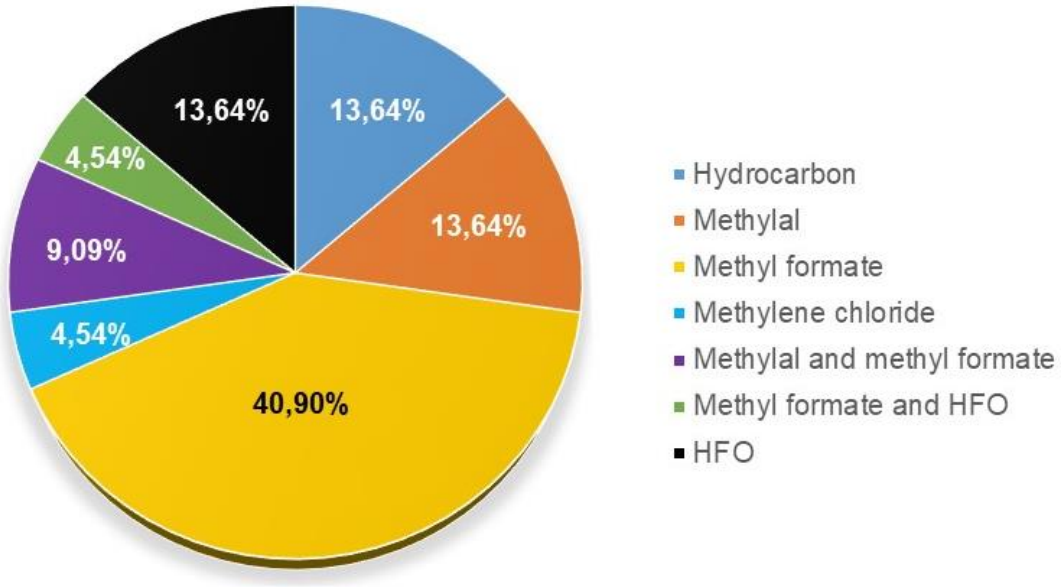
[37] Partially implemented project (converted only the System House, the end users were not converted), however, it was agreed with the enterprise Ecopur (Rodza) the non-use of HCFC-141b, being effectively eliminated 0.51 t ODP of HCFC-141b.

Impact of enterprises on the amount of HCFC-141b (t ODP) eliminated:

t ODP	IMPACT
0 a 5,0	Low
5,1 a 10,0	Medium
> 10,0	High

Thus, we can verify in Graph 1 that 40.90% of the benefited companies opted for the conversion of HCFC-141b to methyl formiate, followed by Methylal, Hydrocarbon and HFO that represented the same percentage of enterprises (13.64%) by technological option.

Graph 1 - Conversion Technology defined by enterprises



In relation to the geographical distribution of eligible enterprises, users of HCFCs-141b, it was used as the basis of a study carried out by the project, which pointed out the existence of a high concentration of this profile of companies, in the South and Southeast regions, where the State of São Paulo, for example, presented a concentration of 47% of the companies in the sector, which at the time (2012) corresponded to 312 enterprises and 31% of consumption (1,732.00 t ODS), with the other enterprises distributed throughout the country.

Thus, considering the spraying of the sector and the large number of enterprises distributed throughout the five regions of Brazil, the strategy of coordinating the activities with the support of the Systems Houses, acting as facilitators of the project

implementation process in small and medium-sized enterprises that use fully formulated systems, was satisfactory and essential to achieve the planned results.

Table 5 shows the total number of enterprises converted by regions and states, where the State of São Paulo accounted for 47.79% of the total number of enterprises converted to use HCFC 141b and low GWP free technologies, evidencing the estimate indicated in the initial study (47%).

Table 5 - Total converted enterprises (new technologies)

CONVERTED ENTERPRISES - TOTAL			
REGIONS	**STATES**	**Qty**	**%**
SOUTHEAST	SÃO PAULO	119	47,79
	RIO DE JANEIRO	13	5,22
	MINAS GERAIS	44	17,67
	ESPÍRITO SANTO	3	1,20
TOTAL SOUTHEAST		**179**	**71,88**
SOUTH	RIO GRANDE DO SUL	18	7,22
	SANTA CATARINA	8	3,21
	PARANÁ	21	8,43
TOTAL SOUTH		**47**	**18,87**
CENTRAL-WEST	GOIÁS	5	2,00
	MATO GROSSO	3	1,20
	MATO GROSSO DO SUL	1	0,40
TOTAL CENTRAL-WEST		**9**	**3,62**
NORTHEAST	BAHIA	2	0,80
	CEARÁ	3	1,20
	PERNAMBUCO	2	0,80
	PARAÍBA	1	0,40
TOTAL NORTHEAST		**8**	**3,20**
NORTH	PARÁ	2	0,80
	AMAZONAS	4	1,60
TOTAL NORTH		**6**	**2,40**
TOTAL GENERAL		**249**	**100**

Tables 6, 7 and 8 show the total number of companies converted, by regions and States, in the following modalities: Systems Houses, Individual Enterprises and End Users supported through Systems Houses.

Of the total number of companies, the State of São Paulo concentrated 88.88% of the converted System Houses; 42.85% of Individual Enterprises and 46.46% of end users converted through Systems Houses.

Table 6 - Total converted enterprises: System Houses

CONVERTED ENTERPRISES: SYSTEM HOUSES			
REGIONS	**STATES**	**Qty**	**%**
SOUTHEAST	SÃO PAULO	8	88,88
	MINAS GERAIS	1	11,11
TOTAL SOUTHEAST		**09**	**100**
TOTAL SYSTEM HOUSES		**09**	**100**

Table 7 - Total converted enterprises: Individual Projects

CONVERTED ENTERPRISES: INDIVIDUAL PROJECTS			
REGIONS	**STATES**	**Qty**	**%**
SOUTHEAST	SÃO PAULO	6	42,85
	RIO DE JANEIRO	2	14,28
TOTAL SOUTHEAST		8	57,14
SOUTH	RIO GRANDE DO SUL	3	21,42
	SANTA CATARINA	1	7,14
	PARANÁ	1	7,14
TOTAL SOUTH		5	35,70
CENTRAL-WEST	GOIÁS	1	7,14
TOTAL CENTRAL-WEST		1	7,14
TOTAL INDIVIDUAL PROJECTS		**14**	**100**

Table 8 - Total converted enterprises: End users

CONVERTED ENTERPRISES (END USERS)			
REGIONS	**STATES**	**Qty**	**%**
SOUTHEAST	SÃO PAULO	105	46,46
	RIO DE JANEIRO	11	4,86
	MINAS GERAIS	43	19,02
	ESPÍRITO SANTO	3	1,32
TOTAL SOUTHEAST		**162**	**71,66**
SOUTH	RIO GRANDE DO SUL	15	6,63
	SANTA CATARINA	7	3,09
	PARANÁ	20	8,84

TOTAL SOUTH		**42**	**18,56**
CENTRAL-WEST	GOIÁS	4	1,76
	MATO GROSSO	3	1,32
	MATO GROSSO DO SUL	1	0,44
TOTAL CENTRAL-WEST		**8**	**3,52**
NORTHEAST	BAHIA	2	0,88
	CEARÁ	3	1,32
	PERNAMBUCO	2	0,88
	PARAÍBA	1	0,44
TOTAL NORTHEAST		**8**	**3,52**
NORTH	PARÁ	2	0,88
	AMAZONAS	4	1,76
TOTAL NORTH		**6**	**2,64**
TOTAL (END USERS)		**226**	**100,0**

In ANNEX (4) the number of converted enterprises (end users) are being presented in detail, considering the regions, states and municipalities.

5.5 Organizational Structure

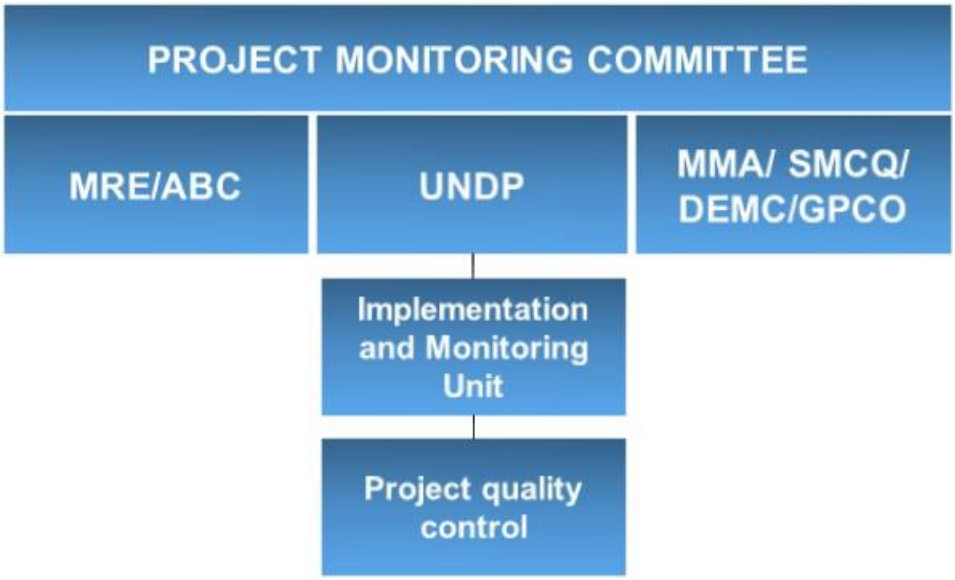


Figure 3 - Project Organization Chart
Source: Management arrangements. 2nd Substantive Review. Out. /2015.
website: www.undp.org.br/atlas

Number of people involved

ROLES	Number of people			
	UIM/PNUD	MMA	IBAMA	ABC
Program Officer	1*			
General Coordinator of the Program		1*		
Project Manager	1***			
Technical Advisor	1***			
Project Assistant	1***			
Technical Team		2*	3*	
Institutional Articulation				1**

*part time dedication (Dedication to BRA12/G76 project and other projects related to the Montreal Protocol).
** part time dedication (Dedication to BRA12/G76 project and other cooperation projects).
*** full time dedication (Dedication to the Montreal Protocol Project Portfolio at UNDP, including project BRA12/G76).

Strategically the project acted in the tripartite meetings through a project monitoring committee, composed of one or more representatives of the institutions involved, according to decisions and issues dealt with (UIM/UNDP, MMA and ABC).

The attributions of the institutions directly involved in the project (ABC/ MMA and UNDP) were defined facilitating the process of engagement of stakeholders. The array of tasks and responsibilities is in the Appendix (5).

5.6 Deadline and Financing

In the following table, the deadlines (baseline vs. real) are being compared, considering two extensions of approved deadlines, in 2015 and 2017.

BRA/12/G76 - Brazilian HCFC Elimination Program (Stage 1) - Foam Sector	
Approved in July 2011.	
Contract signed on September 17, 2012 (PRODOC).	
Start date *(baseline):*	9/17/2012
[38] Actual start (10-month delay)	July 2013
End date *(baseline):*	12/31/2015
[39] Extension of term (24 months)	12/31/2017
[40] Extension of term (24 months)	12/31/2019
Extension of term (6 months)	6/30/2020
Real finish:	6/30/2020
Planned duration:	3 years and 3 months
Actual duration (from PRODOC subscription)	7 years and 9 months
% [41] physical progress (may 2020)	92,30%

In tables 9, 10 and 11 we present a comparison of project financing by component (planned vs. realized by July 2019), the approved installment by component (planned) and the initial estimated costs forecasted (baseline planning) for Component 2 - Investment Projects for the technological conversion of enterprises in the foam sector, respectively.

[38] Delay in the definition of a legal instrument for the feasibility of the transfer of UNDP resources for the execution of investment projects (Component 2), with enterprises (direct beneficiaries), impacting on the start date of the implementation of the projects. Rel. 1st Substantive Review.

[39] Request deadline extension: 2nd Substantive Review of BRA 12/G76 Project. Tripartite meeting. May/2015.

[40] Request deadline extension: 4th Substantive Review of BRA 12/G76 Project. Approval: 80th ExCom Meeting. Nov/2017.

[41] Total: 21 of 23 investment projects carried out, 21 of which were completed and 2 partially completed. Companies (Systems Houses and Individual Projects) that have carried out the conversion of their internal plants and end users through Systems Houses are being considered.

Table 9 - Project financing by component (planned vs. disbursements):

	PRODOC *PLANNED*[42]		**SUBSTANTIVE REVIEW *(NEW PLANNED)***		***DISBURSEMENTS* (June 2020)**	
COMPONENTS	VALUE (US$)	% Planned	VALUE (US$)	% Planned	VALUE (US$)	[43]% Disbursed components and total project
Component 1: Regulatory Actions	120.000	0,78	120.000	0,78	120.000	100%
Component 2: Investment Projects for the technological conversion of enterprises in the foam sector	14.586.257	94,06	14.406.957	94,00	[44]12.372.679	88,01
Component 4: Implementation and Monitoring Unit	800.000	5,15	800.000	5,21	800.000	100%
TOTAL	**15.506.257**	**100,0**	**[45]15.326.957**	**100,0**	**13.292.679**	**86,73**

[42] Approved values. 64th FML ExCom Meeting. July 2011.
[43] Performed in relation to the predicted new column (Substantive Review). Progress Report 2019/2020. 85th FML ExCom Meeting. March/2020.
[44] Progress Report 2019/2020. 85th FML ExCom Meeting. March/2020.
[45] Expected initial total value: USD 15,506,257 (2011). 64th FML ExCom Meeting. July 2011. Amount deducted in USD 179,300 from the 5th installment due to the ineligibility of the enterprise Arinos to access resources under the FML. Progress Report. 2018/2019. 84th FML ExCom Meeting. Sep/2019.

Table 10 - Tranches approved by component (planned):

COMPONENTS	2011	2012	2013	2014	2015	TOTAL
	TRANCHE 1	TRANCHE 2	TRANCHE 3	TRANCHE 4	TRANCHE 5	TOTAL
	AMOUNT (US$)					
Total approved funding (FML)	4.456.257	3.400.000	3.000.000	3.000.000	[46]1.470.700	15.326.957
TOTAL (Tranches 1 a 5)	4.456.257	3.400.000	3.000.000	3.000.000	1.470.700	15.326.957

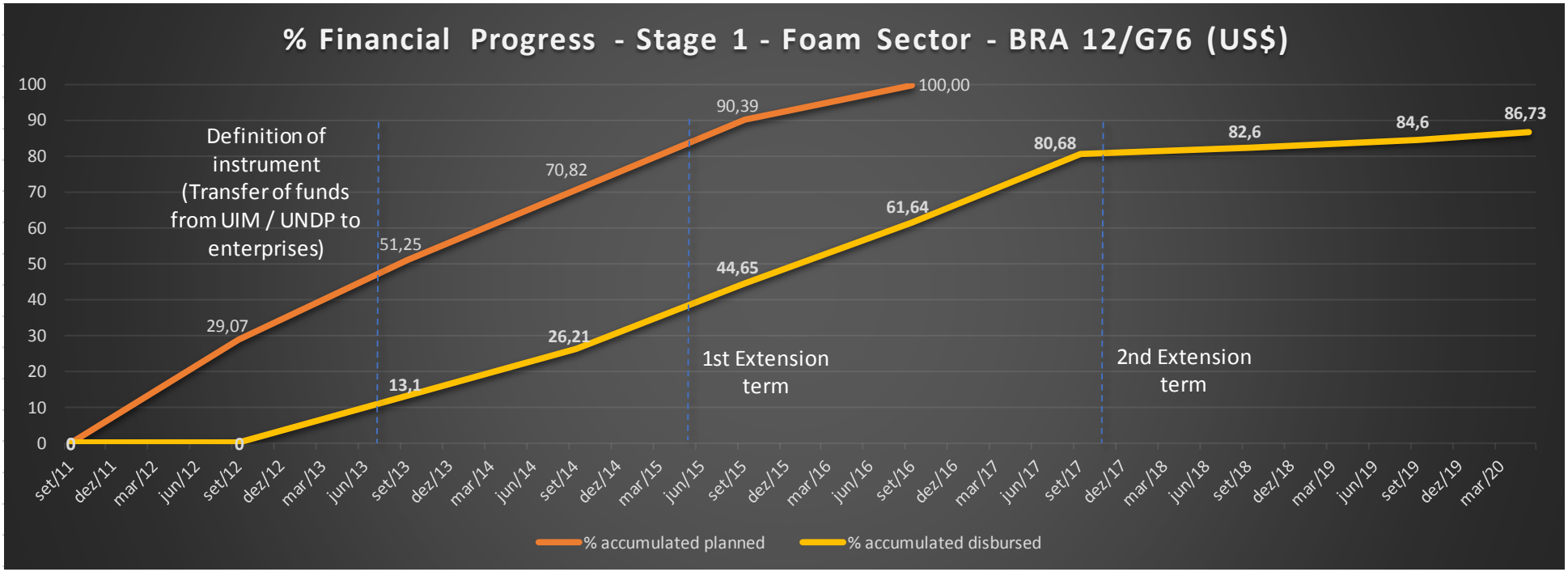
Table 11 - [47] Initial cost estimate (Component 2):

	ODS	MARKET	SECTOR	VALUE (US$)
Component 2: Investment Projects for the technological conversion of enterprises in the foam sector	HCFC 141-b	PU foams	Continuous Panels	2.218.791
			Individual Projects	2.238.819
			Group Projects – Integral Skin and Flexible Molded Foam	6.516.050
			Group Projects - Solar Heaters, Pipe in pipe, Thermoware and Packaging	3.612.597
			TOTAL	**14.586.257**

[46] USD 179,300 (Component 2) was deducted for the 5th installment, due to the fact that the enterprise Arinos became ineligible to access resources within the scope of the FML. Thus, the total estimated value, installment 5 (baseline): USD 1,650,000, was reduced to USD 1470,700.

[47] Resources approved at the 64th FML ExCom Meeting in July 2011, to meet the reduction targets set out in Stage I – HPMP.

Graph 2 shows a comparison (predicted vs. realized), in relation to the accumulated percentage of the financial advance, considering the total period of execution of the project (September 2012 to June 2020).



Graph 2: Planned vs. Disbursed (% of Project Financial Progress)

5.7 Contracts executed

In table 12, the details of the service provision contracts, signed with the beneficiary enterprises (subprojects).

Table 12 - Details of Service Contracts with Enterprises.

Component 2: Investment projects for the technological conversion of enterprises in the foam sector							
RESULT 3: Investment and Industrial Conversion Projects Implemented							
ID	Contracted Institution (PRODOC Product)	Object of the Contract	Bidding Modality / Contract no.	Contract Effective Date	Termination of Contract	New Term (Addition)	VALUES (US$) Disbursed (Sep. 2019)
1	Output 1: AMINO Group Investment Project	Technological conversion of the enterprise plant to replace HCFC-141b	Direct contracting / 27211/2013	11/28/2013	05/28/2015	06/26/2015	167.000,00
2	Output 1: AMINO Group Investment Project (End Users)	Services for the technological conversion of PMEs in the polyurethane foam sector to replace HCFC-141b	Direct contracting / 33212/2015	08/10/2015	08/09/2016	12/15/2018	1.194.933,44 (value after amendment to the contract)
3	Output 2: ARINOS Group Investment Project (Univar Solutions)	Validation of end user information	Direct contracting / 22198/2013	04/12/2013	08/28/2014	-	37.450,00
4	Output 2: ARINOS Group Investment Project (Univar Solutions): End Users	Services for the technological conversion of PMEs in the polyurethane foam sector to	Direct contracting / 33565/2015 Direct contracting / 33565/2015	12/14/2015	12/14/2016	12/15/2018	828.640,47** (value after amendment to the contract)

		replace HCFC-141b					
5	Output 3: ARISTON Group Investment Project	Technological conversion of the enterprise plant to replace HCFC-141b	Direct contracting / 27212/2013	11/28/2013	05/28/2015	08/28/2015	192.750,00
6	Output 3: ARISTON Group Investment Project (End Users)	Services for the technological conversion of SMEs in the polyurethane foam sector to replace HCFC-141b	Direct contracting / 32927/2015	04/16/2015	12/28/2015	08/15/2016	483.802,55
7	Output 5: ECOBLASTER Group Investment Project	Technological conversion of the enterprise plant to replace HCFC-141b	Direct contracting / 27215/2013	28/11/2013	28/05/2015	08/28/2015	202.850,00
8	Output 5: ECOBLASTER Group Investment Project (End Users)	Services for the technological conversion of SMEs in the polyurethane foam sector to replace HCFC-141b	Direct contracting / 33479/2015	10/22/2015	09/10/2016	03/15/2017	726.006,67 (value after amendment to the contract)
9	Output 5: ECOBLASTER Group Investment Project (End Users)	Services for HCFC free technological conversion of eligible beneficiary enterprises in the polyurethane foam sector	Direct contracting (LTA) / JOF 1011/2019	07/26/2019	12/31/2019	-	95.000,00

10	Output 6: ECOPUR Group investment project (now RODZA)	Technological conversion of the enterprise plant to replace HCFC-141b	Direct contracting / 36793/2018	10/30/2018	06/29/2019	12/15/2019	113.000,00
11	Output 7: MCASSAB Group investment project	Technological conversion of the enterprise plant to replace HCFC-141b	Direct contracting / 36564/2018	10/08/2018	09/07/2019	12/15/2019	113.000,00
12	Output 9: POLY-URETHANE Group investment project	Definition of the technology to be used by the enterprise to replace HCFC-141b	Direct contracting / 23477/2013	12/12/2013	02/12/2014	-	20.600,00
13	Output 9: POLY-URETHANE Group investment project	Technological conversion of the enterprise plant to replace HCFC-141b	Direct contracting / 34428/2016	04/07/2016	05/03/2017	04/30/2017	98.000,00
14	Output 9: POLY URETHANE Group Investment Project (End Users)	Services for the technological conversion of SMEs in the polyurethane foam sector to replace HCFC-141b	Direct contracting / 36325/2018	05/10/2018	05/10/2019	12/15/2019	704.120,08 (value after amendment to the contract)
15	Output 9: POLY URETHANE Group Investment Project (End Users)	Services for HCFC-free technological conversion of eligible beneficiary enterprises of the	Direct contracting ([48]LTA) / JOF 0995/2019	07/26/2019	12/31/2019	-	863.000,00

[48] Long Term Agreement (LTA) service contract, comprising HPMP - Stages 1 and 2, with global validity until 7/26/2021 and global value of USD 1,551,221.26

		polyurethane foam sector					
16	Output 10: PURCOM Group Investment project	Technological conversion of the enterprise plant to replace HCFC-141b	Direct contracting / 27214/2013	11/28/2013	05/28/2015	-	201.100,00
17	Output 10: PURCOM Group Investment project (End Users)	Services for the technological conversion of SMEs in the polyurethane foam sector to replace HCFC-141b	Direct contracting / 31965/2014	12/16/2014	12/12/2015	12/31/2018	2.708.184,73 (value after amendment to the contract)
18	Output 11: UTECH Group Investment project	Definition of the technology to be used by the enterprise to replace HCFC-141b	Direct contracting / 28107/2014	12/12/2013	02/12/2014	-	20.300,00
19	Output 11: UTECH Group Investment project	Technological conversion of the enterprise plant to replace HCFC-141b and HCFC-22	Direct contracting / 31949/2014	11/28/2014	10/06/2015	-	103.000,00
20	Output 11: UTECH Group Investment project (End Users)	Services for the technological conversion of SMEs in the polyurethane foam sector to replace HCFC-141b and HCFC-22	Direct contracting / 33521/2015	11/16/2015	11/16/2016	12/31/2016	109.315,84

21	Output 12: SHIMTEK Group Investment project	Definition of the technology to be used by the enterprise to replace HCFC-141b	Direct contracting / 25731/2013	08/12/2013	10/14/2013	-	20.000,00
22	Output 12: SHIMTEK Group Investment project	Technological conversion of the enterprise plant to replace HCFC-141b	Direct contracting / 31562/2014	09/15/2014	04/30/2015	03/31/2016	100.800,00
23	Output 12: SHIMTEK Group Investment project (End Users)	Services for the technological conversion of SMEs in the polyurethane foam sector to replace HCFC-141b	Direct contracting / 34558/2016	08/18/2016	08/18/2017	-	33.976,40
24	Output 13: DANICA Investment project	Technological conversion of the enterprise plant to replace HCFC-141b	Direct contracting / 27387/2013	12/06/2013	12/06/2015	-	689.784,00
25	Output 14: ISOESTE Investment project	Technological conversion of the enterprise plant to replace HCFC-141b	Direct contracting / 25594/2013	07/13/2013	01/13/2014	-	331.963,00
26	Output 15: MBP ISOBLOCK Investment project	Technological conversion of the enterprise plant to replace HCFC-141b	Direct contracting / 27614/2013	12/06/2013	11/17/2014	05/06/2015	691.000,00
27	Output 16: Projeto de Investimento PANISOL	Definition of the technology to be used by the enterprise	Direct contracting / 26250/2013	09/23/2013	11/23/2013	05/23/2014	30.000,00

		in replacement to HCFC-141b					
28	Output 17: CAIRU Investment project	Definition of the technology to be used by the enterprise to replace HCFC-141b	Direct contracting / 29375/2014	04/13/2014	06/02/2014	-	20.000,00
29	Output 17: CAIRU Investment project	Technological conversion of the enterprise plant to replace HCFC-141b	Direct contracting / 31950/2014	12/28/2014	07/20/2015	11/30/2015	144.800,00
30	Output 18: CANTEGRILL Investment project	Definition of the technology to be used by the enterprise to replace HCFC-141b	Direct contracting / 31586/2014	09/19/2014	11/30/2014	-	20.000,00
31	Output 18: CANTEGRILL Investment project	Technological conversion of the enterprise plant to replace HCFC-141b	Direct contracting / 31975/2014	12/17/2014	04/30/2015	-	27.323,08
32	Output 19: DUOFLEX Investment project (OPETRA)	Technological conversion of the enterprise plant to replace HCFC-141b	Direct contracting / 27216/2013	11/28/2013	08/28/2014	-	109.725,00
33	Output 20: Investment Project ESPUMATEC	Definition of the technology to be used by the enterprise to replace HCFC-141b	Direct contracting / 36394/2018	12/17/2013	02/17/2014	-	20.000,00
34	Output 21: FRISOKAR Investment project	Technological conversion of the enterprise plant to replace HCFC-141b	Direct contracting / 26849/2013	11/18/2013	05/18/2015	-	604.390,00

35	Output 22: KALF Investment project	Technological conversion of the enterprise plant to replace HCFC-141b	Direct contracting / 27213/2013	11/28/2013	05/28/2014	-	117.900,00
36	Output 23: LUGUEZ Investment project	Technological conversion of the enterprise plant to replace HCFC-141b	Direct contracting / 25729/2013	08/05/2014	07/18/2014	31/07/2015	214.700,00
37	Output 24: SPANDY Group investment project	Definition of the technology to be used by the enterprise to replace HCFC-141b	Direct contracting / 28105/2014	12/12/2013	02/12/2014	-	20.000,00
38	Output 24: SPANDY Group investment project	Technological conversion of the enterprise plant to replace HCFC-141b	Direct contracting / 31041/2014	08/22/2014	03/17/2015	11/28/2015	204.654,00
39	Output 24: SPANDY Group investment project Peças Espumauto	Technological conversion of the enterprise plant to replace HCFC-141b	Direct contracting / 31040/2014	08/22/2014	03/17/2015	11/30/2015	82.537,97
40	Output 24: SPANDY Group investment project Peças PTP	Technological conversion of the enterprise plant to replace HCFC-141b	Direct contracting / 31035/2014	08/22/2014	03/17/2015	11/30/2015	98.238,70
41	Output 24: SPANDY Group investment project MPU	Technological conversion of the enterprise plant to replace HCFC-141b	Direct contracting / 31047/2014	08/18/2014	03/17/2015	11/28/2015	80.767,16
42	Output 30: TERMOLAR investment project	Definition of the technology to be used by the enterprise	Direct contracting / 30805/2014	08/04/2014	10/06/2014	-	20.000,00

		to replace HCFC-141b					
43	Output 34: BLITZ investment project	Technological conversion of the enterprise plant to replace HCFC-141b	Direct contracting / 36201/2018	03/10/2018	08/30/2018	12/10/2018	335.642,00
	TOTAL COMPONENT 2 - INVESTMENT PROJECTS						**13,000,255.09**

Table 13 - Financial Execution (Consolidated): Until September 2019.

YEARS	2015	2016	2017	2018	Sep. / 2019
ACTIVITIES	DISBURSED	DISBURSED	DISBURSED	DISBURSED	DISBURSED
SUBTOTAL ACTIVITY 1	242.119,23	315.069,39	140.073,49	0,00	0,00
SUBTOTAL ACTIVITY 2	19.983,03	11.576,48	22.069,22	0,00	0,00
SUBTOTAL ACTIVITY 3.1	195.906,37	678.930,44	157.790,51	36.712,25	0,00
SUBTOTAL ACTIVITY 3.2	1.933,13	372.312,41	304.199,67	19.357,84	0,00
SUBTOTAL ACTIVITY 3.3	469.856,65	34.284,18	-	-	-
SUBTOTAL ACTIVITY 3.5	114.196,43	600.128,66	2.253,09	0,00	10,60
SUBTOTAL ACTIVITY 3.6	-	-	0,00	50.850,00	31.078,69
SUBTOTAL ACTIVITY 3.7	-	-	0,00	51.673,30	28.250,00
SUBTOTAL ACTIVITY 3.9	82,84	29.960,59	68.853,09	391.429,58	456.280,06
SUBTOTAL ACTIVITY 3.10	1.145.036,30	309.851,06	652.276,47	12.855,21	0,00
SUBTOTAL ACTIVITY 3.11	103.168,35	85.226,81	-	-	-
SUBTOTAL ACTIVITY 3.12	12.634,12	5.712,13	29.110,33	0,00	0,00
SUBTOTAL ACTIVITY 3.13	386.592,10	-	-	-	-
SUBTOTAL ACTIVITY 3.14	68,04	-	-	-	-
SUBTOTAL ACTIVITY 3.15	353.394,89	-	-	-	-
SUBTOTAL ACTIVITY 3.17	148.288,53	-	-	-	-
SUBTOTAL ACTIVITY 3.18	27.721,08	-	-	-	-
SUBTOTAL ACTIVITY 3.20	41,42	-	0,00	193.772,07	54.241,92
SUBTOTAL ACTIVITY 3.21	513.899,85	-	-	-	-
SUBTOTAL ACTIVITY 3.22	69.468,35	-	-	-	-
SUBTOTAL ACTIVITY 3.23	29.110,35	-	-	-	-
SUBTOTAL ACTIVITY 3.24	329.812,57	-	-	-	-
SUBTOTAL ACTIVITY 3.30	272,15	-	-	-	-
SUBTOTAL ACTIVITY 3.34	-	-	0,00	338.202,13	0,00
TOTAL	4.163.585,78	2.443.052,15	1.376.625,87	1.094.852,38	569.861,27
TOTAL GENERAL (2015 to Sep. 2019)					9,840,326.56

6. Evaluation Methodology

Importance of Program and Project Evaluation

Projects are born out of ideas. The origins of project ideas can come from the organizations themselves, through business models, strategic planning, research activities, among others, that is, from internal ideas or they can be born from external ideas, from scientific discoveries, as in the case Project BRA /12 /G76, resulting from an international treaty, the Montreal Protocol, or from society's demands, government demands, partners and customers, among others (Maximiano, 2014).

From the conception of a project or program it needs to be evaluated. In this context, the evaluation of programs and projects arises. Broadly speaking, the word evaluation is related to the determination of value (Trevisan, 2008).

The objective of a program or project evaluation is to produce concrete effects and results, which can guide the decisions to be made by managers and executors. It allows you to improve a project or service and modify it based on the knowledge of its strengths and weaknesses, learn from previous experiences, check its efficiency and effectiveness, according to the objectives for which it is proposed (Cohen,1999).

Brandão e Silva (2008) conceptualize that evaluation is the discipline that is dedicated to measure, describe and judge objects and phenomena.

The evaluation of programs and projects can be carried out in three different moments, namely: In the selection and prioritization of projects, characterized by the performance of a feasibility study, for example; during the execution of the project, allowing to evaluate the performance of the partial deliveries in terms of time and cost, or after the end of the project or at later times in order to verify the efficiency and effectiveness of the project.

Thus, this evaluation is being considered as ending, as it analyzed the performance of the project's execution in relation to the proposed and achieved objectives; results achieved and impacts on its direct beneficiaries, considering the total period of execution (September 2012 to June 2020).

The need to carry out the final evaluation of the Project - HPMP - Stage 1 - Foam Sector is linked to the fulfillment of guidelines established and disclosed by UNDP through the Planning, Monitoring and Evaluation Manual, called [49]UNDP Evaluation Guidelines © UNDP Jan 2019, in which it foresees that projects with a planned budget or actual

[49] Section 2 - Decentralized evaluation at UNDP. Item 2.5. Project Evaluations.

expenditure in excess of USD 5 million must be evaluated during their implementation or at the end of the project.

In addition, it provides that projects lasting more than five years must carry out at least one intermediate or final evaluation.

For UNDP, the hiring of independent external evaluators aims to avoid undue influences and prejudices in conducting evaluations, ensuring objective and credible results, while meeting criteria of transparency, learning and accountability.

The methodology used for the final evaluation of Project BRA / 12 / G76 followed the model of [50] Logical Framework that assumes that projects are structured following a construction logic that permeates the integration of all decision levels, from strategic to operational, covering all phases of a project's life cycle.

In this way, the evaluation made it possible to more accurately compare the final objectives, results, products and resources planned and realized.

One of the critical success factors in the use of evaluations refers to the way of disseminating the results to the stakeholders. The results must be widely socialized, providing debate and dissemination not only among specialists in the field or those who make decisions, but also with public opinion, and to the general public with accessible language facilitating the understanding of its content (Faria, 2005).

The current moment makes project evaluation a strategic tool to support the achievement of the Sustainable Development Goals of the 2030 Agenda.

Ten years, is the deadline that all UN member countries have to meet the 169 targets related to the 17 Sustainable Development Goals – SDGs.

Details of the Methodology

The evaluation focused on the planning, execution and monitoring processes of the project and used primarily the material prepared and made available by UNDP; in addition to meetings with the main stakeholders of the Project (MMA, IBAMA and UNDP) and interviews with key people and direct beneficiaries (enterprises).

The project's documentation allowed a survey of historical information about the context in which the PBH Project - Stage 1 - Foam Sector, is inserted; in addition to information on project planning, containing: general objectives and specific; structure established by component in terms of scope, term and financing; attributions of each

[50] UNDP Evaluation Guidelines © UNDP Jan 2019.

partner involved, in addition to the technical management and implementation processes of the products with the beneficiary companies (investment projects).

It also allowed the gathering of information regarding the process of execution and monitoring of project activities by component, containing: information regarding the physical and financial progress for the period from September 2012 to June 2020. The sources used for gathering information are in Appendix (1).

The methodology adopted to present the results of the project, entitled Logical Framework or Matrix of Results, followed the guidelines of the UNDP *Evaluation Guidelines* © UNDP Jan 2019.

To meet the [51] specific objectives of carrying out the evaluation of the project with regard to its results achieved in terms of the effectiveness of the management and monitoring process, as well as the impact of the project for the direct beneficiaries, exploratory interviews were chosen, with a sample of companies submitted to the technological conversion process.

It was defined by the qualitative research method, due to subjectivity as to the aspects to be evaluated. For example, the interviewees' perception of the critical points for the technical and administrative implantation of products (investment projects); challenges regarding the knowledge of the implantation and articulation process between those involved; among other subjective elements, whose exploratory approach based on information collection and content analysis allowed us to obtain a greater understanding of the factors that positively and negatively impacted the achievement of results.

The definition of the sampling of companies followed the criteria suggested by UIM / UNDP and accepted for the Final Evaluation of the Project. Thus, the profile of four categories of enterprises included in investment projects (Component 2) was considered in the sample, namely:

1 - Systems Houses (Group Investment Projects, that is, companies that converted their plants, their production process initially and later supported the conversion of end users);

2 - Individual Investment Projects (Enterprises that converted their internal plant);

3 - Ineligible company to receive funds from FML, but which carried out the technological conversion process with its own resources, as well as supported the implementation of technological conversion projects for end users;

[51] Output 1 - Project Evaluation, Work Plan v.1 (Annex 1). Approved on 4/13/2020.

4 - End users (System House Customers).

Methodology used for survey and analysis of primary data

Initial meetings were held with key stakeholders (MMA, IBAMA and UNDP) to contextualize the project and present the main challenges and results obtained over the seven years of its execution.

The area covered by the institutions responsible for the project and by the direct beneficiary companies, in which the meetings and interviews were held are: (i) Midwest Region: Brasília (DF) and (ii) Southeast Region: São Paulo: Barueri, Guarulhos and Osasco; Minas Gerais: Ibirité and Contagem and Rio de Janeiro: Barra do Piraí; however, due to the context of the pandemic of COVID-19 (new coronavirus) that crosses the country, it was decreed quarantine by the Federal Government, restricting face-to-face activities in order to avoid possible contamination or spread of the virus.

Thus, meetings with teams (UNDP, MMA and IBAMA) were held through the Zoom platform on March 25 and April 2, 2020, and interviews with direct beneficiaries were conducted through the Zoom and Skype platform, on period from April 23 to May 6, 2020 through the application of a script, containing seven open questions. The applied script can be found in Appendix (7).

Additionally, on May 21, 2020, two interviews were conducted: (1) in a group with key people from UIM / UNDP, through the Zoom platform and (2) individually, with a representative from ABC, by telephone. In both, questionnaires were applied, previously sent to the participants.

The interviews were analyzed using the content analysis method and the applied questionnaires are found in the Appendix (8).

Tables 14 and 15 show the composition of the meetings and interviews conducted, respectively.

Table 14: Meetings: Stakeholders

MEETINGS (PROGRAM/PROJECT MANAGEMENT)	
INSTITUTIONS	**REPRESENTATIVES (Qty)**
UNDP - Implementation and Monitoring Unit (Montreal Protocol)	02 (01 Project Manager, 01 Technical Advisor)
MMA	03 (01 General Coordination, 02 Environmental Analysts)
IBAMA	03 Environmental Analysts
Program Officer (UNDP)	02 (01 Program Officer, until June 2019; 01 Program Officer, from August 2019)
ABC	01 (01 Technical Advisor)

Table15: Interviews (Enterprises)

INTERVIEWS CONDUCTED (ENTERPRISES)		
SYSTEMS HOUSES	**SOUTHEAST REGION**	**REPRESENTATIVES**
[52]Grupo Purcom	Barueri – SP	01 (Partner)
[53]Univar (atual)/ Arinos	Osasco - SP	01 (Technical development specialist)
[54]Grupo Poly-Urethane	Ibirité - MG	01 (General manager)

[52] National enterprise in the foam sector. Produces Integral Skin, Molded Flexible Foam and Rigid Foam systems. It carried out the technological conversion process of its plant and supported the implementation of the technological conversion project for end users to eliminate the consumption of HCFC-141b (implemented until 2016).

[53] Multinational enterprise in the foam sector. Ineligible company to receive FML funds. It is carrying out its technological conversion process with its own resources and supported the implementation of technological conversion projects for end users to eliminate the consumption of HCFC-141b.

[54] National enterprise in the foam sector. Produces Rigid Foams. It carried out the technological conversion process of its plant and supported the implementation of the technological conversion project for end users to eliminate the consumption of HCFC-141b (implemented until 2017).

INDIVIDUAL PROJECTS	SOUTH AND SOUTHEAST REGION	REPRESENTATIVES
[55]Espumatec	Caxias do Sul - RS	02 (01 Administrative manager e 01 Technical manager)
[56]MBP Isoblock	Barra do Piraí - RJ	01 (Quality manager)
END USER	**SOUTHEAST REGION**	**REPRESENTATIVES**
[57]Valenzuela (End User)	Belo Horizonte - MG	01 (Partner)

7. Project Evaluation

7.1. Main indicators: Efficiency and effectiveness

The results of the project were dimensioned in terms of its efficiency considering the effort used in the processes and methods to produce effective actions (outputs) and in terms of its effectiveness considering the benefits for the enterprises (direct beneficiaries).

In figure 4, the model suggested regarding the dimensions of the result.

[55] Enterprise Luguez, defined in the initial sample (Work Plan - Output1), was replaced by the company Espumatec: a national enterprise in the foam sector that had a high consumption of HCFC-141b. It operates in the sectors of Integral and Flexible Molded Skin. Performed the technological conversion process of its plant to eliminate the consumption of HCFC-141b.

[56] National enterprise in the foam sector with high consumption of HCFC-141b. Produces continuous panels (implemented until 2013). Performed the technological conversion process of its plant to eliminate the consumption of HCFC-141b.

[57] End user: Enterprise converted through the support of the Poly-Urethane Systems House. It carried out the technological conversion process of its plant to eliminate the consumption of HCFC-141b. 2019.

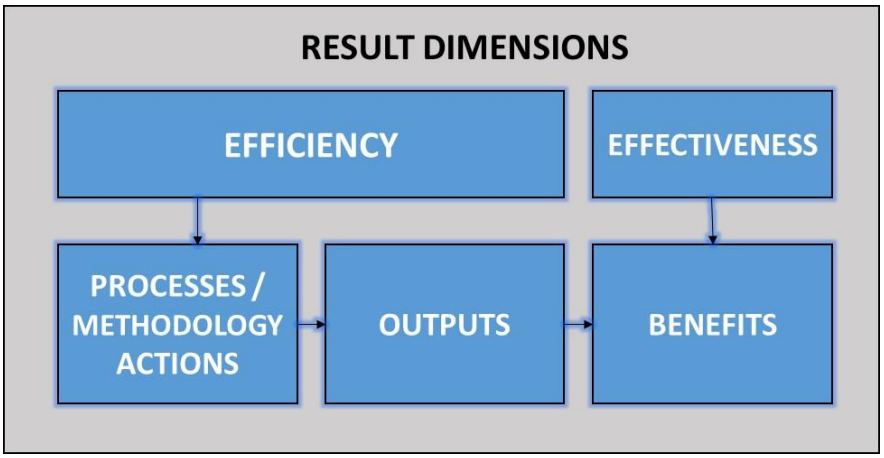


Figure 4: Outcome indicators

Based on the specific objectives described in the Term of Reference for the Final Evaluation of the BRA / 12 / G76 Project Brazilian HCFC Elimination Program – HPMP - Stage 1 - Foam Sector, the qualitative and quantitative criteria and indicators to be evaluated were established. Table 16 shows the results of the evaluated indicators.

Legend:

SPECIFIC OBJECTIVES	
1	Assess compliance with general and specific objectives
2	Assess the main aspects related to their relevance, efficiency, effectiveness and sustainability
3	Identify the main positive and negative aspects that influenced the execution of the project
4	Identify lessons learned during project implementation
5	Assess the project's monitoring, knowledge and knowledge dissemination system

7.2 General Table of Indicators:

Table 16: General Table of Indicators

SPECIFIC OBJECTIVES					SUCCESS CRITERIA	CATEGORY	DESCRIPTION	INDICATORS	INDICATOR RESULTS	MEANS OF VERIFICATION
1	2	3	4	5						
X	X				IMPLEMENTATION STRATEGY	STRATEGY	Strategic advantage provided by the project for companies (direct enterprises)	Articulation model between stakeholders; Mechanisms adopted to enable the transfer of UNDP resources to companies. Mechanisms used to make technological conversions feasible (direct enterprises)	Institutional Arrangement implemented; Contract Models implemented (Service Contacts and Long Term); Presentations, Events, Seminars, Newsletters, Campaigns and Direct Negotiations.	Secondary Data (Progress Reports: 3rd Report May / 2015 to Jan. 2016; 4th Report Sep / 2012 to Jun. 2017; 5th Report Jan. 2017 to Sept. 2019); Interviews (direct enterprises) Interviews (key people)
X	X				INSTITUTIONAL DEVELOPMENT	INSTITUTIONAL COMMUNICATION	Internal and external communication skills; institutional articulation	Efficiency in communication between those involved Meetings (Tripartite) Meetings (Dissemination of knowledge to beneficiaries) Events, Seminars held.	Annual Tripartite meetings; Meetings and technical visits to monitor the implementation of investment projects (UIM / UNDP and International Consultant); Item 7.6 Dissemination of Information and Communication (Table 17)	Initial meetings (MMA, IBAMA and UNDP); Tripartite minutes; Progress reports (UNDP and FML); Interviews with direct beneficiaries (enterprises) site: www.protocolodemontreal.org.br

X	X				**ORGANIZATIONAL STRUCTURE**	HUMAN RESOURCES	Structure designed for the implementation of the project	Project organization chart Adequacy of the structure Stakeholder responsibilities Number of people (Institutions involved)	Organizational chart defined and implemented; Creation of Project Monitoring Committee Implemented role / responsibility matrix Three Institutions (direct partners): MMA, UIM / UNDP and IBAMA (teams of 3 people in each Institution)	2nd Substantive Review; Project document - PBH 2012 Information obtained through UIM / UNDP

SPECIFIC OBJECTIVES 1	2	3	4	5	SUCCESS CRITERIA	CATEGORY	DESCRIPTION	INDICATORS	INDICATOR RESULTS	MEANS OF VERIFICATION
X	X	X			PROJECT MANAGEMENT	PROJECT MANAGEMENT CAPACITY	Project Modeling	Methodology used; Number of people x project products	Logical Framework Matrix UIM / UNDP management (direct team 3 people x 28 products implemented)	UNDP *Evaluation Guidelines* © UNDP Jan 2019., Chart; Logical Framework Matrix
						SCOPE		Planned vs. executed scope	Scope changes to meet the needs of investment projects. Scope implemented (28 products, including 23 investment projects, 4 products to support project management and monitoring and 1 product related to Regulatory Actions)	Progress reports and substantive reviews Logical Framework Matrix Key People Interviews
						SCHEDULE		Planned vs. executed schedule	Timeline with delays compared to initially planned 10 months (initial delay) Planned duration: 3 years and 3 months. Actual duration: 7 years and 9 months % Physical progress executed: 92.30%	Progress reports and substantive reviews Logical Framework Matrix Interviews with key people and enterprises
						FINANCIAL RESOURCES		Project within the expected financing; Reallocation of remaining resources (between project components)	Financial execution within budget % financial progress executed: 86.73%	Progress and Financial Execution Reports; Substantive Revisions

						MANAGEMENT INFORMATION		Monitoring mechanisms: QTY of meetings, per beneficiary enterprise (presentation / negotiation of the project). Qty of field visits made, beneficiary enterprises Qty of progress reports issued by Systems Houses Qty of contracted outputs (individual projects) Qty de COCs issued and signed	Average 5 per enterprise. Total: 5 x 23 investment projects; Media: 115 meetings Average: 3 per enterprise: Total: 3 x 23 investment projects; Average: 69 visits Average: 6 by Systems House: Total: 6 x 10 = 60 Average: 3 per individual enterprise: Total: 3 x 13 = 39 23 signed COCs	Exchange of information with UIM team; 2nd Substantive Review; Service provision contract (Poly-Urethane); Field visits and Progress reports issued by the beneficiary enterprises; Completion Certificates - COCs (signed)

SPECIFIC OBJECTIVES					SUCCESS CRITERIA	CATEGORY	DESCRIPTION	INDICATORS	INDICATOR RESULTS	MEANS OF VERIFICATION
1	2	3	4	5						
X	X	X		X	PROCESSOS OPERACIONAIS	CONTRACTING PROCESS (Enterprises)	Methods, processes, tools and techniques used to facilitate the realization of project activities	Adequate and integrated management and operational processes	43 Contracts signed with direct enterprises	Terms of reference; Service Provision Contracts, Contracts (LTA).
						CONTRACT MONITORING PROCESS (Enterprises)		Adequate and integrated management and operational processes	43 Contracts signed with enterprises	Progress Reports issued by direct beneficiaries, Progress Reports (UNDP and FML)
						DISBURSEMENT PROCESS		Adequate and integrated management and operational processes	4 Approved Substantive Revisions	Progress reports, Action Plans and Substantive Reviews, Financial Execution Reports
						ACCOUNTING PROCESS		Adequate and integrated management and operational processes	Financial execution reports executed	Quarterly reports on financial execution of the project (issued by UNDP for MMA). Progress Reports (UNDP and FML) Accounting records (Atlas System).
X	X	X		X	OUTPUTS	COMPONENT 1 - REGULATORY ACTIONS	Main project deliverables	a) Normative Instructions implemented	Results of the indicators presented in the Results Matrix (Logical Framework), Components 1 (item 7.8).	Progress reports; Tripartite minutes; official publications

						COMPONENT 2- INVESTMENT PROJECTS		a) Qty: Service provision contracts (legal entity); b) Qty (converted System Houses) c) Qty (individual companies converted) d) Qty (End Users converted by Systems House) e) HCFC-141 ODP number eliminated; f) Expectations / enterprise served	Results of the indicators presented in the Results Matrix (Logical Framework), Components 2 (item 7.8).	Project Logical Matrix; Service provision contracts (models); Progress reports (UNDP and FML) and Interviews with beneficiaries (enterprises)
						COMPONENT 4 - MONITORING AND EVALUATION UNIT		a) Qty of reports and action plans prepared and presented to ExCom (planned vs. executed); b) Number of signed Service Contracts; c) Qty of data checks carried out by contracted consultants	Results of the indicators presented in the Results Matrix (Logical Framework), Components 4 (item 7.8).	Progress Reports (UNDP, FML); Project Logical Matrix

SPECIFIC OBJECTIVES 1	2	3	4	5	SUCCESS CRITERIA	CATEGORY	DESCRIPTION	INDICATORS	INDICATOR RESULTS	MEANS OF VERIFICATION
					QUALITY ASSURANCE	COMPONENT 1 - REGULATORY ACTIONS	Analyze current situation, check stock options and propose laws, regulations or control instructions	Establish legal devices to control HCFCs	Results of the indicators presented in the Results Matrix (Logical Framework), Component 1 (item 7.8)	Verification (relevant legislation)
	X			X		COMPONENT 2- INVESTMENT PROJECTS	Conversion according to industrial baseline to absorb production technologies with alternative agents to HCFC-141b.	a) Establish Letters of Agreement (Terms of Commitments signed); b) Monitoring: Equipment Purchased and installed. Conducted trainings. Production tests and reimbursement of operating costs; c) Audit (Verification of consumption data. Hydrocarbon safety audit. Project execution audit Investments); d) Completion of Projects	a) 249 signed commitment terms; b) Training and tests carried out (9 System Houses and 14 Individual Enterprises); c) 4 Data checks performed; d) 23 signed COCs	Continuous project activity (Progress Reports and Action Plans)

						COMPONENT 4 - MONITORING AND EVALUATION UNIT	Establish Terms of Commitment, Implement, Monitor, Audit and Complete Projects	a) Management (Guaranteed execution according to FML and UNDP rules); b) Technical Assistance (Guarantee of technical execution of the projects as approved by the FML); c) Monitoring and coordination of activities between the counterparties involved to carry out the actions approved by the FML. d) Independent verification: Evidence of compliance with the established criteria the Associated Agreement between the Government of Brazil and the FML.	Progress reports and Action Plans approved by the FML; Substantive revisions approved by the CAP - Project Monitoring Committee; Monitoring indicators (Atlas System)	Continuous project activity (Progress Reports and Action Plans)

SPECIFIC OBJECTIVES 1	2	3	4	5	SUCCESS CRITERIA	CATEGORY	DESCRIPTION	INDICATORS	INDICATOR RESULTS	MEANS OF VERIFICATION
X	X				SUSTAINABILITY	FINANCIAL / COMMERCIAL CAPACITY	Financial capacity for project continuity Commercial capacity for project continuity	Qualitative results of technological conversion	Qualitative results of technological conversion (item 7.5)	Interviews with direct beneficiaries (enterprises)
						TECHNICAL / OPERATIONAL CAPACITY	Technical and operational capacity (people and technology)	Qualitative results of technological conversion	Qualitative results of technological conversion (item 7.5)	Interviews with direct beneficiaries (enterprises)
						EXIT STRATEGIES	Strategies adopted to ensure sustainability after the end of the project	Strategies defined by UIM / UNDP	Continuous monitoring (Progress reports) Safety reports, area classification and risk management Signed commitment terms (non use of HCFC-141b and low GWP substance)	2nd Substantive Review; Progress reports; Risk Management (Atlas System) Terms of Commitment (beneficiary enterprises)
X	X			X	KNOWLEDGE MANAGEMENT AND INFORMATION DISSEMINATION	KNOWLEDGE AND COMMUNICATION	Products produced by the project to raise awareness and disseminate knowledge and information.	Sites; Blog, Social Networks Events Newsletters Institutional videos Publications Press (articles)	Table 17: item 7.6 Dissemination of Information and Communication	Details presented in item 7.6 Dissemination of Information and Communication
X			X		LESSONS LEARNED	KNOWLEDGE AND DISSEMINATION OF INFORMATION	Positive points and challenges regarding understanding and awareness of the need for	Qualitative results (Awareness and understanding of the project)	Qualitative results (items 7.5 and 7.7)	Progress Reports Interviews with direct beneficiaries (enterprises)

			technological conversion (impact)			
		BUSINESS CONTRACTING PROCESS (ENTERPRISES)	Positive points and challenges in the hiring process of companies / eligibility criteria	Qualitative results (Hiring of enterprises)	Qualitative results (items 7.4, 7.5 and 7.7)	Progress Reports Interviews with direct beneficiaries (enterprises)
		IMPLEMENTATION STRATEGY	Positives points and challenges in the change process (technological conversion)	Qualitative results (Deployment process)	Qualitative results (items 7.5 and 7.7)	Progress Reports Interviews with direct beneficiaries (enterprises)
		MONITORING STRATEGY	Positive points and challenges in the process of monitoring the implementation of investment projects	Qualitative results (Monitoring process)	Qualitative results (items 7.4 and 7.7)	Progress Reports Interviews with direct beneficiaries (enterprises)

7.3 Relevance of the project

The project is relevant and current, regardless of the socioeconomic scenario or the conjuncture of the specific polyurethane sector. It was designed to implement part of the objectives of the Brazilian Program for the Elimination of HCFCs - HPMP, whose structure was approved by the ExCom of the Multilateral Fund for the Implementation of the Montreal Protocol, at its 64th Meeting, held in July 2011, to assist in the reduction and elimination of consumption of HCFCs in Brazil.

The difficulties faced in the scenario of political and economic crisis in which Brazil experienced, especially in the years 2014 to 2016, did not weaken or alter the importance and necessity regarding the realization of the project's activities.

According to the principles of the international treaty, the Montreal Protocol requires technological changes, but without interference in the economic model of the countries involved, favoring the achievement of positive results by the enterprises that adhere to it.

Given the current scenario, considering the context of the PANDEMIC of COVID-19 (new coronavirus) in which the world is going through, in Brazil, the implementation of the actions foreseen in the project for Stages 2 and 3 becomes even more relevant, as they will allow more enterprises to become aware to assume their responsibilities in the construction of more collaborative and less competitive business models, promoting social and environmental responsibility throughout the production chain in which the polyurethane sector is inserted.

7.4 Project efficiency

The project fulfilled the targets defined regarding the expected indicators, related to component 4 - UIM: Adaptive management implemented, as presented in the Results Matrix in terms of the amount of Progress Reports and Action Plans prepared as inputs for the realization of Substantive Reviews.

The Substantive Reviews were prepared and agreed with the other representatives of the Project Monitoring Committee - CAP according to the internal mechanism of UIM / UNDP, so that the contributions of resources for the execution of investment projects could be incorporated.

The monitoring process appropriated the Logical Framework methodology to structure the project in components, results and products, facilitating the monitoring of actions related to the execution of products.

The main result of component 4 regarding adaptive management was achieved, through the implementation of the methodology that permeated the main phases of the project:

a) Preparation: considering the definition of documents related to baseline (PRODOC - Official Document of the Brazilian Government);

b) Availability of information to beneficiary enterprises, through expression of interest, events, publications and face-to-face meetings for presentation of the project, selection of more appropriate technology, among other activities;

c) Preparation of proposals, negotiation phase with companies, including preparation of Terms of Reference and Technical Specifications, when relevant;

d) Implementation phase: preparation and formalization of service contracts with beneficiary companies, in addition to the contracting of services of individuals, through consultants and other related services to carry out the project activities;

e) Technical implementation of investment projects in enterprises: carrying out technology transfer actions, tests, training and field checks, necessary for the implementation of technological conversion in beneficiary enterprises;

f) Monitoring and evaluation phase: carried out continuously throughout the execution of the project, ensuring the availability of management information through Progress Reports for all stakeholders, in addition to meeting criteria defined by the FML regarding the presentation of Progress Reports and Action Plans that supported the

preparation of Substantive Reviews, submitted for approval at the Tripartite Meetings , according to financial contribution needs for the implementation of investment projects;

g) Closing phase of contracts, by signing a certificate of completion, with the beneficiary enterprises.

As for the efficiency in the implementation period, the schedule was delayed, the initial duration provided for an execution in 3 years and 3 months, but was submitted to two requests for extension of the deadline, impacting a delay of 4 years and six months for its completion, leading the project to a real duration of 7 years and 9 months.

Some non-controllable factors impacted the project execution schedule, such as: the unfavorable economic scenario (2014 to 2016), market fluctuations (foam sector) regarding the best time to perform technological conversions, resistance on the part of enterprises representatives, because they consider competitive disadvantage and/or financial difficulties to assume possible risks of the project for their business.

In addition, other internal factors impacted the project schedule, such as the decision on the most appropriate legal mechanism that would enable the transfer of resources from the UNDP Implementing Agency to the beneficiary enterprises. This process generated a delay of 10 months, from the signing of PRODOC to the effective start of the actions with the companies.

Changes in the internal systems (financial, operational and monitoring) of the UNDP Implementing Agency, negatively impacted the implementation schedule.

Another determining factor for the initial delay, which suggests the impact on the final duration, was the lack of knowledge on the part of the enterprises, of the project supported by the FML, regarding the proposed alternative technology (Methyl Formate), requiring inclusion of scope (not foreseen), for possible transfer of information related to the selection of the most appropriate technology for each enterprise.

This activity required the inclusion of scope for each component 2 output (23 investment projects foreseen in the results matrix).

Throughout the process of executing investment projects (Component 2), other factors promoted delays, such as: resistance of The System Houses in providing information, related, for example, to the list of customers, delaying the identification, qualification and initiation of the conversion process with the end users.

The pulverizing of the sector required displacements for field visits in several regions of the country, suggesting impacts on the dates foreseen in the schedule.

Other operational factors, such as delays in the signing of contracts and deliveries of equipment by suppliers, in addition to non-compliance with security measures by some beneficiary enterprises, impacted the payment schedule provided by UIM/PNUD.

In the various cases, actions were taken by the UIM/UNDP to mitigate deviations, inform and clarify technical and administrative doubts, with the beneficiary enterprises, through meetings, field visits, e-mails, communications (via telephone and WhatsApp), positively impacting the execution of the planned actions.

In Appendix (6), there is risk assessment, an integral part of the monitoring and evaluation process carried out by UIM/UNDP in order to mitigate delays and possible deviations.

Additionally, advertising pieces were produced and disseminated, in addition to folders, booklets and videos, during all phases of project execution, with the objective of intensifying communication and dissemination of information, facilitating the process of companies joining the proposed investment projects.

The Figure 5 presents the main phases and documents of the project, related to the management methodology used by the UIM/UNDP.

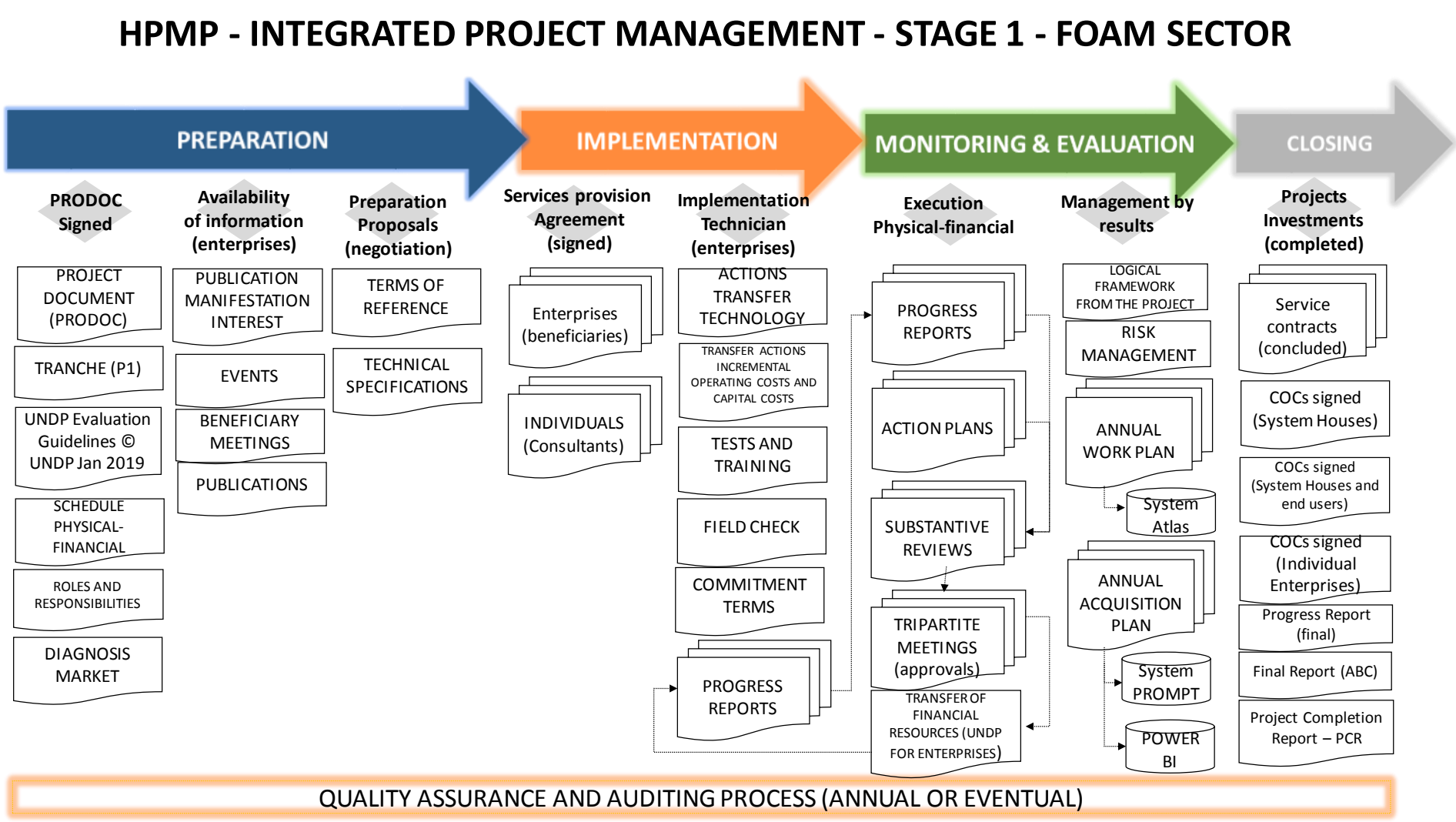


Figure 5 - Main phases and documents of the project

7.5 Project effectiveness (outcomes, outputs and impacts)

As presented in the project results matrix (Logical Framework), the main goal of eliminating 162.88 t ODP of HCFC-141, in the polyurethane foam manufacturing sector by 2020, was exceeded by 1%, in in relation to the revised goal, resulting in 164.38 t ODP of HCFC-141b eliminated, through the execution of 28 products (outputs) of the PBH project - Stage 1, with 23 investment projects implemented through Component 2, which benefited 249 SMEs in the sector.

In addition, the result related to the product (output) corresponding to Component 1 - Regulatory Actions and four products (outputs), through Component 4 - UIM - Adaptive management implemented, which supported the effective implementation of the project's actions, was fulfilled.

The main challenges identified by the direct beneficiaries (Systems Houses, Individual enterprises and end users) regarding administrative, commercial and financial processes were:

- ✓ Operational process, somewhat bureaucratic, to meet the eligibility criteria for small companies. The end user often did not have dedicated and / or qualified people to promptly meet certain requirements (For example: legal requirements). In many cases this point had a negative impact, delaying the process of starting the technological conversion project and / or giving up end users, regarding participation in the process;
- ✓ Difficulties in decision making regarding the best time for the implementation of investment projects, considering the scenario of economic crisis in which Brazil was going through the initial moment of the project (2012-2013);
- ✓ Difficulties in aligning expectations of the PU market (multinational and national Systems Houses, Individual enterprises) regarding the impact of the most appropriate technological option, which would allow internal variables to be equalized (medium and long-term strategies of the companies, product and service portfolio) and external (relationship with the market and competitiveness);
- ✓ In the case of System Houses, enterprises have chosen to delay the process of technological conversion of end users to a more opportune moment in relation to the internal (financial) and external (economic) scenario;
- ✓ Difficulties in equalizing three main factors for conscious decision-making, namely: definition of the expanding agent, financial availability regarding the counterpart value for investment in the project and the feasibility in terms of price and quality of products and services for customers final;

✓ The cost-benefit ratio between the options available, such as, for example, the HFO whose price was above the national market average, reaching USD 20.00 per kilo, made it difficult for enterprises to absorb it at first. In addition, another option, as the hydrocarbon required factory adjustment due to safety issues in the handling of the product, generating the need for investment in civil works;

✓ The mentality practiced by a large part of SMEs in the PU sector, which considered two variables in the production of PU, as a competitive advantage for their businesses, the lowest cost and the highest foam yield. The new expansion agents, in turn, did not meet these two variables at the time, impacting resistance on the part of companies, which sought short term results;

✓ Resistance by SMEs for believing that the need for technological conversion would be postponed and that the import ban for HCFC-141b would not occur in 2020, but in 2040;

✓ Insufficient amount made available by FML through UIM / UNDP, as it specifically contributed to the conversion of technology, requiring an investment of 60% to 70% of own resources to adapt the process in the specific case of an individual project that opted for the HFO expanding agent;

✓ The amount made available by FML through UNDP did not include an additional amount to subsidize the difference in the price of raw materials in the first and second years, creating internal difficulties to absorb these costs without passing on to the final customer by enterprises that chose to migrate to HFO;

The main technical challenges identified by the direct beneficiaries (Systems Houses, individual companies and end users) were:

✓ Not having experienced a similar process, since in the previous process of converting CFCs to HCFCs, only a technological option was considered, which were hydrocarbons and raw material suppliers had the technology, which facilitated the conversion process. In addition, the price was low and competitive;

✓ In the HCFC-141b conversion process, four technological options were made available, and there were several difficulties regarding the technical knowledge of the substances in terms of formulation, safety and quality, in addition to the impact on the business and the PU market;

✓ Lack of information on the part of the enterprises, of the benefits provided by the project supported by the FML, mainly in relation to the proposed alternative technologies (Methyl Formate and HFO);

✓ Difficulties in the testing phase (discontinuous line), by enterprises that opted for the migration of HCFC-141b to hydrocarbon, since it was necessary to provide a physical area for the installation of specific tanks for the execution of the process, meeting criteria and legal requirements regarding security and other items covered by Brazilian law. Such changes impacted the production flow of the plant (input of raw material in the process), directly impacting the initially proposed schedule, demanding a longer adaptation time;

✓ Difficulties to adjust the product, generating many losses, during the testing process for the migration from HCFC-141b to pentane, impacting the final schedule agreed with UNDP and the resumption of the factory's internal production process with the new substance;

They were identified as the main strategies adopted by internal beneficiaries (enterprises) to enable the implementation of investment projects with end users:

✓ Wait for the most opportune moment for the prices of the new substances to reach an acceptable level for their customers, with the decrease of HCFC-141b imports;

✓ Analyze the set of technological options, considering that some entered later as methylal and HFO, requiring a longer period of understanding and assimilation of knowledge and previous studies;

✓ Initially implement the technological conversion process of its production process (Systems Houses) and later support end users in the conversion process.

According to the direct beneficiaries, the main factors that contributed to the positive results in the implementation of investment projects were:

✓ Dissemination of knowledge through various communication vehicles, promoted by the Implementing Agency UNDP, in particular Seminars and Events that allowed an exchange of experiences between different profiles of enterprises in the sector, promoting a change of mentality in relation to the national and international market of PU sector;

✓ Participation in Events, such as the Seminar on Formulation for Rigid PU Foams, held in 2017 in São Paulo, which provided absorption of important new knowledge and experiences for executives and entrepreneurs in the PU sector;

- ✓ Technical and administrative support from the UNDP Institution through a dedicated and qualified team to promptly meet the demands and doubts in the various processes inherent to the implementation of investment projects, especially technical ones, allowing a more assertive decision making;
- ✓ Government support, through MMA, which promoted a positive impact in terms of differentiated performance in relation to previous projects, with active participation, including members of IBAMA at various times, generating credibility and confidence for entrepreneurs in the PU sector;
- ✓ The active participation of an international technical consultant who broke the resistance of several enterprises involved through the transfer of knowledge and successful references from international companies that could guide decision making by the most appropriate technology for their business models;
- ✓ Performance of Systems Houses in supporting the technological conversion of end users, without this creating any link or obligation in relation to loyalty in the supply of products and services;
- ✓ Technical performance of Systems Houses in direct support to end users regarding formulation and process adjustments (machines), facilitating the conversion of technologies;
- ✓ Administrative and technical support from Systems Houses in the process of technological conversion of end users through guidance on the necessary documentation to meet the eligibility criteria and in loco visits, respectively;
- ✓ Positive impact for all those involved (Systems Houses, SMEs and final customers) regarding visibility and credibility in relation to the market in which they operate as a result of the availability of products and services that do not harm the environment. Such impact allowed the mitigation of the negative effect of the possible price increase necessary for the adjustment provided by the implementation of technological conversions, mainly for more expensive technologies, such as, for example, HFO.

The results of the project positively impacted the direct beneficiaries (enterprises) regarding the absorption of new knowledge, such as environmental awareness, the safe handling of flammable substances, knowledge of alternative technologies to ODSs in the production of polyurethane foams, as well as their impacts for end users.

In addition, they promoted improvements in the production process of enterprises with the improvement of infrastructure and operational safety of industrial plants in the

foam sector and in the dissemination of environmentally friendly technologies throughout the production chain.

Other stakeholders positively impacted by the project are:

i) indirect beneficiaries, society as a whole, since the elimination of HCFC-141b consumption by companies, contributes to the recovery of the ozone layer;

ii) the [58] 198 parties participating in the Montreal Protocol, by fulfilling the commitments assumed by the party that corresponded to the Brazilian Government.

[58] https://ozone.unep.org/all-ratifications

7.6 Dissemination of Information and Communication

Table 17 lists the main information vehicles used by the project to raise awareness and disseminate knowledge to the audiences involved (direct and indirect beneficiaries).

Table 17 - Dissemination of Information and Communication

CATEGORY	OUTCOMES	YEAR	DESCRIPTION	ACCESS LINK
EVENTS (PROMOTION, AWARENESS AND DISSEMINATION OF INFORMATION)	Seminar on Formulation of Rigid Polyurethane Foams	May 24th and 25th, 2017 - São Paulo MMA, UNDP and ABIQUIM	Objective: To offer the rigid foam sector the opportunity to deepen the knowledge about the science of the formulation of these products, considering the scenario of HCFC elimination in Brazil and the alternatives available in the market for the replacement of HCFC-141b.	http://www.protocolodemontreal.org.br/site/pbh/projeto-para-o-setor-de-manufatura-de-espumas-de-poliuretano/eventos/seminario-sobre-formulacao-de-espumas-rigidas-de-poliuretano
	International Fair and Congress of Composites, Polyurethane and Thermoplastic / Engineering Plastics - FEIPLAR COMPOSITES & FEIPUR 2016	November 8 and 10, 2016 - São Paulo MMA / UNDP	Objective: To publicize the Brazilian actions to control and eliminate HCFCs in the polyurethane foam sector. Clarify doubts about PBH Stages 1 and 2; know the process of implementing industrial conversion projects for HCFC-free technologies, find out about enterprises eligibility criteria to have access to resources donated by FML. Lectures (five different sector panels)	http://www.protocolodemontreal.org.br/site/pbh/projeto-para-o-setor-de-manufatura-de-espumas-de-poliuretano/eventos/feiplar-composites-e-feipur-2016

CATEGORY	OUTCOMES	YEAR	DESCRIPTION	ACCESS LINK
EVENTS (PROMOTION, AWARENESS AND DISSEMINATION OF INFORMATION)	Seminar: Alternatives to HCFC in the Foam Sector - Technological Options and Equipment	July 23 and 24, 2014 Chapecó, Santa Catarina	Objective: Disseminate and discuss the actions taken for the implementation of Stage 1 of the PBH, technological alternatives for HCFC-141b and solutions in available equipment. Target audience: SMEs and associations in the foam sector, representatives of companies that supply equipment and technological solutions, representatives of the Brazilian, Italian government, Latin American and Caribbean countries, and international organizations.	http://www.protocolodemontreal.org.br/site/pbh/projeto-para-o-setor-de-manufatura-de-espumas-de-poliuretano/eventos/alternativas-ao-hcfc-no-setor-de-espumas-opcoes-tecnologicas-e-equipamentos
	In parallel to FEIPLAR COMPOSITES & FEIPUR 2012, the International Polyurethane Congress was held	November 6 and 7, 2012 (São Paulo) MMA and UNDP	Objective: To present technologies for the Polyurethane sector.	http://www.protocolodemontreal.org.br/site/pbh/projeto-para-o-setor-de-manufatura-de-espumas-de-poliuretano/eventos/feiplar-composites-e-feipur-2012
	Feiplar - Feipur 2012 - International Fair and Congress of Composites, Polyurethane and Engineering Plastics.	November 04 to 06, 2012 (São Paulo)	Objective: publicize the actions related to the protection of the ozone layer and actions of the PBH. Target Audience: representatives of PROZON, civil society, implementing agencies and the national press.	http://www.protocolodemontreal.org.br/site/pbh/projeto-para-o-setor-de-manufatura-de-espumas-de-poliuretano/eventos/feiplar-composites-e-feipur-2012

CATEGORY	OUTCOMES	YEAR	DESCRIPTION	ACCESS LINK
PUBLICATIONS	Brazilian HCFC Elimination Program – HPMP - Stage 1	2018	Information Stage 1: Brazilian HCFC Elimination Program - PBH Stage 1	http://www.protocolodemontreal.org.br/site/images/publicacoes/programa_brasileiro_eliminacao_hcfcs/programa-bras-hcfc_ed_2.pdf
	Folder HPMP Strategy	2016	Brazil and the protection of the ozone layer, a successful partnership between government, the productive sector and society	http://www.protocolodemontreal.org.br/site/images/publicacoes/setor_manufatura_espumas_poliuretano/1505.pdf
	Alternative Technologies for Foams	2016	Document prepared for the PU Foam Sector, by the Working Group of the ABIQUIM Sectorial Polyurethane Commission, based on the documents UNEP TEAP 2008, 2009, 2013 and 2014.	http://www.protocolodemontreal.org.br/site/images/publicacoes/setor_manufatura_espumas_poliuretano/1498.pdf
	Primer: Brazilian HCFC Elimination Program	2016	Objective: Inform enterprises in the PU foam sector about the process of eliminating HCFCs through HPMP and answer the most frequently asked questions and doubts about the industrial conversion of companies in the sector.	http://www.protocolodemontreal.org.br/site/images/publicacoes/programa_brasileiro_eliminacao_hcfcs/1484.pdf
	25 Anos do Protocolo de Montreal	2012	Folder with details about the HPMP	http://www.protocolodemontreal.org.br/site/images/publicacoes/programa_brasileiro_eliminacao_hcfcs/825.pdf

CATEGORY	OUTCOMES	YEAR	DESCRIPTION	ACCESS LINK
INSTITUTIONAL COMMUNICATION	HPMP Institutional Video for the PU Foam Sector	2018/ 2019	Information on the eligibility process, technical and financial support for companies, through the Montreal Protocol FML	http://www.protocolodemontreal.org.br/site/todas-as-noticias/326-video-programa-brasileiro-de-eliminacao-dos-hcfcs-para-o-setor-de-espumas-de-poliuretano
	Informative videos IN IBAMA nº 4 and nº 5, February 2018 HCFC import regulation in Brazil	2018 IBAMA / MMA	Objective: To reinforce the disclosure of dates and commitments adopted by Brazil to prohibit the import of HCFCs used, mainly, in the polyurethane foam and refrigeration sectors	http://www.protocolodemontreal.org.br/site/todas-as-noticias/337-ibama-e-mma-divulgam-videos-informativos-sobre-instrucoes-normativas-que-regulam-a-importacao-de-hcfc-no-brasil
	Institutional Sites	2019	Disclosure of information about the PBH Stages 1 and 2	http://www.protocolodemontreal.org.br/ https://www.mma.gov.br/ozonio
	Newsletters	2017	Objective: To provide dynamism to the dissemination of information about the projects that make up the PBH, presenting the main actions implemented in Brazil, in the beginning of 2018. In addition to this action, electronic messages entitled “Countdown” were sent, informing the number of months that the import ban for HCFC-141b for the foam sector in Brazil was missing.	http://www.protocolodemontreal.org.br/site/boletins-informativos/boletim-protocolo-de-montreal

CATEGORY		OUTCOMES	YEAR	DESCRIPTION	ACCESS LINK
INSTITUTIONAL COMMUNICATION	CAMPAIGNS	30 Years of the Montreal Protocol	2017	Information campaign: Tribute to the 30th anniversary of the Montreal Protocol	https://www.youtube.com/watch?v=8Uak7h2U2tU
		30 Years of the Montreal Protocol (Metro)	2017	Awareness of civil society	
	DIVULGATION (CIVIL SOCIETY)	Divulgation of CETESB - PROZONEST (State Program for Preventing the Destruction of the Ozone Layer)	2016	Divulgation to civil society	https://cetesb.sp.gov.br/prozonesp/2016/11/16/agencia-da-onu-apresenta-programa-para-eliminar-hcfcs-do-setor-de-espumas/

7.7 Sustainability and Lessons Learned

Sustainability

[59] Meaning: "*Concept that, relating economic, social, cultural and environmental aspects, seeks to meet the needs of the present without affecting future generations. Quality or property of what is sustainable, of what is necessary for the conservation of life".*

In view of this concept, the results of the project can be perceived as sustainable in terms of environmental aspects, since 92% of the enterprises adhered to the implementation of investment projects.

Regarding the profile of the enterprises, 30.43% consumed an amount above 10 tons of HCFC-141b and 17.39% between 5.1 and 10 tons of the same substance, totaling 47.82% of high consumption companies that stopped consuming HCFC-141b and became environmentally responsible with the implementation of technological conversion practice.

The enterprises awareness process can be perceived by the implementation of the HCFC-141b technological conversion practice for new alternatives qualified as low Global Warming Potential - GWP and Zero Ozone Destruction Potential - ODP.

With the implementation of the practices, the process is ensured, since the commitments were made between those involved and the results could be experienced. In some cases, such as enterprises that have opted for the HFO technological alternative, the investment has recovered in approximately eight months.

Other cases demonstrate the success of the practices adopted, impacting on sustainability, such as, for example, an end user in the rigid foam sector who recovered significant financial losses, by replacing the expanding agent HCFC-141b with methyl formate, through the partnership with sustainable System House. According to reports, the rate of return of low quality products dropped to zero after the improvement was implemented.

Another relevant situation that strengthens the perception of practices is related to enterprises that have broken the belief of low cost as a factor of added value and assured competitiveness.

The perception of customers in relation to environmentally responsible enterprises is a reality and can be perceived by enterprises that have increased their

[59] Aurélio Dictionary of the Portuguese Language

sales, attracting new customers and partners and in some cases recovering old customers, even adopting substances that at first seemed unfeasible, such as hydrocarbon, for requiring a high initial investment and HFO for the high cost of the raw material at the time of project implementation.

Enterprises whose sustainable practice is part of their business model, such as national System Houses that develop their services through the use of environmentally friendly substances, proved that the practice of sustainability can positively impact the PU sector's production chain.

These enterprises were partly responsible for the development and availability of new expanding agents with zero ODP and low GWP, in addition to acting as facilitators in the technological conversion process of SMEs in the PU sector.

A determining factor that contributes significantly to the practices become sustainable, is related to the ban on the import of HCFC-141b from January 2020.

The ban on the consumption of HCFC-141b has a positive impact on the economic aspect, reducing the price of raw materials for new substances in use, promoting competitiveness for SMEs in the sector and gradually equalizing the supply and demand for the consumption of environmentally appropriate expansion agents.

This factor contributes in part to the self-sustainability of enterprises through the closure of the project and the availability of financial resources provided by multilateral cooperation (FML), since the absorption of knowledge and consequently adherence to new technologies will begin to be part of the new scenario from the PU sector, especially of foams.

UIM / UNDP, as co-responsible for the implementation of investment projects with direct beneficiaries, contributes to sustainability by systematizing and making available to enterprises in the PU sector, information and knowledge acquired, through seminars and events that provide the exchange of information, experiences between executives and entrepreneurs involved in the productive sector.

In addition, UIM / UNDP has made available an [60]official website consolidating various information through videos, recordings of events held, as well as newsletters that provide knowledge that can be applied by companies that have not yet converted their processes. Table 18 consolidates the lessons learned that can be shared by other stages of the HPMP.

[60] http://www.protocolodemontreal.org.br/site/

As exit strategies with a view to ensuring the sustainability of the project after its closure, UIM / UNDP incorporated: the continuous monitoring and monitoring and technical assistance of the beneficiary enterprises; safety reports, area classification and risk management for conversion projects migrated to flammable technologies, such as methyl formate, methylal and hydrocarbons, ensuring the safe operation of the beneficiary enterprise through the use of the new expansion agent.

Another strategy adopted by UIM / UNDP to ensure sustainability was the formalization of the beneficiary enterprises commitment not to return to the use of HCFC-141b in their production process, by signing a Term of Commitment.

Under the aspect of social sustainability, the practices adopted contribute positively to indirect beneficiaries, society as a whole, since the elimination of HCFC-141b consumption by enterprises, contributes to the recovery of the ozone layer.

Regarding sustainability from a cultural point of view, the perception of the countries that participate in the Montreal Protocol, in relation to Brazil, through the fulfillment of the commitments assumed by the Brazilian Government is very satisfactory, which can be verified through reports from enterprises that received requests for international companies (Chile, USA and European countries) in order to know the results provided by the changes implemented since the adhesion to the new expanding agents in their production processes.

Table 18: Lessons Learned

ID	PROCESS	KNOWLEDGE AREA	DESCRIPTION
1	Execution strategy	Schedule	Consider the technological conversion execution schedules defined by the beneficiary enterprises so as not to cause an imbalance in their business (In line with the general objective of the project and Program guidelines).
2	Monitoring of Investment Projects	Schedule	The execution of service contracts signed between UNDP and the enterprises benefiting from the HPMP requires continuous monitoring by the UNDP with the companies. In this sense, it is of great importance to consider the execution schedules defined by the enterprises for their conversions, so as not to cause imbalance;
3	Execution strategy	Technology selection	a) Have the enterprises endorsement in relation to the technologies to be implemented in the investment projects, before submitting them for approval by the FML ExCom (implemented in Stage 2 in progress); b) Technological conversions will only occur if economically viable alternatives are available.
4	Contracting of Enterprises	Communication	The process of hiring enterprises in the foam sector to convert their plants, the main mechanism used for the implementation of projects in this sector, requires close articulation with enterprises to define the Terms of Reference and Goals Plan for conversion.
5	Contracting of Enterprises	Contract Type	The contract for services model was initially created and implemented with the beneficiary enterprises, allowing the transfer of financial resources from UIM / UNDP, as well as the management and monitoring of the implementation of investment projects.
6	Contracting of Enterprises	Contract Type	In order to improve the functioning of this instrument (Contract for services), as of July 2019, the contracts between UNDP and Systems Houses started to be signed in the Long Term Agreement modality, in order to give greater flexibility to the their implementation and greater flexibility for the conversion of end users, considering the switching of suppliers (Systems Houses), characteristic of the polyurethane foam production sector.
7	Implementation of Investment Projects	Group Projects	It requires constant and periodic in loco monitoring, in addition to a focal point based in the System House, dedicated exclusively to the implementation of conversion in end users.

ID	PROCESS	KNOWLEDGE AREA	DESCRIPTION
8	Implementation of Investment Projects	Group Projects (Training)	The training must be carried out with the designated team of the system houses as soon as the service contracts are signed.
9	Dissemination of project results	Communication between beneficiaries (enterprises)	The dissemination of information, using different communication vehicles, is of great importance for raising the awareness of the micro and small enterprises that benefit from the project. In this context, one should take advantage of the experiences of enterprises that have completed their industrial conversion projects and disseminate them to other enterprises (e.g. delivery of a commemorative plaque to enterprises that have completed their conversions, videos showing the progress achieved by the project, etc.); Promote benchmarking (presentation of national and international practices among companies in the PU sector).
10	Dissemination of technical knowledge	Communication	It is important to promote campaigns on the safe management of alternatives that have some degree of flammability, in addition to seeking to establish regulations and standards for the safe use of flammable expansion agents in the production chain of the polyurethane foam sector.
11	Critical success factors	Sustainability and Governance	a) Policies and the legal framework are elements that drive the Market; b) It is necessary to have an efficient import control; c) External cooperation helps in the knowledge of new technologies; d) The strengthening of teams is a fundamental tool for the technological conversion process; e) It is necessary that there is interest and commitment from the country for the projects to be executed; f) The specificities of each country and the competences of each institution must always be respected; g) Institutional strengthening projects are essential for the Government to maintain the governance of the entire process.

7.8 Project Results Matrix (Logical Framework)

GENERAL OBJECTIVE OF THE PROGRAM - HPMP Develop and implement actions to gradually eliminate the consumption of HCFCs, classified as substances in Group I, Annex C, of the Montreal Protocol, in accordance with Decision XIX / 6, agreed at the 19th meeting of the Parties to the Montreal Protocol.
PROJECT SPECIFIC OBJECTIVE - BRA12/G76 - Stage 1 - Foam Sector Eliminate 170.3 tonnes ODP of ozone depleting substances (ODS) by 2015, where 168.8 tonnes of HCFC-141b, referred to technological conversion projects in the sectors of integral skin foam and flexible molded foams, rigid foams of PU in continuous panels, water heaters, piping, thermoware and packaging applications and 1.5 tons of HCFC-22, referring to Component 1 - Regulatory actions.

COMPONENT OBJECTIVE 1: To prepare Drafts of instruments and legal rules related to the elimination of HCFCs and to improve the Control and Inspection System (Montreal Protocol Module of the [61] IBAMA Federal Technical Register).

[61] http://www.protocolodemontreal.org.br/eficiente/repositorio/Ciclo%20de%20Palestras/804.pdf

COMPONENTS	Component 1: Regulatory Actions	Indicators	Results Indicators	Means of Verification
OUTCOMES	**RESULT 2: Draft Regulatory Actions prepared**			
OUTPUTS	OUTPUT 1: Drafts of instruments and legal rules related to the elimination of HCFCs elaborated	Published normative instructions	IN nº 14 IBAMA, of December 20, 2012. Provides for the control of imports of HCFCs and mixtures containing HCFCs, in accordance with Decision XIX / 6 of the Montreal Protocol, among other provisions. IN nº 06 IBAMA, of March 15, 2013. Regulates the Federal Technical Registry of potentially polluting activities that use Environmental Resources (CTF / APP - IBAMA) and modernizes IT instruments, based on registration forms (individuals and companies). IN Nº 4 IBAMA, of February 14, 2018. Regulates the control of imports of HCFCs and mixtures containing HCFCs, in accordance with Decision XIX / 6 of the Montreal Protocol, among other provisions. IN Nº 5 IBAMA, of February 14, 2018. Regulates the environmental control of potentially polluting activities related to substances subject to control and	4th and 5th Progress Reports (ABC / UNDP). Sep. / 2019. 84th ExCom Meeting of the Multilateral Fund for the Implementation of the Montreal Protocol (Progress Report Oct. 2019). http://www.ibama.gov.br/sophia/cnia/legislacao/IBAMA/IN0014-201212.PDF http://www.ibama.gov.br/sophia/cnia/legislacao/IBAMA/IN0006-150313.pdf http://pesquisa.in.gov.br/imprensa/jsp/visualiza/index.jsp?data=16/02/2018&jornal=515&pagina=67&totalArquivos=126 http://pesquisa.in.gov.br/imprensa/jsp/visualiza/index.jsp?data=16/02/2018&jornal=515&pagina=68&totalArquivos=126

			progressive elimination in accordance with the Montreal Protocol.	

COMPONENTS	Component 1: Regulatory Actions	Indicators	Results Indicators	Means of Verification
OUTPUTS	OUTPUT 1: Drafts of instruments and legal rules related to the elimination of HCFCs prepared	Control System Improvements (Registration)	Montreal Protocol Module of the Federal Technical Register of IBAMA	4th and 5th Progress Reports (ABC / UNDP). Sep. / 2019. http://www.protocolodemontreal.org.br/site/pbh/sobre-o-programa/eliminacao-dos-hcfcs-no-brasil/cadastro-tecnico-federal-de-atividades-potencialmente-poluidoras-e-ou-utilizadoras-de-recursos-ambientais-ctf-app
		Institutional Working Groups (GT-HCFCs) and PROZON Interministerial Committee	Publication of Ordinance No. 179, of June 24, 2015 (Working Group GT-HCFCs within the scope of the HCH of PBH replacing Ordinance No. 41, of February 25, 2010). Publication of Ordinance No. 197, of July 6, 2015, which designates the representatives of the GT-HCFCs, created by Ordinance No. 179/2015. Publication of Ordinance No. 326, of July 26, 2016, which changes the representative of the MRE in the GT-HCFC.	4th and 5th Progress Reports (ABC / UNDP). Sep. / 2019.

			Publication of Ordinance No. 565, of December 30, 2016 that changes the representative of the Ministry of Industry, Foreign Trade and Services and the alternate representative of National Association of Electronics Manufacturers - ELETROS at GT-HCFC. Publication of Ordinance No. 171, of June 19, 2015, which amends members of the Ministry of Science, Technology and Innovation (MCTI) and Ministry of Health (MS) in the Interministerial Executive Committee for the Protection of the Ozone Layer (PROZON). Publication of Ordinance No. 563, of December 30, 2016 that changes the alternate representative of the Ministry of Industry, Foreign Trade and Services in PROZON.	
		MMA Published Ordinances	MMA Ordinance No. 212, of June 26, 2012 Establishes the Brazilian HCFCs Elimination Program, under the National Climate Change Plan. MMA Ordinance No. 179, of June 24, 2015. Extends the GT-HCFC period to December 31, 2020.	84th ExCom Meeting of the Multilateral Fund for the Implementation of the Montreal Protocol (Progress Report Oct 2019).

COMPONENTS	Component 1: Regulatory Actions	Indicators	Results Indicators	Means of Verification
		Published decrees Presidency of the Republic of Brazil	Decree No. 9,398, of June 4, 2018. Amends the Decree of March 6, 2003 that created the Interministerial Executive Committee for the Protection of the Ozone Layer, with the objective of establishing guidelines and coordinating actions related to the protection of the ozone layer. Decree No. 9,759, of April 11, 2019. Extinguishes and establishes guidelines, rules and limits for the collegiate bodies of the federal public administration. PROZON and GT-HCFC were extinguished according to the directive issued by Decree 9.759.	84th ExCom Meeting of the Multilateral Fund for the Implementation of the Montreal Protocol (Progress Report Oct 2019)

COMPONENT OBJECTIVE 2: Implement Investment Projects, promoting the elimination of the consumption of 168.8 t ODP of HCFC-141b, based on the technological conversion of companies in the foam sector.

COMPONENTS	**Component 2: Investment Projects for the technological conversion of enterprises in the foam sector**	**Indicators**	**Results Indicators**	**Means of Verification**
OUTCOMES	**RESULT 3: Investment Projects and Industrial Conversion Implemented**	Number of Investment Projects implemented Number of End-users converted by Systems Houses HCFC-141b t ODP eliminated	23 Investment Projects implemented (09 System Houses and 14 Individual Projects) 226 (Converted end users) 164.38 t ODP HCFC-141b eliminated	Progress Reports (UNDP and FML)
OUTPUTS	OUTPUT 1: Investment Project Group AMINO Sectors: System for ISF / FMF and PUR.	Number of Contracts with System House ODP Qty eliminated (sectors: Flexible Moulded Foam and Rigid PU)	1st Contract (System house, conversion of the completed plant, June / 2017); 2nd Contract (end users, Sep / 2019) 9.37 t ODP HCFC-141b eliminated.	4th and 5th Progress Reports (ABC / UNDP). Sep. / 2019. 84th and 85th FML ExCom Meetings for the Implementation of the Montreal Protocol (Progress Reports Oct. 2019 and March 2020).

		Number of end users converted by Systems House Signed certificate of completion (COC)	32 converted end users (sectors: Rigid PU and ISF / FMF) COC of the signed subproject in group.	

COMPONENTS	**Component 2: Investment Projects for the technological conversion of enterprises in the foam sector**	**Indicators**	**Results Indicators**	**Means of Verification**
OUTPUTS	PRODUCT 2: ARINOS Group Investment Project (Univar Solutions) Sectors: Integral Skin, Flexible Moulded Foam and Rigid Foams Status: System House Arinos, did not receive funds from the project for its conversion, as it became ineligible during the project implementation process, but supported the conversion of 23 enterprises (end users).	Number of Contracts with Systems House HCFC-141b t ODP eliminated Number of end users converted by System House Signed certificate of completion (COC)	1st Contract (System house, conversion of 50% of the completed plant, 2nd Contract (end users, until Sep / 2019) 11.2 t ODP HCFC-141b eliminated. 23 converted end users Signed group subproject COC.	4th and 5th Progress Reports (ABC / UNDP). Sep. / 2019. 85th FML ExCom Meeting for the Implementation of the Montreal Protocol (Progress Report - March 2020).

COMPONENTS	Component 2: Investment Projects for the technological conversion of enterprises in the foam sector	Indicators	Results Indicators	Means of Verification
OUTPUTS	OUTPUT 3: Group Investment Project ARISTON Sectors: Integral Skin, Flexible Moulded Foam and Rigid Foams	Number of Contracts with System House Qty ODP eliminated (sectors: ISF / FMF and rigid PU) Number of end users converted by System House Signed certificate of completion (COC)	1st Contract (System house, conversion of the completed plant, June / 2017); 2nd Contract (end users, until June / 2019) 6.59 t ODP HCFC-141b eliminated. 12 converted end users COC of the signed subproject in group.	4th and 5th Progress Reports (ABC / UNDP). Sep. / 2019. 85th FML ExCom Meeting for the Implementation of the Montreal Protocol (Progress Report - March 2020). 5th Progress Reports (ABC / UNDP). Sep. / 2019.

COMPONENTS	Component 2: Investment Projects for the technological conversion of enterprises in the foam sector	Indicators	Results Indicators	Means of Verification
OUTPUTS	OUTPUT 4: Investment Project Group DOW Sector: Rigid PU	CANCELED		5th Progress Reports (ABC / UNDP). Sep. / 2019. House of capital system not eligible to receive funds from FML. The resources provided for the implementation of this Output refer only to the conversion of the end user enterprises. Thus, considering the difficulties of negotiation with the enterprise for the implementation of the group project, it was decided to reallocate the resources to other Outputs, in order to allow the conversion of these end users by other System Houses.
OUTPUTS	OUTPUT 5: Group Investment Project ECOBLASTER Sectors: Integral Skin, Flexible Moulded Foam and Rigid Foams	Number of Contracts with System House	1st Contract (System House, conversion of the completed plant, June / 2017); 2nd Contract (end users, until June / 2017); 3rd Contract	4th and 5th Progress Reports (ABC / UNDP). Sep. / 2019.

		Qty ODP eliminated sectors: (Flexible Moulded Foam and Rigid Foams) Number of end users converted by System House Signed certificate of completion (COC)	(end users, August / 2019). 11.08 t ODP HCFC-141b eliminated. 17 converted end users Signed group subproject COC.	85th FML ExCom Meeting for the Implementation of the Montreal Protocol (Progress Report - March 2020).
	OUTPUT 6: Investment project Group ECOPUR (RODZA) Sector: Rigid PU	Number of Contracts with System House Qty ODP eliminated (System House), sector: PUR Number of end users converted Signed certificate of completion (COC)	1st Contract (Sep / 2019) 0.51 t ODP HCFC-141b eliminated. Not implemented in end users COC of the signed subproject in group.	5th Progress Reports (ABC / UNDP). Sep. / 2019. 85th FML ExCom Meeting for the Implementation of the Montreal Protocol (Progress Report - March 2020).

COMPONENTS	Component 2: Investment Projects for the technological conversion of enterprises in the foam sector	Indicators	Results Indicators	Means of Verification
OUTPUTS	OUTPUT 7: Investment project Group MCASSAB Sector: Rigid PU	Number of Contracts Qty ODP eliminated (System House), sector: PUR Number of end users converted Signed certificate of completion (COC)	1st Contract (Sep / 2019) 1.10 t ODP HCFC-141b eliminated. Not implemented in end users COC of the signed subproject in group.	5th Progress Reports (ABC / UNDP). Sep. / 2019. 85th FML ExCom Meeting for the Implementation of the Montreal Protocol (Progress Report - March 2020).
OUTPUTS	OUTPUT 8: Investment project Group POLISYSTEM Sector: Rigid PU	Not implemented		The enterprise had an expired environmental license. The enterprise claimed that it had been struggling to renew its environmental license. In august 2019 the company informed that it would make its technological conversion to HFC (high GWP technology), thus declining its participation in the project.

OUTPUTS	OUTPUT 9: Investment project Group POLY URETHANE Sector: Rigid PU	Number of Contracts with System House Qty ODP eliminated (System House), sector: PUR Number of end users converted for the System House Signed certificate of completion (COC)	1st Contract (System House, Dec. / 2013); 2nd Contract (conversion of System House, July 2016); 3rd Contract (end users, May / 2018); 4th Contract (July / 2019) 14.93 t ODP HCFC-141b eliminated 55 converted end users 3 Contracts concluded COC of the signed subproject in group. 1 Contract in progress (remaining end users Stage 1 and 2 - expected to end: July / 21)	4th and 5th Progress Reports (ABC / UNDP). Sep. / 2019. Contracts: Poly-Urethane 85th FML ExCom Meeting for the Implementation of the Montreal Protocol (Progress Report - March 2020). 5th Progress Reports (ABC / UNDP). Sep. / 2019; Contracts: Poly-Urethane
OUTPUTS	OUTPUT 10: Investment project Group PURCOM Sectors: Integral Skin, Flexible Moulded Foam and Rigid Foams	Number of Contracts with System House Qty ODP eliminated, sectors (Flexible	1st Contract (System house, conversion of the completed plant, June / 2017); 2nd Contract (end users, Sep./ 2019). 25.86 t ODP	4th and 5th Progress Reports (ABC / UNDP). Sep. / 2019.

		Moulded Foam and Rigid PU) Number of end users converted for the System House Signed certificate of completion (COC)	HCFC-141b eliminated 72 converted end users Signed group subproject COC	85th FML ExCom Meeting for the Implementation of the Montreal Protocol (Progress Report - March 2020).

COMPONENTS	**Component 2: Investment Projects for the technological conversion of enterprises in the foam sector**	**Indicators**	**Results Indicators**	**Means of Verification**
OUTPUTS	OUTPUT 11: Investment project Group UTECH Sector: Rigid Foams.	Number of Contracts with System House Qty ODP eliminated (sector PUR) Number of end users converted for the System House	1st Contract (System house, June / 2017); 2nd Contract (end users, July / 2019). 3.22 t ODP HCFC-141b eliminated 12 converted end users	4th and 5th Progress Reports (ABC / UNDP). Sep. / 2019. 85th FML ExCom Meeting for the Implementation of the Montreal Protocol (Progress Report - March 2020).

		Signed certificate of completion (COC)	Signed group subproject COC	
OUTPUTS	OUTPUT 12: Investment Project Group SHIMTEK Sectors: Integral Skin, Flexible Moulded Foam.	Number of Contracts with System House Qty ODP eliminated (sector Integral Skin, Flexible Moulded Foam) Number of end users converted for the System House Signed certificate of completion (COC)	1st Contract (System house, June / 2017); 2nd Contract (end users, Sep. / 2019). 1.25 t ODP HCFC-141b eliminated 02 converted end users Signed group subproject COC	4th and 5th Progress Reports (ABC / UNDP). Sep. / 2019. 84th and 85th FML ExCom Meetings for the Implementation of the Montreal Protocol (Progress Reports Oct. 2019 and March 2020)

COMPONENTS	Component 2: Investment Projects for the technological conversion of enterprises in the foam sector	Indicators	Results Indicators	Means of Verification
OUTPUTS	OUTPUT13: Investment Project DANICA Sector: Continuous panels.	Number of Contracts Qty ODP eliminated Signed certificate of completion (COC)	Individual Project 1st plant conversion contract (2016); 7.66 t ODP HCFC-141b eliminated Signed certificate of completion	4th and 5th Progress Reports (ABC / UNDP). Sep. / 2019. 84th and 85th FML ExCom Meetings for the Implementation of the Montreal Protocol (Progress Reports Oct. 2019 and March 2020)
OUTPUTS	OUTPUT 14: Investment Project ISOESTE Sector: Continuous panels.	Number of Contracts Qty ODP eliminated Signed certificate of completion (COC)	Individual Project 1st contract, conversion of the plant (2013); 4.95 t ODP HCFC-141b eliminated Signed certificate of completion	4th and 5th Progress Reports (ABC / UNDP). Sep. / 2019. 84th and 85th FML ExCom Meetings for the Implementation of the Montreal Protocol (Progress Reports Oct. 2019 and March 2020)

COMPONENTS	Component 2: Investment Projects for the technological conversion of enterprises in the foam sector	Indicators	Results Indicators	Means of Verification
OUTPUTS	OUTPUT 15: Investment Project IMBP ISOBLOCK. (Barra do Piraí) Sector: Continuous panels.	Number of Contracts Qty ODP eliminated Signed certificate of completion (COC)	Individual Project 1st contract, conversion of the plant (2013); 16.78 t ODP HCFC-141b eliminated Signed certificate of completion	4th and 5th Progress Reports (ABC / UNDP). Sep. / 2019. 84th and 85th FML ExCom Meetings for the Implementation of the Montreal Protocol (Progress Reports Oct. 2019 and March 2020)
OUTPUTS	OUTPUT 16: Investment Project PANISOL Sector: Continuous panels.	Not implemented		5th Progress Reports (ABC / UNDP). Sep. / 2019. The enterprise declined participation in the project in March 2017. In March 2018, a new meeting of UNDP, MMA and IBAMA was held with representatives of the enterprise. However, there was no change in the enterprise decision.

COMPONENTS	Component 2: Investment Projects for the technological conversion of enterprises in the foam sector	Indicators	Results Indicators	Means of Verification
OUTPUTS	OUTPUT 17: Investment Project CAIRU Sectors: Integral Skin, Flexible Moulded Foam	Number of Contracts Qty ODP eliminated Signed certificate of completion (COC)	Individual Project 1st contract, conversion of the plant (2016); 3.3 t ODP HCFC-141b eliminated Signed certificate of completion	4th and 5th Progress Reports (ABC / UNDP). Sep. / 2019. 84th and 85th FML ExCom Meetings for the Implementation of the Montreal Protocol (Progress Reports Oct. 2019 and March 2020)
OUTPUTS	OUTPUT 18: Investment Project CANTEGRILL Sectors: Integral Skin, Flexible Moulded Foam	Number of Contracts Qty ODP eliminated Signed certificate of completion (COC)	Individual Project 1st contract, conversion of the plant (2013); 0.84 t ODP HCFC-141b eliminated Signed certificate of completion	4th and 5th Progress Reports (ABC / UNDP). Sep. / 2019. 84th and 85th FML ExCom Meetings for the Implementation of the Montreal Protocol (Progress Reports Oct. 2019 and March 2020)
OUTPUTS	OUTPUT 19: Investment Project DUOFLEX (OPETRA) Sectors: Integral Skin, Flexible Moulded Foam	Number of Contracts	Individual Project 1st contract, conversion of the plant (2013);	4th and 5th Progress Reports (ABC / UNDP). Sep. / 2019. 84th and 85th FML ExCom Meetings for the Implementation of the

		Qty ODP eliminated Signed certificate of completion (COC)	3.04 t ODP HCFC-141b eliminated Signed certificate of completion	Montreal Protocol (Progress Reports Oct. 2019 and March 2020)

COMPONENTS	**Component 2: Investment Projects for the technological conversion of enterprises in the foam sector**	**Indicators**	**Results Indicators**	**Means of Verification**
OUTPUTS	OUTPUT 20: Investment Project ESPUMATEC Sectors: Integral Skin, Flexible Moulded Foam	Number of Contracts Qty ODP eliminated Signed certificate of completion (COC)	Individual Project 1st contract, technology selection (June / 2017), 2nd plant conversion contract (Sept / 2019); 11.98 t ODP HCFC-141b eliminated Signed certificate of completion	4th and 5th Progress Reports (ABC / UNDP). Sep. / 2019. 84th and 85th FML ExCom Meetings for the Implementation of the Montreal Protocol (Progress Reports Oct. 2019 and March 2020)
OUTPUTS	OUTPUT 21: Investment Project FRISOKAR Sectors: Integral Skin, Flexible Moulded Foam	Number of Contracts Qty ODP eliminated	Individual Project 1st Contract (2013) 7.06 t ODP HCFC-141b eliminated	84th and 85th FML ExCom Meetings for the Implementation of the Montreal Protocol (Progress Reports Oct. 2019 and March 2020)

		Signed certificate of completion (COC)	Signed certificate of completion	

COMPONENTS	**Component 2: Investment Projects for the technological conversion of enterprises in the foam sector**	**Indicators**	**Results Indicators**	**Means of Verification**
OUTPUTS	OUTPUT 22: Investment Project KALF Sectors: Integral Skin, Flexible Moulded Foam.	Number of Contracts Qty ODP eliminated Signed certificate of completion (COC)	Individual Project 1st Contract (2013) 4.4 t ODP HCFC-141b eliminated Signed certificate of completion	84th and 85th FML ExCom Meetings for the Implementation of the Montreal Protocol (Progress Reports Oct. 2019 and March 2020)
OUTPUTS	OUTPUT 23: Investment Project LUGUEZ Sectors: Integral Skin, Flexible Moulded Foam.	Number of Contracts Qty ODP eliminated Signed certificate of completion (COC)	Individual Project 1st Contract (2015) 13.20 t ODP HCFC-141b eliminated Signed certificate of completion	4th and 5th Progress Reports (ABC / UNDP). Sep. / 2019. 84th and 85th FML ExCom Meetings for the Implementation of the Montreal Protocol (Progress Reports Oct. 2019 and March 2020)

COMPONENTS	Component 2: Investment Projects for the technological conversion of enterprises in the foam sector	Indicators	Results Indicators	Means of Verification
OUTPUTS	OUTPUT 24: Investment Project SPANDY Group enterprises SPANDY (Espumauto, PTP e MPU) Sectors: Integral Skin, Flexible Moulded Foam	Number of Contracts Qty ODP eliminated Signed certificate of completion (COC)	Individual Project 5 Contracts (2013 to June / 2017) 3.53 t ODP HCFC-141b eliminated Signed certificate of completion	4th and 5th Progress Reports (ABC / UNDP). Sep. / 2019. 84th and 85th FML ExCom Meetings for the Implementation of the Montreal Protocol (Progress Reports Oct. 2019 and March 2020)
OUTPUTS	OUTPUT 30 – Investment Project TERMOLAR Status: The Termolar enterprise was converted by Systems House Flexible, which is part of Stage 2 of the Project, but since it belongs to the Investment Projects matrix of Stage 1, it was quantified as the end user of this stage.	Number of Contracts Qty ODP eliminated Signed certificate of completion (COC)	Individual project 1st Contract (2014) 2.53 t ODP HCFC-141b eliminated Signed certificate of completion	Information provided by UIM/UNDP
OUTPUTS	OUTPUT 33 – Group Investment Project PUR (Enterprises: CONTERMICA, FRIGS, KORTA KALHAS, TERMOBRAS e SER THERM)	Qty of enterprises converted through System Houses (they are part of the number of end users informed through the	Implemented (2017) Korta Kalhas (Converted: System House Amino)	5th Progress Reports (ABC / UNDP). Sep. / 2019 Information provided by UIM / UNDP

	Status: The enterprises (end users), Contérmica, Frigs, Korta Kalhas, Sher Therm and Termobrás, were grouped in OUTPUT 33 and quantified in the respective System Houses, responsible for their conversions.	indicators of the respective System Houses)	Frigs (Converted: System House Ecoblaster) Contermica e Termobras e Ser Therm (Converted: System House PolyUrethane)	Substantive Revisions: Outputs 25 through 32 have been grouped into Output 33.
OUTPUTS	OUTPUT 34 – Investment Project BLITZ Status: The Blitz enterprise was converted through System House Ariston and quantified as an enterprise (converted end user).	Number of Contracts Qty ODP eliminated Signed certificate of completion (COC)	Individual project 1st Contract (2018) 8.26 t ODP HCFC-141b eliminated Signed certificate of completion	Information provided by UIM / UNDP. Substantive Revisions: Output 34 - Blitz, was included in the Logical Framework. enterprise converted through System House Ariston and quantified as end user converted into final consolidated.

COMPONENT OBJECTIVE 4: Implement, monitor and evaluate the project to implement investment projects in enterprises (direct beneficiaries) in the foam sector.

COMPONENTS	**Component 4: Monitoring & Evaluation Unit**	**Indicators**	**Results Indicators**	**Means of Verification**
OUTCOMES	**RESULT 1: Adaptive management implemented**	Number of Service Contracts (completed)	43 contracts signed 40 (completed by May 2020)	Progress Reports (UNDP and FML)
OUTPUTS	OUTPUT 1: Technical, operational, physical and financial execution performed.	Continuous action	Project executed	Continued action until the end of the project (Data verified Progress reports: September 2012 to June 2020).
	OUTPUT 2: Plans and reports prepared and presented to the Executive Committee.	Number of Progress Reports and Action Plans (prepared and presented) PCR Report 1st meeting of the Executive Committee (2020).	7 Progress Reports 7 Action Plans	3rd 4th and 5th Progress Reports (ABC / UNDP). To be prepared in conjunction with Project BRA/16/G76.
	OUTPUT 3: Implementation and Monitoring of completed Investment Projects	Number of signed Service Contracts (beneficiary enterprises)	43 contracts signed 40 (completed by May 2020)	84th Meeting of the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol (Progress Report Oct. 2019)
OUTPUTS	OUTPUT 4: Annual Data Verification carried out	Number of checks carried out by contracted consultants	4 data checks performed (annual)	International consultant hired to monitor the implementation of the project.

		Number of visits per enterprise (International consultant)	Average 3: Phases: negotiation, implementation and closure of the conversion project	Annual data verification performed by contracted consultants (Reports) 3rd 4th and 5th Progress Reports (ABC / UNDP) Note: From 2017, the annual verification of data started to be carried out within the scope of Project BRA / 16 / G76 - Stage 2 of HPMP.

8. Conclusions and Recommendations

As to the Purpose

Brazil adhered to the Montreal Protocol, through Decree No. 99,280, of June 6, 1990, becoming a Party.

The Brazilian HCFCs Elimination Program - HPMP, as well as its projects, including BRA 12 / G76 - Stage 1 - Foam sector, designed with the objective of meeting global goals, are in line with the guidelines defined in decision XIX / 6 agreed at the 19th meeting of the parties to the Montreal Protocol, referring to Annex C, Substances in Group I, where the Parties agreed to anticipate the timetable for eliminating HCFCs production and consumption.

O HPMP – Stage 1 - Foam sector has contributed, directly or indirectly, to the achievement of predicted goals, in five out of seventeen sustainable development objectives - SDG, proposed by Agenda 2030, namely: SDG 3: Ensuring a healthy life and promoting well-being being for everyone, at all ages; SDG 9: Build resilient infrastructure, promote inclusive and sustainable industrialization and foster innovation; SDG 12: Ensure sustainable production and consumption patterns; SDG 13: Take urgent measures to combat climate change and its impacts and SDG: 17: Strengthen the means of implementation and revitalize the global partnership for sustainable development.

As to General and Specific Objectives

The BRA 12 / G76 - Stage 1 (Foam Sector) project contributed to the Brazilian HCFC Elimination Program, of which it is a part, fulfilling its main objective, the elimination of 164.38 t ODP of HCFC-141b, through the technological conversion of 249 enterprises that benefited from the technical and financial support promoted by the FML, in partnership with the Brazilian Government, with the special collaboration of MMA, responsible for general coordination, and UNDP as the Leading Implementing Agency, responsible for the execution of actions foreseen in Component 2, related to the implementation of 23 investment projects, being 09 projects of the Systems Houses type and 14 of the Individual Projects type.

We can consider that, of the total companies converted to the use of free HCFC -141b and low GWP technologies, related to individual investment projects in the sectors of integral skin and flexible molded foam (ISF / FMF) and group projects (Systems Houses), ISF / FMF and rigid PU sectors, approximately 40.90% opted for methyl formate

to replace HCFC-141b, followed by methyl, hydrocarbon and HFO, which corresponded to the same percentage of companies, 13.64% each.

Of the total percentage of investment projects implemented, 88.88% of the enterprises of the Systems Houses type and 42.85% of the enterprises that implemented individual type projects are in São Paulo. If we consider the total of direct beneficiaries, which correspond to 249 enterprises, we have 47.79% located in São Paulo (capital and interior).

Regarding the Institutional Arrangement and Organizational Structure

The institutional arrangement of the project allowed the engagement of participating institutions (ABC / MRE; MMA / IBAMA and UIM/UNDP), by defining levels of articulation (strategic, tactical and operational), as well as aligning the communication between stakeholders directly and indirectly involved in achieving project results.

The definition of a Project Monitoring Committee with representatives from each institution involved also contributed to the achievement of the results, since it promoted a collaborative and transparent communication, in relation to the actions and decisions of the project regarding the meeting of the expectations of different audiences (direct beneficiaries, financier, representatives of public and private entities, among others).

In addition, the development of an organizational structure, with a clear definition of roles and responsibilities, favored the organization, management and dissemination of information among those involved internally and externally (direct and indirect beneficiaries), facilitating the decision making process in relation to management of changes occurred during the execution of the project in relation to goals, deadlines, implementation strategy and negotiation with the beneficiary enterprises.

Another favorable point in the engagement of interested parties, in particular, of direct beneficiaries, were the technical events and specific forums that promoted the dissemination and exchange of useful information and experiences, allowing enterprises to be aware of environmental issues, in addition to technical support for decision making regarding the most appropriate technology selection and its respective impacts, in terms of the polyurethane market.

As for the efficiency and effectiveness of the project

Regarding the effectiveness in terms of the number of projects actually implemented and the financial resources realized (amounts disbursed and committed),

the project presented a high performance, considering a physical progress of [62]92,30% and financial advance of [63]86,73%.

As for efficiency, the schedule was delayed, being extended in two stages, in the years 2015 and 2017. The initial estimated duration was 3 years and 3 months (2011 to 2015), however, the project was carried out in 7 years and 9 months, causing a delay of 4 years and 6 months for its completion in June 2020.

Several factors were identified as possible causes for the postponement of deadlines, the most critical of which occurred in the initial phase of the project, requiring the creation of a legal mechanism that would allow the financial resources of the Leading Implementing Agency - UNDP to be transferred to the beneficiary enterprises carry out their investment projects.

This process generated a delay of 10 months, from the signing of PRODOC (September 2012) until the effective start of the implementation of actions with enterprises by signing the first contract with a beneficiary enterprise in July 2013.

In addition, the postponement of deadlines was due to the lack of knowledge on the part of the companies, regarding the details of the technical and financial support project of FML, in relation to the proposed alternative technology (Methyl Formate) and financial impacts for the business and, consequently, for the business the polyurethane market.

The latter demanded the inclusion of scope (not initially provided), for the transfer of information related to the selection of the most appropriate technology for each enterprise.

In this way, UIM/UNDP has developed new mechanisms for transferring information to empower those involved (enterprises) in the technical and financial knowledge promoted by the project. For this action, institutional videos, publications, newsletters were developed.

In addition to intensified meetings with the participation of international consultants to support the definition and construction of investment projects with enterprises.

[62] Total: 21 out of 23 investment projects carried out, 21 of which were completed and 2 partially completed. Enterprises (Systems Houses and Individual Projects) that have converted their internal plants and end users through System Houses are being considered.

[63] Progress Report 2019/2020. 85th FML ExCom Meeting. March 2020.

Events were held in parallel with thematic panels to collaborate in the dissemination of knowledge, seeking to facilitate the process of understanding and adhering to direct beneficiaries.

Other non-controllable factors contributed to the negative impact on the project's implementation period, such as the unfavorable economic situation, associated with the oscillation of the specific polyurethane market.

A point to be highlighted regarding efficiency, is that no points of difficulty were identified regarding the performance of human resources, which could be linked to the delay in the implementation schedule.

The effectiveness of the results achieved by the project is associated, in part, with the efficiency of human resources, teams from the institutions involved (MMA, IBAMA and UIM / UNDP), and in particular from the UIM / UNDP team, since it was under their responsibility direct for carrying out the actions provided for in Components 2 - Investment Projects for the technological conversion of enterprises in the foam sector and Component 4 - Implementation of effective / adaptive management of the UIM and indirect, related to Component 1 - Regulatory actions.

Productivity was verified by the number of people dedicated full time (UIM / UNDP) in relation to the number of contracts managed.

In this way, we have that the UIM / UNDP team was composed, over the life of the project, by an average of three people, a project manager, a technical advisor and a project assistant and acted directly in the implementation of 23 investment projects, through the management of 43 service contracts with the beneficiary enterprises.

As for the effectiveness of the results achieved foreseen in the Logical Framework or Matrix of Results of the project, it was found that, through Component 1 - Regulatory Actions, the expected results were fulfilled, through the publication of the Normative Instructions:

- IN nº 14 IBAMA, of December 20, 2012, which provides for the control of imports of HCFCs and mixtures containing HCFCs, in accordance with Decision XIX / 6 of the Montreal Protocol, among other provisions;
- IN nº 06 IBAMA, of March 15, 2013, which regulates the Federal Technical Registry of potentially polluting activities and which uses Environmental Resources (CTF / APP - IBAMA) and modernizes the IT instruments, based on the registration forms (person physical and legal);

In addition, they had a positive impact on the implementation of investment projects, improvements made to the Control System (Federal Technical Register of IBAMA) related to the Montreal Protocol Module, through other projects.

As for Component 2 - Investment Projects for technological conversion of enterprises in the foam sector, as previously mentioned, the goal of eliminating 162.8 t ODP of HCFC-141b was exceeded by 1%, resulting in the elimination of 164.38 t ODP, through the implementation of 23 investment projects that positively impacted 249 enterprises (direct beneficiaries).

As for Component 4 - UIM, the planned adaptive management was implemented, using four products, namely:

Output 1: Technical, operational, physical and financial execution, carried out continuously (September 2012 to June 2020);

Output 2: Plans and reports prepared and presented to the Executive Committee, which corresponded to the preparation and presentation of 7 Progress Reports and 7 Action Plans, allowing the financial contributions to be made for the execution of investment projects.

Output 3: Implementation and Monitoring of Investment Projects, which corresponded to the execution of 43 contracts signed, of which 40 (concluded by May 2020) and;

Output 4: Annual Data Verification, where a total of 4 data verifications were carried out, considering the project phases: initial negotiation with beneficiaries, implementation of the conversion process and closure of the technological conversion project.

It is worth mentioning that the HPMP - Stage 1 - Foam Sector was implemented with donation resources (FML), and that the delays mentioned regarding the execution of the actions, represent a necessary adaptation in relation to the schedules of the beneficiary enterprises, in order to allow whether they choose to implement investment projects or not, but at the most appropriate time, in order to mitigate possible impacts on their business.

It is recommended for this type of project to estimate a longer time in the initiation phase, considering the need for awareness and dissemination of technical, administrative and financial knowledge to the stakeholders involved in order to prepare them for change.

9. Appendix

Appendix (1) Reference documents

- ✓ Tripartite minutes: November 2013, May 2015, March 2016 and August 2017;
- ✓ Folders: HPMP. 2012; Brazilian Actions for the Protection of the Ozone Layer / Ministry of the Environment. Brasília: MMA, 2014; Brazilian HCFCS Elimination Program - PBH (Stage 2). 2016; Brazil and the protection of the ozone layer - A successful partnership between the government, the productive sector and society. 2012; 2016; Stage 1. 2018.
- ✓ PRODOC BRA/12/G76 – HPMP National HCFC Elimination Program. 2012;
- ✓ UNDP Progress Reports: 1st (Period: September 2012 to October 2013); 3rd (Period: May 2015 to January 2016); 4th (Period: September 2012 to June 2017); 5th (Period: January 2017 to September 2019);
- ✓ Progress Reports on Multilateral Fund: 68th Meeting of the Multilateral Fund Executive Committee (September 2012); 73rd Meeting of the Multilateral Fund Executive Committee (September 2014); 77th Meeting of the Multilateral Fund Executive Committee (September 2016); 80th Meeting of the Executive Committee of the Multilateral Fund (August 2017); 82nd Meeting of the Executive Committee of the Multilateral Fund (August 2018); 84th Meeting of the Executive Committee of the Multilateral Fund (October 2019) and 85th Meeting of the Executive Committee of the Multilateral Fund (March 2020);
- ✓ Substantive Revisions: 1st: August 2014; 2nd: October 2015; 3rd: June 2016 and 4th June 2017;
- ✓ UNDP Evaluation Guidelines © UNDP Jan. 2019;
- ✓ Spreadsheet: Project Risk Management (June 2019);
- ✓ O.D: Ministry of the Environment / Brazilian Institute of the Environment and Renewable Natural Resources: Normative Instruction No. 14, of December 20, 2012;
- ✓ Documents Contracts: beneficiary enterprises: Systems House: Poly-Urethane, Individual Company: MBP Isoblock and End User: Valenzuela;
- ✓ COC Models (Ecoblaster, Espumatec, Purcom, Isoeste e Blitz);
- ✓ Site: http://www.protocolodemontreal.org.br/site/

- ✓ https://www.mma.gov.br/
- ✓ Site: https://www.mma.gov.br/clima/protecao-da-camada-de-ozonio/acoes-brasileiras-para-protecao-da-camada-de-ozonio/programa-brasileiro-de-eliminacao-dos-hcfcs-pbh
- ✓ Site: https://www.ibama.gov.br/
- ✓ Site: https://www.ibama.gov.br/cadastro-tecnico-federal-ctf
- ✓ Site: https://www.ibama.gov.br/notas/1365-ibama-publica-instrucoes-normativas-para-reduzir-a-importacao-e-intensificar-o-controle-de-substancias-nocivas-a-camada-de-ozonio-2

Appendix (2): Bibliographic References

Adulis, Dalberto. 2002. The use of the Logical Framework in project management and evaluation. Third Sector Magazine. São Paulo.

Bardin, Laurence. 2011. Content analysis. Ed.: Editions 70. Brasil.

Cohen, E.; Franco, R. 1999. Evaluation of social projects. Ed. Vozes. Petrópolis, RJ.

Faria, C. A. Pimenta de. 2005. The policy of public policy evaluation. Brazilian Journal of Social Sciences.

Flick, Uwe. 2009. Introduction to qualitative research. Ed. Penso.

Kerzner, Harold. 2013. Project Management. A Systems Approach to Planning, Scheduling, and Controlling. Ed. John Wiley & Sons.

Mattar, F. N. 2008. Marketing research: methodology, planning. São Paulo, Ed.: Atlas.

Maximiano, A. C. A. 2014. Project Management: How to turn ideas into results, São Paulo, SP.

Project Management Institute. 2017. A Project Management Knowledge Guide (Guide PMBOK ®) 6ed. São Paulo.

Project Management Institute Research Series. 2010. The Future of Project Management. São Paulo.

Rabechini J; Maximiano, A. C. A.; Martins, V. A. 2005. The adoption of portfolio management as a managerial alternative. Production Magazine.

Silverman, David. 2011. Interpretation of Qualitative Data. Methods for Analysis of Interviews, Texts and Interactions. Ed. Penso.

Trevisan e Bellen. 2008. Public Policy Evaluation: a theoretical review of a field under construction. Public Administration Magazine.

Appendix (3) Enterprise profile (Project Beneficiaries)

			QUANTITATIVES			
ID	INVESTMENT PROJECTS		CONVERTED SYSTEM HOUSES	CONVERTED INDIVIDUAL ENTERPRISES	USERS CONVERTED BY SYSTEMS HOUSES	GRAND TOTAL (SYSTEM HOUSES + INDIVIDUAL ENTERPRISES + END USERS THROUGH SYSTEM HOUSES
1	Output 1	Amino	1		32	33
2	Output 2	Arinos	0		23	23
3	Output 3	Ariston	1		12	13
	Output 4	DOW (canceled)				
4	Output 5	Ecoblaster	1		17	18
5	Output 6	Ecopur	1			1
6	Output 7	Mcassab	1			1
	Output 8	Polysistem (not implemented)				
7	Output 9	PolyUrethane	1		55	56
8	Output 10	Purcom	1		72	73
9	Output 11	Utech	1		12	13
10	Output 12	Shimtek	1		2	3
11	Output 13	Danica		1		1
12	Output 14	Isoeste		1		1
13	Output 15	MBP Isoblock		1		1
	Output 16	Panisol (not implemented)				
14	Output 17	Cairu		1		1
15	Output 18	Cantegrill		1		1
16	Output 19	Duoflex		1		1
17	Output 20	Espumatec		1		1
18	Output 21	Frisokar		1		1
19	Output 22	Kalf		1		1
20	Output 23	Luguez		1		1
21	Output 24	Group Spandy, enterprises of the same group (Espumauto, MPU Poliuretano and PTP Peças)		4		4
22	Output 30	Termolar		0	1	1
	Output 33	Group of individual end-user enterprises (Contérmica, Frigs, Korta Kalhas, Sher Therm, Termobrás)				
23	Output 34	Blitz		0		0
		TOTAL	9	14	226	249

Appendix (4) Number of enterprises converted (End Users) by Regions, States and Municipalities.

NUMBER OF ENTERPRISES CONVERTED BY REGIONS, STATES AND MUNICIPALITIES (END USERS)					
REGIONS	**STATES**	**QTY TOTAL**	**ID**	**MUNICIPALITIES**	**QTY BY MUNICIPALITY**
SOUTHEAST	SÃO PAULO	105	1	São Paulo (capital)	27
			2	Ribeirão Preto	7
			3	São Bernardo do Campo	4
			4	Barueri	5
			5	Ribeirão Pires	2
			6	Brodowski	3
			7	Diadema	3
			8	Morungaba	2
			9	Guarulhos	5
			10	Osasco	5
			11	Araras	1
			12	Pompéia	1
			13	Mogi Mirim	1
			14	Santo André	1
			15	Embu das Artes	1
			16	Itápolis	3
			17	Elias Fausto	1
			18	Dracena	1
			19	Campinas	3
			20	Itaquaquecetuba	1
			21	Piracicaba	1

			22	Catanduva	1
			23	Sertãozinho	1
			24	Bragança Paulista	1
			25	Ipuã	1
			26	Jundiaí	1
			27	Taboão da Serra	1
			28	Boituva	1
			29	Caieiras	1
			30	São José do Rio Preto	2
			31	Itu	1
			32	Suzano	1
			33	Santos	1
			34	São Caetano do Sul	2
			35	São Manuel	1
			36	Capivari	1
			37	Tremembé	1
			38	Jaboticabal	1
			39	Birigui	1
			40	Taubaté	1
			41	Mogi Guaçu	1
			42	Botucatu	1
			43	Santa Bárbara d'Oeste	1
			44	Ferraz de Vasconcelos	1
			45	Pederneiras	1
			46	Mairinque	1

REGIONS	STATES	QTY TOTAL	ID	MUNICIPALITIES	QTY BY MUNICIPALITY
SOUTHEAST	RIO DE JANEIRO	11	1	Rio de Janeiro	5
			2	Nova Iguaçu	1
			3	Rio Bonito	1
			4	Duque de Caxias	1
			5	São João de Miriti	1
			6	São João da Barra	1
			7	Irajá	1
	MINAS GERAIS	43	1	Belo Horizonte	8
			2	Paraisópolis	1
			3	Santana do Paraíso	1
			4	Contagem	10
			5	Elói Mendes	2
			6	Sete Lagoas	2
			7	Ponte Nova	1
			8	Ribeirão das Neves	1
			9	Juiz de Fora	1
			10	Ubá	3
			11	Matozinhos	1
			12	Uberlândia	1
			13	Visconde do Rio Branco	1
			14	Caratinga	1
			15	Poços de Caldas	1
			16	Coronel Fabriciano	1

			17	Governador Valadares	1
			18	Nova Lima	1
			19	Itaúna	1
			20	Paraopeba	1
			21	Pedro Leopoldo	1
			22	Ibirité	2
	ESPÍRITO SANTO	3	1	Piúma	1
			2	Atílio Vivácqua	1
			3	Serra	1

REGIONS	STATES	QTY TOTAL	ID	MUNICIPALITIES	QTY BY MUNICIPALITY
SOUTH	RIO GRANDE DO SUL	15	1	Porto Alegre	2
			2	Novo Hamburgo	1
			3	Caxias do Sul	4
			4	Campo Bom	2
			5	Lajeado	1
			6	Cachoeirinha	1
			7	São Leopoldo	1
			8	Flores da Cunha	1
			9	Farroupilha	2
	SANTA CATARINA	7	1	São José do Cedro	1
			2	Chapecó	1
			3	Joinville	2

			4	Massaranduba	1
			5	Xanxerê	1
			6	Jaraguá do Sul	1
	PARANÁ	20	1	Arapongas	1
			2	Nova Santa Rosa	3
			3	Maringá	3
			4	Curitiba	5
			5	Almirante Tamandaré	1
			6	Foz do Iguaçu	1
			7	União da Vitória	1
			8	São José dos Pinhais	1
			9	Céu Azul	1
			10	Cascavel	1
			11	Rio Negro	1
			12	Campo Largo	1

REGIONS	STATES	QTY TOTAL	ID	MUNICIPALITIES	QTY BY MUNICIPALITY
CENTRAL-WEST	GOIÁS	4	1	Aparecida de Goiânia	2
			2	Goiânia	2
	MATO GROSSO	3	1	Várzea Grande	1
			2	Cuiabá	1
			3	Araputanga	1

	MATO GROSSO DO SUL	1	1	Itaquirai	1
NORTHEAST	BAHIA	2	1	Candeias	1
			2	Lauro de Freitas	1
	CEARÁ	3	1	Maracanaú	2
			2	Marco	1
	PERNAMBUCO	2	1	Olinda	1
			2	Jaboatão dos Guararapes	1
	PARAÍBA	1	1	Queimadas	1
NORTH	PARÁ	2	1	Marituba	1
			2	Óbidos	1
	AMAZONAS	4	1	Manaus	4

Appendix (5) Responsibility matrix

[64]Responsibility Matrix

ASSIGNMENTS	ABC/ MRE	MMA	PNUD
Monitor the development of the project from the technical aspects, by analyzing the annual reports generated in the technical module (RPE - Electronic Progress Report of the Project Monitoring Management Information System (SIGAP), visits and periodic meetings, with UNDP and MMA, for the purpose of verifying the fulfillment of its objectives, goals and results.	X		
Approve adjustments to the Project Document, proposed by MMA and UNDP.	X		
Designate the technical team, which will act in coordination with UNDP to carry out the project.		X	
Monitor and evaluate project development.		X	
Jointly elaborate the PTA project activity plans and annual budgets, making the necessary adjustments to achieve the expected results**.**		X	X
Approve the terms of reference and technical specifications for hiring consultants, purchasing goods and providing services necessary to implement project activities.		X	
Conduct, in conjunction with the UNDP, technical evaluation of products, delivered goods and services provided by companies and consultants, according to technical and qualitative criteria.		X	
Participate in selection and evaluation committees of enterprises and consultants, when necessary and in accordance with UNDP rules.		X	
Propose to ABC / MRE and UNDP the necessary modifications and adjustments for the smooth running of the project.		X	
Jointly prepare the annual implementation report (Progress Report) and the annual Work Plan, which must be submitted annually for analysis by the ABC / MRE and the Executive Committee of the Multilateral Fund for the Implementation of the Montreal Protocol - ExCom. Prepare, together, the Final Project Report to be submitted to ABC / MRE and ExCom**.**		X	X
Coordinate and implement the project technically and administratively in line with the activities planned and approved in the annual work plan.			X

[64] Project Document PRODOC

Perform and monitor the activities provided for in the Project Document as provided for in the approved annual work plan.			X

ASSIGNMENTS	ABC/ MRE	MMA	PNUD
Make specialists on your regular staff available and / or hire consultants for daily monitoring for project implementation and operational and technical support, according to the annual work plan and resources defined in the Project Document.			X
Process the administrative actions necessary to achieve the project, always observing criteria of technical quality, costs and expected deadlines, according to the annual work plan or at the request of the MMA, when not provided for in this plan.			X
Manage the project's financial resources, following its accounting and financial procedures, according to UNDP rules and standards.			X
Propose to ABC / MRE and MMA the necessary modifications and adjustments for the smooth running of the project.			X
Make project financial execution reports available to MMA on a quarterly basis.			X

ASSIGNMENTS PROJECT MONITORING COMMITTEE	ABC/ MRE	MMA	PNUD
Participate in meetings to evaluate new projects and evaluate substantive reviews or finalize projects**.**	X	X	X
Analyze and discuss the development of project activities and suggest modifications, if necessary.	X	X	X
Through **Tripartite Meetings**, discuss the progress reports, action plan and final report approved by the Executive Committee – ExCom.	X	X	X
Through **meetings to evaluate new projects**, discuss PRODOC adjusted in the UNDP format as approved by the Executive Committee - ExCom.	X	X	X
Analyze the results achieved and settle disputes.	X	X	X
Call meetings of the Project Monitoring Committee, at least once a year or at the request of one of the parties.			X

Appendix (6) Avaliação de riscos do projeto (junho/2019)

Risk Assessment (updated 2019)

Project Title: Brazilian HCFC Phase-out Management Plan - Stage 1					Project No. in Atlas: 00064848			Date: June, 2019	
#	**Description**	**Date of Identification**	**Type**	**Impact and Probability**	**Defensive measure / Management response**	**Agency Responsible**	**Submitted or updated by**	**Last Update**	**Status**
UPDATED RISK ANALYSIS OF THE PROJECT									
1	*The national ozone unit coordinator might be changed after the election for President of the Country.*	During election period	Political	Articulation with key project counterparty limited by staff changes	*Awareness of new managers about the importance of the project*	*UNDP*	*UIM*	*June, 2019*	*Been monitoring*
2	*Impact of the restrictive economic scenario on beneficiary companies*	During implementation of Stage 1 of the HPMP	Financial and operational	Reduction in the production rate of beneficiary companies (4) End of activities for production of polyurethane foams by beneficiary companies (3).	*Periodic monitoring visits to assess and identify mitigation alternatives*	*UNDP*	*UIM*	*June, 2019*	*Been monitoring*
3	*Commercial availability of HCFC-141b after import ban*	At the end of 2018	Operational	Possible impact on the previously agreed schedule for	*Monitor implementation*	*UNDP*	*UIM*	*June, 2019*	*Been monitoring*

	due to stockpiling			implementation of subprojects (4)					
4	*Commercial availability of alternatives to HCFCs*	During the implementation of Stage 1 of the HPMP	Operational	Possible impact on the previously agreed schedule for implementation of subprojects (3)	*Permanent contact with suppliers of alternative substances to HCFCs regarding their commercial availability*	*UNDP*	*UIM*	*June, 2019*	*Been monitoring*
5	*Impact of the interrelationship between Stage 1 a 2 of the HPMP*	During implementation of Stage 2 of HPMP	Operational and Programmatic	Delays in the industrial conversion projects at end users level (2)	*Monitor implementation*	*UNDP*	*UIM*	*June, 2019*	*Simultaneous project reconversion for both Stage 1 and Stage 2*
6	*Technological option different from the one originally proposed*	During the implementation of Stage 1 of the HPMP	Operational and Programmatic	Redefinition of the financial-operational schedule of the pre-agreed subproject (1)	*Monitor implementation of the technology selection plan*	*UNDP*	*UIM*	*June, 2019*	*Been monitoring*
7	*Geographical distribution and the number of HPMP beneficiary enterprises*	During implementation of Stage 1 and 2 of the HPMP	Operational and Programmatic	Difficult for systems houses to implement the project of end users lever (2)	*Periodic monitoring visits to assess the systems house to define a strategic work plan*	*UNDP*	*UIM*	*June, 2019*	*Been monitoring*
NOTE: The risk record must be updated in the Atlas system throughout the project execution.									

Appendix (7) Script (Interviews with enterprises)

Question 1: Application for all enterprises included in the sample.

1 - What were the main challenges faced by your enterprise (enterprise name) in the execution of the investment and technological conversion project?

Identify: period in which participated and performance in the project

Explore: organizational structure; operational processes (making resources available, meeting eligibility criteria); communication (response time between interlocutors); acquisition processes; stages of the project implementation process / difficulties encountered in implementing the technological conversion of the enterprises plant to eliminate the consumption of HCFC-141b; external factors (not controllable), among others.

Question 2: Application only for the System Houses (Purcom, Univar and Polyurethane).

2 - What were the main challenges faced by your enterprise (enterprise name) to support the implementation of conversion projects for end users converted by your systems house?

Identify: period when you supported the conversion of end users.

Explore: organizational structure; operational processes (making resources available, meeting eligibility criteria); communication (response time between interlocutors); acquisition processes; stages of the project implementation process / difficulties encountered in implementing the technological conversion of end users to eliminate the consumption of HCFC-141b; external factors (not controllable), among others.

Question 3: Application for all enterprises included in the sample.

3 - How did the institutional arrangement between the various stakeholders (MMA, UNDP, FML) and in particular the dialogue with the Implementing Agency (UNDP) contributed to the achievement of the project's results in your enterprise?

Vision of each enterprise *:

Given the expectations of * Enterprise (name), address positive and negative points in this institutional articulation.

Question 4: Application for all enterprises included in the sample.

4 - Were the strategies used to make technological conversions / technology transfer feasible? What could be improved?

Question 5: Application for all enterprises included in the sample.

5 - How do you evaluate the mechanisms adopted for knowledge dissemination? How did they impact the results of project implementation in your enterprise?

Portal (website), media, systems, among others.

Question 6: Application for all enterprises included in the sample.

6 - What effective contributions did the project provide for your enterprise?

Explore: results achieved, development of new projects that are part of the ecosystem, awareness and dissemination of good practices, among others.

Question 7: Application for all enterprises included in the sample.

7 - General Contribution: How can we ensure the sustainability of the project, once the contribution of resources is finished?

What mechanisms are being adopted by your enterprise to ensure the sustainability of the project?

How can your enterprise effectively contribute to the dissemination of this knowledge to the sector in which it operates and to other sectors?

Explore: financial, operational / technical and commercial aspects.

External environment: social, economic and environmental

Appendix (8) Questionnaires (UIM / UNDP and ABC)

Questionnaire (UNDP)

1 - What were the main challenges faced by the Leading Implementing Agency (UNDP) in planning and implementing the project? Cite three aspects that favored the achievement of the results and cite three unforeseen and / or challenging aspects in the implementation of the project.

2 - How did the institutional arrangement of the project (UIM / UNDP, MMA / IBAMA, ABC / FML) impact the results achieved? What are the main challenges in the dialogue with multiple stakeholders (internal and external)?

3 - Specifically, in relation to Component 2 - Investment projects for the technological conversion of enterprises in the foam sector.

Were the * strategies used to make technological conversions / technology transfer to beneficiaries (enterprises) adequate? What could be improved?

* Strategies related to the FML financial resource transfer mechanism to beneficiaries and technical strategy (individual and group projects).

4 - What were the main challenges in the process of implementing and monitoring contracts? What can be improved?

5 - How do you evaluate the mechanisms adopted by the project to raise awareness and disseminate knowledge to those involved? How did they impact the results achieved?

Portal (website), events, publications, institutional videos, newsletters, among others.

6 - What is your vision regarding the impact of the project for the direct beneficiaries (enterprises), for the PU foam manufacturing sector and for the ecosystem as a whole?

7 - What lessons learned can be adopted by similar projects? List lessons learned that can be implemented in Stage 2 of the project.

8 - General Contribution: How to ensure the sustainability of the project, once the contribution of resources is finished? How can UIM / UNDP contribute to the maintenance of activities with companies in the PU foam manufacturing sector?

Questionnaire (ABC)

1 - What were the main challenges faced by ABC / MRE in relation to the Multilateral Cooperation project with the FML? Cite three aspects that favored the achievement of results and cite three unforeseen and / or challenging aspects.

2 - How did the institutional arrangement of the project (* ABC / MRE / FML, MMA / IBAMA, UIM/UNDP) impact the results achieved? What are the main challenges in the dialogue with multiple stakeholders (internal and external)?

* ABC's communication process with the others involved.

3 - Specifically, in relation to Component 2 - Investment projects for the technological conversion of enterprises in the foam sector.

How do you analyze the strategy adopted to enable the transfer of financial resources from FML, through the implementing agency Leader - UNDP, to direct beneficiaries (enterprises)? What are the challenges in managing this process? How did it impact the results achieved by the project?

4 - What were ABC main challenges in monitoring contracts managed by UIM/UNDP with direct beneficiaries (enterprises)?

5 - How do you evaluate the mechanisms adopted by the project to raise awareness and disseminate knowledge to those involved? How did they impact the results achieved?

Portal (website), events, publications, institutional videos, newsletters, among others.

6 - What is your vision regarding the impact of the Multilateral Cooperation project for the direct beneficiaries (enterprises), for the PU foam sector and for the ecosystem as a whole?

7 - What lessons (s) learned can be adopted by similar projects?

8 - General Contribution: How to ensure the sustainability of the project, once the contribution of financial resources (FML) is finalized?

Appendix (9) Initial meetings (UIM / UNDP, MMA and IBAMA)

Avaliação Final do Projeto BRA/12/G76
Programa Brasileiro de Eliminação dos HCFC – Etapa 1: Setor de Espumas

Entrevistas com representantes de instituições envolvidas na implementação do projeto

Instituição/*stakeholder* entrevistado	PNUD
Mecanismo utilizado para a reunião	Reunião Virtual via Zoom
Participantes	**Assinatura**
Ana Paula Leal – Gerente do Projetos (PNUD) e-mail: ana.leal@undp.org	Ana Paula Pinho Rodrigues Leal
Raquel Rocha – Assessora do Projeto (PNUD) e-mail: Raquel.rocha@undp.org	Raquel Rocha
Sônia Prota – Consultora independente e-mail: soniaprota@terra.com.br	Sônia Prota

Data	Horário	Pauta
25/03/2020	Manhã e Tarde	- Objetivos da avaliação final do projeto BRA/12/G76 1. Termos de Referência; 2. *UNDP Evaluation Guideline.* - Informações pertinentes sobre a implementação do Protocolo de Montreal no Brasil 1. Atores envolvidos e responsabilidades; 2. Aplicações do HCFC-141b no Brasil; 3. Cronograma de eliminação para o setor de espumas; 4. Mecanismos de disseminação de informações. - Apresentação Geral sobre o BRA/12/G76 1. Objetivos Geral e Específicos; 2. Abrangência; 3. Atores envolvidos e responsabilidades; 4. Projetos de investimento; 5. Mecanismo de monitoramento de implementação utilizados pelo PNUD; 6. Resultados alcançados. - Disponibilização de documentação complementar.

Avaliação Final do Projeto BRA/12/G76
Programa Brasileiro de Eliminação dos HCFC – Etapa 1: Setor de Espumas

Entrevistas com representantes de instituições envolvidas na implementação do projeto

Instituição/*stakeholder* entrevistado	MMA
Mecanismo utilizado para a reunião	Reunião Virtual via Zoom
Participantes	**Assinatura**
Magna Luduvice – Analista Ambiental (MMA) e-mail: magna.luduvice@mma.gov.br	Magna Luduvice
Tatiana Oliveira – Analista Ambiental (MMA) e-mail: tatiana.olivera@mma.gov.br	Tatiana Oliveira
Frank Amorim – Analista Ambiental (MMA) e-mail: frank.amorim@mma.gov.br	Frank Edney Gontijo Amorim
Sônia Prota – Consultora independente e-mail: soniaprota@terra.com.br	Sônia Prota

Data	Horário	Pauta
02/04	Manhã	- Informações pertinentes sobre a implementação do Protocolo de Montreal no Brasil 1. Atores envolvidos e responsabilidades; 2. Aplicação das demais SDOs utilizadas no Brasil; 3. Cronograma de eliminação de SDOs no Brasil; 4. Arcabouço legal; 5. Mecanismos de disseminação de informações. - Apresentação Geral sobre o BRA/12/G76 1. Mecanismos de monitoramento de implementação utilizados pelo MMA; 2. Avaliação dos resultados alcançados; 3. Avaliação sobre a atuação do PNUD como agência implementadora do projeto. - Disponibilização de documentação complementar que julgarem pertinente.

Avaliação Final do Projeto BRA/12/G76
Programa Brasileiro de Eliminação dos HCFC – Etapa 1: Setor de Espumas

Entrevistas com representantes de instituições envolvidas na implementação do projeto

Instituição/*stakeholder* entrevistado	IBAMA
Mecanismo utilizado para a reunião	Reunião Virtual via Zoom
Participantes	**Assinatura**
Juliana Ramalho Lopes – Técnico Administrativo (IBAMA) e-mail: juliana.lopes@ibama.gov.br	Juliana Ramalho Lopes
Ellen Pozzebom – Analista Administrativo (IBAMA) e-mail: ellen.pozzebom@ibama.gov.br	Ellen R. Pozzebom
Ana Cristina Linhares – Analista Ambiental (IBAMA) e-mail: ana.linhares@ibama.gov.br	Ana Cristina Soares Linhares
Sônia Prota – Consultora independente e-mail: soniaprota@terra.com.br	Sônia Prota

Data	Horário	Pauta
02/04	**Tarde**	Reunião com o IBAMA Via zoom ou Skype <u>Pauta</u> - Informações pertinentes sobre a implementação do Protocolo de Montreal no Brasil 1. Arcabouço legal: Instruções Normativas; 2. Cadastro Técnico Federal; 3. Principais desafios (Controle e Fiscalização); 4. Novas abordagens: Disseminação de informações. - Disponibilização de documentação complementar que julgarem pertinente.

Appendix (10) Attendance list (Interviews: Enterprises - Direct beneficiaries)

Programa Brasileiro de Eliminação dos HCFCs: Projeto: BRA/12/G76 (Etapa 1) – Setor de Espumas	
Sponsor: Fundo Multilateral para a Implementação do Protocolo de Montreal – FML	Stakeholders: ABC, MMA e IBAMA
Agência Implementadora Líder: Programa das Nações Unidas para o Desenvolvimento - PNUD	
Consultoria externa: Avaliação Final do Projeto: BRA/12/G76 (Etapa 1) – Setor de Espumas	
Consultora: Sonia Prota	
Entrevistas (Beneficiários diretos): Período: abril a maio de 2020	

	EMPRESA/ REPRESENTANTE	DATA	ASSINATURA
1	Grupo Poly Urethane / Cláudio Marcelo de Azevedo claudio@polyurethane.com.br	23/04/2020	CLAUDIO MARCELO DE AZEVEDO
2	Grupo Purcom / Giuseppe Santanche giuseppe@purcom.com.br	24/04/2020	
3	MBP Isoblock / Rodrigo Terra Brandão rodrigobrandao@mbp.com.br	24/04/2020	Rodrigo Terra Brandão
4	Arinos (Univar Solutions) / Felipe Bertini Janunci / felipe.bertini@univarsolutions.com	28/04/2020	Felipe Bertini Janunci
5	Espumatec / Marcio Almeida marcio@espumatec.com.br	05/05/2020	Marcio Almeida
6	Espumatec / Jhoni Toaldo toaldo@espumatec.com.br	05/05/2020	Jhoni Toaldo
7	Marco Celio Moraes Valenzuela / Marco Celio marco@valenzuela.com.br	06/05/2020	Marco Celio

Appendix (11) Attendance list (Interviews: ABC and UNDP)

Programa Brasileiro de Eliminação dos HCFCs Projeto: BRA/12/G76 (Etapa 1) – Setor de Espumas	
Sponsor: Fundo Multilateral para a Implementação do Protocolo de Montreal – FML	**Stakeholders: ABC, MMA e IBAMA**
Agência Implementadora Líder: Programa das Nações Unidas para o Desenvolvimento PNUD	
Consultoria externa: Avaliação Final do Projeto: BRA/12/G76 (Etapa 1) – Setor de Espumas	
Consultora: Sonia Prota	
Entrevistas: Pessoas-chave: Agência Implementadora Líder (PNUD) e ABC.	

	INSTITUIÇÃO/ REPRESENTANTE	DATA	ASSINATURA
1	PNUD/ Rosenely Diegues Peixoto / Programme Officer (até junho/2019, aprox.)	21/05/20	
2	PNUD/ Haroldo Machado Filho / Programme Officer (a partir de agosto/ 2019)	21/05/20	Haroldo de Oliveira Machado Filho
3	PNUD/ Ana Paula Leal / Gerente de Projetos	21/05/20	Ana Paula Pinho Rodrigues Leal
4	ABC/ Tânia Jardim	21/05/20	Tania Jardim

Appendix (12) Status Report: Final Project Evaluation (03/12/20 to 06/30/20)

PROJECT INFORMATION			
PROJECT NAME	Brazilian HCFC Phase-Out Management Programme – HPMP – Project BRA/12/G76: Stage 1 - Foam Sector	Prepared by:	Sonia Prota
		Period:	3/12/20 to 6/30/20

GENERAL PROJECT SUMMARY

Scope	Technical	Schedule	Resources (human and / or financial)
		In day	

MILESTONES						
ACTIVITIES	START		FINISH			
	Baseline	REAL	Baseline	REAL	Estimate	Status
Contract Signature				3/12/20		completed
Project documentation availability				3/24/20		completed
Initial meeting (UNDP)				3/25/20		completed
Product Delivery 1 - Work Plan v0				3/31/20		completed
Product Review 1 - Work Plan v0				4/3/20		Completed Revised by UNDP / MMA
Product Delivery 1 - Work Plan v1 (revised)				4/5/20		Completed / consultant
Product 1 - Work Plan v1 (approved)				4/13/20		Completed Approved by UNDP / MMA
Initial meeting (MMA)				4/2/20		completed
Initial meeting (IBAMA)				4/2/20		completed
Provision of documentation (Model Contracts)				4/13/20		completed
Survey of primary data (Interviews) Poly Urethane Group				4/23/20		completed
Interview - Purcom Group				4/24/20		completed
Interview - MBP Isoblock				4/24/20		completed
Interview - Univar Solutions Brasil				4/28/20		completed
Interview Luguez Enterprise replaced by Espumatec Enterprise				5/5/20		completed
Valenzuela Enterprise Interview (End User)				5/6/20		completed

Product Delivery 2 - Preliminary Report v.0				5/18/20		completed
ABC / MRE Representative Interview				5/21/20		completed
Group Interview: (2) Program Officer; Project Manager				5/21/20		completed
Product Review 2 - Preliminary Report v0				5/23/20		Completed Revised by UNDP / MMA
Product Delivery 2 - Preliminary Report v1 (revised)				5/27/20		completed / consultant
Product 2 - Preliminary Report v1 (revised)				5/28/20		Completed Revised by UNDP / MMA
Product 2 - Preliminary Report v2 (revised and approved)				5/28/20		Completed / consultant Approved/ UNDP / MMA
Product Delivery 3 - Final Report v0 / Portuguese version				6/11/20		Sent / consultant
Product Review 3 - Final Report v0				22/06/20		Completed Revised by UNDP / MMA
Product Delivery 3 - Final Report v.1 (revised) Portuguese version				26/06/20		Sent / consultant
Product Delivery 3 - Final Report v0 English version				26/06/20		Sent / consultant

Status

	In day
	Date at risk (requires recovery plan)
	Impact on product end date

WEEKLY KEY DATES		
Achievements of the last weeks	**Completion Date**	**Responsible**

Important activities (next week)	**Planned Date**	**Responsible**

Risks / Dependencies		
Items	**Probability**	**Impact**

Change Request			
ID	**Description**	**Date Submitted**	**Date Approved**