

Concept Note

Project/Programme Title: Substitution of HFCs with refrigerants with a more environmentally friendly global warming potential (GWP) (low or zero GWP)

Country(ies): Paraguay

National Designated Authority(ies) (NDA): MADES (Ministry of Environment and Sustainable Development)

Accredited Entity(ies) (AE): Ozone Department

Date of first submission/
version number: [YYYY-MM-DD] [V.0]

Date of current submission/
version number: [YYYY-MM-DD] [V.0]



GREEN
CLIMATE
FUND

Notes

- The maximum number of pages should **not exceed 12 pages**, excluding annexes. Proposals exceeding the prescribed length will not be assessed within the indicative service standard time of 30 days.
- As per the Information Disclosure Policy, the concept note, and additional documents provided to the Secretariat can be disclosed unless marked by the Accredited Entity(ies) (or NDAs) as confidential.
- The relevant National Designated Authority(ies) will be informed by the Secretariat of the concept note upon receipt.
- NDA can also submit the concept note directly with or without an identified accredited entity at this stage. In this case, they can leave blank the section related to the accredited entity. The Secretariat will inform the accredited entity(ies) nominated by the NDA, if any.
- Accredited Entities and/or NDAs are encouraged to submit a Concept Note before making a request for project preparation support from the Project Preparation Facility (PPF).
- Further information on GCF concept note preparation can be found on GCF website [Funding Projects Fine Print](#).

A. Project/Programme Summary (max. 1 page)			
A.1. Project or programme	<input type="checkbox"/> Project <input checked="" type="checkbox"/> Programme	A.2. Public or private sector	<input checked="" type="checkbox"/> Public sector <input type="checkbox"/> Private sector
A.3. Is the CN submitted in response to an RFP?	Yes <input type="checkbox"/> No <input type="checkbox"/> If yes, specify the RFP: _____	A.4. Confidentiality¹	<input type="checkbox"/> Confidential <input checked="" type="checkbox"/> Not confidential
A.5. Indicate the result areas for the project/programme	<p>Mitigation: Reduced emissions from:</p> <input type="checkbox"/> Energy access and power generation <input type="checkbox"/> Low emission transport <input checked="" type="checkbox"/> Buildings, cities and industries and appliances <input type="checkbox"/> Forestry and land use <p>Adaptation: Increased resilience of:</p> <input type="checkbox"/> Most vulnerable people and communities <input type="checkbox"/> Health and well-being, and food and water security <input type="checkbox"/> Infrastructure and built environment <input type="checkbox"/> Ecosystem and ecosystem services		
A.6. Estimated mitigation impact (tCO2eq over lifespan)	30.509.694,27 (accumulated reduction until 2045)	A.7. Estimated adaptation impact (number of direct beneficiaries and % of population)	N/A
A.8. Indicative total project cost (GCF + co-finance)	Amount: USD 805.000	A.9. Indicative GCF funding requested	Amount: USD 805.000
A.10. Mark the type of financial instrument requested for the GCF funding	<input checked="" type="checkbox"/> Grant <input type="checkbox"/> Reimbursable grant <input type="checkbox"/> Guarantees <input type="checkbox"/> Equity <input type="checkbox"/> Subordinated loan <input type="checkbox"/> Senior Loan <input type="checkbox"/> Other: specify _____		
A.11. Estimated duration of project/ programme:	a) disbursement period: 5 years b) repayment period, if applicable: _____	A.12. Estimated project/ Programme lifespan	5 years, with the potential of scaling the project in the long term.
A.13. Is funding from the Project Preparation Facility requested?²	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> Other support received <input type="checkbox"/> If so, by who: _____	A.14. ESS category³	<input type="checkbox"/> A or I-1 <input type="checkbox"/> B or I-2 <input checked="" type="checkbox"/> C or I-3
A.15. Is the CN aligned with your accreditation standard?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>	A.16. Has the CN been shared with the NDA?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
A.17. AMA signed (if submitted by AE)	Yes <input type="checkbox"/> No <input checked="" type="checkbox"/> If no, specify the status of AMA negotiations and expected date of signing: _____	A.18. Is the CN included in the Entity Work Programme?	Yes <input checked="" type="checkbox"/> No <input type="checkbox"/>
A.19. Project/Programme rationale, objectives and approach of programme/project (max 100 words)	Paraguay has made commitments to the Montreal Protocol and its respective amendments on the phasing out of Hydrofluorocarbons, with MADES being the national authority for the implementation of the Vienna Convention and the Montreal Protocol by Law 1561/00. The program's approach proposes to reduce the consumption and emission of gases (HFCs) by promoting the use of low GWP alternatives in large users and thus find an alternative path towards the progressive replacement with refrigerants of a more environmentally friendly Global Warming Potential (GWP). The concept note has been developed during the last phase of the Technology Needs Assessment (TNA) and the Technology Action Plan for Paraguay (TAP).		

¹ Concept notes (or sections of) not marked as confidential may be published in accordance with the Information Disclosure Policy ([Decision B.12/35](#)) and the Review of the Initial Proposal Approval Process ([Decision B.17/18](#)).

² See [here](#) for access to project preparation support request template and guidelines

³ Refer to the Fund's environmental and social safeguards ([Decision B.07/02](#))

B. Project/Programme Information (max. 8 pages)

B.1. Context and baseline (max. 2 pages)

In Paraguay, access to temperature-controlled food preservation systems using refrigeration equipment that improve and guarantee the cold chain and reduce food loss, thus ensuring food safety, is a major challenge from the technical, economic, and environmental points of view.

In Paraguay, whose economy is based on primary production, food waste, resulting from an inefficient cold chain, has several environmental impacts, which are linked to the need to increase land use change for agricultural and livestock purposes, increased water and energy consumption for production processes, increased waste generation, direct and indirect greenhouse gas emissions, as well as increased poverty and vulnerability of food producers.

The promotion of a sustainable cold chain is necessary to meet the challenges of reducing food loss and waste and could have a positive impact in relation to national climate change goals to reduce vulnerability and mitigate GHG emissions, for which a new efficient infrastructure that uses gases with low global warming potential in refrigeration systems should be designed and implemented and access to these technologies should be promoted to the most critical sectors.

The National Mitigation Strategy is part of the National Climate Change Policy and seeks to implement processes and competencies of all sectors involved to reduce the adverse impacts of climate change in a responsible, efficient, and participatory manner that favours environmental protection, in line with national development objectives. This strategy will be key in the country's industrial development of the country, as industrial processes will increase. For this reason, it will be necessary to encourage investments in clean industries, as well as to promote the development of new and suitable technologies, and at the same time, promote the modification of the national energy matrix towards a more environmentally friendly one.

The Republic of Paraguay has submitted its Nationally Determined Contributions to the United Nations Framework Convention on Climate Change (UNFCCC), through which it assumes an international commitment to reduce greenhouse gas emissions by 10% and another 10% if financing is available. It has established measures such as reducing consumption of HFCs by freezing and reducing domestic imports. In this context, the substitution of HFCs with refrigerants with a more environmentally friendly global warming potential program supports the measure. It is important to mention that contributions to the National Greenhouse Gas inventory, emissions from the IPPU sector (Year 2017) correspond to 2%, of which the refrigeration and air conditioning sector is responsible for approximately 54% in the country. On the other hand, it is noteworthy that the industrial sector represents 20% of Paraguay's GDP (BCP, 2017) and employs 11.1% of the labour force (DGECC, 2016).

Paraguay has also made commitments to the Montreal Protocol and its respective amendments on the phase-down of Hydrofluorocarbons, being MADES the national authority for the implementation under the Kigali Amendment. The main objective of the Montreal Protocol is the protection of the ozone layer by taking measures to control the total global production and consumption of ozone-depleting substances, with the ultimate goal of eliminating them, based on progress in scientific knowledge and technological information.

Hydrofluorocarbons (HFCs) are substances that belong to the so-called "Kyoto Protocol basket of greenhouse gases". They have a high Atmospheric Warming Potential (AWP), but do not deplete the ozone layer, therefore, they are often used as substitutes for ozone-depleting substances (ODS), especially HCFCs. In accordance with the provisions of the Montreal Protocol the global consumption and production of HCFCs is being phased out, while HFCs are being introduced.

The implementation of a program to replace HFCs with refrigerants with a more environmentally favourable global warming potential requires addressing several causes and barriers. These can be of a social, gender, fiscal, regulatory, technological, financial, ecological, and institutional nature. The main ones are described below:

Social barriers: lack of awareness and understanding of the negative effects of HFCs on the environment can hinder the implementation of a substitution program. Education and outreach are critical to promote public acceptance and support.

Political and institutional barriers: Current legislation does not provide for protocols regarding occupational health and safety for the proper use of alternative substances. In addition, there may be a lack of coordination among key stakeholders, such as governments, companies, non-governmental organizations and academia, which may hinder effective program implementation.

Technological barriers: Refrigeration equipment with characteristics not compatible to operate with new low GWP refrigerants.

Financial barriers: The costs associated with the transition to more sustainable refrigerants can be high, making adoption difficult. Adequate financing, such as tax incentives, subsidies, or international funds, is required to support the transition and make it more accessible.

The objective of this concept note is the proposal of a series of demonstration projects that generate technological solutions for the adoption of refrigerants with low global warming potential and contribute to energy efficiency, is key, in attention to the fact that it will be providing the appropriate tools to carry out the commitments made in the framework of the Kigali amendment and thus raise awareness regarding the implementation of the law and the application of rapid and effective mitigation measures HFC and thus support the role of the overall objectives on reducing climate change, reducing the emission of greenhouse gases generated by the refrigeration and air conditioning sector having as its main objective the promotion of the use of refrigerant gases with low GWP.

The large users of the supermarket sector are of great importance for the supply of goods and services, mainly related to the food sector, and given the environmental conditions of Paraguay with high temperatures throughout the year, they require permanent air conditioning, refrigeration, and food refrigeration systems. Projects related to this program have been implemented at the country level, such as the "Design of a prototype for refrigeration equipment that operates with natural refrigerants and renewable energy for communities of perishable food producers of primary production in Paraguay, in vulnerable areas with little access to electricity" and the consultancy for the "Design of refrigeration systems with natural refrigerant R-290 in supermarkets", demonstrating the great interest in the sector at the government level.

B.2. Project/Programme description (max. 3 pages)

Components and activities of the programme:

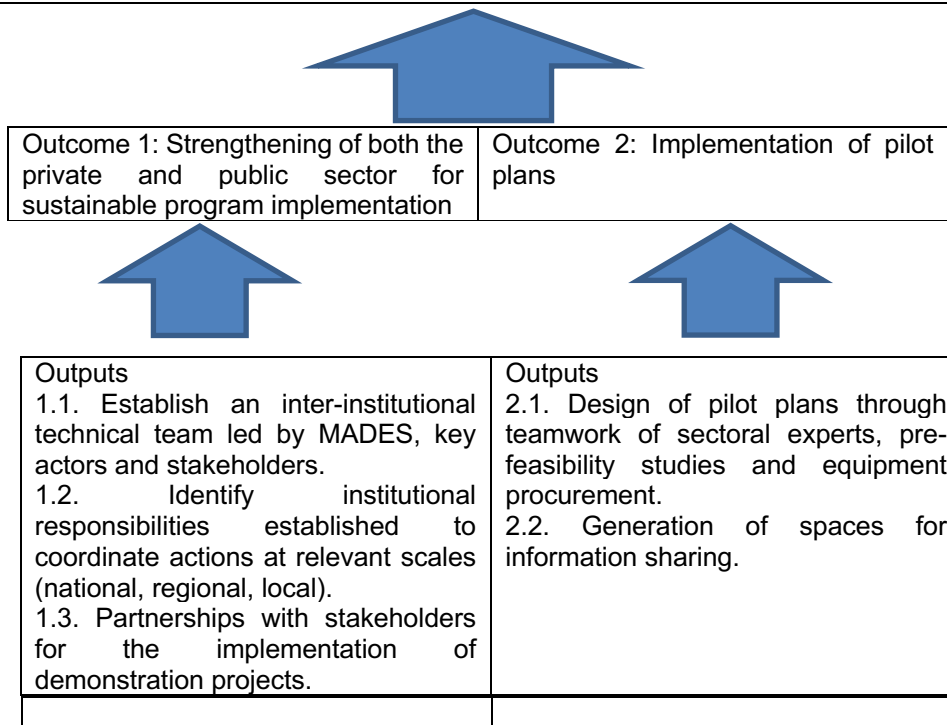
- Action 1: Establish an inter-institutional technical team led by MADES, key actors and stakeholders.
Action 2: Identify institutional responsibilities established to coordinate actions at relevant scales (national, regional, local).
Action 3: Partnerships with stakeholders for the implementation of demonstration projects.
Action 4: Development of 5 pilot projects in sectors of the food cold chain in Paraguay (vulnerable communities of primary production/fishing, dairy industry and meat packing plants, supermarkets, food service).
- Hiring of experts
- Equipment
- Technicians
- Technical studies
Action 5: Generate spaces to share quantified information from the results of the pilot experience.

The Theory of Change diagram illustrates how the programme will address the identified barriers through activities and resultant outputs to achieve the planned goal and envisaged outcome. The theory of change diagram also indicates the inputs in terms of national climate change priorities. The theory of change diagram also lists key assumptions and risks associated with the programme.

Goal: Promote the substitution of HFCs for refrigerants with a more environmentally friendly global warming potential (GWP) and that contribute to energy efficiency to contribute to the reduction of greenhouse gas emissions in the IPPU sector.



Goal Statement: If supermarkets in Paraguay start replacing HFCs with more environmentally friendly global warming potential refrigerants, the country will be able to meet its NDC mitigation commitments as HFC emissions will be reduced.



Barriers: - Absence of institutional capacity - Lack of financial resources - Lack of interest on the part of the implementing groups	Risks: - Operational - Political - Financial
Assumptions: - Kigali amendment will reduce projected production and consumption of hydrofluorocarbons (HFCs) by more than 80% over the next 30 years (UNEP)	

According to Article 7 of the National Constitution, everyone has the right to live in a healthy and ecologically balanced environment. The preservation, conservation, restoration and improvement of the environment, as well as its reconciliation with integral human development, are priority objectives of social interest. These purposes will guide the relevant legislation and government policy.

In addition, Paraguay is one of the countries adhering to the Paris Agreement, whose objective is to limit global warming to well below 2, preferably 1.5 degrees Celsius, compared to pre-industrial levels. To achieve this long-term temperature goal, countries aim to peak greenhouse gas emissions as soon as possible to achieve a climate-neutral planet by mid-century.

The Law No. 1561 that creates the National Environmental System, the National Environmental Council and the Environmental Secretariat, establishes according to Article 14 that the Ministry of Environment and Sustainable Development acquires the character of enforcement authority of Law No. 61/92 that approves and ratifies the Vienna Convention for the Protection of the Ozone Layer; and the amendment to the Montreal Protocol on Substances that Deplete the Ozone Layer.

The Montreal Protocol has been successful in reducing these substances and has contributed to the recovery of the ozone layer in many areas of the planet. However, it has been recognized that some substances used as alternatives to

GFCs, such as hydrochlorofluorocarbons (HCFCs), are also harmful to the ozone layer and contribute to global warming. For this reason, the Kigali Amendment to the Montreal Protocol was adopted. This amendment provides for the phase-out of hydrofluorocarbons (HFCs), with the ultimate goal of reducing HFC emissions by 80-85% by 2045.

Currently, the National Air Quality Directorate, through the Ozone Department, is leading the project for the preparation of HFC implementation plans under the Kigali Amendment funded by the Multilateral Fund of the Montreal Protocol, MADES and the United Nations Development Program. Through this project, activities such as the study of consumption of HFCs and their low-GWP alternatives for the period 2017-2021 in Paraguay and projection to 2030 are being developed, in order to better understand the trend of HFC consumption and alternatives, especially those with low GWP.

B.3. Expected project results aligned with the GCF investment criteria (max. 3 pages)

GCF Investment Criteria	Expected Results	Indicator
Impact Potential (Mitigation)	Reduce HFC emissions by replacing them with refrigerants with lower warming potential.	% reduction in greenhouse gas emissions with respect to baseline

The project aims to reduce the consumption and emission of gases (HFCs) by promoting the use of low-GWP alternatives in large users and thus find an alternative path towards the progressive replacement with refrigerants with a more environmentally friendly Global Warming Potential (GWP).

GCF Investment Criteria	Expected Results	Indicator
Paradigm Shift	Deployment of new climate technology.	Adaptation of technologies for the use of new refrigerants
	Implementation of a pilot program in supermarkets	Beneficiaries directly impacted in five pilot projects

The project seeks a paradigm shift in the use and deployment of new climate technologies that can reduce GHG emissions through the use of substances with low Warming Potential. To achieve effective implementation of the program, it is necessary that key stakeholders and future implementers of the technology can actively participate and understand the importance of replacement. Therefore, the paradigm shift is achieved by combining the effective use of technology with the social component of institutional strengthening.

GCF Investment Criteria	Expected Results	Indicator
Sustainable Development	Promoting energy efficiency	% energy consumption
	Technological Advancements	% of HFC reduced

SDG 13 aims to introduce climate change as a key issue in the policies, strategies and plans of countries, companies and civil society, improving the response to the problems it generates, and promoting education and awareness of the entire population in relation to the phenomenon. HFCs are greenhouse gases, which means that they contribute to global warming and climate change. Reducing their use reduces greenhouse gas emissions and helps to mitigate climate change.

SDG 7 main objective is to address the global challenge of providing sustainable energy to drive economic growth, improve living conditions and combat climate change.

GCF Investment Criteria	Expected Results	Indicator
	Implement the use of refrigerants with lower global warming potential.	% of new refrigerants implemented

The NDC of Paraguay has established measures such as reducing consumption of HFCs by freezing and reducing domestic imports. In this context, the substitution of HFCs with refrigerants with a more environmentally friendly global warming potential program supports the measure. As well as the instruments such as the training programs on good practices in refrigeration systems and the sustainable and climate friendly elimination of ozone depleting substances.

GCF Investment Criteria	Expected Results	Indicator
Country Ownership	Alignment with country's updated NDCs	Goals of the Objectives 20 and 22 met by 2030

	Increased local engagement in the IPPU sector	Number of locals involved with conception, creation, and implementation of IPPU programs.
The project has strong country ownership, as evidenced by the alignment between the Objectives of the updated NDCs with the participatory TNA and TAP process that led to the prioritization of this program.		

GCF Investment Criteria	Expected Results	Indicator
Efficiency and Effectiveness	Improved cost-effectiveness of future IPPU sector projects	Investment costs of projects, economic benefits obtained in each project

Project co-financing will be assessed and secured during the PPF process.

B.4. Engagement among the NDA, AE, and/or other relevant stakeholders in the country (max ½ page)

The engagement between the NDA and the EA took place throughout the Technology Needs Assessment and the development of the Technology Action Plan for Paraguay that culminated in June 2023. First, the Steering Committee was established, including other key actors and stakeholders representing water resources.

Next, the IPPU sector was prioritized in the Committee's validation meeting and finally, the Technology Sheet was ranked as a national priority during the multi-criteria analysis. During the development of the Technology Action Plan for the sector, the MADES Ozone Department actively cooperated to adapt the action plan to the country's needs. The same cooperation and ownership are expected to take place during the development of the financing proposal. Other key stakeholders such as the Industrial Union of Paraguay and the Academia were consulted throughout the process and will also take a crucial role in the development of the funding proposal and the deployment of the project.

C. Indicative Financing/Cost Information (max. 3 pages)

C.1. Financing by components (max ½ page)

Component/Output	Indicative cost (USD)	GCF financing		Co-financing		
		Amount (USD)	Financial Instrument	Amount (USD)	Financial Instrument	Name of Institutions
Establishment of the technical team.	15.000					
Identification of responsibilities.	15.000					
Creation of alliances with stakeholders	25.000					
Implementation of the five pilot projects	700.000					
Socialization of the information generated	50.000					
Indicative total cost (USD)	805.000					

C.2. Justification of GCF funding request (max. 1 page)

The project requires GCF financing because the national public sector does not have the necessary resources, especially MADES, which has a very limited budget. Moreover, the project has no clear source of revenue. So far, MADES has not found any source of funding to meet the goals of the Kigali Amendment and the Montreal Protocol. In reference to the relevance of GCF funds, it is a project that contributes to the fulfilment of the GCF objectives (see theory of change). In addition, the project contributes to meeting national NDC objectives as a climate change mitigation project. The project also has the capacity for replicability in other areas of the national territory and the region. Among other funds available, it is worth mentioning the Minamata Convention within the framework of the Montreal Protocol.

C.3. Sustainability and replicability of the project (exit strategy) (max. 1 page)

The sustainability of the project will be ensured in the long term through the financial strengthening of the MADES Ozone Department.) On the other hand, it is recommended that the affected private sector (cold chain supermarkets) promote a culture of ownership, maintain a follow-up of the activities implemented, and actively collaborate with their own funds to scale up the results of the pilot projects.

D. Supporting documents submitted (OPTIONAL)

- Map indicating the location of the project/programme
- Diagram of the theory of change
- Economic and financial model with key assumptions and potential stressed scenarios
- Pre-feasibility study
- Evaluation report of previous project
- Results of environmental and social risk screening

Self-awareness check boxes

Are you aware that the full Funding Proposal and Annexes will require these documents? Yes No

- Feasibility Study
- Environmental and social impact assessment or environmental and social management framework
- Stakeholder consultations at national and project level implementation including with indigenous people if relevant
- Gender assessment and action plan
- Operations and maintenance plan if relevant
- Loan or grant operation manual as appropriate
- Co-financing commitment letters

Are you aware that a funding proposal from an accredited entity without a signed AMA will be reviewed but not sent to the Board for consideration? Yes No