Final Report

Terminal Evaluation of the UNDP-supported GEF-financed project "Production of sustainable, renewable biomass-based charcoal for the iron and steel industry in Brazil" PIMS 4675 - GEF ID 4718

Terminal evaluation period: Oct 2021 – Feb 2022

Terminal evaluation report February 2022

Brazil – Latin America & the Caribbean Region

GEF Focal area: Climate Change; UNDP Focus area: Environment and Energy

Implementing partner: Ministry of Environment

Trond Norheim, Evaluator

Acknowledgements

The Terminal Evaluator received important documentation, information and continuous support from UNDP Staff in the Brazil Country Office, as well as collaboration from the Project Management Unit in the Ministry of Environment. The Evaluator would like to acknowledge all the respondents to the interviews, survey, stakeholder meetings and email inquiries; including the Ministry of Environment; Ministry of Development, Industry and Commerce; Ministry of Science; and local agencies in Minas Gerais. The report would not have been possible without all this support.

Cover photo: Fornos-Fornalha system built on the property of a rural beneficiary of the Project

Evaluation Report

Terminal Evaluation of the UNDP/GEF project "Production of sustainable, renewable biomass-based charcoal for the iron and steel industry in Brazil"

TABLE OF CONTENTS

Annexes:

Annexed in separate file:

ACRONYMS AND ABBREVIATIONS

BD	Biodiversity
CC	Climate Change
CBD	Convention on Biological Diversity
CBO	Community-based Organisation
CEO	Chief Executive Officer
CSO	Civil Society Organization
DAC	Development Assistance Committee (of OECD)
DIM	Direct Implementation Modality
EA	Executing Agency
ECOCARB	Eco Consultoria e Agronegócios Ltda
EIA	Environmental Impact Assessment
ES	Ecosystem Services
FAO	Food and Agricultural Organization of United Nations
FPIC	Free, Prior and Informed Consent
FSP	Full-Size Project (GEF)
GCF	Green Climate Fund
GEF	Global Environment Facility
GEFSEC	Secretariat of the Global Environment Facility
GEO	Global Environment Outlook
INAES	Instituto Antonio Ernesto de Salve
IS	Intermediate State
LULUCF	Land-Use, Land-Use Change and Forestry
MCTI	*Ministério da Ciência, Tecnologia e Inovações* *(*Ministry of Science, Technology and Innovation)
MDIC	Ministry of Development, Industry and Commerce
M&E	Monitoring and Evaluation
MTR	Mid Term Review
NGO	Non-Governmental Organization
NIM	National Implementation Modality
OC	Outcome
OECD	Organization for Economic Cooperation and Development
PIR	Project Implementation Report
PPG	Project Preparation Grant
PRA	Participatory Rural Appraisal
PRODOC	Project Document
PSC	Project Steering Committee
SDG	Sustainable Development Goal
SIF	Sociedade de Investigações Florestais (Society of Forestry Research)
SMART	Specific, Measurable, Achievable, Relevant/Results-oriented and Time-bound
STAP	Scientific and Technical Advisory Panel
TE	Terminal Evaluation
TOT	Training of Trainers
UNDP	United Nations Development Programme

1. EXECUTIVE SUMMARY

Table 1. Project Information Table

Project Title: Production of sustainable, renewable biomass-based charcoal for the iron and steel industry in Brazil		
Country: Brazil	**Implementing Partner: Ministry of Environment (MMA)**, closely coordinated with the Ministry of Development, Industry and Commerce (MDIC) and the Ministry of Science.	**Management Arrangements:** Direct Implementation Modality (DIM)
UNDAF Outcome: #5: More efficient use of available resources is ensured to promote an equitable and environmentally sustainable economic development		
UNDP Strategic Plan Environment and Sustainable Development <u>Primary</u> Outcome: Mainstreaming environment and energy **UNDP Strategic Plan <u>Secondary</u> Outcome:** Environmental considerations are mainstreamed in sector and local-level strategies and plans		
UNDP Social and Environmental Screening Category:	**UNDP Gender Marker: 0** (no noticeable contribution to gender equality)	
Atlas Project Proposal ID: 00077747	**Atlas Project ID:** 00088369	
UNDP-GEF PIMS ID number: 4675	**GEF ID number:** 4718[1]	
Project start date: October 2014	**Planned end date:** December 2021	
Brief project description: The project´s objective is to reduce the greenhouse gas emissions from the iron and steel sector in the Brazilian State of Minas Gerais, by (i) developing and demonstrating enhanced, clean conversion technologies for renewable, biomass-based charcoal production, and (ii) implementing an effective, supportive policy framework. The Project was addressing the identified barriers that impede the clean and efficient conversion of biomass resources to charcoal for the iron and steel sector in Brazil. The Project promoted the availability of sustainable, renewable biomass-based charcoal, produced efficiently and at a competitive cost level compared to mineral coke.		
1. FINANCING PLAN		
GEF (CCM-2 and CCM-3)	USD 7,150,000	
Co-financing: national Government, private sector, universities, and UNDP CO in Brazil	USD 36,800,000	
Total Budget	**USD 43,950,000**	
2. PARALLEL CO-FINANCING (*all other co-financing that is not cash co-financing administered by UNDP)*		
UNDP	USD	
Government of Brazil	USD	
Other national sources	USD	
○Total co-financing	USD 0	
○Grand-Total Project Financing (1)+(2)	**USD 43,950,000**	

[1] See project information on GEF's website: https://www.thegef.org/project/production-sustainable-renewable-biomass-based-charcoal-iron-and-steel-industry-brazil

1.2 Project description

The project "Production of sustainable, renewable biomass-based charcoal for the iron and steel industry in Brazil" was implemented from October 2014 to November 2021 with UNDP as Implementing Agency and the Ministry of Environment (MMA) of Brazil as Executing Agency, with US$ 7,150,000 financial support from Global Environment Facility (GEF) and US$ 36,800,000 planned co-financing. It is also known as the "Carbon Project".

The UNDP focus area most closely related to the project design is Environment and Energy.

1.3 Evaluation rating and achievements

Table 2. Evaluation Ratings Table

Measure	TE Rating	Achievement Description
Project Strategy	N/A	The project strategy was well described in the ProDoc, and was followed through the implementation. Positive partnership strategy.
Progress Towards Results	Objective Achievement Rating: Satisfactory (S)	Has reached the objective to develop and demonstrate enhanced, clean conversion technologies for renewable, biomass-based charcoal production. It has not yet completely reached the objective that this technology should be supported by an effective policy framework.
	Outcome 1: Moderately Satisfactory (MS)	Average compliance 61.3% in the goal to implement a new policy framework. The sector strategy is not yet adopted. Data in the platform entered by the companies supported and are accessible to these. No credits were provided to the target groups for GHG mitigation.
	Outcome 2: Highly Satisfactory (HS)	Average compliance 97.5% in the goal to strengthen the technology and human capacity base for clean charcoal. The most important result was development, validation and introduction of new low-emission technology for sustainable charcoal production.
	Outcome 3: Highly Satisfactory (HS)	Average compliance 100%. The project reached all the targets and went far beyond the targets for GHG emission reductions.
Project Implementation & Adaptive Management	Rating: Highly Satisfactory (HS)	Effective and efficient project management after a long inception period that gave initial delays. Excdellent collaboration with project partners and Steering committee. Adaptive management included change from NIM to DIM during the inception and later on use of project savings due to the exchange rate to support many small charcoal producers.
Sustainability	Rating: Satisfactory (S)	High potential for sustainability of project outcomes. The environmental sustainability is clear, combined with social benefits. Institutional and financial sustainability are linked, because financial sustainability would be strengthened if the government facilitates credit or other financing for the private sector.

1.4 Summary of findings, conclusions and lessons learned

1.4.1 Findings

The main finding of the Terminal Evaluation is that the project despite a long initiation process was able to comply with most of its expected outputs and outcomes, and has come a long way towards achieving long-term impact and sustainability.

Reduced co-financing from the public sector was partly replaced by added private sector co-financing, which gives expectation of financial sustainability.

1.4.2 Conclusions

The project design is strong in the sense that it covers only one sub-sector and one region, and is very specific in what it wants to achieve.

Adaptive management was practiced through the change from NIM to DIM the use of saved project funds to support small and medium charcoal produces.

The creation and maintenance of a large stakeholder network from the public and private sector, as well as the universities, has been a success factor, not only for the project results but for the sector. It was designed and executed with strong country ownership, and with an active Steering Committee.

The project has so far a delivery rate of 80.8%. After initial delays, implementation was satisfactory.

A strong reduction in Government co-financing was partially offset by participating companies' in-kind contributions that were 3.9 times the target.

UNDP carried out its tasks for M&E efficiently and provided highly skilled long-term technical advisors. All national stakeholders are positive to UNDP's handling of the project management. The main partner MMA had a positive role but was affected by high staff turnover.

The project has reached its objective to develop and demonstrate enhanced, clean conversion technologies for renewable, biomass-based charcoal production. It has not completely reached the other part of the objective, an effective policy framework. The overall progress towards the project objective is approx. 70%.

There is a high degree of progress towards the outcomes, and most of the outcomes have been achieved. Only outcome 1 is a bit below because it depends on a political process to carry it forward. A sector strategy for renewable charcoal was approved but not yet adopted. The overall progress towards the outcomes is approx. 84%.

The project had a clearly positive impact on climate change mitigation with global environmental benefits. It also improved environmental performance of the I&S industry in general, including adverse impacts on the local population.

Despite the fact that the project design did not give any emphasis to gender issues, it still was able to increase the number of women participating in the project and the sector.

The Project was highly relevant for the GEF-5 Climate Change Mitigation (CCM), Objective #2 "Promote market transformation for energy efficiency in industry and the building sector", UNDP's priorities on climate change mitigation, the SDGs and Brazil's NDCs.

The results achieved on climate change mitigation would not have been possible without the GEF budget. UNDP as GEF implementing agency provided know-how that brought the I&S sector in MG to a new level of improved environmental performance.

1.4.3 Lessons learned

To avoid strong delays in initiation of project activities, it is important that as much as possiple of the project planning is finalized during the PPG, including a detailed results framework with reliable baselines, operative regulations, and a work plan with deadlines for each step. On the other hand, the Government to avoid surprises and delay of approval.

Project co-financing could result in success or complete failure of a project. In this case, the strongly reduced government co-financing was partly mitigated by additional private sector support.

Direct Implementation could sometimes give better project results than a National Implementation Modality. This should however not necessarily be taken as an argument in favour of the DIM, because it is positive for institutional development and ownership that national partners are in charge.

A project with strong national partner support and interest would have more expectation of impact and sustainabilit.

A project should not have adoption of political strategies or policies as its expected outputs, because it is completely outside project management's control and therefore increase the project risk.

Even a project that involves cutting trees and emitting GHGs can be part of climate change mitigation. What should be considered is the alternative, in this case the use of mineral coke.

Sustainable charcoal production for the I&S industry has both global and local environmental benefits, as well as social benefits through job creation, poverty alleviation and worker health.

Sustainable charcoal could also add work opportunities for rural women in both the primary and secondary production.

1.4.4 Recommendations

Table 3. Summary of recommendations

No.	Topic	Recommendation
It is recommended that UNDP should:		
1	Results framework	Assure that a good results framework is developed during the PPG phase, with reliable baselines on output- and outcome level, and specific targets that could be used for planning of project activities and monitoring of results. This period should also be used for other detailed planning, including operative regulations and a work plan with deadlines.
2	Government commitment	Assure that the Government on high level is onboard during the design phase, that it is understood that co-financing is an international commitment, and to agree in advance on expected date for national project approval.
3	Exchange of lessons learned	Assure more exchange of experiences and lessons learned, especially between UNDP projects in the same country at the same time, but also with other agencies in the same fields.
4	Transfer lessons from this project	Assure that results and lessons learned from this project are integrated into design of other UNDP projects that are focusing on climate change mitigation in the industry sector, especially if they cover charcoal production.
5	Platform for project information	Discuss with MMA and partners the possible establishment of an information platform with documents and information developed during the project, to be accessible through the Internet.
6	High-level follow-up discussions with the government	Take initiative to a higher-level discussion between the UNDP Resident Representative and government counterparts with the goal to promote adoption of "Strategy for the sustainable charcoal-based iron and steel industry". The adoption of the MRV system to track sustainable charcoal production and the reduction of GHG emissions by the I&S sector could also be included in the same conversations.

2. INTRODUCTION

2.1 Purpose and objectives of the Terminal Evaluation

The purpose of the Terminal Evaluation (TE) was to assess the achievement of project results against what was expected to be achieved, as well as draw lessons that can both improve the sustainability of benefits from the project and aid in the overall enhancement of UNDP programming.

The TE Report was expected to promote accountability and transparency, and assess the extent of project accomplishments.

2.2 Scope

The main issues of the TE are effectiveness and efficiency of project implementation, relevance, coherence, and expected impact and sustainability. The scope of the TE also includes aspects such as the impact of the results of the innovative technologies supported by the project, and the impact of the Covid-19 pandemic on project implementation.

Considering the moment of approval of the project, the review was carried out in the context of the UNDP Strategic Plan 2014-2017.

2.3 Methodology

The Evaluator applied the following **principles** through the execution of the Terminal Evaluation:

a) Free and open review process, transparent and independent from Project management and policy-making, to enhance credibility;

b) Review ethics that abides by relevant professional and ethical guidelines and codes of conduct, while the review was undertaken with integrity and honesty;

c) Partnership approach, to build development ownership and mutual accountability for results. A participatory approach was used on all levels (UNDP and its consultants, institutions, partners, beneficiaries);

d) Co-ordination and alignment, to consider national and local reviews and help strengthen country systems, plans, activities and policies;

e) Capacity development of partners by improving review knowledge and skills, stimulating demand for and use of review findings, and supporting accountability and learning; and

f) Quality control throughout the review process.

Evaluation methodology: The review paid special attention to the progress and compliance with expected project outputs, and progress towards outcomes and initial impacts, as well as the influence and integration of the experiences and lessons learned. There was no evaluation team, and all tasks were carried out by the sole Evaluator. Due to the Corona virus pandemic no international missions were included in the evaluation, which limited its efficiency, especially since there was no local consultant. The main limitation of this had to do with not being able to interview local beneficiaries in the field and observe the investments financed by the project.

The evaluation started with study and analysis of the project documentation. After that, stakeholder interviews were carried out through Teams, Zoom, GoogleMeet, Skype, phone, Whatsapp, etc., with follow-up through e-mail. As a complementary source of information, an online survey in Portuguese was carried out through SurveyMonkey. The survey was sent to 28 persons recommended by UNDP that had most relation with the project, and 15 responded (8 women and 7 men), with a balance between public and private sector, UNDP and civil society. Despite the limited number of persons, the survey was a very valuable tool for additional information and triangulation of the issues that

had been mentioned during the direct interviews. Based on processing and analysis of all background information and new data, the Evaluator reviewed if the project has given or is expected to give the intended outcomes and impact, to comply with the Project objectives.

The specific design and methodology for the TE was based on the TOR, presented in the Inception Report and agreed with UNDP and PMU. The Evaluator developed a detailed review framework based on the evaluation questions. These questions are those that the TE report should be able to respond based on information from multiple sources. For each stakeholder interview it was given emphasis to have a flexible approach where the questions would vary according to the specific information held by each stakeholder, which is assuring efficient use of the interview time. This flexible approach also gives the opportunity to go deeper into some important topics that might come up during the interviews, to assure that the total information achieved would be as complete as possible. Many questions were however repeated in interviews with different stakeholders, to triangulate the sources, thereby assuring the correct information. The approach still allows for differences of opinion, where opposing views (if any) could be mentioned in the report.

The Evaluator tried to cover all stakeholders that are relevant for the project, both women and men. However, due to the limitations mentioned above, and considering the type of project it was never an option to interview many local people. Those interviewed reflect the stakeholders that according to UNDP and PMU have been the most important for implementation of the project or in relation to it. The Evaluator made efforts to achieve support from a local consultant to carry out local interviews, first through direct contacts and later on requesting support from universities, but both failed. However, considering that the TE was carried out in the time of Covid-19, the Evaluator consider to have achieved sufficiently broad information to draw reliable conclusions.

Cross-cutting issues covered in the TE evaluation were gender equality and women's empowerment, rights-based approach, volunteerism, the approach to capacity development and governance, knowledge management, poverty alleviation, resilience, climate change mitigation and adaptation, disaster risk management, and South-South cooperation.

2.4 Data collection and analysis

The Evaluator had all the most relevant documents available from the start of the evaluation, including the updated results framework, which facilitated the preparation of the Inception Report. Data collection was also done through interviews of 16 people, most of them suggested by UNDP in an annex to the contract. On the Evaluator's initiative, an online survey was included and sent out to a broader stakeholder group that all had a relation to the project, which was replied by 15 people, where three had a relation with the project since the beginning and ten had been related with the project since 2018. Complementary written sources were added throughout the evaluation.

After most of the interviews and the survey had been finalized, the results were processed and analyzed. The information gathered is a reflection of a process where the Evaluator was seeking the best sources according to access to reliable information, as well as to triangulate all contradictory information and sources where it could be doubts about the reliability. The answers to the survey were treated completely anonymous.

Target audience: The conclusions, recommendations and lessons learned from the TE would be useful especially for UNDP, the Ministry of Environment (MMA) and the GEF, universities, other public and private project partners, and probably also for the UNEG member organizations UNIDO and UNEP. It could be used in the continued process for developing and promoting methods for sustainable biomass production and use, as well as mitigation and adaptation to climate change in the industry sector; and inspiration for design and implementation of new project phases or similar projects in the future, in Brazil or other countries.

2.5 Ethics

As mentioned in 2.3, the TE was abiding by professional and ethical guidelines and codes of conduct, assuring to undertake it with integrity and honesty. This means e.g. to respect all stakeholders and their points of view, and study the information from different angles. It was intended to use a partnership approach, however this was a bit restricted due to lack of face-to-face interaction. The evaluation was however strictly independent, where the findings, conclusions, recommendations and lessons learned were based on study of reliable sources.

2.6 Limitations to the evaluation

The start-up of the evaluation work was delayed due to initial lack of access to the UNDP task manager and delay in approval of the Inception Report, which put the interview process on-hold until the methodology was given green light. From then on, the evaluation ran smoothly with the expection of difficulty to contact and set up meetings with a few of the interviewees.

Carrying out the TE during the COVID-19 pandemic gave many challenges. First of all, it was not possible to carry out international travel for the evaluation, and this was also not expected according to the TOR. For that reason all stakeholder interviews were done remotely, and no field visits could be carried out.

2.7 Structure of the TE report

The TE report is structured based on an analysis of elements with a logic sequence:

a) Understand the Project Context, Theory of Change, Design, and Strategy: *What will the Project like to achieve?*

(including review of the content and use of the results framework)

b) Review the Project performance: *Is the Project achieving what it should, and having sufficient progress?*

(progress towards results, barriers to overcome, project management, etc.)

c) Consider opportunities for or risks to the *sustainability of project outcomes*

(including financial, socio-economic, institutional and environmental issues), and

d) *Recommendations* for the end of the project implementation and how to follow-up the results.

3 PROJECT DESCRIPTION

3.1 Project start and duration

The project was approved for implementation January 23, 2014, which is when the clock start ticking according to the GEF, but the document signature was not until June 12, 2015, which is considered the project start date. The project design phase included a PPG from March 28, 2012, and it was decided to finalize the project in December 2021.

3.1.1 Milestones

The project milestones are defined as (i) inception workshop; (ii) mid-term review; and (iii) terminal evaluation and/or project closure.

The project inception workshop was held so late as in April 2016, which according to the PIR 2016 was as planned. However, considering approval January 2014 and project initiation June 2015, this was a delayed inception workshop.

The mid-term review (MTR) was carried out from June to September 2019. This was also very late, considering that the project according to the PRODOC was expected to finalize in March 2018. The first reason was the initial delay mentioned above, and it was therefore decided that the review

should be done from Dec 2018. The second reason for delay of the MTR was two unsuccessful calls to hire an MTR consultant, which required that the project team had to revise and relaunch the TOR in 2019.

The Terminal Evaluation was according to the PIR 2019 expected to be carried out from Oct 1, 2019. At that moment the project had still ongoing activities and much budget funds left. Shortly after, the Covid-19 pandemic broke out, and the project activities continued on a slower pace. The project end-date was extended from Junme 2020 to June 2021 and then to December 2021. In 2021 UNDP also had some delay in recruiting the TE Evaluator, causing a final delay of this milestone.

3.2 Development context

3.2.1 Socio-economic factors

Brazil is the 5th largest country in the world with an area of nearly 8.6 million km^2. Brazil has an important biodiversity, including most of the Amazonas Rainforest, which covers approx. 40% of the country (3.5 million km^2; "Cerrado" savannas (2.5 million km^2); and the semi-arid region "Caatinga" (more than 1.5 million km^2); as well as the remainders of the Atlantic Forests; and the "Pantanal" swamp region.

Brazil has the 7th largest population in the world (213,445,417 in 2021)[2], and distribution of the population and income over the country is very uneven. The Brazilian economy ranks 12th in the world , with a GDP of US$ 1.44 trillion[3], which is lower than when the project started, due to an economic crisis. OECD estimates that Brazil's GDP was reduced by 4.1% in 2020[4], which is a stronger reduction than during the financial crisis 2015-16. The country faces several social and economic problems and lack of adequate infrastructure. Industry including energy accounted in 2018 for 17.8% of real value added; trade and transport 19.8%; public sector 21.9%; and the agricultural sector (including forestry and fishery) only 5.2%[5]. Brazil is by far the largest economy in Latin America, based on a diversified industrial infrastructure, highly qualified research and technological facilities, the export of equipment and machinery (including planes and cars), and is a major supplier of commodities such as coffee, cocoa, soybeans and corn, as well as minerals.

Brazil is still a country marked by deep social and regional inequalities, and an extreme poverty situation in the north-eastern region. Labor situations are often precarious and many workers have no access to a formal employment. The country has however experienced progress in several social areas. According to the OECD, the country had in 2019 a life expectancy at birth of 75.9 years and infant mortality of 12.4 per thousand, however both these figures are expected to have worsened during the Covid-19 pandemic.

Brazil is one of the main iron and steel producers in the world and the second largest exporter of iron ore (USD 23 Billion), with main destination China (USD 13.6 Billion), followed by several Asian and European countries[6]. The iron and steel production is largely concentrated in the state of Minas Gerais (70%), with capital Belo Horizonte. Brazil's iron and steel (I&S) sector is unique because 34% of the iron production is obtained using charcoal instead of mineral coke as the reducing agent. There are some large companies that produce charcoal for the I&S sector, but also many small producers. Brazil is in a position where it is possible not to phase out domestic charcoal but instead develop the sector based on a mix of sustainable, renewable wood resources complemented by imported mineral coke. In the context of climate change mitigation, sustainable charcoal provides a renewable source of energy to hedge the use of mineral coal in the iron production chain, but it requires continuous

[2] US Census Bureau 19.11.2021
[3] World Bank open data, figures 2020.
[4] https://www.oecd-ilibrary.org/economics/country-statistical-profile-brazil-2021-2_6c012673-en
[5] https://www.oecd-ilibrary.org/economics/country-statistical-profile-brazil-2021-2_6c012673-en
[6] https://oec.world/en/profile/bilateral-product/iron-ore/reporter/bra

reforestation of the Eucalyptus plantations that are being used, to avoid exploitation of natural forests. Renewable biomass-based charcoal is a key asset to reduce greenhouse gas (GHG) emissions from the I&S sector. The project has therefore supported technological innovation, policy development and other factors to develop the sector on a sustainable pathway.

3.2.2 Institutional factors

The project has been implemented under UNDP's Direct Implementation modality (DIM) through UNDP's Country Office. The driving force behind the project was from the start the Ministry of Science, Technology and Innovation (MCTI), before MMA came in. The executing agency is the Ministry of Environment (*Ministério do Meio Ambiente*, MMA). This ministry has been coordinating the Project with MCTI; Ministry of Development, Industry and Commerce (MDIC) - now part of Ministry of Economy; the Ministry of Agriculture, Livestock and Food Supply (MAPA); and the Government of the State of Minas Gerais (MG), who are all part of the Project's Steering Committee (see fig. 2). UNDP is also member of the Steering Committee and responsible to the GEF.

3.2.3 Policy factors

Brazil was the signatory to the UNFCCC in 1992, which was ratified by the Congress in 1994. It should take fourteen years before Brazil adopted its first National Plan on Climate Change in December 2008, which defines actions and measures aimed at mitigation and adaptation to climate change. In 2009 Brazil established its climate change policy and the climate change fund *Fundo Clima* to financially support mitigation and adaptation actions. Both these measures formed the basis for the initial design of the current project, which started in 2011.

Brazil presented during UNFCCC COP-15 in Copenhagen 2009 a pledge for voluntarily GHG emission reductions in the iron and steel industry of 8-10 million tons CO_2eq by 2020. In 2010, a Decree was issued based on the National Plan on Climate Change to establish sector plans for mitigation and adaptation. The Ministry of Development, Industry and Trade (MDIC) outlined an emission reduction plan that comprised two GHG mitigation goals: (i) to increase the amount of planted forests stocks to supply the iron and steel industry with renewable and sustainable biomass; and (ii) to improve the charcoal production process to reduce emissions and increase efficiency in the use of biomass. In line with this plan, the State of Minas Gerais State defined 2018 as the deadline for phasing out non-renewable charcoal in the state's iron and steel industry.

The design and first years of implementation of the UNDP-GEF "charcoal project" was in the period of President Dilma Rousseff (Workers' Party). In October 2018 Jair Bolsonaro (independent) won the elections, and entered the presidency in January 2019. This led to great institutional and policy changes, not least for the Ministry of Environment. The environmental policy of the Government of Brazil has since then been heavily criticized by foreign governments and environmental NGOs, especially in relation to deforestation in the Amazon region and for reducing the budget for MMA.

Brazil presented in December 2020 an updated version of its Nationally Determined Contributions (NDC) to UNFCCC[7]. Under the updated NDCs, Brazil's targets to reduce emissions by 37% by 2025 and 43% by 2030 compared to 2005 levels is unchanged, however an increase in the base year emissions used as a reference means that Brazil could continue to increase its emissions and still meet its targets. However, in April 2021 the President promised that Brazil would reach zero carbon emissions by 2050, and during the recent UNFCCC COP-26 in Glasgow, Brazil's delegation was party to some important announcements, including pledges to reduce methane emissions and end illegal deforestation by 2030.

[7] https://www.gov.br/mre/en/contact-us/press-area/press-releases/brazil-submits-its-nationally-determined-contribution-under-the-paris-agreement

3.3 Problems that the project sought to address

3.3.1 Problem statement

According to the project document, the problem the project wanted to address is that *insufficient attention is being paid to the limitations of the traditional charcoal production process*, which could put at risk the national ambition to produce the required large amounts of renewable, biomass-based charcoal for the iron and steel sector. This problem is especially relevant because advanced and clean conversion technologies were before the project not commercially applied in Brazil. In response to national climate change policies and the international market for CO_2 certificates, the Brazilian iron and steel sector predominantly focused on developing eucalyptus plantations for charcoal production as a carbon sink to offset the sector's GHG emissions.

The limitations and adverse impacts of traditional charcoal conversion technology are: (i) *Inefficient use of the inputs* (wood, land, labor), and when the resources become scarce, the business model is no longer economically viable. (ii) *Small-scale, labor-intensive* conversion process that is difficult to control, which affects the conversion rate and quality of charcoal. (iii) *Few opportunities for scale benefits* with traditional kilns, unable to produce the volumes demanded by the I&S sector in the future. (iv) *Substantial GHG emissions*, including the strong greenhouse gas methane (CH_4) and Non-Methane Hydrocarbons (NMHCs). (v) *Highly polluting by-products* that are harmful for the local environment and workers.

Investment in more advanced and efficient charcoal conversion technologies was found not to be profitable, due to (i) low and fluctuating prices for pig iron on the international markets; (ii) competence of charcoal from illegal sources, reducing the market value of charcoal from sustainable forest plantations; (iii) reference price for pig iron in the international market based on mineral coke; (iv) supply constraints for wood and charcoal to respond to fluctuations in the pig iron markets; and (v) the traditional perception in the sector of charcoal as a cost, rather than a factor to create added value.

3.3.2 Threats

The word threat is not used in the Project Document, PIRs and the TOR for the TE, but is standard in the UNDP TE outline. In project management, "threat" is often used as meaning the same as external risks, and would therefore be treated as part of the project risk management during implementation (see 4.1.2).

Some issues that were risks during the implementation are converted to threats for the outcome and impact of the project after the project closes, while other risks are no longer applicable. Based on the general project design, complemented by interviews, it seems like the main treats for the project outcomes are (i) the economic crisis in Brazil, which greatly reduces the availability of funds for new investements, including opportunities for private sector credit; and (ii) the possible changes in government policy. These two threats are inter-related, because even with an on-going national economic crisis, the opportunities for international carbon funding could increase if the Brazilian government is more open to the UNFCCC goals (reduction of threat turned into an opportunity).

3.3.3 Barriers

The PRODOC defined several barriers, which are presented in the following in a slightly reformulated version, highlighting the barrier as it was perceived before the project started:

Policy barrier: *Lack of policy that integrates strategic and business view on charcoal production*. Brazil, and specifically Minas Gerais, has developed policy to stimulate the sustainable production of charcoal. Banning the use of charcoal obtained from native forest resources was an important step forward to allow development of a market for renewable, biomass based charcoal, but insufficient to promote sustainable charcoal as an alternative for the iron and steel industry, as mineral coke

represents a competitive alternative. The PRODOC therefore considered it necessary to develop a detailed strategy together with the I&S sector, that would integrate large-scale production of renewable, biomass-based charcoal into the iron production chain. Policy-related activities could include sustained support for research and development and a minimum pricing policy for renewable, biomass-based charcoal. While some niche players were already in the process of branding "green pig iron" and "green steel" when the project was designed, a sector-wide approach was considered necessary to generate a large market for renewable, biomass-based charcoal based on its explicit environmental benefits, with quality criteria and certification procedures.

Information barrier: *Lack of information and methodologies to assess the economics of renewable charcoal*. Without this information mineral coke would likely continue to replace charcoal in Brazil, as it is readily available and has been the option-of-choice worldwide. This barrier was highlighted because only some highly advanced, capital-intensive companies had awareness of the overall impact and the limitations of the traditional charcoal conversion process, while the majority of charcoal producers did not have the information. The PRODOC considered that further investigation in this field was needed to support policy and decision makers from the industry, and that alternative scenarios should be developed to transform the sector through viable technical and economic solutions. It was expected that demonstration of advanced charcoal conversion technologies under market conditions would greatly assist in drawing the sector's attention.

Technology barrier: *Lack of an advanced, clean and cost-effective charcoal conversion technology in Brazil*. The traditional charcoal production process is not sustainable, and has limitations and severe adverse environmental impacts mentioned in 3.3.1, while charcoal is produced in other countries in different types of kilns considered "appropriate technology" and adapted to local circumstances.

Business models barrier: *Traditional charcoal conversion process is not a rational business model*. The traditional model is to subcontract local workers who supply the charcoal at an agreed price. Wood and land are used inefficiently and byproducts are disposed of into the environment. There was also little experience with technologically more advanced charcoal production plants in the iron production chain. PRODOC however highlighted that it was not yet clear yet whether the switch to a more capital-intensive conversion process would be economically rewarding for the industry. It was considered that large-scale, capital-intensive charcoal production sites could potentially be able to capture by-products and excess heat, and thereby contribute to operate the conversion process as a profitable business.

Financial barrier: *Difficulty mobilizing capital for advanced charcoal technology and production facilities*. Since lenders require high levels of collateral, attracting debt capital adversely affects a company's financial performance and exposure. The companies therefore focus on rewarding technologies in terms of payback time and profitability, which - at least at the moment of project design – did not include the charcoal technology. Even though the I&S sector is composed of large international conglomerates, the charcoal production is most often subcontracted to local informal producers that are undercapitalized and hardly creditworthy.

3.4 Project objectives

3.4.1 Development objective

To develop and demonstrate enhanced, clean conversion technologies for renewable, biomass-based charcoal production, supported by an effective policy framework.

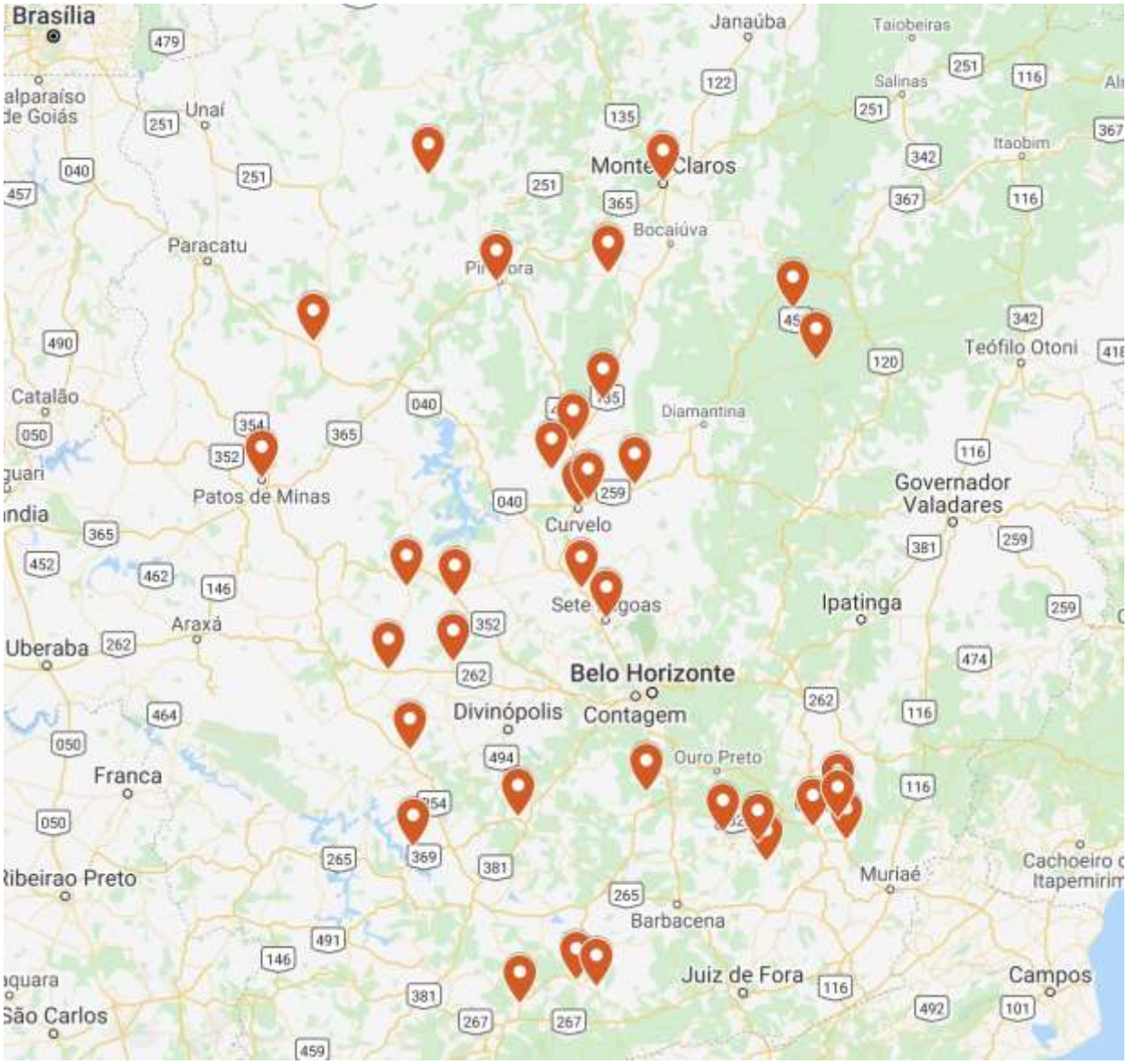
3.4.2 Immediate objective[8]

To reduce the greenhouse gas emissions from the iron and steel sector in the Brazilian State of Minas Gerais, by (i) developing and demonstrating enhanced, clean conversion technologies for renewable, biomass-based charcoal production; and (ii) implementing an effective, supportive policy framework.

3.4.3 Field sites

The project sites were not visited during the TE, since there was only one evaluator and no international mission was included[9]. The map below shows a total of 34 project sites, all in the state of Minas Gerais.

Fig 1. Map of the project area with project sites[10].



[8] The project design does not make any distinction between development objective and immediate objective. The development objective mentioned in 3.4.1 is from the Results Framework and the immediate objective is mentioned as the "project objective" in the PRODOC.
[9] The TE followed the document UNDP IEO 2020. Evaluation Guidelines. Evaluations during COVID-19.
[10] The interactive map can be found at https://www.google.com/maps/d/edit?mid=17PIBy57EZfHkZi5VDaTh9zTFLW0ooec7&usp=sharing

3.5 Expected results

The expected results of the project are included in the results framework. The following table summarizes the project's content with outcomes and outputs for each component. The full results framework with targets and % of compliance is presented in section 4.3.3 Effectiveness.

Table 4. Summary of the project content

Project Objective: To develop and demonstrate enhanced, clean conversion technologies for renewable, biomass-based charcoal production, supported by an effective policy framework		
Components	**Outcomes**	**Outputs**
1. Information and policy development	1.1 Policy framework to promote use of renewable biomass based charcoal by the I&S sector implemented	1.1.1 Detailed strategy put into place by the Government (MMA & MDIC) to promote the use of renewable biomass-based charcoal by the I&S sector in MG
		1.1.2 Monitoring and verification system for GHG emission reductions by the I&S sector implemented
		1.1.3 The environmental impact and resource efficiency of clean, renewable biomass-based charcoal production chains are assessed using analytical tools
		1.1.4 Financial incentive schemes to promote the use of renewable biomass-based charcoal assessed on their merits
2. Strengthening of technological development and human capacity	2.1 Technology and human capacity base for clean charcoal conversion in strengthened by TA and targeted training	2.1.1 Baseline technology development for clean charcoal conversion enhanced by supporting design, testing and evaluation of key system components
		2.1.2 Support to optimize technologies to capture by-products from the charcoal conversion process, including tar products, hydrocarbons, and process heat
		2.1.3 Efficient business models developed to accelerate widespread introduction of clean charcoal conversion technology
		2.1.4 Training material on clean charcoal conversion developed and used for (i) technical training targeting I&S companies, universities and research institutes; (ii) policy and decision makers; and (iii) project developers and financiers
3. Investment and performance monitoring	3.1 Commercial charcoal production facilities built to deliver objectively verifiable renewable, biomass-based charcoal and GHG emission reductions	3.1.1 Tender mechanism set up by MMA to support investment in a first batch of commercial production facilities for clean, renewable charcoal
		3.1.2 Targeted support to facilitate planning and permitting charcoal conversion projects selected under the tender process
		3.1.3 First batch of commercial, renewable biomass-based charcoal production facilities procured and put into operation by the private sector; GHG emission reductions monitored and verified; and performance payments made
		3.1.4 Best practices and lessons learnt collected and disseminated to promote clean charcoal production across the I&S sector in Brazil and abroad

3.6 Main stakeholders

3.6.1 Implementing partner

The implementing partner (project executing agency) is the Ministry of Environment (MMA) on behalf of the Government of Brazil.

3.6.2 Implementing partner arrangements

The project has an office in the MMA in Brasilia and is supported by the national UNDP office. The UNDP Office provides programmatic and technical oversight and ensures fiduciary compliance of UNDP/GEF. The Government of Brazil has the overall role as the Implementing Partner, and is represented by MMA. According to the project document, MMA will closely coordinate the project with the Ministry of Development, Industry and Commerce (MDIC), the Ministry of Science. Technology and Innovation (MCTI) and the Government of the State of Minas Gerais (MG) in the Project's Steering Committee. There has later on been some changes in the public sector and the Steering Committee (see 3.6.3).

After some changes due to restructuring of the government, the Project Steering Commmittee consists currently of representatives from the Ministry of Environment (MMA), Chair; Ministry of

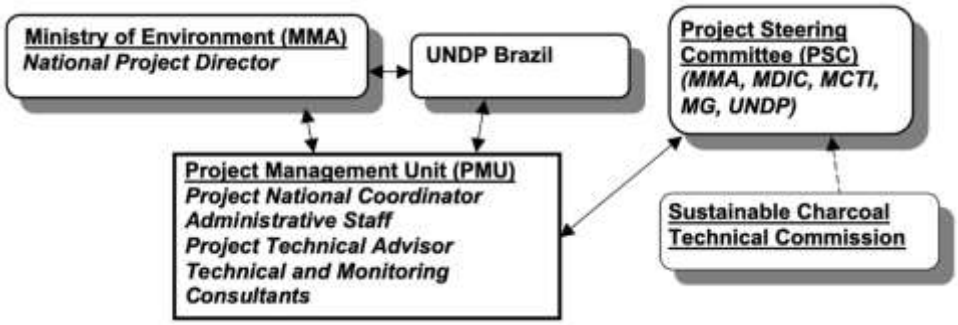
Economy (ME), Ministry of Science, Technology & Innovation (MCTI); Ministry of Agriculture, Livestock and Food Supply (MAPA); Government of Minas Gerais (MG); and UNDP.

The Project Steering Committee (PSC) is the highest decision-making authority of the project, planned to meet two times per year, where each member has one vote. The PSC meetings are convoked by the National Project Director. Extraordinary meetings can be held if deemed necessary, and the PSC can invite external consultants to assist in the monitoring process.

The National Project Director is a part-time position and senior staff member appointed by the MMA, to ensure that Project implementation follows national policy and standards. The Director chairs the PSC and represents the Project at annual tripartite meetings, as well as in high-level national and international meetings. The Project Director reports directly to the PSC, while keeping the Minister of Environment updated. *The National Project Coordinator* is a non-voting member of the PSC, assisted by a Project Technical Advisor, and is in charge of the meeting minutes.

The Project Management Unit (PMU) is responsible for the daily coordination of project activities, including operational planning, supervision, administration and financial management. Additionally, a Sustainable Charcoal Technical Commission (SCTC) was foreseen to be created by the end of 2013, but this commission was never established.

Fig. 2. Project governance and management structure



3.7 Theory of Change

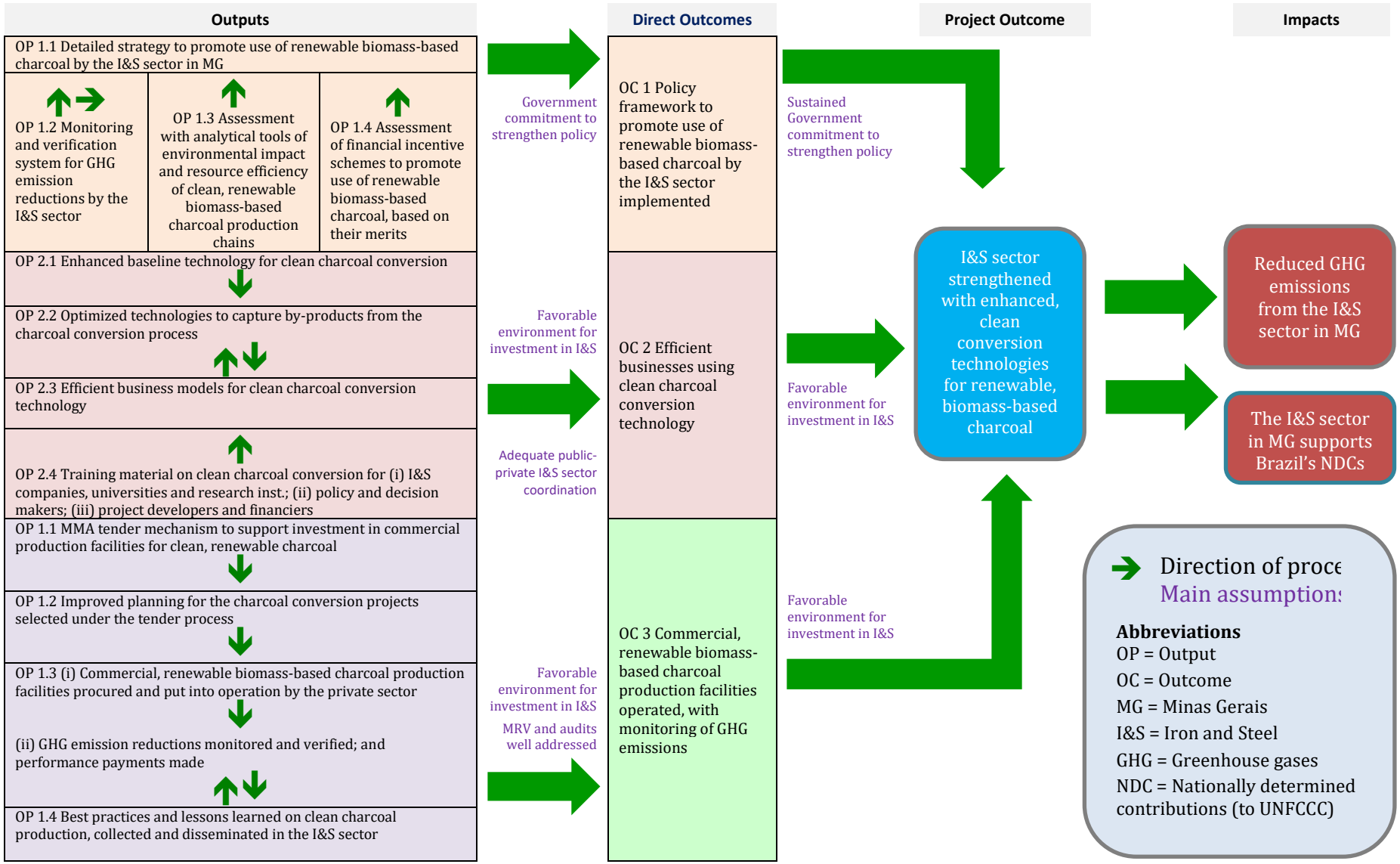
A Theory of Change (TOC) is a method used for planning a project. It articulates long lasting intended impact and then maps backward to identify the preconditions necessary to achieve this impact(s). It is a comprehensive description and illustration of how and why a desired change is expected to happen in a context.

The Evaluator has reviewed the TOC of the project, and considers that it has a simple and clean structure that is easy to understand, consisting of three clearly different components: (i) Information and policy development ; (ii) Strengthening of technological development and human capacity; and (iii) Investment and performance monitoring; each with its own outcome (see table 4).

The Project addressed the identified barriers that impede the clean and efficient conversion of biomass resources to charcoal for the iron and steel sector in Brazil. On this basis, the Project promoted the availability of sustainable, renewable biomass-based charcoal, produced efficiently and at a competitive cost level compared to mineral coke.

In fig. 3 the Evaluator has constructed the Theory of Change model for the project, including flow of processes and main assumptions. As shown in the model, some outputs depend on others, so there is a natural sequence. However, some processes can be in different stage of process in different places at the same time. The text in the figure is an abbreviation of text from the Results Framework, abbreviated and a bit reformulated to strengthen the logic. This also has to do with the review of the quality of the Results Framework, presented in par. 4.1.1.

Fig. 3. **RECONSTRUCTED THEORY OF CHANGE – Production of sustainable, renewable biomass-based charcoal for the iron and steel industry in Brazil**



4 EVALUATION FINDINGS

4.1 Project design and formulation

The TE Evaluator reviewed the quality of program design, based on the key sources the Project Document with annexes, including the Results Framework. The project was designed from 2011 (PIF submission 10.11.2011, re-submission 23.03.2012) until 7.12.2013 (submission of request for CEO endorsement). The PPG was approved by GEF 28.03.2012, the Concept document 1.06.2012 and the project document 23.01.2014. The design is strong in the sense that it covers only one sub-sector and one region, and is very specific in what it wants to achieve. On the other hand, considering that the design process passed through a PPG, it should have been expected to have better baselines and stronger commitment for co-financing.

4.1.1 Analysis of Results Framework

(i) Project logic and strategy

As mentioned under the discussion about the TOC, the project has a simple structure with three components, each with one outcome, that goes towards a common goal, considered by the Evaluator as the project's immediate impact. It is good that the project is focusing on what is important to achieve the project objective, instead of (as in many other projects) being a package of independent activities preferred by the different partners.

Even though the clear project structure is easy to understand, the designers have with the exception of output 1.2 committed the error of mixing activities and outputs (see table 5). Activities are normally not included in a results framework, but are part of the work plans to reach the results. This might be considered by the reader as only order of the words, and not important, however when it comes to practice the PMU should know that it has not achieved an output just because an activity has been carried out.

Table 5. Some outputs in the results framework and proposed improved wording

No	Current wording	Proposed wording
1.1	A detailed strategy is put into place by the Government (MMA & MDIC) to promote the use of renewable biomass-based charcoal by the I&S sector in MG.	Detailed strategy to promote the use of renewable biomass-based charcoal by the I&S sector in MG.
1.3	The environmental impact and resource efficiency of clean, renewable biomass-based charcoal production chains are assessed using analytical tools.	Assessment with analytical tools of environmental impact and resource efficiency of clean, renewable biomass-based charcoal production chains
1.4	Financial incentive schemes to promote the use of renewable biomass-based charcoal (e.g. tax exemptions, soft loans, performance-based payments) are assessed on their merits.	Assessment of financial incentive schemes to promote the use of renewable biomass-based charcoal (e.g. tax exemptions, soft loans, performance-based payments) based on their merits.
2.1	Baseline technology development for clean charcoal conversion is enhanced by supporting the design, testing and evaluation of key system components.	Enhanced baseline technology for clean charcoal conversion, including design, testing and evaluation of key system components.
2.2	Support is given to optimize technologies to capture by-products from the charcoal conversion process, including tar products, hydrocarbons, and process heat.	Optimized technologies to capture by-products from the charcoal conversion process, including tar products, hydrocarbons, and process heat.
2.3	Efficient business models are developed (accounting for variations in plant size, logistical set-up, use of by-products, ownership models) to accelerate the widespread introduction of clean charcoal conversion technology.	Efficient business models for clean charcoal conversion technology.
2.4	Training material on clean charcoal conversion is developed and used for (i) technical training targeting I&S companies, universities and research institutes; (ii) policy and decision makers; and (iii) project developers and financiers.	Training material on clean charcoal conversion for (i) I&S companies, universities and research institutes; (ii) policy and decision makers; and (iii) project developers and financiers.
3.1	A tender mechanism is set up by MMA to support investment in a first batch of commercial production facilities for clean, renewable charcoal	MMA tender mechanism to support investment in commercial production facilities for clean, renewable charcoal

3.2	Targeted support is given to facilitate planning and permitting for the charcoal conversion projects selected under the tender process.	Improved planning for the charcoal conversion projects selected under the tender process.
3.3	A first batch of commercial, renewable biomass-based charcoal production facilities is procured and put into operation by the private sector, and greenhouse gas emission reductions are being monitored and verified, and payments are made for delivered performance.	(i) Commercial, renewable biomass-based charcoal production facilities procured and put into operation by the private sector (ii) GHG emission reductions monitored and verified; and performance payments made
3.4	Best practices and lessons learnt are collected and disseminated to promote clean charcoal production across the I&S sector in Brazil and abroad.	Best practices and lessons learned on clean charcoal production, collected and disseminated in the I&S sector

For the objective of this analysis, and for the TOC, the following definitions have been used:

Output: The availability (for intended beneficiaries/users) of new products and services and/or gains in knowledge, abilities and awareness of individuals or within institutions. For example, access by the intended user to a report; new knowledge held by workshop participants at the end of a training event; heightened awareness of a serious risk among targeted decision-makers.

Outcome: The use (i.e., uptake, adoption, application) of an output by intended beneficiaries, observed as a change in institutions or behaviors, attitudes or conditions.

Direct outcome: An outcome that is intended to be achieved from the uptake of outputs and occurring prior to the achievement of the Project Outcome.

Impact: Long-lasting results arising, directly or indirectly from a project.

To summarize, an outcome is the use of an output, and the impact is the long-term result of this use. It might seem not so relevant to make changes on a Results Framework at the moment the project is going to close, because it is not the idea that it should be used for monitoring of this project. It was however done in line with the methodology point (e) *Capacity development of partners*, to provide learning that could be useful during the design of new projects.

Table 6. Comments to targets in the Results Framework

Indicators	Baseline	Target (End of Project)	Comment
Number of commercially demonstrated efficient charcoal conversion technologies.	at least three (3) technological concepts under development by private firms; no (0) commercial demonstration (as of 2013).	at least three (3) charcoal production plants in commercial operation; at least three (3) successful business models; at least one (1) proven conversion technology	Baseline should have defined: 0 charcoal production plants in commercial operation; 0 successful business models; 0 proven conversion technologies
Financial incentives for (a) use of renewable charcoal by I&S sector in MG; (b) investment in efficient, clean charcoal production chains	(a) No incentives for renewable charcoal use (0); (b) No incentives for investment in efficient, clean charcoal production chains (0).	(a) Incentives for renewable charcoal use in place (1); (b) Incentives in place for investment in efficient, clean charcoal production chains (1).	1 incentive for each criterion seems like a very small target: should be higher numbers.
(a) Training material; (b) Number of training programs implemented	(a) No training material developed (0); No training program (0)	(a) Training material developed (1); At least three (3) training programs being executed.	(a) 1 training material is very little specific. Should define e.g. the number of training documents
Consultancies to support project development	No (0) consultancies	At least three efficient charcoal conversion facilities are ready for the investment phase of the program	The baseline and target have not the same unit of measure.
(a) Documents and presentations with best practices; (b) international event to disseminate clean charcoal production	(a) No documents (0); No event (0)	(a) Documents and presentations compiled (1); (b) International event held (1).	(a) The indicator says documents (plural) and the target says 1, which seems low. Presentations are not mentioned in the baseline.

(ii) Indicators

Indicators should be SMART (Specific, Measurable, Achievable, Relevant/Results-oriented and Time-bound), which is mostly the case. The indicators in the Results framework are relatively specific, despite the comments mentioned about outputs. Most of the indicators are also

measurable thanks to concrete baselines, and they are highly relevant and results-oriented, but they are not time-bound, except for the whole implementation period as the timeline.

Regarding the use of indicators for planning, monitoring and review of results, the key issue is that baseline and target must measure the same unit of measure. The indicator must also be sufficiently concrete, normally defined by a number. The Evaluator considers that the following indicators should have improved (which would also have facilitated the TE).

4.1.2 Assumptions and risks

Assumptions and risks are both factors outside project management's direct control. The assumptions are significant external factors or conditions that need to be present for the realization of the intended results, while risks are significant external factors that might negatively affect the project's performance in case of occurrence. Assumptions are therefore often considered as positively formulated risks.

The Results Framework presents a long list of assumptions on project objective level and output level. It seems like the design team had the goal of including one or several assumptions for all outputs, but much fewer assumptions would have been better and thereby showed more certainty that the project was well planned and the results could be achieved. It is not normal to have assumptions on all outputs, since they are concrete results of the project activities and should be mostly under project management's direct control. The assumptions presented in the results framework on output level are indirectly also for the outcomes, because it would not be possible to reach the outcomes without the outputs. Since assumptions such as commitment (of Government and other stakeholders) are mentioned for sereval outputs, it would have been better to elevate them to assumptions for the outcomes. The following table is a review of the assumptions, where green comments are for the good assumptions, red comments for bad or not relevant assumptions, and yellow for weakly formulated assumptions.

Table 7. Review of assumptions in the Results Framework

Strategy	Assumptions	Evaluator comments
Project Objective: To develop and demonstrate enhanced, clean conversion technologies for renewable, biomass-based charcoal production, supported by an effective policy framework.	1. A favorable environment for investment exists in the iron and steel industry in Brazil.	Good assumption
	2. Sustained government commitment to strengthen policy framework and sector governance	Good assumption, however also a risk due to political changes
Outcome 1 A policy framework has been implemented to promote the use of renewable biomass-based charcoal by the I&S sector, supported by an internationally recognized system for monitoring achieved GHG emission reductions		
1.1 A detailed strategy is put into place by the Government (MMA & MDIC) to promote the use of renewable biomass-based charcoal by the I&S sector in MG.	1.1.1 Sustained government commitment to strengthen policy framework and sector governance	Good assumption, however also a risk due to political changes
	1.1.2 Adequate coordination between MMA, MDIC, State of MG and sector stakeholders.	Good assumption
1.2 A Monitoring and Certification Platform to register GHG emission reductions achieved by efficient charcoal production facilities implemented by the I&S sector	1.2.1 Sustained government commitment to strengthen policy framework for renewable charcoal	See 1.1.1
	1.2.2 Technical and auditing implications of MRV can adequately be addressed.	"Adequately addressed" is vague. Could instead say e.g. "Access to accredited technical auditors"
	1.2.3 Sector companies are willing to implement MRV systems for renewable charcoal and GHG reductions.	"Willing to" sounds like forcing them. Could have used "interest in"
1.3 The environmental impact and resource efficiency of clean, renewable biomass-based charcoal production chains are assessed using analytical tools.	1.3.1 Project activities can be implemented according to plan	Not an assumption: result of project management
	1.3.2 Sufficient input information is available and/or shared by sector agents to enable realistic analysis.	Good assumption

1.4 Financial incentive schemes to promote the use of renewable biomass-based charcoal (e.g. tax exemptions, soft loans, performance-based payments) are assessed on their merits.	1.4.1 Sustained government commitment to strengthen policy framework for renewable charcoal	Government commitment is not required to assess the schemes on their merits
	1.4.2 Economic benefits of sustainable charcoal are acknowledged	Same as above (note that the output is not the schemes)
Outcome 2: The technology and human capacity base for clean charcoal conversion in Brazil is strengthened by technical assistance and targeted training.		
2.1 Baseline technology development for clean charcoal conversion is enhanced by supporting the design, testing and evaluation of key system components.	2.1.1 Sector agents and research institutes continue to support a joined technology development program on efficient charcoal conversion	Good assumption
	2.1.2 Planned activities can be implemented timely and successfully.	Not an assumption: result of project management
2.2 Support is given to optimize technologies to capture by-products from the charcoal conversion process, including tar products, hydrocarbons, and process heat.	2.2.1 Sector agents and research institutes continue to support a joined technology development program on efficient charcoal conversion	Good assumption
	2.2.2 Planned activities can be implemented timely and successfully.	Not an assumption: result of project management
2.3 Efficient business models are developed (accounting for variations in plant size, logistical set-up, use of by-products, ownership models) to accelerate the widespread introduction of clean charcoal conversion technology.	2.3.1 Industries, public agencies and CSO's share information to evaluate and design innovative business models for clean charcoal production.	Good assumption
2.4 Training material on clean charcoal conversion is developed and used for (i) technical training targeting I&S companies, universities and research institutes; (ii) policy and decision makers; and (iii) project developers and financiers.	2.4.1 Sector stakeholders show sustained commitment to the objectives of the Project.	Good assumption
	2.4.2 Envisaged activities can be executed as planned.	Not an assumption: result of project management
Outcome 3: Commercial charcoal production facilities are built under a competitive bidding mechanism to deliver objectively verifiable renewable, biomass-based charcoal and GHG emission reductions.		
3.1 A tender mechanism is set up by MMA to support investment in a first batch of commercial production facilities for clean, renewable charcoal	3.1.1 Adequate coordination between MMA, MDIC, BNDES, BDMG and the Project to set up a consistent financial mechanism.	Good assumption
	3.1.2 The value of the proposed mechanism is understood by the targeted companies.	Good assumption
3.2 Targeted support is given to facilitate planning and permitting for the charcoal conversion projects selected under the tender process.	3.2.1 Eligible project proposals for efficient, clean charcoal production facilities are presented by the private sector.	Good assumption
	3.2.2 Experts and specialized services can be mobilized to offer adequate support.	Good assumption
3.3 A first batch of commercial, renewable biomass-based charcoal production facilities is procured and put into operation by the private sector, and greenhouse gas emission reductions are being monitored and verified, and payments are made for delivered performance.	3.3.1 Appropriate technological solutions are available, offering bankable investments.	Good assumption
	3.3.2 Private sector agents are able and willing to attract financing for planned charcoal investments.	Good assumption
	3.3.3 External market factors are sufficiently positive to justify private sector investment.	This assumption is not concrete: -Does it refer to the I&S sector in MG?
	3.3.4 The added value of the proposed payment mechanism is acknowledged by the sector.	Good assumption
3.4 Best practices and lessons learnt are collected and disseminated to promote clean charcoal production across the I&S sector in Brazil and abroad.	3.4.1 Sector stakeholders show sustained commitment to the objectives of the Project.	Good assumption
	3.4.2 Envisaged activities can be executed as planned.	Not an assumption: result of project management

The project design has a good risk analysis and risk table. The column for mitigation however includes mostly analysis, while the following table presents only the mitigation measures. Two of the risks included at the moment of project approval were later considered not applicable and taken out: (i) climate change impact; and feasibility of verifying GHG emissions. The rating was also changed for two of the risks (number 2 and 5 in the table below), however the table presents the original rating since the effective risk would continuously change. All the risks included in the table seem to have been relevant at the moment of design and early implementation. It is highly positive that the risk matrix has been actively used and later updated. The project management's response to issues that *did occur* are treated later in the report.

The PIR 2019 considered the overall project risk as high, which had to do with the economic recession in the country and the changed policy of the federal government after the Bolsonaro Government took over. The political risk was managed well because the project continued to have strong support from the Government of Minas Gerais. The federal government did also not want to close projects that had private sector support. The change on federal level however led to much staff changes and it negatively affected the co-financing expected from BNDES and Fundo Clima (see section on co-financing).

At the time of the TE, the risks to implementation are less important, while the risks for sustainability of the outcomes are still there (see sustainability section). The last PIR highlights two risks at this moment: (i) Organizational risks, regarding the appropriate knowledge management of all the documents and studies; and (ii) Environmental risks, to ensure that all procedures are well established and documentation presented for environmental assessments of sustainable charcoal production from forest plantations (to ensure that the project is not a cause of deforestation).

Table 8. Summary of risk matrix

#	Description	Type	Impact & Probability[1]	Mitigation decided
1	Government policies and programs would not be continued and project results would not be mainstreamed.	Governance	P = 2 I = 4	(i) Strengthen sector ownership; (ii) Partnerships with public and private sector; (iii) market-oriented approach with performance-based payments for GHG reductions
2	The private sector and technology institutions would fail to develop and implement clean and resource-efficient charcoal conversion technologies.	Development	P = 2 I = 4	Support different technological proposals in parallel
3	The unit cost of the renewable charcoal produced would be too high for commercial use.	Development	P = 3 I = 3	(i) aim for efficient, cost-effective charcoal production; (ii) explore more attractive business models for the charcoal sector.
4	Conflicts of interests between sector stakeholders would hamper the implementation of the Project.	Fiduciary	P = 2 I = 5	Creation of Sustainable Charcoal Technical Commission (SCTC)[2] as a platform for mediating interests.
5	Sector companies would not respond to the market triggers and incentives created through the bidding mechanism as expected	Development	P = 2 I=5 (critical)	Carefully shaping the financial conditions for a tender mechanism.
6	Adverse social impacts (such as labor loss) would affect the introduction of advanced charcoal production technology	Sustainability	P = 2 I = 3	Collaboration between the State of MG and UNDP supporting poverty eradication and social equity.
7	Exchange rate risk	Financial	P = 2 I = 3	Careful financial planning.

[1]Probability and Impact in case of occurrence were both measured on a scale from 1 (low) to 5 (high). [2]This commission was never established

a. Lessons learned and planned stakeholder participation

i. Lessons from other projects incorporated into the design

The Government of Minas Gerais and the Federal University of Viçosa have tried to promote technological improvements and reduced environmental impacts from the local I&S industry since long before the UNDP-GEF project. The Ministry of Science, Technology and Innovation (MCTI) and UNDP Brazil analyzed the situation, which led to the PIF that was presented to the GEF 15 Nov 2011. The State of MG was in the same period assisted by the World Bank to design and implement effective development policy, and move towards a low-carbon economy in line with national objectives. The multi-donor program PROFOR[11] and World Bank's BioCarbon Fund co-financed the study "Identifying Financial and Institutional Arrangements for Scaling Up Renewable Charcoal Production", presented in Belo Horizonte 5 Dec 2011. On 3 April 2012,

[11] http://www.profor.info/knowledge/brazil-scaling-renewable-charcoal-production

six large I&S sector companies[12] subscribed the "Sustainable Charcoal Protocol", adhering to the principles of sustainable and equitable development, and urging the public sector to address the barriers. The forestry association of MG (AMS) also subscribes to the principles of sustainable forest management and actively promotes forest plantations as carbon sinks to generate additional revenues.

The Sustainable Charcoal Plan for the I&S sector under leadership of MDIC provided the basis for the present project. The plan promoted reduction of GHG emissions, avoided deforestation of native forests, and increased competitiveness of renewable charcoal. Analytical work under the plan led to the voluntary commitment to reduce sector emissions by 8-10 Mt CO_2eq. Fundo Clima (National instrument for financing climate projects) created credit facilities for efficient charcoal conversion plants, and BNDES executed low interest loans; while MDIC and MMA jointly promoted clean charcoal production. MMA is also the leading government entity for Nationally Appropriate Mitigation Actions (NAMA), which early established a specific set of actions for the I&S sector.

Technological development activities were initiated by sector industries, consulting firms and research institutes, with topics such as improved kilns, capture of by-products, use of heat for wood drying, logistics, scale benefits, operational costs, capture of exhaust gases for flaring and co-generation. Important actors in this process were the Federal University of Viçosa, BiomTec, CharConsulting, BioCarbo, CEMIG, ArcelorMittal, Plantar, RIMA, and others. All the mentioned initiatives accumulated knowledge that was used to design and implement the UNDP-GEF project, however the PRODOC did not highlight any specific lessons learned.

ii. Planned stakeholder participation

The project is implemented through a Direct Implementation Modality (DIM), even though it was originally approved to be implemented through a National Implementation Modality (NIM), see 4.2.1. It was designed to bring together government actors (Federal and State), I&S industries, other sector stakeholders and research institutes. The ministries originally involved and defined in the PRODOC were MCTI, MDIC and MMA, while MAPA was invited to participate on a later stage. The stakeholder arrangements and Steering Committee participation is described in 3.6.2.

Industries, public agencies and CSOs were expected to share information to evaluate and design innovative business models for clean charcoal production. The Project team was expected to share approaches, knowledge and lessons with stakeholders in Brazil and the region.

iii. Linkages with other interventions

The project did not have any formal linkages with other projects or programmes, but was strongly and directly related with the main stakeholders in the I&S sector (see details under 4.1.3). These have all other financing resources, including the firms' sale of carbon credits, but there are no signed agreements between the UNDP-GEF project and these other funding mechanisms.

[12] Aperam South America, ArcelorMittal, Gerdau, Siderúrgica Norte Brasil – Sinobras, Thyssenkrupp CSA Siderúrgica do Atlântico, Usiminas, Vallourec & Sumitomo Tubos do Brasil, V&M do Brasil, Villares Metals, and Votorantim Siderurgia.

b. Project implementation

i. Adaptive management

One example of adaptive project management was the change from National Project Implementation Modality (NIM) as mentioned in the project document approved by GEF 23.01.2014, to Direct Project Implementation Modality (DIM). A letter with request for DIM was sent by the Executive Secretary of MMA 4.08.2014, mentioning at the same time that MMA would continue as Technical Focal Point for the Project. The reason mentioned for the change was "the unprecedented implementation of climate change mitigation actions".

Another example of adaptive management was the use of project funds that have been saved due to the devaluation of the Brazilian currency. Despite the fact that 70-80% of the charcoal production in Minas Gerais comes from small and medium size charcoal producers, they were not contemplated in the project tender mechanism. After implementing a tender process directed mostly at larger firms, two bidding processes were planned and executed but with a different scope, targeting small and medium charcoal produces. This was also a result of flexibility from the new government authorities. The processes supported dissemination of knowledge and adoption of improved technologies. The producers were reached through institutions that support them in training activities, and with construction and installation of new equipment.

Bidding Process 1 (2019-20) supported six small charcoal producers through the institutions INAES and ECOCARB in the following regions: 1. Itamarandiba (3 producers), 2. Sete Lagoas (1 producer), 3. Martinho Campos (1 producer), 4. São Vicente de Minas (1 producer). *Bidding Process 2 (2020-21)* incorporated lessons learned from the first bid, and had a budget of USD 1.3 million to support 49 small charcoal producers. In June this year the three institutions INAES, ECOCARB and SIF were contracted. Due to the size of the procurement, the processes went into revision and support from the UNDP Regional Hub. The institutions contracted delivered their final product in Nov 2021. So far the small producers under ECOCARB's contract achieved gravimetric yield of 32.51% and 393 CO_2eq/yr certified emission reductions, while the small producers under INAES' contract achieved 33.83% gravimetric yield and only 4 CO_2eq/yr certified emission reductions.

ii. Actual participation and partnership arrangements

The project has maintained the structure that was described in the PRODOC, except that some of the ministries have changed and the Sustainable Charcoal Technical Commission (SCTC) was never established (see 3.6.2 and 4.1.4).

The Project Steering Committee (PSC) described in 3.6.2 was planned to meet once every semester to review progress and obstacles and to decide upon strategic and critical project issues. The National Project Coordinator is a non-voting member of the committee. The PSC played a very positive and active role to steer the project, also between formal committee meetings. Matter of institutional concern that goes beyond the Project's scope and content was expected to be addressed at the appropriate levels of dialogue between UNDP and the Government of Brazil, but that has never occurred.

The National Project Director is a senior staff member of the Government appointed by MMA. The Director was changed in 2020 in relation with changes of several ministry staff members in charge of the project.

The Project Management Unit, coordinated by the National Project Coordinator, in charge of the day-to-day project implementation and adaptive management based on the Project M&E plan, and also supervises the project in the field, including activities sub-contracted to

specialists and other institutions. The PMU is in charge of, among others: (i) project management and execution of activities; (ii) procurement and financial management; (iii) progress reports and use of budget resources; (iv) management reports to MMA, PSC and UNDP; (v) inter-institutional coordination; and (vi) dissemination of project results.

The creation and maintenance of a large network of nearly eighty stakeholders from the public and private sector, as well as the universities, has been a success factor, not only for the project results but for the sector.

UNDP, as the GEF implementing agency, supports the Project through its country office in Brasilia and provides technical expertise. The UNDP project team maintains close cooperation with MMA and is also in charge of monitoring and reporting to GEF.

The following table reviews the main stakeholders that were important for the Carbon project.

Table 9. Key stakeholders related with the project

Stakeholders	**Main unit connected to the project**	**Roles and responsibilities in project implementation**	**Type of stakeholder**[1]
United Nations Development Programme (UNDP)	Sustainable Development Cluster and Project Team	GEF Implementing agency. In charge of monitoring and technical support to project implementation, budget management and reporting to GEF	IG
Ministry of Environment (MMA)	Department of Environmental Economics and International Agreements	The Project National Implementing Partner. Leads the Steering Committee and appoints the Project Director.	GO
Ministry of Science, Technology & Innovation (MCTI)	Secretariat of Entrepreneurship and Innovation (SEMPI)	Is representative in the Steering Committee. MCTI participated in the baseline study 2011 when the PIF was prepared.	GO
Ministry of Industry, Foreign Trade and Services (MDIC)	Coordenação de Energia Renovável e Sustentabilidade (Coordination of Renewable Energy and Sustainability)	Was in charge of industrial charcoal and representative in the project Steering Committee. In Oct 2018 this ministry was incorporated as a Secretariat under the Ministry of Economy.	GO
Ministry of Agriculture, Livestock and Food Supply (MAPA)	Marketing and Supply Department	Representative in the Steering Committee from August 2017	GO
Ministry of Economy (ME)	Secretariat for Development	Representative in the Steering Committee from 2018 (see also MDIC)	GO
MG State Secretariat for Economic Development (SEDE-MG)	Mining, Energy and Logistics Policy Superintendence	Representative in the Steering Committee	GO
MG Technical Assistance and Rural Extension Company (EMATER-MG)	Technical Department	Important stakeholder for local project implementation, maintaining direct contrac with local beneficiaries.	GO
Brazilian Micro and Small Business Support in MG (SEBRAE-MG)	Department of Agribusiness	SEBRAE is a non-profit agency with the goal to foster entrepreneurship and provide guidance to help small businesses.	BI
Federal University of Viçosa (UFV)	Wood Panels and Energy Laboratory of Forestry Dept. (LAPEM)	Developed new technology that was introduced through the project, and was active in inter-institutional collaboration on national and local level.	ST
Federal University of São João Del Rey (UFSJ)	Department of Forestry (DEPLO)	Implementation of demonstration units (through project bidding call) and related training activities	ST
Federal University of Minas Gerais (UFMG)	Institute of Agricultural Sciences (ICA)	Implementation of demonstration units (through project bidding call) and related training activities	ST
IMAFLORA	Socio-enevironmental audit	IMAFLORA carried out assessment of socio-environmental performance of facilities supported	NG/ST
Instituto Antonio Ernesto de Salve (INAES)	n/a	Support to small charcoal producers through bidding processes 1 and 2	BI
Eco Consultoria e Agro-negócios (ECOCARB)	n/a	Support to small charcoal producers through bidding processes 1 and 2	BI
Sociedade de Investiga-ções Florestais (SIF)	n/a	Support to small charcoal producers through bidding process 2	BI
RIMA	Research Department	Participant in first tender for emissions reductions and gave counterpart financing through its project	BI

VALLOUREC	Iron Ore Pelletizing Department	Participant in first tender for emissions reductions and gave counterpart financing through its project	BI
ARCELORMITTAL	Department of Development and Technology	Participant in first tender for emissions reductions and gave counterpart financing through its project	BI
PLANTAR	Plantar Carbon	Participant in first tender for emissions reductions and gave counterpart financing through its project	BI
Forestry Industry Association of Minas Gerais (AMIF)	Presidency	AMIF www.Amif.org.br came in 2018 out of the Brazilian Charcoal Association (ABRACAVE)	BI
Brazilian Association of Metallurgy, Materials and Mining (ABM)	Presidency	Part of I&S and charcoal sector dialogue	BI
Association of Steel Mills for Forestry Development (ASIFLOR)	Forestry Superintendence	Part of I&S and charcoal sector dialogue in MG	BI
Iron Industry Union of the State of Minas Gerais (SINDIFER)	Presidency	Part of I&S and charcoal sector dialogue in MG	BI

[1]Stakeholder group refers to the nine main groups recognized by Agenda 21, where these are included in the table: *BI*=Business and Industries; *NG*=Non-Governmental Organizations; and *ST*=Scientific & Technological Community. The Evaluator Reviewers has added Governmental (*GO*) and Inter-governmental organizations (IG).

iii. Project finance and co-finance

The project was approved with a total budget of USD 43,950,000, including USD 7,150,000 from GEF (plus USD 50,000 for the PPG) and USD 36,800,000 in expected co-financing. According to the budget in PRODOC, the pledged co-financing consisted of USD 8.6 million cash financing from the government, USD 25 million government loans to the private sector, USD 2.9 million as in-kind co-financing from the private sector, and USD 300,000 from the implementing agency UNDP.

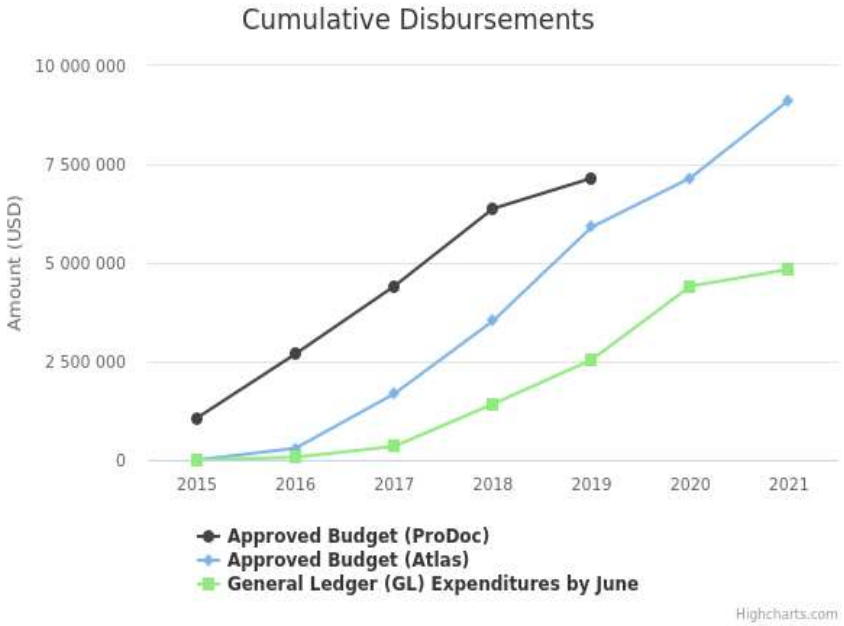
The cumulative disbursements as of Nov 30, 2021 were USD 5,776,553, and the delivery rate at the same moment (expense against the total approved budget) was 80.8%. After the initial delays, implementation progress and level of disbursement has been satisfactory, despite severe exchange rate fluctuation which has been a difficulty for financial planning. However, since the project's budget is in USD and the money is changed at the moment of carrying out expenses, the national financial crisis and devaluation has resulted in more available funds for the project than expected at the moment of approval. The Brazilian currency (Real) weakened further during the COVID-19 pandemic, with a devaluation of almost 40% in 2020.

For the mentioned reasons, even though the progress on physical execution has been high, the financial execution is lower than the one initially registered in Atlas. For the contracts that have been successfully executed, the total payments were up to 20% lower than the initial values included in Atlas.

The project period was extended already at the starting point, because it had taken so long between GEF project approval January 2014 and start of implementation (Inception Workshop April 2016). The project had also two no-cost extensions. The first request extended the Project until 12.06.2021 (GEF approval notified through UNDP Regional Office 3.03.2020), followed by a "substantive revision" signed by the UNDP country office 16.07.2020. The second request approved in March 2021 extended the project until December 12th, 2021 (GEF approval notified through UNDP Regional Office 19.03.2021). The workplan was updated based on both the first and second extension.

There are no project audit reports, because UNDP has a global audit where only some projects are selected. Projects that are considered high-risk or are above a threshold of USD 10 million managed by UNDP are audited, while only some other projects are selected for audit by sampling.

Fig. 4. Cumulative project disbursements (USD) according to the updated PIR Nov 2021.



The MTR identified as very unlikely to achieve the target of US$ 40 million co-financing established in PRODOC, in light of the loss of Fundo Clima/BNDES funding, which was justified with the financial crisis and priority to other sectors. The difference between pledged and achieved co-financing from the Government reflected changed political priorities, but also of a hasty project design- and preparation process, because also the previous government provided lower co-financing than pledged. The lack of funds from Fundo Clima, that were expected to be provided as credits to the private sector, can still not explain the very low completely co-financing from both the national ministries and the State of Minas Gerais. This could reflect insufficient interest and at the same time an expectation of no consequence of the incompliance with pledged co-financing defined in the agreement with GEF.

Table 10 Co-financing Table[1] (GEF format, US$1,000)

Co-financing	UNDP own financing		Government		Other[2]		Total	
(Type/Source)	Planned	Actual	Planned	Actual	Planned	Actual	Planned	Actual
Grants	200	200	0	0	0	0	200	200
Loans/Credits	0	0	25,000	0	0	0	25,000	0
Equity investments	0	0	0	0	0	0	0	0
In-kind support	100	100	8,600	2,174	3,037	10,245	11,737	12,519
Total	**300**	**300**	**33,600**	**2,174**	**3,037**	**10,245**	**36,937**	**12,719**

[1]Represents updated co-financing data (Dec 31, 2021); [2]This refers to contributions mobilized for the project from other multilateral agencies, bilateral development cooperation agencies, NGOs, the private sector and beneficiaries.

The loss in co-financing was partially offset by participating companies' in-kind contributions to build or improve their commercial production facilities. The private sector co-financing of R$ 55.8 million (USD$ 11.3 million) was demonstrated in audits and is 3.9 times the target of USD 2.9 million, which demonstrates the interest from the private sector. The tender mechanism was successfully negotiated, implemented for six projects from four companies. Audited results (by the firm Rina) in terms of national co-financing are included in the following table.

Table 11. Approved co-financing at the moment of GEF CEO endorsement and until Dec 31, 2021.

Sources of co-financing	Cash pledged		Cash final		In-kind pledged		In-kind final		Total final	
	US$	%	US$	%	US$	%	US$	%	US$	%
Govt of Brazil (MMA)	0		0		4,500,000	38.34	1,001,517	8.00	1,001,517	7.87
Govt of Brazil (MCTI)	0		0		2,000,000	17.04	447,152	3.57	447,152	3.52
Govt of Brazil (MDIC/ME)	0		0		0		416,153	3.32	416,153	3.27
Govt of Brazil (MAPA)	0		0		0		197,220	1.58	197,220	1.55
Govt of State of MG	0		0		2,100,000	17.89	112,180	0.90	112,180	0.88
Fundo Clima/BNDS[1]	25,000,000	99.2	0		0		0	0.00	0	0.00
UNDP	200,000	0.8	200,000	100	100,000	0.85	100,000	0.80	300,000	2.36
UFV (Federal Univ. of Viçosa)	0		0		136,873	1.17	294,129	2.35	294,129	2.31
Private sector (global)	0		0		2,900,000	24.71	(see below)		(see below)	
Vallourec (Cat. 4)	0		0		0	0.00	1,393,496	11.13	1,393,496	10.96
Rima (Cat. 1)	0		0		0	0.00	2,218,208	17.72	2,218,208	17.44
Rima (Cat. 3)	0		0		0	0.00	1,137,481	9.09	1,137,481	8.94
Plantar (Cat. 1)	0		0		0	0.00	1,418,735	11.33	1,418,735	11.15
ArcellorMittal (Cat. 2)	0		0		0	0.00	523,974	4.19	523,974	4.12
ArcellorMittal (Cat. 3)	0		0		0	0.00	3,258,962	26.03	3,258,962	25.62
Total pledged	**25,200,000**	68.22		**100**	**11,736,873**	31.78			**36,936,873**	**100**
Total final			**200,000**	1.57			**12,519,207**	98.43	**12,719,207**	**100**

[1]Credits

iv. Monitoring & Evaluation

(i) Design at entry

See 4.1.1. The project has a quite clear design, but some aspects of the results framework complicates its use for M&E. Risks and safeguards were also defined, with the possibility of monitoring both issues through the implementation.

(ii) M&E during implementation

The Results Framework was used as the main tool for monitoring during implementation, which is positive because it facilitates the reporting to GEF. The PIRs are however too complicated with too much text, which makes the reader lose track of what was achieved and not achieved. This refers not only to GEF, but also to different levels in UNDP and the national partner organizations. It would have been better with less text in the table and give additional information as standard text in the PIR.

The risks were monitored and registered in the PIRs at the moment of preparing each report, but without an updating of the original risk matrix.

Safeguards is in the PIR format included as a second part of the Risk section. The original table of environmental and social safeguards was filled in during the PPG and updated during the MTR. The last PIR mentions some social and environmental risks that have changed during the Project implementation:

The Workplan 2020/2021 defined as priority the expansion of the project results of promotion of sustainable production of charcoal from planted forests by small rural producers. For the second call for proposals where implementation recently ended, some risks considered were deforestation; areas of conflicts regarding eucalyptus plantations and traditional communities; and carbonization plants/sites close to urban areas. These issues were however clearly defined in the selection criteria for the call, and mitigation measures consisted in strictly following the rules, combined with monitoring during execution of the local projects. One of the most important is that the wood used in the charcoal production is sourced from forests that are managed in a sustainable manner and totally compliant with Brazil's Environmental

Legislation. Other criteria were e.g. that properties should not be close to rivers, follow compliance with social and environmental standards, proof of legal biomass origin, compliance with safety and work legislation, and verification of no slave labor.

Another issue to comment on is that % participation of women in project activities was not monitored, and there are no data on this in the PIRs. The Project still achieved important results in this area (see page 44: gender equality and women empowerment).

The Project management could have been done more efficiently if the Results Framework had been used as both a planning- and monitoring instrument, preferably as a user-friendly web-based instrument managed by the TM. The following could have been done:

- Reformulate the table to establish expected compliance date for each output (as well as all major steps when there are long processes)
- Use this planning version in the dialogue between UNDP and PMU/MMA.
- Continuously calculate % progress on outputs
- An alert system (traffic light system) for outputs that are falling behind schedule.

There have been several changes of UNDP staff in charge of the project, which is a problem for institutional memory and efficiency of follow-up. There has also been a lot of staff turnover in MMA, especially in 2020. The MMA Secretary of International Relations changed 3-4 times.

The GEF Climate Change tracking tool was filled in during the PPG (baseline data) and updated during the MTR. The MTR was carried out quite late in the implementation period. It could have had a more positive impact to adjust execution if it had been done at an earlier stage. The TE was done only with a small delay.

(iii) Overall assessment

Despite the comments given by the Evaluator on design and implementation of M&E, the project monitoring has been done efficiently. It was a right decision to implement the project through DIM, especially considering the national institutional changes and turnover in MMA.

v. Implementation

(i) UNDP implementation and oversight

UNDP was both the GEF Implementing agency and in charge of execution through a DIM. As mentioned above (iv), UNDP carried out its tasks for M&E efficiently. UNDP also provided highly skilled long-term technical advisors, and contracted consultants (firms and individuals) that despite some delays overall did an excellent job. The national stakeholders interviewed were all positive to UNDP's handling of the project management. It should also be mentioned that UNDP's work with implementation and oversight was facilitated by a very active Steering Committee, and fluent dialogue with members of the committee between the meetings.

The online survey gave stakeholders' opinion on what was the value added (except for money) of being a GEF- and UNDP project. Only one person thinks there was no value added, while the rest mentioned several issues, where one key word that stands out is "recognition". This is because the charcoal sector had previously been one of the least prestigious sub-sector, while the project elevated it and gave national stakeholders another view. It also gave recognition of the benefits, advantages and added values of the Sustainable Steel Industry. Some of the issues mentioned were:

- UNDP with GEF funding gives credibility to carry out the project. Being a UNDP-GEF Project brings trust, respect and credibility with other agencies, institutions and companies. It also brought prestige and commitments to the SDGs.

- The project's added value consists of the sustainable production of charcoal, with a reduction in gas emissions and the production of better quality, denser, less fines and more resistant charcoal, which may attract new markets.
- The project had fundamental results for implementation of the National Policy on Climate Change, Nationally Appropriate Mitigation Actions (NAMAs) under the UNFCCC and Nationally Determined Contributions (NDC) to the Paris Agreement. Effective results in reducing GHG emissions through innovative technological solutions. Innovation also stands out in terms of the support mechanism - a pioneering approach for the Federal Government, GEF and UNDP.
- The project development helped, and will continue to help to increase the quality of teaching, research and extension work through training courses/field days/technical visits, always with exchanges of experiences, establishing connections and creating closer networks between institutions and all those involved, directly or indirectly. It must be a reciprocal activity. In addition to gaining knowledge, the project gave the possibility of achieving new skills and abilities aiming at more dynamic, multidisciplinary and innovative work, brining all the knowledge acquired to the society as a whole.
- Improvement of economic analysis skills; multidisciplinary project that brings a lot of important knowledge about society. Also, non-measurable values such as worker health, learning about sustainable development, believing in the project, disseminating knowledge.

(ii) Implementing Partner execution

The main implementing partner MMA had a positive role in project implementation, leading the government's political and technical work on the topic covered, appointing the Project Director and national coordinator, and leading the Steering Committee. MMA was however affected by staff turnover, and at least four times the main PMU staff were changes. This led each time to that new persons had to learn about the project, and often the historic memory of the project was not efficiently transferred to the incoming staff. The project was most affected by this in the year 2020, when activities came to a stand-still for a longer period.

Even though MMA was the leading partner, other public sector agencies on federal and MG state level also had key roles. Important partners for the project implementation where other public agencies on federal and state level, universities and private sector firms. According to many of the interviews, the project's strength laid in the interaction between stakeholders to move the sector forward.

(iii) Overall project implementation

In line with what is mentioned above, the project was implemented efficiently. Most of the accumulated delay was in the beginning, between GEF approval and the inception workshop, but since then the project had an efficient implementation.

The efficient management combined with savings due to exchange rate USD/BRL made it possible to carry out two calls for small and medium charcoal producers (2019-2021), implemented through local firms.

Interviews during the TE and the online survey confirmed that national stakeholders in general were satisfied with the project implementation, however they considered that the project was executed more efficiently on state- and local level than on national level (fig. 8). This probably has to do with the institutional changes in the national government mentioned earlier.

(iv) Coordination

The Project Steering Committee (PSC) has functioned well according to the opinion of its representatives and other stakeholders participating in the project. It was highlighted by several persons that the PSC members were active, interested, and highly involved in what is going on in the project, including in the periods between meetings.

The coordination between different stakeholder groups, public – private – academia – civil society, has been excellent in this project compared with most development projects where often some of these groups are left out or only exists on paper. In this case it was real influence and coordination through the whole project period.

(v) Operational issues

Most stakeholders interviewed could not pinpoint serious issues that negatively influenced the Project implementation, but the most important were:

- Initial delays in starting Project activities
- Lack of government co-funding (and thereby lack of credits to private firms)
- Institutional challenges due to re-structuring of the public sector.

vi. Risks and safeguards

(i) Risk management

The treatment of risk during project design is fully commented on in chapter 4.1.2 and table 8, while monitoring of risk is commented in b-iv(ii) above. Risk is reviewed in each PIR, but not directly related to the risks defined in PRODOC. At this point in time, when the project is closing, the last PIR considers that the main risks revolve around the following two aspects: (i) Organizational risks regarding the appropriate knowledge management; and (ii) Environmental risks, to ensure all procedures are well established and documentation present for environmental assessments regarding sustainable charcoal production from forest plantations (e.g. to ensure the project is not causing deforestation).

The Evaluator considers that the project implementation at this moment has no real risks. The two "risks" mentioned in the last PIR are not risks for project management, but the measures are included to assure positive impact and higher possibility of sustainability once the project has ended.

(ii) Monitoring and use of social and environmental safeguards

Monitoring of safeguards is commented on under the monitoring section, see b-iv(ii) above.

c. Project results and impacts

i. Progress towards objective and expected outcomes

(i) Progress towards the project objective

The TE found that the project has reached its objective to develop and demonstrate enhanced, clean conversion technologies for renewable, biomass-based charcoal production. It has however not completely reached the other issue included in the project objective, that this technology should be supported by an effective policy framework. The project has made much progress also in this area, but further progress depends completely on the political process and the policy of the national government. The overall progress towards the project objective is estimated to 69.7%.

(ii) Progress towards outcomes

The TE found a high degree of progress towards the outcomes, and most of the outcomes have been achieved. Only outcome 1 is a bit below because it depends on a political process to carry it forward. A sector strategy for renewable charcoal was approved but not yet adopted, and it now depends on the willingness to apply it (see also Effectiveness). The overall progress towards the outcomes is estimated to 84.2%.

ii. Relevance

The Project was designed to support the GEF-5 Climate Change Mitigation (CCM), Objective #2 *"Promote market transformation for energy efficiency in industry and the building sector"*, because it applies a cleaner production strategy to the iron and steel (I&S) production chain that pursues an increased charcoal yield from renewable biomass resources. The Project was also aligned with CCM Objective #3, *"Promote investment in renewable energy technologies"*, as it promotes the use of biomass-based charcoal as a sustainable and renewable energy sources to offset the use of a fossil fuels (mineral coal).

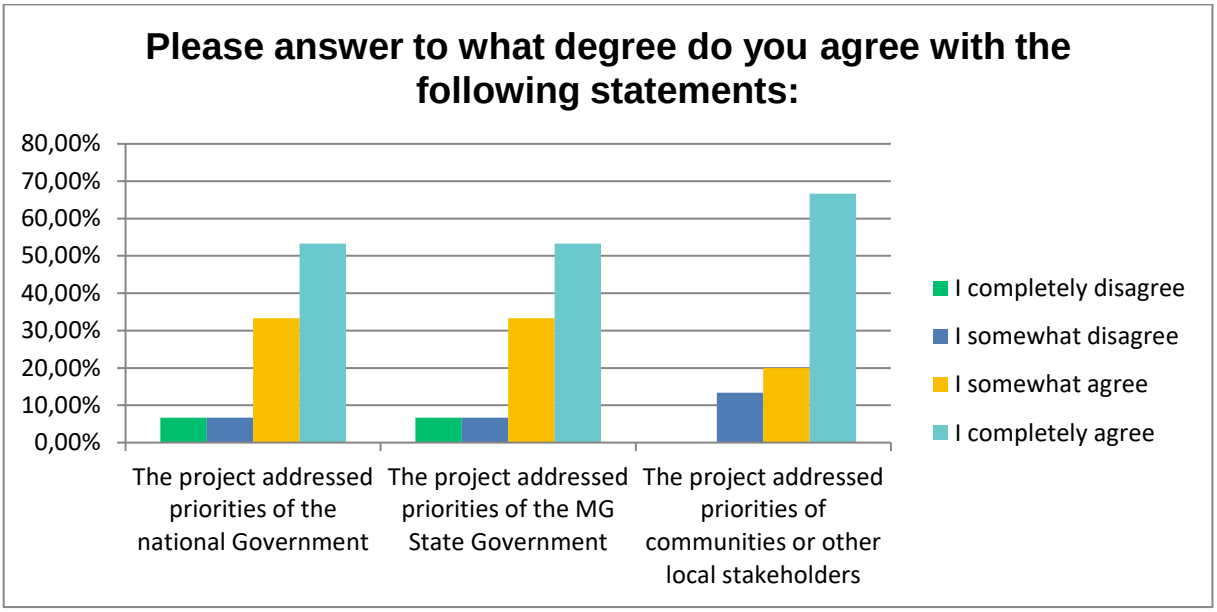
The project concept originated from an interaction between national and local or stakeholders, that were actively involved in the project design. The Ministry of Science, Technology and Innovation (MCTI) was driving the process from the start in dialogue with UNDP, while many local stakeholders also participated, especially EMATER-MG, University Federal of Viçosa (UFV), Association of Producers (AMIFI), SENAR[13], etc. EMATER-MG works with technology transfer in many areas of MG, and reach out to many people.

The project was highly relevant for UNDP's focus area of environment and energy, as well as for the SDGs and the Brazil's NDCs. It should however be remembered that both the SDGs and NDCs were approved after the project, so they could not have influenced the project design. The project was also strongly aligned with the priorities of the Federal Government, but this alignment weakened under the current document due to lower priority to the climate change issue. The Government of Minas Gerais has I&S and the charcoal sector as some of its highest priority areas. The state is the largest producer and user of charcoal in Brazil, with approx. 70% of the national consume.

The people that participated in the survey completely agree that the project addressed priorities of the national or state government, however more think that the project addressed priorities of communities or other local stakeholders (e.g. the charcoal producers).

[13] www.sistemafaemg.org.br/senar

Fig. 5 The project's addressing of stakeholder priorities, according to the online survey



The project had a private sector focus, which was in line with the previous and current government priorities, however the issue of climate change is not a priority for the current government. The project was for the state of Minas Gerais. During implementation it was an intent to do a feasibility study for replication in Mato Grosso, but it was not followed-up because the Ministry of Economy was not onboard.

iii.Effectiveness

(i) Compliance with outputs

Outputs under outcome 1: The average compliance with outputs under outcome 1 was estimated to 61.3%. The process for the development of a sector strategy has taken more time than originally envisioned. The process for its construction included a specialized consortium that hired to technically draft the proposals and accompany this process, and second, by including a wide range of potentially relevant stakeholders, anchored on the project partnership network. At the end of 2020, following MMA's indications, a Strategy text was formally submitted to government authorities, after first having passed approval in the Project Steering Committee. The next stages for the adoption of the Strategy depend on MMA's ambition and ability to articulate with other government authorities.

Besides the Strategy, other targets within this outcome are related with:

MRV System. The MRV methodologies for charcoal production were developed in collaboration with the private sector and based on CDM methodologies for assessing emissions reductions. An electronic platform to monitor and register GHG emission reduction was developed, and training sessions and testing conducted. The hosting of the platform is being taken up by MMA and is accessible to the firms that were supported.

Methodologies for performing assessments on charcoal production chains has been targeted through consultancies and assessment and information material. A company was hired to analyze and register the information from the business models study, and collect market information on the charcoal production chain.

Financial incentives for use of renewable charcoal: Four studies were developed related to incentives, including a proposal on economic and financial incentives. Another consultancy assessed the project's payment for performance scheme. Some incentives in the Government Safra plan might be relevant for charcoal producers.

Outputs under Outcome 2: The average compliance with outputs under outcome 2 was estimated to 97.5%. The technology "kiln-furnace" developed by the University Federal of Vicosa (UFV) was validated as technically and economically viable for charcoal production. The gravimetric yield obtained was very satisfactory as it went from a baseline of 26% to an average of 33% (target 32%), and the associated GHG emission reduction was estimated at 46.2% CO_2eq.

The university employed one project manager, three economists, and two forest engineers with knowledge of charcoal production, plus some other forest engineers and instructors, all paid with project resources through service contracts. Some success factors for achieving the university's project outputs were (i) that it was able to create and fully manage the technology; (ii) that the project was both multi-disciplinary and multi-stakeholder; (iii) that the project used existing infrastructure; (iv) good project management; and (v) high-level instructors.

Two other education institutions, the Federal University of Minas Gerais, and the Federal University of Sao Joao Del Rei were selected through a bidding call, to implement four demonstration units. This encouraged the execution of permanent programs that contribute to the dissemination of knowledge, academic research, and training of rural producers.

Other targets within this outcome are related with:

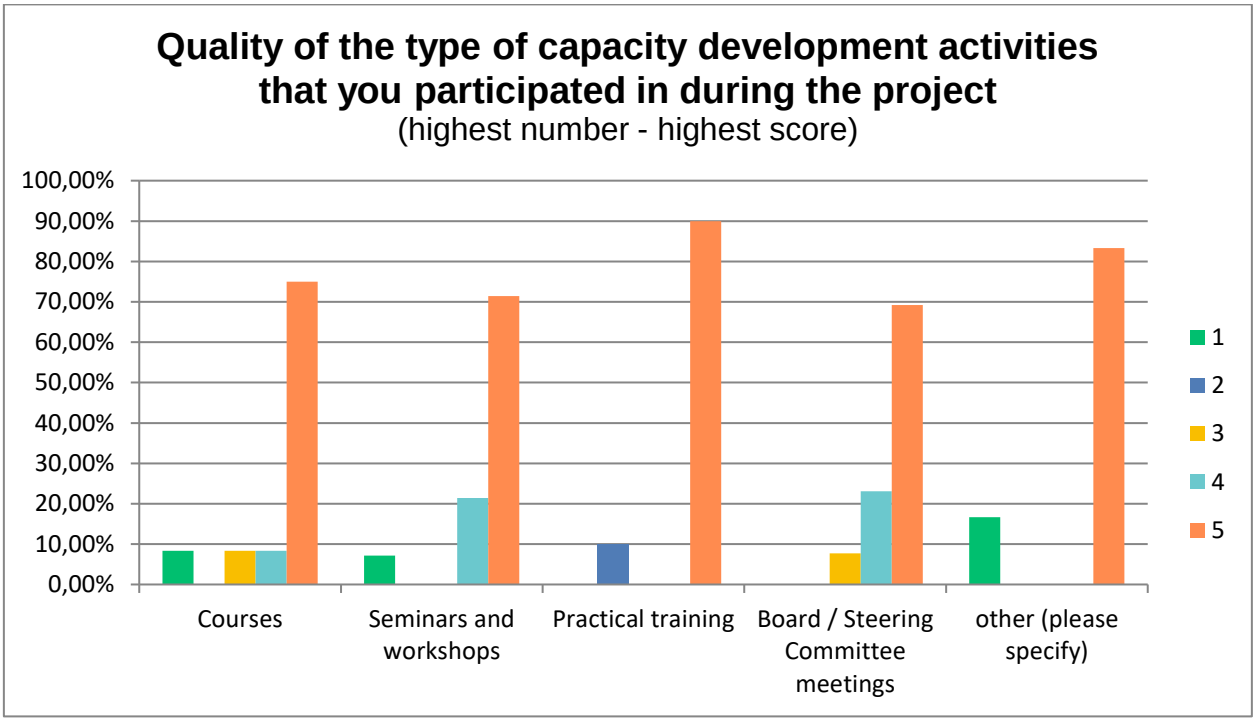
By-products utilization technology program carried out. A consultancy was developed, results presented, and training workshops offered in the National Charcoal Forum 2019. The manual will be printed in Nov 2021 and delivered to main Project Stakeholders.

Business models to accelerate introduction of clean charcoal conversion technology. The kilns-furnace system and business models were analyzed, while business plans for independent charcoal producers were developed. The results were disseminated in the IUFRO Congress 2019. A manual is currently being developed to integrate the information from the studies in a simpler and more didactic way.

Training: More than 500 participants were trained on sustainable charcoal production through at least 30 events. The participants included multipliers (T-o-T), extension workers, charcoal producers, and students both in the construction and operation of kiln-furnace, carbon balance, by-products, as well as sustainable management of forest plantations. Printed construction and operation manuals were distributed to the main system multipliers in MG. A YouTube video was developed (https://www.youtube.com/watch?v=lpp4bPXPxrw&t=8s) with English and Spanish subtitles. Two Demonstration Units for dissemination of sustainable charcoal production technology in partnership with Federal University of São João Del Rei (UFSJ) and with the Federal University of Minas Gerais (UFMG) provided training for a total of 218 people, including forestry training for 100 EMATER-MG extension workers.

The survey found a very high degree of satisfaction with the training events carried out in the framework of the project. 93% were satisfied or highly satisfied with the seminars and workshops, 90% with practical training, and 83% with the courses. Other capacity building the participants were satisfied with included Field Days and Tri-party meetings.

Fig. 6. Perception of quality of the project's capacity development according to the survey.



Outputs under outcome 3: The average compliance with outputs under outcome 3 was estimated to 100%. A tender mechanism was designed to support large charcoal producers linked to the iron and steel industry, through an innovative performance-based modality. Initially met with skepticism among potential partners, it was designed as a two-step process to reach the independent charcoal producers and stimulate replacement of productive arrangements.

Initial tender process led to signature of contracts with four firms for six plants. Audited emissions reductions are given in table 12. Co-financing from these firms as part of their proposals are included in table 11.

Table 12. Emission reductions for firms participating in the initial tender process.

Firm	**Category**	**tons CO_2eq/year**
Arcelormittal	2	50,660
Arcelormittal	3	12,691
Plantar	1	5,568
Rima	1	6,388
Rima	3	3,002
Vallourec	4	23,847
Total		102,156

In order to verify the results of the supported companies, an independent audit was hired in September 2019. In Oct 2019, the consortium PCE-Cossisa requested the termination of their contract. In Nov and Dec 2019, the first results payments were made to Plantar, Vallourec and

Rima (Category 1). In May 2020 also ArcelorMittal received its results payment. Rima (Category 3) delivered its final product May 2020 containing the monitoring report for reduction of GHG emissions. Due to the COVID-19 pandemic it was however not possible to carry out the audit for the results payment, as the company is currently working in a scale model, and the team that needs to be interviewed is not on site. Arcelor's proposal audit for category 3 was performed by distance, following UNFCCC procedures for audits during the pandemic.

Bidding Processes targeting small charcoal producers: (i) A first call covered six small charcoal producers that improved their processes with support from the institutions INAES and Ecocare for field training, and construction and installation of new equipment. This process covered the following regions: 1. Itamarandiba (3 producers), 2. Sete Lagoas (1 producer), 3. Martinho Campos (1 producer), and 4. São Vicente de Minas (1 producer). (ii) A second call replicated the process and incorporated lessons learned from the first bid, however with a much larger number of beneficiaries (49 small producers). This represents a single public notice of USD 1.2 million, and therefore went into revision and support from the UNDP Regional Hub.

Table 13. **RESULTS FRAMEWORK WITH PROJECT ACHIEVEMENTS AT END TERM** (updated Nov 2021)

Project Objective: To develop and demonstrate enhanced, clean conversion technologies for renewable, biomass-based charcoal production, supported by an effective policy framework.					
Description of Indicator	**Baseline**	**End of project target level**[14]	**End of project level**	**% of target achieved**	**% compliance**[15]
Number of commercially demonstrated efficient charcoal conversion technologies.	At least 3 technological concepts under development by private firms; no commercial demonstration	3 charcoal production plants in commercial operation	6 charcoal production plants in commercial operation	200	>100
		3 successful business models	6 successful business models	200	>100
		At least 1 proven conversion technology	10 proven conversion technologies (note: PIR says 10, but the technology used is similar in all cases, so it could be considered as 1)	1000	>100
Average gravimetric yield implemented technologies	25% for small producers	32% or better	33%	114.3	>100
	29% for industrial		35%	200	
Policy and regulatory framework for renewable charcoal use in MG	No strategy in place	Strategy adopted	MMA decided 09/2020 to submit the Strategy to government authorities and other stakeholders without public consultation. It was approved 11/2020, but is not formally adopted.	In process	70%
GHG emissions reductions (CO_2eq)	Direct: 0	Direct: 432 kton CO_2eq (CCM-2) (= 21,600 CO_2eq/year)	Direct: Reduction of 102,553 t CO_2eq/yr.	474.8%	>100%
Reduction of tons CO_2eq for small/big producers: 102,553 t CO_2eq (4.75 x higher than target goal of 21,600 t CO_2eq/year)	Indirect: 0	Indirect: 700 kton CO_2eq/yr (CCM-2); 200 kton CO_2eq/yr (CCM-3)	Indirect: *Increase* of 3,366 t CO_2eq/yr, especially due to transport	0	0
Investment capital leveraged for efficient charcoal production	0	USD 40,000,000	USD 11,301,112 from private sector. No investment capital received from private sector.	28.3	28.3
			Average compliance of 5 targets for Project objective:		**69.7**
Outcome 1. A policy framework has been implemented to promote the use of renewable biomass-based charcoal by the I&S sector, supported by an internationally recognized system for monitoring achieved GHG emission reductions					
1.1 Renewable charcoal strategy in MG	No strategy to stimulate charcoal technology. Ban on non-renewable charcoal in MG	Detailed strategy designed and adopted by MG State Government	MMA decided 09/2020 to submit the Strategy to government authorities and other stakeholders without public consultation. It was approved 11/2020, but is not formally adopted.	In process	70%
1.2 MRV system for charcoal production and GHG benefits for I&S sector agents	No system in place	MRV system implemented and operational	MRV methodology developed; MRV tool: MMA web platform for info and transparency for branding of climate-friendly pig iron and steel products	In process	75%
1.3 Acceptable methodologies and criteria to assess charcoal production chains.	No acceptable methodology in place	Acceptable methodologies in place to perform quantitative evaluations/ assessments	(i) 6 successful business models developed; (ii) 92 best practices identified and detailed; (iii) business plans based on feasibility study for sustainable charcoal; (iv) Study to diagnose, monitor and recommend improvement in social and environmental performance; (v) Social and environmental assessment of the small charcoal producers.	Multiple methodologies and criteria used and accepted	100%
1.4 Financial incentives for: (a) use of renewable charcoal by I&S sector in MG; (b) investment in efficient, clean charcoal production chains	(a) No incentives for renewable charcoal use; (b) No incentives for investment in efficient, clean charcoal production chains	(a) Incentives for renewable charcoal use in place; (b) Incentives in place for investment in efficient, clean charcoal production chains	*No financial incentives for charcoal reported in PIR*, however: The Government's Safra Plan 2021/22 includes financing for production of bio-inputs, renewable energy, adoption of conservation practices and agroforestry. The Sector Plan for Mitigation and Adaptation to Climate Change for Consolidation of a Low-Carbon Economy in Agriculture (ABC) includes forestry and agroforestry.	0	0%
			Average compliance with 4 targets for outputs under Outcome 1:		61.3%

[14] Mid-term targets were not defined

[15] Average calculated with no achievement above 100%

Outcome 2. The technology and human capacity base for clean charcoal conversion in Brazil is strengthened by technical assistance and targeted training					
Charcoal technology test program carried out.	Isolated technology development efforts with low sector coordination level	Concerted charcoal technology development program executed	Concerted charcoal technology test program was executed and finalized	1 program	100%
By-products utilization technology program carried out.	Isolated private initiatives to develop technologies for utilization of charcoal by-products	Concerted by-products technology program carried out	Manual on by-products under preparation (to be printed Nov/2021). 3 institutions (BIOMTEC, EPB, UFMG) hired to support expansion or installation of charcoal production technologies from planted forests with production and recovery of by-products.	Partly achieved	90%
(a) Number of developed business models; (b) number of expressions of interest (EoI) from local charcoal producers; (c) seminar/workshop on efficient charcoal production chains.	(a) Some business models conceived but not commercially proven yet; (b) No EoI's (c) No (0) seminar held	(a) At least 4 different business models developed and accepted by charcoal producers; (b) At least 6 EoI's signed; (c) 1 seminar	(a) 6 successful business models developed and accepted; (b) The signed EoI from local producers are part of their project proposals (c) Side event on charcoal production chains and business models during IUFRO 2019 (another event planned for 2020 was cancelled due to COVID-19)	Fully achieved	100%
(a) Training material; (b) Number of training programs implemented	(a) No training material developed; (b) No training program	(a) Training material developed; (b) At least 3 training programs executed	(a) 10,000 kiln-furnace system construction and operation manuals; 1 training video on construction and operation of the kiln-furnace system. 500 binders with Best Practices in sustainable charcoal production Guide and Sheets. (b) 30 training sessions, >500 people trained in sustainable charcoal production (>600 hours training)	Fully achieved	100%
			Average compliance with 4 targets for outputs under Outcome 2:		97.5
Outcome 3: Commercial charcoal production facilities are built under a competitive bidding mechanism to deliver objectively verifiable renewable, biomass-based charcoal and GHG emission reductions.					
Tender mechanism negotiated and formalized	Proposal for tender mechanism prepared by MMA	Tender mechanism negotiated and formalized	Tender mechanism negotiated and formalized. First call 2019 – implemented 2020; Second call 2020 – implemented 2021	Fully achieved	100%
Consultancies to support project development	No consultancies	At least 3 efficient charcoal conversion facilities ready for the investment phase of the program	3 institutions hired: ECOCARB, INAES and SIF. All delivered final product 11/2021. Certified emission reductions: ECOCARB 393 CO_2eq/yr; INAES 4 CO_2eq/yr.	Fully achieved	100%
(a) Number of efficient, clean charcoal production facilities in place; (b) Charcoal production per plant (tons/yr); (c) Wood-charcoal conversion rate per plant (%); (d) GHG emission reductions per plant (tons CO_2eq/yr)	(a) No facilities in place (b) 0 tons/yr; (c) Conversion rates 25-30%; (d) 0 tons CO_2eq/yr	(a) At least 3 commercial facilities procured and operating, including 1 small-scale (under 1,000 tons); (b) 80,000 tons/yr (c) at least 33% conversion rate (weighted average) [avg. improvement]; (d) 21,6 kton CO_2eq/yr	(a) 6 large charcoal production plants in commercial operation, and many small-scale (b) >130,000 tons of charcoal per year (c) Gravimetric yield 35%. (d) 6 plants. Total: 102,2 kton CO_2eq/yr. Avg. of 3 best plants 29,066 kton CO_2eq/yr	(a) 200% of target (b) 162.5% of target (c) 136.4% of target (d) 134.6% of target	>100%
(a) Documents and presentations with best practices; (b) international event to disseminate clean charcoal production	(a) No documents; (b) No events	(a) Documents and presentations compiled; (b) International event held.	(a) 92 best practices were identified and detailed. 500 binders with Best Practices in sustainable charcoal production Guide and Sheets (b) Side event during IUFRO 2019	Fully achieved	100%
			Average compliance with 4 targets for outputs under Outcome 3:		100%
			Average compliance of output targets[16]:		**81.4%**
			Average compliance of outcome targets:		**82.1%**

[16] Calculated with one figure for each output and the average for outputs that have more than one target

(ii) Compliance with outcomes

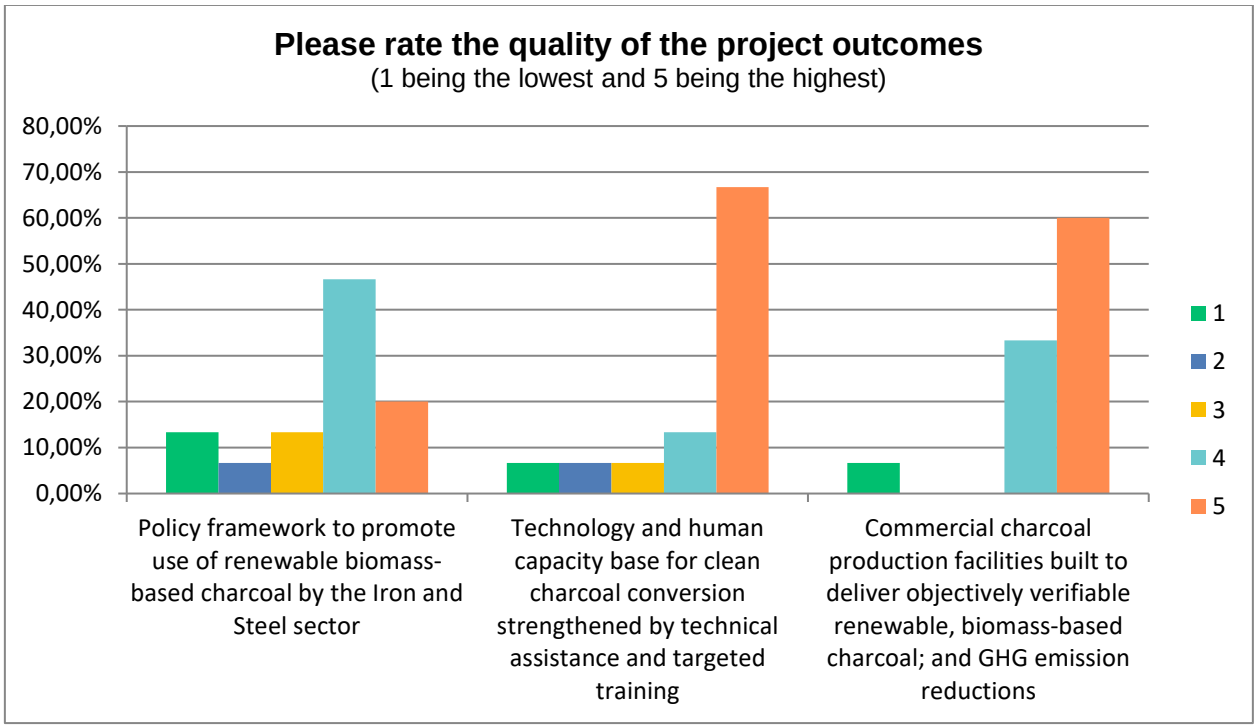
Outcome 1 aimed to implement a policy framework to promote the use of renewable biomass-based charcoal by the I&S sector, supported by an internationally recognized system for monitoring of achieved GHG emission reductions. The outcome is still in process, with 61.3% progress on its outputs. A sector strategy for renewable charcoal prepared by the project, submitted through the PSC was approved Nov 2020, but is not formally adopted. The impact of this important result would depend on the political willingness to apply it.

Outcome 2 aimed to strengthen the technology and human capacity base for clean charcoal conversion, where a charcoal technology program was successfully completed. The outcome was *nearly fully achieved*, and it is expected that it will be finalized before closing of the project.

Outcome 3 aimed to build commercial charcoal production facilities under a competitive bidding mechanism. The outcome was *fully achieved*, and the final reports were delivered during the TE. A tender mechanism for commercial production facilities was implemented, followed by two consecutive bidding processes to support small and medium size charcoal producers.

Regarding the **quality of project outcomes**, the majority of survey participants gave the highest rating to the strengthening of technology and human capacity base for clean charcoal conversion. Very high score was also given to Commercial charcoal production facilities to deliver objectively verifiable renewable, biomass-based charcoal, as well as GHG emission reductions. This is in line with the comments given in most of the stakeholder interviews, where the introduction of new clean technology was highlighted as the project's highest achievement.

Fig.7. The quality of project outcomes



iv. Efficiency

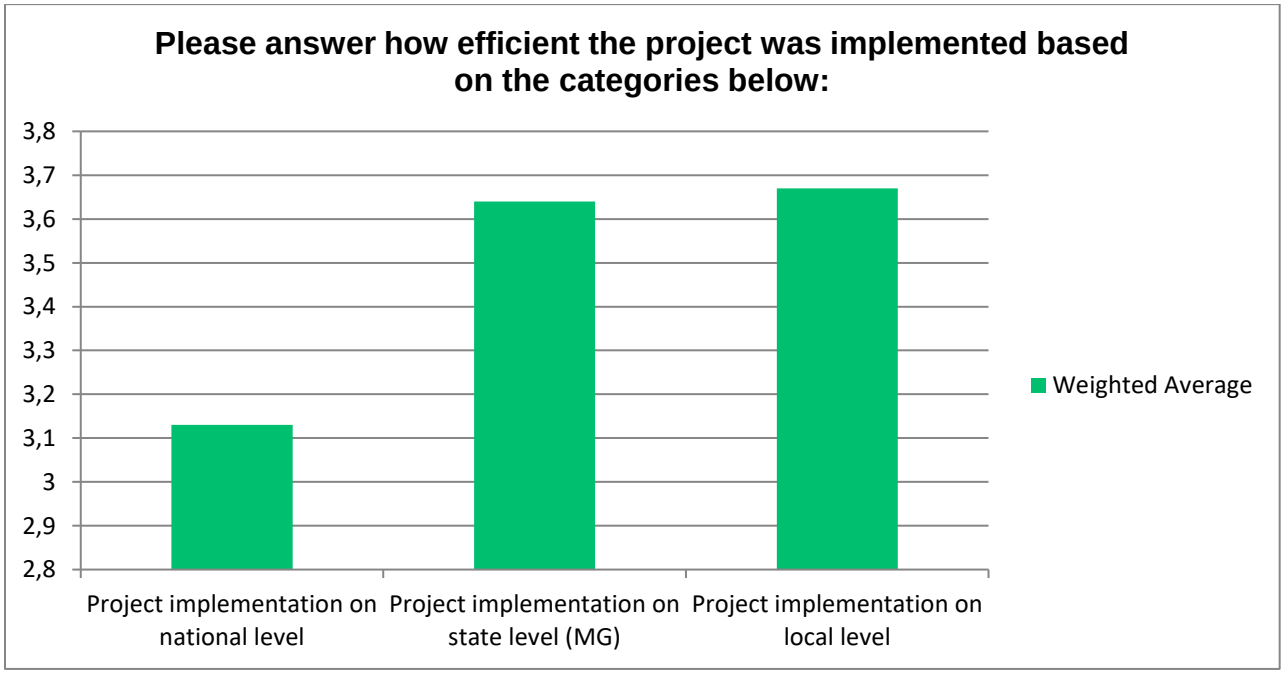
Despite project delays from the start, once the project was initiated it was implemented quite efficiently and with good cost-effectiveness. The budget was low compared to the number of potential beneficiaries, especially considering that it was distributed to so many stakeholder organizations. The University of Viçosa considers that efficient training should be two times per week (high frequency, not necessarily so long time each time). The budget limitations were however somewhat mitigated by the exchange rate that resulted in a more positive relation between costs and benefits than expected according to ProDoc.

The project faced however many challenges, partly due to the high turn-over in government counterpart agencies. This effect was stronger after the last change of government, especially in 2020, both at state and federal levels. New staff needed time to familiarize themselves with the project, which demanded flexibility, and sometimes decision-making took much longer than normal because the new staff members were not yet familiar with the processes.

This is to certain degree reflected in fig. 8, which shows the opinion of the survey participants about the efficiency of project implementation, being much lower on national level than on state and local level. The numbers in the figures are weighted averages, however what says more is that 73.3% consider that the project was very efficiently implemented on local level and 71.4% considered it to be very efficiently implemented on state level.

Along with institutional and other operational delays, the COVID-19 pandemic from 2020 had a significant impact on the project. Most field activities and some trainings had to be suspended in certain periods, and also dialogue with the government experienced delays. The last project extension (2nd semester 2021) was justified and granted due to COVID-19, to be able to adapt to the new conditions and conclude the ongoing activities. Information and training materials were therefore transformed into other formats to be more easily disseminated online.

Fig. 8. Opinion of the survey participants about the efficiency of project implementation

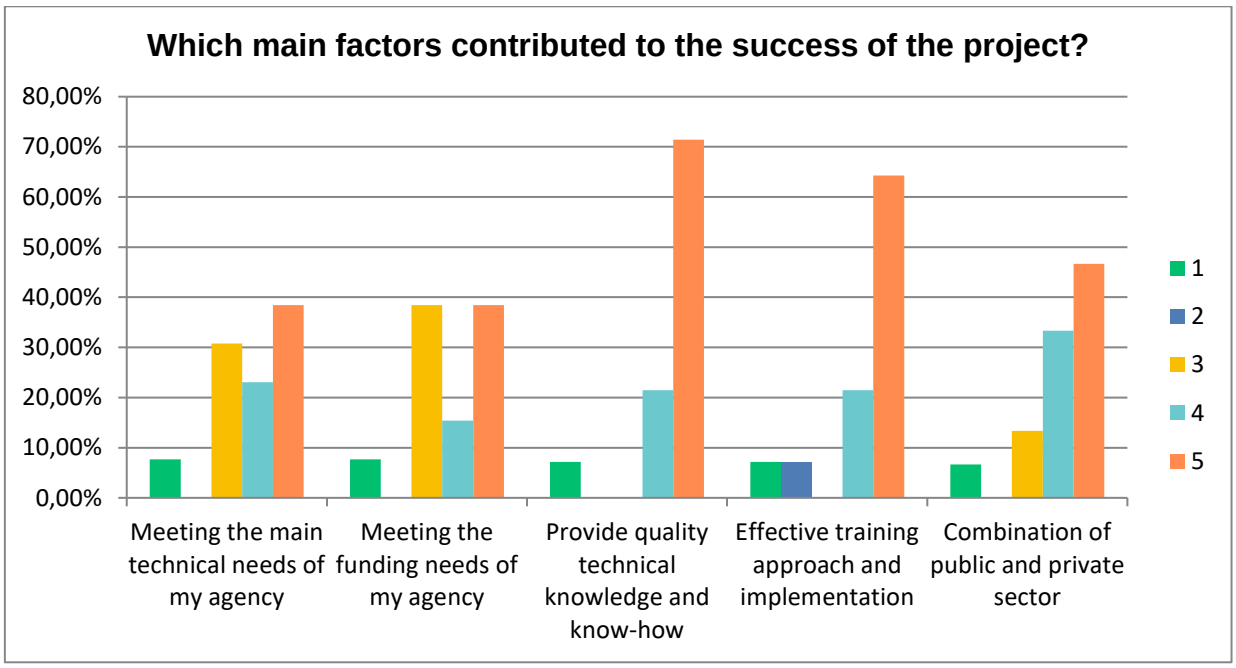


v. Overall outcome

The project has been a success, and has achieved nearly all its planned outcomes. The achievement has been despite the lack of co-financing for credits that were planned to be an incentive for the private sector. The fact that the private sector stepped up and did it anyway show that there is a need for these investments and gives expectations of sustainability. The only outcome that is not fully achieved has to do with the political framework conditions for renewable biomass-based charcoal used by the I&S sector.

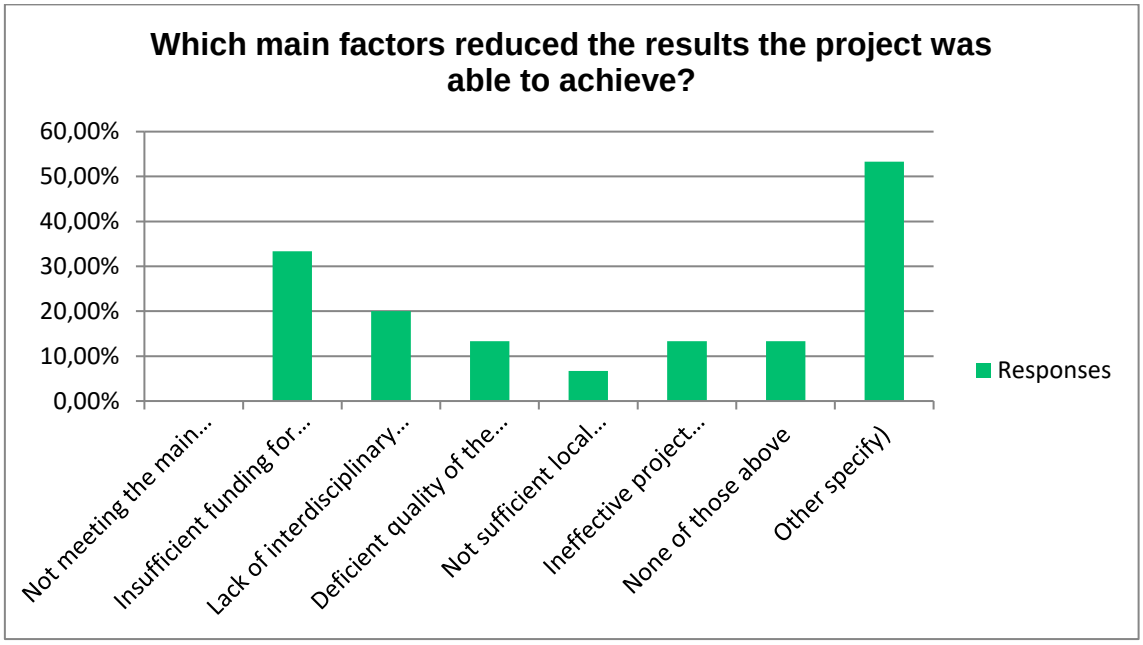
The following figure presents the opinion of people participating in the survey about the factors that contributed to the success of the project, where provision of quality technical knowledge and know-how got the highest score.

Fig. 9. Factors contributing to the success of the project according to survey participants



There were however also multiple factors that reduced the outcome of the project. Among the alternatives presented in the survey, 1/3 thought insufficient funding was the main factor. The group "other" included issues such as too tight schedules/deadlines, and especially short time for activities during the rainy season.

Fig. 10. Factors that reduced the results of the project according to survey participants.



vi. Sustainability

(i) Financial

As clearly shown in the previous sections, there is currently low interest in the federal government for financing credits to investments in sustainable charcoal productions. It is however certain possibility that some elements of the Government's Safra Plan 2021/22 could be used for this purpose, since it includes financing for production of bio-inputs, renewable energy, and agroforestry. The Government's confirmation of the NDCs during COP-26 could potentially strengthen financing for climate change mitigation, but it is too soon after the conference to tell if that will lead to any change.

The positive element that could give expectations of financial sustainability is the private sector's interest in providing their own funds, demonstrated through a project co-financing from the firms that were 3.9 times the pledged amount. Even without much facilitation from the Government's side, the carbon market is growing, and it would be gradually more interesting for Brazilian and international firms to participate in the process. The Federal University of Viçosa is seeing the situation a bit more negative, since the project has provided important funding for research staff that is now drying up. They have currently no budget to continue the activities of the project. An alternative could be that they as inventor of the core technology could be service provider to the private sector, instead of each firm having the need to contract its own expertise.

To summarize: *There is a high possibility of future financial sustainability.*

A new project that would build on the UNDP-GEF carbon project is currently in the early design phase. It is not confirmed which international agency it would be presented to, but GCF has been mentioned. Independent of the funding source, a new project should work strongly with the private sector in the design phase, to assure that the sector's interests are considered and in that way assure its willingness to invest.

(ii) Socio-political

The Ministry of Environment wants to continue the process, but some red flags are that the strategy has not been adopted and co-financing was much lower than expected. The federal government would have to use the sector strategy in practice if it should have any benefit, and preferably convert it into a sub-sector policy. There are however frequent political changes, even within a government election period, and MMA might still use the strategy in its work. People that were interviewed during the TE think that the new minister of environment appointed in June 2021 has a stronger interest in the project's outcome than his predecessor. In that case, new signals from the national government could also influence the work of the MG state government. Reduced emissions from the I&S sector could be one of the elements for Brazil to comply with its NDC commitments that were ratified during COP-26.

The sector strategy document is ready and validated by all main stakeholders, the private sector, Government, University, etc. During the former project director it was proposed to carry out a public consultation, and some preparation for it was made. However, MMA was not convinced because there are some issues in the strategy outside the mandate of MMA, and they wondered who should coordinate it. The private sector is still interested in a political decision of support for the strategy.

The Ministry of Economy left the Steering Committee during the last year of implementation, which is also a negative political signal. It is a serious recession in Brazil, and this project is probably not their highest priority, but with only two meetings per year it would still not take up much of their time.

On local level, sustainability of project results depends strongly on the interest of the local stakeholders, who are encouraged by the technologies promoted by the project, because they create more jobs. The charcoal producers are important beneficiaries, and the workers are often poor rural inhabitants living in the nearby communities. The survey found that remote communities are among the prime beneficiaries, and especially the youth, because there is not many alternatives for employment in some of these areas. It is interesting to note that indigenous peoples were not involved because the rules of the project prohibit financing investments in indigenous communities (for environmental reasons). On the other hand, the Quilombola communities (descendants of African slaves) that make up a high percentage of the MG rural population have been among the local charcoal workers.

(iii) Institutional

The project has clearly strengthened the participating institutions, first of all through training and capacity building of staff where UNDP has done several capacity building events for the MMA through the Joint Operation Facility. This was necessary because of frequent changes in the ministry team, estimated by UNDP staff to be every three months during the last years.

Capacity building was also created through establishment of an inter-institutional network of mutual support that includes public and private stakeholder groups, universities and even civil society groups. The exchange of knowledge and expertise advise, especially for the charcoal production technology developed under the Federal University of Viçosa, has been fundamental for all stakeholders involved.

The project has to less degree led to improved governance, because that was not the project's goal and then also not included in the activities. It is however expected that the exchange of experiences through the network mentioned above would provide an incentive through examples and lessons learned, especially for the weakest institutions. Note that only 20% of the people that took part in the survey consider that there insufficient capacity in their

organization to continue the project processes and practices (fig. 11). Most surveyees also consider that the project results would be integrated into national systems for monitoring, etc. (fig. 12), but this is however not necessarily referring to their own institution.

Fig. 11. Opinions on the capacity to continue the project processes, according to the survey.

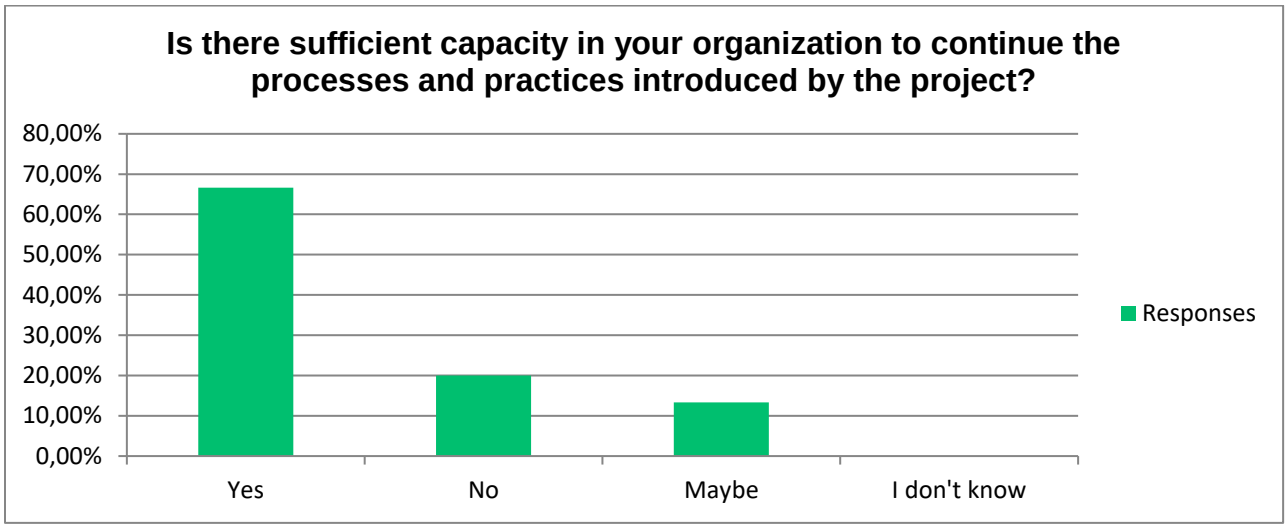
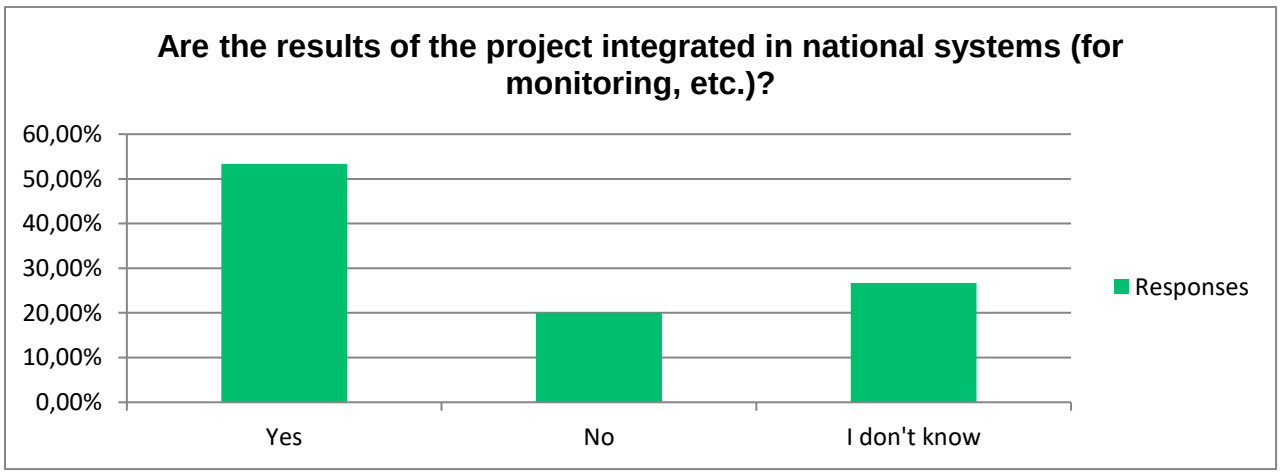


Fig. 12. Opinions on integration of the project results in national systems, according to the survey.



(iv) Environmental

The scope of the project is to demonstrate that there is a significant potential for using charcoal to achieve a more sustainable steel industry, and thereby meeting Brazil's commitments under the UNFCCC while at the same time improving the I&S sector's environmental performance. The project has exceeded its targets on reduction of GHG emissions, thereby yielding greater global environmental benefits than expected according to the design. There are however also some environmental risks mentioned in the ProDoc, and for that reason the large companies went through a detailed screening considering safeguards. No negative environmental impacts were registered during the TE.

The sustainability of forest plantations and their exploitation management is a key issue for the project. The STAP meeting on the PIF 29.04.2012 commented that there is no project component or activity for producing plantation biomass sustainably. It was therefore presumed that financial resources for sustainable biomass production through plantations will

come from other sources. This is a correct assumption, since Eucalyptus has been planted in MG since centuries ago.

The Evaluator however see it as a potential risk that even though the investments have strong climate change mitigation impact, by making wood a preferred alternative compared with coke it would increase the demand for wood, thereby potentially lead to deforestation and even use of other wood resources from native forest. Minas Gerais State Law nº 18.365/09 bans the production of charcoal from native forests as of 2018, but prohibition in this state combined with high demand for wood could lead to more illegal logging and also deforestation in neighbour states (an effect known as leakage). This has happened in the past, in periods with high demand from the I&S industry. In a long-term perspective it would probably not lead to deforestation because higher demand for Eucalyptus wood could increase the prices and the incentive for planting, since this wood has a better quality for charcoal production than wood from most native species. Eucalyptus has also the advantage of natural regeneration through sprouting. The Evaluator's recommendation is therefore that the environmental authorities, especially in MG, should monitor the land coverage of Eucalyptus, and if it is going down they should try to assure more incentives and technical assistance for reforestation.

A charcoal technology test program was carried out in the framework of the project, where the structure and operational validation of the "fornos-fornalha" (kiln-furnace) system was successfully concluded. The results demonstrated the social, environmental and economic viability of the system, where the positive environmental impacts are especially related to increased gravimetric yield and reduction of GHG emissions.

IMAFLORA carried out assessment of socioenvironmental performance of commercial facilities supported through the project, where no serious environmental impacts were detected. It also made recommendations to improve social and environmental performance in the production and use of charcoal in the Brazilian steel sector (pig iron, steel and ferroalloys). The conclusion reached was that in the charcoal production chain, both the steel and forestry industries stand out for adopting modern technologies, with less environmental impacts.

Since the 2nd call for proposals was quite large (US$ 1.2 million) some environmental risks were considered, such as the potential for deforestation; conflicts between traditional communities with eucalyptus planted florets producers; and air pollution from carbonization plants/sites situated close to urban areas. The project safeguards were updated before the 2nd call for SMEs, including (i) not being close to urban settlements; and (ii) only use of planted forest for the charcoal production.

The TOR for the call therefore included very restrict criteria to select the small charcoal producers. One of the most important was that the wood used in charcoal production should be sourced from sustainably managed forests totally compliant with the Brazilian Environmental Legislation. Other mandatory criteria were that properties should not be close to rivers, have legal tenency rights; show proof of legal biomass origin; comply with social and environmental standards, as well as safety and work legislation; carry out verification of potential slave labor, etc. Monitoring of social and environmental performance of the small charcoal producers was conducted in 2021 by the three firms that were contracted.

The project has also tried to improve environmental awareness and thereby the possibility for improved environmental sustainability, by training and capacity building regarding environmental issues. For instance, forty employees from the private sector, as well as representatives from the Federal Government and other public sector agencies such as Sebrae/MG, Senar/MG, Emater/MG, and the State Government of MG participated in the Second Workshop on Social and Environmental Monitoring.

To conclude, the project had a clearly positive impact on climate change mitigation with global environmental benefits. It also improved environmental performance of the I&S industry in general, including reduced air pollution with positive result for the local population.

(v) Overall likelihood of sustainability

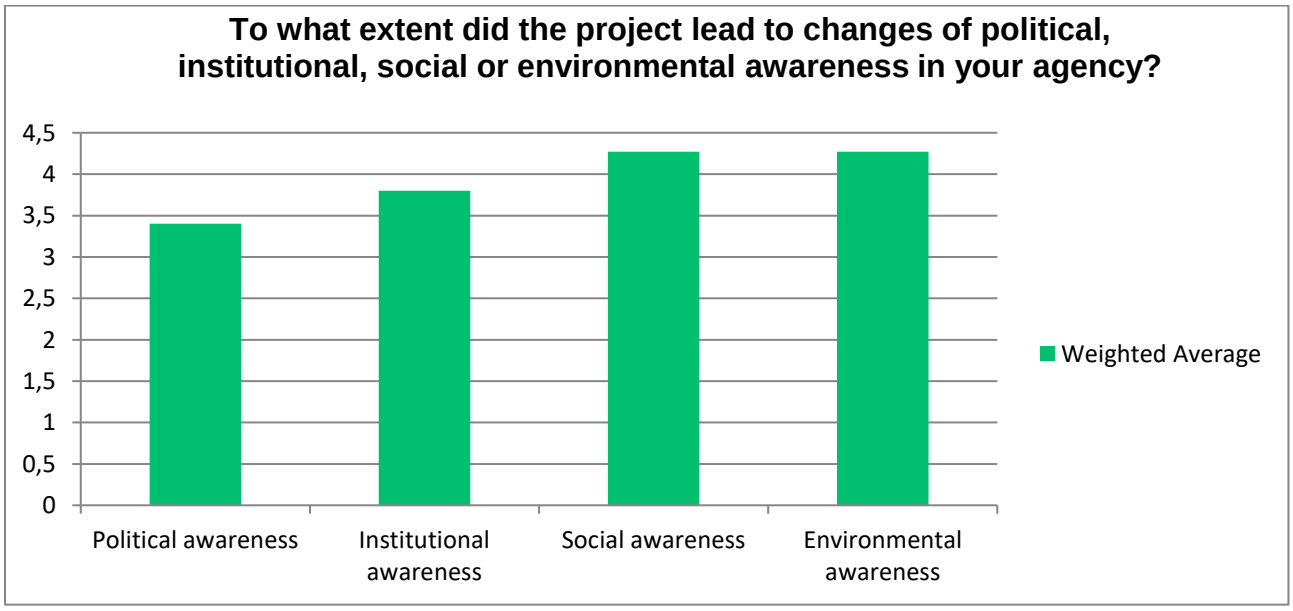
Based on the information provided in this chapter, there is a high potential for sustainability of the project outcomes. The environmental sustainability is clear, combined with some added social benefits. The institutional and financial sustainability are linked, because the financial sustainability would be strengthened if the government facilitates credit or other forms of financing for the private sector. The Evaluator has a positive view also on these dimensions of sustainability, because the private sector's lobbying and Brazil's interest of complying with its NDCs would be complementary and point in the same direction.

vii. Country ownership

Despite being implemented through a DIM modality, it is considered that the project was designed and executed with strong country ownership. This is reflected in the very active role of the Steering Committee and its individual members, and was also highlighted in many of the stakeholder interviews. 80% of the respondents to the survey consider that the project had a high or extremely high national institutional ownership.

The long project period the project has been carried out led to a general improved awareness in the participating agencies, especially regarding socio-environmental issues. Fig. 13 shows the perception among surveyees about improved awareness in their own agency through the project. More than half responded a very high change of environmental and social awareness.

Fig. 13. Change of awareness in participating agencies according to the survey.



viii. Gender equality and women's empowerment

The project design did not give any emphasis to gender issues. The charcoal sector is very male dominated with great gender disparity, and without priority in the PRODOC it should not be expected to reach much progress in this area. It therefore came like a surprise that the project still was able to increase the number of women participating in the project and the sector, and that even some people interviewed consider it as one of the project's more important achievements.

The charcoal sector is comprised mainly of men, where women accounts for only 7% of the labor force, and says that the main reason is the working conditions in traditional charcoal conversion. The workers there are exposed to health risk, excessive solar radiation and heat from the furnaces, and even more important the exposure to atmospheric effluents. Due to these factors and the need for great physical effort, traditional charcoal conversion sites are almost entirely male dominated.

There was no coherent tracking of % gender participation in the project activities, however the people that responded to the TE survey estimated a women participation on average around 40%. The large majority consider that women had the same opportunities to participate in all project activities as the men, and also had the same opportunities to influence the project content. The project has been incorporating the gender issue into the discussion of its activities, supporting and encouraging greater participation of women.

A gender analysis conducted by the project in 2018 found that technological improvements offer new work opportunities for women, both in planted forests and in the operation of systems to control the charcoal production process. The analysis provided recommendations for how the project should treat the gender issues:

- Increase the vision of sustainability to include indicators that have the capacity to measure changes in the social field.
- Transform the demonstration units into a basis to enhance social perspectives related to the charcoal chain, including the gender perspective.
- Include project indicators that show connections between sustainable practices in charcoal production and levels of empowerment in family members, such as women and youth.
- Develop public policies to increase social inclusion of women in general so as to foster reduction of gender inequality in the charcoal production chain.

The project addressed these recommendations and tried to ensure women's participation in training activities and also that all communication products should incorporate the gender perspective. The Project included the gender issues in most of the training activities and discussions, to encourage greater participation by women. A private sector training workshops on social and environmental monitoring demonstrated that with the greater women participation the firms' productivity could increase, and another workshop addressed additionally to the gender approach LGBT-related issues.

The project included gender issues also in its main results. Regarding the implementation of a policy framework to promote the use of renewable biomass-based charcoal by the I&S sector (Outcome 1), the final text of the "Strategy to Stimulate the Economic, Social and Environmental Sustainability of the Brazilian Steel Industry Using Charcoal" emphasizes the importance of insertion of women and youth in the production chain and improvements in working conditions, increasing job and income generation. The strategy included a gender approach that would serve as guidelines in the charcoal sector. The project's emphasis on gender issues led to a gradual improvement and higher % of women during the 2nd call por proposals for SMEs.

The project contributed to more job opportunities for women in the rural areas, especially in the production of eucalyptus seedlings, planting and management of forests. More decent employment for women would also be created through the shift to more clean technology.

ix.Cross-cutting issues

This section covers only cross-cutting issues that were not specifically mentioned in other parts of the report.

Human rights: The project can be considered to have a *rights-based approach*, even though it is not the main focus. As mentioned, the project has advanced quite a lot on gender issues and integration of traditionally discriminated groups such as the Quilombolas, and included these aspects of non-discrimination in the second call for firms to support local charcoal producers.

Volunteerism: There is no mention of volunteerism in the PIRs, however the Evaluator would like to mention that many stakeholders gave more results than expected according to the project design, including the University of Viçosa, private firms, and the Steering Committee members. The University of Viçosa developed an App on its own initiative.

Poverty alleviation: The project has improved economic development and provided new sources of employment to poor remote communities, and is therefore reducing poverty.

Climate change adaptation and disaster risk management: The project document and reporting do not consider these aspects. However, investment in projects that cover both mitigation and adaptation is known to normally have a better cost/benefit ratio, and could therefore be considered in case there is a follow-up project.

Resilience: Adding value to the production chain and reduced production costs enhances sector competitiveness, which is crucial for the resilience of the Brazilian I&S industry. Improvement of the living conditions for the rural population is also enhancing the resilience of local communities.

South-South cooperation: This issue is not considered in the project document. PMU and UNDP however were interested in providing the charcoal project's experiences and lessons learned to other countries, and contacts were established with Mozambique and Argentina. This initiative was not continued due to lack of interest from the authorities in MMA.

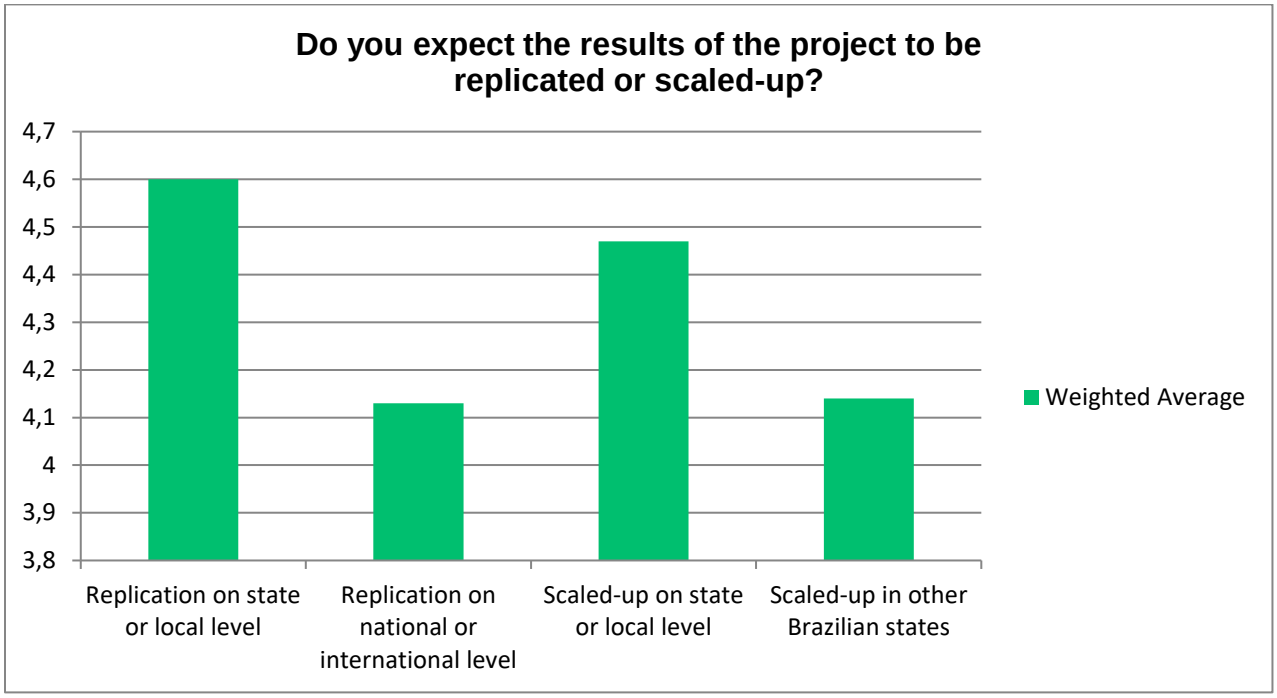
x. GEF additionality

This project is an example of an initiative where GEF funding led to global environmental benefits, which is in line with the GEF institutional objective. The results achieved on climate change mitigation would not have been possible without the budget from GEF. On the other hand, UNDP as a GEF implementing agency has provided technical know-how that brought the I&S sector in MG to a new level of improved environmental performance.

xi. Catalytic/replication effect

The project already had a catalytic effect in the sector that was highlighted as strongly appreciated by most stakeholders interviewed. Replication has also been done through the first and second call for support to small private sector firms, where 6 producers benefitted from the first call and 49 from the second call. The survey results also indicate an expectation of replication and scaling-up of the project outcomes, where 80% have very high expectations of replication on MG State level and 60% on national or international level. 73% have very high expectations of scaling-up the results on MG State level and 64% in other states.

Fig. 14. Expectations of replication and scaling-up of project results according to the survey.



The most notorious unexpected result mentioned in both the PIRs and interviews was the strengthening of local small charcoal producers and their emission reductions, which was not included in the ProDoc. 53% of the surveyees had registered un-anticiated positive results and nobody had noticed any unanticipated negative results. The concrete results mentioned were the high acceptance of new technology, as well as the compromise and inter-institutional involvement of public and private sector partners and other stakeholders.

xii. Progress to Impact

As shown in table 13, the progress to impact is good, with approx. 70% of project objective indicators already achieved. It should be noted that full project impact is normally achieved after implementation, sometimes several years after a project closed. Such long-term impacts that are expected to be gradually strengthened are: (i) the reduced emissions of GHG emissions from the I&S sector in MG; and (ii) the support from this sector to compliance with Brazil's NDCs (see TOC, fig 3).

In the short term, the project has already led to strengthening of institutional capacity of the main partners. 53% of the surveyees had noticed significant change and 33% some change, which has to do with institutional integration of the project results, A total of 80% informed that many or some elements in their agency were replaced or new elements integrated due to the project, where 73% consider that the new knowledge is being used and 67% that the technical solutions are being used. At the same time, 93% consider that the project has given positive social and environmental impact.

Fig. 15. Integration of project results in the agencies according to the survey.

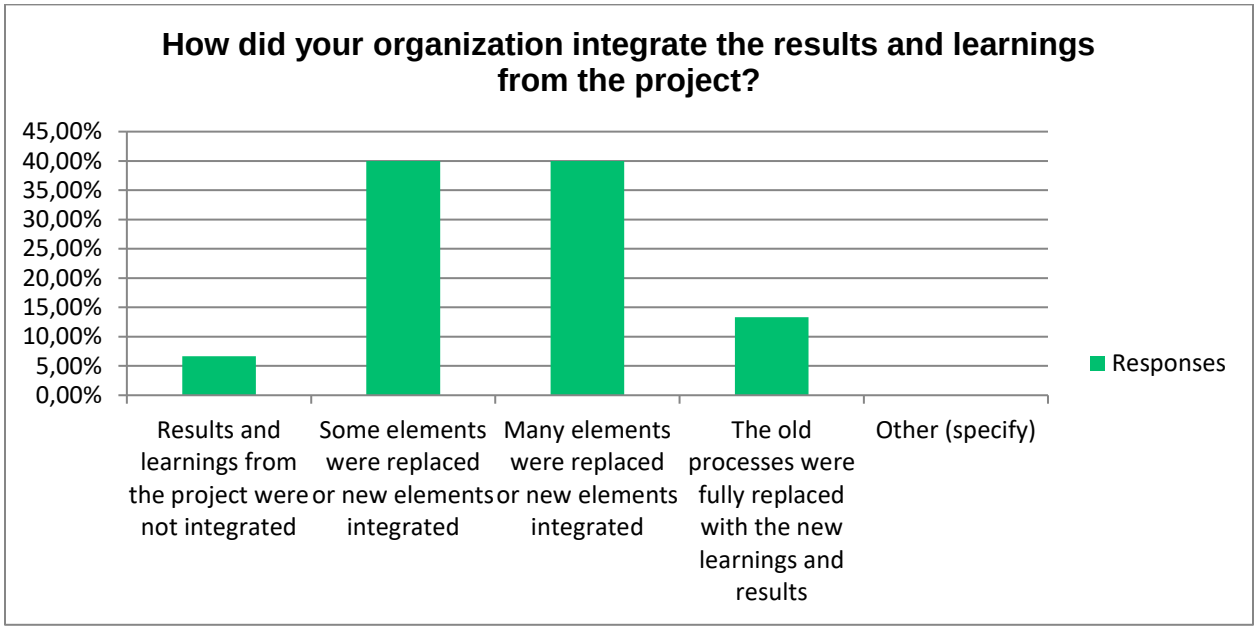
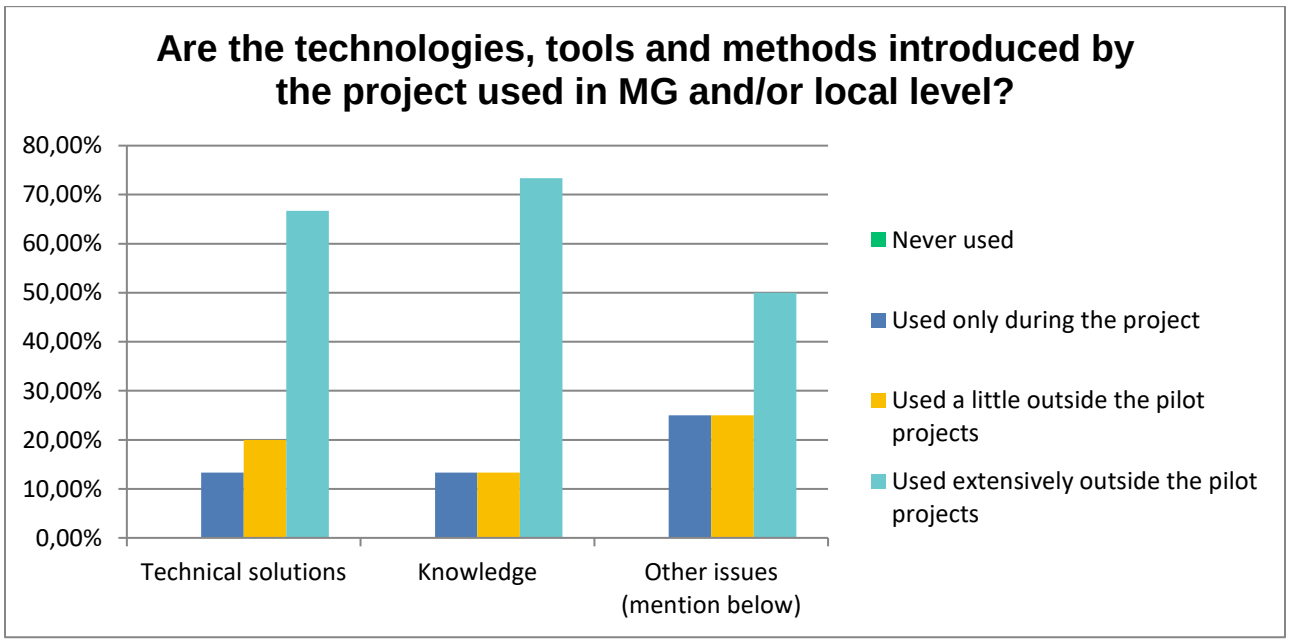


Fig. 16. Use of technologies, tools and methods introduced by the project according to the survey



5 MAIN FINDINGS, CONCLUSIONS, RECOMMENDATIONS AND LESSONS

5.1 Project design and formulation

The main finding of the Terminal Evaluation is that the project despite a long initiation process was able to comply with most of its expected outputs and coutcomes, and has come a long way towards achieving long-term impact and sustainability.

5.2 Conclusions

The conclusions of the TE can be summarized in the following way:

The project design is strong in the sense that it covers only one sub-sector and one region, and is very specific in what it wants to achieve. On the other hand, considering that the design process passed through a PPG, it should have been expected to have better baselines and stronger commitment for co-financing. The project has a simple structure with three components, each with one outcome, that goes towards a common goal, considered as the project's immediate impact. Indicators are mostly SMART, but they are not time-bound.

Assumptions and risks: The Results Framework presents a long list of assumptions on project objective level and output level. Fewer assumptions would have been better and thereby showed more certainty that the project was well planned and the results could be achieved. The project design has a good risk analysis and risk table. All the risks included seem to have been relevant at the moment of design and early implementation.

One example of adaptive management was the change from NIM to DIM during the project inception period. Another example was the use of project funds that have been saved due to the devaluation of the Brazilian currency. After implementing a tender process directed mostly at larger firms, two bidding processes were planned and executed but with a different scope, targeting small and medium charcoal produces.

Participation and partnership arrangements: The project has maintained the structure that was described in the PRODOC, except that some ministries changed and the Sustainable Charcoal Technical Commission (SCTC) was never established. The Steering Committee played a very positive and active role. The creation and maintenance of a large network of nearly eighty stakeholders from the public and private sector, as well as the universities, has been a success factor, not only for the project results but for the sector.

Project finance and co-finance: The project was approved with a budget of USD 43.95 million, including USD 7,15 million from GEF and USD 36,8 million in expected co-financing. The cumulative disbursements as of Nov 30, 2021 were USD 5,78 million, and the delivery rate 80.8%. After the initial delays, implementation progress and level of disbursement has been satisfactory, despite severe exchange rate fluctuation that affected financial planning. The national financial crisis and devaluation resulted in more available funds than expected. The project had two formal extensions.

The large difference between pledged and achieved co-financing from the Government reflected changed political priorities, especially the lack of funds from the national climate fund that were expected to be provided as credits to the private sector. This was partially offset by participating companies' in-kind contributions that were 3.9 times the target.

M&E: The Results Framework was used as the main monitoring tool, which is positive because it facilitates the reporting to GEF. The PIRs are however too complicated with too much text in the table. The risks were monitored and registered in the PIRs at the moment of preparing each report, without updating the original risk matrix. The original table of environmental and social safeguards was filled in during the PPG and updated during MTR. Gender participation was not

monitored during implementation, and there are no data on this in the PIRs. The Project management could have been done more efficiently if the Results Framework had been used as both a planning- and monitoring instrument. The GEF Climate Change tracking tool was filled in during the PPG and updated during the MTR.

Implementation: UNDP carried out its tasks for M&E efficiently. UNDP also provided highly skilled long-term technical advisors, and contracted consultants that despite some delays overall did an excellent job. The national stakeholders interviewed were all positive to UNDP's handling of the project management.

Implementing Partner execution: The main implementing partner MMA had a positive role in project implementation, leading the government's political and technical work and leading the Steering Committee, but was affected by high staff turnover. Other key partners included public agencies on federal and state level, universities and the private sector. The project's strength laid in the interaction between stakeholders to move the sector forward.

Efficient management combined with savings due to exchange rate made it possible to carry out two calls for small and medium charcoal producers (2019-2021), implemented through local firms. The interviews and survey confirmed that national stakeholders were satisfied with the project implementation, but consider that the project was executed more efficiently on state- and local level than on national level.

The project has reached its objective to develop and demonstrate enhanced, clean conversion technologies for renewable, biomass-based charcoal production. It has however not completely reached the other issue included in the project objective, that this technology should be supported by an effective policy framework. The overall progress towards the project objective is approx. 70%.

There is a high degree of progress towards the outcomes, and most of the outcomes have been achieved. Only outcome 1 is a bit below because it depends on a political process to carry it forward. A sector strategy for renewable charcoal was approved but not yet adopted. The overall progress towards the outcomes is approx. 84%.

The Project was highly relevant for the GEF-5 Climate Change Mitigation (CCM), Objective #2 "Promote market transformation for energy efficiency in industry and the building sector", UNDP's priorities on climate change mitigation, the SDGs and Brazil's NDCs.

The average compliance with outputs under outcome 1 was estimated to 61.3%. The process for the development of a sector strategy has taken more time than originally envisioned, and the strategy is approved but not yet adopted. MRV System for charcoal production was developed based on CDM methodologies for assessing emissions reductions, and training and testing conducted. Methodologies for performing assessments on charcoal production chains were targeted through consultancies and assessment and information material. Financial incentives for use of renewable charcoal: Four studies were developed related to incentives, including a proposal on economic and financial incentives.

The average compliance with outputs under outcome 2 was estimated to 97.5%. The technology "kiln-furnace" developed by the University Federal of Vicosa (UFV) was validated as technically and economically viable for charcoal production. The gravimetric yield obtained was very satisfactory as it went from a baseline of 26% to an average of 33% (target 32%), and the associated GHG emission reduction was estimated at 46.2% CO_2eq. By-products utilization technology program was carried out as well as Business models to accelerate introduction of clean charcoal conversion technology, and Training: More than 500 participants trained on sustainable charcoal production through at least 30 events and Demonstration Units for sustainable charcoal

production technology that provided training for 218 people. Much training and instruction materials were also developed.

The average compliance with outputs under outcome 3 was estimated to 100%. A tender mechanism designed to support large charcoal producers linked to the iron and steel industry gave a total of 102,156 CO_2eq/year from these firms. Bidding Processes targeting small charcoal producers: A first call supported six small charcoal producers and a second call supported 49 small producers.

Outcome 1 aimed to implement a policy framework to promote the use of renewable biomass-based charcoal by the I&S sector, supported by an internationally recognized system for monitoring of achieved GHG emission reductions. The outcome is considered to be in process, with 61.3% progress of its outputs achieved.

Outcome 2 aimed to strengthen the technology and human capacity base for clean charcoal conversion, where a charcoal technology program was successfully completed. The outcome was nearly fully achieved, and it is expected that it will be finalized before project closing.

Outcome 3 aimed to build commercial charcoal production facilities under a competitive bidding mechanism. The outcome was fully achieved, and the final reports were delivered during the TE. A tender mechanism for commercial production facilities was implemented, followed by two consecutive bidding processes to support small and medium size charcoal producers.

Regarding the quality of project outcomes, the majority of survey participants gave the highest rating to the strengthening of technology and human capacity base for clean charcoal conversion. Very high score was also given to Commercial charcoal production facilities. This is in line with the comments given in most of the stakeholder interviews.

Efficiency: Despite project delays from the start, once the project was initiated it was implemented efficiently and with good cost-effectiveness. The budget was however low compared to the number of potential beneficiaries. The high turn-over in government counterpart agencies reduced efficiency because new staff needed time to familiarize themselves with the project, and sometimes decision-making took much longer than normal. Along with institutional and other operational delays, COVID-19 from 2020 had a significant impact. Most field activities and some trainings were suspended in certain periods, and also dialogue with the government experienced delays.

Sustainability: There is a high potential for sustainability of the project outcomes. Despite low public sector co-financing, there is a high possibility of future financial sustainability through funding from the private sector and potentially new credit financing. The Ministry of Environment wants to continue the process, but some red flags are that the strategy has not been adopted and co-financing was much lower than expected. On local level, sustainability of project results depends strongly on the interest of the local stakeholders, who are encouraged by the technologies promoted by the project, because they create more jobs. Institutionally, the project supported training of the participating institutions and capacity building events for the MMA, as well as establishment of an inter-institutional network of mutual support. The project had a clearly positive impact on climate change mitigation with global environmental benefits. It also improved environmental performance of the I&S industry in general, including adverse impacts on the local population.

The project was designed and executed with strong country ownership, and had a very active Steering Committee. 80% of the respondents to the survey consider that the project had a high or extremely high national institutional ownership.

Gender equality and women's empowerment: Despite the fact that the project design did not give any emphasis to gender issues, it still was able to increase the number of women participating in the project and the sector. There was no coherent tracking of gender participation, but people that responded to the TE survey estimated a women participation around 40%. A gender analysis 2018 found that technological improvements offer new work opportunities for women, both in forestry and the charcoal production process.

Cross-cutting issues: The project can be considered to have a rights-based approach, even though it is not the main focus. Poverty alleviation: The project improved economic development and provided new sources of employment to poor remote communities, and is therefore reducing poverty. Resilience: The project added value to the production chain and reduced production costs enhances sector competitiveness, which is crucial for the resilience of the Brazilian I&S industry. South-South cooperation: PMU and UNDP were interested in providing the charcoal project's experiences to other countries, but MMA was not onboard.

GEF additionality: The results achieved on climate change mitigation would not have been possible without the GEF budget. UNDP as GEF implementing agency provided know-how that brought the I&S sector in MG to a new level of improved environmental performance.

Catalytic/replication effect: Replication has been done through the first and second call for support to small private sector firms. The TE survey indicates an expectation of replication and scaling-up of the project outcomes, where 80% have very high expectations of replication on MG State level and 60% on national or international level.

Progress to Impact is good, with approx. 70% of project objective indicators already achieved. The project led to significant strengthening of the institutional capacity of main partners.

5.3 Recommendations

Since this is a Terminal Evaluation without plans for a new GEF funded project phase, only UNDP can be held accountable for following up the recommendations, especially in design of new UNDP-GEF projects. *It is recommended that UNDP should:*

1. Assure that a good results framework is developed during the PPG phase, which should have reliable baselines on output- and outcome level, and specific targets that could be used for planning of project activities and monitoring of results. This period should also be used for other detailed planning, including operative regulations and a work plan with deadlines.
2. Assure that the Government on high level is onboard during the design phase, that it is understood that co-financing is an international commitment, and to agree in advance on the expected date for national project approval.
3. Assure more exchange of experiences and lessons learned, especially between UNDP projects going on in the same country at the same time, but also with other agencies working in the same technical fields. In this case the project did not have much exchange with other projects, and did not follow up a proposed South-South exchange initiative.
4. Assure that results and lessons learned from this project are being integrated into the design of other UNDP projects that are focusing on climate change mitigation in the industry sector, especially if they cover charcoal production.
5. Discuss with MMA and partners the possible establishment of an information platform with all the relevant documents and information developed during the project, to be openly accessible through the Internet.

6. Take initiative to a higher-level discussion between the UNDP Resident Representative and government counterparts with the goal to promote adoption of "Strategy for the sustainable charcoal-based iron and steel industry". The adoption of the MRV system to track sustainable charcoal production could also be included in the same conversations.

5.4 Lessons learned

- To avoid strong delays in initiation of project activities, it is important that as much as possiple of the project planning is finalized during the PPG, including a detailed results framework with reliable baselines, operative regulations, and a work plan with deadlines for each step. On the other hand, the Government on high level should be onboard in the main conversations, to avoid surprises and delay of approval.
- Project co-financing could result in success or complete failure of a project. In this case, the strongly reduced government co-financing was partly mitigated by additional private sector support, and savings due to the Brazil currency devaluation. Without these two factors the project could have been severely impacted.
- Even in a large country as Brazil with a strong human resource base, a Direct Implementation Modality (DIM) could sometimes give better project results than a National Implementation Modality (NIM). This should however not necessarily be taken as an argument in favour of the DIM, because it is positive for national institutional development and ownership of the project results that national partners are in charge.
- A project with strong national partner support and interest would have more expectation of impact and sustainability. In this case, the private sector partners came up with more funding, which demonstrates interest and commitment to the project outcome. The strong sector network and mutual support gave an strength that cannot be monitarized but added to the project outcomes.
- A project should not have adoption of political strategies or policies as its expected outputs, because it is completely outside project management's control and therefore increase the project risk. Such processes are often longer than a project duration. The alternative is that the project output should be a proposal that has been discussed among project partners, to be presented to the politicians (often a ministry) for the corresponding political process.
- Even a project that involves cutting trees and emitting greenhouse gases can be part of the climate change mitigation solution. The reason is that what should be considered is the alternative, in this case the use of mineral coke, instead of a sustainably managed biofuel.
- Sustainable charcoal production for the I&S industry has both global and local environmental benefits, as well as positive social benefits through job creation, poverty alleviation and improved worker health. It could therefore be replicated and scaled-up in regions and countries with similar conditions and natural resources.
- Sustainable charcoal production could also add work opportunities for rural women in both the primary production (forestry) and secondary production (charcoal).

ANNEX 1. TERMS OF REFERENCE (excluding annexes)

Terms of Reference for ICs and RLAs through /GPN ExpRes

Services/Work Description: Terminal Evaluation consultancy in energy/climate change sector.
Project/Programme Title: - Production of sustainable, renewable biomass-based charcoal for the iron and steel industry in Brazil**.**
Consultancy Title: Terminal Evaluation for GEF Project Production of sustainable, renewable biomass-based charcoal
for the iron and steel industry in Brazil
Duty Station: Home-based
Duration: 60 days
Expected start date: 23rd September 2021

1. BACKGROUND

1.1 Introduction

In accordance with UNDP and GEF M&E policies and procedures, all full- and medium-sized UNDP-supported GEF-financed projects are required to undergo a Terminal Evaluation (TE) at the end of the project. These Terms of Reference (TOR) set out the expectations for the TE of the full-sized project titled BRA/14/G31 - Production of sustainable, renewable biomass-based charcoal for the iron and steel industry in Brazil (PIMS 4675 - Charcoal Project), implemented by the United Nations Development Programme (UNDP). The project started on the first quarter of 2016 and is in its 6 year of implementation. The TE process must follow the guidance outlined in the document 'Guidance for Conducting Terminal Evaluations of UNDP-Supported, GEF-Financed Projects':

http://web.undp.org/evaluation/guideline/documents/GEF/TE_GuidanceforUNDP-supportedGEF-financedProjects.pdf.

1.2 Project Description

The project´s objective is to reduce the greenhouse gas emissions from the iron and steel sector in the Brazilian State of Minas Gerais, by (i) developing and demonstrating enhanced, clean conversion technologies for renewable, biomass-based charcoal production, and (ii) implementing an effective, supportive policy framework.

The proposed Project is targeted at addressing the identified barriers that impede the clean and efficient conversion of (renewable) biomass resources to charcoal for the iron and steel sector in Brazil. The Project promotes the availability of sustainable, renewable biomass-based charcoal, produced efficiently and at a competitive cost level compared to mineral coke.

The budget of the project is US$ 43,950,000, of which US$ 7,150,000 is provided as a grant under GEF CCM-2 and CCM-3, and US$ 36,800,000 is provided as co-financing by the national Government, private sector, and universities, and by UNDP CO in Brazil.

The Project focuses on reducing the technology barrier as the sector lacks the specific knowledge to develop efficient charcoal conversion plants and implement them as a rational business. In addition, the more advanced iron and steel companies were invited to invest in efficient charcoal conversion facilities by offering a financial incentive through a dedicated bidding procedure, and by facilitating project design and implementation through specialized technical assistance. The bidding process capitalizes on the progress made by private companies on clean charcoal production since 2009. The financial benefits for participants will offset the higher perceived risks related to early-market introduction and provide an acceptable rate on return for investors. The bidding process implies a change in approach compared to the PIF, which foresaw the Project taking the lead in the technology

development process. The expected benefits of the bidding process include: (i) ability to foster and demonstrate several technologies and business contexts; (ii) market-pull approach rather than technology push; and (iii) greater cost-effectiveness. The new approach also avoids potential issues related to intellectual property, which turned out to be relevant.

Work in the field of policy and regulation pursues expanding the existing framework (which is primarily restrictive by banning non-renewable charcoal) by establishing positive incentives for renewable, clean, and resource-efficient charcoal production, and by facilitating implementation of advanced charcoal production facilities in Minas Gerais. In the end-of-project situation, I&S companies are expected to have readily access to information and technology, thereby supported by favorable regulation and incentives to foster investment in charcoal conversion. While some companies have embarked on an internal technology development programme, others may opt to acquire access to technology under appropriate intellectual property arrangements (such as licenses).

The Project will pursue its objective through the following components:
I. Information and policy development
II. Strengthening of technological development and human capacity.
III. Investment and performance monitoring.

The scope of the Project consists in (i) bringing together government actors, industries, sector stakeholders and research institutes; (ii) constructing a clear path towards market transformation by policy development in Minas Gerais; (iii) providing assistance for technological development; and (iv) implement a first batch of commercial, advanced charcoal production facilities by providing specific financial incentives for the use of renewable charcoal.

2. SCOPE OF WORK, RESPONSIBILITIES AND DESCRIPTION OF THE PROPOSED WORK

2.1 Terminal Evaluation Purpose

The Terminal Evaluation (TE) Report will assess the achievement of project results against what was expected to be achieved and draw lessons that can both improve the sustainability of benefits from the project and aid in the overall enhancement of UNDP programming. The TE Report promotes accountability and transparency and assesses the extent of project accomplishments.

The results of the TE Report, including the analysis of the indicators and lessons learned, will serve UNDP for the elaboration of future projects and public policies. In addition, the Project has built a solid network of partners and beneficiaries who will also be able to use the results in formulating their post-project work plans. 2021 is the Project's last year of implementation.

The scope and objectives of the TE must include aspects such as the impact of the results of the innovative technologies supported by the project. The impact of the Covid-19 pandemic will also be an important aspect of the TE.

2.2 DUTIES AND RESPONSIBILITIES

TE Approach & Methodology

The TE must provide evidence-based information that is credible, reliable, and useful.

The TE consultant will review all relevant sources of information including documents prepared during the preparation phase (i.e., PIF, UNDP Initiation Plan, UNDP Social and Environmental Screening Procedure/SESP, the Project Document – PRODOC), project reports including annual PIRs, project budget revisions, lesson learned reports, national strategic and legal documents, and any other materials that the team considers useful for this evidence-based evaluation. The TE consultant will review the baseline and midterm GEF focal area Core Indicators/Tracking Tools submitted to the

GEF at the CEO endorsement and midterm stages and the terminal Core Indicators/Tracking Tools that must be completed before the TE field mission begins.

The TE consultant is expected to follow a participatory and consultative approach ensuring close engagement with the Project Team, government counterparts (the GEF Operational Focal Point), Implementing Partners, the UNDP Country Office(s), the Regional Technical Advisors, direct beneficiaries, and other stakeholders.

Engagement of stakeholders is vital to a successful TE. Stakeholder involvement should include interviews with stakeholders who have project responsibilities, including but not limited to executing agencies, senior officials and task team/component leaders, key experts and consultants in the subject area, Project Board, project beneficiaries, academia, local government and CSOs, etc. Due to the situation of the Covid-19 pandemic in Brazil, there will be no field missions in this TE. However, the Project Management Unit will support and facilitate contacts and platforms for interviews with the stakeholders in each territory where the project operates.

The specific design and methodology for the TE should emerge from consultations between the TE consultant and the above-mentioned parties regarding what is appropriate and feasible for meeting the TE purpose and objectives and answering the evaluation questions, given limitations of budget, time and data. The TE consultant must, however, use gender-responsive methodologies and tools and ensure that gender equality and women's empowerment, as well as other cross-cutting issues and SDGs are incorporated into the TE report.

The final methodological approach including interview schedule and data to be used in the evaluation should be clearly outlined in the inception report and be fully discussed and agreed between UNDP, stakeholders, and the TE consultant.

The final TE report should describe the full TE approach taken and the rationale for the approach making explicit the underlying assumptions, challenges, strengths and weaknesses about the methods and approach of the evaluation.

As of 11 March 2020, the World Health Organization (WHO) declared COVID-19 a global pandemic as the new coronavirus rapidly spread to all regions of the world. As external field missions are suspended in the Project, the TE consultant should develop a methodology that takes this into account to conduct the TE virtually and remotely, including by using remote interview methods and extended desk reviews, data analysis, surveys, and evaluation questionnaires. This should be detailed in the TE Inception Report and agreed with the Commissioning Unit.

As the TE is to be entirely carried out virtually, considerations should be taken for stakeholder availability, ability, or willingness to be interviewed remotely. In addition, their accessibility to the internet/computer may be an issue as many government and national counterparts may be working from home. These limitations must be reflected in the final TE report.

If a data collection/field mission is not possible, then remote interviews may be undertaken through telephone or online (skype, zoom etc.). International consultants can work remotely with national technical advisor support in the field if it is safe for them to operate and travel. No stakeholders, consultants or UNDP staff should be put in harm's way and safety is the key priority.

2.3 Detailed Scope of the TE

The TE will assess project performance against expectations set out in the project's Logical Framework/Results Framework (see TOR Annex A).

The TE will assess results according to the criteria outlined in the Guidance for TEs of UNDP-supported GEF-financed Projects:

http://web.undp.org/evaluation/guideline/documents/GEF/TE_GuidanceforUNDP-supportedGEF-financedProjects.pdf.

The Findings section of the TE report will cover the topics listed below. A full outline of the TE report's content is provided in TOR Annex C. The asterisk "(*)" indicates criteria for which a rating is required.

i.Project Design/Formulation

•National priorities and country drivenness
•Theory of Change
•Gender equality and women's empowerment
•Social and Environmental Safeguards
•Analysis of Results Framework: project logic and strategy, indicators
•Assumptions and Risks
•Lessons from other relevant projects (e.g., same focal area) incorporated into project design
•Planned stakeholder participation
•Linkages between project and other interventions within the sector
•Management arrangements

ii.Project Implementation

•Adaptive management (changes to the project design and project outputs during implementation)
•Actual stakeholder participation and partnership arrangements
•Project Finance and Co-finance
•Monitoring & Evaluation: design at entry (*), implementation (*), and overall assessment of M&E (*)
•Implementing Agency (UNDP) (*) and Executing Agency (*), overall project oversight/implementation and execution (*)
•Risk Management, including Social and Environmental Standards

iii.Project Results

•Assess the achievement of outcomes against indicators by reporting on the level of progress for each objective and outcome indicator at the time of the TE and noting final achievements
•Relevance (*), Effectiveness (*), Efficiency (*) and overall project outcome (*)
•Sustainability: financial (*), socio-political (*), institutional framework and governance (*), environmental (*), overall likelihood of sustainability (*)
•Country ownership
•Gender equality and women's empowerment
•Cross-cutting issues (poverty alleviation, improved governance, climate change mitigation and adaptation, disaster prevention and recovery, human rights, capacity development, South-South cooperation, knowledge management, volunteerism, etc., as relevant)
•GEF Additionality
•Catalytic Role / Replication Effect
•Progress to impact

iv.Main Findings, Conclusions, Recommendations and Lessons Learned

•The TE consultant will include a summary of the main findings of the TE report. Findings should be presented as statements of fact that are based on analysis of the data.
• The section on conclusions will be written in light of the findings. Conclusions should be comprehensive and balanced statements that are well substantiated by evidence and logically connected to the TE findings. They should highlight the strengths, weaknesses, and results of the project, respond to key evaluation questions, and provide insights into the identification of and/or solutions to important problems or issues pertinent to project beneficiaries, UNDP and the GEF, including issues in relation to gender equality and women's empowerment.

•Recommendations should provide concrete, practical, feasible and targeted recommendations directed to the intended users of the evaluation about what actions to take and decisions to make. The recommendations should be specifically supported by the evidence and linked to the findings and conclusions around key questions addressed by the evaluation.
•The TE report should also include lessons that can be taken from the evaluation, including best and worst practices in addressing issues relating to relevance, performance and success that can provide knowledge gained from the particular circumstance (programmatic and evaluation methods used, partnerships, financial leveraging, etc.) that are applicable to other GEF and UNDP interventions. When possible, the TE consultant should include examples of good practices in project design and implementation.
•It is important for the conclusions, recommendations and lessons learned of the TE report to include results related to gender equality and empowerment of women.

The TE report will include an Evaluation Ratings Table, as shown in the TOR Annex.

3. Expected Outputs and deliverables

The TE consultant shall prepare and submit:

•TE Inception Report: TE consultant clarifies objectives and methods of the TE. TE Consultant submit the Inception Report to the Commissioning Unit and project management after the document analysis. Approximate due date: October 4th, 2021.
•Draft TE Report: TE consultant submits full draft report with annexes within 3 weeks of the end of the TE interviews. Approximate due date: October 18, 2021.
•Final TE Report* and Audit Trail: TE consultant submits revised report, with Audit Trail detailing how all received comments have (and have not) been addressed in the final TE report, to the Commissioning Unit within 1 week of receiving UNDP comments on draft. Approximate due date: November 01, 2021.

The final TE report must be in English. If applicable, the Commissioning Unit may choose to arrange for a translation of the report into a language more widely shared by national stakeholders.

All final TE reports will be quality assessed by the UNDP Independent Evaluation Office (IEO). Details of the IEO's quality assessment of decentralized evaluations can be found in Section 6 of the UNDP Evaluation Guidelines.

4. Institutional arrangements/reporting lines

The Commissioning Unit and the Project Team will provide support to the operationalization of virtual / remote meetings and will provide the TE consultant with an updated list of interested parties with contact details (phone and email), in addition to providing all online documentation as well as setting up stakeholder interviews for the TE consultant.

4.1 Duration of the Work

The total duration of the TE will be approximately (average 25-35 working days) over a time period of 60 days starting September 23rd, 2021 and shall not exceed 60 days from when the TE consultant is hired. The tentative TE timeframe is as follows:

- September 08 to September 15, 2021: Selection of TE consultant
- September 23, 2021: Prep the TE consultant (handover of project documents)
- September 27, 2021: Document review, preparing and submit the TE Inception Report
- October 04 to October 15, 2021: Stakeholder meetings and interviews
- October 18, 2021: Preparing and submit of draft TE report
- October 18 to October 22, 2021: Circulation of draft TE report for comments

- October 25 to October 29, 2021: Incorporation of comments on draft TE report into Audit Trail & finalization of TE report
- November 01, 2021: Submit final TE report
- November 01 to November 12, 2021: Circulation of final TE report and approval

The expected start date of contract is September 23, 2021.

4.2 Duty Station

The TE consultant will work home-based, with the remote support of the Commissioning Unit, who will provide support in the agendas with stakeholders and interviews with the beneficiaries in the territories.

5. Experience and qualifications

I. Academic Qualifications:

Post-Graduate in related areas of the TOR

II. Years of experience:

Mandatory criteria:
- Minimum 10 years of relevant professional experience
- Previous experience with results-based monitoring and evaluation methodologies
- Technical knowledge in the targeted focal area(s);
- Experience with implementing evaluations remotely will be considered an asset.

Qualifying criteria:
- Project evaluation/review experiences within United Nations system
- Experience of working on GEF evaluations
- Experience of working on GEF evaluations, preferably with Climate Change/Energy;
- Experience working in Latin America

III. Language:
Fluency in written English and working knowledge of Portuguese.

IV. Competencies:
- Competence in adaptive management
- Demonstrated understanding of issues related to gender
- Experience applying SMART indicators and reconstructing or validating baseline scenarios
- Project evaluation/review experience within United Nations system will be considered an asset

A team of one independent consultant will conduct the TE with experience and exposure to projects and evaluations in other regions globally.

The consultant must complain with the following:

Consultant Independence: The consultant cannot have participated in the project preparation, formulation, and/or implementation (including the writing of the Project Document) and should not have a conflict of interest with project's related activities.

Evaluator Ethics

The TE consultant will be held to the highest ethical standards and is required to sign a code of conduct upon acceptance of the assignment. This evaluation will be conducted in accordance with the principles outlined in the UNEG 'Ethical Guidelines for Evaluation'. The evaluator must safeguard

the rights and confidentiality of information providers, interviewees, and stakeholders through measures to ensure compliance with legal and other relevant codes governing collection of data and reporting on data. The evaluator must also ensure security of collected information before and after the evaluation and protocols to ensure anonymity and confidentiality of sources of information where that is expected. The information knowledge and data gathered in the evaluation process must also be solely used for the evaluation and not for other uses without the express authorization of UNDP and partners.

6. Payment Modality

Payment to the individual contractor will be made based on the actual number of days worked, deliverables accepted and upon certification of satisfactory completion by the manager.

Payment schedule:
•20% payment upon satisfactory delivery of the final TE Inception Report and approval by the Commissioning Unit
•40% payment upon satisfactory delivery of the draft TE report to the Commissioning Unit
•40% payment upon satisfactory delivery of the final TE report and approval by the Commissioning Unit and RTA (via signatures on the TE Report Clearance Form) and delivery of completed TE Audit Trail

Criteria for issuing the final payment of 40%
•The final TE report includes all requirements outlined in the TE TOR and is in accordance with the TE guidance.
•The final TE report is clearly written, logically organized, and is specific for this project (i.e., text has not been cut & pasted from other MTR reports).
•The Audit Trail includes responses to and justification for each comment listed.

In line with the UNDP's financial regulations, when determined by the Commissioning Unit and/or the consultant that a deliverable or service cannot be satisfactorily completed due to the impact of COVID-19 and limitations to the TE, that deliverable or service will not be paid.

Due to the current COVID-19 situation and its implications, a partial payment may be considered if the consultant invested time towards the deliverable but was unable to complete to circumstances beyond his/her control.

ANNEX 2. TERMINAL EVALUATION ITINERARY

Activity		Dates
Inception Phase	Handover of documents to TE consultant	04-08.10.2021
	Review docs + prepare TE Inception Report	11-15.10.21
	Consultations with UNDP TM	11-15.10.21
	Present Inception Report	15.10.21
	Prepare survey	16-31.10.21
Review Inception Report	Review of Inception Report (UNDP)	18-29.10.21
	Approval of Inception Report	29.10.21
Intermediate Phase	Meeting with UNDP	01.11.21
	Carry out interviews	02.11-26.11.21
	Carry out online survey in Portuguese	04.11-20.11.21
	Meeting with UNDP	29.11.21
	Processing of data from interviews and survey, and follow-up on e-mail about concrete issues	21.11-17.12.21
	Preparation of draft Terminal Evaluation Report	15.11-03.12.21
Draft TE Phase	Elaboration of draft TE Report	15.11-03.12.21
	Submission of draft TE Report	03.12.21
Review of draft TE Report	Review of Draft TE Report (UNDP, MMA)	06.12.2021-02.02.2022
Final TE Phase	Adjustment of TE Report based on consolidated comments, with Audit Trail & finalization of TE report	02.02-04.02.2022
	Submission of Final TE Report	04.02.2022
	Approval and circulation of final TE report	From 7.02.2022

ANNEX 3. PERSONS INTERVIEWED

NAME	DEPARTMENT	NAME	POSITION
UNDP	Sustainable Development Cluster	Luana Lopes	Coordinator
	(former) Sustainable Development Cluster	Haroldo de Oliveira Machado Filho	Former Unit Coordinator
	Project Team	Ione Nascimento	Project Manager
	Project Team	Claudia Câmara	Project Advisor
	Project Team	Mônica Santos de Oliveira	Former Technical Advisor
	Project Team	Paula Silveira	Former Project Manager
MMA (Ministry of the Environment)	Dept. of Environmental Economics and International Agreements	Adriano Santhiago de Oliveira	Former Project Director
MAPA (Ministry of Agriculture)	Commercialization and Supply Department	João Antonio Fagundo Salomão	Analyst
ME (Ministry of Economy)	Secretariat for Development	João Pignataro Pereira	Engineer
EMATER-MG (MG Technical Assistance and Rural Extension Company)	Technical Department	Sérgio Regina	Technical Coordinator
SEBRAE-MG (Brazilian Micro and Small Business Support in MG)	Department of Agribusiness	Fabiana Santos Vilela	Technical Analyst
UFV (Federal University of Viçosa)	Wood Panels and Energy Laboratory, Department of Forestry (LAPEM)	Cássia Carneiro	Coordinator
UFV	LAPEM	Leticia Peres	Forest Engineer, MSc student
UFV	LAPEM	Paula Surdi	PhD in Forest Resources, Post Doctorate position
UFV	LAPEM	Rafaela Souza Silva	Economist (project manager)
UFV	LAPEM	Humberto Fauller	Doctor of Forest Science/ researcher (project instructor)

(Additional persons were consulted through the online survey)

ANNEX 4. DOCUMENTS AND ONLINE SOURCES REVIEWED

Project document with all annexes

GEF PIF document

GEF PPG document

GEF Project Review Sheet

GEF STAP Review

Request for GEF CEO Endorsement

Financial documents: Annual Combined Delivery Reports (CDR) 2015-2020

Quarterly CDR 2021

Project Work Plans

Project Implementation Reviews (PIR) 2016-2021

Party meeting reports: 10 documents

Mid-term Review: Main document and 8 other documents

UNDP Brazil Project Review 2020

GEF6 Tracking Tool for CCM

Project products: 187 reports

Stakeholder list

Maps

UNDP Gender Equality Strategy 2018-2021

UNDP Strategic Plan 2018-2022

Guidence for conduction Terminal Evaluations of UNDP-supported GEF financed projects

Guidence for evaluations during COVID-19

www.thegef.org

www.undp.org

https://www.gov.br/mma

Websites of partner organizations

ANNEX 5. TERMINAL EVALUATION QUESTION MATRIX

Evaluation Questions	Indicators	Sources	Data Collection Method
Evaluation Criteria: Relevance			
• Does the project's objective align with the priorities of the local government and local communities?	• Level of coherence between project objective and statedpriorities of local stakeholders	• Local stakeholders • Document review of local development strategies, environmental policies, etc.	• Interviews • Desk review
• Does the project's objective fit within the national environment and development priorities?	• Level of coherence between project objective and national policy priorities and strategies, as stated inofficial documents	• National policy documents	• Desk review • Interviews
• Did the project concept originate from local or national stakeholders, and/or were relevant stakeholders sufficiently involved in project development?	• Level of involvement of local and national stakeholders in project origination and development (number of meetings held, project development processes incorporating stakeholder input, etc.)	• Project staff • Local and national stakeholders • Project documents	• Interviews • Desk review
• Does the project objective fit GEF strategic priorities?	• Level of coherence between project objective and GEF strategic priorities (including alignment of relevant focal area indicators)	• GEF strategic priority documents for the period when project was approved • Current GEF strategic priority documents	• Desk review
• Was the project linked with and in-line with UNDP priorities and strategies for the country?	• Level of coherence between project objective/design and UNDP strategies, UNDAF, CPD	• UNDP strategic priority documents	• Desk review
• Does the project's objective support implementation of the UNFCCC?	• Linkages between project objective and elements of the UNFCCC and Brazil's compliance with the convention	• UNFCCC website • Brazil NDC and communications to the convention	• Desk review
Evaluation Criteria: Efficiency			
• Is the project cost-effective?	• Quality and adequacy of financial management procedures (in line with UNDP, UNOPS, and national policies, legislation, and procedures) • Financial delivery rates. expected rate • Management costs as percentage of total costs	• Project documents • Project staff	• Desk review • Interviews with project staff
• Are expenditures in line with international standards and norms?	• Cost of project inputs and outputs relative to norms and standards for donor projects in Brazil	• Project documents • Project staff	• Desk review • Interview with project staff

• Is the project implementation approach efficient for delivering the planned project results?	• Adequacy of implementation structure and mechanisms for coordination and communication • Planned and actual level of human resources available • Extent and quality of engagement with relevant partners / partnerships • Quality and adequacy of project monitoring mechanisms (oversight bodies' input, quality and timeliness of reports, etc.)	• Project documents • National and local stakeholders • Project staff	• Desk review • Interviews with project staff • Interviews with national and local stakeholders
• Is the project implementation delayed? If so, has that affected cost-effectiveness?	• Project milestones in time • Planned results affected by delays • Required project adaptive management measures related to delays	• Project documents • Project staff	• Desk review • Interviews with the project staff
• What is the contribution of cash and in-kind co-financing to project implementation?	• Level of cash and in-kind co-financing relative to expected level	• Project documents • Project staff	• Desk review • Interviews with the project staff
• To what extent is the project leveraging additional resources?	• Amount of resources leveraged relative to project budget	• Project documents • Project staff	• Desk review • Interviews with the project staff
Evaluation Criteria: Effectiveness			
• Are the project objectives likely to be met? To what extent are they likely to be met?	• Level of progress toward project indicator targets relative to expected level at current point of implementation	• Project documents • Project staff • Project stakeholders	• Interviews • Desk review
• What are the key factors contributing to project success or underachievement?	• Level of documentation of andpreparation for project risks, assumptions and impact drivers	• Project documents • Project staff • Project stakeholders	• Interviews • Desk review
• What are the key risksand barriers that remain to achieve theproject objective and generate Global Environmental Benefits?	• Presence, assessment of, and preparation for expected risks, assumptions and impact drivers	• Project documents • Project staff • Project stakeholders	• Interviews • Desk review
• Are the key assumptions and impact drivers relevant to the achievement of Global Environmental Benefits likely to be met?	• Actions undertaken to address key assumptions and target impact drivers	• Project documents • Project staff • Project stakeholders	• Interviews • Desk review

Evaluation Criteria: Results			
• Have the planned outputs been produced? Have they contributed to the project outcomes andobjectives?	• Level of project implementation progress relative toexpected level at current stage of implementation • Existence of logical linkages between project outputs and outcomes/impacts	• Project documents • Project staff • Project stakeholders	• Interviews • Desk review
• Are the anticipated outcomes likely to be achieved? Are the outcomes likely to contribute to the achievement of the project objective?	• Existence of logical linkages between project outcomes andimpacts	• Project documents • Project staff • Project stakeholders	• Interviews • Desk review
• Are impact level results likely to be achieved? Are the likely to be at the scale sufficient to be considered Global Environmental Benefits?	• Environmentalindicators • Level of progress through the project's Theory of Change	• Project documents • Project staff • Project stakeholders	• Interviews • Desk review
Evaluation Criteria: Sustainability			
• To what extent are project results likely to be dependent on continued financial support? What is the likelihood that any required financial resources will be available to sustainthe project results once the GEF assistance ends?	• Financial requirements for maintenance of project benefits • Level of expected financial resources available to support maintenance of project benefits • Potential for additional financial resources to support maintenance of project benefits	• Project documents • Project staff • Project stakeholders	• Interviews • Desk review
• Do relevant stakeholders have orare likely to achieve an adequate level of"ownership" of results, to have the interest in ensuring that project benefits are maintained?	• Level of initiative and engagement of relevant stakeholders in project activities and results	• Project documents • Project staff • Project stakeholders	• Interviews • Desk review
• Do relevant stakeholders have thenecessary technical capacity to ensure that project benefits are maintained?	• Level of technical capacity of relevant stakeholders relative to level required to sustain project benefits	• Project documents • Project staff • Project stakeholders	• Interviews • Desk review
• To what extent are the project results dependent on socio-political factors?	• Existence of socio-political risks to project benefits	• Project documents • Project staff • Project stakeholders	• Interviews • Desk review
• To what extent are the project results dependent on issuesrelating to institutional frameworks and governance?	• Existence of institutional and governance risks to project benefits	• Project documents • Project staff • Project stakeholders	• Interviews • Desk review
• Are there any environmental risks that can undermine the future flow of project impacts and Global Environmental Benefits?	• Existence of environmental risks to project benefits	• Project documents • Project staff • Project stakeholders	• Interviews • Desk review

ANNEX 6. RATING SCALES

Ratings for Progress Towards Results: (one rating for each outcome and for the objective)		
6	Highly Satisfactory (HS)	The objective/outcome is expected to achieve or exceed all its end-of-project targets, without major shortcomings. The progress towards the objective/outcome can be presented as "good practice".
5	Satisfactory (S)	The objective/outcome is expected to achieve most of its end-of-project targets, with only minor shortcomings.
4	Moderately Satisfactory (MS)	The objective/outcome is expected to achieve most of its end-of-project targets but with significant shortcomings.
3	Moderately Unsatisfactory (HU)	The objective/outcome is expected to achieve its end-of-project targets with major shortcomings.
2	Unsatisfactory (U)	The objective/outcome is expected not to achieve most of its end-of-project targets.
1	Highly Unsatisfactory (HU)	The objective/outcome has failed to achieve its midterm targets and is not expected to achieve any of its end-of-project targets.

Ratings for Project Implementation & Adaptive Management: (one overall rating)		
6	Highly Satisfactory (HS)	Implementation of all seven components – management arrangements, work planning, finance and co-finance, project-level monitoring and evaluation systems, stakeholder engagement, reporting, and communications – is leading to efficient and effective project implementation and adaptive management. The project can be presented as "good practice".
5	Satisfactory (S)	Implementation of most of the seven components is leading to efficient and effective project implementation and adaptive management except for only few that are subject to remedial action.
4	Moderately Satisfactory (MS)	Implementation of some of the seven components is leading to efficient and effective project implementation and adaptive management, with some components requiring remedial action.
3	Moderately Unsatisfactory (MU)	Implementation of some of the seven components is not leading to efficient and effective project implementation and adaptive, with most components requiring remedial action.
2	Unsatisfactory (U)	Implementation of most of the seven components is not leading to efficient and effective project implementation and adaptive management.
1	Highly Unsatisfactory (HU)	Implementation of none of the seven components is leading to efficient and effective project implementation and adaptive management.

Ratings for Sustainability: (one overall rating)		
4	Likely (L)	Negligible risks to sustainability, with key outcomes on track to be achieved by the project's closure and expected to continue into the foreseeable future
3	Moderately Likely (ML)	Moderate risks, but expectations that at least some outcomes will be sustained due to the progress towards results on outcomes at the Midterm Review
2	Moderately Unlikely (MU)	Significant risk that key outcomes will not carry on after project closure, although some outputs and activities should carry on
1	Unlikely (U)	Severe risks that project outcomes as well as key outputs will not be sustained

ANNEX 7. SERVICE PROVIDER STATEMENT OF COMMITMENT

Service provision reference:

Object of the Contract:

I hereby declare that I am aware and full committed to not engage in any conduct associated with sexual exploitation and abuse, discrimination or harassment, whether sexual or gender-related, as well as with physical abuse, abuse of authority or verbal abuse in the provision of the service in any work or intellectual production environment.

I declare that I am not personally or in any branches (if any), subsidiaries or affiliated entities (if any) engaged in any practice inconsistent with the criteria set forth The International Convention on the Child's Rights which sets out the enshrined principles as to the right to life, liberty, the obligations of parents, society and the state towards children and adolescents.

I further agree that any breach of any rule will constitute a serious violation and that – in addition to other legal rights and provisions available to any person or institution – this will serve as grounds for termination with the consequent extinction of any link related to service provision.

I also understand that nothing in these terms shall limit the right of UNDP to bring such a breach of the rules of conduct to the knowledge of authorities.

Name:	Trond Norheim
Signature:	
Title:	International Consultant
ID Number:	3083229
Date:	24-09-2021

ANNEX 8. UNEG Code of Conduct for Evaluators/Consultants[17]

Evaluators/Consultants:

1. Must present information that is complete and fair in its assessment of strengths and weaknesses so that decisions or actions taken are well founded.
2. Must disclose the full set of evaluation findings along with information on their limitations and have this accessible to all affected by the evaluation with expressed legal rights to receive results.
3. Should protect the anonymity and confidentiality of individual informants. They should provide maximum notice, minimize demands on time, and respect people's right not to engage. Evaluators must respect people's right to provide information in confidence and must ensure that sensitive information cannot be traced to its source. Evaluators are not expected to evaluate individuals and must balance an evaluation of management functions with this general principle.
4. Sometimes uncover evidence of wrongdoing while conducting evaluations. Such cases must be reported discreetly to the appropriate investigative body. Evaluators should consult with other relevant oversight entities when there is any doubt about if and how issues should be reported.
5. Should be sensitive to beliefs, manners and customs and act with integrity and honesty in their relations with all stakeholders. In line with the UN Universal Declaration of Human Rights, evaluators must be sensitive to and address issues of discrimination and gender equality. They should avoid offending the dignity and self-respect of those persons with whom they come in contact in the course of the evaluation. Knowing that evaluation might negatively affect the interests of some stakeholders, evaluators should conduct the evaluation and communicate its purpose and results in a way that clearly respects the stakeholders' dignity and self-worth.
6. Are responsible for their performance and their product(s). They are responsible for the clear, accurate and fair written and/or oral presentation of study limitations, findings, and recommendations.
7. Should reflect sound accounting procedures and be prudent in using the resources of the evaluation.
8. Must ensure that independence of judgement is maintained, and that evaluation findings and recommendations are independently presented.
9. Must confirm that they have not been involved in designing, executing, or advising on the project being evaluated.

MTR Consultant Agreement Form

Agreement to abide by the Code of Conduct for Evaluation in the UN System:

Name of Consultant: Trond Norheim

_____

Name of Consultancy Organization (where relevant):

_____

I confirm that I have received and understood and will abide by the United Nations Code of Conduct for Evaluation.

Signed at _*Tårnåsen, Norway*_____ *(Place)* on __*03-08-2021*_____

Signature:

[17] http://www.unevaluation.org/document/detail/100

ANNEX 9. SIGNED TERMINAL EVALUATION REPORT

Trond Norheim
Evaluator
trondn@dimes-global.com

ANNEX 10. UNDP CLEARANCE

(PENDING)