



REQUEST FOR CEO ENDORSEMENT

PROJECT TYPE: Full-sized Project

TYPE OF TRUST FUND: GEF Trust Fund

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PART I: PROJECT INFORMATION

| | | | |
|--|----------------------------------|------------------------------|---------------|
| Project Title: Promotion of Sustainable Charcoal in Angola through a Value Chain Approach | | | |
| Country(ies): | Angola | GEF Project ID: ¹ | 5719 |
| GEF Agency(ies): | UNDP | GEF Agency Project ID: | 5331 |
| Other Executing Partner(s): | Ministry of Environment (MINAMB) | Submission Date: | April 7, 2016 |
| | | Resubmission Date: | May 17, 2016 |
| GEF Focal Area (s): | Climate Change | Project Duration(Months) | 72 |
| Name of Parent Program (if applicable): | n/a | Project Agency Fee (\$): | 438,900 |
| <ul style="list-style-type: none"> ➤ For SFM/REDD+ <input type="checkbox"/> ➤ For SGP <input type="checkbox"/> ➤ For PPP <input type="checkbox"/> | | | |

A. FOCAL AREA STRATEGY FRAMEWORK²

| Focal Area Objectives | Expected FA Outcomes | Expected FA Outputs | Trust Fund | Grant Amount (\$) | Cofinancing (\$) |
|---|-----------------------|-------------------------|------------|-------------------|------------------|
| CCM-2 Promote market transformation for energy efficiency in industry and the building sector | GHG emissions avoided | Energy savings achieved | GEF TF | 4,620,000 | 18,711,700 |
| Total project costs | | | | 4,620,000 | 18,711,700 |

B. PROJECT FRAMEWORK

| Project Objective: To reduce the current unsustainable and GHG-intensive mode of charcoal production and utilization from Angola's Miombo woodlands via an integrated set of interventions in the national charcoal value chain. | | | | | | |
|---|------------|--|--|------------|-------------------|----------------------------|
| Project Component | Grant Type | Expected Outcomes | Expected Outputs | Trust Fund | Grant Amount (\$) | Confirmed Cofinancing (\$) |
| I. Information and strengthening of the policy framework for sustainable charcoal | TA | 1. The policy framework to support a sustainable charcoal value chain in Angola, has been strengthened | 1.1 Baseline information updated and completed covering energy, forestry, economic, environmental, social, and gender aspects of the charcoal value chain 1.2 Inter-institutional coordination enhanced to strengthen governance of charcoal sector 1.3 Preparation and endorsement of a national white paper on sustainable charcoal production | GEF TF | 1,220,000 | 5,990,000 |

¹ Project ID number will be assigned by GEFSEC.

² Refer to the [Focal Area Results Framework and LDCE/SCCF Framework](#) when completing Table A.

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| | | | <p>1.4 Design of a certification scheme for sustainable charcoal including a mechanism for monitoring, reporting and verification (MRV) of charcoal production, distribution and commercialization</p> <p>1.5 Incorporation of certified, sustainable charcoal and energy-efficient stoves into national poverty reduction and rural development programmes under application of MRV mechanism</p> <p>1.6 National conference and field visits implemented for key stakeholders to discuss and disseminate results and prospects for sustainable charcoal in Angola and region</p> | | | |
| II. Transfer of sustainable charcoal technology to agents along the charcoal value chain | TA (2.1-2.5) and INV (2.6 – 2.7) | 2. The benefits of sustainable charcoal production technology, briquetting and energy-efficient charcoal stoves, have been accepted by producers and peri-urban consumers | <p>2.1 Demonstration and introduction of improved charcoal kilns among selected rural communities in the Huambo-Luanda corridor</p> <p>2.2 Demonstration and introduction of energy-efficient technologies (briquetting and efficient stoves) in selected peri-urban municipalities of Luanda</p> <p>2.3 Integration of improved charcoal production technology in sustainable forest management and rural development initiatives in communities in the Huambo-Luanda corridor</p> <p>2.4 Targeted technical assistance to support charcoal pilots and enhance facilities of project partners</p> <p>2.5 Detailed documentation and systematization of project experiences, and generation of recommendations for policy development, and design of financing production and business models</p> | GEF TF | 1,390,000 | 686,700 |
| | Inv | | 2.6 Dissemination of energy-efficient charcoal kilns in | GEF TF | 550,000 | 10,400,000 |

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|---|----|--|--|--------|-----------|---------|
| | | | <p>selected rural communities, and briquetting technology in selected peri-urban areas (on a cost-sharing basis)³</p> <p>2.7 Dissemination of certified charcoal and energy-efficient charcoal stoves among low-income households through government poverty reduction and/or market development programs⁴</p> | | | |
| III. Strengthening of human capacities and institutions | TA | 3. Institutional and human capacities for sustainable charcoal production and utilization have been strengthened through partnerships for knowledge transfer and professional training | <p>3.1 Technical assistance and capacity building activities for the Institute for Forestry Development (IDF) in Huambo Province</p> <p>3.2 Design and implementation of a training programme and extension work on efficient charcoal production for student teachers and community workers</p> <p>3.3 Training activities conducted for relevant government staff on sustainable charcoal production, charcoal policy, financing and monitoring, verification and reporting systems</p> <p>3.4 Training activities targeting professional charcoal retailers in peri-urban markets on the establishment of sustainable charcoal supply chains, and technical assistance for briquetting micro-enterprise development</p> | GEF TF | 1,040,000 | 950,000 |
| IV. Monitoring and Evaluation | TA | 4. The Monitoring & Evaluation plan for the Project has been implemented | <p>4.1 Design and implementation of a Monitoring and Evaluation plan, including reporting on progress indicators and targets</p> <p>4.2 Implementation and reporting of Mid-term Review and Terminal Evaluation</p> <p>4.3 Execution of project audits</p> | GEF TF | 200,000 | 145,000 |

³ This output links to the efforts under output 2.1 and 2.2 to introduce improved charcoal kilns in rural communities, and briquetting machines in peri-urban areas, respectively.

⁴ This output builds on output 1.5.

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|--|--|--------|------------------|-------------------|
| | Subtotal | | 4,400,000 | 18,171,700 |
| | Project management Cost (PMC) ⁵ | GEF TF | 220,000 | 540,000 |
| | Total project costs | | 4,620,000 | 18,711,700 |

C. SOURCES OF CONFIRMED COFINANCING FOR THE PROJECT BY SOURCE AND BY NAME (\$)

Letters of co-financing for the project are included in a separate file with the submission

| Sources of Co-financing | Name of Co-financier (source) | Type of Cofinancing | Cofinancing Amount (\$) |
|---------------------------|--------------------------------------|---------------------|-------------------------|
| National Government | Ministry of Environment (MINAMB) | Cash | 2,500,000 |
| National Government | Ministry of Environment (MINAMB) | In-kind | 1,000,000 |
| National Government | Ministry of Agriculture (MINAGRI) | Cash | 1,500,000 |
| National Government | Ministry of Energy and Water (MINEA) | Cash | 1,000,000 |
| National Government | Ministry of Commerce (MINCO) | Cash | 10,000,000 |
| CSO | ADPP Angola | In-kind | 1,000,000 |
| CSO | COSPE Italy | In-kind | 186,700 |
| Others | University of Córdoba UCO-UJES | In-kind | 650,000 |
| GEF Agency | UNDP CO Angola | Cash | 875,000 |
| Total Co-financing | | | 18,711,700 |

D. TRUST FUND RESOURCES REQUESTED BY AGENCY, FOCAL AREA AND COUNTRY¹

| GEF Agency | Type of Trust Fund | Focal Area | Country Name/ Global | (in \$) | | |
|------------------------------|--------------------|----------------|-------------------------|------------------|-----------------------------|------------------|
| | | | | Grant Amount (a) | Agency Fee (b) ² | Total c=a+b |
| UNDP | GEF TF | Climate Change | Angola | 4,620,000 | 438,900 | 5,058,900 |
| Total Grant Resources | | | | 4,620,000 | 438,900 | 5,058,900 |

¹ In case of a single focal area, single country, single GEF Agency project, and single trust fund project, no need to provide information for this table. PMC amount from Table B should be included proportionately to the focal area amount in this table.

² Indicate fees related to this project.

F. CONSULTANTS WORKING FOR TECHNICAL ASSISTANCE COMPONENTS:

| Component | Grant Amount (\$) | Cofinancing (\$) | Project Total (\$) |
|----------------------------|-------------------|------------------|--------------------|
| International Consultants | 412,500 | 330,000 | 742,500 |
| National/Local Consultants | 559,060 | 100,000 | 659,060 |

G. DOES THE PROJECT INCLUDE A "NON-GRANT" INSTRUMENT? No

⁵ PMC should be charged proportionately to focal areas based on focal area project grant amount in Table D below.

(If non-grant instruments are used, provide in Annex D an indicative calendar of expected reflows to your Agency and to the GEF/LDCF/SCCF/NPIF Trust Fund).

PART II: PROJECT JUSTIFICATION

A. DESCRIBE ANY CHANGES IN ALIGNMENT WITH THE PROJECT DESIGN OF THE ORIGINAL PIF⁶

A.1 National strategies and plans or reports and assessments under relevant conventions, if applicable, i.e. NAPAS, NAPs, national communications, TNAs, NCSA, NIPs, PRSPs, NPFE, Biennial Update Reports, etc.: **NA**

In September 2015, the Ministry of Energy and Water (MINEA) of Angola completed the Rapid Assessment and Gap Analysis under the SE4All Global Initiative with support from UNDP. The present GEF project is aligned with the recommendations on sustainable charcoal given in that report, specifically the need for database development, efficient charcoal production kilns, energy-efficient stoves, and heightened awareness. Note that Angola has not submitted BURs nor Intended Nationally Determined Commitments (INDCs) for Greenhouse Gas reductions at present. Angola has also not yet participated in the TNA exercises.

A.2. GEF focal area and/or fund(s) strategies, eligibility criteria and priorities. **NA**

A.3 The GEF Agency's comparative advantage:

Reference is made to UNDP's comparative advantages as outlined at PIF stage. Worthwhile to note is UNDP's ongoing involvement in the last two years in various sustainable biomass and charcoal development issues in the region via the following activities: initiation and financing of NAMA studies into the charcoal value chain in Cote d'Ivoire and Ghana (Oct. 2014), and support for the abovementioned SE4All Rapid Assessment and Gap Analysis for Angola. Please see - <http://www.undp.org/content/undp/en/home/librarypage/environment-energy/mdg-carbon/>

A.4. The baseline project and the problem that it seeks to address:

The baseline project consists primarily of Government involvement to design strategies and implement studies relevant for the charcoal sector. The Ministry of Environment (MINAMB) coordinates efforts with the Ministry of Agriculture (MINAGRI) and the Ministry of Energy and Water (MINEA). Government programmes and strategies include natural resource management; forest stock inventories and a (re-)forestation strategy; and a renewable energy strategy and mapping of renewable energy sources. Various other government programmes by the Ministry of Commerce (MINCO) address rural producers and consumers of agricultural products, offering an opportunity for commercialization of sustainable charcoal in Angola. Baseline activities by the academic sector are aimed at building up in-country scientific, educational and professional capacities in forestry management and bioenergy. Moreover various non-governmental organizations are supporting the promotion of sustainable charcoal production for improved rural livelihoods at the local level. The baseline activities listed in the PIF have been updated (Prodoc, § 43-56) to reflect the current initiatives and their implementation status. The baseline makes a start by addressing the key barriers hampering the implementation of a more sustainable charcoal sector in Angola, specifically the policy and information barriers. In spite of these advances, severe systemic barriers are still in place that are a legacy of the long-lasting conflict in Angola, notably weak human and institutional capacities coupled with ineffective regulation and lack of enforcement of the biomass sector. Specific charcoal-related barriers that are not addressed or only partially addressed under the baseline project include: (i) collection and analysis of data on the charcoal value chain (information); (ii) design, promotion and demonstration of sustainable business models (delivery models); (iii) training and promotion of energy-efficient, low-emission charcoal technologies (technology); (iv) awareness raising activities and supportive studies (policy); and (v) exploration of financing opportunities (finance).

Specifically, the baseline project consists of the following Government programmes and activities:

1. The Sustainable Management of Natural Resources Programme implemented by the Ministry of Environment (MINAMB). This Programme provides a framework to facilitate the line ministries MINAGRI, MINGEO and MINPET in their efforts to mainstream sustainable natural resource conservation principles and practices into sector policies and programmes. The Programme responds to the challenges outlined in Angola's Long-term Development Strategy and the

⁶ For questions A.1 –A.7 in Part II, if there are no changes since PIF and if not specifically requested in the review sheet at PIF stage, then no need to respond, please enter "NA" after the respective question.

Development Programme 2013-2017 and provides orientation and technical support for sectoral action plans and programmes. (Prodoc, § 43).

2. The Ministry of Commerce (MINCO) is in charge of implementing the national Integrated Municipal Programme for Rural Development and Poverty Reduction. As part of this programme, the sub-programme “Cartão Kikuia” was set up, deploying a voucher system to allow low-income families to buy baskets of basic necessities in special shops: the “Lojas Kikuia”. The Programme PAPAGRO was established in November 2013 as part of the National Strategy for Rural Commerce and Entrepreneurship. Both programmes provide an entry point for marketing of sustainably produced charcoal and efficient stoves, as well as for awareness raising campaigns. (Prodoc, § 44-45).

3. The National Forestry Inventory (NFI) was conceived as an instrument to facilitate the efficient administration of national forest resources and enable their sustainable exploitation. Work initiated in 2008 with technical assistance from FAO. The NFI is implemented by the Ministry of Agriculture (MINAGRI) through the Institute for Forestry Development (IDF) (Prodoc, § 46).

4. The National Renewable Energy Strategy implemented by the Ministry of Energy and Water (MINEA). Activities pursued under the Strategy include: the distribution of 100,000 improved cooking stoves and 50,000 solar lanterns; implementation of RETs (renewable energy technologies) for productive uses in 200 rural communities; establishment of training centers for technicians in RETs; and allocation of public funds to the National Electrification Fund to facilitate financing of RETs by Small and Medium-sized Enterprises (SMMEs) (Prodoc, § 47).

Non-Government baseline projects are as follows:

5. Partnership University Jose Eduardo dos Santos in Huambo (UJES) and University of Córdoba, Spain (UCO). Both universities collaborate under an agreement aimed at strengthening of the education and research capabilities of UJES’ Faculty of Agricultural Sciences (FCA). They also participate in the EU-funded project “African Network for Education in Energy Resources (ANEER)”, together with the Higher Polytechnic Institute of Gaza, Mozambique (ISPG). The project aims to strengthen academic skills in the field of energy efficiency and improve the management of higher education in Angola and Mozambique. The partners have established a plan of activities to study the impact of charcoal production on the Miombo ecosystem and to design and test methodologies for mitigation. (Prodoc, § 48-50).

6. *Ajuda de Desenvolvimento de Povo para Povo* (ADPP Angola) is an Angolan non-governmental organization, which started in 1986 and was registered with the Ministry of Justice in 1992. ADPP works in 17 of Angola's 18 provinces and directly engages more than 8,000 people in work or study on a daily basis. Through its Farmers’ Club (FC) projects, ADPP assists subsistence farmers to adopt environmentally sustainable techniques to improve productivity, and trains FC members to organize for buying inputs and selling to the market. ADPP has committed itself to transfer sustainable charcoal technology to rural producers, taking advantage of its training facilities, capabilities and its Farmers’ Club system. (Prodoc, § 51-53).

7. COSPE is an Italian registered NGO committed to the implementation of more than 100 projects in around 30 countries, in Europe, Africa, Latin America, Asia, the Mediterranean and Eastern Europe. COSPE has been working in Angola since 1993. Environmental/agricultural projects have been implemented by COSPE co-funded by the Italian Ministry of Foreign Affairs and the EU, including the Integrated Project for the Protection and Development of Angolan coastal Forest (PIPDEFA). COSPE is involved in establishing a payment for ecosystem services system in the Canjombe community near Waku Kungu (Kwanza Sul). This integrated project covers the introduction of improved charcoal kilns alongside other income-generating activities. (Prodoc, § 54-56).

Removal of the barriers identified will result in substantial reductions in global GHG emissions, as well as localized socio-economic and environmental benefits. This provides a rationale for GEF involvement under the GEF-5 CCM Focal Area. The GoA has expressed its support through support for parallel Government programmes by MINAMB, MINEA, MINAGRI and MINCO as co-financing to the Project (aggregate value of US\$ 16 million) through a letter issued by the Ministry of Environment (attached in Annex B to the Prodoc). The CSOs ADPP Angola and COSPE (Italy), and the University of Córdoba UCO-IDAF (Spain) - in collaboration with the University of Huambo (Angola) – have committed USD 1,836,700 co-financing (in-kind) funded through parallel projects and institutional support (letters attached in Annex B to Prodoc). The total co-financing budget associated to the baseline project amounts to US\$18,711,700 (see Prodoc, § 75) which represents an increase of 42% compared to the co-financing for the Project identified in the PIF (US\$ 13,164,095). Moreover, cash co-funding for investment has increased from an initially committed figure of US\$ 4.5 million to an actual US\$ 10 million. **It is notable to mention that UNDP’s co-finance for**

the project has increased from US\$ 400,000 to US\$ 875,000, an increase of 119%. As a result, the co-financing ratio of the Project has increased to 4:1 (co-finance to the GEF grant).

A. 5. Incremental /Additional cost reasoning: describe the incremental (GEF Trust Fund/NPIF) or additional (LDCF/SCCF) activities requested for GEF/LDCF/SCCF/NPIF financing and the associated global environmental benefits (GEF Trust Fund) or associated adaptation benefits (LDCF/SCCF) to be delivered by the project:

The Problem statement outlined in the PIF remains valid but has been reviewed during the PPG and fine-tuned to the latest current situation in Angola. The main drivers behind the fast expansion of the charcoal market in Angola are:

- the large demand for charcoal from the growing population in peri-urban areas;
- the lack of alternative fuels such as LPG in many parts of the country;
- availability of cheap labour and forest resources in the interior; and
- absence of alternatives for cash income generation by rural people.

Compared to other countries in Sub-Saharan Africa, circumstances specific for Angola include the absence of sector-relevant data; an incipient institutional framework; a generalized lack of skilled human resources; and a poorly developed internal market and logistical infrastructure. On the positive side, Government strategies are evolving towards a more equitable, inclusive and diversified economic development model, while awareness of the importance of energy- and resource-efficiency is growing. The key challenge is to reach the provincial and municipal levels and translate national priorities into interventions that can be managed effectively at the local level by public entities in engagement with the stakeholders. Moreover, Government interest in next generation climate change mitigation mechanisms and payment for environmental service mechanisms has increased.

The PPG affirmed that rural charcoal producers in Angola need technology that matches a basic level of technical skills, and that fits into the local production systems. Earlier attempts by NGOs had limited success by pursuing an overly ambitious level of technology transfer. The PPG also concluded (based on in-depth consultations) that formal establishment of rural charcoal producers in Angola would be premature under the Project's time horizon. Moreover, Government programmes aimed at SME development (as identified at PIF stage) proved to be immature as yet to serve small-scale and under-capitalized rural farmers. Instead it was agreed that one should first prioritize strengthening local associative capacities and make visible the economic, social and environmental benefits of sustainable charcoal production to all stakeholders. Angola needs to generate a body of positive and systematically documented experiences with improved charcoal production that is convincing to rural farmers and policy makers for additional upscaling. Work towards this goal can benefit from - and feed into – similar initiatives in other Sub-Saharan countries such as that promoted by NEPAD, UNDP and the SE4All Global Initiative.

Since establishing a “green charcoal” market appeared premature at present in Angola due to weak interest by higher-income consumers, the Project will leverage the Ministry of Commerce (MINCO) programmes PAPAGRO and Loja Kikua as a delivery channel for introducing certified charcoal on the market (Prodoc, § 42, 44-45). In the context of a poorly developed market system, a more vertically-integrated supply chain is more likely to be successful (in fact, experiences have shown that fair trade commodity product sourcing often starts within a command-based structure). It was further discovered that many small retailers can be traced back to their communities of origin, and as such are also part of a vertical supply chain (often along family ties). One may conclude that a wholesale market for charcoal in Angola has not yet developed (Prodoc, § 67). Based on the findings of the PPG, the Project approach has been thoroughly revised (Prodoc, § 58-72).

Compared to the PIF, a few Outputs have been discarded as they had become obsolete due to progressing baseline activities (information collection), or because they were deemed not viable under present circumstances (green charcoal, formalization of charcoal producer groups and linkages with SME finance programmes INAPEM and Angola Investe). The indicated changes are expected to improve the robustness of the Project's Strategic Results Framework (SRF), reduce dependence on external factors, and enhance sustainability of the outcomes proposed. As regards improved charcoal production, the main type of technology chosen for promotion (Casamance kilns) is less ambitious (from a GHG abatement perspective) than envisioned at PIF stage (where we estimated promoting a mix of Casamance and retort kin technologies) but is still sufficient to achieve substantial energy savings given the low baseline level. More advanced low-carbon technologies (such as retorts) will be demonstrated; however they will only be pursued if opportunities into this direction appear feasible.

As a result of choosing to disseminate a relatively cheap production technology (Casamance kilns) compared to the original scenario in the PIF (which included dissemination of 80 retort kilns) the % of INV versus TA in the GEF budget has decreased compared to the PIF.

In terms of technology transfer a two-step approach is proposed, aimed at initial, donor-funded demonstrations followed by replication with mobilization of (some) local funding to verify that improved technology is effectively accepted and its benefits acknowledged by local stakeholders. Marketing of certified charcoal (original component 4) has now been incorporated into component #2 by creating a demand for certified charcoal through the aforementioned Government programmes. This approach not only links consumption with production, but also generates a financial inflow that may support rural producers in adopting more sustainable production methods. Furthermore, a link with policy is created since certification criteria for sustainable charcoal needs to be drafted and operationalized.

A detailed explanation of the minor changes in outputs from PIF to CEO Endorsement is elaborated in the table below.

Changes in Project's Strategic Results Framework between PIF and CEO ER

| Components at PIF stage | Outputs - location at PIF stage | Outputs - location at CEO Endorsement | Comments / Rational for changes |
|--|---|---|--|
| 1. Biomass data collection and institutional strengthening of biomass energy stakeholders. | 1.1 National charcoal survey conducted and standardized; baseline report completed, including mapping of areas of production and consumption and organizations involved in charcoal trade (using a value chain approach). | Integrated into: 1.1. Baseline information updated and completed covering energy, forestry, economic, environmental, social, and gender aspects of the charcoal value chain. | PIF Outputs 1.1-1.4 have been downscaled and consolidated as a result of progress in information collection and policy development under the baseline. Output 1.3 is no longer explicitly pursued since its sustainability cannot be secured and the institutional framework is not yet mature. However, investment in IT infrastructure is taking place by the Government; hence this output may be attained under the baseline. |
| | 1.2 Biomass data information and statistics mainstreamed into annual energy statistics collected by the Ministry of Energy and Water (MINEA) and national energy planning mechanisms. | | |
| | 1.3 Biomass energy information hosted in an appropriate IT database with specific mechanisms in place to ensure it is updated and maintained post-project. | | |
| | 1.4 Completed assessment study of charcoal production-related environmental, economic and social impacts with recommended action plans for vulnerable areas. | | |
| | 1.5 Framework agreement for institutional coordination on biomass energy policies and charcoal regulation developed between MINAMB, IDF and MINEA covering both upstream and downstream biomass energy issues. | Further detailed into: 1.2 Inter-institutional coordination enhanced to strengthen governance of charcoal sector. 1.3 Preparation and endorsement of a national white paper on sustainable charcoal production. | The scope of PIF output 1.5 is already largely covered by the CMA committee led by MINAMB. In response, the endorsement of a white paper (versus a framework agreement) has been set as a more ambitious goal for the Project. |
| | 1.6 Trainings conducted for relevant government and provincial staff on best practices in sustainable biomass management, policies, incentives and MRV systems. | Expanded into the following outputs: 3.1 Technical assistance and capacity building activities for the Institute for Forestry Development (IDF) in Huambo Province 3.2 Design and implementation of a | At CEO ER a dedicated component III is proposed to strengthen human resources and institution building. Based on a gap analysis, additional target groups were found, specifically the IDF in Huambo, which is a key public entity for the sector. Also, training needs were |

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| | | training programme and extension work on efficient charcoal production for student teachers and community workers. 3.3 Training activities conducted for relevant government staff on sustainable charcoal production, charcoal policy, financing and monitoring, verification and reporting systems. | identified among other intermediaries including local NGOs, extension workers and rural teachers. |
| | 1.7 Exchange visits and stakeholder participation in regional community of practice and knowledge exchange platforms on sustainable charcoal issues in the Miombo Eco-region. | Integrated into: 1.6 National conference and field visits implemented for key stakeholders to discuss and disseminate results and prospects for sustainable charcoal in Angola and region | Stakeholder involvement and exchange of experiences are managed as transversal themes, and are a key aspect of the project strategy. A national conference is foreseen to link operational implementation (Huambo) with policy (Luanda) and facilitate exchange of experiences with countries in the region. |
| 2. Dissemination of appropriate technologies for sustainable charcoal production (improved kilns) and efficient combustion in at least eight (8) selected charcoal-producing municipios (municipalities) in 1-2 target Provinces. | 2.1 Sensitization campaign conducted with relevant provincial stakeholders and community groups on importance of sustainable charcoal technologies and practices. | See PIF Output 1.7 | See PIF Output 1.7 |
| | 2.2 Minimum sixty (60) sustainable charcoal producer associations (CPAs) selected from existing NGO-supported groups across 8 municipalities in targeted Provinces. | Replaced by: 2.1 Demonstration and introduction of improved charcoal kilns among selected rural communities in the Huambo-Luanda corridor | The approach for introducing sustainable charcoal kilns has changed. Direct engagement with charcoal producers proved difficult and CPAs appear more diffuse than in other countries. Therefore, the Project proposes to work through ADPP Angola (2.1) and COSPE (2.2) as Responsible Parties to implement EE kilns. Targets have been aligned with the system of ADPP Farmer's Clubs. Upscaling is foreseen under (2.6). Targeted assistance (2.4) is foreseen to ensure technical backup for project partners. Systematization of experiences (2.5) is included to address identified weaknesses in reporting and analysis and to share experiences with other countries. |
| | 2.3 All CPAs selected will be legally registered as microenterprises according to regulations of the Angola Invest Programme (Programa Angola Investe). | Removed from the SRF. | |
| | 2.4 Dissemination of approximately 200 Casamance kilns and 80 retort (or other) kilns to target CPAs. | Replaced by: 2.1 Demonstration and introduction of improved charcoal kilns among selected rural communities in the Huambo-Luanda corridor 2.3 Integration of improved charcoal production technology in sustainable forest management and rural | |

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| | | development initiatives in communities in the Huambo-Luanda corridor. 2.6 Introduction of energy-efficient charcoal kilns in selected rural communities, and of briquetting technology in peri-urban areas, on a cost-sharing basis. | |
| | 2.5 Training of 60 CPAs on sustainable charcoal practices and improved kiln technologies, as well as group reporting, book-keeping and compliance with certification standards (established under Component #4). | Replaced and extended through the following outputs: 2.4 Targeted technical assistance and equipment to support charcoal pilots and enhance facilities of project partners 2.5 Detailed documentation and systematization of project experiences, and generation of recommendations for policy development and design of financing production and business models | |
| | 2.6 MRV, tracking and licensing system established for all improved kilns piloted and mapping completed of all targeted areas receiving kilns to track decrease in forest cover loss relative to baseline parameters. | Replaced by: 1.4 Design of a certification scheme for sustainable charcoal including a mechanism for monitoring, reporting and verification (MRV) of charcoal production, distribution and commercialization. 1.5 Incorporation of certified, sustainable charcoal and efficient-efficient stoves into national poverty reduction and rural development programmes under application of MRV mechanism. | The approach towards an MRV system has been adjusted to link it to national CC policy and financing, justifying insertion of the PIF Outputs 4.6, 2.6 and 3.5 into component I. MRV will be directly integrated into Governmental social and rural development programmes, based on applicable criteria for sustainable charcoal. The focus will be on tracking charcoal volumes rather than forestry parameters. |
| | 2.7 National model scheme for commercial financing for charcoal producing groups (a partnership with INAPEM and local financial institutions) proposed and in place by the end of project. | Removed from the SRF. | It was realized at PPG phase that the rural charcoal producers are not eligible to take part in the current set-up of Angola Investe programme, which targets larger companies. |

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| 3. Dissemination of charcoal briquetting machines to enterprises in selected peri-urban areas of Luanda and/or Benguela. | 3.1 Feasibility study and mapping of the best locations and production capacity for briquetting from charcoal dust production and/or other base sources in Luanda and Benguela. | Replaced by: | The approach to this component will be two-fold. (1) Briquetting will be introduced by ADPP Angola through its school system. Sites have been selected (PIF Output 3.1) in peri-urban areas. A full business model will be developed under the Project. ADPP activities include training and outreach aiming at replication. (2) Briquetting will be introduced among professional retailers in peri-urban areas of Luanda (PIF Output 3.4). |
| | 3.2 Twenty (20) charcoal briquetting enterprises formally established, incorporated, trained and operational across selected peri-urban areas of Luanda and/or Benguela. | 2.2 Demonstration and introduction of energy-efficient technologies (briquetting and efficient stoves) in peri-urban municipalities of Luanda. | |
| | 3.3 Training of all enterprises on briquetting practices, technologies and business models (including financing options). | 2.6 Introduction of energy-efficient charcoal kilns in selected rural communities, and of briquetting technology in peri-urban areas, on a cost-sharing basis. | |
| | 3.4 Dissemination of approximately 40-50 briquetting machines to selected enterprises targeted for assistance. | 3.4 Training activities targeting professional charcoal retailers in peri-urban markets on the establishment of sustainable charcoal supply chains, and technical assistance for briquetting micro-enterprise development | |
| | 3.5 MRV, tracking and licensing system established for all machines piloted to monitor production and sales, as well as ensure compliance with certification scheme. | See PIF Output 2.6 | |
| | 3.6 Briquetting support platform integrated into Angola Invest Program for replication of support services and provision of commercial finance to enterprises post-project. | See PIF Output 2.6 | |
| Outcome 4. Sustainable charcoal and briquetting certification and marketing scheme at selected retailers in Luanda and Benguela. | 4.1 Feasibility study conducted on development of a “green charcoal” certification scheme to source and market charcoal produced under Component #2 to 2-3 selected retail outlets in Luanda and Benguela. | Removed from the SRF. | The approach to market development for sustainable charcoal has changed as green charcoal was deemed to not be a viable option during the PPG phase. Instead, The “green charcoal” mechanism has been replaced by incorporation of sustainable charcoal into the Government programmes PAPAGRO and Loja Kukuia (vertical supply chain) aimed at low-income urban households. The price paid to the producers should provide an incentive for replication. |
| | 4.2 Feasibility study conducted on development of a market outlet for the sale of charcoal briquetting products supported under Component #3. | Removed from the SRF. | |
| | 4.3 Based on recommendations from F/S, pilot fair trade “green charcoal” product sourced and | Replaced by: 2.7 Dissemination of certified charcoal | |

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| | available for sale to the public at 2-3 retail outlets in Luanda and/or Benguela with packaging requirements and source tracking system in place (point of origin). | and energy-efficient charcoal stoves among low-income households through governmental poverty reduction and/or market development programs. | |
| | 4.4 Market survey conducted at end of project assessing consumer reception and competitiveness of “green charcoal” and briquetting concepts and potential for scale-up. | Removed from the SRF. | Sensitization is included as a transversal theme. A market survey is no longer foreseen (given current weak interest) but may be pursued during implementation if the situation changes. Note that at in the final project design, focus is on low-income charcoal users rather than the more wealthy consumers targeted at PIF. |
| | 4.5 Sensitization campaign for consumers on “green charcoal” and “green briquetting” products and impacts of unsustainable charcoal production. | | |
| | 4.6 Establishment and operationalization of a national certifying entity with funding committed for its operation post-project. | See PIF Output 2.6 | See PIF Output 2.6 |

A brief outline of the Project Components and the adjustments compared to the PIF is provided below:

Component 1 - Information and strengthening of the policy framework for sustainable charcoal (Prodoc, § 77-89). The focus of this component remains as in the PIF. Certain activities have been adjusted as a function of progress under the baseline. The Project will deliver tangible results by supporting existing coordination mechanisms and prepare a Government-endorsed white paper on sustainable charcoal; collect and analyse key input information; and strengthen capacities of government institutions (Outputs 1.1-1.3). Key stakeholders in this component include the Ministries of Environment (MINAMB), Energy and Water (MINEA), and Agriculture (MINAGRI). At an operational level, this component will identify objective and verifiable criteria for sustainable charcoal produced in Angola (Output 1.4). Linkages have been established with the already existing social and rural development programmes deployed by the Government (PAPAGRO and Loja Kikuia) to introduce sustainable charcoal and energy-efficient charcoal stoves, thereby generating increased direct impact among rural farmers and low-income peri-urban households. These programmes offer an environment for testing and fine-tuning of certification and MRV schemes, and an opportunity to address governance and sustainability issues including pricing (Output 1.5). Finally, this component will support the organization of a national conference and field visits on sustainable charcoal production in Huambo, with the aim to strengthen the links between stakeholders, exchange experiences and viewpoints, and firmly position charcoal on the national development and sectorial agendas (Output 1.6). Field visits will be organized for key stakeholders to show them on a firsthand basis how low-carbon charcoal technologies work and showcase project activities in the field.

Component 2 - Transfer of sustainable charcoal technology to agents along the charcoal value chain (Prodoc, § 90-107). This component aims to transfer sustainable charcoal technology to rural producers and (peri-urban) consumers, working in partnership with non-governmental organizations in the Charcoal Corridor *Huambo – Kwanza Sul – Luanda*, and in cooperation with Government programmes PAPAGRO and Loja Kikuia. A two-step approach is proposed. The first step (demonstration) involves the introduction of sustainable charcoal production technology (energy-efficient, low-emission kilns) among rural communities (Outputs 2.1-2). The Project will contract eligible CSOs (following UNDP POPP and NIM guidelines; ADPP Angola and COSPE are two possibilities) to promote charcoal technology, thereby generating a variety of experiences from which lessons for scaling-up can be drawn. The ultimate goal of this first step is to have sustainable charcoal production technology fully accepted by a critical mass of producers. Targeting the peri-urban areas (charcoal retail and consumption), It is envisioned that ADPP will introduce and demonstrate charcoal briquetting technology as a business opportunity (Output 2.3). The Project foresees technical backstopping (Output 2.4) and sharing of lessons with other countries in Sub-Saharan Africa who have similar GEF-funded projects. The second step (upscaling) involves dissemination of charcoal kilns and briquetting machines to interested producers and entrepreneurs on a cost-shared basis. This Output (2.6) departs from the assumption that a first group of users has accepted the technology and understands its benefits. The Project will finance part of the initial investment for the technology assets, with the remainder being paid by the producer or operator. The Project aims to further trigger demand for sustainable charcoal through the Government's PAPAGRO programme under the application of certification criteria, and promote energy-efficient charcoal stoves to low-income consumers through the Loja Kikuia programme (Output 2.7). Finally, experiences and emission reductions from technology uptake will be documented and systemized in detail, and lessons learned will be drawn (Output 2.5).

Component 3 - Strengthening of human capacities and institutions (Prodoc, § 108-119). This component will strengthen the national human resource base required for sustaining a low-emission, energy-efficient charcoal sector in Angola. Angola, emerging from decades of conflict and with a very young population, is faced with the challenge to educate and train a next generation of professionals in all disciplines and at all levels. This component aims to build the necessary institutional and human capacities within the IDF (with a focus on IDF Huambo) to adequately perform its tasks related to forest management and reforestation and to improve sector governance. Project activities in Huambo may be implemented in collaboration with Huambo University (UJES) as a formal project partner (if they are selected following UNDP POPP and NIM guidelines) (Output 3.1). Output 3.2 will partner with local NGOs to train student teachers on sustainable charcoal technology and transfer their knowledge to charcoal producers and rural families, prospective briquetting entrepreneurs, and charcoal consumers. The Project will benefit from ADPP's collaboration with the Ministry of Education to operate rural teacher's schools (EPF) and vocational schools (EPP), with back-up from ADPP's Frontline Institute in Huambo. Output 3.3 involves short practical training activities and seminars targeting key staff (public officers) of involved Government entities and policy-makers at the national, provincial, and municipal levels. Finally, Output 3.4 targets the professional retailers on peri-urban markets by creating awareness about the

principles and benefits of sustainable charcoal production; it will further support the retail sector to set up micro-enterprises for briquetting.

Component 4 - Monitoring and Evaluation (Prodoc, § 119-122) A separate component has been added covering the activities related to project monitoring and evaluation according to UNDP and GEF guidelines, and the collection of lessons learnt.

Global Environmental Benefits

The environmental benefits from the project include: (i) reduction of CH₄ releases into the atmosphere per unit of charcoal produced as a result of improved kilns; (ii) reduction of the rate of non-renewable biomass (wood) consumption as a result of increased kiln efficiency (gravimetric yield); (iii) avoided charcoal losses by promotion of briquetting; (iv) reduced consumption of charcoal by end-users through the dissemination of energy-efficient charcoal stoves; (v) reduced soil contamination at charcoal production sites due to improved production processes and increased user awareness; and (vi) reduced indoor pollution with associated health benefits, especially for women and children, as a result of energy-efficient stove use. The benefits (i-iv) are discussed in detail and have been quantified in Annex D of the Prodoc.

The methodology for calculating emission reductions from the kilns is based on a standardized baseline developed by Mueller and Michaelowa.⁷ It is assumed that increased kiln efficiency will proportionally reduce the inputs of non-renewable biomass. The share of non-renewable biomass is included as a key parameter in the methodology. In the absence of specific data, a share of non-renewable biomass (X) of 50% is assumed under the baseline, which seems conservative for Angola. The methane emission reductions are estimated based on CDM methodology AM0041, which provides a simple formula relating to CH₄ emissions in charcoal kilns, to the gravimetric yield (i.e. mass of charcoal outputs divided by mass of wood inputs).⁸

Assuming the use of mound-type kilns under the baseline with a conversion efficiency (gravimetric yield) of 10%, and Casamance kilns with 20% efficiency under the alternative scenario (the Project), emission reductions of 31.6 kg CH₄ per ton charcoal (0.664 ton CO_{2eq}/ton charcoal) are obtained. It is further assumed that the reduced demand for wood inputs will save non-renewable biomass resources (which requires producer awareness), offsetting 1.164 ton CO_{2eq} per ton charcoal. In total, GHG emission reductions of 1.828 ton CO_{2eq} are achieved per ton of charcoal produced compared to the baseline.

The project will follow a two-step approach: an initial pilot involving 36 kilns followed by an expansion (replication) phase to attain a total of 270 operational Casamance kilns at the end of the project. A kiln volume of 50 m³ is assumed. The kilns are typically operated in groups of 3 units operated by a team of three people, during a 3 months per year, yielding 9 charcoal batches per year. Other direct emission reductions are achieved by the introduction and operation of 10 briquetting machines in urban areas, and the dissemination of 10,000 energy-efficient stoves.

The total estimated direct GHG emission reductions obtained from the installed technologies is **209,120 ton CO_{2eq}** over lifetime (10 years). At PIF stage the estimated direct lifetime GHG emission reductions from the deployment of improved carbonization technologies (kilns and briquetting machines) was higher (709,071 ton CO_{2eq}) but this was due in large part to the fact that the asset lifetime was assumed to be 15 years and that in the PIF we targeted dissemination of 80 high-yield retort kilns which have a much higher efficiency output ration compared to Casamance kilns (as already explained in the previous section the project will focus on Casamance; more advanced low-carbon technologies will be demonstrated but only pursued if opportunities into this direction appear feasible).

It is important to note that the Project further pursues indirect emission reductions through market transformation as a result of improved policy, technology transfer and capacity building. An indicative top-bottom estimate can be derived from the total market volume for charcoal in the country, which is of the order of 2 million peri-urban households, each consuming 500 kg charcoal or more annually. The total charcoal demand would be around 1.0 million ton/yr, requiring 5.0 million ton wood. Since off-setting of non-renewable biomass through improved kiln efficiency is beyond control of the Project at such a large scale, only avoided methane releases are claimed here (0.664 ton CO_{2eq}/ton charcoal). Assuming a successful implementation of the charcoal pilots, a market penetration of 30% and a GEF causality factor of

⁷ See, for example: "Proposal for a new Standardized Baseline for Charcoal Projects in the Clean Development Mechanism", Mueller, M, Michaelowa, A. Eschman, M, Zurich, Switzerland, December 2011.

⁸ The emissions of methane produced per ton of charcoal during the carbonization process (M) are given by the empirical formula: $M [\text{kg CH}_4/\text{ton charcoal}] = 139.13 - 313.80 * Y$, in which Y represents the conversion efficiency (tons of charcoal obtained per ton wood input).

60%, the attainable annual CH₄ emission reductions would be of the order of **1.2 million ton CO_{2eq}** (indirect) over a 10-year period after Project termination.

A.6 Risks, including climate change, potential social and environmental risks that might prevent the project objectives from being achieved, and measures that address these risks:

Based on the preliminary assessment at PIF stage, the identified risks have been reformulated to clarify cause-effect relations and accordingly structure the proposed mitigation measures. One of the original concerns about spreading the project across too large a geographic area has been addressed by narrowing the geographical coverage of the Project to the Huambo – Luanda corridor. The Project also shifts away (as explained earlier) from business formalization, which upon further study at PPG phase was assessed as high-risk and too premature at this stage. Sustainability of the products delivered has been enhanced by seeking synergies with parallel sector policies, including those covering energy, forestry, climate change and finance, rural development and poverty reduction. The acceptance of improved charcoal technology by rural farmers remains uncertain and is classified as a critical risk (risk 4). In general, Angola, as well as other countries in Sub-Saharan Africa, still lack a body of verifiable and replicable production models and widespread recognition of the potential of charcoal for development is still limited. In fact, the Project will contribute to a movement across the region on the benefits and importance of sustainable charcoal.

The PPG confirmed the existing institutional and human capacity gaps in Angola. In response, the SRF has been revised to address human capacity in a systematic manner and reduce reliance on incipient institutions. This approach is expected to increase the sustainability of Outputs while reducing implementation risks and delays (risks 1, 2, and 3). Technical performance risks (risk 5) are deemed controllable since the chosen improved charcoal technologies are simple and proven in other countries. Operator capabilities remain the most critical technical factor given the very basic skills available, the low levels of awareness, and the absence of positive incentives. This risk has been reduced by proposing a modest technological step-up from baseline business-as-usual (BAU) practices (e.g Casamance kilns) which should not interfere with local production processes. This choice acknowledges that charcoal production is a seasonal activity for rural subsistence farmers. However other production schemes that might benefit from more advanced (stationary) kilns are not excluded as these are expected to gain increased importance in the coming years.

Although this GEF Project does not directly address biomass harvesting (step 1 of the value chain), the use of renewable biomass is promoted through the establishment of sustainability criteria for charcoal. Technological upgrades and increased knowledge about biomass varieties are expected to contribute to a more rational use of native and planted forest resources in the future. Sustainable forest management practices are already being promoted by COSPE and ADPP and are part of national forest policies. In the longer term, adequate sector governance and pricing of charcoal are key factors to control demand for non-sustainable charcoal based on illegal forest clearance (risk 6), which is beyond the scope and capabilities of the present initiative.

The low levels of association and poor access to finance by rural farmers are major barriers to the process of technology transfer and up-scaling (risk 7). The Project has mitigated this risk by moving away from formalization done in the context of government-based credit schemes (such as Angola Investe), since farmers will unlikely become eligible within the next years. The Project partners will follow a more community-based approach to generate success cases and mobilize local finance, possibly complemented by up-coming, more targeted governmental assistance programmes. Since investment costs in improved charcoal kilns are low, the Project rather aims to facilitate financing of operational costs and generate direct revenues under MINCO's PAPAGRO programme, with possible opportunities for additional revenue streams from carbon finance, which is deemed feasible (risk 8).

Experiences in other countries show that the revenues generated along the charcoal value chain are inequitably distributed and do not reflect the efforts made; this specifically affects women (risk 9). A comprehensive mapping of the charcoal chain in Angola during the PPG was hampered by a range of factors. In order to mitigate this risk, appraisal of proposed activities on gender aspects and close engagement with sector agents are envisaged. To this purpose, the Project will contract an expert on energy and gender relations that will ensure that the project specifically addresses gender-related issues during implementation.

For a comprehensive overview of the identified risks and proposed mitigation measures, please consult the table in the Prodoc (Section V – Risk Management).

A.7. Coordination with other relevant GEF financed initiatives:

The Project builds upon and/or will coordinate with a range of initiatives addressing climate change, rural energy production and access, and sustainable land and forest management in Angola. UNDP will ensure knowledge management throughout its GEF portfolio in Angola and seek synergies to optimize the use of project management resources and implementation models, including with the LCDF project “*Promoting Climate-resilient Development and Enhanced Adaptive Capacity to Withstand Disaster Risks in Angola’s Cuvelai River Basin*” (GEF ID 5177). Sharing of responsibilities between the Project Board for both Projects will be assessed as a means to ensure harmonization and integration.

Synergies also exist with the AfDB project “*Integrating Climate Change into Environment and Sustainable Land Management Practices*” (GEF ID 5231) which, among other objectives, pursues promotion of sustainable land management (SLM) practices and environmentally clean technologies. It is noted that the Project’s Executing Partner (Ministry of Environment – MINAMB) plays a pivotal role for implementing LCDF and GEF projects in the country and establishing institutional linkages with sector ministries such as MINAGRI and MINEA. There are important similarities in objectives and scope between ADPP’s Farmer’s Club approach and the Farmer Field Schools, promoted by the Ministry of Agriculture and FAO, in the LCDF project (GEF ID 5432) “*Integrating Climate Resilience into Agricultural and Agropastoral Production Systems through Soil Fertility Management in Key Productive and Vulnerable Areas Using the Farmers Field School Approach*”. It is also important to note that MINAMB is the direct counterpart for several NGOs in the country, including COSPE.

MINAMB and UNDP will actively seek coordination with all related initiatives targeting environmental degradation and rural development and tap into additional climate funding when available and appropriate. The Project will closely monitor progressing baseline activities by the Government of Angola in collaboration with its partners, including the SE4All global initiative and any regional charcoal policy development supported by NEPAD.

B. ADDITIONAL INFORMATION NOT ADDRESSED AT PIF STAGE:

B.1 Describe how the stakeholders will be engaged in project implementation.

Stakeholders include the National Government (MINAMB, MINEA, MINAGRI-IDF, MINCO); provincial and municipal authorities; educational and research entities (UJES); non-governmental organizations, including ADPP, COSPE, and others active in the region; rural communities including charcoal producers; charcoal consumers in peri-urban areas; professionals and extension workers in rural energy, development, forestry and micro-enterprise development; rural and peri-urban schools, teachers and students; and agents involved in transport, distribution, commercialization and fiscalization of charcoal production and trade.

The Ministry of Environment (MINAMB) will be the national executing agency working in close coordination with the other ministries. MINAMB, MINEA and MINAGRI – IDF will participate in the Project Board on behalf of the Government of Angola. UNDP will closely interact with the Executing Partner (MINAMB) to strengthen sector governance, thereby drawing on its capabilities to link multiple stakeholders at different government levels. The Project will draw upon the Multi-sectorial Committee for the Environment (CMA) and provide technical assistance and enhanced liaison capabilities through the appointment of a Technical Advisor, based in Luanda, and assisted by local consultants and government staff. The Project will further interact with MINCO for incorporating sustainable charcoal into Government programmes led by that ministry. The Project will engage with the ministries at the provincial level through capacity building and mainstreaming of activities whenever possible.

The project will engage several NGOs or CSOs to execute field-level activities using a Responsible Party (RP) Modality. The selections will follow UNDP POPP and National Implementation Modality (NIM) guidelines (using either a Collaborative Advantage selection process or competitive selection). Beneficiaries in rural and peri-urban areas will primarily interact with the NGOs which will implement charcoal production and briquetting pilots as Responsible Parties (RPs) of the Project. Several NGOs (ADPP, COSPE) have confirmed their interest to serve as RPs and have a long-term presence and record of accomplishment in Angola and proven capabilities to engage with rural communities, local authorities, the national Government and local CSOs. The Project will provide technical assistance to the RPs for leading the technology transfer process to ensure that solid, sustainable results are achieved. Specific attention will be paid to effective integration of charcoal production into the local production systems. The Project will actively seek opportunities to achieve an equitable distribution of benefits among all participants along the value chain. Gender aspects will be monitored throughout the Project’s implementation and corrective measures

proposed if and when required.

The Project will further engage with stakeholders involved in education and training, specifically the University Jose Eduardo dos Santos (UJES) in Huambo, supported by the University of Cordoba (Spain), with the objective to incorporate charcoal and bioenergy technology into the educational and research programme. The Project will benefit from existing programmes (including the EU-sponsored ANEER initiative) and working relations between UJES and key stakeholders including IDF, IIA and extension workers in different disciplines in the Province of Huambo. This engagement will significantly increase human capacity at academic and professional levels in relevant disciplines including forestry, bioenergy and charcoal engineering, rural development, environmental law, and climate change policy. UJES is likely to be involved in the Project as a Responsible Party pending their competitive selection following appropriate UNDP POPP guidelines. Finally, the Project will target rural student teachers, energy assistants in peri-urban areas, and extension workers through NGO partners.

B.2 Describe the socioeconomic benefits to be delivered by the Project at the national and local levels, including consideration of gender dimensions, and how these will support the achievement of global environment benefits (GEF Trust Fund/NPIF) or adaptation benefits (LDCF/SCCF):

The Project is expected to be instrumental for attaining a series of social and economic benefits. Alongside effective regulation of land tenure and forest access, local economic development is key to increasing the cost of labor, making non-sustainable charcoal production less rewarding. Based on an analysis of the value chain, producers are paid around AKZ 500 per 40-kg bag of charcoal (4-5 US\$). The Project makes a strong case for decentralized development models that are in alignment with the National Development Plan. Such models are particularly relevant for Angola given the poorly developed energy and road infrastructure, the need to consolidate communities and settlements outside the urban centres, and the urgency to improve quality of life (HDIs) in the rural areas.

At the level of the national economy, sustainable charcoal production and utilization imply a higher resource-efficiency in terms of biomass material (forest stocks) while other resources – specifically land and labor – will be used more efficiently. Departing from a BAU annual forest area of 100,000 hectare converted due to non-sustainable charcoal production in Angola, an indicative economic value of US\$ 35,000,000 can be derived. With attainable efficiency gains of 50% or better targeted under the Project, more sustainable charcoal production would yield at least US\$ 17,500,000 in biomass stock savings per year for the national economy (compared to BAU). An increase in resource efficiency also translates into fuel savings in the transport sector, estimated at about US\$ 500,000 per year. The products generated by the Project will support the Government of Angola to articulate national forestry and climate change policy in order to preserve the country's forest stocks in designated areas.

Rural communities in principle obtain social, environmental and economic benefits from more sustainable charcoal production. Improved, cleaner production methods and technologies can assist in improving labor conditions and reduce local pollution due to fumes, ashes and tar. The Project makes a strong case for decentralized development models that are in alignment with the National Development Plan. Peri-urban people will benefit from more efficient charcoal utilization, not only through the use of efficient charcoal stoves but also via efficient transport, packaging and briquetting technology (transport issues will be analyzed in more detail under Output 1.3 and addressed as part of Output 1.4). Specifically, the benefits extend to reduced pollution and transport costs (via improved packaging) and the creation of new business opportunities. Efficient stoves would translate into direct cost savings up to 30-50% for charcoal users.

Gender considerations

Gender equity refers to fair sharing of resources and benefits by both women and men who are involved in charcoal production and the commercialization process, ranging from care of tree seedling nurseries to distribution and sale of charcoal. In the charcoal sector, women and men play different roles, therefore making gender equity an important aspect of the entire sector. Interviews held during the PPG indicated that tree felling and charcoal production is male-dominated (92% of respondents), while retail distribution is basically done by women (91%). These figures are aligned with the general role distribution between men (doing heavy labor) and women (market trade) in rural Angola. The Project brings benefits for both men and women and at an outcome level the project will track the percentage of households benefitting from interventions which are female-headed households. While the men may benefit from improved labor conditions, financial benefits through savings via retail trade and household charcoal utilization rest

predominantly impact women. Close monitoring and training of involved authorities on gender aspects throughout the Project will assist in identifying gaps and needs and ensuring that benefits are gender-balanced.

B.3. Explain how cost-effectiveness is reflected in the project design

The following elements have been included in the Project design to enhance cost-effectiveness:

(a) The Project builds upon baseline activities by several Ministries which respond to Government prioritization of economic diversification, renewable energy, rural development and poverty reduction. Moreover, a platform for inter-institutional coordination is already found to be in place (the CMA). Compared to the situation as assessed at PIF stage, this progress enables redirection of GEF funds to generate specific inputs supporting the baseline.

(b) Investment in charcoal technology will be done on a cost-sharing basis, thereby increasing impact in terms of energy savings (GJ), emission reductions (CO_{2eq}) and number of beneficiaries reached. Cost-sharing also contributes to strengthening the Project's exit strategy, especially if synergies can be established with future micro-financing mechanisms targeting rural farmers.

(c) A focus on low-income households instead of the more affluent market segment enables reaching a much larger number of charcoal consumers. The Project is envisaged to address this segment by mainstreaming charcoal into social assistance programmes; in the medium-term, more market-oriented mechanisms can be developed once sustainable charcoal is legitimized and accepted as a bonafide business opportunity. This approach not only improves the efficiency of GEF funding but also increases effectiveness of the fiscal budget spent otherwise spent on energy subsidies and poverty reduction.

(d) To support its implementation, the Project will leverage national Responsible Parties that are closely engaged with rural communities and bring into the Project their expertise and baseline projects. Through this approach, the Project will expectedly accelerate the introduction of improved charcoal technology among rural communities versus starting from scratch, thus increasing the chance of success, facilitating the exchange of experiences and extracting valuable lessons learned. The existing infrastructure and competencies of the RPs also enhances the scope and effectiveness of educational, promotional and training activities at a reduced cost.

(e) By bundling the technology demonstration activities and collaboration with Responsible Partners, GEF resources were freed up that are now used to implement new Outputs, specifically those contributing to human resource development (outcome 3).

(f) Compared to the PIF, the Project's level of ambition is increased via: (i) working towards a policy white paper as a tangible Output; (ii) incorporation of MRV and certification schemes into the PAPAGRO and Loja Kikuia programmes; and (iii) establishing links with climate-based financing mechanisms (including VERs and REDD+).

The cost-effectiveness of the Project is approximately US\$ 3.3 per ton CO_{2eq} avoided considering the direct and indirect GHG emission reductions. If related to the direct emission reductions only, cost-effectiveness is about US\$ 22 per ton CO_{2eq} but as mentioned in Section A.5 the project's impact on the baseline and policy environment is substantial and therefore the assessment of cost-effectiveness against the combined benefits is more appropriate as a metric.

C. DESCRIBE THE BUDGETED M & E PLAN:

The Monitoring and Evaluation Plan is summarized in the following table (see also Prodoc § 155).

| GEF M&E requirements | Primary responsibility | Indicative costs to be charged to the Project Budget ⁹ (US\$) | | Time frame |
|----------------------|------------------------|--|--------------|---|
| | | GEF grant | Co-financing | |
| Inception Workshop | UNDP Country Office | USD 5,000 | 0 | Within 2 months of project document signature |

⁹ Excluding project team staff time and UNDP staff time and travel expenses.

| GEF M&E requirements | Primary responsibility | Indicative costs to be charged to the Project Budget ⁹ (US\$) | | Time frame |
|---|---|--|--------------|--|
| | | GEF grant | Co-financing | |
| Inception Report | Project Coordinator M&E Expert | USD 5,000 | None | Within 2 weeks of inception workshop |
| Standard UNDP monitoring and reporting requirements as outlined in the UNDP POPP | UNDP Country Office | None | 50,000 | Quarterly, annually |
| Monitoring of indicators in project results framework | Project Coordinator with M&E Expert support | USD 62,500 USD 2,500 travel | 50,000 | Annually |
| GEF Project Implementation Report (PIR) | Project Coordinator and UNDP Country Office and UNDP-GEF team | None | None | Annually |
| NEX Audit as per UNDP audit policies | UNDP Country Office | USD 25,000 | 0 | Annually or other frequency as per UNDP Audit policies |
| Supervision missions | UNDP Country Office | None ¹⁰ | 25,000 | Annually |
| Oversight missions | UNDP-GEF team | None ¹⁰ | None | Troubleshooting as needed |
| Knowledge management as outlined in Outcome 4 | Technical Advisor | None | 20,000 | On-going |
| GEF Secretariat learning missions/site visits | Project Coordinator and UNDP-GEF team | None | None | To be determined |
| Mid-term GEF Tracking Tool to be updated | Project Coordinator | None | None | As part of MTR. |
| Independent Mid-term Review (MTR) | UNDP Country Office and external evaluation expert | USD 40,000 USD 5,000 travel | None | 24 months after Project start |
| Final GEF Tracking Tool to be updated | Project Coordinator | None | None | As part of TE |
| Independent Terminal Evaluation (TE) included in UNDP evaluation plan | UNDP Country Office and external evaluation expert | USD 50,000 USD 5,000 travel | None | Three months before operational closure |
| Translation of MTR and TE reports into English or Portuguese, as and if needed | UNDP Country Office | None | None | To be determined |
| TOTAL indicative COST Excluding project team staff time, and UNDP staff and travel expenses | | USD 187,500 USD 12,500 travel Total: USD 200,000 | USD 145,000 | |

¹⁰ The costs of UNDP Country Office and UNDP-GEF's participation and time are charged to the GEF Agency Fee.
GEF5 CEO Endorsement Template-February 2013.doc

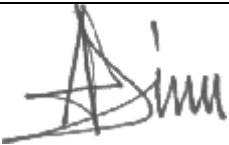
PART III: APPROVAL/ENDORSEMENT BY GEF OPERATIONAL FOCAL POINT(S) AND GEF AGENCY(IES)

A. RECORD OF ENDORSEMENT OF GEF OPERATIONAL FOCAL POINT(S) ON BEHALF OF THE GOVERNMENT(S): (Please attach the [Operational Focal Point endorsement letter\(s\)](#) with this form. For SGP, use this [OFP endorsement letter](#)).

| NAME | POSITION | MINISTRY | DATE (MM/dd/yyyy) |
|-------------------------------------|---|----------------------------|--------------------|
| DR. CARLOS AVELINO MANUEL CADETE | NATIONAL DIRECTOR OF STATISTICS PLANNING AND STUDIES GABINET, GEF OPERATIONAL FOCAL POINT | MINISTRY OF ENVIRONMENT | NOVEMBER 5TH, 2013 |

B. GEF AGENCY(IES) CERTIFICATION

This request has been prepared in accordance with GEF/LDCF/SCCF/NPIF policies and procedures and meets the GEF/LDCF/SCCF/NPIF criteria for CEO endorsement/approval of project.

| Agency Coordinator, Agency Name | Signature | Date (Month, day, year) | Project Contact Person | Telephone | Email Address |
|--|--|-------------------------------|--|---------------------|---|
| Adriana Dinu UNDP-GEF Executive Coordinator |  | May 17, 2016 | Lucas Black UNDP/GEF Regional Technical Advisor Energy, Infrastructure, Transport and Technology (EITT) | +90 538 598 5172 | E-mail: lucas.black@undp.org |

ANNEX A: PROJECT RESULTS FRAMEWORK (as presented in the Project Document, p. 42-43).

| | | | | | |
|--|---|--|--|---|---|
| Project title: Promotion of Sustainable Charcoal in Angola through a Value Chain Approach (PIMS 5331) | | | | | |
| Intended Outcome as stated in the UNDAF/Country Programme Results and Resources Framework: No. 4: By 2019, the environmental sustainability is strengthened through the improvement of management of energy, natural resources, access to green technology, climate change strategies, conservation of biodiversity, and systems and plans to reduce disasters and risks | | | | | |
| Outcome indicators as stated in the Country Programme Results and Resources Framework, including baseline and targets: Indicator 4.1.1. No. of responsive legal, policy and institutional frameworks supported for sustainable management of environment resources. Baseline: Weak institutional capacities and policy frameworks. Target: At least 2 policy frameworks enabled. (Data Source: MINAMB. Frequency: Annual) | | | | | |
| Applicable Outputs from the 2014 – 2017 UNDP Strategic Plan: Output 1.5: Inclusive and sustainable solutions adopted to achieve increased energy efficiency and universal modern energy access (especially off-grid sources of renewable energy) | | | | | |
| Applicable Output Indicators from the UNDP Strategic Plan Integrated Results and Resources Framework: Output 1.5 indicator 1.5.2: a) Number of people with improved energy access as a result of UNDP-supported intervention. b) Percentage of households benefitting from improved access to energy which are female-headed households. | | | | | |
| | Objective and Outcome Indicators | Baseline¹¹ | Mid-term Target¹¹ | End of Project Target¹¹ | Assumptions¹² |
| Project Objective: To reduce the current unsustainable and GHG-intensive mode of charcoal production and utilization from Angola’s Miombo woodlands via an integrated set of interventions in the national charcoal value chain. | (Aa) Achieved direct GHG emission reductions over lifetime (ton CO2eq); (Ab) Estimated indirect GHG emission reductions over lifetime (ton CO2eq); | (Aa) 0 ton CO2eq; (Ab) 0 ton CO2eq; | (Aa) 0 ton CO2eq; (Ab) 0 ton CO2eq; | (Aa) 209 k ton CO2eq; (Ab) 1.2 M ton CO2eq | - Sustained commitment of, and dialogue with, national authorities. |
| | (Ba) ¹³ Number of people with improved energy access as a result of UNDP-supported intervention. (Bb) Percentage of households benefitting from improved access to energy which are female-headed households (Bc) Average monetary savings by households using sustainable charcoal in efficient stoves (US\$/household-year). | (Ba) 0; (Bb) 25% (Bc) 0 US\$/hh-y) | (Ba) 200; (Bb) 50% (Bc) 100 US\$/hh-y) | (Ba) 10,000; (Bb) 50% (Bc) 100 US\$/hh-y) | - Project activities can be implemented as planned. - Effective engagement of all stakeholders. - Adequate technical performance and social acceptance by all stakeholders. |
| | (C) ¹⁴ Policy and regulatory framework for sustainable charcoal sector supported. | (C) rated “1” (no policy/regulation/strategy in place) | (A) rated “2” policy/regulation/strategy discussed and proposed) | (A) rated “4” (policy/regulation/strategy adopted ¹⁵ but not enforced) | - Effective mobilization of non-GEF funding. |
| | Outcome 1: The policy framework to support a sustainable charcoal value chain | (1a) white paper on sustainable charcoal, endorsed by Government (-); | (1a) no concept for white paper (0); | (1a) concept for white paper presented (0); | (1a) white paper completed and endorsed (1); |

¹¹ Baseline, mid-term and end of project levels must be expressed in the same neutral unit of analysis as the corresponding indicator.

¹² Risks must be outlined in the Feasibility section of this project document.

¹³ Indicators Ba and Bb are aligned with UNDP IRRF indicator 1.5.2.

¹⁴ Indicator C is aligned with the GEF CC TT template, using a rating scale 0..6.

¹⁵ I.e. the charcoal white paper on sustainable charcoal endorsed by the Government.

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| in Angola, has been strengthened. | (1b) certification and MRV mechanism designed and implemented; | (1b) no certification and no MRV mechanism designed nor implemented (0,0); | (1b) certification and MRV mechanism for sustainable charcoal production chain designed (1,0); | (1b) certification and MRV mechanism for sustainable charcoal designed and implemented in government programmes (1,2) ¹⁶ | - Project activities can be implemented as planned. - Regional public institute proved capable to host and sustain charcoal expertise centre. |
| Outcome 2: The benefits of sustainable charcoal production technology, briquetting and energy-efficient charcoal stoves, have been accepted by producers and peri-urban consumers. | (2a) Number of improved charcoal kilns and briquetting machined effectively in use; | (2a) No improved charcoal kilns (0), nor briquetting machines in use (0); | (2a) 18 improved kilns and 3 briquetting machines; | (2a) 270 improved kilns and 10 briquetting machines; | - Sustained commitment, and dialogue with, national Government entities. - Adequate technical performance and social acceptance by all stakeholders. - Ability to enhance level of organization of charcoal producers. |
| | (2b) Annual volume of certified, sustainable charcoal delivered to consumers (ton/yr); | (2b) No certified, sustainable charcoal delivered (0 ton.yr); | (2b) No certified, sustainable charcoal delivered (0 ton.yr); | (2b) 3,024 ton/yr certified, sustainable charcoal delivered per year | - Ability to monitor and verify charcoal production and utilization activities. |
| | (2c) Number of energy-efficient (EE) charcoal stoves delivered to peri-urban consumers (-). | (2d) No EE charcoal stoves delivered (0); | (2c) 3,000 EE charcoal stoves delivered | (2c) 10,000 EE charcoal stoves delivered. | - Project activities can be implemented as planned. |
| Outcome 3: Institutional and human capacities for sustainable charcoal production and utilization have been strengthened through partnerships for knowledge transfer and professional training. | (3a) Number of persons skilled in charcoal technology (male, female); | (3a) No persons skilled in charcoal technology (0 male, 0 female); | (3a) 40 persons skilled (20 male ; 20 female) | (3a) 150 persons skilled (75 male ; 75 female) | - Sustained commitment, and dialogue with, national Government entities. - Project activities can be implemented as planned. - Adequate technical performance and social acceptance by all stakeholders. |
| | (3b) Number of partnerships strengthened and active at project termination; | (3b) 1 partnership in place (UCO-UJES) | (3b) 2 active partnerships | (3b) 3 active partnerships | - Effective mobilization of non-GEF funding. |
| Outcome 4: The Monitoring & Evaluation plan for the Project has been implemented. | (4a) Mid-term review (1) and follow-up on recommendations (1) on gender mainstreaming and sustainability of project results; | (4a) No Mid-term Review (0) and no recommendations (0); | (4a) Mid-term Review completed (1); | (4a) Follow-up on MTR recommendations completed (1); | - Project activities can be implemented as planned. - Project Management is aware of gender and sustainability aspects and risks and able to define adequate mitigation |
| | (4b) Terminal Evaluation document (-). | (4a) No Terminal Evaluation (0). | (4b) No Terminal Evaluation (0). | (4b) Terminal Evaluation completed (1) | |

¹⁶ Envisaged in the programmes PAPAGRO and Loja Kikuja of the Ministry of Commerce (MINCO).
GEF5 CEO Endorsement Template-February 2013.doc

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ANNEX B: RESPONSES TO PROJECT REVIEWS (from GEF Secretariat and GEF Agencies, and Responses to Comments from Council at work program inclusion and the Convention Secretariat and STAP at PIF).

| Comments | Response | Reference in documents |
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| Comments from the GEF Council | | |
| <p>Germany welcomes the PIF and appreciates the aim of promoting the sustainable production of charcoal. The PIF review by the GEF Secretariat and STAP addresses most of the critical issues including the continuation of the project after the gradual decrease of technology subsidies, the inclusion of the local commercial banking sector, the results-based remuneration of projects, the cost-efficiency per unit of GHG of the three suggested options compared with other options, the necessity to support the implementation of all three suggested options at once, as well as the STAP's comment that the how and who (including selection criteria) needs further elaboration. On top of that, Germany would like to add the following:</p> <p>(a) Sanction mechanisms need to be elaborated for charcoal producer associations who fail in demonstrating that a perverse incentive was not induced (in conjunction with risk mentioned under A.3);</p> <p>(b) A clarification of the role of CPAs (charcoal producer associations) in the</p> | <p>(a) Please note that the approach to verify sustainable charcoal has been thoroughly revised, since a pure market-based approach appeared not feasible in the short (and likely medium) term. Formalization of charcoal producers and reasonably good governance and control structures are critical factors, which are not in place. Instead, Government programmes will directly procure charcoal from producer groups involved in the Project through a command-based structure rather than a market mechanism (this is deemed necessary to jumpstart the market and achieve proof of concept). The Project aims at testing and implementing sustainability criteria and an MRV for charcoal, as well as assuring tangible benefits for producers of sustainable charcoal, prior to future upscaling. The Government programmes will provide a more contained environment to test MRV and governance, than an open market system.</p> | <p>Prodoc, § 65-66.</p> |

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| <p>current situation is missing as well as an analysis of CPAs currently filling this role.</p> <p>(c) Germany is uncertain about how the target of 60 CPAs has been defined.</p> <p>(d) Further engagement with the Kreditanstalt für Wiederaufbau (KfW) is recommended as they launched a Standardized Baseline (SBL) development in the charcoal sector in Senegal.</p> | <p>(b) The PPG phase found that charcoal producers in Angola are not organized into CPAs as seen in other countries (such as Tanzania) but rather work based on mutual support/needs and family ties. Associative capacities in rural areas are still very weak as a result of social and economic disruption during the conflict. There is still a large gap separating the rural, informal economy and the formal system. It was therefore decided that establishment and formalization of CPAs is not viable within the Project's time horizon. The Project will instead work with established social groupings such as farmer groups organized by ADPP's Farmer's Clubs rather than CPAs.</p> <p>(c) This initial target was defined based on considerations of manageability and minimum impact. Note that in the final Project design, the target for demonstration is based on the assumption that kilns are operated in a cluster by a team of three people. A second, upscaling phase is envisaged in which technology is copied and adopted by more farmer groups in the communities and surrounding areas (90 teams).</p> <p>(d) This is noted and UNDP's MDG Carbon initiative is already interacting with various countries and associated stakeholders in West Africa on NAMAs and SBLs for charcoal. Engagement with the charcoal SBL work in Senegal supported by KfW will be pursued during the project inception phase.</p> | <p>Prodoc, § 61-63.</p> <p>See SRF, Prodoc, p.41-42.</p> |
| <p>Comments from the GEF Secretariat at Work Plan Inclusion</p> | | |
| <p>25. Items to consider at CEO endorsement / approval (FJ, 19 March 2014).</p> <p>a) By CEO endorsement, details are expected on how the project will ensure there will be sustained financing for the biomass energy database updating beyond project completion.</p> | <p>a) In the immediate future the Project envisages collecting and analyzing bioenergy information as a contracted service. The contractor will incorporate information into a geo-referenced database with an appropriate user interface, and transfer the result to the Government (with IDF as the primary host and interface user) for continued management of the data post-project. The functional specifications for this activity will be drafted in the first Project year. Please note that in the final Project design, this Output is explicitly focused on charcoal and includes other (non-forestry) aspects of the charcoal value chain as well.</p> <p>This product will build upon baseline activities such as IDF's forest inventory, MINEA's biomass mapping, and techniques such as remote sensing that are being transferred under the UJES-UCO partnership. However, present capabilities in Angola are presumed to be insufficient for continuous updating of this database by Government agencies and would therefore rely on subsequent contracting by external services. Institutional strengthening and proper budgeting are critical for</p> | <p>Prodoc § 79-80.</p> <p>Prodoc § 110-112.</p> |

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| | <p>IDF to take full ownership and responsibility for the charcoal database. It is expected that IDF will benefit from the ongoing process of institutional consolidation in Angola, making sustainability of the database plausible. Improved inter-institutional coordination and prioritization of renewable energy sources by the Government of Angola will certainly be a contributing factor.</p> | |
| <p>b) The additionality of Output 1.3 compared to similar existing under the GEF SLM project as well as the Output's contribution to the project's mitigation impact is expected to be demonstrated and detailed by CEO endorsement.</p> | <p>(b) Note that activities related to forest management ("Step 1" in the charcoal value chain) are financed under the baseline, and not through GEF funding for this Project.</p> <p>Data collection and tools for data access and analysis are supportive of policy development and as such, contribute to the delivery of indirect emission reductions. Note also that only indirect GHG benefits are claimed resulting from improved charcoal kilns. Benefits due to the increased share of renewable biomass sources for charcoal production (as a result of improved management and/or LULUCF), are not claimed by this GEF Project.</p> | <p>Prodoc § 18-19.</p> |
| <p>c) By CEO endorsement, details are expected on how the gradually decreasing technology subsidy will work. It is expected that not all the 280 supported kilns will be supported by a 100% subsidy for purchase of the equipment. By CEO endorsement, details are also expected on how the national model scheme for commercial financing for charcoal producing groups will work and on how the use of commercial banking will be progressively introduced during the project implementation as a tool to enable national level scaling up after on.</p> | <p>(c) The results from the PPG made clear that it would be premature to propose and implement a detailed financing mechanism targeting rural charcoal producers. Micro-financing and banking services for this target group are almost non-existent in the country and people usually rely on informal assistance. It has been decided that assisting the financial sector, including commercial banks, to engage with the rural charcoal sector in Angola is – for the moment – beyond the scope and capabilities of this GEF CCM initiative and is therefore not pursued. Moreover, formalization of charcoal producers is unlikely to happen in the near future.</p> <p>The Project will make a large effort to demonstrate and transfer improved kiln technology to rural charcoal producers, which is already a challenge in itself. The objective is to have improved charcoal kilns accepted by the majority of rural producers, which implies that benefits are real and acknowledged, and operating such kilns is feasible.</p> <p>Building upon this result, the Project will disseminate additional charcoal kilns on a cost-sharing basis with interested producers. As a base case, a 50% investment subsidy is proposed under the project; however, if more advanced financing schemes would become operational at that time, the Project will seek engagement with such schemes and their operators, thereby leveraging additional resources and strengthening the Project's exit strategy.</p> | <p>Prodoc § 59-71, and § 105.</p> |
| <p>d) By CEO endorsement, details are expected on how the gradually decreasing technology subsidies will work. It is expected that not all the 20 supported briquetting enterprises will be supported by a 100% subsidy for purchase of the equipment. By CEO</p> | <p>(d) A similar approach to cost-shared financing of briquetting technology will be pursued as described under (c). However, it is expected that more opportunities for micro-financing will be available than for charcoal kilns.</p> | <p>Prodoc § 105</p> |

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| <p>endorsement, details are also expected on how the national model scheme for commercial financing for briquetting will work and on how the use of commercial banking will be progressively introduced during the project implementation as a tool to enable national level scaling up after on.</p> | | |
| <p>e) By CEO endorsement, details are expected on the market demand for certified charcoal and on whether this demand is consistent with the potential size of improved kilns and briquetting systems, and whether the demand will be able to do more than just replacing existing certified charcoal from Namibia to ensure effective mitigation benefits.</p> | <p>(e) Based on the findings of the PPG, the Project will follow a different approach and deliver certified charcoal to eligible low-income households under social assistance programmes, such as the voucher-based Loja Kikuia. This approach is aligned with recent IMF recommendations to reduce Government spending on energy subsidies.</p> <p>The PPG could not confirm the current existence of a demand for certified charcoal in Angola. Households with sufficient purchasing capacity to pay a higher price for certified charcoal generally have low levels of awareness on environmental issues and benefit from subsidized fuels; as such, they have little incentives to purchase higher-priced charcoal that is “green” or “certified.” This situation may change in the future. The revised approach aims to link sustainable charcoal production to end-users through vertically-integrated supply chains established by Government programmes such as PAPAGRO. This approach envisages increased awareness about the benefits of sustainable charcoal and provides opportunities for testing of governance and verification mechanisms, and specific activities such as labelling and promotion.</p> | <p>Prodoc § 59-71.</p> |
| <p>f) Given the choice to have a progressively decreasing subsidy level over the implementation of the project and given also the expected progressive involvement of commercial banks to support equipment investment, a more robust co-financing is expected by CEO endorsement.</p> | <p>(f) Please refer to (c) for a discussion of financing opportunities.</p> <p>The co-financing ratio has been increased to a ratio 1:4.</p> <p>Given the low cost of improved charcoal kilns (Casamance technology), direct investment under the Project is constrained for reasons of manageability.</p> | <p>Prodoc § 105-106.</p> <p>See Table C.</p> |
| <p>g) By CEO endorsement, please endeavor to present higher co-financing from the Agency.</p> | <p>The co-finance from UNDP has increased significantly from 400K at PIF to 875K at CEO Endorsement.</p> | <p>See letter from UNDP in Prodoc annex B.</p> |
| <p>Comments from STAP</p> | | |
| <p>1. Overall this is well prepared report. The project aims to reduce the use of unsustainably produced charcoal by low-carbon interventions in the charcoal production value chain.</p> | <p>Acknowledged.</p> | |

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| <p>Biomass feedstock production and charcoal sales are to be assessed and sustainable biomass production will be promoted to avoid deforestation. Training will be provided. Efficient charcoal kilns will be identified and deployed (involving around one third the share of the total project grant and over half the co-financing). Briquetting technologies are to be deployed. A "green" charcoal certification scheme is proposed. Surveying consumers towards the end of the project is commendable.</p> | | |
| <p>2. The problem is that much of the biomass is produced from unsustainable sources; the conversion of biomass to charcoal in earth mounds is currently an inefficient process; charcoal producers are unlicensed; physical losses occur during transport and handling; and inefficient cook stoves are used.</p> | <p>Acknowledged. Please note that a more complete problem analysis is included in the Prodoc. Root causes and barriers go beyond the technical problem of resource- and energy-inefficiency.</p> | <p>Prodoc, § 57.</p> |
| <p>3. The barriers to making improvements to the current value chain are clearly outlined. The baseline projects are clearly outlined. The proposed interventions in the value chain have been well thought through.</p> | <p>Acknowledged. Please note that the depicted baseline has been updated and adjusted due to: (a) advances in government policies and programmes; (b) identified compatibility issues with SME support programmes (Angola Investe); and (c) the work of several local NGOs discontinuing work on charcoal.</p> | <p>Prodoc, § 43-56.</p> |
| <p>4. The risks are well defined.</p> | <p>Acknowledged. Please refer to the Prodoc for a further refinement of the risk assessment.</p> | <p>Prodoc, p. 36-40.</p> |
| <p>5. Comments on the four project components follow: 5-1) Biomass data collection:</p> <p>a. The Outputs appear achievable within the time frame and the need for MRV is recognised.</p> <p>b. What is not clear is how the objectives will be undertaken. For example, who will undertake the surveys, who will be the respondents,</p> | <p>(a) Acknowledged. Note progress on forestry inventory and biomass energy mapping under the baseline, on which the Project will build forth.</p> <p>(b) Given the limited capacity of national sector institutions, surveys will be contracted to specialized (international) consultancy firms, with involvement and training of IDF.</p> | <p>Prodoc, § 79-80.</p> |

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| <p>how will a sample be selected.</p> | | |
| <p>5-2) Dissemination of efficient charcoal kilns:</p> <p>a. The concept is fine but again it is not clear on how this can be achieved in practice.</p> <p>b. It is not clear how the 60 associations will be "selected" or the criteria to be used. It is also assumed the selection of the technologies has been based on careful assessment but it is not clear why there are 200 Casamance kilns and 60 retorts. Since the retorts are more efficient why not use these alone?</p> <p>c. Has the technical performance of each of these kilns been measured in the field? If so, what were the results? Will this help determine which type is selected and under what conditions? The efficiency of the Casamance kiln depends on its construction and particularly how well the base was constructed.</p> <p>d. Who will manufacture the kilns? Where will they come from? If manufactured locally (and could use locally available materials as a more affordable option) are the materials and and 'know how' available?</p> | <p>(a) The introduction (and training of users on) improved kilns will be assigned to a local NGO with long-term engagement with rural communities (ADPP).</p> <p>(b) As experienced during the PPG, close interaction with rural communities requires local presence due to the poor road infrastructure and social issues caused by the internal conflict. Therefore, the point of departure is not technology but socially determined. Moreover, to assure project manageability it is decided to limit the geographical coverage to the Huambo – Luanda corridor. The Project will therefore start work with communities already covered by the partners ADPP and COSPE, and initially focus on Casamance kilns. The key challenge is to have improved technologies accepted and incorporated into local production systems, as previous experiences show that more advanced, usually stationary, kilns will be abandoned. The PPG concluded that Angola must first generate a body of (positive) experiences; once a first step is made and benefits are pertained and acknowledged, a demand for more advanced kilns should follow. For demonstration purposes (with a view to demonstrating more efficient and less polluting options for tar collection and anticipating a more industrial, full-time charcoal production sector), retort kilns will also be demonstrated.</p> <p>(c) No technical tests could be performed under the PPG and facilities to do so are currently unavailable in Angola. The Project will put great emphasis on technical support to motivated charcoal producers to build and operate Casamance kilns up to the best standards in the region.</p> <p>(d) It is envisaged that the local farmers / charcoal producers will manufacture the kilns, with some basic tools and materials brought in. Given the poor supply chains serving the interior, the starting point will be local production. Another lesson drawn from the PPG is that charcoal production should not be addressed as an isolated activity since local production systems are mixed and supply chains and market structures can target multiple products and services.</p> | <p>Prodoc, § 94-95.</p> <p>Prodoc, § 102-103.</p> |

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| <p>e. Presumably it is important that people see that the kilns are successful from the beginning in order to facilitate widespread acceptance. If they break down, is there a maintenance plan?</p> | <p>(e) This is indeed the case, especially since rural people “want to see before they believe”. Proper maintenance and planning of kilns (as a function of working periods and forest management) will be combined with training on manufacturing, testing, and enhancement of operating skills (thereby increasing charcoal quality and reducing GHG emissions).</p> | |
| <p>5-3) Dissemination of briquetting machines:</p> <p>a. The criteria to be used for selection of entrepreneurs will need careful consideration.</p> <p>b. The choice of briquetting machines to be disseminated will be analysed. Will this be after various testing regimes of the range of designs? What features will be compared? Who will make the final selection decision?</p> | <p>(a) Please note that the PPG could not engage adequately with prospective briquetting entrepreneurs in the peri-urban areas. In response, this Output has been scaled down, as the viability of briquetting as a business model has not been confirmed. In order to enhance effectiveness, briquetting activities will be combined with promotion, education and demonstration of energy-efficient charcoal stoves. The project partner will be local NGOs with experience in this area and the envisaged initial entrepreneurs will be motivated students.</p> <p>(b) Similar to the charcoal kilns, the technology-of-choice for briquetting is a trade-off between low technical skills and equipment costs on one hand, and a minimum production capacity necessary for making making a livelihood on the other hand. Unreliable electricity supply will be taken into consideration as well. The starting point will be the screw press. Only if and when market prospects appear positive, will larger-scale briquetting systems be considered.</p> | <p>Prodoc, § 96-98.</p> |
| <p>5-4) Certification and marketing scheme:</p> <p>a. The consumer market survey at the end is a useful approach but who will conduct it? It will require market research expertise. Would it be useful to conduct a "before and after" survey of the same respondents? How many will be needed to be a statistically representative sample.</p> | <p>(a) Please note that the revised Project envisages commercialization of certified charcoal through Government programmes targeting low-income households which, potentially, and if properly priced, will allow a much faster off-take of sustainable charcoal than through the wealthier consumers who have little incentive to do so.</p> <p>The PPG showed that national capabilities concerning statistical methodologies, data analysis and design of surveys, are still very weak. Moreover, only small groups could be targeted so that data may not be representative. The Census 2014 was a huge achievement and a first step towards differentiation of population groups. There is still a long way to go before refined market studies will be feasible in Angola.</p> <p>In any case, it is certainly recommended that the Project will conduct surveys to assess the effectiveness of promotional activities, and resulting awareness, among different end-users: low-income households, school children and their families, and the more wealthy consumers. The latter group may take more consciousness in the</p> | <p>Prodoc, § 65-66.</p> |

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| <p>b. The careful approach to the certification scheme based on the Nambian charcoal example is well warranted.</p> | <p>near future given Government policies to reduce subsidies on fuels and electricity – charcoal might be included in combined surveys.</p> <p>(b) Under leadership of the Ministry of Environment, appropriate sustainability criteria and certification mechanisms will be pursued that meet international standards and are feasible in Angola.</p> | <p>Prodoc, § 84-85.</p> |
| <p>Finally, the calculation of CO2 emissions avoided is complex since it involves land use change.</p> <p>The calculations of direct emission CO2eq savings from the use of kilns appear sound given the lack of data available and uncertainties. Assumptions made are erring on the conservative side which is good. Further refinement will be necessary during the PPG phase as is proposed.</p> <p>Will the kilns have any impact on black carbon and if so, will it be incorporated into the GHG emission reduction numbers?</p> | <p>In principle, the Project will only claim GHG benefits resulting from energy efficiency measures along the charcoal value chain steps 2-5 and not from step 1 (forestry), which would be LULUCF. It is acknowledged that the share of renewable biomass in current charcoal production is not known; but a function of the regenerative capacity of the species used. The larger share of biomass will be non-renewable, given the low regenerative capacity of the Miombo ecosystem and the increasing over-exploitation.</p> <p>Concerning the direct and indirect emission reductions, it is envisaged to carry out an ex post assessment of actual emission reductions. This can be based on the actual number of kilns installed towards Project closure, an assessment of their technical performance, the rate of non-renewable biomass consumed, and an extrapolation of productivity.</p> <p>It is further recommended to carry out a more fine-tuned ex-ante assessment once the technology pilots are technically specified and implementation has started.</p> <p>Recent literature confirms that the impact of black carbon on climate change is complex and not fully understood. Black carbon (soot) is harmful for human health and is a short-term contributor to global warming. See: “Integrated Assessment of Black Carbon and Tropospheric Ozone – Summary for Decision Makers” by UNEP and WMO (http://www.unep.org/dewa/Portals/67/pdf/BlackCarbon_SDM.pdf).</p> <p>The GWP of black carbon is estimated at 4,470 over a 20-year period, and 1,055-2,240 over a 100-year period. See Report to Congress on Black Carbon 2012 (https://www3.epa.gov/blackcarbon/2012report/Chapter2.pdf)</p> <p>STAP asks whether the (improved) kilns will have any impact on black carbon. The answer is affirmative. Qualitatively, the more efficient use of wood resources, and the improved pyrolysis process will reduce the release of carbon particles through kiln fumes. We have not found in literature any quantitative relation between charcoal kiln type and efficiency, and the amount of black carbon released (for example in mg per kg of wood inputs).</p> | <p>Prodoc Annex D.</p> |

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| | In the absence of a quantitative estimate of the black carbon reductions, this is not included in the presented GHG emission reduction estimate for the Project. | |
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ANNEX C: STATUS OF IMPLEMENTATION OF PROJECT PREPARATION ACTIVITIES AND THE USE OF FUNDS¹⁷

PROVIDE DETAILED FUNDING AMOUNT OF THE PPG ACTIVITIES FINANCING STATUS IN THE TABLE BELOW:

| PPG Grant Approved at PIF: US\$ 100,000 | | | |
|--|--|------------------------------------|--------------------------------|
| <i>Project Preparation Activities Implemented</i> | <i>GEF/LDCF/SCCF/NPIF Amount (\$)</i> | | |
| | <i>Budgeted Amount</i> | <i>Amount Spent To date</i> | <i>Amount Committed</i> |
| Technical review and baseline studies; institutional arrangements, monitoring and evaluation | 74,500 | 42,764 | 31,736 |
| Financial planning and co-financing investments | 10,000 | 9,957 | 43 |
| Validation workshop | 15,500 | 6,583 | 8,917 |
| Total | 100,000 | 59,304 | 40,696 |

¹⁷ If at CEO Endorsement, the PPG activities have not been completed and there is a balance of unspent fund, Agencies can continue undertake the activities up to one year of project start. No later than one year from start of project implementation, Agencies should report this table to the GEF Secretariat on the completion of PPG activities and the amount spent for the activities.

ANNEX D: CALENDAR OF EXPECTED REFLOWS (if non-grant instrument is used)

Provide a calendar of expected reflows to the GEF/LDCF/SCCF/NPIF Trust Fund or to your Agency (and/or revolving fund that will be set up)

n/a