

MULTILATERAL INVESTMENT FUND

MIF Delegation of Authority to Country Offices Plan of Operations

1. GENERAL INFORMATION

A.	<i>Project Title</i>	Building a Business Model for Wood Waste Recycling
B.	<i>Project No. (TC#)</i>	SU-T1094
C.	<i>Executing Agency</i>	<i>Foundation for Sustainable Wood Processing in Suriname (FSWPS)</i>
D.	<i>Target Beneficiaries</i>	Direct Beneficiaries: 40 sawmill operators, 80 new employees/contractors Indirect Beneficiaries: approximately 240 dependents of persons with new jobs/contracts
E.	<i>Sources of Funding</i>	Total Cost: \$330,000 MIF Contribution: \$150,000.00 (45%) Counterpart Resources: \$180,000.00 (55%)
F.	<i>Objectives</i>	(i) The key objectives of the project are to (i) develop a business model for production and export of wood waste products (specifically charcoal and briquettes) manufactured in Suriname via an innovative carbon neutral conversion process, and (ii) increase economic returns and productivity of the wood processing sector via the application of circular economy principles in converting waste to commercially viable products.
G.	<i>Execution Timetable</i>	The period for disbursement will be 24 months

2. BACKGROUND AND JUSTIFICATION

Problem Summary

- 2.1 In Suriname, only 34%¹ of all locally harvested timber processed in the country's sawmills is converted into commercial products. This means that 2/3 of each log entering the sawmill constitutes waste and approximately 20% of this waste is sawdust. As a result, approximately 200,000 m³ of wood waste being is currently generated by local sawmills on an annual basis. Most of this wood waste is (illegally) dumped and burned in abandoned mining pits in and around the capital city of Paramaribo, although such practices are prohibited under local law.

¹ file:///C:/Users/nicolak/Downloads/Suriname-Houtafval-SvanDijk%20(1).pdf (page 14)

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- 2.2 While wood waste is biodegradable, current disposal practices present environmental and specific health hazards for the urban population as wood waste poses a fire hazard being highly combustible, while dumping of sawdust creates an ideal environment for the growth of airborne fungi which contribute to respiratory and other related health problems. Most sawmills in Suriname are located within or near the densely-populated capital, posing health and environmental hazards. These hazards directly affect urban and peri urban communities in or close to the capital city, communities in which 66.8%² of Suriname's total population resides.
- 2.3 Current industry practices present a clear opportunity to increase economic returns and productivity via the application of circular economy principles in converting waste from the wood processing sector to commercially viable products. In this regard, the Foundation for Sustainable Wood Processors in Suriname (FSWPS) undertook an initial pilot in 2016 using an energy efficient low carbon twin retort technology to convert wood waste to charcoal.
- 2.4 The furnace used in this demonstration showed promising conversion rates of wood waste to charcoal of 30-35%. (using 3 tons of wood waste feedstock to produce 1 ton of charcoal on average). The comparable ratios for traditional charcoal making are 15 tons of feedstock for production of 1 ton of charcoal. In addition, the twin retort technology is highly energy efficient, contributing to a significant reduction in Greenhouse Gas (GHG) emissions in comparison with traditional methods of charcoal conversion.
- 2.5 The proposed business model will also include the drying and compressing of sawdust to make briquettes which can be exported for heating in temperate climates. Briquettes are a sustainable source of energy (bio-blocks) and deliver around 50% more energy than logs.
- 2.6 Both charcoal and briquettes will be produced for retail and/or industrial markets. The European market for charcoal is estimated at 800.000³ tons annually, with an average price of USD 200 per ton (FOB). Nigeria is currently Europe's biggest charcoal supplier, 40% of all charcoal imports to Europe originate from the African continent⁴; however there are issues associated with these sources of supply, specifically: (1) the legality of the sources from most African states cannot be proven under the European Timber Regulation (EUTR, 2013 Regulation (EU) No. 995/2010⁵), (2) concerns on the environmental impact of charcoal production as there is a growing trend of uncontrolled deforestation on the African continent which is responsible for about 20% of global CO₂ emissions and threatens biodiversity⁶ and

2 The national population 524,143. <http://www.sr.undp.org/content/suriname/en/home/countryinfo/>

3 <http://www.tft-earth.org/wp-content/uploads/2015/05/TFT-charcoal-research.pdf> (page 2)

4 <http://www.tft-earth.org/wp-content/uploads/2015/05/TFT-charcoal-research.pdf> (page 4)

5 Regulation (EU) No. 995/2010 was adopted in 2010 and applied to all EU member states in 2013.

<https://www.agriculture.gov.ie/media/migration/forestry/eutr/EUTROverview09102014NOCPDF141014.pdf> (page 2)

6 <http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32010R0995&from=EN>

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(3) the illegal trade (conflict timber)⁷ in this commodity may be a source of financing for armed conflicts. As a result, European buyers are motivated to find an alternative source of supply. In contrast the charcoal and briquettes produced in Suriname will come from verifiable (EUTR) legal sources (certifiable under the Suriname Forest Management Act 1992⁸) and is sustainably sourced (40% of the actively managed forest concessions in Suriname (400,000 ha) producing lumber from which wood waste feedstock for charcoal is generated are (Forest Stewardship Council⁹) certified).

- 2.7 In summary, the proposed project seeks to develop a commercially and environmentally sustainable solution for utilizing waste from the wood processing industry in Suriname will serve as the first practical demonstration of a commercially viable circular economy intervention in Suriname. To reduce the incidence and effects of illegal burning of wood waste on the environment and the health of urban populations, the project seeks to build out a business model for the conversion of industrial wood waste into charcoal and briquettes using a highly efficient CO₂ neutral twin-retort technology for export to established markets in Europe. Given the scale of wood processing as an industry within Suriname, there is high potential for involvement of existing wood processors as well as new job creation associated with the roll out of this business model.
- 2.8 The innovative features of the proposed project may be summarized as follows: (i) it is the first commercially oriented adaptation of circular economy principles in the context of Suriname, (ii) the energy efficient carbon neutral technology used for conversion of wood waste to charcoal and briquettes; is highly innovative for the LAC region
- 2.9 The project is well aligned with the IDB Suriname Country Strategy (2016 – 2020), as the project places a strong emphasis on economic diversification through innovation and exports¹⁰ as well as the involvement of the private sector to adopt technologies and business models to support climate change adaptation and mitigation¹¹. The project promotes the use of innovative and environmentally friendly technology as it reduces the CO₂ and GHG emissions in urban and peri-urban settings as well as recycling wood waste into a marketable product. The development of a business model will support scalability of the project and will provide a platform for investment in expansion. The proposed project has direct synergies with the IDB's Housing and Urban Development division; an IDB team is currently supervising the implementation of a Sustainable Cities program for Paramaribo which is focused on generating new avenues for economic, private sector led growth including sustainable recycling. In addition, the project is aligned with the IDB's institutional strategy focus on improving productivity and innovation of firms in the region as the project will directly increase

7 <http://www.euflegt.efi.int/documents/10180/23398/FLEGT+Action+Plan/3c0cfc91-1503-458a-9d05-1717bf226e23> (page 21)

8 http://faolex.fao.org/cgi-bin/faolex.exe?rec_id=025438&database=faolex&search_type=link&table=result&lang=eng&format_name=@ERALL

9 <http://www.probos.nl/images/pdf/bosberichten/bosberichten2015-06English.pdf>

10 IDB Suriname Country Strategy 2016-2020 (IDBDOCS: 40751307) page 12

11 IDB Suriname Country Strategy 2016-2020 (IDBDOCS: 40751307) page 16

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productivity of wood processing firms by reducing waste and producing new products using an innovative technology.

- 2.10 The proposed intervention is also well aligned with the MIF's strategy and specifically MIF's inclusive cities thematic area as follows: (i) the proposed project will catalyze commercial application of circular economy practices; (ii) the project is focused on job creation in urban and peri-urban areas; and (iii) the proposed intervention seeks to improve health and environmental standards in the urban and peri-urban areas by reducing the emission of CO₂ and CH₄.

3. EXECUTING AGENCY

- 3.1 The executing agency will be the Foundation for Sustainable Wood Processing in Suriname (FSWPS). FSWPS represents the key wood processors in Suriname and has experience in successfully executing a previous MIF project (ATN/ME-12144-SU¹²). In addition to advance this project, the FSWPS has developed partnerships with experienced technical and commercial actors in sustainable wood waste management. These key partners include:
- 3.2 **Environmental Services and Support N.V.¹³ (ESS)**. ESS is a Surinamese registered environmental consultancy firm. ESS has developed a hands-on knowledge of the forest based industry in Suriname, sustainability certification, forest product based value chain and overall project management and is a key technical partner that will support management of environmental sustainability and climate change adaptation in development of the business model.
- 3.3 **Charbon Engineering NV¹⁴ (The Netherlands) and its main shareholder Europem NV (Belgium)¹⁵** are two European based companies involved in the delivery of innovative technologies for production of charcoal and briquettes from wood waste. These partners will provide the technical and knowledge transfer of innovative technology for climate neutral conversion of charcoal and briquettes to the FSWPS. Charbon Engineering was established in 2008 and has installed ovens in Europe, North Africa and Asia for wood, charcoal and metallurgy industries. Europem NV was established in 1999 and is a leading actor in the delivery of Environmental Payback Projects, that leverage environmental, energy and process technology know-how. Europem NV's focus is technological innovation to provide sustainable, reliable, flexible and robust solutions for energy generation, product recovery, waste valorization, environmental protection and safety.

12 ATN/ME-12144-SU was executed over 3 years (2010-2013). The MIF contribution was \$150,000.00 and the counterpart contribution was \$65,000.00.

13 <http://www.ess-environment.com>

14 <http://www.charbon-engineering.eu/>

15 <http://www.euco-pem.com/en>

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3.4 Caribbean Parquet Flooring N.V. (CPF) is a major Surinamese owned and operated timber concessionaire and producer of superior quality wood products for over 30 years. CPF will provide local raw material logistics and supply chain management necessary and commence commercial production of charcoal and briquettes in Suriname. CPF has access to 32,000 Ha of FSC compliant forest and can produce an estimated of 16,000 tons of waste annually (a volume representing approximately 54% of the feedstock needed for sustainable operation of an export-focused charcoal and wood briquette production facility). CPF is FSC compliant and is a founding member of the FSWPS and has demonstrated track record of responsible forestry and quality management. CPF has strong linkages with local forest workers and forest dwelling communities, wood processors and furniture and final wood component producers.

4. PROJECT OBJECTIVES AND DESCRIPTION

4.1 Objectives:

At the impact level, it is expected results will include: (i) new job creation (particularly in feedstock collection, logistics management and operation of furnaces), (ii) an increase in the number of firms adopting environmentally sustainable practices and technologies (particularly wood processors), and (iii) an initial 30,000 metric tons of wood waste are diverted from landfills for recycling.

At the outcome level this project will support the development of a value chain and business model to produce charcoal and briquettes primarily for export to regional and international markets. The key results targeted include the following:

- (a) an investment plan is developed for commercial financing of the project
- (b) 40 sawmills participating in the supply chain within 2 years
- (c) 80 FTE jobs created
- (d) 30,000 metric tons of wood waste converted to charcoal and briquettes by end of year 2 of commercial production.

To achieve the targeted results, the project will be structured as follows:

4.2 Component 1: Quality testing and analysis of feedstock. The objective of this component will be to test the quality and physical properties of local feedstock as an input to charcoal and briquette production. A key factor in the production of quality charcoal with low residual ash is the physical properties of the feedstock. Surinamese forests include hundreds of tree species; however, only 90 marketable wood species are on the Stichting voor Bosbeheer en Bostoezicht (SBB)¹⁶ list and just 5 species comprise 50% of the harvested timber¹⁷. To ensure consistent supply and quality of the final product, and to promote a more widespread use of forest

¹⁶ SBB – Foundation for Forestry Oversight and Management.

¹⁷ S. van Dijk. (2013) "Marketing opportunities for potential Surinamese wood species"

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resources, a comprehensive physical and chemical testing of the key tree species to assess suitability for charcoal and briquette production is essential. This component will also support the technical pilot operation to test commercial charcoal making from the available solid wood waste and briquettes from sawdust from sawmills.

4.3 Component 2: Strengthening of production. The objective of this component will be to identify and engage key actors in the supply chain for charcoal and briquette production in Suriname. This component will also include modelling the logistical requirements and costing of sales to a range of export markets as well as development of quality system to ensure that the charcoal and briquettes produced in Suriname are compliant with required standards of viable targeted markets.

4.4 Component 3: Development of a market and business plan. The objective of this component is to support investment in sustainable commercial production and sales. Project activities include the development of a market strategy to establish viable channels for the sale of charcoal and briquettes within the region and in the European market. This component will also support the development of a business plan and investment proposal to assist the FSWPS to finance and conclude agreements for the commercial startup of production and export of charcoal and briquettes manufactured from wood waste.

5 BUDGET

5.1 The budgeted costs of the proposed project are presented in the following summary table:

Cost Elements	MIF	Counterpart	Total
Component 1	\$ 30,000.00	\$ 60,000.00	\$90,000.00
Component 2	\$ 20,000.00	\$ 40,000.00	\$60,000.00
Component 3	\$ 50,000.00	\$ 20,000.00	\$70,000.00
Technical Co-ordination and Project Administration	\$ 30,000.00	\$ 55,000.00	\$85,000.00
Ex-post reviews	\$5,000.00	-	\$5,000.00
Final Evaluation	\$5,000.00	-	\$5,000.00
Contingencies	\$10,000.00	\$ 5,000.00	\$15,000.00
Total	\$150,000.00	\$180,000.00	\$330,000.00

All figures are expressed in US dollars

5.2 Sources of Funding: The total cost of the project is budgeted as US\$330,000, of which MIF will contribute US\$150,000 (45%) in non-reimbursable technical co-operation funds. The Executing Agency commits to make the remaining funds, US\$180,000 (55%) available as counterpart resources, of which US \$80,000 will be provided in cash, and US \$100,000 will be provided in kind. The Executing Agency commits to provide all counterpart resources either

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directly and/or by mobilizing other stakeholder/partner agency contributions. A detailed budget is presented in Annex II.

- 5.3 Disbursements:** The review of supporting documentation for disbursements will be conducted on an ex-post and semiannual basis.

6 MECHANISMS FOR PROJECT EXECUTION

- 6.1 Execution and Disbursement Periods.** The project will be executed and disbursed in 24 months.
- 6.2 Program Implementation Readiness.** The institutional assessment (Diagnostic Needs Assessment) presented in Annex V indicates that the Executing Agency has adequate capacity to implement the project.
- 6.3 Disbursements by Results:** Project disbursements will be contingent upon verification of the achievement of milestones. These milestones will be verified using their means of verification, agreed upon between the Executing Agency and the MIF. Achievement of milestones does not exempt the Executing Agency from the responsibility of achieving the project objectives and targeted results as outlined in the Results Matrix (Annex I). In accordance with the MIF's Performance and Risk-based approach, project disbursements amounts will be based on the project's projected liquidity needs, for a maximum period of 6 months. The first disbursement will be contingent on the Executing Agency's achieving reaching Milestone 0 (conditions prior to first disbursement. Subsequent disbursements will be issued subject to the following two conditions being met: (i) MIF has verified that milestones have been achieved, as agreed to in the annual plan; and (ii) that the Executing Agency has justified 80% of all cumulative advances.
- 6.4 Procurement:** For the procurement of goods and contracting of consulting services, the Executing Agency will apply the IDB Policies (GN-2349-9 y GN-2350-9). Given that the Diagnostic of Executing Agency Needs (DNA) generated a **Medium Risk** classification, the project team has determined, as stipulated in Appendix 4 of the IDB Policies, the Executing Agency which belongs to the private sector, will use the private sector procurement methods specified in Annex I of the Operational Guidelines for Technical Cooperation Projects (OP-639). In addition, the review of procurement and contracting processes for the project will be conducted **ex-post** and on a **semiannual** basis, **with the initial 3 procurements being reviewed on an ex ante basis**, as indicated in the draft procurement plan Annex III.
- 6.5** Before project contracting and procurement begins, the Executing Agency must submit the updated project Procurement Plan for the IDB/MIFs approval which should be updated annually and when there are changes in the methods or goods or services to be procured.

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7. MONITORING AND EVALUATION

- 7.1 **Supervision:** Operational supervision and disbursement responsibility will reside with an appointed officer of the MIF and the Suriname Country Office (CCB/CSU).
- 7.2 **Project Status Reports:** The Executing Agency will be responsible for presenting Project Status Reports (PSRs) to the MIF within thirty (30) days after the end of each semester, or more frequently as determined by the MIF. The PSR will contain information on the progress of project execution, achievement of milestones, and completion of project objectives as stated in the logical framework and other operational planning tools. The PSR will also describe issues encountered during execution and outline potential solutions. Within ninety (90) days after the end of the execution term, the Executing Agency will submit to the MIF a Final Project Status Report (Final PSR) which will highlight results achieved, project sustainability, evaluation findings, and lessons learned.
- 7.3 **Evaluation:** Project results will be assessed via an independent final evaluation. Prior to the conclusion of this project, an independent consultant, financed from the MIF contribution to the project will undertake a Final Evaluation. The evaluation will focus on the extent to which project objectives and targeted results, as outlined in the logical framework have been attained and the underlying factors that enabled or impeded project implementation. The consultant will be required to distill key lessons learned as well as prospects for sustainability and scaling.
- 7.4 **Financial Management:** The Executing Agency will establish and will be responsible for maintaining adequate accounts of its finances, internal controls, and project files according to the financial management policy of the IDB/MIF. Given that the Diagnostic of Executing Agency Needs (DNA) generated a Medium Risk score in financial management, the review of supporting documentation for disbursements will be conducted **ex-post** and on a **semiannual** basis.
- 7.5 The IDB will contract independent auditors to carry out the ex-post reviews of procurement processes and of supporting documentation for disbursements. Ex-post reviews will include an analysis of the Financial Statements that the EA should prepare annually as part of its financial management of the project. The costs associated with this contract will be financed with the MIF contribution resources according to IDB procedures.
- 7.6 During project execution, the frequency of ex-post reviews for procurement processes and supporting documentation for disbursements, as well as the need for additional financial reports, can be modified by the MIF based on the results of the ex-post review reports conducted by external auditors during the project execution.

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8. APPROVAL

8.1 This project is recommended and approved for financing under the MIF Program of Delegation of Authority (MIF/GN-62-7).