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INDUSTRIAL DEVELOPMENT ORGANIZATION



MINISTERO DELL'AMBIENTE  
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REPUBLIC OF BOTSWANA  
Ministry of Environment,  
Natural Resources Conservation and Tourism



UNIDO NETWORK OF INVESTMENT AND  
TECHNOLOGY PROMOTION OFFICES  
ROME, ITALY



Catalogue of investment opportunities  
in **energy** and **environment** sectors

 **BOTSWANA**

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# Botswana

Botswana is located in Southern Africa a land locked country with an extension of 582,000 km<sup>2</sup> and with a population of 2.214,854 the majority of them located in the following cities: Gaborone, Francistown and Maun. The Country limits with Namibia, South Africa, Zimbabwe and Zambia.

According to Botswana Power Corporation the country demands in electricity is 600 MW and is expected to rise to 700 MW by 2019. The energy balance of commercial energy sources in Botswana accounts for 75% from petroleum, electricity and coal sources while biomass-based fuels, fuel wood accounts for 25% and renewable energy is hardly used.

The solar industry in Botswana has a big potential. The Country receives over 3200 hours of sunshine per year, with an average insolation on horizontal surface of 21 MJ7/m<sup>2</sup> and average 320 clear, sunny days per year.

Installed capacity planned for 2020, priorities and government programs:

Botswana in their communications to the United Nations Framework Convention on Climate Change (UNFCCC) indicated its intention to achieve an overall emissions reduction of 15% by 2030, taking 2010 as the base year, with regard to the exploitation of solar energy can be identified the following objectives:

- Production of solar thermal energy
- Construction of solar parks
- Photovoltaic installations for energy production
- Electrification of rural villages without grid through photovoltaic installations
- Access to solar water-heaters

In the second communication of Botswana to the UNFCCC it was indicated the willingness of the country to replace fuel wood with the use of LPG and biogas.

The fuel wood is mainly collected by hand, by individual households being the majority women, with the aim to meet their energy needs for cooking, and heating but resulting in wood shortages and in local depletion. In addition, fuel wood is use in the residential sector approximately 77 percent households in rural areas and 46 percent nationally wide, while the trend observed is a move away from wood to use LPG gas for cooking, in rural areas the challenge remains. Governmental institutions and small to medium commercial enterprises, especially use diesel fuel wood as the principal energy source.



## Biogas

<b>Code</b>	BOT/003/1709
<b>Sector</b>	Promoting Production and Utilisation of Biogas from Agrowaste in South Eastern Botswana
<b>Description of the activity or the product</b>	<p>The Botswana national Development Plan 2010-2016 accords priority to transforming agro-waste into biogas. This GEF-financed, UNDP-implemented project will assist the Government of Botswana in meeting this priority through three project components: 1) institutional strengthening and capacity development; 2) the facilitation and establishment of biogas plants, and 3) the setting-up of utilisation and knowledge platforms. The Outcomes of the project include the implementation of effective waste-management policies and guidelines with operational regulations: capacity to design and develop biogas projects in South-Eastern Botswana; the first best-practice public-private partnership established; reduction in greenhouse gas emissions (direct and indirect) of 1.65 tCo<sub>2e</sub>, and increased incomes through the use of small-scale biogas and bio-fertilizer, especially for women.</p>
<b>Requested cooperation or technology</b>	<p>Technology for small scale digesters of nominal capacity 4-300 cbm. Technology for medium scale digesters 300-5000 cbm. Large scale digester 15000 cbm.</p>
<b>Year of foundation</b>	2017
<b>Classification of the project</b>	New Project
<b>Machinery of the interest of the company</b>	<p><b>Waste Collection Section:</b> waste collection industrial and special vehicles; Underground or half-underground storage tank systems; Waste handling and storage.</p> <p><b>Waste Treatment and Disposal Technologies and Components:</b> products and components for compost production; Bio shredders; Biological waste treatment; Slaughterhouse and farm produce waste treatment; Landfill: equipment and plant.</p> <p><b>Energy from Biogas:</b> All the industrial chain of biogas from equipment components and technologies for biogas plants to cogeneration and trigeneration.</p> <p><b>Biofuels:</b> Methane production and distribution.</p> <p><b>Integrated Waste Management:</b> Waste collection services management.</p>
<b>Participation in ECOMONDO 2017</b>	Mr. Baboloki AUTLWETSE
<b>Company Name</b>	United Nations Development Programme (UNDP)



## Residential and Tourism Sector

<b>Code</b>	N.A.
<b>Sector</b>	Construction of Green Buildings
<b>Description of the activity or the product</b>	Design a University Building- Eco Park training- with the use of green technologies.
<b>Requested cooperation or technology</b>	Technologies for residential and community areas.
<b>Year of foundation</b>	2011
<b>Classification of the project</b>	New Project
<b>Machinery of the interest of the company</b>	<b>Renewable Products:</b> Ecomaterials, eco-design. <b>Water recycling, recovery and re-use:</b> Ecomaterials, eco-design; Water recycling; Recovery and re-use: Water re-use, domestic residue recycling; Water recovery plants. <b>Integrated Waste Management:</b> Landscaped area maintainance. <b>Photovoltaic Energy:</b> Solar streetlamps and lighting; Solar tracking photovoltaic plants.
<b>Participation in ECOMONDO 2017</b>	Ms. Tebogo Valentia MODISAGAPE, Ms. Nametso Baitsang MAIKANO
<b>Company Name</b>	Val Interiors and West Quay (Pty) LTD- <a href="http://www.valinteriors.co">www.valinteriors.co</a>

<b>Code</b>	BOT/008/1710
<b>Sector</b>	Ecotourism or Sustainable Destination in Kasane, Chobe, Botswana
<b>Description of the activity or the product</b>	Botswana Ecotourism Certification System who has already 76 lodges as members.
<b>Requested cooperation or technology</b>	Renewable Energy technologies for the Tourism Sector.
<b>Year of foundation</b>	2006
<b>Classification of the project</b>	Extension
<b>Machinery of the interest of the company</b>	<p><b>Waste Collection, transport and street cleaning:</b> Electric vehicles for waste collection and street cleaning; Biofuel vehicles; Hybrid vehicles.</p> <p><b>Waste Treatment and Disposal Technologies and components:</b> Bio-filter and exhaust air treatment; Products and components for compost production; Biological waste treatment; Recyclable material treatment; Used oil treatment; Special and hazardous waste treatment; Hazardous waste disposal; Plastic recycling systems.</p> <p><b>Recovery of Matter and Energy:</b> Paper and cardboard salvage; Animal and vegetable oil salvage.</p> <p><b>Biobased Industry-Bioeconomy:</b> Biodegradable and compostable polymers and bioplastics.</p> <p><b>Energy from Biomass:</b> Equipment, components and technologies for biomasses; Equipment, components and products for energy from biomasses.</p> <p><b>Energy from Biogas:</b> Equipment , components and technologies for biogas plants; Containers and silos for fermentation; Biogas production plants; Biogas cogeneration and trigeneration.</p> <p><b>Biofuels and alternative fuels:</b> Equipment, components and technologies from alternative fuels; Burners for biodiesel/ethanol/vegetable oil; Biodiesel producers and distributors.</p> <p><b>Integrated Waste Management:</b> Waste collection services management.</p> <p><b>C&amp;D Waste:</b> Treatment and recovery: dust elimination devices.</p> <p><b>Polluted Site Reclamation:</b> Soil-air suction systems, microbiological treatment.</p> <p><b>Water and Wastewater treatment:</b> Purification plants: compact/ prefabricated/with structural metalwork, filtration, drainage water treatment, UV radiation plants, ozonation plants, purification plants with sludge stabilization, natural sewage treatment plants.</p> <p><b>Sludge Disposal:</b> Biogas based system.</p> <p><b>Water Recycling, recovery and re-use:</b> Water re-use; Water recovery plants.</p> <p><b>Integrated water Management:</b> Sewage construction and management; Construction and management of water purification and treatment plants.</p> <p><b>Environmental Equipment Analysis, measurement control:</b> Industrial process effluent analyses: measurement and equipment; Hydrocarbon analysis: measurement and equipment.</p> <p><b>Communication and Consultancy Services:</b> Environmental impact assessment studies.</p> <p><b>Thermal solar energy:</b> equipment for solar energy, natural circulation thermal solar plants.</p>
<b>Participation in ECOMONDO 2017</b>	Mr. Mafila Richard MALESU
<b>Company Name</b>	Botswana Tourism Organization member of green destinations

## Energy from Biomass

<b>Code</b>	N.A.
<b>Sector</b>	Energy from Biomass
<b>Description of the activity or the product</b>	Extraction of syngas, bio-oil/Pyrolitic; bio-char/carbon Black.
<b>Requested cooperation or technology</b>	Capital Investor/ technical expertise, technology transfer, equipment purchase, joint venture.
<b>Year of foundation</b>	-
<b>Classification of the project</b>	New Project
<b>Machinery of the interest of the company</b>	<p><b>Recovery of Matter and Energy:</b> Organic waste salvage; Wood salvage; Plastic salvage, tyre salvage, production of energy from waste: pyrocleaning, and thermo-catalyc cracking, waste derived fuel plants.</p> <p><b>Renewable Products:</b> Selling waste-derived products, ecomaterials, eco-design, packaging.</p> <p><b>Biobased Industry- Bioeconomy:</b> Biolubricants, biorefinary (vegetable biomass, sub-products, waste and effluents from the agro-industrial sector, civil organic waste; Equipment and plants for recovering energy from waste.</p> <p><b>Energy from Biomass:</b> Equipment components and technologies for bio-masses; biomass industrial plants; biomass processing; biomass logistic; machines for production of pellets and/or chips.</p> <p><b>Energy from Biogas:</b> Equipment components and technologies for biogas plants, biogas production plants, plants for production of biogas from landfills and purification plants; plants for production of biogas from live-stock sewage waste; plants for production of biogas from industrial waste, equipment, components and measurement systems for the biomethane sector, systems for biomethane stockage, transport, injection into networks and distribution; technology for purifying and upgrading biomethane biogas obtained from OFMSW.</p> <p><b>Sludge Disposal:</b> Thickening and dehydration.</p>
<b>Participation in ECOMONDO 2017</b>	Mr. Kabelo RAMADITSE
<b>Company Name</b>	Black Cotton Engineers (PTY) Ltd



## Public and Municipal Sector

<b>Code</b>	N.A.
<b>Sector</b>	Environment
<b>Description of the activity or the product</b>	Department of Waste Management and Pollution Control.
<b>Requested cooperation or technology</b>	Technologies in Waste Sector and Renewable Energy.
<b>Year of foundation</b>	-
<b>Classification of the project</b>	Public Project
<b>Machinery of the interest of the company</b>	<p><b>Waste Collection, Transport and Street Cleaning:</b> special containers for differentiated collection.</p> <p><b>Waste Treatment and Disposal-Technologies and Components:</b> Mechanical and sorting treatment plants and equipment; Asbestos treatment; Recyclable material treatment; Used oil treatment; Special and hazardous Waste treatment; Hazardous waste disposal.</p> <p><b>Recovery of Matter and Energy:</b> Salvaged and recycled material; Electrical and electronic equipment salvage; Tyre salvage; Production of energy from waste: pyrocleaning and thermocatalytic cracking; Design and construction of incinerators; Waste derived fuel plants.</p> <p><b>Renewable Products:</b> new carbon free materials.</p> <p><b>Biobased Industry- Bioeconomy:</b> Biorefinery(vegetable biomass; subproducts,waste and effluents from the agro-industrial sector, civil organic waste); Composting plants and equipments.</p> <p><b>Energy from Biomass:</b> Equipment, components and products for energy from biomasses; Pellet and or chip suppliers; Machines for production of pellets and/or chip.</p> <p><b>Energy from Biogas:</b> Equipment components and technologies for biogas plants; Equipment, components and measurement systems for the bio-methane sector; Methane-powered vehicles.</p> <p><b>Biofuels and alternative fuels:</b> Production of biofuels.</p> <p><b>C&amp;D Waste:</b> Treatment and recovery: equipment for industrial plants demolition; Products from C&amp;D waste recycling.</p> <p><b>Polluted Site Reclamation:</b> Land reclamation: plants and equipment; Groundwater decontamination.</p> <p><b>Wastewater lifting, transport and storage:</b> Desalting plants.</p> <p><b>Treatment of Industrial and Artisan Wastewater:</b> Tanning industry.</p> <p><b>Communication and Consultancy Services:</b> Research institutions; Environmental impact assessment studies.</p> <p><b>Thermal Solar Energy:</b> Plants for the production of thermal solar energy.</p> <p><b>Energy from Wind:</b> Equipment and Components and technologies for wind power plants.</p>
<b>Participation in ECOMONDO 2017</b>	Mr. Kentlafetse MOKOKWE
<b>Company Name</b>	Ministry of Environment of Botswana

<b>Code</b>	N.A.
<b>Sector</b>	Local Government
<b>Description of the activity or the product</b>	Waste Energy Plant from existing landfill.
<b>Requested cooperation or technology</b>	Technical Expertise, technology transfer Technical Expertise, technology transfer.
<b>Year of foundation</b>	-
<b>Classification of the project</b>	Extension
<b>Machinery of the interest of the company</b>	<p><b>Waste Collection, Transport and Street Cleaning:</b> Compacters.</p> <p><b>Waste Treatment and Disposal Technologies and Components:</b> Mechanical and sorting treatment plants and equipments, shredders/crushers, landfill:equipment and plant.</p> <p><b>Energy from Biogas:</b> equipment , components and technologies for biogas plants, plants for production of biogas from landfills and purification plants.</p> <p><b>Integrated Waste Management:</b> Set-up and management of disposal, treatment and recycling plants.</p> <p><b>Technology &amp; Devices for air purification:</b> Fume purification- dust collectors; Fume purification-gas scrubbers, air scrubbers.</p> <p><b>Associations, Organizations, miscellaneous:</b> Administrations and local authorities.</p>
<b>Participation in ECOMONDO 2017</b>	Mr. Mosimanegape David MOGOROSI
<b>Company Name</b>	Kgatleng District Council of Botswana

<b>Code</b>	N.A.
<b>Sector</b>	Local Government
<b>Description of the activity or the product</b>	Extraction of biodiesel from plastic, agricultural waste with the aim to produce fertilizers, biodiesel and plastic products
<b>Requested cooperation or technology</b>	Management expertise, technical expertise, technology transfer, equipment purchase, joint venture, market access
<b>Year of foundation</b>	-
<b>Classification of the project</b>	New Project
<b>Machinery of the interest of the company</b>	<p><b>Renewable Products:</b> Selling waste-derived products, ecomaterials, eco-design.</p> <p><b>Biobased Industry-Bioeconomy:</b> Biorefinery (vegetable biomass; subproducts, waste and effluents from the agro-industrial sector, civil organic waste)</p>
<b>Participation in ECOMONDO 2017</b>	Mr. Mompoti SELEKE
<b>Company Name</b>	City of Francistown Council

<b>Code</b>	N.A.
<b>Sector</b>	Local Government
<b>Description of the activity or the product</b>	Installation solar street lights in Gaborone Gaborone Transfer Station & Recycling Centre
<b>Requested cooperation or technology</b>	Technical Expertise, technology transfer
<b>Year of foundation</b>	-
<b>Classification of the project</b>	New Project
<b>Machinery of the interest of the company</b>	<p><b>Waste Collection, Transport and Street Cleaning:</b> Waste transport by road; electric vehicles for waste collection and street cleaning, bins, road cleaning and maintenance vehicles, urban quality, road safety solutions, waste handling and storage.</p> <p><b>Waste Treatment and Disposal Technologies and Components:</b> Recyclable material treatment.</p> <p><b>Recovery of Matter and Energy:</b> Tyre salvatage.</p> <p><b>Water Recycling, Recovery and Re-use:</b> Water re-use.</p> <p><b>Associations, Organizations, miscellaneous:</b> Administrations and local authorities.</p> <p><b>Photovoltaic Energy:</b> Solar streetlamps and lighting; Turnkey photovoltaic plants</p> <p><b>Sustainable Mobility:</b> Car park management and vehicle parking solutions; Road safety solutions; Electric vehicles for waste collection and street cleaning.</p>
<b>Participation in ECOMONDO 2017</b>	Mr. Mathe Mpho GAPE
<b>Company Name</b>	Gaborone City Council

<b>Code</b>	N.A.
<b>Sector</b>	Association of Local Authorities of Botswana
<b>Description of the activity or the product</b>	Promote among local authorities in Botswana green technologies.
<b>Requested cooperation or technology</b>	Technical Expertise, technology transfer
<b>Year of foundation</b>	-
<b>Classification of the project</b>	New Project
<b>Machinery of the interest of the company</b>	<p><b>Recovery of Matter and Energy:</b> Plastic salvage; Production of energy from waste: pyrocleaning, and thermo-catalytic cracking.</p> <p><b>Renewable Products:</b> Ecological parks and gardening.</p> <p><b>Integrated water management services:</b> Water resource planning and management.</p> <p><b>Associations, organizations, miscellaneous:</b> Associations and Consortiums.</p>
<b>Participation in ECOMONDO 2017</b>	Mr. Tsimanyane ONKEMETSE
<b>Company Name</b>	Botswana Association of Local Authorities

**Waste Treatment/Recycling/Renewable Energy Distributors**  
**Not present in ECOMONDO 2017**

<b>Code</b>	BOT/004/1709
<b>Sector</b>	Integrated Waste Management Solution & Landfill Gas to Electricity in Botswana
<b>Description of the activity or the product</b>	Promoting the efficient use of resources through the adequate treatment of solid waste, production of electricity as by-product of waste disposal and the reuse, recycling and regeneration of resources.
<b>Requested cooperation or technology</b>	Investors for implementing new process.
<b>Year of foundation</b>	1986
<b>Classification of the project</b>	Extension of a Project
<b>Machinery of the interest of the company</b>	<p><b>Waste Collection, Transport and Street Cleaning:</b> Special containers for differentiated collection; Can crushing and collection machines.</p> <p><b>Waste Treatment and Disposal Technologies and Components:</b> Mechanical and sorting treatment: plants and equipment; Conveyer belts; Landfill: equipment and plant; Production of energy from waste pyrocleaning and thermocatalytic cracking; Design and construction of incinerators.</p> <p><b>Renewable Energy Products:</b> Selling waste-derived products.</p> <p><b>Biobased Industry-Bioeconomy:</b> Anaerobic digestion: plants and equipment; Equipment and plants for recovering energy from waste; Composting plants and equipment.</p> <p><b>Energy from Biomass:</b> Pellet and/or chip and/or wood burning boilers; Biomass processing; Biomass logistic.</p> <p><b>Energy from Biogas:</b> Plants for production of biogas from landfills and purification plants, from livestock sewage waste, from industrial waste; Biogas alternative engines.</p> <p><b>C&amp;D Waste:</b> Treatment and Recovery-Recycling systems for bituminous conglomerates.</p> <p><b>Sludge Disposal:</b> Biogas-based systems; Sludge application in agriculture; Hazardous sludge disposal.</p> <p><b>Environmental Equipment Analysis Measurement, Control:</b> Biogas analysis: measurement and equipment; Waste analysis and classification measurement and equipment.</p> <p><b>Energy from Solar:</b> Solar-biomass combined systems; Solar Gas Cobined Systems.</p> <p><b>Energy from Wind:</b> On-shore and off-shore aerogenerator producers.</p> <p><b>Cogeneration and trigeneration:</b> Biodiesel and vegetable oil cogeneration and trigeneration; Abscription refrigeration plants.</p> <p><b>Distributed Generation and Microgeneration:</b> Plants for distributed generation and remote heating; Mini and Micro cogeneration.</p> <p><b>Energy Efficiency:</b> Air conditioning from geothermal sources; Gas heat pumps.</p>
<b>Company Name</b>	Sotravic Botswana- <a href="http://www.sotravic.net">www.sotravic.net</a>

<b>Code</b>	BOT/005/1709
<b>Sector</b>	Renewable Energy
<b>Description of the activity or the product</b>	Provide Eco-Friendly solutions for a packing house, greenhouse with heating and cooling, laboratory that can be powered by solar, water treatment for river/sewage water, water purification and aquaponics farming with solar pumping, looking for supply of technology and full turn key solutions.
<b>Requested cooperation or technology</b>	Water pumping system with solar energy. Technology Transfer, Equipment Purchase, Technical expertise and subcontracting.
<b>Year of foundation</b>	2015
<b>Classification of the project</b>	New Project
<b>Machinery of the interest of the company</b>	<p><b>Renewable Products:</b> Ecomaterials, eco-design; End products for the food-stuffs sector; End products for the agricultural sector; End products for the industrial sector; End products for the other sectors.</p> <p><b>Energy from Biomass:</b> Equipment, components and technologies for biomasses; Equipment components and products for energy biomasses; Bio-mass cogeneration.</p> <p><b>Wastewater Lifting, transport and storage:</b> Pumps and pumping stations; Purification and waste water treatment, valves.</p> <p><b>Water and wastewater treatment:</b> Purification plants.</p> <p><b>Electric and mechanical equipment, purification plants:</b> Compact and pre-fabricated with structural metalwork; Filtration; Treatment of Industrial and Artisan Wastewater as well as farm produce industry.</p> <p><b>Technology &amp; Devices for air purification:</b> Vacuum systems.</p> <p><b>Environmental equipment:</b> Analysis; Measurement; Control: soil analysis -measurement and equipment, remote control systems, level indicators, temperature and humidity measurement.</p> <p><b>Photovoltaic Energy:</b> Components and technologies for photovoltaic plants; Flexile film photovoltaic modules; Integrated/ hybrid photovoltaic systems; Inverters for input into grid, solar tracking photovoltaic plants.</p> <p><b>Energy from Wind:</b> Equipment components and technologies for wind power plants; Offgrid miniwind power plants.</p> <p><b>Motors:</b> Cast iron components for electric motors, LV asynchronous motors, AC motors.</p> <p><b>Energy Saving and Efficiency:</b> air conditioning from geothermal sources, high efficiency electric motors, saving and efficiency in energy.</p> <p><b>Sustainable Construction:</b> air conditionin from geothermal sources, free cooling systems.</p>
<b>Company Name</b>	Direct Motion Control

<b>Code</b>	BOT/002/1709
<b>Sector</b>	Recycling
<b>Description of the activity or the product</b>	Waste tire recycling company that produce furniture such as: doors, stools, rubber interlocking bricks, rubber granules, coffee tables just to name a few, also rubber paving for sidewalks.
<b>Requested cooperation or technology</b>	<p>The company required tire shredding machine that can shred 1 tonne an hour with a separator for the steel and wool, and a granulator that can make granules round like a ball shape with a size of 0.6mm- 0.8mm granules. it can be second hand and domestic size in addition they required compactors, and a scale.</p> <p>The above machinery is required for the production of artificial grass, and material for floor of pavements for sidewalks and kindergarten structures.</p> <p>They expect a foreign investor to partner with machinery to assist on mass production and to bring the vision of replacing dumping sites with recycling sites to life.</p>
<b>Year of foundation</b>	2013
<b>Classification of the project</b>	Expansion
<b>Machinery of the interest of the company</b>	<p>Machinery for different size of granulation from tires recycling, compactors, systems for weighing and identifying differentiates waste collection containers, waste collection industrial and special vehicles.</p> <p><b>Waste treatment and disposal technologies and components section:</b> mixers, presserps, shredders/crushers, vibrating screens, shears, blades/ cutters.</p> <p><b>Recovery of Matter and Energy section:</b> Equipment for scrap and waste.</p> <p><b>C&amp;D Waste:</b> Treatment and recovery: Crushing fixed and mobile equipment.</p>
<b>Company Name</b>	Intelligent Technologies









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