Micro and Small Enterprises and the Green Economy in the Caribbean Islands

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“A green economy as one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one which is low carbon, resource efficient and socially inclusive.”

“...the clean energy economy, consisting primarily of four sectors: renewable energy (e.g. solar, wind, geothermal); green building and energy efficiency technology; energy-efficient infrastructure and transportation; and recycling and waste-to-energy.”
Review of the green economy

What does the green economy mean for micro and small enterprises (MSEs)?

**Eco-innovation:**
“...introduction of any new or significantly improved product (good or service), process, organisational change or marketing solution that reduces the use of natural resources and decreases the release of harmful substances across the whole life-cycle.”
Why focus on MSEs

• Micro and small enterprises (MSEs) constitute the majority of businesses in OCTs (employees ≤ 50; revenue ≤ €10 m).

• Due to their small size (limited capital, revenue and human resource), MSEs are easily left behind in the green transition.

• Most start-up enterprises start small, so if we green today we transform tomorrow’s large enterprises.

• Smaller enterprises are often the generators of new eco-innovation.

• By greening MSEs, we transform the entire society.
Why focus on MSEs

For **enterprises**, eco-innovation (going “green”) can:

- Reduce the long-term operating costs of enterprises.
- Improve the quality of goods and services.
- Enable businesses to demand a higher price, in some cases.

For **Caribbean island OCTs**, MSE eco-innovation can:

- Extend the life of natural resources
- Improve the quality of human life by reducing stress and pollution
- Reduce dependence on imports of foreign goods and electricity.
- Create new types industries related to eco-innovative product and services.
OCT Characteristics

- Populations from 4800 to 149,000 inhabitants.
- GDP per capita from less than US$15,000 to US$60,000.
- Tourism contribution to GDP between 61 to 84 per cent of GDP.
- Net importers of food and disposable goods.
- High dependence upon fossil fuels.
OCT Characteristics

• Exposure to volatile energy prices (fossil fuels).
• Volatile financial markets and tourism flows
• Limited space impacts on housing, landfills, agriculture and exposure to communicable disease.
• Climate change: Caribbean contributes little but among worst affected.
  – Warmer waters $\rightarrow$ impaired reefs $\rightarrow$ depleted fish stocks
  – Rising sea levels $\rightarrow$ reduced freshwater and salinized coastlines
  – Increased incidence of storms and hurricanes
Four groups of agents are essential for MSE eco-innovation.
I: Driving eco-innovation in MSEs

- Green MSEs
  - Demand
    - GMA procurement
    - Informed private consumers
      - NGOs/NPOs
  - Supply
    - GMA green incentives
    - Platforms for eco-innovation
      - Support from LMEs, NGOs and GMAs
I. Driving eco-innovation in MSEs

Role of GMAs

a. Pro-formality – resolve informality

b. Government legislation – determining (green) national legislation and regulations, codes, standards and labels

c. Incentivisation of green practices – reducing barriers to the adoption of green technology and equipment

d. Eco-innovation platforms
## I. Driving eco-innovation in MSEs

### a. Pro-formalisation

<table>
<thead>
<tr>
<th>Reduce paperwork and bureaucracy</th>
<th>Simplify taxation</th>
<th>Incentivise formality</th>
<th>Strengthen Inspectorate</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simplify procedures for start-up, operationalisation, management and closure. Improve information availability.</td>
<td>Fewer payments &amp;/or flexible payment periods to suit industry</td>
<td>Make formal states attractive with financial and non-financial benefits (e.g. training, listing on official government registers etc.)</td>
<td>Special assistance to government for identifying and reaching out to enterprises to formalise them.</td>
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</table>
I. Pro-formalisation

- With respect to pro-formalisation, the modern practice to use business incubators.

"Business incubation is a unique and highly flexible combination of business development processes, infrastructure and people designed to nurture new and small businesses by helping them to survive and grow through the difficult and vulnerable early stages of development." (Source University of Cyprus)

- Incubators provide a unique opportunity to formalise businesses and to introduce innovation to them from inception.
## I. Driving eco-innovation in MSEs

### b. Government legislation

<table>
<thead>
<tr>
<th>Mandatory standards, codes and approvals</th>
<th>Recommended codes</th>
<th>Labels</th>
<th>Environmental laws</th>
</tr>
</thead>
<tbody>
<tr>
<td>Product codes (particularly for essential goods and services such as buildings, clothing and food)</td>
<td>GMAs may not always be in a position to mandate a code or standard, but it can recommend or favour one.</td>
<td>GMAs legitimately determine what information must be disclosed about products (such as its energy utilisation)</td>
<td>Laws related to how we treat the environment, the use of EIAs and CECs and methods of enforcing the polluter pays principle. Bottle bills and bans on certain plastics.</td>
</tr>
</tbody>
</table>
I. Driving eco-innovation in MSEs

- Legislation (in the Caribbean at large, a lot of work still to be done)
  - Anguilla: Building code for rainwater harvesting.
  - Antigua: Ban on plastic bags effective (January 2016)
  - Trinidad and Tobago: Fee-based certificates of environmental clearance (CECs) and EIAs.
  - Trinidad and Tobago: a 0.01% tax on all profits to capitalise a fund for NGO environmental projects.
## I. Driving eco-innovation in MSEs

### c. Incentivisation of Green Practices

<table>
<thead>
<tr>
<th>Tax incentives for RE and Energy Efficiency</th>
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<td>Waivers of import duties on RE equipment; reduced taxes items.</td>
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<th>Special-interest loans</th>
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<td>Loans from special funds for adoption of RE and/or energy efficient systems.</td>
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<tr>
<th>Green public procurement</th>
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<td>Favouring companies that are environmentally compliant in public purchasing agreements.</td>
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<tr>
<th>Grants</th>
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<tr>
<td>Special grants for developing innovative ideas and/or for upgrading business efficiency via innovation</td>
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</table>
I. Driving eco-innovation in MSEs

- Renewable energy incentives: Barbados (solar energy in hotels)

Businesses that are formal and compliant with government regulation (re: corporation tax, VAT, land tax, and national insurance contributions) or in a payment arrangement with government are entitled to a 150% deduction of actual expenditure, not exceeding BBD 25,000, for each year for five years for:

- Energy audits.
- 50% of the cost of retrofitting premises or installing systems to produce electricity from sources other than fossil fuels.

Source: Barbados. PWC Tax Summaries
I. Driving eco-innovation in MSEs

Additional, over a 10-year period commencing income year 2012, the following incentives apply:

• An income tax holiday (10 years) granted to a developer, manufacturer, or installer of RE and/or energy efficient products.

• 150% deduction of interest on a loan for the construction or installation of a new or the upgrading of an existing property w.r.t. to generating, supplying, or selling RE sources or for the installation or supply of RE or energy efficient products.

• 150% deduction of the amount expended on staff training in relation to generation and sale of RE or RE products.

• 150% deduction of expenditure on the marketing of products for the generation and sale of electricity from a RE source or products related to same.

Source: Barbados. PWC Tax Summaries
I. Driving eco-innovation in MSEs

• 150% deduction of expenditure on product development and research related to the generation and sale of electricity from a RE or EE source or installation or servicing of same.
• Exemption from the payment of corporation tax by a venture capital fund invested in the RE and EE.
• Tax deduction related to contributions to a venture capital fund invested in the RE and EE.
• Exemption from the payment of withholding tax on dividends earned by shareholders of companies solely engaged in RE and EE.
• Exemption from the payment of tax on interest earned by financial institutions for financing the development, manufacturing, and installation of RE and EE systems.

*Source: Barbados: PWC Tax Summaries*
## d. Eco-innovation platforms

<table>
<thead>
<tr>
<th>Public private partnerships to stimulate innovation</th>
<th>Fora for showcasing innovation</th>
<th>Public calls for proposals</th>
</tr>
</thead>
<tbody>
<tr>
<td>The triple-helix model of innovation</td>
<td>Examples include food festivals and business idea competitions, national award platforms, specialist conferences</td>
<td>Calls for proposals directed at specific problems to be resolved.</td>
</tr>
</tbody>
</table>
I. Diving eco-innovation in MSEs

E.g. Climate Change Innovation Centre (InfoDev, WB)

<table>
<thead>
<tr>
<th>COUNTRY</th>
<th>NAME</th>
<th>INNOVATION</th>
</tr>
</thead>
<tbody>
<tr>
<td>Antigua &amp; Barbuda</td>
<td>Elliot Lincoln</td>
<td>Biofuels from microalgae cultivation; CO2 sequestration and wastewater treatment</td>
</tr>
<tr>
<td>Antigua &amp; Barbuda</td>
<td>Mario Bento</td>
<td>Desalination systems for small rural communities; low cost, solar-powered, brackish water reverse osmosis (RO)</td>
</tr>
<tr>
<td>Belize</td>
<td>Santiago Juan</td>
<td>Alternative animal feed production using vertical farming techniques</td>
</tr>
<tr>
<td>Dominica</td>
<td>Gail Defoe</td>
<td>Home-grown organic bio fertilizers</td>
</tr>
<tr>
<td>Jamaica</td>
<td>Brian Wright</td>
<td>The Pedro Banks Renewable Energy Project</td>
</tr>
<tr>
<td>Jamaica</td>
<td>Harlo Mayne</td>
<td>H2-Flex Hydrogen Hybrid Project</td>
</tr>
<tr>
<td>Jamaica</td>
<td>Kert Edward</td>
<td>Fiber-optic solar indoor lighting (FOSIL)</td>
</tr>
<tr>
<td>Jamaica</td>
<td>Shirley Lindo</td>
<td>Organic soil conditioner and fuel briquettes from castor oil waste</td>
</tr>
<tr>
<td>St. Kitts - Nevis</td>
<td>Donny Bristol</td>
<td>Recyclables Expansion &amp; Commercialization Project (Focal areas: resource use efficiency and recycling)</td>
</tr>
<tr>
<td>St. Lucia</td>
<td>Patricia A Joshua</td>
<td>Sustainable agri-business paper products</td>
</tr>
<tr>
<td>Trinidad</td>
<td>Suzanne Thomas</td>
<td>Mobile modularized PF bio-digester</td>
</tr>
</tbody>
</table>
I. Driving eco-innovation in MSEs

• Partners: The large or medium-sized enterprise
  – Sharing innovation through “public goods”, “excess” and externalities.

• Some RE/EE and resource management technologies assume the character of public goods (where their consumption by one person has little or no impact upon another person’s ability to consume.

• Large corporations often have the ability to invest in RE, EE and resource saving technologies with significant positive spill-over effects that can be utilised by MSEs and communities.
Partnerships for innovation: During a drought in West End, Anguilla (2013), the CuisinArt Hotel was able to use its reverse osmosis facility to provide water to nearby communities and enterprises.
I. Driving eco-innovation in MSEs

In Jamaica, a small RE company called CaribShare, collects organic food waste from hotels and livestock farms and turns it into biogas using anaerobic biodigesters that provide affordable, reliable electricity to rural communities.

Large hotels can produce significant amounts of waste energy, food and water. To what extent do our MOUs with large foreign companies include clauses related to spill-over effects to support our micro and small enterprises?
I. Driving eco-innovation in MSEs

Partners: the role of NGOs/NPOs

NGOs/NPOs often:

• Are key partners for governments in eco-innovation
• Undertake a great deal of community environmental and resource sensitisation.
• Comprise individuals with passion and vision for eco-innovation, sustainable enterprise and the environment.
• Are small organisations themselves (MSEs).
• Require scaling up to maximise their impact.
I. Driving eco-innovation in MSEs

• Green VI (Tortola) has partnered with Cooper Island Beach Club for promoting:

  – entrepreneurship and demonstrating agriculture and horticulture as feasible business
  – food gardens and self-sufficiency
  – composting and a ‘waste’ is resource philosophy
  – Permaculture and the value of indigenous plants
  – Sustainable projects in schools and communities
Interestingly, even though NGOs/NPOs do not operate “for profit” (but for service to the community and the environment), in several OCTs they do not receive any fiscal support from the government.
I. Driving eco-innovation in MSEs

Role of the consumer

• The buying public (informed by NGOs/NPOs and the government) create a demand pull for eco-innovation.
  – Informed customers demand green products and service and they drive innovation!
Tourism could be the key to unlocking eco-innovation in the Caribbean OCTs.

UNEP notes that:
– The global sector contributes 5% to GHG
– Tourism employs up to 8% of the global labour force.
– Tourism can significantly reduce poverty and create employment
– Tourism impacts upon conservation and restoration of forests, mangroves, wetlands and coastal zones including coral reefs.
– Tourist are demanding green tourism (eco-innovative tourism).
Unlocking tourism’s potential (continued)

- Recognised sustainable tourism standards exist (Global Sustainable Tourism Criteria (GSTC)) for resource efficiency and attracting additional investment and customers.
- “Much of the economic potential for green tourism is found in small and medium-sized enterprises (SMEs), which need better access to financing for investing in green tourism.”

Tourism is crosscutting, involving buildings, energy and transport, agriculture and fisheries, waste management and the natural environment)

When you green tourism, you have successfully built to capacity to introduce eco-innovation to the entire economy.
II. BAP for eco-innovation in tourism

- Buildings and energy use
  - Retrofitting buildings
    - Homestead accommodation
  - New buildings
  - Appliance labelling
  - Building certification

- Transport

- Waste management

TSI Project   Funded by: European Union   Implemented by: Eurecna
II. BAP for eco-innovation in tourism (transport)

- Tourism
  - Buildings and energy use
  - Transport
    - Taxi metering to account for fuel and distance
    - Commercial bicycles and rickshaw services
    - CNG and Electric vehicles
  - Waste management

TSI Project  Funded by  Implemented by
II. BAP for eco-innovation in tourism (waste)

- Tourism
  - Buildings and energy use
  - Transport
  - Waste management
    - Reduce, recycle, reuse,
      - Waste to energy
      - Waste to fertiliser

TSI Project  Funded by European Union  Implemented by Eurecna
II. BAPs for MSEs in construction

Tourist accommodation: Buildings

Source: www.myfloridagreenbuilding.info
II. BAPs for MSEs in construction

• Tourist accommodation: Buildings
  – Cooper Island Beach Club (Tortola, BVI)
    • 208 Photovoltaic panels produce over 75% of electricity
    • Efficient solar water heaters
    • Rainwater harvesting and underwater cistern (250,000 gallons)
    • Internal water recycling of 1000 gallons per day
    • Rooms use louvred windows and cupola roof (not air-condition)
    • Guests encouraged to use laundry with discretion
    • Eco-friendly detergents used for washing
    • Hypoallergenic guest pillows and mattress covers made for recycled plastic bottles
    • No polystyrene is used and no plastic bottled water
    • Furniture made from reclaimed fishing boats
II. BAPs for MSEs in construction

• Tourist accommodation: Buildings
  – Cooper Island Beach Club (Tortola, BVI)
    • Organic food waste is used to create compost for growing herbs, vegetables and fruits
    • Donations are accepted from guests and agencies

• Possible further greening could be:
  • Imploding glass for aggregate in construction
  • Hydroponic gardens and plastic bottles for vertical herb gardening
  • Collecting and filtering of waste oil to replace diesel fuel.
II. BAPs for MSEs in transport

• Energy (transport)
  – Sustainable private commercial transport.
    • In Aruba, BYD Vehicles (China) signed an MOU to provide electric vehicles to help Aruba achieve a zero-carbon footprint. However, this does not yet apply to small scale transport services.
    • The Avis (St. Barths), a private car rental company, boasts of electric vehicles.
II. BAP for MSEs in agriculture

- Agriculture

  - Closed cycle agriculture
  - Multicrop systems
  - Laboratory Facilities
  - Hydroponics and aquaponics
  - Vertical farming | Urban farming

[Image: TSI Project Funded by [European Union] Implemented by [Eurecna]]
## II. BAP for MSEs in agriculture

### Agriculture

<table>
<thead>
<tr>
<th>BAP</th>
<th>Description</th>
<th>Sample Case</th>
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</thead>
<tbody>
<tr>
<td><strong>Tourism agricultural clusters</strong></td>
<td>Linking hotels to small scale community farming for better agricultural planning.</td>
<td>Kittitian Hill (St. Kitts); Cooper Island Beach Club (BVI)</td>
</tr>
<tr>
<td><strong>Urban agriculture</strong></td>
<td>Urban and peri-urban cultivation: growing plants and vegetables in urban settings. Vertical agriculture may be used (cultivating herbs on walls, skyscraper greenhouses or inclined surfaces to attain greater output on a surface area).</td>
<td>Various project in Cuba. Vertical agriculture is a feature in post-crisis Haiti</td>
</tr>
<tr>
<td><strong>Aquaculture</strong></td>
<td>Rearing of fish in controlled environments (including cage culture)</td>
<td>University of the US Virgin Islands</td>
</tr>
<tr>
<td><strong>Aquaponics</strong></td>
<td>The simultaneous rearing of fish and vegetables where fish manure nourishes plants and where plants clean water.</td>
<td>Epilimnion Aquaculture (Trinidad)</td>
</tr>
<tr>
<td><strong>Water management</strong></td>
<td>Drip irrigation systems; rainwater harvesting and recycling domestic water.</td>
<td>Anguilla; Cooper Island Beach Club (BVI)</td>
</tr>
</tbody>
</table>
II. BAP for MSEs in agriculture

• Current agriculture related projects:

• The on-going Bioshare project (Jamaica) to convert hotel organic waste into slurry for compost and energy in rural communities.

• For sustainable agriculture and MSEs (Tortola), there are plans to establish 3 greenhouses, one of which will be opened to communal access by small scale farmers in a farmers’ association.
II. BAP for MSEs in Waste Management

- Waste management
  - **Organic waste**: generally converted into energy and compost or fertiliser.
  
  - **Inorganic waste**: generally volumes are **reduced** and some waste is shipped to foreign companies for reuse, recycling and upcycling.
    
    - Recycling tends to focus on transparent plastic (PET, PET-E, HDPE, LDPE plastic), usually converted to threads and fabric, glass, aluminium cans, plastic bottle caps, paper and cardboard, used batteries and scrap metal. Small enterprises here tend to focus upon collecting and transporting waste. That is, there is little innovation.
II. BAP for MSEs in Waste Management

• Waste management

True innovation would mean the involvement of micro and smaller enterprises in doing what larger companies do to Caribbean waste.

• Glass → aggregate for roads and construction
• Plastic bottles → thread and cloth; wicking or receptacles for urban agriculture
• General plastics → furniture, household fixtures
• Used paper → new paper and packaging
• Old cloth → bags
• Other forms of waste → works of art!
II. BAP for environmental management

Creative uses of the lionfish (invasive species)
II. BAP for the creative industries

Sargassum seaweed turned to human food or fertiliser.

In Barbados, the seaweed has been harvested by small scale entrepreneurs and used to create as a soil conditioner and fertiliser.

Research also indicates that sargassum:
• can also be used as food (human and animal).
• has medical uses (it has analgesic, anti-inflammatory, antioxidant, neuroprotective, anti-microbial, anti-tumor, fibrinolytic, immune-modulatory, anti-coagulant, hepatoprotective and anti-viral properties).
• Can be used to create energy (through biodigesters)
• Can be converted into cosmetics (soaps).
Q/A
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