



U.S. CARIBBEAN CHAPTER

Greening the Caribbean



art by: Doel Fresse



U.S. CARIBBEAN
CHAPTER

www.usgbccaribbean.org

U.S. ENERGY CONSUMPTION

CO2 EMISSIONS

BUILDINGS
39%

INDUSTRY
29%

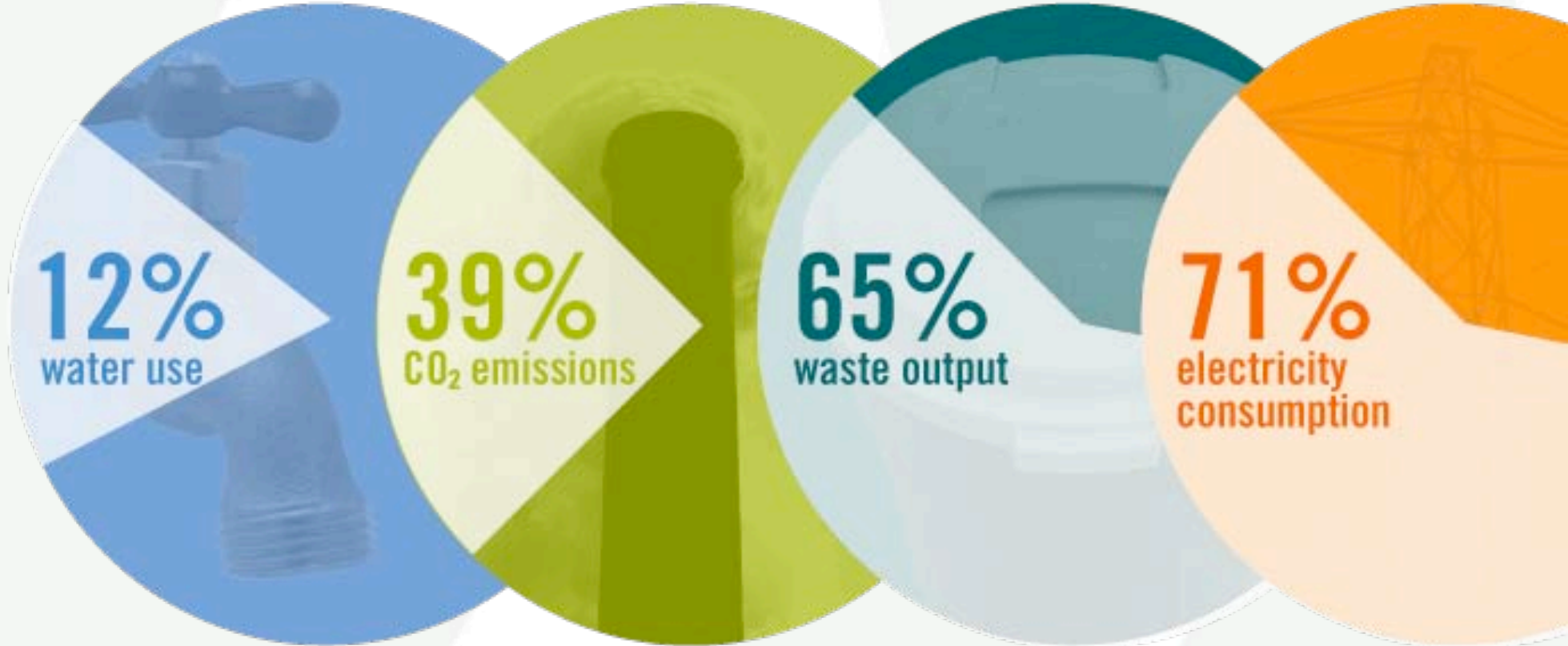
TRANSPORTATION
32%



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Leadership in Energy and Environmental Design





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Leadership in Energy and Environmental Design

* Turner, C. & Frankel, M. (2008). Energy performance of LEED for New Construction buildings: Final report.
** Kats, G. (2003). The Costs and Financial Benefits of Green Building: A Report to California's Sustainable Building Task Force.
*** GSA Public Buildings Service (2008). Assessing green building performance: A post occupancy evaluation of 12 GSA buildings.

Average Savings of Green Buildings

ENERGY SAVINGS
24%* - 50%**

CARBON SAVINGS

33%*** - 39%**

WATER USE SAVINGS

40%**

WASTE COST SAVINGS

70%**



Source:
Capital E

Architects

**Product
Manufacturers**

**Building
Owners**

**Federal,
Local,
and State
Governments**

Nonprofit Leaders

Planners

USGBC

Engineers

**Financial
Planners**

**Utility
Managers**

**Interior
Designers**

**Landscape
Architects**

**Building
Tenants**

**Property
Managers**

**Code
Officials**



Green Building Evaluation and Certification

LEADERSHIP in ENERGY and ENVIRONMENTAL DESIGN

A leading-edge system for certifying green performing buildings.





LEED® for New Construction

Total Possible Points 110***

 Sustainable Sites	26
 Water Efficiency	10
 Energy & Atmosphere	35
 Materials & Resources	14
 Indoor Environmental Quality	15

* Out of a possible 100 points + 10 bonus points

** Certified 40+ points, Silver 50+ points,
Gold 60+ points, Platinum 80+ points

 Innovation in Design	6
 Regional Priority	4

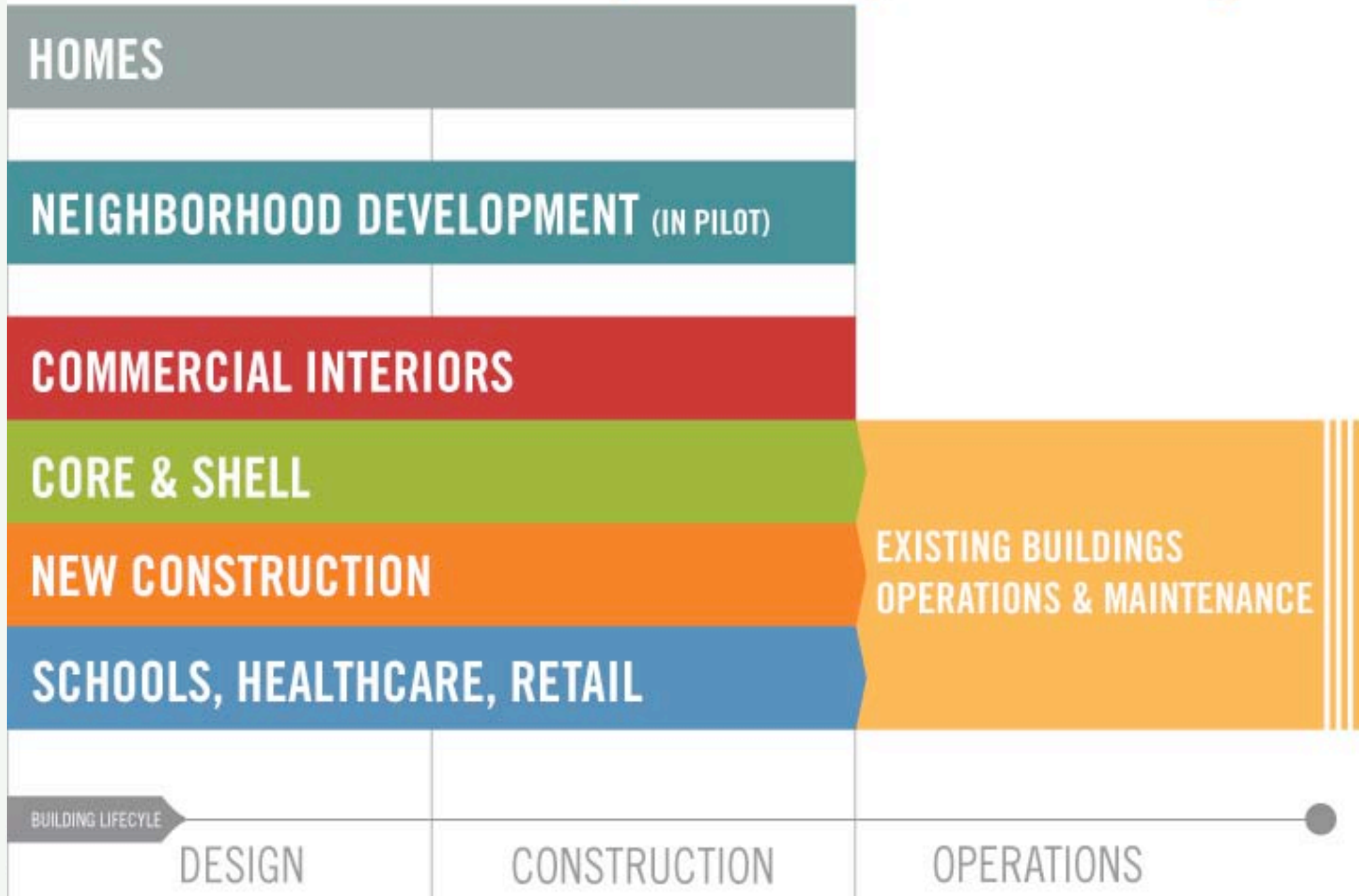
LEED: Rating Systems: Certification

- Certified 40-49 points
- Silver 50-59 points
- Gold 60-79 points
- Platinum 80 + points

The USGBC will recognize buildings that achieve one of these rating levels with a formal letter of certification and a mountable plaque



LEED address the complete lifecycle of buildings:



HOMES

NEIGHBORHOOD DEVELOPMENT (IN PILOT)

COMMERCIAL INTERIORS

CORE & SHELL

NEW CONSTRUCTION

SCHOOLS, HEALTHCARE, RETAIL

EXISTING BUILDINGS
OPERATIONS & MAINTENANCE

BUILDING LIFECYCLE

DESIGN

CONSTRUCTION

OPERATIONS

LEED 2009 FOR EXISTING BUILDINGS OPERATIONS & MAINTENANCE

**The goal of LEED EBOM
is to help owners improve and operate
their buildings in a sustainable and
efficient manner, today and in the future.**

Introduction. LEED for Existing Buildings OM, Sept 2008

For Public Use and Display
LEED 2009 for Existing Buildings
Operations & Maintenance Rating System
USGBC Member Agreement November 2008



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Leadership in Energy and Environmental Design



SYNERGY

The interaction of two or more agents to produce a combined effect greater than the sum of their separate effects



LEED for Existing Buildings: Operations & Maintenance Registered Project Checklist

Project Name: _____

Project Address: _____

Yes	?	No		
			Project Totals (Pre-Certification Estimates) 92 Points	
			Certified: 34-42 points	Silver: 43-50 points
			Gold: 51-67 points	Platinum: 68-92 points

Yes	?	No		
			Sustainable Sites	12 Points
▼	▼	▼	Credit 1	LEED Certified Design and Construction 1
▼	▼	▼	Credit 2	Building Exterior and Hardscape Management Plan 1
▼	▼	▼	Credit 3	Integrated Pest Mgmt, Erosion Control, and Landscape Mgmt Plan 1
▼	▼	▼	Credit 4	Alternative Commuting Transportation 1 to 4
			Credit 4.1	10% Reduction 1
			Credit 4.2	25% Reduction 2
			Credit 4.3	50% Reduction 3





LEED for Existing Buildings: Operations & Maintenance Registered Project Checklist

Yes	?	No			
			Materials & Resources		14 Points
Yes			Prereq 1	Sustainable Purchasing Policy	Required
Yes			Prereq 2	Solid Waste Management Policy	Required
			Sustainable Purchasing		
▼	▼	▼	Credit 1	Ongoing Consumables	1 to 3
			Credit 1.1	40% of Purchases	1
			Credit 1.2	60% of Purchases	2
			Credit 1.3	80% of Purchases	3
▼	▼	▼	Credit 2.1	Durable Goods, Electric	1
▼	▼	▼	Credit 2.2	Durable Goods, Furniture	1
▼	▼	▼	Credit 3	Facility Alterations and Additions	1
▼	▼	▼	Credit 4	Reduced Mercury in Lamps	1 to 2
			Credit 4.1	90 pg/lum-hr	1
			Credit 4.2	70 pg/lum-hr	2
▼	▼	▼	Credit 5	Food	1
			Solid Waste Management		



MATERIALS AND RESOURCES

Buildings generate a large amount of waste throughout their life cycles, from construction and building operations to demolition. The amount of waste leaving the property can be reduced, however, through responsible procurement choices, as well as by implementing comprehensive recycling programs throughout the construction, operation, and demolition phases. Consideration for materials and resources focuses on the health and productivity consequences of material selections for building occupants, plus the long-term social, economic, and environmental impacts of materials used in the design and construction of the building.

Green building addresses two kinds of problems related to materials and resources:

- waste management, and
- life-cycle impacts.

LEED recognizes and encourages strategies that consider materials and resources from a long-term, life-cycle perspective.

The Zero Waste Economy

Designing a Full-Cycle System—Upstream AND Downstream



© Copyright, Eco-Cycle 2005

www.ecocycle.org/zerowaste/zwsystem



MATERIALS AND RESOURCES

New Constructions, On Going Consumables, Durable Goods and Facility Alterations

1. Reducing Waste at its Source

Procurement

2. Comprehensive Recycling and Composting programs:

Waste diversion from landfills and incinerators

3. Selecting Sustainable Products

Reducing Global Impacts of Material Selection

Life Cycle Impacts



MATERIALS AND RESOURCES

Reducing Waste at its Source

Procurement: Sustainable Purchasing Policy

New Constructions, On Going Consumables,
Durable Goods and Facility Alterations

- Building Reuse
- Materials Reuse, Salvaged Material
- Recycled Content:
 - Post-consumer & Pre-consumer
- Rechargeable Batteries





MATERIALS AND RESOURCES

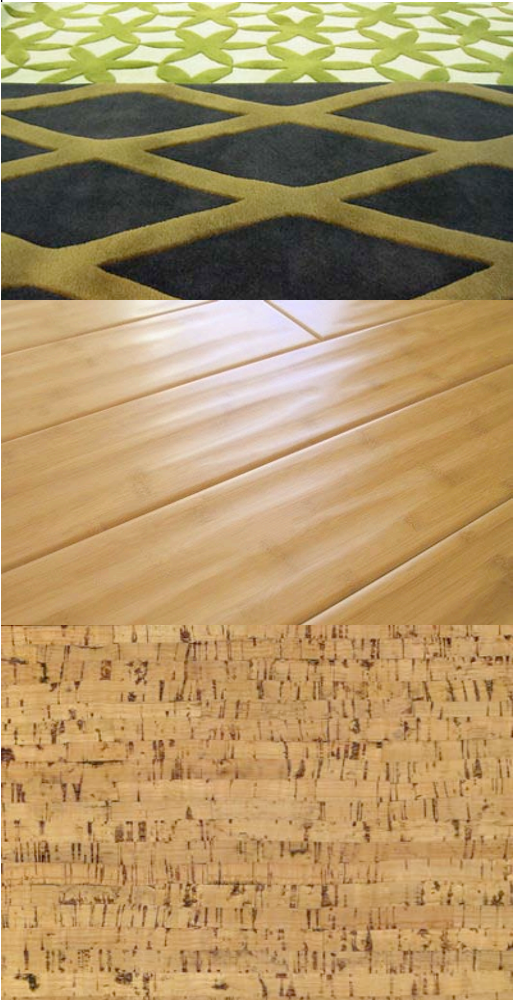
Comprehensive Recycling and Composting

- Storage & Collection of Recyclables
- Construction Waste Management
- Waste Stream Audit
- Sustainable Waste Management





MATERIALS AND RESOURCES



Selecting Sustainable Products

Reducing Global Impacts of Material Depletion and CO2 emissions

- Rapidly renewable
- Sustainable Forestry
- Energy efficient equipment
- Regional : Extracted, Processed & Manufactured

Life Cycle Impacts

- Mercury Content
- VOC and Formaldehyde
- Food: USDA Organic, Fair Trade, Rainforest Alliance Certified, Regional



ZERO VOC PAINT
ENVIRONMENTALLY PREFERRED



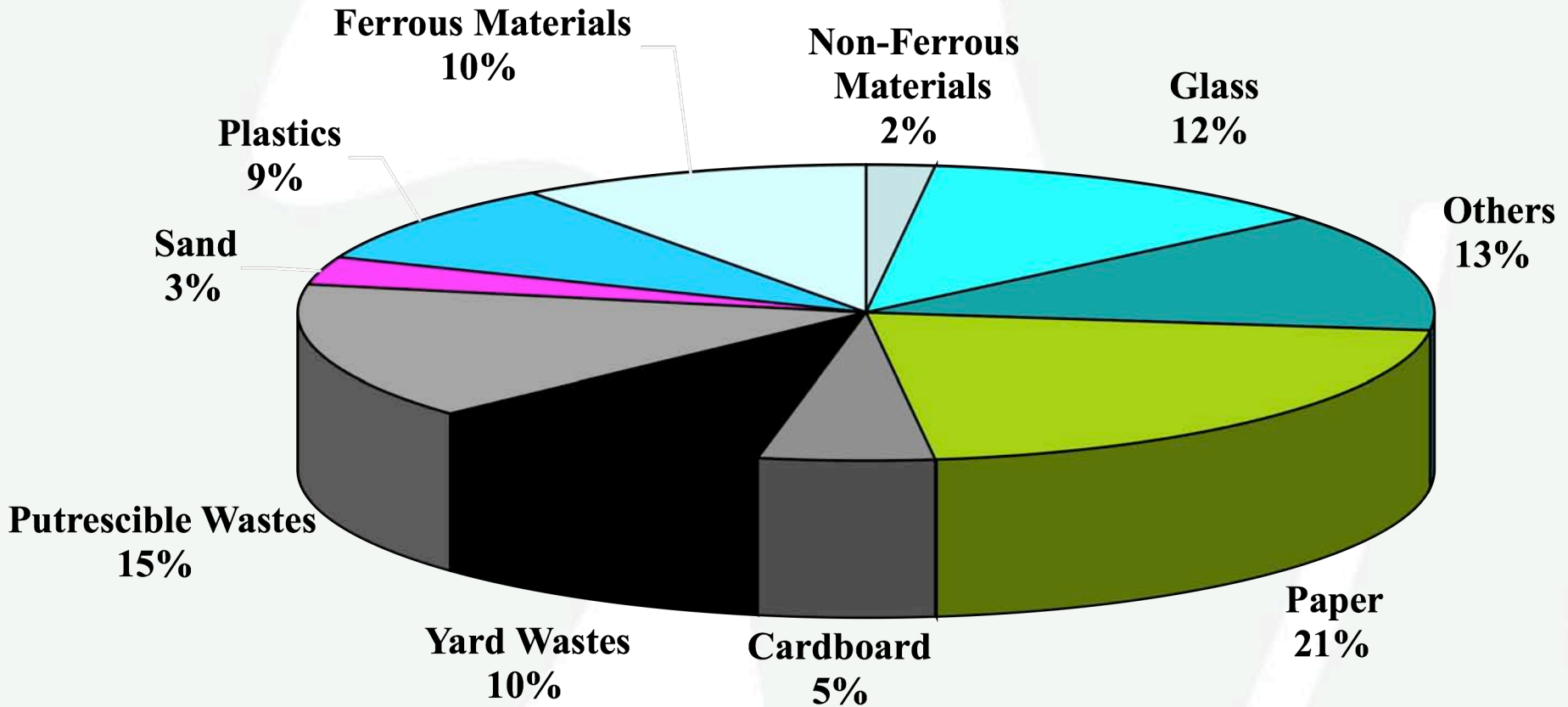
Responsible Stewardship of the World's Forests



Solid Waste in Puerto Rico:

25% Potential for Compost
54% Recyclables

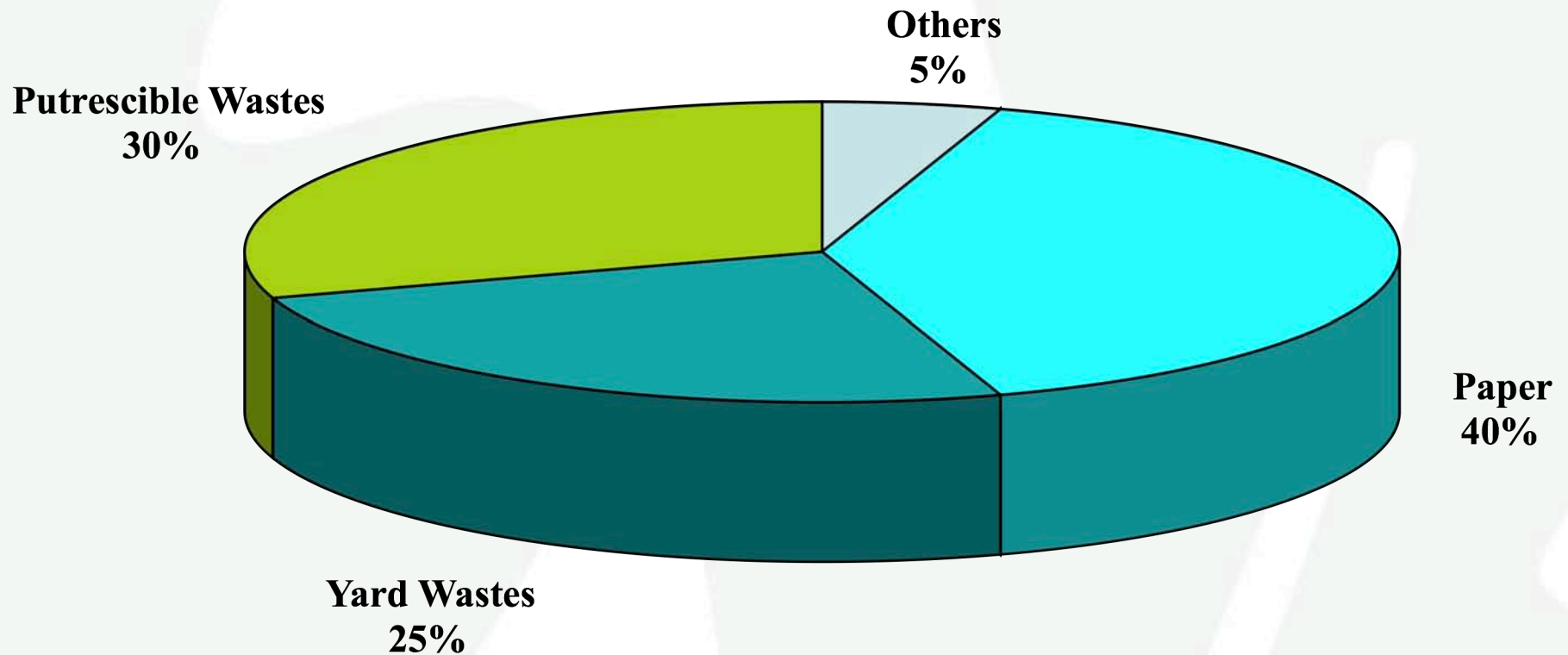
Resource: ADS 2009



Solid Waste: Hotel Industry:

A characterization of the waste stream of the Wyndham Anatole Hotel in Dallas conducted by The Texas Natural Resource Conservation Commission showed three primary materials:

Resource: Florida Green Lodging Program





55%



A large pile of mixed waste, including paper, plastic, and other debris, with the text "40%" overlaid in the center. The waste is a dense, chaotic mix of various materials, including crumpled paper, plastic bags, and other unidentifiable trash. The colors are mostly muted, with some brighter spots of orange, blue, and red. The text "40%" is written in a large, bold, black font, centered over the middle of the image.

40%



Source Reduction and Waste Management

1. AUDIT: Establish Baseline Case
2. Provide recycling of waste based on audit: Coordinate with local recycling and reuse industries
3. Waste diverted vs. Baseline Audit
4. Implement. Keep on going metrics. They will help you raise the bar.

Table 1: REQUIRED ENTRY - Building Baseline Waste Stream Audit Before Implementing Procurement/Management Policy

Waste Material By Type	Quantity currently recycled (tons/yr.)	Estimated Unsegregated Waste Per Year (tons/yr.)	Total Waste Quantity By Material (tons/yr.)	Percent of Total Annual Waste By Material (%)	Current Recycling Rate By Material (%)
Newspaper				0	0
Glass				0	0
Aluminum				0	0
Tin/bi-metal				0	0
High grade paper				0	0
Mixed paper				0	0
Corrugated Cardboard				0	0
Plastics				0	0
Scrap metals				0	0

Source Reduction and Waste Management

Waste Management Policy and Waste Stream Audit

Intent

Establish minimum source reduction and recycling program elements and quantify current waste stream production volume.

Requirements

Conduct a waste stream audit of the ongoing waste stream (not specific upgrade project waste) to establish a current building waste baseline that identifies the types of waste making up the waste stream and amounts of each type of waste in the waste stream. At a minimum, the audit should determine the amounts for paper, glass, plastics, cardboard and metals in the waste stream. Identify opportunities for source reduction and diversion. Operate over the performance period a waste reduction policy to reduce waste stream through source reduction purchasing strategies, collection station equipment, recycling and occupant education.

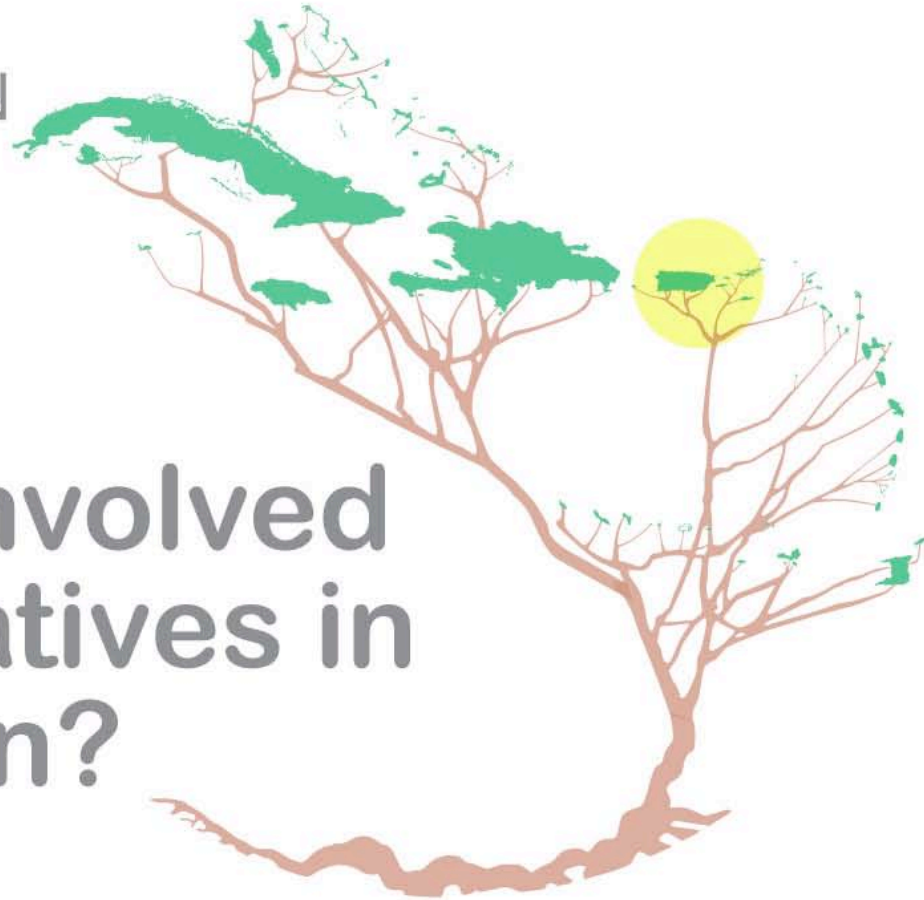
Submittals – Initial Certification

- Provide a copy of the waste stream audit to establish building waste baseline.
- Provide a copy of the waste reduction policy implemented to reduce waste stream through source reduction purchasing strategies, collection station equipment, recycling and occupant awareness notices.

Required



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Want to get involved
in **green** initiatives in
the Caribbean?

www.usgbccaribbean.org

GREEN BUILDING NEAR YOU

USGBC Chapters are passionate advocates for green building in communities all across the country.

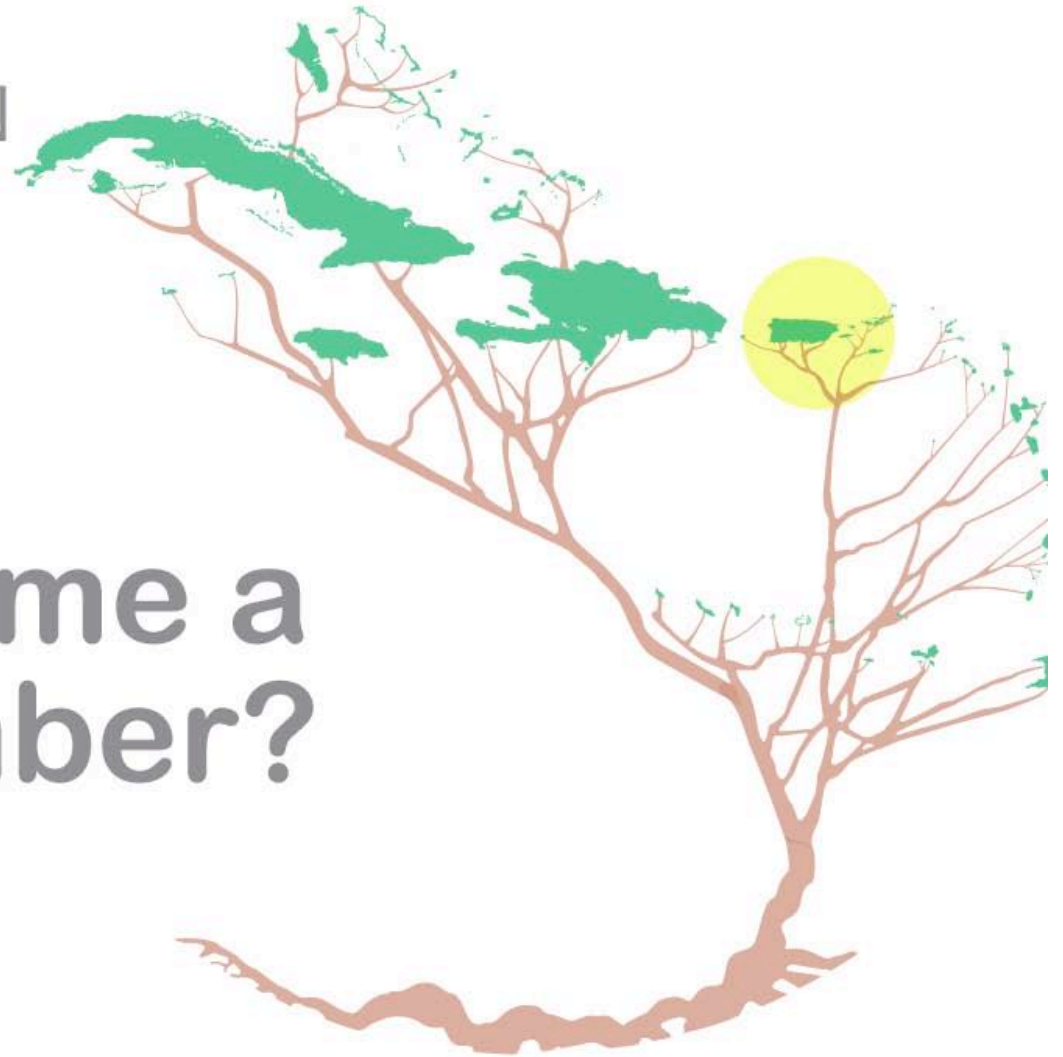


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Want to become a
Chapter Member?

Join us! We need volunteers!
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