Opportunities in Energy Efficiency: Green Building and the Industrial Sector

USAID's Energy Efficiency for Clean Development Program (EECDP)

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Opportunities in Energy Efficiency

Green Buildings: Exploring Opportunities

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Topics & Trends

- Green Building Certification Programs
- Country-Specific Guidance

- International Activity
- Development Goal Links

Green Building Certification Programs – What are they?

- Based on a broad set of requirements to decrease environmental impact
- Often have multiple levels
- Provide recognition (incentive) for meeting requirements
- High public visibility

Typical Certification Requirements

ENERGY EFFICIENCY plus other energy and environmental impacts

- Water consumption (and associated energy used to pump and process)
- Embedded energy and chemicals in building materials
- Sustainable construction process
- Indoor air quality/health
- Emissions tied to transportation

Green Building Programs – What are the potential benefits to participants?

Highlights from the WGBC's "Business Case for Green Buildings"

- Through integrated design, green doesn't have to cost more
- Improved environmental and social impacts improve marketability
- Any design and construction costs premiums are paid back through reduced energy costs
- Occupant health and worker productivity are improved

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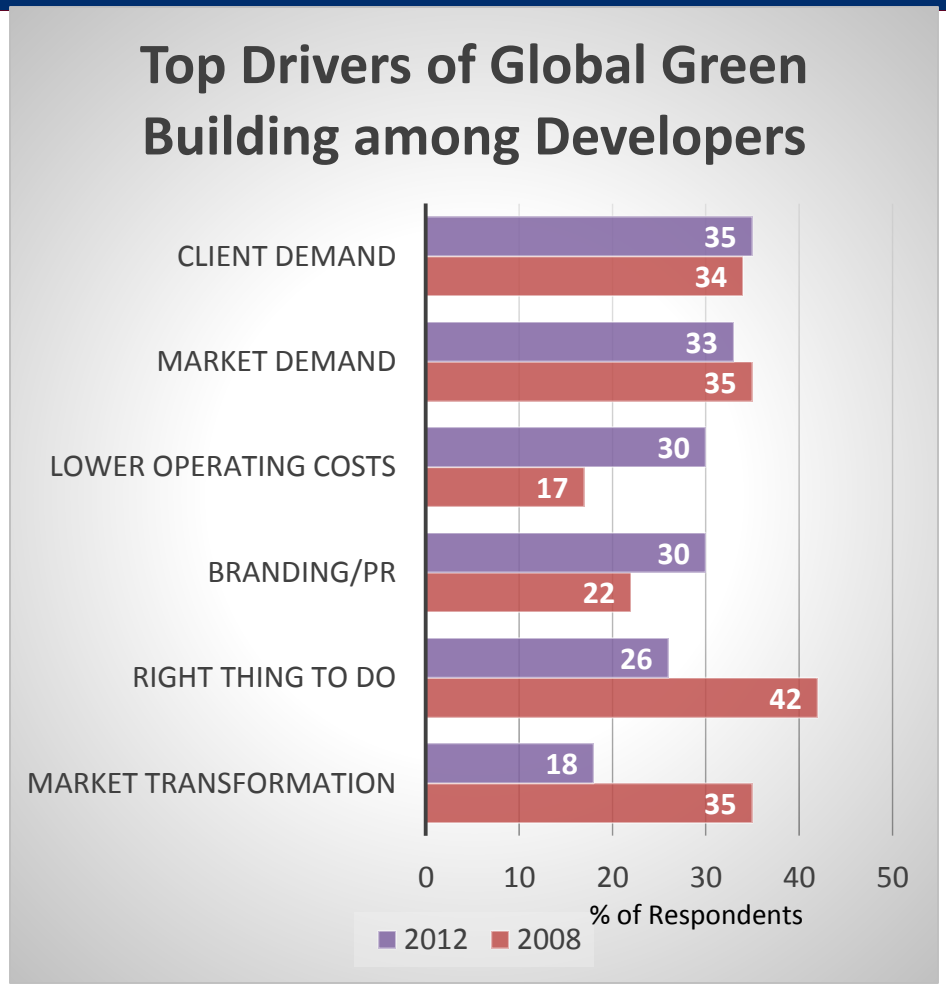
Global Stats

Source: Adapted from McGraw Hill Construction, 2013

Top Triggers:

- US – Client Demand
- Australia – Market Demand
- Europe – Client Demand
- UAE – Regulations
- Singapore – Regulations
- Brazil – Market Demand
- South Africa – Right Thing to Do



Country-Specific Guidance

LEED
LEADERSHIP IN ENERGY & ENVIRONMENTAL DESIGN

绿色建筑标识
GREEN BUILDING LABEL

إستدامة
estidama

BCA GREEN MARK

green star™

breeam

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Quick Brainstorm – Why develop a Country-Specific Certification Program?

- Local Buy-In/ Ownership
- Respond to specific climatic conditions
- Focus on local priorities
- Leverage historical design traditions
- Utilize locally-available construction materials
- Address technology and information needs

EXAMPLE: Green Star SA (customized from Green Star Australia and being adapted for Ghana)

- Management
- Indoor Environment Quality
- Energy
- Transport
- Water
- Materials
- Land Use & Ecology
- Emissions
- Innovation

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- Indoor Environmental Quality
- Energy & Atmosphere
- Water Efficiency
- Materials & Resources
- Sustainable Sites

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Example: Taiwan

Source – Ministry of the Interior, Presentation 10/20/2014

台灣的綠建築標章Green Building Label

四大範疇 Four aspects	九大指標 Nine indicators	與地球環境關係 Environmentally related					
		氣候 Climate	水 Water	土壤 Soil	生物 Biology	能源 Energy	資材 Resource
生態 Ecology	生物多樣性 (biodiversity)	★	★	★	★		
	綠化量 (Greenery)	★	★	★	★		
	基地保水 (Soil water content)	★	★	★	★		
節能 Energy saving	日常節能(Energy saving)	★				★	
減廢 Waste reduction	二氧化碳減量(CO2 emission			★		★	★
	廢棄物減量(Wastereduction)			★			★
健康 Health	室內環境(Indoor aevironment)						
	水資源(Water resource)	★	★				
	污水垃圾改善 (Sewage&garbage improvement)		★		★		★

4 Aspects

- ecology, energy saving, waste reduction, health

9 Indicators

- biodiversity, greenery, soil water content, energy saving, CO2 emission, waste reduction, indoor environment, water resource, sewage & garbage improvement

Environmentally Related Points

- climate, water, soil, biology, energy, resource

Example: Taiwan

Source – Ministry of the Interior, Presentation 10/20/2014

Minimum Requirements

Pass two prerequisites：(Energy Saving and Water Conservation

Two kinds of certificate

- Green Building Label for completed buildings
- Green Building Candidate Certificate for building projects.

- Valid for three years

Development Goal Links

- Reduce resource demand - energy, water, materials
- Lower GHG emissions
- Create opportunities for expanded energy access
- Build workforce and create jobs
- Supports urban infrastructure growth and resilience efforts
- Increases trade and investment opportunities

International Activity – What needs to happen?

- Country-specific focus
- Performance data collection
- Public awareness/education
- Infrastructure to support evaluation and testing of materials
- Technical training and education