A REVIEW OF GREEN BUILDING INCENTIVES AND AN INTRODUCTION TO EDGE CERTIFICATION

Ommid Saberi and Corinne Figueredo, IFC 4/19/17
WHAT IF THE BUILDINGS IN YOUR JURISDICTION WERE RESOURCE EFFICIENT?

- BUSINESS COSTS & COST OF LIVING
- CITY WATER AND ENERGY NEEDS
- GHG + OTHER POLLUTANTS
- JOB CREATION
- CITY RANKINGS
TOOLS TO PROMOTE VOLUNTARY CHANGE IN THE BUILDING SECTOR

• INCENTIVE OPTIONS

  Edge

• A tool to help designers
• An affordable certification
• An easy way to quantify impact (e.g. GHG tCO$_2$e)
**INCENTIVE TYPES FOR GREEN BUILDINGS**

**TOOLS TO INFLUENCE BUILDING PATTERNS ACROSS THE CITY**

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INCENTIVES CAN HELP KICK-START
A VIRTUOUS CIRCLE FOR GREEN BUILDINGS

“We would fund efficient buildings, but there is no demand for them.”

Home Owners

Value creation among all market players.

“We would like lower utility bills but there aren’t any efficient homes.”

Builders

“We would ask for energy-efficient homes, but investors won’t finance them.”

Investors

“We can build energy-efficient homes, but developers don’t ask for them.”

Developers
A VIRTUOUS CIRCLE SUSTAINED BY THE COMMERCIAL VALUE OF GREEN BUILDINGS

BUILDERS
- Higher Sales Price
  - Portland: 8% more
  - Seattle: 9% more
  - Singapore: 4% more
- Quicker Sale
  - Portland: -18 days
  - Seattle: 4 times faster

BUYERS
- Lower Utility Bills
  - US: 15% less
  - Portland: 4 times faster
- Lower Default Rates
  - US: 33% less

BANKS
- Higher Resale Value
  - UK: +10%-14%
  - Netherlands: +3.7%
  - California: +8.7%
  - Switzerland: +0.5%- 7%

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IFC’S GREEN BUILDING PROGRAM: THE VISION
A HOLISTIC ENGAGEMENT OF ALL STAKEHOLDERS

- Green building codes and policies
- New financial products
- EDGE certification system
- Demonstration projects

20% of all new construction in target markets to be green in 7 years.
Recognizing that this approach was missing, IFC created EDGE. Over 1,000,000 square meters certified to date in 14 countries. Over $2 billion in IFC’s own green investments facilitated.

A metrics-driven, scalable voluntary standard was needed to align the interests of market players, prove the case for building green, and reward innovative design.
EDGE CASE STUDIES ONLINE: OFFICES, RETAIL, HOSPITALS, HOTELS AND HIGH TO LOW INCOME RESIDENTIAL

Kaufland
- Bulgaria

First Home Premium - Binh Duong
- Vietnam

Keserwan Medical Center
- Lebanon

Citra Towers Kemayoran
- Indonesia

City Express Hotels
- Mexico

VBHC
- India

Johnson Controls HQ Asia Pacific
- China

Canopus
- Brazil

https://www.edgebuildings.com/projects/
EDGE

EXCELLENCE IN DESIGN FOR GREATER EFFICIENCIES

20%
THE FREE EDGE SOFTWARE OFFERS LOCALLY RELEVANT SOLUTIONS FOR RESOURCE EFFICIENT DESIGN, INCLUDING FINANCIAL COSTS AND BENEFITS.

www.edgebuildings.com
EDGE: A GREEN BUILDING STANDARD CLEAR, ACHIEVABLE TARGETS.

‘A building that has 20% less energy, water and material consumption compared to an equivalent local benchmark.’ The standard provides a performance assurance to buyers and investors.
EDGE CERTIFICATION IS DELIVERED BY THE LARGEST AND MOST PRESTIGIOUS NETWORKS IN THE WORLD

Worldwide

Green Business Certification Inc.
thinkstep-SGS joint venture

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EDGE CERTIFICATION PROCESS
REQUIRES LITTLE ADDITIONAL DOCUMENTATION

EDGE software integrates into design process

Preliminary Certificate

Project file in EDGE software updated to as-built design

Construction

Operation

Register

Design

Preliminary audit is based on design documentation

Final project audit includes validation by readily available documentation and site visit

EDGE

Excellence In Design
For Greater Efficiencies

International Finance Corporation
World Bank Group
SOFTWARE DEMO

www.edgebuildings.com
WHAT IS NEW ABOUT EDGE?

FINANCIAL CALCULATOR  No other certification system has free software to estimate the cost of going green for fast decision-making.

QUANTITATIVE APPROACH  EDGE projects performance with a uniquely measurable approach to impacts: **GHG tCO\textsubscript{2}e; water M\textsuperscript{3}; kWh**.

ONE-STOP SHOP  Efficiency simulations are executed in EDGE and the entire certification process can be conducted within the software.

PROJECT INTEGRATION  The design tool guides users from the start and documents required are just invoices, photos, architectural drawings.

LOCATION-SPECIFIC  EDGE has city – level climate and lifestyle data for more accurate results.

GREEN BUILDINGS FOR ALL  Fast and affordable, EDGE makes certification easy for everyone.
## INCENTIVE TYPES FOR GREEN BUILDINGS
### TOOLS TO INFLUENCE BUILDING PATTERNS ACROSS THE CITY

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**LEED** is used to support a tiered benefit system in which projects that have the highest LEED certifications are rewarded with the most generous Floor Area Ratio (FAR).

- **INCENTIVE** - Developers may be granted additional density up to 0.25 FAR and/or additional height (up to 3 stories if the building meets the Silver LEED rating or higher).

- **REQUIREMENT** - Arlington County requires the developer to post a bond or a letter of credit equal to the amount of the approved bonus density multiplied by the average rental rate. If the building does not achieve the promised level of performance, the bond or credit defaults to the County.
3-Star certification supports a significant national cash subsidy program channeled from Beijing to provincial & local governments by Ministry of Housing & Urban Rural Development (MOHURD).

- **INCENTIVE** - **Cash subsidy per square meter**:  
  - ~\$7/square meter for a 2-Star certified building.  
  - ~\$13/square meter for a 3-Star certified building

- **REQUIREMENT** - **a project must get full post construction certification**.

Central government, now considering implementing reduction of property tax to owners of green buildings coupled with an interest subsidy program.
LEED, AQUA, PBE Edifica and EDGE support São Paulo's incentives for environmentally friendly or sustainable buildings.

- INCENTIVES – increases in **density**; significant **discounts on the one-off tax** "Outorga Onerosa" paid to the municipality upon project completion.

- REQUIREMENTS – Projects which introduce **green space or increased permeability**, get density bonus. Projects which receive **third party green certifications** or energy efficiency labels get density and/or tax breaks.

The exact rates of discount for different levels of certification are expected to be published shortly by the municipal government. The law was passed in late 2016.
LET’S DISCUSS WHAT MAKES SENSE FOR YOUR CITY: IFC IS WORKING WITH SEVERAL CITIES WORLDWIDE

- Mandaluyong
- Jakarta
- Ho Chi Minh city
- Bhubaneswar
- Belgrade
- Buenos Aires

We invite you to reach out to Corinne at cfigueredo@ifc.org
ANNEXES
Energy Efficiency Measures

- Reduced Window to Wall Ratio - WWR of 40%
- External Shading Devices - Annual Average Shading Factor (AASF) of 0.58
- Insulation of Roof Surface - U Value of 0.45
- Insulation of External Walls - U Value of 0.45
- Low-E Coated Glass - U Value of 3 W/m² K and SHGC of 0.45
- Higher Thermal Performance Glass - U Value of 1.95 W/m² K and SHGC of 0.28

- Natural Ventilation - Corridors
- Natural Ventilation - Guest Rooms with Auto Controls
- Variable Refrigerant Volume (VRV) Cooling System - COP of 3.45
- Air Conditioning with Air Cooled Screw Chiller - COP of 3.2
- Air Conditioning with Water Cooled Chiller - COP of 5.39
- Ground Source Heat Pump - COP of 4.65
- Absorption Chiller Powered by Waste Heat for Space Heating - COP of 0.7
- Recovery of Waste Heat from the Generator for Space Heating
- Variable Speed Drives on the Fans of Cooling Towers
- Variable Speed Drives Pumps
- Sensible Heat Recovery from Exhaust Air - Efficiency of 60%
- High Efficiency Condensing Boiler for Space Heating - Efficiency of 90%
- High Efficiency Boiler for Water Heating - Efficiency of 90%
- Variable Speed Hoods with Automated Fan Controls
Energy Efficiency Measures

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39.3% Meets EDGE Standard
## EFFICIENT AND LOW CARBON SYSTEMS

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Kaufland – Hristo Smimenski, EDGE-certified retail project in Bulgaria (2015)
WATER EFFICIENCY

- Low-flow Plumbing Fixture
- Aerators and Auto Shut-off Faucets
- Rainwater Harvesting System
- Efficient Water Closets
- Grey Water Treatment and Recycling System
- Black Water Treatment and Recycling System
- Water-efficient Landscaping
- Condensate Water Recovery

Abhikalpan Office, EDGE-certified office project in India (2016)
DEFINING GREEN DESIGN
LOW EE MATERIALS

- Reduce quantity
- Substitute high-energy materials
- Find alternatives with low embodied energy