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Finance Corporation**
World Bank Group



IFC's EDGE Green Buildings Market Transformation Program

Webinar, February 6, 2014

Session Agenda

- **Importance of sustainable urbanization**
- **Approach of the World Bank Group**
- **IFC's approach to cities**
- **IFC's approach to green buildings**
- **Demo of EDGE Homes Beta Tool**

WBG Mission: To reduce poverty and boost share prosperity



Main driver of private sector development in the World Bank Group

- Profitable since 1956
- More than half of IFC's 3,763 staff work in field offices
- More than 100 offices in 95 countries
- 3 main businesses

Investment Services

\$56.5 Bn portfolio

Advisory Services

\$200 m per year

IFC Asset Management Co.

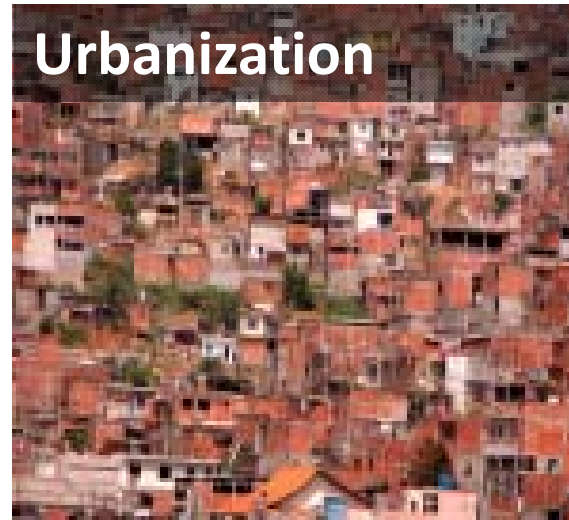
\$4.5 Bn under mgmt

Reasons for sustainable urbanization

Population Growth



Urbanization



Economics



Climate Change



Sustainable urbanization is one of the World Bank Group's 5 climate change priorities



Carbon Pricing



Removing Fossil Fuel Subsidies



Sustainable Cities

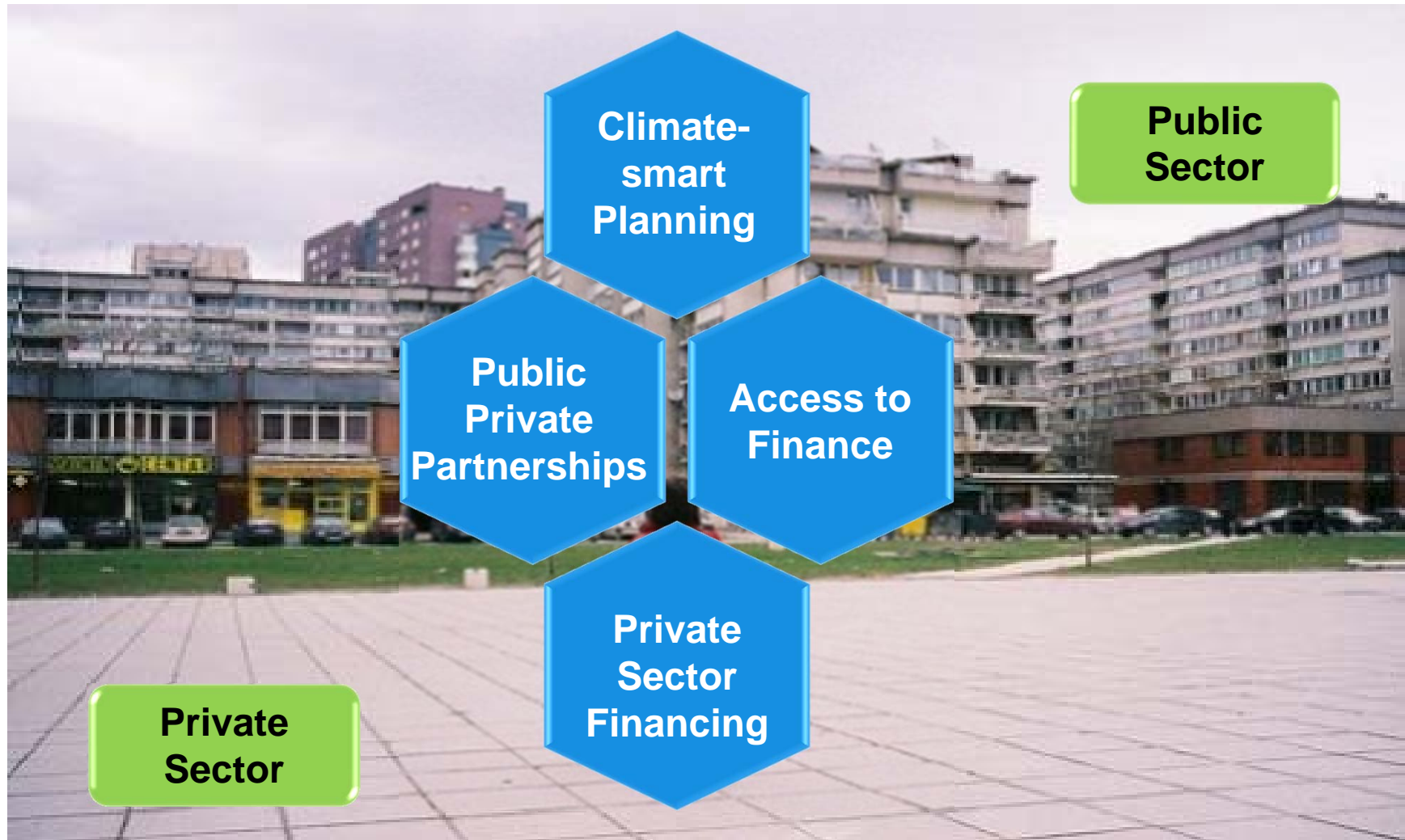


Sustainable Agriculture



Sustainable Energy for All

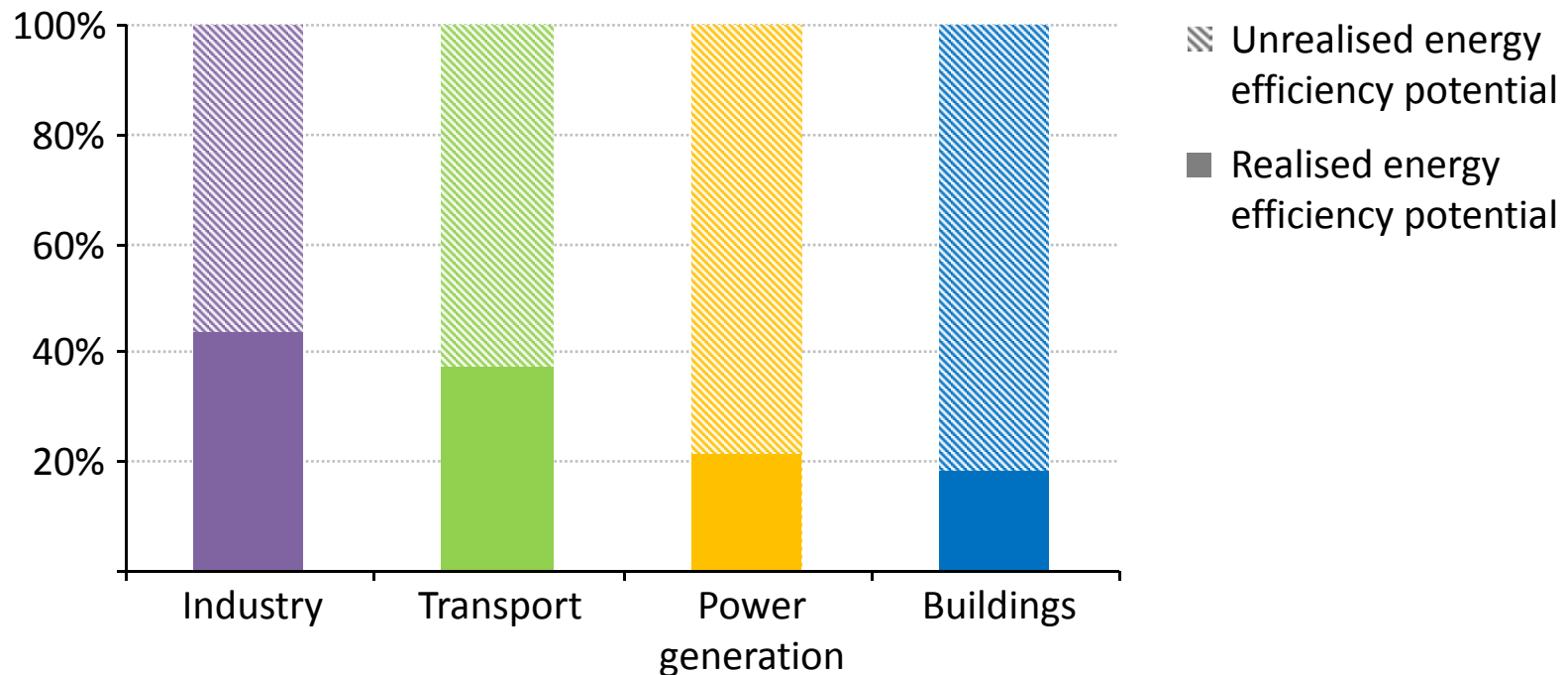
World Bank Group's climate-smart solutions for cities include interventions on both public and private sector side



More information at: <http://www.worldbank.org/en/topic/urbandevelopment/brief/low-carbon-livable-cities>

Buildings risk being the least exploited potential source of energy efficiency

Energy efficiency potential left unused in the New Policies (4°C path) Scenario



Two-thirds of the economic potential to improve energy efficiency remains untapped in the period to 2035

Source: World Energy Outlook

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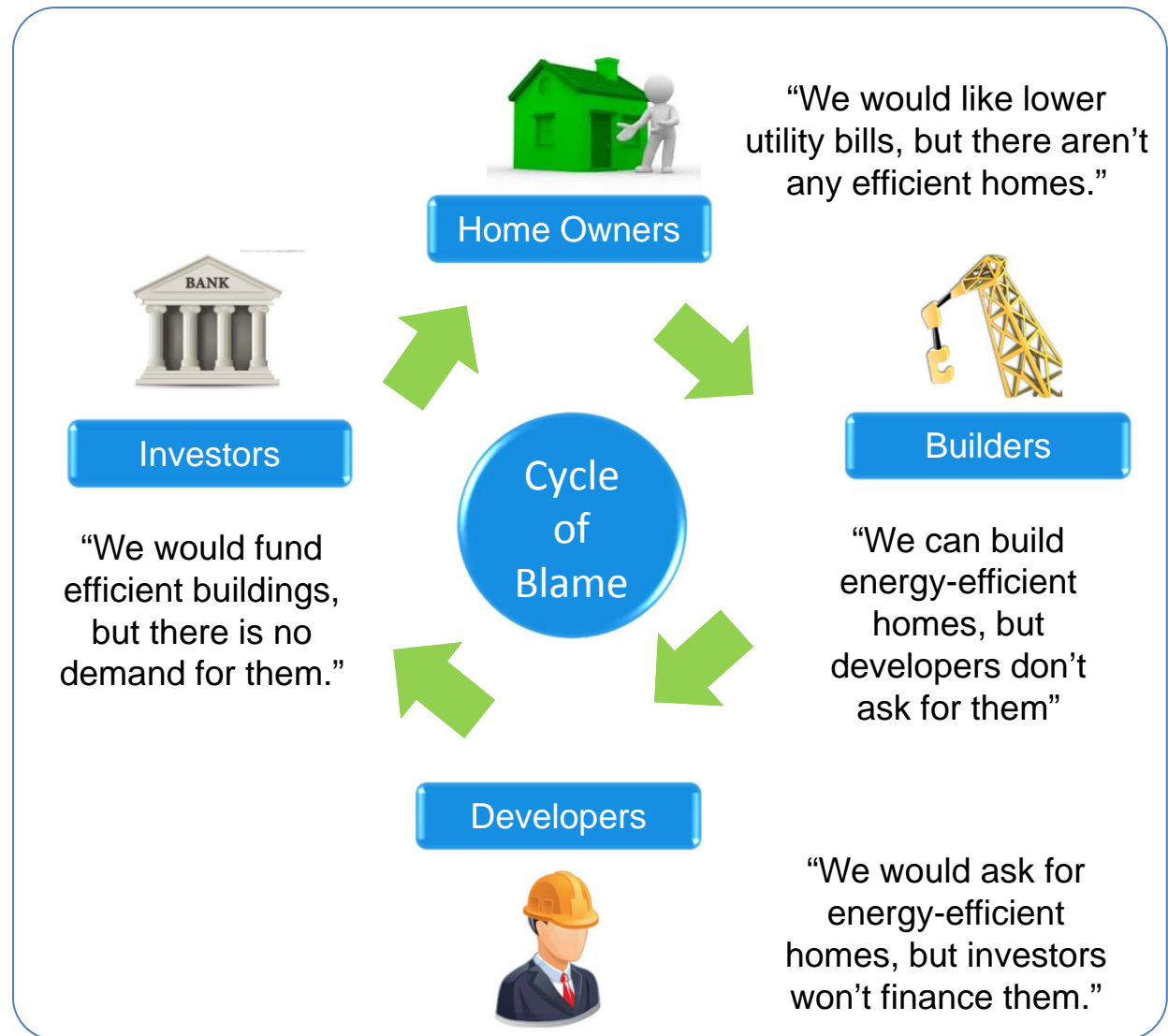
Unlocking the potential for green building requires a multi-pronged approach

Technologies and know-how are available.

Economic benefits are well documented.

But barriers remain:

- Marginally higher upfront costs
- High perceived market risk
- Weak enabling environment



IFC is combining its expertise in regulations and investment to deliver a comprehensive platform for green buildings

IFC's EDGE Green Building Market Transformation Program

- ❑ A four-pronged approach to incentivize market adoption of green building practices
- ❑ Builds on resources and pipeline of IFC investments and advisory
- ❑ Incorporates a global certification system to define and validate green buildings.



Latin America



Case Study: Vinte

Developer for affordable, sustainable homes, long-standing IFC client

Features: solar hot-water, water efficient fittings, low energy light bulbs and smart meters



Case Study: City Express

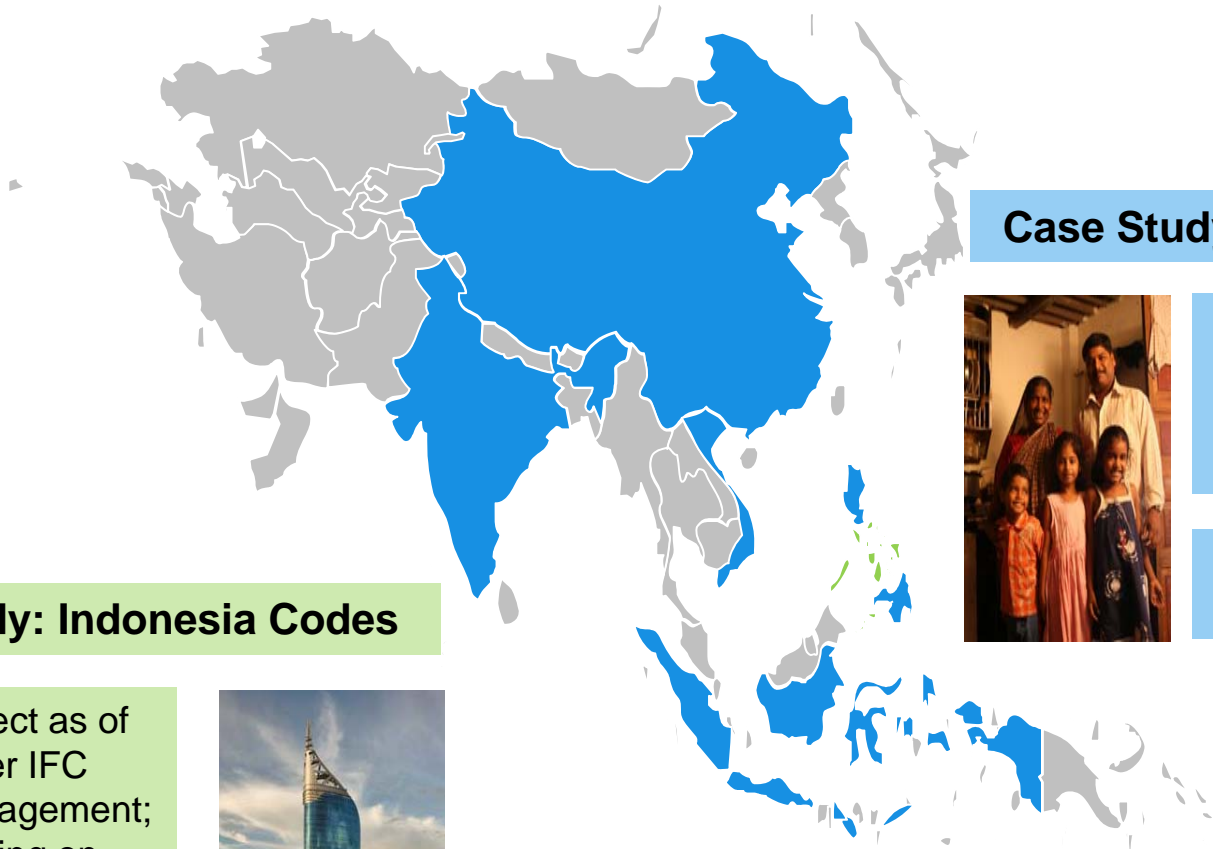


\$37 M in loans for new hotels; EDGE certification for 5 hotels in MX, CO

Features: smaller windows, double glazing, insulation, HVAC, lighting, concrete construction



Asia



Case Study: Dewan Housing



\$70M loan with \$15 M blended finance via IFC-Canada Climate Change Program

Affordable mortgages for green homes

Case Study: Indonesia Codes

Code in effect as of 2013 after IFC advisory engagement; now working on national codes



Features: simple to implement, effective, easy to monitor

Africa

Case Study: South Africa

Focus on low-income housing market

MOU with South Africa Green Building Council, partnership with ESCOM, relationships with banks



EDGE program impacts over 5-7 years

Target



20% of new construction certified as green in target markets

Impacts



5 million units with lower utility bills for homeowners



Power savings equal current consumption of Costa Rica



1 million cars off the road p.a.



Water savings equal current consumption of Trinidad



\$300 billion mobilized



Excellence in Design for Greater Efficiency




An Assessment tool + Rating system

ENERGY
20%

WATER
20%

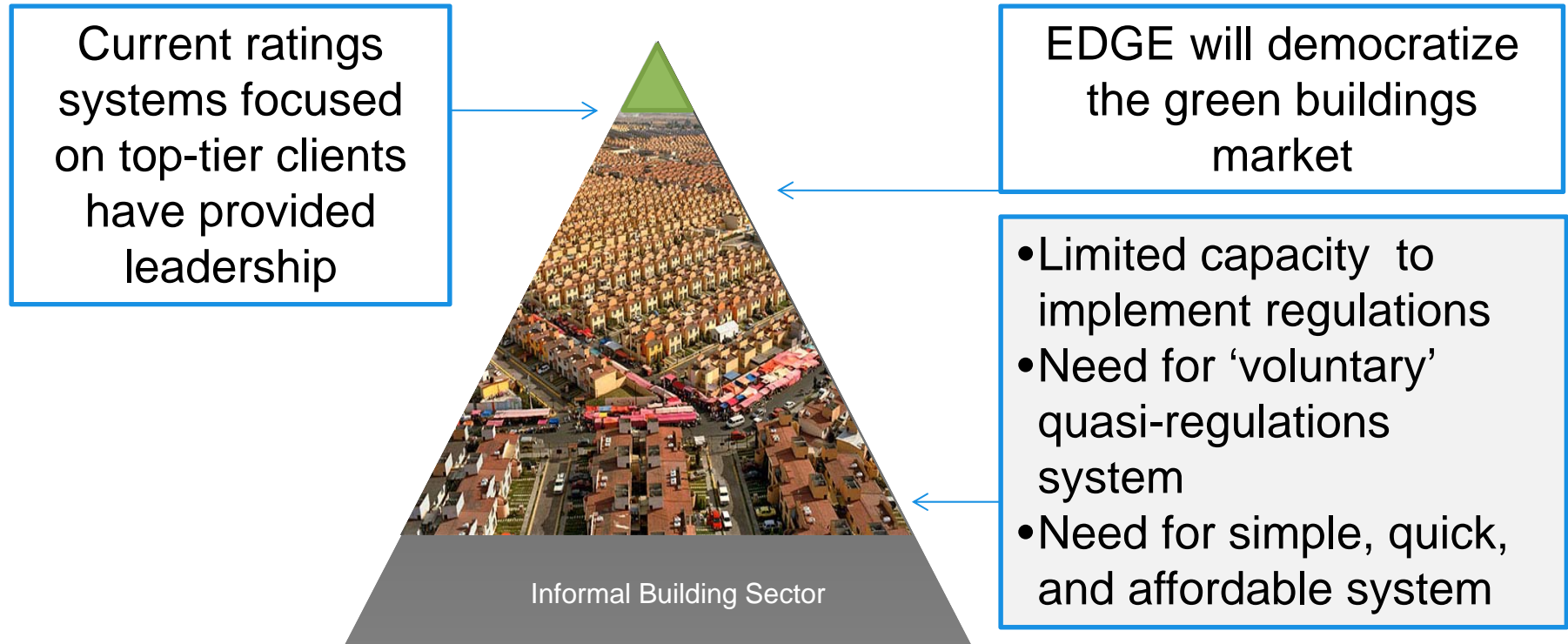
MATERIALS
20%

A Universal Standard



A Certification System

Making an impact in emerging markets



There is a clear opportunity to engage much more of the market to focus on green buildings.

EDGE Tools

- EDGE has contextual data of utility costs and climate for different cities
- EDGE uses building physics calculations to give design-specific results
- EDGE spells out the most effective technical measures
- EDGE provides an investment planning tool for building owners and developers

The screenshot displays the EDGE Homes software interface. At the top, it features the 'Edge Homes' logo with the tagline 'Excellence In Design For Greater Efficiencies' and the IFC logo with 'AN INNOVATION OF International Finance Corporation World Bank Group'. Below the header, there are two main sections: 'Type and Location Data' and 'Energy Efficiency Measures'.

Type and Location Data (Enter Building Data)

Country: [input field] City: [input field]
 Type of Home: [input field] Type of Home Owner: [input field]

Use a typical house / flat (selected) or Use more detail

Total floor area / house: [input field] m²
 No. of bedrooms: [input field]
 No. of floors of house / flat: [input field]

Operational CO₂: [input field] tCO₂ / year
 Embodied CO₂: [input field] tCO₂
 Estimated Utility Costs: [input field] \$ / month

Total external wall area: [input field] m²
 Total window area: [input field] m²
 Total wall area: [input field] m²

Energy Efficiency Measures
 (Select option from the list below)

- Automatic controls for all outdoor & / or corridor lights
- Low energy lightings (CFL / LED / FS Lights)
- All rooms with windows for sufficient daylight
- Roof insulation
- Wall insulation
- Reflective roof and wall paint
- Cross ventilation
- Ceiling fans in all habitable rooms
- External solar shading
- Heavy thermal mass in wall / ceiling / floors
- Low 'E' coating on glazing
- Double glazed windows
- EE refrigerator
- EE gas water heaters
- Gas condensing boiler for space heating
- Solar water heating

Actual saving: [input field]
 Total saving (inc. virtual): [input field]

Energy kWh/m²/year

Bar chart showing energy consumption for Reference Home, Virtual Energy for Comfort, Improved Home, and Virtual Energy for Comfort. The chart is broken down into categories: Comfort cooling, Comfort heating, Other appliances, Refrigerator, Cooking, Water Heating, and Lighting.

Location & Climate

Country: [input field] City: [input field]

A world map is shown at the bottom right of the interface.

More Information

ifc.org/edge


find us



EDGE Homes Beta is not yet publicly available.

As a registered attendee to this webinar, you will be notified the moment the application becomes open for public use.

Enter Project Details



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Edge Homes Beta

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Design | **Green Measures** | [Download Results](#)

Welcome to EDGE Homes (Beta), IFC's green building tool to help you design resource-efficient housing with lower utility costs and a reduced environmental footprint. Complete as much information as you can about your project to build a solid foundation for EDGE to calculate your results. While EDGE Homes (Beta) does not save your data, you may download a PDF of your results once you have selected your green measures.


Project Details

Project Owner Name	<input type="text"/>	Project Address Line 1	<input type="text"/>
Project Name	<input type="text"/>	Project Address Line 2	<input type="text"/>
House or Apartment Block Name	<input type="text"/>	Project City	<input type="text"/>
Project Owner Email	<input type="text"/>	Project Province/State	<input type="text"/>
Project Owner Phone	<input type="text"/>	Project Postal Code	<input type="text"/>
		Project Country	<input type="text"/>

Location & Climate Data

Choose context data in order for EDGE to begin to prepare the background calculations for your project.

Country	<input type="text" value="Angola"/>
City	<input type="text" value="Cabinda"/>
Income Category	<input type="text" value="Low Income"/>



Select Location & Climate Data



Design

Green Measures

Download Results

Location & Climate Data

Choose context data in order for EDGE to begin to prepare the background calculations for your project.

Country	<input type="text" value="Mexico"/>
City	<input type="text" value="Mexicali"/>
Income Category	<input type="text" value="Low Income"/>
Climate Type	<input type="text" value="Humid"/>
Air Conditioning	<input type="text" value="Yes"/>
Space Heating	<input type="text" value="Yes"/>
Ceiling Fans	<input type="text" value="No"/>



Building Data

Enter building data so EDGE understands more about your project.

Type of Home	<input type="text" value="Flats/Apartments"/>
Average Unit Area (m2)	<input type="text" value="100"/> m2
No. of Bedrooms/Unit	<input type="text" value="3"/> no.
No. of Floors	<input type="text" value="10"/> no.
No. of Units	<input type="text" value="20"/> no.

Area Details

Enter area details if available, otherwise you may opt for defaults.

	Default	User Entry
Bedroom (m2)	44.0	<input type="text" value="0.0"/>
Kitchen (m2)	12.0	<input type="text" value="0.0"/>
Living/Dining (m2)	35.0	<input type="text" value="0.0"/>
Toilet (m2)	3.6	<input type="text" value="0.0"/>



Input Building Data and Area Details



Design

Green Measures

Download Results

Building Data

Enter building data so EDGE understands more about your project.

Type of Home	Flats/Apartments	▼
Average Unit Area (m2)	100	m2
No. of Bedrooms/Unit	3	no.
No. of Floors	10	no.
No. of Units	20	no.
Occupancy (People/Unit)	4	no.

Area Details

Enter area details if available, otherwise you may opt for defaults.

	Default	User Entry
Bedroom (m2)	44.0	0.0
Kitchen (m2)	12.0	0.0
Living/Dining (m2)	35.0	0.0
Toilet (m2)	3.6	0.0
Utility, Balcony, Service Shaft (m2)	5.4	
Gross Internal Area (m2)	100.0	100.0
External Wall Length m/Unit	28.9	0.0
% Window to Wall Ratio	30%	0

Key Assumptions

If you know your fuels, select them from the dropdown menus. You may also fine-tune the costs of utilities and other key assumptions by over-riding the defaults. This will make your EDGE results more accurate. Please provide your data source should you choose to over-ride the temperature fields.

Fuel Used for Cooking	Natural Gas	▼
Fuel Used for Water Heating	Natural Gas	▼

Monthly Average



Change Key Assumptions if necessary



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Key Assumptions

If you know your fuels, select them from the dropdown menus. You may also fine-tune the costs of utilities and other key assumptions by over-riding the defaults. This will make your EDGE results more accurate. Please provide your data source should you choose to over-ride the temperature fields.

Fuel Used for Cooking	Natural Gas				
Fuel Used for Water Heating	Natural Gas				
Fuel Used for Space Heating	Natural Gas				
	<i>Default</i>	<i>User Entry</i>			<i>Default</i>
Cost of Electricity	0.08	0.0	\$/kWh		Monthly Average Outdoor Temperature (deg.C)
Cost of Diesel Fuel	0.73	0.0	\$/L		Jan
Cost of Natural Gas	0.67	0.0	\$/L		Feb
Cost of Water	0.50	0.0	\$/kL		Mar
Latitude	32.0	0.0	Deg		Apr
CO2 Emissions g/kWh of Electricity	454	0.0	g/kWh		May
Window to Wall Ratio	30%	0	%		Jun
Roof U Value	1.4	0.0	W/m2.k		Jul
Wall U Value	1.8	0.0	W/m2.k		Aug
Glass U Value	5.9	0.0	W/m2.k		Sep
	0.0	0.0	Factor		Oct

Green Measures page shows base and improved case



Design

Green Measures

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RESULTS

Watch your results improve as you select among the various efficiency measures.

Final Energy Use	<input type="text" value="1,184"/> kWh/Month	Operational CO2 Savings	<input type="text" value="-"/> tCO2/Year	Base Case Utility Costs	<input type="text" value="113.5"/> \$/Month
Final Water Use	<input type="text" value="24.5"/> m3/Month	Embodied Energy Savings	<input type="text" value="-"/> MJ	Utility Costs Reduction	<input type="text" value="0.0"/> \$/Month

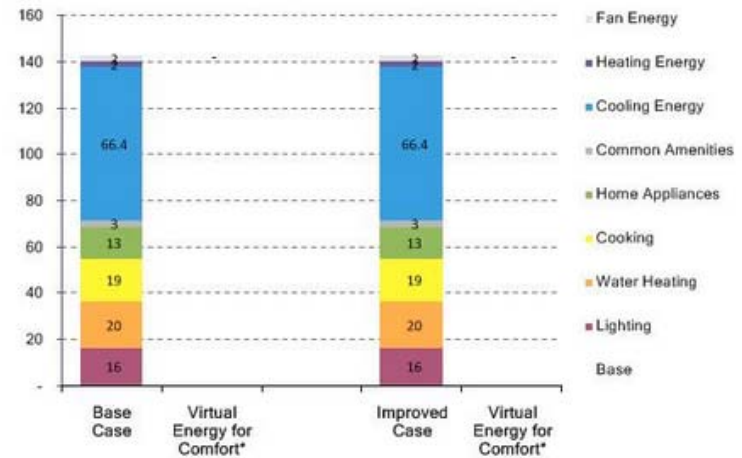
Energy Efficiency Measures

Select energy efficiency measures and watch your savings grow towards the 20% EDGE standard. Edit the default values if needed.


		Default
HME01	<input checked="" type="checkbox"/> Reflective Paint/Tiles for Roof	% Solar Reflectivity <input type="text" value="70"/>
HME02	<input checked="" type="checkbox"/> Reflective Paint for External Walls	% Solar Reflectivity <input type="text" value="70"/>
HME03	<input type="checkbox"/> External Shading Devices	
HME04	<input type="checkbox"/> Insulation of Roof Surface	U Value [W/m2 K] <input type="text" value="0.48"/>
HME05	<input type="checkbox"/> Insulation of External Walls	U Value [W/m2 K] <input type="text" value="0.44"/>
HME06	<input checked="" type="checkbox"/> Low-E Coated Solar Control Glass	U Value [W/m2 K] <input type="text" value="5.7"/> SHGC <input type="text" value="0.33"/>
HME07	<input checked="" type="checkbox"/> Higher Thermal Performance Glass	U Value [W/m2 K] <input type="text" value="1.95"/> SHGC <input type="text" value="0.28"/>
HME08	<input type="checkbox"/> Cross Ventilation	
HME09	<input type="checkbox"/> Ceiling Fans in all Habitable Rooms	
HME10	<input type="checkbox"/> High Efficiency Cooling System	COP <input type="text" value="6.5"/>
HME11	<input type="checkbox"/> High Efficiency Boiler for Space Heating	% Eff. <input type="text" value="90"/>
HME12	<input type="checkbox"/> High Efficiency Boiler for Hot Water	% Eff. <input type="text" value="85"/>


0.00% ENERGY SAVINGS

ENERGY kWh/m2/Year




Mouse-overs provide additional guidance





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RESULTS Watch your results improve as you select among the various efficiency measures.

Final Energy Use <input type="text" value="1,184"/> kWh/Month	Operational CO2 Savings <input type="text" value="-"/> tCO2/Year	Base Case Utility Costs <input type="text" value="113.5"/> \$/Month
Final Water Use <input type="text" value="24.5"/> m3/Month	Embodied Energy Savings <input type="text" value="-"/> MJ	Utility Costs Reduction <input type="text" value="0.0"/> \$/Month

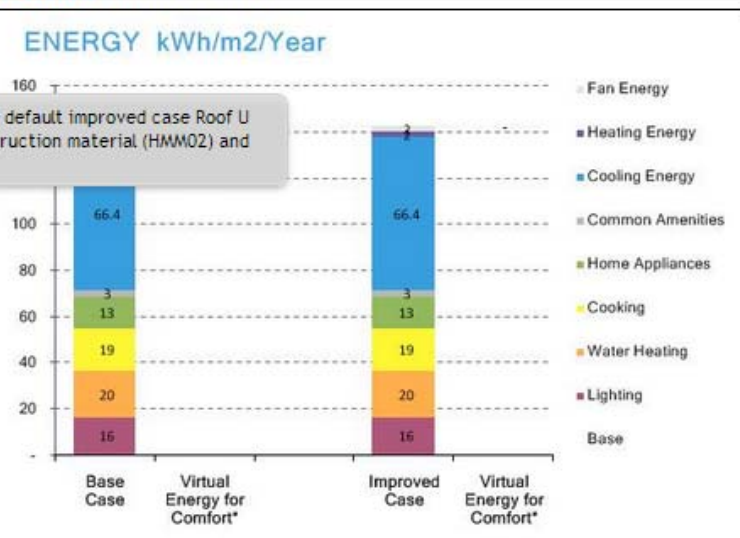
Energy Efficiency Measures

Select energy efficiency measures and watch your savings grow towards the 20% EDGE standard. Edit the default values if needed.

	Default	
HME01 <input type="checkbox"/> Reflective P		<div style="background-color: #ccc; padding: 5px; border: 1px solid #ccc; font-size: 0.9em;"> The base case Roof U Value can be found under Key Assumptions; the default improved case Roof U Value is calculated through a combination of the selected Roof Construction material (HMM02) and selected Insulation (HMM07) </div>
HME02 <input type="checkbox"/> Reflective P		
HME03 <input type="checkbox"/> External Shading Devices		
HME04 <input type="checkbox"/> Insulation of Roof Surface	U Value [W/m2 K] <input type="text" value="0.48"/>	
HME05 <input type="checkbox"/> Insulation of External Walls	U Value [W/m2 K] <input type="text" value="0.44"/>	
HME06 <input checked="" type="checkbox"/> Low-E Coated Solar Control Glass	U Value [W/m2 K] <input type="text" value="5.7"/> SHGC <input type="text" value="0.33"/>	
HME07 <input checked="" type="checkbox"/> Higher Thermal Performance Glass	U Value [W/m2 K] <input type="text" value="1.95"/> SHGC <input type="text" value="0.28"/>	
HME08 <input type="checkbox"/> Cross Ventilation		
HME09 <input type="checkbox"/> Ceiling Fans in all Habitable Rooms		
HME10 <input type="checkbox"/> High Efficiency Cooling System	COP <input type="text" value="6.5"/>	
HME11 <input type="checkbox"/> High Efficiency Boiler for Space Heating	% Eff. <input type="text" value="90"/>	
HME12 <input type="checkbox"/> High Efficiency Boiler for Hot Water	% Eff. <input type="text" value="85"/>	

0.00% ENERGY SAVINGS

ENERGY kWh/m2/Year



Category	Base Case	Virtual Energy for Comfort*	Improved Case	Virtual Energy for Comfort*
Lighting	16	16	16	16
Water Heating	20	20	20	20
Cooking	19	19	19	19
Home Appliances	13	13	13	13
Common Amenities	3	3	3	3
Cooling Energy	66.4	66.4	66.4	66.4
Total	137.4	137.4	137.4	137.4



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23


Improved case results change when measures are ticked



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RESULTS Watch your results improve as you select among the various efficiency measures.

Final Energy Use	<input type="text" value="891"/> kWh/Month	Operational CO2 Savings	<input type="text" value="1.6"/> tCO2/Year	Base Case Utility Costs	<input type="text" value="113.5"/> \$/Month
Final Water Use	<input type="text" value="24.5"/> m3/Month	Embodied Energy Savings	<input type="text" value="-"/> MJ	Utility Costs Reduction	<input type="text" value="23.7"/> \$/Month

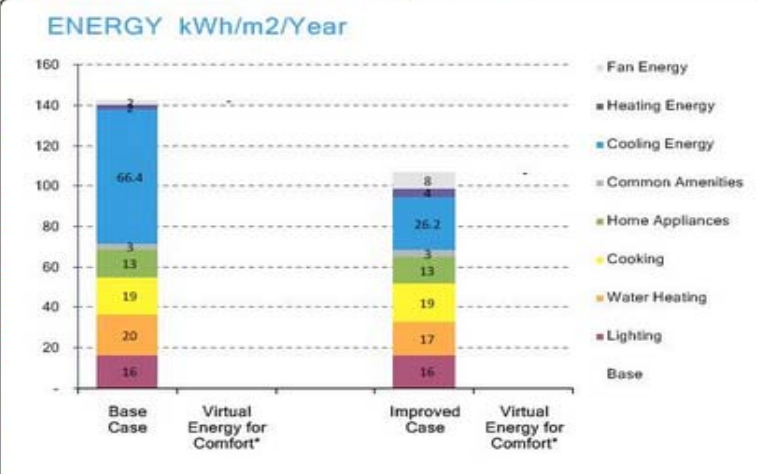
Energy Efficiency Measures

Select energy efficiency measures and watch your savings grow towards the 20% EDGE standard. Edit the default values if needed.

HME01	<input type="checkbox"/> Reflective Paint/Tiles for Roof		Default	
	% Solar Reflectivity	<input type="text" value="70"/>		
HME02	<input type="checkbox"/> Reflective Paint for External Walls		% Solar Reflectivity	<input type="text" value="70"/>
HME03	<input checked="" type="checkbox"/> External Shading Devices		U Value [W/m2 K]	<input type="text" value="0.48"/>
HME04	<input type="checkbox"/> Insulation of Roof Surface		U Value [W/m2 K]	<input type="text" value="0.44"/>
HME05	<input type="checkbox"/> Insulation of External Walls		U Value [W/m2 K]	<input type="text" value="5.7"/>
HME06	<input checked="" type="checkbox"/> Low-E Coated Solar Control Glass		SHGC	<input type="text" value="0.33"/>
HME07	<input type="checkbox"/> Higher Thermal Performance Glass		U Value [W/m2 K]	<input type="text" value="1.95"/>
			SHGC	<input type="text" value="0.28"/>
HME08	<input type="checkbox"/> Cross Ventilation		COP	<input type="text" value="6.5"/>
HME09	<input checked="" type="checkbox"/> Ceiling Fans in all Habitable Rooms		% Eff.	<input type="text" value="90"/>
HME10	<input type="checkbox"/> High Efficiency Cooling System			
HME11	<input type="checkbox"/> High Efficiency Boiler for Space Heating		% Eff.	<input type="text" value="85"/>
HME12	<input checked="" type="checkbox"/> High Efficiency Boiler for Hot Water			
HME13	<input type="checkbox"/> Low Energy Light Bulbs - Internal Spaces		% Hot Water	<input type="text" value="10"/>
HME14	<input checked="" type="checkbox"/> Low Energy Light Bulbs - External Spaces			
HME15	<input type="checkbox"/> Lighting Controls for Corridors & Outdoors			
HME16	<input checked="" type="checkbox"/> Solar Hot Water Collectors			

24.80% Meets EDGE Energy Standard

ENERGY kWh/m2/Year



Category	Base Case	Virtual Energy for Comfort*	Improved Case	Virtual Energy for Comfort*
Fan Energy	2	0	8	0
Heating Energy	0	0	0	0
Cooling Energy	66.4	0	26.2	0
Common Amenities	3	0	3	0
Home Appliances	13	0	13	0
Cooking	19	0	19	0
Water Heating	20	0	17	0
Lighting	16	0	16	0
Base	0	0	0	0
Total	140	0	105.2	0

*Virtual energy is the amount of energy that will be required based on the assumption that the home or flat will eventually install air conditioning or heating.

Water Efficiency Measures are connected to Energy Efficiency



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Green Measures

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RESULTS

Watch your results improve as you select among the various efficiency measures.

Final Energy Use	<input type="text" value="889"/> kWh/Month	Operational CO2 Savings	<input type="text" value="1.6"/> tCO2/Year	Base Case Utility Costs	<input type="text" value="113.5"/> \$/Month
Final Water Use	<input type="text" value="17.7"/> m3/Month	Embodied Energy Savings	<input type="text" value="-"/> MJ	Utility Costs Reduction	<input type="text" value="27.2"/> \$/Month

Water Efficiency Measures

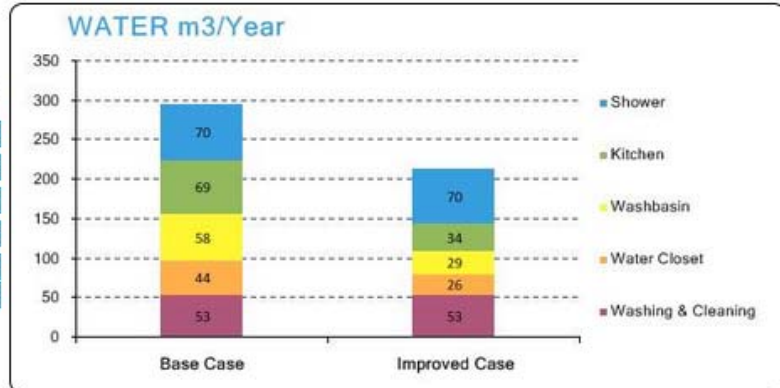
Select water efficiency measures and watch your savings grow towards the 20% EDGE standard. Edit the default values if needed. Note that certain water efficiency measures may impact your energy efficiency results.

- HMW01 Low-Flow Showerheads
- HMW02 Low-Flow Taps for Kitchen Sinks
- HMW03 Low-Flow Taps for Washbasins
- HMW04 Dual Flush for Water Closets
- HMW05 Single Flush for Water Closets
- HMW06 Rainwater Harvesting System
- HMW07 Recycled Grey Water for Flushing
- HMW08 Recycled Black Water for Flushing


Default

Lt./min	<input type="text" value="8"/>
Lt./min	<input type="text" value="4"/>
Lt./min	<input type="text" value="4"/>
1st - Lt./flush	<input type="text" value="6"/>
2nd - Lt./flush	<input type="text" value="3"/>
Lt./flush	<input type="text" value="6"/>

27.8% Meets EDGE Water Standard




Materials section measures embodied energy of materials



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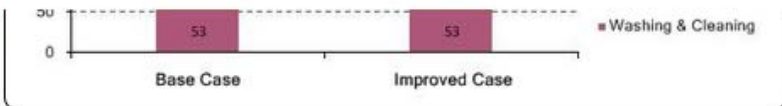


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RESULTS Watch your results improve as you select among the various efficiency measures.

Final Energy Use <input type="text" value="972"/> kWh/Month	Operational CO2 Savings <input type="text" value="1.2"/> tCO2/Year	Base Case Utility Costs <input type="text" value="113.5"/> \$/Month
Final Water Use <input type="text" value="17.7"/> m3/Month	Embodied Energy Savings <input type="text" value="1,673.2"/> MJ	Utility Costs Reduction <input type="text" value="20.3"/> \$/Month

<p>HMW05 <input checked="" type="checkbox"/> Single Flush for water Closets</p> <p>HMW06 <input checked="" type="checkbox"/> Rainwater Harvesting System</p> <p>HMW07 <input type="checkbox"/> Recycled Grey Water for Flushing</p> <p>HMW08 <input type="checkbox"/> Recycled Black Water for Flushing</p>	<p>LL/FLUSH <input type="text" value="0"/></p>	
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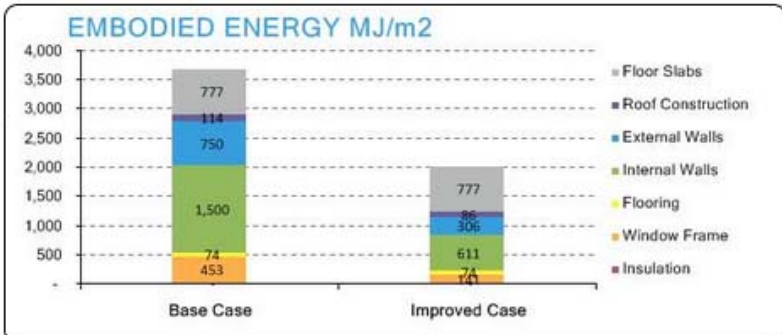
Materials Efficiency Measures

Select materials efficiency measures and watch your savings grow towards the 20% EDGE standard. Note that certain materials efficiency measures may impact your energy efficiency results. Thicknesses of materials as specified are a minimum requirement for EDGE.

HMM01 Floor Slabs	In-Situ Reinforced Concrete Slab	▼
HMM02 Roof Construction	180mm Concrete Filler Slab	▼
HMM03 External Walls	Precast Concrete Panels	▼
HMM04 Internal Walls	Precast Concrete Panels	▼
HMM05 Flooring	Ceramic Tile	▼
HMM06 Window Frames	uPVC	▼
HMM07 Insulation	Glass Wool	▼

45.6% Meets EDGE Materials Standard

EMBODIED ENERGY MJ/m2



Component	Base Case (MJ/m2)	Improved Case (MJ/m2)
Floor Slabs	777	777
Roof Construction	114	86
External Walls	750	306
Internal Walls	1,500	611
Flooring	74	74
Window Frame	453	74
Insulation	0	0
Total	3,777	2,077

Downloadable pdf produces a results report



Project Details

Project Owner Name:	Project Address Line 1:
Project Name:	Project Address Line 2:
House or Apartment Block Name:	Project City:
Project Owner Email:	Project Province/State:
Project Owner Phone:	Project Postal Code:
	Project Country:

Location & Climate Data

Country: Mexico
 City: Mexicali
 Income Category: Low Income
 Climate Type: Humid
 Air Conditioning: Yes
 Space Heating: Yes
 Ceiling Fans: No



Building Data

Type of Home: Flats/Apartments
 Average Unit Area (m²): 100 m²
 No. of Bedrooms/Unit: 3 no.
 No. of Floors: 10 no.
 No. of Units: 20 no.
 Occupancy (People/Unit): 4 no.

Area Details

Bedroom (m²): 44.0
 Kitchen (m²): 12.0
 Living/Dining (m²): 35.0
 Toilet (m²): 3.6
 Utility, Balcony, Service Shaft (m²): 5.4
 Gross Internal Area (m²): 100.0
 External Wall Length m/Unit: 28.9
 Window to Wall Ratio: 30%

Key Assumptions

Fuel Used for Cooking:	Natural Gas			
Fuel Used for Water Heating:	Natural Gas			
Fuel Used for Space Heating:	Natural Gas	Month		
		Temper		
	Default	User Entry	Default	
Cost of Electricity:	0.08	0.0	\$/kWh	Jan: 13.60
Cost of Diesel Fuel:	0.73	0.0	\$/L	Feb: 14.30
Cost of Natural Gas:	0.67	0.0	\$/L	Mar: 18.90
Cost of Water:	0.50	0.0	\$/KL	Apr: 23.10
Latitude:	32.0	0.0	Deg	May: 26.80
CO ₂ Emissions g/kWh of Electricity:	454	0.0	g/kWh	Jun: 31.80
Window to Wall Ratio:	30%	0	%	Jul: 33.50
Roof U Value:	1.4	0.0	W/m ² .K	Aug: 33.00
Wall U Value:	1.8	0.0	W/m ² .K	Sep: 31.50
Glass U Value:	5.9	0.0	W/m ² .K	Oct: 22.90
Glass SHGC:	0.8	0.0	Factor	Nov: 17.70
AC System Efficiency:	2.90	0.0	COP	Dec: 12.80

RESULTS

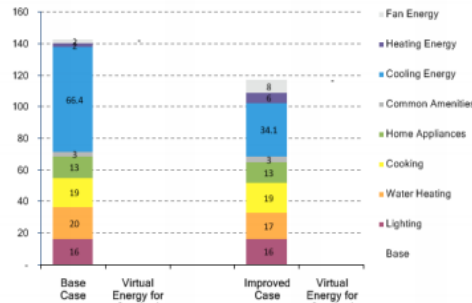
Final Energy Use: 972 kWh/Month Operational CO₂ Savings: 1.2 tCO₂/Year Base Case Utility Costs: 11
 Final Water Use: 17.7 m³/Month Embodied Energy Savings: 1,673.2 MJ Utility Costs Reduction: 20

Energy Efficiency Measures

HME01 Reflective Paint/Tiles for Roof	:	Solar Reflectivity	70 %
HME02 Reflective Paint for External Walls	:	Solar Reflectivity	70 %
HME03 External Shading Devices	:	Yes	
HME04 Insulation of Roof Surface	:	U Value [W/m ² K]	0.48
HME05 Insulation of External Walls	:	U Value [W/m ² K]	0.44
HME06 Low-E Coated Solar Control Glass	:	U Value [W/m ² K]	5.7
		SHGC	0.33
HME07 Higher Thermal Performance Glass	:	U Value [W/m ² K]	1.55
		SHGC	0.28
HME08 Cross Ventilation Orientations	:		
HME09 Ceiling Fans in all Habitable Rooms	:	Yes	
HME10 High Efficiency Cooling System	:	COP	6.5
HME11 High Efficiency Space-Heating Gas Boiler	:	% Eff.	90 %
HME12 High Efficiency Hot Water Gas Boiler	:	Yes	% Eff. 85 %
HME13 Low Energy Light Bulbs - Internal Spaces	:		
HME14 Low Energy Light Bulbs - External Spaces	:	Yes	
HME15 Lighting Controls for Corridors & Outdoors	:		
HME16 Solar Hot Water Collectors	:	Yes	% Hot Water 10 %
		Collector Area (m ² /Unit)	0.08
HME17 Solar Photovoltaics	:	% of Annual Electricity Use	100%
		Capacity kWp/Unit	-

17.96% ENERGY SAVINGS

ENERGY kWh/m²/Year



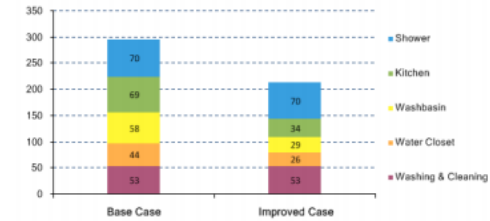
*Virtual energy is the amount of energy that will be required based on the assumption that the home or flat will eventually install air conditioning or hvac

Water Efficiency Measures

HMM01 Low-Flow Showerheads	:	LL/min	8
HMM02 Low-Flow Taps for Kitchen Sinks	:	Yes	LL/min 4
HMM03 Low-Flow Taps for Washbasins	:	Yes	LL/min 4
HMM04 Dual Flush for Water Closets	:	Yes	1st - LL/flush 6 2nd - LL/flush 3
HMM05 Single Flush for Water Closets	:	Yes	LL/flush 6
HMM06 Rainwater Harvesting System	:	Yes	
HMM07 Recycled Grey Water for Flushing	:		
HMM08 Recycled Black Water for Flushing	:		

27.8% Meets EDGE Water Standard

WATER m³/Year

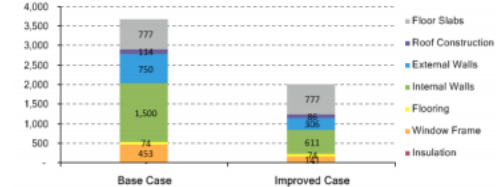


Materials Efficiency Measures

HMM01 Floor Slabs	:	In-Situ Reinforced Concrete Slab
HMM02 Roof Construction	:	180mm Concrete Filler Slab
HMM03 External Walls	:	Precast Concrete Panels
HMM03 Internal Walls	:	Precast Concrete Panels
HMM04 Flooring	:	Ceramic Tile
HMM05 Window Frame	:	uPVC
HMM06 Insulation	:	Glass Wool

45.6% Meets EDGE Materials Standard

EMBODIED ENERGY MJ/m²



Forthcoming resources



- EDGE User Guide
- EDGE Methodology Manual
- Publicly available EDGE Homes tool
- Beta versions of the Hotels, Hospitals, Offices, and Retail tools