The 6th Industrial Revolution
World Green Building Council

Growth

- Established GBCs
- Emerging GBCs
- Prospective GBCs
- Associated Groups

2007: 26
2008: 33
World Green Building Council

Growth

- Established GBCs
- Emerging GBCs
- Prospective GBCs
- Associated Groups

Legend:
- Green: Established GBCs
- Blue: Emerging GBCs
- Light Blue: Prospective GBCs
- Light Grey: Associated Groups

Bar chart:
- 2007: 26
- 2008: 33
- 2009: 64

World Map:
- Color-coded regions indicating the growth of green building councils and groups.
World Green Building Council

Growth

- Established GBCs
- Emerging GBCs
- Prospective GBCs
- Associated Groups

2007: 26
2008: 33
2009: 64
2010: 82
World Green Building Council

Growth

- Established GBCs
- Emerging GBCs
- Prospective GBCs
- Associated Groups

Map and bar chart showing growth over years from 2007 to current.
World Green Building Council

Regional Networks

[Map and data visualization showing the growth and distribution of green building councils across the world, with bars indicating the years 2007 to 2011.]
Voluntary vs Regulation

REGULATIONS

BENCHMARK

level of sustainability

Not meeting code

70%

5%

typical building practices

market leaders

20%

20%

innovators & risk takers

5%
market transformation.

- **REGULATIONS**: Not meeting code - 70% typical building practices - 5%
- **BENCHMARK**: Not meeting code - 5% market leaders - 20% innovators & risk takers - 5%

level of sustainability
4 Priorities

1. Prove the business case
2. Provide insights on progress to predict future trends
3. Existing Buildings
4. Expand our scope
Business Case

There is a building consensus:

*rental*

*sale price &

*occupancy

*premium*

for green office buildings
## United States

### Commercial Building

<table>
<thead>
<tr>
<th>Report</th>
<th>Rental premium</th>
<th>Sale price premium</th>
<th>Occupancy rate premium</th>
</tr>
</thead>
<tbody>
<tr>
<td>Miller et al (2008)</td>
<td>9%</td>
<td>No premium</td>
<td>2-4%</td>
</tr>
<tr>
<td>Eichholtz et al (2010a)</td>
<td>Energy Star: 3.3% LEED: No premium</td>
<td>Energy Star: 19% LEED: No premium</td>
<td>NA</td>
</tr>
<tr>
<td>Eichholtz et al (2010b)</td>
<td>Energy Star: 2.1% LEED: 5.8%</td>
<td>Energy Star: 13% LEED: 11.1%</td>
<td>NA</td>
</tr>
<tr>
<td>Pivo and Fisher (2010)</td>
<td>2.7%</td>
<td>8.5%</td>
<td>NA</td>
</tr>
<tr>
<td>Fuerst and McAllister (2011)</td>
<td>4-5%</td>
<td>25-26%</td>
<td>Energy Star: 1-3% LEED: No premium</td>
</tr>
</tbody>
</table>
New Era of Company valuation

Price = \text{Cash Flow grown over time and discounted}

= \text{Cash Flow} \frac{1}{\text{[risk free rate + risk premium] - growth}}

- Impact on operating margins
- Impact on revenue growth
- Impact on risk premium

\{ \text{Impact on growth} \}
2010 Trends

What are your goals with respect to green buildings?

New Construction

- Global
  - Certified to a recognized green standard: 51%
  - Green elements, but not certified: 32%
  - No goal for green buildings: 17%
  - Don't know: 4%

- US/Canada
  - Certified to a recognized green standard: 52%
  - Green elements, but not certified: 32%
  - No goal for green buildings: 14%
  - Don't know: 4%

- Pan-Europe
  - Certified to a recognized green standard: 52%
  - Green elements, but not certified: 32%
  - No goal for green buildings: 14%
  - Don't know: 4%

- India
  - Certified to a recognized green standard: 64%
  - Green elements, but not certified: 25%
  - No goal for green buildings: 2%
  - Don't know: 4%

- China
  - Certified to a recognized green standard: 73%
  - Green elements, but not certified: 25%
  - No goal for green buildings: 2%
  - Don't know: 4%

Retrofit Projects

- Global
  - Certified to a recognized green standard: 53%
  - Green elements, but not certified: 32%
  - No goal for green buildings: 17%
  - Don't know: 2%

- US/Canada
  - Certified to a recognized green standard: 60%
  - Green elements, but not certified: 20%
  - No goal for green buildings: 12%
  - Don't know: 2%

- Pan-Europe
  - Certified to a recognized green standard: 56%
  - Green elements, but not certified: 27%
  - No goal for green buildings: 4%
  - Don't know: 2%

- India
  - Certified to a recognized green standard: 49%
  - Green elements, but not certified: 27%
  - No goal for green buildings: 5%
  - Don't know: 3%

- China
  - Certified to a recognized green standard: 59%
  - Green elements, but not certified: 46%
  - No goal for green buildings: 4%
  - Don't know: 3%

Source: Johnson Controls Survey 2010
Business Case
Global Report

- Explore the value case
- Best of the best research
- Thought pieces
- Case studies
- Identify gaps
- Identify further research
4 Priorities

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World Green Building Trends Research

Collaboration between World GBC and McGraw-Hill Construction
83% of the GBCs surveyed support a rating system

Many GBCs support multiple rating systems

Voluntary rating systems used by GBCs
Number of registered and certified buildings

More than 1.5 million buildings registered

Note: this includes all building types and all certification types and stages
More than 1.5 million buildings registered,
Total of almost 1 billion square metres (9.2 billion ft sq) of area
4 Priorities

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Les « GreenBook », les mementos des typologies

Les pleines propriétés qui constituent le parc géré par La Francaise REM ont été classées en 9 typologies

27 actifs constituant un échantillonnage ciblé ont fait l’objet d’un diagnostic énergétique. 9 « green books » ont ainsi été élaborés. Ils déterminent les caractéristiques de performance énergétiques communes à chaque typologies ainsi que le type et le coût estimé des investissements à réaliser dans le cadre d’une économie de la consommation énergétique.

Afin de prendre en compte les caractéristiques spécifiques à chaque actif, 3 modes opératoires complémentaires aux « green books » ont été développés. Il s’agit:

1 – du « screen »
le « green book » est complété par l’analyse des consommations énergétiques et par l’ajustement des données en fonction de la nature des équipements existants.

2 – du « focus »
le « screen » est complété par des investigations sur site telles qu’une simulation thermique. Le plan pluriannuel de travaux est complété par des plans d’optimisation de l’utilisation et de l’exploitation. À ce stade l’opportunité d’une labellisation de l’actif est étudiée.

3 – du « zoom »
le « focus » est complété par des investigations portant sur d’autres aspects environnementaux que la performance énergétique, tels que l’empreinte environnementale, le confort du bâtiment, la qualité sanitaire, l’usage de l’eau et la gestion des déchets. Le plan pluriannuel de travaux est complété par un livret d’utilisation, un guide d’exploitation et une annexe environnementale servant de base à la rédaction du « bail vert ». Ce mode opératoire est surtout adapté pour des actifs d’une superficie supérieure à 2 000 m², pour des actifs labellisés et lorsque ces actifs comportent des lots rentrant dans le cadre réglementaire de l’annexe environnementale.
# Mayors Powers: Existing Buildings

## FIG 2.4 C40 Mayors’ Powers: Existing Buildings

<table>
<thead>
<tr>
<th></th>
<th>Own or Operate</th>
<th>Set Policies and Enforce Regulation</th>
<th>Control Budgets/Levy Charges</th>
<th>Set Vision</th>
</tr>
</thead>
<tbody>
<tr>
<td>Municipal offices</td>
<td>27</td>
<td>21</td>
<td>25</td>
<td>23</td>
</tr>
<tr>
<td>Municipal facilities</td>
<td>25</td>
<td>20</td>
<td>23</td>
<td>21</td>
</tr>
<tr>
<td>Municipally owned housing</td>
<td>22</td>
<td>17</td>
<td>17</td>
<td>18</td>
</tr>
<tr>
<td>Public primary and secondary schools</td>
<td>17</td>
<td>16</td>
<td>12</td>
<td>15</td>
</tr>
<tr>
<td>Municipal - Energy procurement</td>
<td>16</td>
<td>13</td>
<td>12</td>
<td>17</td>
</tr>
<tr>
<td>Institutional campuses and buildings</td>
<td>13</td>
<td>14</td>
<td>4</td>
<td>12</td>
</tr>
<tr>
<td>Commercial buildings</td>
<td>5</td>
<td>17</td>
<td>8</td>
<td>10</td>
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<tr>
<td>Industrial buildings</td>
<td>3</td>
<td>16</td>
<td>7</td>
<td>9</td>
</tr>
<tr>
<td>Private primary and secondary schools</td>
<td>2</td>
<td>17</td>
<td>3</td>
<td>9</td>
</tr>
<tr>
<td>Private housing</td>
<td>2</td>
<td>17</td>
<td>6</td>
<td>9</td>
</tr>
</tbody>
</table>

Source: C40-Arup Study: Climate Action In MegaCities
4 Priorities

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Socio-economic rating tool category
Sustainable Cities Initiative
C40 & ICLEI
Building Systems
Transport
Materials
Water
Solid Waste
Construction
Land Cover Change
Materials & Resources
Energy & Atmosphere
Location & Planning
Sustainable Sites
Water Efficiency
Buildings are designed based on historic conditions
e.g., Typical Meteorological Year

Future conditions are unlikely to match historic assumptions
e.g., minimum rise of 1.5° C by 2020;
potential for >5° C
Stormwater control strategies are based on historic design storms e.g., storm intensity, frequency

Trends indicate an increased frequency of high-intensity precipitation events e.g., in New England +28% in 20 years, +127% in 90 years
WORLD GREEN BUILDING WEEK 17-21 SEPT '12
Does anyone have extra rain barrels for my #greenapple project? @mygreenschools

I just did a #greenapple project on my campus with @ashley123! Great way to spend a Saturday.

2 much litter! Picking up trash at my bro’s elementary school. #greenapple
Connecting the Green Building Community

www.worldgbc.org