The Sustainable Buildings and Construction Initiative

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Why Building & Construction?

The building and construction market

- 5-15% of direct employment (111 million jobs)
- Investment US$ 3000 billion/year (10%+ of GDP)
- To growth markets: Brazil, China and India (~10%)

Global construction spending 2003

- USA
- Japan
- Germany
- Italy
- France
- UK
- Brazil
- Spain
- Korea
- Mexico
- Australia
- India
- Hong Kong
- Other countries

Source: ELSI and Global Insight (2009)

Global construction spending growth 2003-04

- USA
- Japan
- Germany
- Italy
- France
- UK
- Brazil
- Spain
- Korea
- Mexico
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- Other countries

Source: ELSI and Global Insight (2009)

SHARE OF THE BUILT ENVIRONMENT IN RESOURCE USE

- 40% Energy use
- 30% Raw material use
- 20% Water use
- 20% Land

10% 50% 100%

SHARE OF THE BUILT ENVIRONMENT IN POLLUTION EMISSION

- 40% CO2 emissions
- 30% Solid waste generation
- 20% Water effluents

10% 50% 100%
UNEP FI Property Investment Group
Paris, 7-8 Dec 2007

Key objectives:

- Life Cycle Approach towards a sustainable Building and Construction sector
- Global and sector cross-cutting initiative
- Focus on common and worldwide challenges
- Move beyond recommendations towards implementation

SBCI in a nutshell:

Partnership between the Private Sector and the United Nations (UNEP).

Seeks to address common global challenges to sustainability in the B&C sector

Builds on synergies with other initiatives.
The SBCI Members

Members drawn from throughout the life cycle of buildings

Members support SBCI through membership fees and direct involvement in implementation

As of 15 October 2006 SBCI has 27 members from 14 countries, including China
Two Key Focus Areas

1. Climate Change: Qualify buildings and construction activities as eligible activities for support under the flexible mechanisms of the Kyoto protocol.

2. Economic Incentives: Develop and promote economic incentives for a life cycle approach (LCA) in design, construction and financing of buildings, so as to create market conditions favourable to buildings that are optimized from a life cycle perspective.
Focus Area 1: Climate Change

1. Background study on Buildings and Energy Efficiency
2. Think Tank
   - Elaborating recommendations for SBCI
3. Working group
   - Responding to TT recommendations
4. CDM projects in North Africa
   - Learning by doing
5. Partnerships with MTF, WBCSD etc.
Focus Area 2: Economic instruments for LCA

1. Support global network of experts
   - To develop know-how
2. Project on Public Finance Mechanisms for energy efficiency in buildings
3. Think Tank on economic incentives
4. Partners (UNEP FI, LCI)
Other activities

- Tsunami reconstruction project

- Outreach & Communication
  - Changsha
  - Greenbuild
  - Davos
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SBGI Communication

Annual meetings

SBGI annual meetings are organised with the entire SBGI membership.

SBGI website

The website of SBGI will present the Initiative to the world.

Network briefings

SBGI consultations will be organised with key stakeholders.

SBGI workshops

SBGI workshops will be organised on a regular basis (initially twice per year) to present, discuss and support SBGI tools and references.

Pilot projects

The current focus areas of the initiative.

Tools & strategies briefings

SBGI tools & strategies briefings are presenting the results of the SBGI tools and strategies Briefings.

Strategic reports

The part of the projects, and take part of the results through the Programmes. SBGI members will be invited to support the SBGI Projects.
Buildings and Climate Change
- SBCI First Strategic Report -

To find the answer to a few basic questions:

- What do we know about energy use in buildings?
- What factors decide how much energy we use?
- What barriers are there to reduced energy use?
- What instruments exist for encouraging energy efficient building?
- Recommendations
The Baseline

- 30-40% of global energy consumption takes place in the B&C sector (IEA)
- Lack of reliable data, especially for developing countries
- Biomass use in developing countries significant
- Potential energy savings are often 50%+
- Energy use in construction phase is typically about 5-15% of total energy use over the life cycle
The Baseline

Energy use in residential vs commercial sectors

- Sub-Saharan Africa
- Asia (excl. Middle East)
- Europe
- North America
- C. America & Caribbean
- Middle East and N. Africa
- South America
- Oceania
- Developed
- Developing
Sources for energy consumption

- Residential, Kuwait
- Commercial, India
- Residential, India
- Commercial, USA
- Residential, USA
- Rural residential, China
- Urban residential, China
- Commercial, Australia
- Residential, Australia
- Commercial, Canada
- Residential, Canada

- Heating
- Cooling
- Lighting
- Water heating
- Others
Energy efficiency factors

It is technically possible to build significantly less energy consuming houses.

Residential building, 10 storeys, 10 000m².

Reference case (RC) vs low energy case (LE)

- New York, USA - RC: 64 kWh/m²
- New York, USA - LE: 59 kWh/m²
- New Delhi, India - RC: 94.3 kWh/m²
- New Delhi, India - LE: 44.1 kWh/m²
- Beijing, China - RC: 173 kWh/m²
- Beijing, China - LE: 59 kWh/m²
- Madrid, Spain - RC: 24.6 kWh/m²
- Madrid, Spain - LE: 58.9 kWh/m²

Other factors:
- Advanced Glazing: 18.3%
- Insulated Envelope: 24.5%
- Natural Ventilation: 16.1%
- Windows Shading: 41.2%
Energy efficiency factors

- Construction phase: Embodied energy
  - E.g. Steel vs. glulam or new vs. recycled aluminium

- Use phase: Envelope
  - Need for, and use of, insulation.

- Use phase: Energy dependent systems;
  - HVAC, hot water, lighting, appliances and other electric equipment

- Use phase: Human behaviour

- Demolition phase: Recycling
Energy efficiency factors

- Opportunities on heating/cooling
  - Low temperature heating systems
  - Good design
  - High efficiency A/C
  - Window design and technology
  - Cooking

- Low-energy house
  - 60% reduction
  - Conservation before energy system: Integration!

- Passive house
New or refurbished buildings?

- Europe: 1-2 % renewal of building stock, 70% built before first energy crisis and ½ before 1950.
- Developing world: Shorter life span and more urgent need for new buildings.
- Focus on added insulation
- Solar heating when suitable
- Flexible solutions of energy systems
- Consider commissioning
Encouraging energy efficiency

- Economic potentials significant
  (But lack of wall breaking figure)

- Policies & Legislation
- Economic instruments:
  - Dynamic tariffs (Real pricing?)
  - Energy audit (subsidized)

- Information & Education
  - EU - You control climate change
  - Parow pilot energ efficient retrofit and employee awareness campaign

- Technology transfer
Encouraging energy efficiency

Policies and legislation

- India: Energy Conservation Act
- EU Directive on the energy performance of buildings
- Scandinavia: Standards & building codes
- Russia: law on energy savings
- China: Policy on 65% energy efficiency improvement
Barriers

- (Perception of) costs for energy efficient solutions
- Disconnect between builders and users
- Inadequate knowledge about benefits of, and opportunities for, energy efficiency
- Lack of technical know-how and basic equipment
- Lack of funding
- No immediate priority in many cases
- Incentives not tailored to the building sector
  - Owners that do not pay the energy bill
  - Kyoto flexible mechanisms not tailored to large number of small activities
Summary

1. SBCI has JUST started
2. Rapidly growing interest and attention, even from highest levels
3. Key issue is climate change, linked to economy of energy savings
4. Technology is there but not the means to mainstream it
5. SBCI has a narrow focus but a multi-pronged approach
Thank You!

For more information
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