Resource Efficient Cities

Addressing environmental and social challenges while creating major financial savings

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Emerging markets are in the midst of a construction boom

- World population will reach 9 billion by 2050: 34% higher than today – growth will be fastest in poor countries, where population is expected to actually double.

- The emerging middle class – with rising income levels – is growing by 90 million per year.

- To meet this demographic change, increased employment opportunities will have to be generated in urban areas.
Sustainable City = Resource Efficient City

- And one that addresses Sustainable Consumption and Production issues by promoting:
  - Energy efficient buildings
  - Low carbon modes of transport and connectivity
  - Water demand management
  - Integrated waste management - new resources
  - Green public procurement and private sector participation
  - Sustainable lifestyles and behavior change

- Decoupling in Cities
  - Environmental impacts
  - Resource use
  - Innovation
  - More and better with less (within planetary boundaries)
Why a Sustainable City?

- By 2050:
  - 75% population (middle class growth)
  - 75% energy, resource use
  - 75% GHGs
  - 75% waste

- Cities: hubs for economic growth, critical infrastructure/systems, gov’t, finance/investment, education/culture, distribution centers (food), pop.

- No global solutions without engagement at city level
- Business case, return on investment!
We have a unique opportunity to avoid locking-in to resource-hungry, high-carbon assets with 30-70 year lives if we act now

Urbanization and growth in population and incomes are driving a building boom in developing countries

• most will double their built environment in the next 30 to 40 years

* IPCC
# Environmental Impact of Cities and Buildings

<table>
<thead>
<tr>
<th>Environment Impact (global)</th>
<th>Cities (%)</th>
<th>Buildings (%)</th>
</tr>
</thead>
<tbody>
<tr>
<td>GHGs</td>
<td>75</td>
<td>30</td>
</tr>
<tr>
<td>Energy Consumption</td>
<td>70</td>
<td>40</td>
</tr>
<tr>
<td>Resources (natural)</td>
<td>75</td>
<td>30 (80% increase ’92)</td>
</tr>
<tr>
<td>Waste</td>
<td>75% rate &gt;pop.growth</td>
<td>30%</td>
</tr>
<tr>
<td>Water</td>
<td>50% (losses)</td>
<td>25</td>
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<tr>
<td>Electricity</td>
<td>(included in Energy)</td>
<td>60</td>
</tr>
<tr>
<td>Land</td>
<td>~50% increase by 2050</td>
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*Growth regions: Africa, Asia, Middle East, and Latin America*
Buildings risk being the least exploited potential source of energy efficiency.

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

Source: World Energy Outlook, IEA
UNEP’s work on cities
strategic Partnerships and Major Initiatives

Strategic Partnerships
• Joint work programme with Cities Alliance
• UNEP/UN-Habitat Partnership Framework
• Sustainable Development Goals for Cities

Major Initiatives
• Sustainable Buildings and Climate Initiative
• Global Partnership on Waste Management
• Global Initiative for Resource Efficient Cities
Sustainable Buildings and Climate Initiative (SBCI): *Promote sustainable building policies and practices worldwide.*

*Cities-Buildings Nexus: Application of sustainability and life cycle principles and assessment at each link (intervention point) of the supply chain and to link to urban systems*
Global Partnership on Waste Management (GPWM): A collaborative relationship for international organizations, Governments, NGOs, Municipalities, Private companies, and Academic organizations.

To enhance international cooperation, outreach, advocacy, knowledge management and sharing, and identifying and filling information gaps in waste management to protect human health and environment, and to tackle adverse impacts of unsound management of waste.

To raise awareness, political will, and capacity to promote resource conservation and efficiency through waste prevention and by recovering valuable material and/or energy from waste.

Steering Committee:
- Advice
- Feedback

Areas and Partners:
- Implementation & expansion of pilot project

Secretariat at UNEP IETC:
- Cooperation

Information Platform:
- Contents:
  - Waste Management Database
  - Compendium of Technologies and Policy documents
  - Guidance, Manuals & Training materials
  - Lesson learned and Project summary

Observers:
- Cooperation

Other partnerships and initiatives:
- Cooperation

To raise awareness, political will, and capacity to promote resource conservation and efficiency through waste prevention and by recovering valuable material and/or energy from waste.
Global Initiative for Resource Efficient Cities

Objective

“To enhance the quality of life in urban areas, in particular in rapidly growing cities in developing countries, while minimizing resource extraction, energy consumption and waste generation, and while safeguarding ecosystem services”
Global Initiative for Resource Efficient Cities

Input
- Land
- Water
- Energy
- Food

Output
- Target: Zero Emission and Waste

Reduce - Reuse - Recycle
Global Initiative for Resource Efficient Cities

- Assist cities in identifying and monitoring their resource footprint
- Links partners and cities interested in resource efficiency
- Coordinate and support the development of clear goals and targets
- Provides access to expertise and support access to funding
Global Initiative for Resource Efficient Cities
results of the 2013 comprehensive review
and next steps
GI-REC comprehensive review
the first step of a long term process

Review
- Comprehensive review - setting the foundation for future activities, ensuring that we have considered different perspectives in our approach

Validate
- On the ground validation through workshops and interviews in the regions. It is also a time to build/strengthen partnerships for operationalization

Operationalize
- Piloting, Capacity building, Advocacy the real work begins with cities all over the world as we do pilot activities in cities or capacity building in specific regions
What do the cities think?
Global survey results

Findings

• Majority of the cities are aware of the environmental risks but nearly 50% do not have a resource/sustainability plan
• Cities risk perceptions are shaped by global discourse. Crucial resource issues not prominent in the global arena - such as food and raw materials - are not city priorities
• Cities understand resource efficiency in a holistic way including all aspects of sustainable development. 72% of respondents relate RE to economic concerns
• Cities are motivated to manage resources because of climate change impacts, urban sprawl, population growth, and rising prices of key resources
What do the cities think?
Global survey results

Recommendation

• Existing urban plans should be used to effectively mainstream resource efficiency

• GI-REC should provide a coherent and operational definition of resource efficiency and advocate it globally

• GI-REC should spell out the connections between resource efficiency and urban green economy given the survey respondents’ emphasis on economic competitiveness.

• Regional approach targeting smaller, fast growing, cities. Strengthening the link between resource efficiency and economic concerns
How do institutions support cities?
Mapping exercise results

Findings

• The economic argument for resource efficiency is weak and needs to be made to convince cities to invest in it.
• Lack of proof that technological solutions work in practice
• There is confusion over the roles and responsibilities between cities, nations, and the rest of the world
• No universal standard for a “resource efficient city”. There is a proliferation of different signals of success
• Poor quality of data on material flows across key sectors

A systems approach to resource efficiency in cities is a minority among the initiatives documented with food, water, and the extraction of minerals and metals being less common areas of focus compared to the interest in energy and climate change.
How do institutions support cities?
Mapping exercise results

Recommendation

• **Develop a stronger platform of collaboration**: There is an emerging body of evidence of a ‘network effect’ whereby a city’s participation in a community of practice can demonstrably lead to monetized benefits.

• **Develop the business case**: UNEP’s comparative strength is its scientific expertise and its credibility in the business community on promoting the transition to a green economy. GI-REC should build on UNEP’s existing work by teaming with industry partners to add to the evidence base.

• **Lead in the development of a consensus definition on resource efficiency**: Cities require support and engagement of all actors, from all sectors, to build these understandings and capacities that will enable the transition to greater resource efficiency.
The Perception

-0.4% to 12.5%
Cost premium for green buildings (actual costs based on various studies)

0.9% to 29%
Estimated cost premium for green buildings (based on design stage estimates and surveys)
Understanding commercial value of ‘Green’

Higher Sale Price
- Portland: 8% more
- Seattle: 9% more
- Singapore: 4% more

Higher Resale Value
- UK: +10%-14%
- Netherlands: +3.7%
- California: +8.7%
- Switzerland: .5%-7%

Quicker Sale
- Portland: -18 days
- Seattle: 4 times

Lower Utility Bills
- USA: 15% less

Lower Default Rate
- USA: 33% less

Source: IFC-EDGE (www.edgebuildings.com)
Do cities and institutions have the tools they need?

Research agenda

Finding

• No. There is an existing rift between theoretically appropriate planning cycle (5 years) and the reality on the ground (1-2 year political cycles).
• There is a disconnect in planning cycle terms and the time required to collect critical data plays against the use of metabolic flow analysis in urban planning
• There is a need to change the urban infrastructure to allow for more efficient flows

Recommendation

• Given the long term nature of infrastructure investments, cities need to formulate unique strategies for transition that are grounded in their current realities. A framework is being developed to assist cities in this goal
Recurring themes in the comprehensive review

- **Planning cycles and city plans** need to be reworked to address the issue of resource efficiency.
- There is a need for a consensus in the **operational definition** of resource efficiency.
- Cities need **effective tools and methods** to measure success.
- The **business case for resource efficiency** still needs to be made and it is important for cities.
- **Climate change is a key issue** in cities and adapting to its impacts is of primary concern to decision makers.
- **Global advocacy on key issues** have an influence on city priorities hence food is not a priority.
GI-REC Work Programme
2013-2014 Highlights

- **City workshops at regional level**: Southeast Asia and China (2013), Africa (2014), Latin America (TBA), South Asia (TBA)
- **Piloting in key cities in Southeast Asia and China** (2014)
- **Harmonization and development of city standards**
  - Continue strategic partnerships with institutions like ISO
  - Continue work on indicators with the expert group
- **Developing the business case for investment on resource efficiency** at city level
- **Consolidating the advisory board**
GI-REC Work Programme
Outline: Post 2014 Plan

Piloting
• GI-REC will partner with cities within the region to pilot specific approaches developed at the global level

Capacity Building
• Establishing links with existing institutions in targeted regions to assist cities with regional environmental issues

Create awareness of relevant global issues
• Link between resource efficiency and the green economy
• Continue development of standards

Strengthen strategic partnerships
• Consolidate the advisory board and membership structure
Tools Development

TOOL 1: Understanding the Resource Efficiency Context
Understanding the city’s resource profile
Establish a resource efficiency baseline

TOOL 4: Monitoring Progress
Related to tool 1

TOOL 2: Setting goals and assigning responsibilities to key stakeholders

TOOL 3: Identification of optimal infrastructure options and exploring implementation
- Identify possible infrastructure approaches
- Identify best infrastructure approaches
If the right choices are not made today, we will be locking into high-resource consuming urban infrastructure for decades.
Thank you very much!

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