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Urban Transition to Sustainable

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Urban and Industrial Sustainable Redevelopment

The current modeling of many urban centers, commercial areas, and industrial areas seem to involve spreading buildings and transit over a large expanse of land. This modeling is not only inefficient but it creates a costly and wasteful infrastructure. The practice of urban and industrial sprawl must change if we are to truly achieve sustainability.

As much as possible we need to incorporate the concept of high-rise, well designed and concentrated housing, offices, and industry rather than individual houses and spread out facilities. We need more green spaces and bike lanes rather than concrete and asphalt. Mass transit such as undergrounds and buses should be the focus rather than the conventional focus on urban planning with the automobile in mind. The urban and industrial system must also incorporate best practices and equipment in recycling, production, and waste management to be truly sustainable.

The ECO\$ funds from the ECO\$ financial system proposal as well as government funding should help provide funding for significant rebuilding of cities around the principles of smart growth and sustainable development listed below. Appropriate funding as well as intelligent planning and implementation should set humanity on the path to true sustainability.

Smart Growth Guidelines

Exhibit 1: Smart Growth Principles

Based on the experiences of communities around the nation, the Smart Growth Network developed a set of ten basic principles to guide smart growth strategies:

- Mix land uses.
- Take advantage of compact building design.
- Create a range of housing opportunities and choices.
- Create walkable neighborhoods.
- Foster distinctive, attractive communities with a strong sense of place.
- Preserve open space, farmland, natural beauty, and critical environmental areas.
- Strengthen and direct development towards existing communities.
- Provide a variety of transportation choices.
- Make development decisions predictable, fair, and cost effective.
- Encourage community and stakeholder collaboration in development decisions.

Source: Smart Growth Network. Smart Growth Principles.
<http://www.smartgrowth.org/engine/index.php/principles>.

These guidelines would appear to support the true spirit of what “sustainability” is about. Some key goals at least.

The Smart Growth Principles chart presents 10 Principles (or guidelines) of “Smart Growth” that the Smart Growth organization has developed. Their website also indicates some of the economic benefits of developments under the principles of “smart growth”.

From the Office of Sustainable Communities, Smart Growth Program, EPA, USA, 2012

One of the key benefits of the smart growth program is it encourages and supports local business enterprises which makes the local and nearby economy stronger.

Urban and Industrial Sustainability Index

In order to help measure the progress of any sustainable programs and developments it would be beneficial to have relevant sustainability index measurements. It is important to have comparability to other urban centers, to have historical statistics, and to have forecasted goals indicated.

The following organizations are good sources for sustainable program initiatives, measurement, communications, and reports. Their websites and publications contain a breadth of information helpful in the understanding of what is truly involved in sustainable development.

a) **EUROPEAN FOUNDATION for the Improvement of Living and Working Conditions**

"The overall aim of the EU Sustainable Development Strategy is to identify and develop actions to enable the EU to achieve a continuous long-term improvement of quality of life through the creation of sustainable communities able to manage and use resources efficiently, able to tap the ecological and social innovation potential of the economy and in the end able to ensure prosperity, environmental protection and social cohesion.

"The strategy sets overall objectives and concrete actions for seven key priority challenges for the coming period until 2010, many of which are predominantly environmental:

Climate change and clean energy

Sustainable transport

Sustainable consumption & production

Conservation and management of natural resources

Public Health

Social inclusion, demography and migration

Global poverty and sustainable development challenges

<http://ec.europa.eu/environment/eussd>

<http://www.eurofound.europa.eu/pubdocs/1998/07/en/1/ef9807en.pdf>

Urban Sustainability Indicators

© European Foundation for the Improvement of Living and Working Conditions, 1998

b) **United Nations Sustainable Development**

UN Habitat for a Better Urban Future

Themes: Environment and Climate Change, Information and Monitoring, Land and Housing, Risk and Disaster Management, Social Inclusion, Urban Development and Management, Urban Economy and Financing Shelter, Water Sanitation and Infrastructure

The Seventh session of the World Urban Forum will be held in Medellin, Colombia from 5 to 11 April 2014 with the focus on the overall theme "Urban Equity in Development - Cities for Life".

<http://www.unhabitat.org/categories.asp?catid=9>

c) **2011 Urban Sustainability Index by McKinsey & Company**

Urban China Initiative

The 2011 Urban Sustainability Index is one of the inaugural studies of the Urban China Initiative (UCI), a think-tank founded in 2010 by Columbia University, McKinsey & Company, and Tsinghua University.

For the full 2010 report, see www.urbanchinainitiative.org

This report documents the challenges being faced by Chinese Urban Planners. With increased influx from rural China and new wealth there is an urgent need for modern residential high rise space and balancing the speed of development with due process, thorough urban planning, and due diligence in building design and production. In addition there are new challenges with water and air pollution with the increased auto's, energy requirements, and industrial production.

d) A City example of their Sustainable Project

Philadelphia Government, Office of Sustainability, GreenWorks

<http://www.phila.gov/green//programs.html>

<http://www.phila.gov/green/PDFs/GW2012Report.pdf>

GreenWorks Philadelphia, Update, 2012 Progress Report

Sections: 1 Energy 2 Environment 3 Equity 4 Economy 5 Engagement

Summary of Targets (and progress)

Target 1 Lower City Government Energy Consumption by 30 Percent

Target 2 Reduce Citywide Building Energy Consumption by 10 Percent

Target 3 Retrofit 15 Percent of Housing Stock with Insulation, Air Sealing, and Cool Roofs

Target 4 Purchase and Generate 20 Percent of Electricity Used in Philadelphia from Alternative Energy Sources

Target 5 Reduce Greenhouse Gas Emissions by 20 Percent

Target 6 Improve Air Quality toward Attainment of Federal Standards

Target 7 Divert 70 Percent of Solid Waste from Landfill

Target 8 Manage Stormwater to Meet Federal Standards

Target 9 Provide Walkable Access to Park and Recreation Resources for All Philadelphians

Target 10 Provide Walkable Access to Affordable, Healthy Food for All Philadelphians

Target 11 Increase Tree Coverage Toward 30 Percent in All Neighborhoods by 2025

Target 12 Reduce Vehicle Miles Traveled by 10 Percent

Target 13 Increase the State of Good Repair in Resilient Infrastructure

Target 14 Increase the Size of the Regional Clean Economy by 25 Percent

Sustainable Index(s) Examples

The following indexes were based upon a variety of material(s) found in the above websites, documents and resources. Possibly the best way to report on sustainability progress is to combine the Index statistics with the overview and analysis methods used by The Building and Social Housing Foundation (BSHF) organization (bshf.org). See their website for their detailed program review methodology. A must for any indexes should be historical data as well as nationwide conformity in format and goals. The following index's are to be considered drafts/examples and not a final version. They might be considered a starting point from which to develop regional, national, and international indexes.

Examples of Sustainable Indexes

AIR QUALITY INDICATOR	Concentration ppm					
	1973	1983	1993	2003	2013	GOAL
Pollutant						
CO2						
CH4						
N2O						
CO						
SO2						
NO2						

RESIDENTIAL BUILDING INDEX	Number of					
	1973	1983	1993	2003	2013	GOAL
Housing						
Single Homes - detached						
Single Homes - semi or row						
Multiple Dwellings up to 3 levels						
Footprint of above buildings (hectares)						
Apartment Buildings - Rental						
Apartment Buildings - Condo						
Footprint of above buildings (hectares)						

Examples of Sustainable Indexes, cont'd

INDUSTRIAL/COMMERCIAL WASTE INDEX	Waste in Tonnes					GOAL
	1973	1983	1993	2003	2013	
Industrial/Commercial Waste						
Landfill Waste (Tonnes)						
Electronics Waste Recycled (Tonnes)						
Machinery and Equipment Waste Recycled (Tonnes)						
Paper Waste Recycled (Tonnes)						
Chemical Waste Recycled (Tonnes)						
Chemical Waste Incinerated (Tonnes)						
Organic Waste Recycled (Tonnes)						
Yard Waste Recycled (Tonnes)						
Vehicle Waste (Tonnes)						
Vehicle Waste Recycled (Tonnes)						

Examples of Urban Sustainable Developments

Green Building, Santa Monica Public Library Project Description

"The Main Library Complex includes 110,000 feet of building space housing the library, community meeting rooms, and a café. The project also includes a 3 story, 500 space subterranean parking structure. The facility was awarded LEED Gold certification for being a green building. A green building places high priority on health, environment, and resource conservation over the life of the building. The Main Library follows LEED practices from beginning to end. Some of the strategies used on this project include replanting existing trees, using native and drought-tolerant plants, and recycling construction and demolition waste."



A picture of the interior courtyard of the Santa Monica Library

Project Highlights:

- "Raised access floor and under floor air distribution to improve energy efficiency and facilitate future adaptation of the space.
- 200,000 gallon rain water storage system for landscape watering
- Significant percentages of recycled content materials (e.g., 100% structural steel and rebar, 70% aluminum framing)
- High-efficiency HVAC equipment.
- High performance windows
- Direct Digital Control (DDC) System for HVAC optimization
- 10 kW Photovoltaic system"

From:

http://www.smgov.net/Departments/OSE/Categories/Green_Building/Santa_Monica_Public_Library.aspx

Note LEED information.

"LEED, or Leadership in Energy & Environmental Design, is transforming the way we think about how our buildings and communities are designed, constructed, maintained and operated across the globe. Comprehensive and flexible, LEED is a green building tool that addresses the entire building lifecycle recognizing best-in-class building strategies."

The U.S. Green Building Council (USGBC) <http://www.usgbc.org/>

Concentrated Multi-Use Development

A good example of concentrated multi-use development can be seen in Ottawa, Canada Lansdowne Park Development, which is located in a prime area bordering the scenic Rideau Canal.

<http://ottawa.ca/en/city-hall/planning-and-development/transforming-ottawa/stage-2-site-plan>

Before and After Visualization, Urban Park space and Sports Facility plans, Mixed Use Concept Plans

Trinity will be building a mixed use development: Retail, Office, and Residential. This site has a good video which presents a visualization of a completed Lansdowne Park area.

<http://www.trinity-group.com/properties/new-urban-centres/ottawa-on/lansdowne-park-redevelopment/>

The winners of the 2013 World Habitat Awards

(The 2013 World Habitat Awards will be presented to the winners at the World Urban Forum, which will be hosted by UN-Habitat in Medellín, Colombia from 5-11 April 2014.)

Be sure to visit the bshf.org & worldhabitatawards.org websites to see the details, overview, and analysis on each project. Their project reviews are a good example of thorough analysis on sustainable development initiative projects.

"The Building and Social Housing Foundation (BSHF) is an independent research organisation that promotes sustainable development and innovation in housing through collaborative research and knowledge transfer. BSHF believes that everyone should have access to decent housing and is committed to promoting housing policy and practice that is people centered and environmentally responsible."

Each project reviewed by BSHF is analyzed with the following parameters:

Aims and Objectives, Project Description (plus further details), Innovative Aspects, Environmental Sustainability, Financial Sustainability, Social Sustainability, Barriers, Lessons Learned, Evaluation, and Transfer

Winners of the 2013 World Habitat Awards:

"Hebron Old City Rehabilitation Programme - Palestine

Restoration and reuse of historic buildings, regenerating urban infrastructure and supporting local economic development to reverse depopulation."

"The 100,000 Homes Campaign - USA

Scaling up a 'housing-first' approach to provide accommodation for thousands of the most vulnerable and chronically homeless people across the USA."

Some other outstanding projects listed were:

"The Struggle for Housing in Central Areas – Brazil

Community-led mutual aid housing in city centre areas, addressing issues of displacement and gentrification."

"Cooperative Programme for the Development of Urban Neighborhoods – Cameroon

Building a culture of public participation in urban development through participatory budgeting and cooperative housing processes."

"30 Years of Planning Continuity in Freiburg – Germany

Integrated planning approach over 30 years makes Freiburg an exemplar of sustainable living in a compact, car-light city."

Winners of the 2013 World Habitat Awards information is courtesy of The Building and Social Housing Foundation (BSHF)

<http://www.bshf.org/>