Sustainable city

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A **sustainable city**, or **eco-city** is a city designed with consideration of environmental impact, inhabited by people dedicated to minimisation of required inputs of energy, water and food, and waste output of heat, air pollution - CO_2, methane, and water pollution. Richard Register first coined the term "ecocity" in his 1987 book, *Ecocity Berkeley: building cities for a healthy future*.[1] Another leading figure who envisioned the sustainable city is architect Paul F. Downton, who later founded the company Ecopolis Pty Ltd. The field of industrial ecology is sometimes used in planning these cities.

A sustainable city can feed itself with minimal reliance on the surrounding countryside, and power itself with renewable sources of energy. The crux of this is to create the smallest possible ecological footprint, and to produce the lowest quantity of pollution possible, to efficiently use land; compost used materials, recycle it or convert waste-to-energy, and thus the city's overall contribution to climate change will be minimal, if such practices are adhered to.

It is estimated that around 50%[2] of the world's population now lives in cities and urban areas. Essentially these large communities are unsustainable, but they provide both challenges and opportunities for environmentally conscious developers. In order to make them more sustainable, building design and practise, as well as perception and lifestyle must adopt sustainability thinking.

Contents

Practical achievement

These ecological cities are achieved through various means, such as:

- Different agricultural systems such as agricultural plots within the city (suburbs or centre). This reduces the distance food has to travel from field to fork. Practical work out of this may be done by either small scale/private farming plots or through larger scale agriculture (eg

farmscrapers).
- Renewable energy sources, such as wind turbines, solar panels, or bio-gas created from sewage. Cities provide economies of scale that make such energy sources viable.
- Various methods to reduce the need for air conditioning (a massive energy demand), such as planting trees and lightening surface colors, natural ventilation systems, an increase in water features, and green spaces equaling at least 20% of the city's surface. These measures counter the "heat island effect" caused by an abundance of tarmac and asphalt, which can make urban areas several degrees warmer than surrounding rural areas—as much as six degrees Celsius during the evening.
- Improved public transport and an increase in pedestrianization to reduce car emissions. This requires a radically different approach to city planning, with integrated business, industrial, and residential zones. Roads may be designed to make driving difficult.
- Optimal building density to make public transport viable but avoid the creation of urban heat islands.
- Solutions to decrease urban sprawl, by seeking new ways of allowing people to live closer to the workspace. Since the workplace tends to be in the city, downtown, or urban center, they are seeking a way to increase density by changing the antiquated attitudes many suburbanites have towards inner-city areas. One of the new ways to achieve this is by solutions worked out by the Smart Growth Movement.
- Green roofs
- Zero-emission transport
- Zero-energy building
- Sustainable urban drainage systems or SUDS
- energy conservation systems/devices
- Xeriscaping - garden and landscape design for water conservation

International examples

Kenya

Hacienda - Mombasa, Kenya. It is the largest development of eco-friendly residential properties in East Africa; construction is currently ongoing, and it will eventually be one of Africa's first self-sustaining estates.

Brazil

Southern cities of Porto Alegre and Curitiba are often cited as examples of urban sustainability.

Sweden

Gothenburg (http://www.goteborg.se), and especially Älvstaden (http://www.alvstranden.com) (Central city by the river Göta Älv) is a very good example of sustainable city in Sweden. It has a low environmental impact and contains passive houses, good recycling system for waste etc.

Hammarby Sjöstad, Stockholm

Denmark

The industrial park in Kalundborg is often cited as a model for industrial ecology.

Ecuador

Loja, Ecuador won three international prizes for the sustainability efforts begun by its mayor Dr.

Jose Bolivar Castillo.[3]:25

New Zealand

The city of Waitakere, the Western part of the greater Auckland urban region, was New Zealand's first eco-city, working from the Greenprint, a guiding document that the City Council developed in the early 1990s.

Republic of Ireland

South Dublin County Council announced plans in late 2007 to develop Clonburris, a new suburb of Dublin to include up to 15,000 new homes, to be designed to achieve the highest of international standards.[4] The plans for Clonburris include countless green innovations such as high levels of energy efficiency, mandatory renewable energy for heating and electricity, the use of recycled and sustainable building materials, a district heating system for distributing heat, the provision of allotments for growing food, and even the banning of tumble driers, with natural drying areas being provided instead.[5]

China

- China is working with investment and technology supplied by the Singapore government to build an ecocity in the Coastal New District of Tianjin City in northern China, named the "Sino-Singapore Tianjin Eco-city".[6]

- Dongtan Eco-city is the name of another project on the third largest island in China at the mouth of the Yangtze River near Shanghai. The project was scheduled to accommodate 50,000 residents by 2010, but its developer has currently put construction on hold.[7]

- Huangbaiyu is another major eco-city being build by China.

- As of April 2008, an ecocity collaboration project is being proposed for a district in Nanjing, the capital city of Jiangsu Province on the Yangtze River, just west of Shanghai.

- Rizhao mandates of solar water heaters for households, and has been designated the Environmental Model City by China's SEPA.[3]:108

India

India is working on Gujarat International Finance Tec-City or GIFT which is an under-construction world-class city in the Indian state of Gujarat. It will come up on 500 acres (2.0 km^2) land.[8] It will also be first of its kind fully Sustainable City.

U.S.

- Arcosanti, Arizona

- Treasure Island, San Francisco: is another project that aims to create a small eco city.

U.K

- St Davids the smallest city in the United Kingdom aims to be the first carbon neutral city in

the world [9]

See also

- Transition town
- Sustainable design

References

Notes

1. **^** Register, Richard (1987). *Ecocity Berkeley: building cities for a healthy future*. North Atlantic Books.
2. **^** https://www.cia.gov/library/publications/the-world-factbook/fields/2212.html?
   countryName=World&countryCode=xx&regionCode=oc&#xx
3. ^ *a b* Worldwatch Institute. (2007). *State of the World : Our Urban Future*.
4. **^** Clonburris (http://www.clonburris.ie/index.php?option=com_content&task=view&id=27&Itemid=56)
5. **^** Construct Ireland Ecology of Scale (http://constructireland.ie/articles/design-approaches/ecology-of-scale-2.html).
6. **^** http://www.tianjinecocity.gov.sg Website of the Sino-Singapore Tianjin Eco-city
7. **^** http://features.csmonitor.com/environment/2008/12/23/in-china-overambition-reins-in-eco-city-plans
   In China, overambition reins in eco-city plans
8. **^** http://giftgujarat.in/ Gujarat International Finance Tec-City plans
9. **^** http://www.eco-city.co.uk

Further reading

- Richard Register (2006) *Ecocities: building cities in balance with nature (http://worldcat.org/oclc/48558979&referer=brief_results)*, New Society Publishers. ISBN 0865715521.
- Shannon May (2008) "Ecological citizenship and a plan for sustainable development (http://dx.doi.org/10.1080/13604810802168117)", City,12:2,237 — 244

- Timothy Beatley (2000) *(1997) [http://worldcat.org/oclc/36695680&referer=one_hit Eco-city dimensions : healthy communities, healthy planet (http://worldcat.org/oand), New Society Publishers. ISBN 0865713537.*
- Richard Register (1987) *Ecocity Berkeley: building cities for a healthy future (http://worldcat.org/oclc/15055352&referer=brief_results)*, North Atlantic Books. ISBN 1556430094.
- Sim Van der Ryn and Peter Calthorpe (1986) *Sustainable communities : a new design synthesis for cities, suburbs, and towns (http://worldcat.org/oclc/9394364&referer=brief_results)*, Sierra Club Books. ISBN 087156629X.
- Paolo Soleri (1973) *Arcology : the city in the image of man (http://worldcat.org/oclc/34901911&referer=brief_results)*, MIT Press. ISBN 0262190605.
- Ian L. McHarg (1969) *Design with nature (http://worldcat.org/oclc/8518?tab=holdings)*, Published for the American Museum of Natural History [by] the Natural History Press."

External links

- Ecocity Summit 2009 ISTANBUL - TURKIYE (http://www.habitat.org.tr/index.php?option=com_content&view=article&id=378:ecocity2009&catid=75:ekokenr&Itemid=89)
- ECOPOLIS (http://www.habitat.org.tr/index.php?option=com_content&view=article&id=401:ecopolisecology&catid=75:ekokenr&Itemid=89)

- Working Group for Sustainable Cities at Harvard University (http://environment.harvard.edu/related-programs/sustainable-cities)
- Sustainable Cities (http://www.terrain.org/articles/13/strategy.htm), Terrain.org
- Ecocity Builders (http://www.ecocitybuilders.org/)
- Ecocity Summit 2008 (http://www.ecocityworldsummit.org/index2.htm), April 22-26, San Francisco, California.
- Ecocity Summit 2008 media site (http://www.ecocitymedia.org/)
- Which way China? (http://www.chinadialogue.net/article/show/single/en/297-Which-way-China-)Herbert Girardet, 2006 October 2, chinadialogue. Discusses the emergences of ecocities in China.
- Eco Cities in China (http://www.shannonmay.com/Publications.html) Publications by Anthropologist Shannon May on the transformation of Huangbaiyu, China into an Eco Village
- Los Angeles: A History of the Future (http://www.ithacahours.com/losangeles.html)
- Transition Towns, a organisation building sustainable cities (http://transitiontowns.org/)
- Resource Guide on Sprawl and the New Urbanism (http://www.lib.berkeley.edu/ENVI/sprawl.html)edited by Deborah Sommer, Environmental Design Library, University of California, Berkeley.
- Bicycle City (http://www.bicyclecity.com/)
- The Ecocity web forum (http://www.ecocityforum.com/), with a proposal for an environmentally responsible clean-slate ecocity.
- The Barbara Hardy Centre for Sustainable Urban Environments (http://www.unisa.edu.au/barbarahardy)

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