

Urban Sustainability Project:

Models for Sustainable Cities:

Proponents of Sustainable Cities

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2014

The term 'sustainable cities' is gaining wide popularity but its meaning depends on the source and interests of the user or organization. There is no commonly accepted definition of what constitutes a sustainable city or indeed of what constitutes sustainability in cities. It is therefore worthwhile considering the range of ways in which the term is being used and evaluate whether the definitions are complementary or conflicting.

The models which will be considered in this paper are:

- Green city
- Resilient city
- Smart city
- Innovative/creative city
- Sharing/Collaborative city
- Cultural city
- Happy city
- Healthy city

The evaluation of the models in relation to sustainability will be based on a range of economic, social, environmental and cultural parameters.

Models for Sustainable Cities

• Green City

Economic

A green city places emphasis on environmental awareness in the public and private realms, to be implemented by the local authority and residents. It will impose strict regulations on economic activities likely to generate pollution and will impose zero or near zero waste requirements, recycling and composting. It will provide encouragement and incentives for green building, the use of renewable energy and for the use of environmentally friendly goods and services. It can also become a beta site for the testing and promoting environmentally beneficial technologies, particularly for green building and household energy efficiency.

A green city is attractive to residential and property development but not to manufacturing industry. Its residents will purchase goods manufactured elsewhere and therefore has a high external ecological footprint but a low internal footprint.

Social

Green cities are usually associated with a high level of willingness of residents to participate in promoting public commitments, such as waste separation and recycling. Community connectivity is high and the achievement of environmental goals emphasizes the sense of 'place'.

Social activities, such as community gardens, strengthen inclusiveness and community resilience.

Environmental

A green city not only reduces its internal footprint but also promotes environmentally beneficial actions, such as the protection of urban biodiversity and maintenance of ecosystem services. Large green spaces may be preferred to distributed small parks. Environmental awareness is strongly promoted in schools and all educational activities. Environmental awareness however is not always translated into environmentally sound

behavior and sustainable lifestyles. A 'green' city, with an emphasis on tree-planting and parks, may not be sustainable if its residential buildings are low density and highly dependent on private transportation.

Cultural

A green city is a city which appreciates the past as well as looking to the future. It will pay attention to the conservation of the built environment, to historic heritage and to the encouragement of cultural diversity.

• Resilient City

Economic

A resilient city will be capable of coping with financial and economic shocks and crises and is able to harness new opportunities which may arise from a crisis situation. It will have conducted a thorough analysis of possible risks and be ready to cope with implementing precautionary measures and coping with the residual risks in an efficient way to enable its citizens to overcome stress and distress. It will establish financial institutions capable of supplying credit to small as well as large business interests and takes steps to encourage and support a wide range of small scale enterprises. It will establish infrastructures which are capable of supplying services, reducing dependence on outside sources and reducing major disruptions whatever their cause.

A resilient city fosters a localized economy, utilizing the expertise and capabilities of its residents and enterprises and keeping the profits for the benefit of the local community rather than losing them to large scale chain stores. Some have experimented with local currencies.

Social

A resilient city is an inclusive city which fosters individual and community networks for adaptation to changing circumstances, reducing stress from any form of disruption and provides a safety net for

those whose circumstances do not currently enable them to be socially and economically independent.

It encourages social enterprises and cooperative business structures.

Environmental

A resilient city is capable of coping with sudden environmental events and is well adapted to slowly changing environmental conditions. It has highly developed physical infrastructures able to reduce disruption caused by a sudden event, such as flooding, and has required all built structures to be prepared for adaptation to climate change.

Cultural

A resilient city encourages diversity. It welcomes cultural differentiation and promotes acceptance and cooperation which cut across cultural boundaries. It accepts differences in the meaning of 'place'

• Smart City

Smart cities are associated with 2 features:

- High density urban residential development which enables the efficient provision of public transportation and other services
- Intensive information connectivity networks which enable the identification , monitoring

and management of public infrastructures

Economic

Smart cities are capable of providing high levels of accessibility to all residents and high levels of data management for public services. They will be attractive to economic activities requiring a high level of efficiency of service and should reduce the costs of their operation. They will enable job mobility and support freelancing, increasingly important as job security decreases. Dependence on the highly efficient infrastructures may expose business to risks if those infrastructures fail or are disturbed by any natural or manmade source.

Social

Smart cities provide the infrastructure to all. They are not concerned about how the individual may use those infrastructures or the wellbeing of the residents.

Environmental

Smart cities are ecologically efficient cities which should be able to reduce their internal ecological footprint through preventing loss or waste of resources. They are particularly effective in the

efficient use of space (density of building), the efficient operation of transportation, water and energy supply.

Smart cities can build into their networks abilities to detect risks, monitor adverse conditions or emissions, apply the relevant measures for their control and identify the sources of adverse impacts for regulatory inspection and enforcement.

Cultural

Smart cities are not particularly concerned with cultural parameters.

• **Innovative/creative City**

Economic

An innovative city seeks to promote new and different approaches to achieving economic prosperity than the currently used business models. Innovation and creative models are more frequently the result of a transfer or transformation from one discipline or expertise to another than the result of a new invention totally unknown beforehand. The innovative city therefore seeks to attract creative people, willing to make new contacts and open to exploring exchanges of ideas and information through formal or informal channels all over the world. It seeks connectivity and flexibility. It does not rely on what is already known but enables and encourages experimentation with the unknown. It seeks open source expertise and encourages wide participation in a globalized world economy.

In terms of employment, the innovative city may consist of a rather dynamic but unstable population, which is ready to change direction, move frequently, work odd hours, connect up with different people at different times of the day according to the project in hand, work for several different employers or self employed and be prepared for gaps of low or non employment.

For the employers, the innovative city is a rapidly changing form of employment according to the projects in hand, gathering networks of employees according to current needs and not building a longterm permanent team of staff.

It is a city which takes risks. Innovation does not always end up in success – it can also fail and fail frequently before a success story is found. It therefore may result in having a

changing population which is capable of accommodating changes quickly and easily, knowing that it may not be able to take on longterm commitments of large payments.

Social

An innovative city is likely to be dynamic and changing, with ups and downs, with unstable and changing employment and income. It is unlikely to be a stable 9 to 5 working day with clearly defined longterm prospects for taking major credit commitments and loans. It is therefore likely to generate social conditions which are capable of accommodating rapid and frequent change, such as 'light assets' which would depend on using services. It avoids accumulating 'heavy assets' such as

property, which cannot be realized quickly for relocation or which require heavy mortgage commitments which cannot necessarily be met.

It promotes a different form of consumption, based on access not acquisition, renting services rather than purchasing products. It would greatly benefit from collaborative consumption.

The innovative city may be a very unstable community, highly connected but unable to pursue long term relationships and build long term commitments to public as well as private interests. It may have a lesser sense of 'place' and accept any location according to the dynamic changes it undergoes. It may have weaker family ties and stronger but short term geographical community ties.

It may not be sufficiently attentive to those who do not or cannot play an active part in innovative activities and find themselves in a socially disadvantaged position, in need of support but unable to make any contribution. An innovative city may become a socially divisive city, with severe gaps between those who succeed and those who do not. In that situation, it is not building resilience but is much more dependent on opportunism.

Environmental

The environmental consequences and enabling conditions for an innovative city are not yet clearly identifiable but it is possible to point to a few directions.

An innovative city will provide a high level of infrastructures to attract investment in new ideas and enable a high level of connectivity. It is likely to be a smart city, with good public accessibility to promote connectivity and highly developed information networks.

The need for flexibility may reduce the ecological impact of its residents by reducing asset accumulation, promoting the use of services rather than the acquisition of properties and products and the lack of a guaranteed income may encourage saving and efficiency.

However, innovation has its risks. Some innovation may not succeed and will end of with a waste of resources. Risks may also include environmental risks and therefore be less cautious concerning possible impacts of pollution or toxicity. The precautionary principle in fact is not conducive to innovation and may even promote an averse risk approach which would stifle innovation.

Cultural

An innovative city could be innovative in culture as well as in promoting economic prosperity. As an open dynamic society, creative culture may contribute to promoting innovative thinking and may itself be a part of a creative and innovative city.

However, an innovative city focusing on economic prosperity in the future, may not give due

attention and consideration to the past, such as historic heritage, nor may its residents have the time or income available to enjoy cultural activities.

• **Sharing/Collaborative City**

Economic

The sharing or collaborative city promotes the provision of services in preference to the purchase of goods. Sharing space, workspace, equipment, transport or sharing the time of an expert, sharing data and information (open source) are all manifestations of the basic concept that living well does not necessarily depend on one's ability to purchase property and goods. 'Yours is Mine' (Rachel Botsman) enables 'light asset' living. It requires different types of business models, the development of trust between the provider and the users, new forms of insurance to cope with issues of liability for damage and new types of regulation to enable multiple users at different times of the day or week.

Under utilized assets or property are essentially a waste of capital infrastructure. They are used for only a part of the time they are available and the efficiency of their use could be increased. More intensive use of existing facilities would delay or even reduce the need for adding new facilities and reduce the costs of use between multiple users.

The sharing or collaborative city requires geographical proximity to enable easy and convenient access to the service needed and requires a high level of digital mobile devices to enable a very high level of connectivity between residents.

Social

Sharing has a strong social element. People are interested in sharing and collaboration not only for gaining access to the service at a lower cost but also because it generates connections between people and encourages inclusiveness. Sharing creates relationships between people and generates trust between those sharing the same item or service. It therefore contributes to community resilience.

Environmental

Sharing reduces the need for unnecessary and wasteful purchasing by individuals or households. It not only reduces the costs of obtaining the service but reduces the demand for energy and resources to provide a lower quantity of goods. It also reduces the level of physical infrastructure required to provide the services rather than to accommodate the goods.

Cultural

Sharing has a cultural element based on joint values and a willingness to be part of a joint framework of users. Although it is frequently associated with communism and in Israel with kibbutz life, it has a much wider connotation that builds on a willingness to share as opposed to a strive for individual attainment. It compromises marketing based on the need for conspicuous consumption to demonstrate social status.

• **Cultural City**

Economic

Cities which are able to put an emphasis on the performing arts, creativity or on historic cultural heritage have a strong economic base supported by a high level of economic activity. Support for cultural activities requires both time and available income which may characterize cities with a significant proportion of population able and willing to give that

support (such as an older population) or cities with a strong attraction for tourism.

Social

Support for cultural activities and heritage may be associated with community engagement but could equally be individual preference. It would not therefore be a pre-requisite to strengthen connectivity and resilience for a cultural city.

Environmental

Emphasis will be on the manmade landscape and built-scape of the city rather than on ecosystem function or on the ecological footprint of its inhabitants.

Cultural

Multi cultural interested in promoting a mosaic of cultures, individually, jointly and cross-culturally.

• Happy City

Economic

A Happy city enables its residents to have the free time to enjoy activities which contribute to happiness. It may not encourage a devotion to long working hours which do not enable free time for social, family and community interaction. Incomes may therefore be somewhat lower and consequently consumption patterns will seek to reduce costs.

It encourages proximity of workplace to reduce time wasted on commuter travel, which is reflected in smaller dwelling units at higher densities with less space for purchasing little used equipment

The emphasis on connectivity encourages local business to maintain personal relationships with local clients, build trust and take responsibility for providing ongoing services.

Street facades are active, open and attractive to pedestrians.

Social

The emphasis on community and neighbourhood engagement and connectivity encourages activities along streets and in public spaces, promoting multiple experiences and casual encounters between residents. Streets are safe.

Environmental

Parks are for people. The Happy city gives preference to greenery which evokes pleasure and provides social experiences rather than supports ecosystems. Green spaces are therefore more dispersed and easily accessible as pockets and strips.

The emphasis on connectivity encourages community gardens and common gardens, not separated by walls and fences.

Cultural

Reduction of commuter distance can contribute to the revitalization of inner urban areas

• Healthy City

Economic

Healthy cities will not tolerate pollution which affects human health therefore will impose severe restraints on economic activities likely to generate air pollution, noise or toxic substances which could impose risks on the surrounding areas. Priority will be given to clean urban transport.

Healthy cities encourage physical activity to combat the common symptoms generated by an over sedentary lifestyle. They encourage getting to work by foot or bicycle and reduce long

distance motorized transport.

Social

Healthy cities will require fast and easy access to medical services, which requires high densities to enable the provision of services.

Such cities focus on healthy lifestyles and on combating unhealthy symptoms, particularly obesity, smoking and accidental injury. They encourage engagement in sport and physical activity for all ages. They pay particular attention to ensuring a high level of social contact for ageing populations.

Environmental

Health and environment are often complementary when involved in reducing exposure to pollution. However a healthy city will put the emphasis on public access to parks which are easily accessible and useable and encourage people to get out of a sedentary lifestyle rather than on their value for natural ecosystems or biodiversity.

Cultural

Healthy cities do not necessarily have a cultural agenda.

Evaluation of Models for Sustainable Cities

• **Economic parameters**

Level of employment or some measure of job security over time as much employment may be short term, part-time or freelance

Accessibility in terms of whether available to all, rapidly accessible and at what cost

Availability of collaborative or sharing solutions and business models which can be easily accessed from personal mobile devices

Availability of services as an alternative to purchasing products

Innovation in terms of new enterprises, jobs and services

Economic resilience of the local authority and of inhabitants to adapt and cope with risks and uncertainty in available household income

• **Social parameters**

Inclusion which is reflected in the engagement and involvement of all sectors of the population at all ages

Connectivity through geographic proximity, through community networks and through social media

Community resilience of the local authority and of neighbourhoods to adapt and cope with any kind of risk or change and to harness opportunities for strengthening wellbeing

Personal resilience of inhabitants to cope with change, risks and disturbances without a breakdown of social structure

• **Environmental parameters**

Resource efficiency relating to the local use of space, energy, buildings and structures, infrastructure, materials and water

External Ecological footprint, relating to the impact of consumers on planetary resources

Waste minimization of all sources of domestic or industrial waste

Ecological resilience relating to the ability of ecosystems to provide provisioning and regulating services

• **Cultural parameters**

Richness of cultural variety of all sectors of the population

Cultural resilience to maintain the cultural physical heritage and the performing arts of communities

Combination of models

- Complementary, where the characteristics of the models can support each other
- Conflicting, where the characteristics of the models detract from one another

Evaluation of Models of Sustainable Cities

	green	resilient	smart	innovative	sharing	cultural	happy	healthy
Economic								
employment								
accessibility								
sharing								
services								
innovation								
Economic resilience								
Social								
inclusion								
connectivity								
Community resilience								
Personal resilience								
Environmental								
Resource efficiency								
External footprint								
Waste minimization								
Ecological resilience								
Cultural								
Cultural richness								
Cultural resilience								