

EFFECTIVE APPROACH TO ACHIEVE SUSTAINABLE URBAN RENEWAL IN DENSELY POPULATED CITIES

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ABSTRACT

To ensure that urban renewal can address urban decay problems effectively and satisfy different parties in a territory, many scholars in the world recommend sustainable urban renewal. Sustainable urban renewal is a concept to integrate global concept of sustainability into urban renewal process. In order to transform such abstract concept into real practices, an effective approach should be worked out. With reference to previous studies and foreign examples, urban (re)development projects can be more sustainable through urban design. To work out how urban design would affect triple sustainable values i.e. economy, environment and social equity of urban renewal projects in Hong Kong, a study investigating this issue is initiated. By conducting questionnaire survey to collect the views from experienced practitioners in local construction industry, urban design features that have significant impacts on the sustainable values can be identified. It is believed that the research findings of this paper can strengthen the understanding of local developers, urban designers and government officials on how to plan a sustainable urban renewal project afterwards.

Keywords: Urban Renewal, Sustainability, Urban Design, Hong Kong, Practitioners

INTRODUCTION

Urban areas especially in the early-developed cities grow and deteriorate from time to time. Adversely changed urban environment worsen the living conditions of the citizens and therefore, urban renewal projects to improve the built environment take place. However, many projects fail to tackle the problems of urban decay and to satisfy affected parties, and hence generate some negative outcomes including destruction of existing social and community networks (Couch, 1990), expulsion of vulnerable groups like low income group and the elderly (Rothen-

berg, 1969) and presence of undesirable features e.g. air, noise and air pollutions, traffic jams, etc. (Alexandre, 1992).

As a result, many scholars, planning practitioners and officers in the West recommend incorporating global concept of sustainability into urban renewal process in recent years in order to create sustainable community. Like other Asian-pacific regions, Hong Kong has been influenced by this trend and the Government attempts to promote and implement sustainable (re)development in the territory since late 1990s.

When the people in Hong Kong have been struggling to identify some effective ways to achieve sustainable (re)development, overseas urban design literature coincidentally claims that urban design can contribute to enhancement of economic, environmental and social values which are the fundamental components of sustainability. Therefore, this study aims to justify this idea by collecting the views from experienced practitioners in the local construction industry.

SUSTAINABLE URBAN RENEWAL APPROACH

To minimize the deficiencies in the urban renewal projects, a sustainable approach to urban renewal process is necessary. One way to develop such approach is to apply the concept of sustainability to urban renewal (Lee, 2003).

The concept of sustainable development to safeguard the interest of generations has been initiated since 1980s. Sustainable development was clearly defined in Brundtland Commission Report as “a development that meets the needs of the present generation without compromising the ability of future generations to meet their own needs” (WCED, 1987). In recent decades, many people have revisited this concept and produced more than hundreds other definitions. When examining those definitions, it can be noticed that economy, environment and social equity are 3 foremost sustainable values commonly recognized in the world, which should be considered, merged and balanced for the benefits of current and future generations.

Recently, sustainable urban renewal approach integrating global concept of sustainability into local urban renewal process is gradually recognized in the world and many states or cities start to incorporate this idea into their planning strategies. For instance, Californian government makes effort to assess the urban redevelopment plans to ensure that sustainable development elements are taken into account (Devuyst, 2000). The Community Redevelopment Agency of the City of Los Angeles also implements sustainable development practices in economic, environmental and social redevelopment of deteriorated urban neighborhoods (Pincetl, 2001).

Since late 1990s, the Hong Kong Government also attempts to incorporate the idea of sustainability in urban renewal strategies in addition to urban development (Fung, 2001). Housing Planning and Lands Bureau (2001) emphasized that promotion of sustainable development in the urban area was one of the main objectives of urban renewal in Hong Kong. Urban Renewal Authority, a quasi-governmental agency responsible for renewal related works in Hong Kong, takes into account the principles of sustainable development when planning and executing urban renewal programmes.

Even though the Hong Kong Government has a clear and correct direction to future development of urban renewal and the academics strongly recommend adoption of sustainable urban regeneration approach, the query about how to achieve sustainable urban renewal has to be resolved. Urban design literature in the West coincidentally claims that urban design can contribute to enhancement of economic, environmental and social values (Vandell et al, 1989; Rowley, 1998), and improve the quality of life of the citizens (Couch, 1990; Lee, 2003).

Vandell, Lane and Kain (1989) have analyzed the design qualities of a set of 102 commercial buildings in the United States and they found that good design did not necessarily cost more but the rental value consistently increased. Investors, developers and users are beneficial as more investment opportunities are offered, higher return can be obtained, more jobs are created, better environmental quality is provided and more accessible amenities are available in well-designed city (CABE & DETR, 2001). Furthermore, Lee (2003) studied the design characteristics of 7 urban redevelopment projects in Seoul and he concluded that good urban design led to higher level of residents' satisfaction.

From the foreign examples, it seems that urban design is very effective in creating sustainable communities and achieving sustainability in a (re)development. In order to work out whether sustainability of local urban renewal projects can be enhanced following the same way, this study has collected the views from experienced practitioners in the local construction industry on how urban design would affect 3 sustainable values in Hong Kong renewal projects.

IDENTIFICATION OF SIGNIFICANT URBAN DESIGN FEATURES FOR URBAN RENEWAL PROJECTS

Selection of Urban Design Features

Urban design in this study refers to an urban planning process to satisfy functional and aesthetic needs on a local scale. The urban design objectives are so abstract that they should be transformed into concrete design features (DETR, 2000). Design features are components/ elements found in a development. Rowley (1998) has published 50 urban design features categorized into 4 concerned areas

namely functional and social use considerations; natural environment and sustainability considerations; visual considerations, and the urban experience which should be considered in securing the quality of urban design. Lee (2003) also pinpointed that more than 30 urban design features could be incorporated in the redevelopment programme to make the downtown areas in Seoul more sustainable.

After the literature review, 46 features commonly observed in the communities with good urban design are short listed (Table 1). The features in the table are not conclusive but the most typical design characteristics are included.

Table 1. List of Urban Design Features

URBAN DESIGN FEATURES	
D 01. Mixed development	D 24. Provision of accommodations
D 02. Establishment of local business activities	D 25. Provision for basic needs of disabled, elderly or children
D 03. Variety of business activities	D 26. Community involvement in public decision making
D 04. Provision of public facilities	D 27. Sense of belongings on community
D 05. Diversity of public facilities	D 28. Security against crimes
D 06. Provision of open spaces	D 29. Convenience, efficiency & safety for drivers
D 07. Presence of nightlife	D 30. Convenience, efficiency & safety for pedestrian
D 08. Adaptability of development to the changing needs	D 31. Convenience, efficiency & safety for public transport users
D 09. Efficient use of land & space	D 32. Access to provisions for disabled, elderly or children
D 10. Management of buildings, facilities & spaces	D 33. Access to public facilities
D 11. Provision of pollution control measures	D 34. Access to open spaces
D 12. Air quality & noise level	D 35. Access to work
D 13. Installation of energy efficient devices	D 36. Proximity to business activities
D 14. Optimization of natural lighting & ventilation	D 37. Accessibility of the development
D 15. Incorporation of environmental design	D 38. Building design & overall appearance
D 16. Use of recycled, recyclable/ durable materials	D 39. Compatibility with neighborhood
D 17. Wildlife conservation	D 40. Building density, height & mass
D 18. Installation of water saving devices	D 41. Layout of building and streets
D 19. Waste management	D 42. Design of open spaces
D 20. Preservation of historical structures & features	D 43. Provision of landscapes e.g. trees, planters
D 21. Promotion of local distinctiveness	D 44. Appearance of street furniture
D 22. Preserving & facilitating social network	D 45. Appearance of pedestrian routes & sidewalk
D 23. Availability of local employment	D 46. Rehabilitation of repairable building structures

Methodology

In this study, questionnaire survey was adopted to collect data. A total of 30 experienced practitioners representing different disciplines of town planning, architectural design, and property development were invited to answer a questionnaire on sustainable urban renewal in March 2005. All of them are building professionals and nearly 90% of them have worked in the construction industry for 10 years or above. These parties were selected as target respondents because they have actively involved in various stages of urban (re)development.

There are two parts in the questionnaire. In the first part, the respondents are required to rate the importance of 46 urban design features on each of triple sustainable values namely economy, environment and social equity of urban renewal project. In this survey, a 5-point Likert-type scale between 1 and 5 is used. 1 represents the least important design feature while 5 represents the most important design features. In the second part, the practitioners are asked to fill in some personal information e.g. *Gender, Age, Education Level* and *Average Monthly Personal Income*. In this study, descriptive analysis was employed to analyze both attitudinal and demographic data collected from the questionnaire survey.

Table 2. Personal Information of The Respondents

	Percentage (%)
Gender	Male 73
	Female 27
Age	<30 10
	30 – 39 40
	40 – 49 47
	≥ 50 3
Education Level	High Diploma 7
	Bachelor Degree 50
	Master Degree or above 43
Average Monthly Personal Income	< HK\$30,000 38
	HK\$30,000 – HK\$69,999 48
	≥ HK\$70,000 14

Findings

Demographic Characteristics of The Respondents

The demographic characteristics of the respondents are presented in Table 2. It is not surprising to notice that more than 70% of respondents are male. In the construction industry, the population of male is always higher than that of female. Since most of the respondents are professionals with experience of 10 years or more, half of them are over age of 40. Another fourth is between the ages of 30

and 39 and only a small remaining portion is below age of 30 or above age of 50. The respondents surveyed generally have achieved a higher education level. Half of the respondents have only obtained a bachelor degree while 43 % of them have attained master level or above. As many of the respondents are in managerial grades and senior positions, their incomes are relative higher than the public. 62% of them earn at least HK \$30,000 per month.

Foremost Urban Design Features Improving Triple Sustainable Values

Mean value of individual feature under each of 3 sustainable values is calculated and the results are then arranged in descending order of importance. 10 out of 46 design features with the highest mean values under each category are presented in Table 3 - Table 5.

Table 3. Top 10 Features for Enhancement of Economic Sustainability

NO	DESIGN FEATURES
1	D. 09 Efficient use of land & space
2	D. 08 Adaptability of development to the changing needs
3	D. 01 Mixed development i.e. various uses within the same building or an area
4	D. 02 Establishment of local business activities e.g. retail shops, banks
5	D. 36 Proximity to business activities
6	D. 03 Variety of business activities
7	D. 38 Building design & overall appearance
8	D. 35 Access to work
9	D. 23 Availability of local employment
10	D. 10 Management of buildings, facilities & spaces

The design features significantly improving the *economic sustainable values* are shown in Table 3 and the explanations of their effects are discussed as follows:

Every resource including land and space has value in alternative use (Barron, 2004). The use of a resource is regarded as inefficient if the alternative use has higher productivity and yields higher net benefits. Many low-density buildings in Hong Kong were built in the past and the maximum development potentials of sites were underused. Their property values are usually lower than the site redevelopment values; therefore, urban renewal to cover urban land by a more efficient and profitable use is likely to be considered to optimize the economic benefits.

The political environment and economy of a city, technology level, and demands of the citizens change when the time passes. Buildings and provisions within a development that are not capable to cater for changing needs will become obso-

lete very soon even though their service lives have not expired yet. To optimize full utility values of individual buildings and the facilities, and avoid premature replacement, the building and urban forms should be highly adaptable after redevelopment (Montgomery, 1998).

Mixed-use development is a preferred approach to be adopted in urban renewal projects to revitalize derelict areas in Hong Kong. Since Hong Kong is a densely populated city with compact urban form, there is enormous potential for diversified uses located in the same district. Mixed development with great variety of activities can attract the investors and consumers to move in to stimulate the economic growth of an urban area as the time for searching various activities can be saved.

Obviously, establishment of business activities e.g. retail shops, banks can motivate public consumptions and new investments in neighborhoods. Proximity to commercial establishment probably improve the property transaction values since the buyers in general are willing to pay more if they can get what they want conveniently in their daily life operations (Li & Brown, 1980). Hence, the respondents preferred to have different business establishment proximity to their properties after completion of urban renewal programme.

Like other Asian countries, property market plays an important role in stimulating economic growth in Hong Kong. High property transaction prices in the real estate market characterize prosperous economy. According to Li and Brown (1980), the property sale price increases when the visual appearance is to the satisfaction of the public. Apart from the sale values, good building design and nice appearance also increase the rental value of buildings (Vandell et al, 1989). To achieve good performance of property market and continuous development of the economy, due consideration to building design and appearance is necessary.

Not surprisingly, the practitioners believed that urban design created jobs by attracting new business and retaining contemporary companies in particular area after urban renewal. Availability of employment draws population while high concentration of people supports local economic activities (Oktay, 2004). As mentioned by Corbett and Corbett (2000), distance from work is negatively related to productivity. Therefore, access to work is perceived as one of top 10 design features for enhancing economic sustainability.

To minimize general expenses, effective management of buildings, facilities & spaces is required. Routine maintenance, one of the major building management activities, reduces the deterioration rates of the structures and their facilities, and lowers the operation and future repair costs (Miles & Syagga, 1987). Reducing in energy consumption through proper management also saves capital expenditure (Chartered Institute of Housing, 2000). An example provided by Corbett and Cor-

bett (2000) showed that a corporation saved approximate \$18 million in a year by switching off office lightings, air-conditionings and equipment when they were not in use. The money saved can be spent elsewhere to get a better return.

Table 4. Top 10 Features for Enhancement of Environmental Sustainability

NO	DESIGN FEATURES
1	D. 11 Provision of pollution control measures
2	D. 12 Air quality & noise level
3	D. 16 Use of recycled, recyclable or durable materials
4	D. 13 Installation of energy efficient devices
5	D. 14 Optimization of natural lighting & ventilation
6	D. 06 Provision of open spaces e.g. parks, seating areas
7	D. 43 Provision of landscapes e.g. trees, planters
8	D. 19 Waste management including waste collection, reduction & recycle
9	D. 18 Installation of water saving devices
10	D. 15 Incorporation of environmental design e.g. sun shades, balcony

Environmental sustainable design features in Table 4 are discussed below:

Measures / technologies to control pollutions or maintain the air quality and noise level to acceptable standards can offset the negative impacts of developments on the environment. To reduce total amount of wastes generated in the long run, reuse and recycling of materials are required. Apart from recycled and recyclable materials, durable materials can also be used as they are long lasting, and do not require frequent maintenance and replacement. Proper waste management is beneficial to the environment. For instance, total amount of domestic solid waste can be reduced when waste recovery programme including separation of waste paper, aluminum cans and plastic bottles is initiated.

Consumption of natural resources can be more effective through either building design or mechanical means. Proper building orientation and façade design to maximize the ingress of sunlight and facilitate natural airflow, provision of external shading devices such as fins and balconies, etc. regular heat entering and leaving the buildings without inducing excessive solar heat gain and loss. Therefore, only reasonable amount of energy is required to be used for providing artificial lighting, and additional cooling and heating (Chartered Institute of Housing, 2000). In addition, installation of environmentally friendly fittings such as energy efficient and water conservation devices can prevent unnecessary wastage of scarce resources like power and water during operation of the buildings.

Natural landscape and open space are important to protect urban ecology. Open spaces are regarded as city lung of urban areas. Green spaces such as parks ame-

liorate local climate (Oktaç, 2004). Trees and plants are useful to moderate wind speed and regulate wind direction to change the airflow patterns between and within the buildings (Corbett & Corbett, 2000). In addition, they provide shading over the land surfaces to control indoor and outdoor temperatures. A study undertaken by the University of California revealed that the ambient temperature in well-shaded areas is about 10 degrees lower than that in poorly shaded regions (Corbett & Corbett, 2000). Moreover, vegetation filters the air. Smith (2000) pointed out that planting remove up to 75% of suspended particulates in the ambient air, regulate the level of greenhouse gas i.e. carbon dioxide and release oxygen into the atmosphere.

Table 5. Top 10 Features for Enhancement of Social Sustainability

NO	DESIGN FEATURES
1	D. 04 Provision of public facilities e.g. school, medical services, sports facilities
2	D. 28 Security against crimes
3	D. 27 Sense of belongings on community
4	D. 22 Preserving & facilitating social network
5	D. 26 Community involvement in public decision making
6	D. 32 Access to provisions for disabled, elderly or children
7	D. 25 Provision for basic needs of disabled, elderly or children
8	D. 31 Convenience, efficiency & safety for public transport users
9	D.30 Convenience, efficiency & safety for pedestrian
10	D.06 Provision of open spaces e.g. parks, seating areas

The following paragraphs indicate how design features presented in Table 5 enhance the *social sustainability*.

Provision of public facilities not only meets the basic needs of the citizens (Rothenberg, 1969) but also offers venues for holding different leisure activities. To look after vulnerable groups such as disabled, elderly and children within a community, special provisions should be readily available for their uses. Open spaces provide a buffer zone in crowded areas to facilitate social gathering and public interaction. Most of them are public goods so that everyone belonged to various socio-economic groups can enjoy. Thus, sense of place can be promoted.

Security is an essential element in every neighborhood. As said by Corbett and Corbett (2000), people prefer to stay in a safe and security place where thieves, burglars or vandals are absent. The public would like to know what is going on in the public areas around their dwellings and hence urban design that fails to keep the spaces under public surveillance reduces a sense of security of the citi-

zens. Public participation is another matter of concerns during urban design process. When the residents are involved in urban design of their communities, the finalized design proposal is very likely to meet their needs and desires. Since they are able to assist in shaping the community, they feel that they are part of the community and their senses of belongings are also enhanced.

The respondents pinpointed that existing community network had to be conserved after urban renewal. Throughout the years, many practitioners commented that disruption of existing social network was a negative outcome of urban redevelopment. As rehousing resources are inadequate to meet the demand of affected citizens in Hong Kong, relocation of properties' or businesses' owners is inevitable. In order to safeguard the interests of local residents, daily activities, customs, ways of living and interaction, etc. of existing community should be retained.

Accessibility is also an essential theme in improving social sustainability. Everybody regardless of his/her age and physical condition should have proper and convenient access to certain places in their daily lives. Freedom of movement from place to place is recognized as a basic human right that should be preserved anyway. Provisions of convenient, efficient & safe public transportation routes and pedestrian walkways are vital as they increase social contact at street level. When the people walk around or travel by mass transportation systems, they can meet their friends and thus inter-personal relationship improves (Lee, 2003). Promoting effective mass public transit and frequent walking can improve social cohesion as well as public health since reduction in total traffic volume increases chances for the pedestrians to do healthy and mild exercise, lowers the amounts of harmful pollutants, and reduces stress on drivers and pedestrians (Corbett & Corbett, 2000).

CONCLUSION

Hong Kong was a former colony of the United Kingdom from 1840s to 30 June 1997. Within 160 years, Hong Kong underwent rapid developments in various aspects e.g. physical, political, financial and social dimensions. As a result of limited land supply, changing economy and population needs, high-density urban form of development is adopted here. Such development forms not only creates crowded living environment, traffic congestion and incompatible land uses but also poses constraints on urban design (Fung, 2001). In order to cope with changes in various aspects and address different urban problems, more and more urban renewal schemes are undertaken nowadays. With reference to the foreign examples, urban renewal projects can be more sustainable and good communities can be created through urban design. The questionnaire survey conducted in this

study has confirmed that urban design features had significant impacts on 3 foremost sustainable values i.e. economy, environment and social equity.

Someone may argue that it is preferable to incorporate top 10 design features under each of 3 categories in an urban renewal project. Nevertheless, it is impossible as the projects often incur financial and site constraints. Therefore, the policy makers have to make a trade-off among options. To ensure that right decision can be made, the characteristics of the region undergoing urban renewal, site constraints and preference of affected residents should be well known. The ideal will be to have an urban renewal proposal that is capable to achieve possible economic growth without sacrificing environmental and social needs for the benefits of current and future generations.

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