

STRATEGIES FOR ACHIEVING PEDESTRIAN ORIENTED AREAS TO ENCOURAGE ATTENDANCE AND INCREASE URBAN SUSTAINABILITY

***Mohamad Moayedi**

P.h.D Candidate, Science and Technology University, Iran

**Author for Correspondence*

ABSTRACT

As cities affect the environment; some theorists blame them for environment demolition. Urban development has increased the importance of environmental quality. Environment includes human, recourses and processes transforming materials to products. It has three dimensions: natural, artificial and socio-economic. Recent experiences underpin that sustainability policies need to be considered at inception point of any project. Transportation is of main issues of urban sustainability. Walking which is accomplished in pedestrian streets is vital for peoples` everyday life. Community comes to reality only by signifying those streets. This survey, using analytic-descriptive method, has reached to the point that pedestrian street has undeniable role in developing environment. Thus, its efficiency will be improved by using objective and subjective aesthetic, functional and environmental components. To reach them, Plans and strategies have been presented here.

Keywords: *Sustainability, Urban Sustainable Development, Urban Space, Pedestrian Oriented Space, Walking, Urban Ecology.*

INTRODUCTION

Urban environment as an ecosystem is a complicated living organization, developing constantly. Selecting "sustainable development" as the main slogan of third millennium, is the result of development effects on biosphere (Qarekholo, 2005, 157). Human unreasonable intervention in the environment have resulted in disasters (Hall, 2005). Urban development dominates natural environments that leads to various contaminations, mental illness, lack of drinking water and hygiene and much more wastes (Zebardast, 2003, 155). Planners need to find a way to accomplish sustainability policies in cities(Shieh,2007,199). Walking and preparing the space for attendance are of those policies that implicates restricting motorized vehicles. Hence, nowadays theories focus on walking as a sustainability index.

The main question of this survey is: what environmental criteria are necessary to reach a sustainable city? To find the answer, sustainable development and pedestrian streets will be expanded at first, and then designing policies will be presented.

THEORY

Sustainable development:

Fast urban development has affected human life and made the environment unsustainable as well (Mofidi et al, 2008, 15). Unsustainability dimensions are presented in table (1):

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Table1. Spatial scale of environmental problems (Shin et al,1997)

Continent/earth	Region	Metropolitan areas	Communities	House hold/job location	Spatial scale
	- high ways - water resources - power supply factories	- industrial parks - roads - the confluence of latrines - medical plans - brown fields	- drinking water - drainage - wastes - streets/paths	- shelter - water supplies - situ sanitation - ventilation	Key infrastructures
- acid rain - earth warmth - Ozone	- water pollution - ecologic destroyed areas	- traffic - accidents - environmental conditions - pollution - toxic wastes	- drainage collection - waste disposal - flood prevention - noise/stress - natural hazards	- substandard housing - water shortage - no hygiene - dieses - inner air pollution	Organizational problems

Five main effects of environmental problems are: health, safety, productivity, amenity value and ecological value. Hence, regarding minimum pollution, energy productivity, biodiversity, reuse of burnt lands are doubly important(Strong,Hemphill,2006,485). "sustain" as a verb, first used in 1290 in English language, but has its roots in Latin language: "sub" and "ten ere", "keep or preserve". Oxford lexicon refers "sustainable" originality to about 1400 years ago and describes it in different ways. However, it is just few decades that it has got its current meaning: "what can be continued in the future"(Soflayi,2003,62). Two definitions below clarify its nature more:

1. Improving quality of life, considering capacity of the environment,
2. Meeting contemporary needs without constraining future generations` ability to supply theirs(Hamideh et al,2006,5).

Development is also in contradiction with growth which stipulates qualitative contents like quality of life, welfare, hygiene, education and etc(Dalirzadeh,2005,93). It includes three key words: evolution, change and progress. Evolution is long term alteration. Change is a measurable process in short term. Progress is dynamic moving forward(Taqizadeh,2007,280). Sustainable development is a universal content following public benefits, freedom, democracy and equality(Gladwin et al,1995,876). Sustainable development indexes are categorized in ecologic, economic and social classes. Campbell believes in two ways of reaching to sustainable development: substantive way in which economic and ecologic knowledge are helpful and procedural way, including policy making and scheme(Campbell,1996,305).

Urban sustainable development:

It is not exactly stabilizing each subsystems, but is decided to equipoise social advantages, ecologic conservation and reconstructions by economic growth(Button,2002)(Riley,2001). In Peter Hall's point of view, urban sustainability implicates these issues:

- Urban sustainable economy, causing job and wealth,
- Urban correlation and integration,
- Urban sustainable shelters, causing proper and available housing,
- Urban sustainable ecology, causing solid ecosystems,
- Urban sustainable accessibility, causing conserving resources of social movements,
- Urban sustainable life, causing a live city,
- Urban sustainable democracy, causing empowering citizenship rights(Hall,Pfeiffer,2000).

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Pedestrian oriented spheres and urban sustainable development:

Walking is a harmonic movement style along with sustainable planning principles. It also involves visual senses, participation and public education. Jane Jacobs believes in pedestrian streets as main public spaces, which have their own social and physical structures(Jacobs,2004,13). Table(2) expands the connection between sustainable development and walking:

Table2: Connection between sustainable development and walking

Connection between sustainable development and walking	Sustainable development principles
Walking in short distance, especially in city centers would decrease energy consumption. It is predicted to build walking neighborhoods in most countries up to the end of 21 st century(Sadeqi et al,2008,153).	Energy economy
Riding non-motorized vehicles is the most sustainable form of energy consumption.	Replacing unsustainable energies with sustainable ones
Studying climate change and world warmth during past years expresses this fact that compact buildings, people or actions in a small area named city, increase wind, temperature, rain and contaminants. Greenhouse gasses and many other ones are products of fossil fuels which may be decreased by using non-motorized vehicles.	Decreasing pollution
In today cities, highways are occupying lands increasingly as the result of motorized vehicles priority.	Transforming linear development to sustainable development
Automobiles, specially driven slowly or in on-engine mode produce a lot of air and sound pollutions and lower quality of life.	Necessity of clean air
We need to think if the quality of our lives is fit to our expectations. And does this current flow results in future generation welfare?	Future generation rights

The role of pedestrian streets in urban sustainable development:

Implementing literature review about pedestrainization, the first book is "pedestrian planning design", published in 1971, U.S.A(Fruin,1971). "urban space for pedestrian" in 1975 expanded city reformation topics(Pushkarev,Zupon,1975). "for pedestrians only" published two years later , in which non-traffic areas in city centers were studied(Brambila,Ango,1977). Appleyard in "livable streets" insists that streets should have social functions as well as service functions(Appleyard,1981). Gehl discusses about proper designing of pedestrian streets, emphasizing on social activities(Gehl,1987). Simpson talks about developing old city centers in his book(Simpson,1988). Street related issued are independent subjects in new urbanism, including pedestrians, safety, attraction, mixed landuses and social aspects(Bahreini, 1998,292). Before, cities were identified by their tall buildings or domes. But today, pedestrian streets are main indicators (Bramakan,2008,33).

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Advantages of pedestrian streets may be summarized as: connection, flexibility, comfort, breezing, clarity, not using unsustainable energy resources, no pollution, low on-course cost, reliability, exhilaration, dynamism(urban roads designing white paper,1995). Table(3) presents the role of pedestrian streets in urban sustainability:

Table3. The role of pedestrian streets in urban sustainable development

Environmental importance	Definition	Role
Preventing pollutions and activate people	Most contemporary cities are automobile oriented which lead to less activities and high risk(Ahmadi,Habib,2007). (Montgomery, et al,2008)	The role of physical and mental health
Increasing public control on environment and preventing harms	Pedestrian streets are beds of social interactions which increase public control and lower crime and disorders(Ahmadi,Habib,2007). (Montgomery, et al,2008)	Social role
Decreasing fuel consumption, traffic, etc	Pedestrian streets affect economic issues seriously and cause citizens` interaction with financial landuses.	Economic role
Decreasing unsustainable energy consumption and CO ₂ production, increasing greeneries	25% of pollutions rise from automobiles while transportation system energy consumption is about 12% in different countries(Ahmadi,Habib,2007). (Montgomery, et al,2008)	Ecologic role
Comfort, vitality, exhilaration, linked natural and human made environments	Pedestrian spheres pave the ways for social interactions which create memories. They strengthens people` image of the city(Ahmadi,Habib,2007). (Montgomery, et al,2008)	Perceptual role
Decreasing pollutants, conserving land, optimizing transportation system	Using non-motorized vehicles affects quality of life severely(Ahmadi,Habib,2007). (Montgomery, et al,2008)	Non-motorized vehicles
Compatibility with ecology, being inclined to walking, reduce the use of cars	Walking is healthiest and cheapest way of moving in cities, in harmony with the environment(Montgomery, et al,2008).	Proper spaces for walking
Using clean energies, meeting needs by walking, decreasing trips and contamination	Vehicles need to be environment-friendly, have low energy consumption with no sound pollution and be safe for the users. Optimized management is necessary for each city, designed for human priorities.	Trip management using pedestrainization

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Strategies for environmental planning in pedestrian streets:

Table(4) and table(5) present Policies and plans for sustainable designing of urban pedestrian streets:

Table4. Plans for sustainable designing of urban pedestrian streets

Inclusive dimensions		Quality components of sustainable city designing
Social interactions, survival, respect, celebrating the city, memories, customs, distinctive spots(Risser,Chaloupka,2010)	Social and cultural	Aesthetics (subjective approach)
Ecological sustainability related to drainage and wastes, air and sound pollution, traffic and greeneries (Risser,Chaloupka,2010)	Environmental	
Net income, life standards, retails, land value (Risser,Chaloupka,2010)	Economic	
Traffic control, directive signs and tools, proper image, bump removing, up leveled walk ways with streets	Physical	
Designing features, related to street networks, pedestrian streets and sidewalks (Risser,Chaloupka,2010).	Comfort	Aesthetics (objective approach)
Designing features, related to crime, landuses, attendance, violence (Risser,Chaloupka,2010)	Safety	
Variety, proximity of landuses, pedestrian streets network, related buildings (Risser,Chaloupka,2010)	Access	
Dynamism, time and responsibility (Risser,Chaloupka,2010)	Feasibility	
Diversity and complexity, scale, aesthetics, vitality (Risser,Chaloupka,2010)	Desirability	
Low air and sound pollution, safety, greeneries, slow down the traffic in neighborhoods(Fruin.2004)(Longo, 2004)		Environmental
Omitting cars from urban spaces and developing walkways (Fruin.2004)(Longo, 2004)		
Traffic management using public transportation (Fruin.2004)(Longo, 2004)		
Accessible for all groups with any age, gender, ability and color, safety against accidents, charisma and diversity, various facilities and equipments.		Functional

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Table5. Policies for sustainable designing of urban pedestrian streets

Designing policies	Components
<ul style="list-style-type: none"> - Protect pedestrians against accidents by designing alternatives - proper site selection for pedestrian streets - building responsive places by designing alternatives - illumination - directive tools and signs - desirable image - regarding human scales - bump removing - local materials, appropriate with climate - participation and vitality - respect interest groups by considering their opinion - predicting places for special events - urban furniture - protect valuable historic buildings 	Aesthetics (objective approach)
<ul style="list-style-type: none"> - Legibility - comfort - safety by designing alternatives - low traffic volume - predicting resting facilities - sense of place, meaning, perception - hygiene - spatial identity - signs and symbols 	Aesthetics (subjective approach)
<ul style="list-style-type: none"> - Improving public transportation <ul style="list-style-type: none"> - a network of pedestrian streets - linked greeneries to walkways - temperature and humidity, climate, wind - desirable landscape - local trees and plants - removing pollution origins - 24 hours landuses - encourage citizens to use public transportation - designing a movement pattern - recreational facilities 	Environmental
<ul style="list-style-type: none"> - People attendance days and nights - Considering gender in designing - Various landuses, with attention to consistency and harmony - Involving all groups of people in designing 	Functional

CONCLUSION

Findings show that transportation style, in harmony with the environment should be emphasized to decrease negative mental and physical effects. Vehicles affect environment via greenhouse gasses. Hence, using a sustainable urban transport system is undeniable for planners and managers. Walking is a main feature of sustainable cities, takes place in pedestrian streets. This system needs to be in harmony with roadways. Although using motorized vehicles is inevitable for long distance trips, but inner city trips may be done by proper site selection of landuses. We need to encourage people to use green transport systems specially walking, which have social, economic, physical and environmental roles. People need to be safe and far from hazards. An urban designer deals with public spaces and needs to find solutions for ecologic

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dilemmas. Two factors have to be considered in designing pedestrian streets. One is proper site selection and the other is charisma to attract people for constant use of the space. Considering objective and subjective aesthetic, environmental and functional factors help sustainable designing. Designers considering public transportation, traffic management, parking lots and sidewalks, create an attractive sphere for people` daily implementations, while conserving city environments.

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