

# URBAN PLANNING THROUGHOUT ENVIRONMENTAL QUALITY AND HUMAN WELL-BEING

## PLANEAMENTO URBANO ATRAVÉS DA QUALIDADE AMBIENTAL E DO BEM-ESTAR HUMANO

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### ABSTRACT

The cities of today present some requirements that are not similar to the past. There are cities that the industrial and service sectors are in decline; others begin their journey into the technological and industrial sector. In general, politically and socially are restructured in terms of its economy, which results in an entirely different shape to their primitive structures. As people begin to understand the dynamic nature of landscapes, they will change the way they see the landscape as a static scene. Sustainable cities must be simultaneously economically viable, socially just, politically well-managed and ecologically sustainable to maximize human comfort. The present research suggests a multi-disciplinary approach for a holistic understanding of urban environmental quality and human well-being in sustainable urban development.

Keywords: Well-being, Urban planning, Liveable city, Environmental quality.

### RESUMO

As cidades de hoje apresentam alguns requisitos que não são semelhantes do passado. Existem cidades que os sectores industriais e de serviços estão em declínio e outros apenas iniciam a sua jornada para o sector tecnológico e industrial. De um modo geral, politicamente e socialmente são reestruturadas em termos de sua economia, o que resulta na transformação das suas estruturas iniciais. Como as pessoas começam a compreender a natureza dinâmica da paisagem, muda a maneira que eles vêem a paisagem como um cenário estático. Cidades sustentáveis devem ser simultaneamente economicamente viáveis, socialmente justas, politicamente bem geridas e ecologicamente sustentáveis para maximizar o conforto humano. A investigação actual sugere uma abordagem multidisciplinar para uma compreensão integral da qualidade do ambiente urbano e do bem-estar humano no desenvolvimento urbano sustentável.

Palavras-chave: Qualidade de vida, Planeamento urbano, Cidade habitável, Qualidade ambiental.

JEL Classification: Q01, R1

## **1. INTRODUCTION**

Urban Habitat is aggressive or unnatural for human beings? In many cities, urban green spaces may be missing or wrongly distributed. It must take into account the noise pollution produced by cars and household heating systems in countries with cold winters. Also consider the heat island effect in urban areas and conurbations.

Socio-spatial variations in urban environmental quality and human wellbeing (see fig.1) are not new but are an established characteristic of city life. Cities have always represented a mixed blessing for their inhabitants (Pacione, 2003).

There are other important factors such as suburban areas if well designed, if there is accessibility to green areas that are outside the city and if the outputs of the city can be done in addition to the usual means of transport, by bicycle.

While it is unnecessary for different forms of landscape knowledge to share a methodology or a theoretical foundation, the key is a common frame of reference that has a reasonable fit with the range of ways in which disciplines and communities perceive and value landscape (Stephenson, 2008).

## **2. ECOLOGY AND BIODIVERSITY**

### **2.1. Ecology**

The heart of landscape ecology is the evaluation of spatial configuration and temporal sequencing as they affect landscape ecological integrity and aesthetic appeal, we believe it is the logical discipline within which to elaborate the union of these issues. This union has been called 'the landscape ecological aesthetic'(Thorne, and Huang, 1991).

Natural sounds, meanwhile, may improve the quality of built-up environments to a certain extent. However, any incongruence between sound and image in a landscape quite clearly diminishes the value assigned it, indicating the need to conserve singular soundscapes. Such cases call for the application of soundscape conservation measures in protected natural spaces, cultural landscapes and parks and green areas (Carles et al.1999).

Fragmentation is a research concept properly belonging to the biosciences and agriculture, yet it is one finding application in the planning and design fields. Cultural landscape, on the other hand, is a concept uniquely rooted in landscape architecture and resource management. The planners and designers are challenged to consider whether human actions are "natural" actions, or whether they belong in a separate philosophical category (Taylor, 2002).

The masonry retaining walls together with their vegetative companions constitute a distinctive urban ecology in Hong Kong. Whereas humans have built the artificial cliffs, it is nature which has bestowed a munificent, handsome and serendipitous gift of green livery. The fortunate combination of abiotic and biotic factors, in an inordinately harsh compact city milieu, on an apparently inhospitable habitat, has allowed tenacious and abundant vegetative colonization (Jim and Chena, 2010).

Soils perform a number of crucial functions which make them environmentally, economically and socially important. Which soil functions can be distinguished? The production, the carrier, the filter, the resource, the habitat, and the cultural function are usually recognized. Some of these functions are exclusive and in competition (EC, 2006).

The sealing of soil can lead to decrease of water permeability, in the loss of biodiversity, and in the reduction of the capacity for the soil to act as a carbon sink (Scalenghe and Ajmone Marsan 2009).

## **2.2. Biodiversity**

Maintaining biodiversity requires a wise combination of protection, management and recreation of habitats to secure representative and functional habitat networks. As urbanisation is increasing worldwide, town and cities are becoming the most common habitat for humankind.

The successful maintenance of representative habitats can be viewed as a series of partly overlapping and complementary “green infrastructures” in the landscape, each of which have various properties to which species are adapted (Sandström, Angelstam and Khaakee, 2006).

The information on biodiversity issues that planners have at disposal often offers a very limited support, due to the lack of informative data and suitable planning support systems (PSS) (Geneletti, 2008).

To help prevent further loss of biodiversity, there is an urgent need for more strategic approaches to conservation planning in urban environments based on a scientific understanding of landscape patterns, species requirements and development pressures.

The conservation planning tools can be better integrated into the different stages of landuse planning for future urban growth (Gordon et al., 2009).

## **3. URBAN ECOSYSTEMS**

Ecosystem services provided by a Green Infrastructure can provide healthy environments and physical and psychological health benefits to the people residing within them. Healthy environments can contribute to improved socio-economic benefits for those communities (Tzoulas, K. et al., 2007).

That ecosystem quality tends to decline continuously as urban density increases, although the scatter evident in many of these relationships suggests that for any given urban density, and with appropriate consideration to the proportion and configuration of green space and tree cover, there is substantial scope for maximising ecological performance (Tratalos et al., 2007).

Urban ecosystems are a complex mosaic of climates, land uses, biophysical, and socioeconomic variables. Future studies of urban forests and their role in environmental quality should consider the ecological and socio-economic heterogeneity within the urban ecosystem (Escobedo and Nowak, 2009).

The maintenance of ecosystem goods and services, i.e. natural capital, is the basic guarantee of environmental security that aims to evaluate the level of threats to the actual flux of natural capital. This is of particular relevance considering that in each European partner country there is a great number of areas that are recognized for their natural value (Petrosillo et al., 2009).

Key ecological services, such as clean air and water, drought and flood protection, soil generation and preservation, and detoxification of wastes are disrupted, risking the health and welfare of society. An understanding of ecosystem responses to urbanization is necessary to evaluate and balance short-term needs with long-term sustainability goals (Styers et al., 2010).

## **4. LANDSCAPING AND SPATIO-TEMPORAL VARIATIONS**

Landscaping can and should support environmental functions as well, such as conserving water and providing wildlife habitat. However, for persuasive health, social, and environmental reasons, these design elements must increasingly be incorporated within traditional and neo-traditional urban settings. (Jackson, 2003).

Geographical information systems (GIS) are excellent tools for landscape modelling and three-dimensional analysis. They allow easy digitalisation of geographical information and coverage structure, as well as facilitating graphical representation (Hernández et al., 2004).

There is little information available on the spatial variation of landscape functions. It was developed a methodological framework to map and quantify landscape functions depending on the availability of spatial information.

Making landscape functions spatial explicit, adds an important component to research conducted in the field of quantification of landscape goods and services (Willemen et al., 2008).

Analyzing spatio-temporal characteristics of land use change is essential for understanding and assessing ecological consequence of urbanization. More importantly, such analysis can provide basic information for appropriate decision-making (Deng et al., 2009).

Space and time are intrinsic components of the decision-making process in natural resource management. As such, the spatio-temporal nature of decision-making should be acknowledged and incorporated into models developed to assist the management of natural resources (Bone and Dragičević, 2010).

## **5. URBAN AND INDIGENOUS VEGETATION. URBAN PARKS AND WOODLANDS**

### **5.1. Urban and Indigenous Vegetation**

The areas of indigenous vegetation within cities and towns are mostly endangered even when they are protected by law. It is necessary to know the endangering factors to improve the efficiency of protection of these areas and to develop conservation strategies depending of the special quality of the different sites (Breuste, J., 2004).

The full range of aesthetic functions includes visual, scenic, olfactory and tactile effects of urban vegetation as well as multisensory effects (Sardon, 1988).

### **5.2. Urban Parks**

People from all ethnic backgrounds spend some of their leisure time in green areas. This study found that urban parks are more inclusive green places than non-urban green areas, and that urban parks can promote social cohesion. The urban green areas that are designed to meet different cultural needs and to facilitate social interaction may contribute to social cohesion in the culturally diverse cities and towns of late modern society (Buijs et al., 2009).

Analysis of these different parks shows that spatial articulation (e.g. lines of trees, groups of trees, the configuration of corner, etc.) is the clue to spatial occupancy (Goličnik and Ward Thompson, 2010).

When internationally evaluating cities in terms of competitiveness, one major aspect to take into account is the presence of public facilities such as urban parks. Another consideration is citizen accessibility to these parks. These notions can be viewed as differences between an industrial society, in which the primary focus is on economic efficiency and productivity, versus a more cultural oriented society where a higher quality of life is prioritized. Providing parks near neighborhoods is vital for their function as recreational areas for citizens to congregate and socialize, while aesthetically upgrading the vicinity (Oh and Jeong, 2007).

### **5.3. Urban Woodland**

Urban forestry research in the Nordic and Baltic countries is very diverse. Project topics range from tree selection to studies of the impacts of urban woodland and nature on human health and wellbeing. The results emphasise the importance of international research networks for the development of urban forestry research. By enhanced networking and

collaboration within the research community, across disciplines, and between researchers and those commissioning and using research, urban forestry research can be strengthened and made more relevant (Konijnendijk et al. 2007).

The present concern for the urban environment and the quality of life in cities, along with a scientific awareness of the role played by trees in all these aspects, has given rise to a great interest for the tree-planted areas of the city. It can be affirmed the existence of a correlation between the possibilities of urban comfort and the existence of green zones, the more accurate the greater the size of these tree-lined or green space zones (Gómez, Tamarit and Jabaloyes, 2001).

The urban forest patches may play in mitigating particulate matter air pollution and should be considered in plans for improving urban air quality (Cavanagh, Zawar-Reza and Wilson, 2009).

The potentials for creating urban coppice woodlands that are managed for multiple uses by local residents is an exciting prospect and one that will become increasingly in demand as the debate on nature conservation, climate change, and human health and well-being intensifies (Busse and Møllerb, 2008).

## **6. PLANNING AND MANAGEMENT. SPATIAL PLANNING AND LANDSCAPE CONSERVATION**

### **6.1. Planning and Management**

From a climatic point of view, the comprehensive planning level is very important as it gives a good view of the interaction of the different climatic effects produced by the city and the surrounding rural landscape. This information is important in order to understand how changes in land use will affect the local climate (Eliasson, 2000).

Analysis and planning of ecological networks is a relatively new phenomenon and is a response to fragmentation and deterioration of quality of natural systems. In urban areas, the problems of land use intransigence, political and jurisdictional issues create a difficult environment for implementing ecological networks (Cook, 2002).

It is unlikely that landscapes can ever be sustainable, except where we attempt to adopt an overtly conservationist approach (Potschin and Haines-Young, 2006).

It is increasingly recognized that more sustainable approaches are needed for planning and managing landscapes worldwide. The spatial dimension of sustainability engages processes and relations between different land uses, ecosystems and biotopes at different scales, and over time (Botequilha Leitão and Ahern, 2002).

Landscapes change because they are the expression of the dynamic interaction between natural and cultural forces in the environment. Cultural landscapes are the result of consecutive reorganization of the land in order to adapt its use and spatial structure better to the changing societal demands. The planning and managing future landscape remains difficult and extremely uncertain. The processes and management in past traditional landscapes and the manifold relations people have towards the perceivable environment and the symbolic meaning it generates, offer valuable knowledge for more sustainable planning and management for future landscapes (Antrop, 2005).

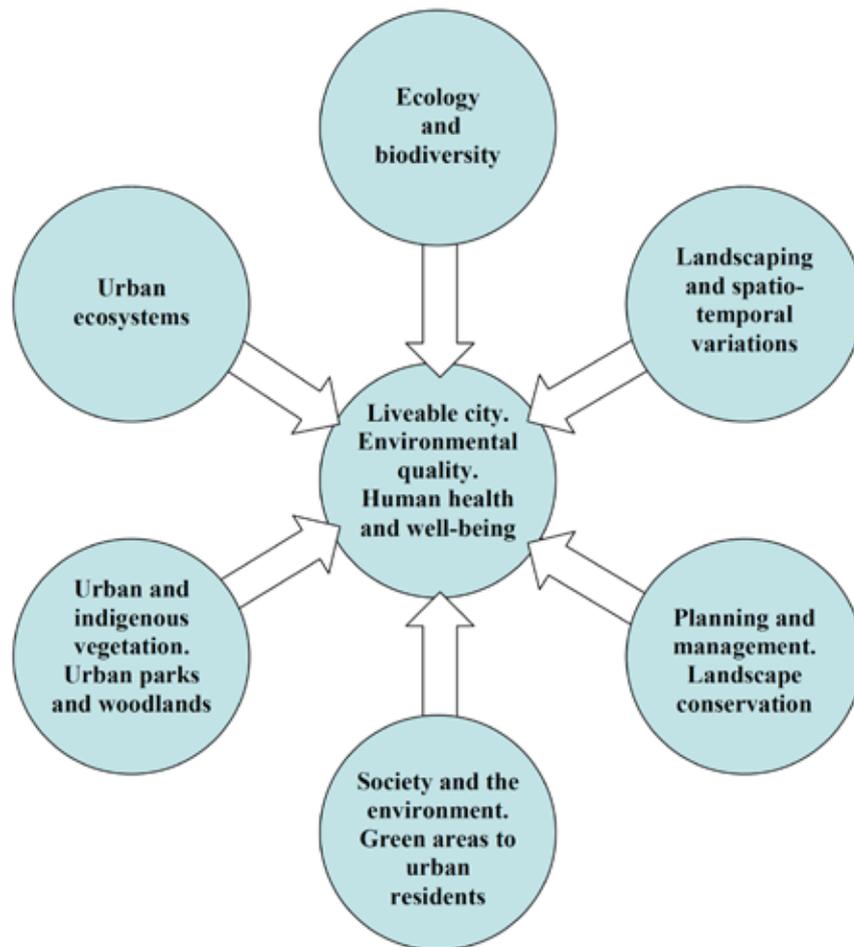
As people begin to understand the dynamic nature of landscapes, they will change the way they see the landscape as a static scene, which does not address ecological sustainability and will embrace the new ecological aesthetic idea (Panagopoulos, 2009).

The concept of soil quality represents the integration of the physical, biological, and chemical aspects of soils. Limited attention has been given to the holistic assessment of soil quality in landscape and urban planning, as it is typically addressed only through chemical

analyses. The use of a holistic test that provides information of all three aspects of soils (physical, biological, and chemical) provides a more meaningful approach to monitoring soil quality and it provides farmers, consultants and agencies with a tool to identify soil constraints and to target management practices or remediation strategies (Schindelbeck et al., 2008).

“Urban tsunami” is spreading worldwide and threatening natural resources and human health. Unfortunately, current conventional urban planning often focuses more on economic growth than on natural assets and ecological sustainability (Wang, 2009).

Figure 1. Liveable City and Environmental Quality, Human health and Well-being



## 6.2. Spatial Planning and Landscape Conservation

Spatial planning and land management may have important impacts on the potential transfer of pollutants from contaminated soils to humans. For those areas where risk is identified as unacceptable, alternative planning or management options should be defined to achieve a maximal risk reduction in a cost-effective way (Poggio et al., 2008).

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The shape and health of the landscape legacy that we have inherited and that we will pass on to future generations is a subject of critical concern. It was concerned as well with the loss of the 'public landscape', the sense of shared places and purposes that build convivial communities. These are only a few of the many issues that need to be addressed, if the nature of landscape architecture and other allied practices concerned with the maintenance and management of our landscape is to remain relevant in the next century (Jacobs and Mann, 2000).

In order to reconcile landscape conservation with changing demands on land use and natural resources, it is essential that the ecological, socio-cultural and economic values of the landscape be fully taken into account in planning and decision-making (Groot, R. de., 2006).

New landscapes emerge with changing life-styles. Decision making for landscape planning, conservation and management use the concept of sustainability widely. To make it operational, many new associated and more specific concepts have been proposed such as natural and social capital, conservation economy and quality of life capital. As landscape changes, also its meaning and significance changes and consequently its management (Antrop, 2006).

## **7. SOCIETY AND THE ENVIRONMENT. GREEN AREAS TO URBAN RESIDENTS**

The interconnections between society and the environment are profound (Bartuska, A.M., 2005).

The green areas located close to residential settings areas may be one among potential protective factors that can buffer against the adverse health effects due to chronic traffic-noise exposure (Gidlöf-Gunnarsson and Öhrström, 2007).

Information concerning the social values and meanings of green areas to urban residents is scarce nowadays. This information should be made available in a usable form for urban land use and green area planning (Tyrväinen, Mäkinen and Schipperijn, 2007).

Urban residents worldwide express a desire for contact with nature and each other, attractive environments, places in which to recreate and play, privacy, a more active role in the design of their community, and a sense of community identity. The design of urban landscapes strongly influences the well-being and behavior of users and nearby inhabitants (Matsuoka and Kaplan, 2008).

Today there exists a critical mass of research that has identified human needs related to nature and the role the environment plays in providing social interaction for nearby residents Rodiek, J. (2008).

## **8. FINAL REMARKS: LIVEABLE CITY AND ENVIRONMENTAL QUALITY. URBAN DEVELOPMENT AND GROWTH. HUMAN HEALTH AND WELL-BEING**

### **8.1. Liveable City and Environmental Quality**

Clearly, in order to attain the goal of a liveable city, a wide range of social, economic and environmental needs must be satisfied (Pacione, 2003).

Social viewpoints such as employment, education and safety have recently been given much attention in the development of indicators of urban liveability. In addition, environmental

aspects, such as healthy air, a quiet neighbourhood, an attractive street scene and green spaces within walking distance, are gaining weight. (See fig.2). The amount and quality of green spaces affect citizens' patterns of activities, the modes and frequencies of every day recreation, the way knowledge about the environment is acquired, the opportunities to relax of daily stress, etc (Van Herzele and Wiedemann 2003).

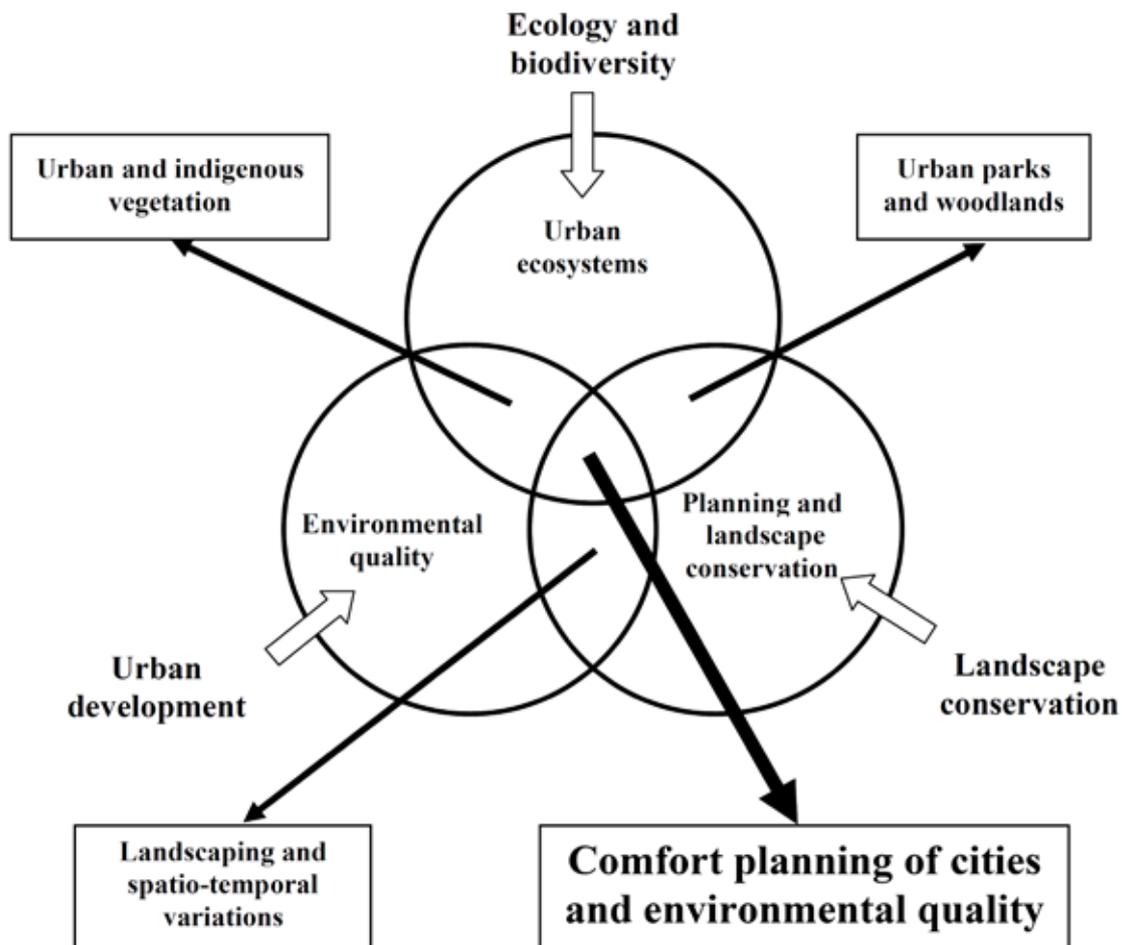
Concepts as livability, living quality, living environment, quality of place, residential-perception and -satisfaction, the evaluation of the residential and living environment, quality of life and sustainability do overlap, and are often used as synonyms—but every so often are contrasted (Van Kamp et al., 2003).

Environmental quality specialists have an important role in providing tools that can measure and compare, both in sum total, and distributively across different groups, the environmental quality implications of different futures (Brown, 2003).

The presence of natural areas contributes to the quality of life in many ways. Besides many environmental and ecological services (Chiesura, 2004).

The quality of urban soil should be evaluated to support public services for good environmental quality management. Planners should also adjust their decisions towards more sustainable urban design (Vrščaj et al., 2008).

Figure 2. Comfort Planning of Cities and Environmental Quality



## **8.2. Urban Development and Growth**

Monitoring the urban development in order to assure sustainable cities in the future is an absolute necessity. Decision support in this domain needs some spatial information enabling to forecast the urban development trends (Weber, 2003).

The analysis of the factors which condition walking in the urban environment is an important issue in urban planning. The landscape, in its entirety, plays a role in encouraging pedestrian movements. The frequency of pedestrian traffic in the streets is analyzed as a function of accessibility and landscape preferences with the help of a conceptual framework (Foltête and Piombini, 2007).

The capacity to project urban growth scenarios that reflect various public policies so that their relative impacts can be evaluated on natural resources is broadly hended (Beardsley et al., 2009).

Four out of five European citizens live in urban areas, and urban form – like the density or compactness of a city – influences daily life and is an important factor for both quality of life and environmental impact. An interdisciplinary study of urban form including landscape metrics, socio-economic factors and governance structures combined with a historical analysis would greatly enhance the understanding of emerging urban form (Schwarz, 2010).

## **8.3. Human Health and Well-being**

The quality of the urban environment as a living space for the peoples of the world is, therefore, an issue of fundamental concern for academic researchers, policy makers and citizens. Increasing concern over the nature and extent of these socio-spatial divisions in urban environmental quality and human wellbeing has focused international research attention on the problems of living in the contemporary city (Pacione, 2003).

The identification of quantifiable landscape attributes that affect health is seen as an important factor in enabling future landscape design to be of benefit to human health (Velarde, Fry and Tveit, 2007).

Sustainable development requires, among other things, that development projects not result in the degradation of natural resources for outdoor recreation. There has been a rapid increase in knowledge regarding the importance of the external environment to our health and well-being (see fig.3). The urban forest investments for health and well-being can be an important part of strategic decisions in spatial planning. As preconditions for a permit, the development and financing of new urban forests and green areas can be part of the total development plan. This is an issue of global interest, as many countries are in a process of rapid urbanization, and urban greening and urban forestry have an important role to play in the process of promoting quality of life and improving environmental quality (Skärbäck, 2007).

Figure 3. Urban Well-being



To many people, solitude and peacefulness are the main qualities of landscape and especially of woodland in relation to recovery from stress and attention fatigue (Busse and Nilsson, 2007). Research indicates a relationship between sensory perception of natural environments and human health. The urban green spaces can be viewed as elements of importance to public mental health (Grahn, P. and Stigsdotter, 2010). The present research suggests a multi-disciplinary approach for a holistic understanding of urban environmental quality and human well being in sustainable urban development.

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