

IMPACT ON LAND VALUE OF WATERSCAPE AS PART OF ECOSYSTEM SERVICES

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This study focuses on waterfronts which are a source of ecosystem services and are now one of the rare urban natural elements, based on the idea that it is essential to maintain and further a sound relationship between ecosystem services and human well-being, in order to recreate today's cities to sustainable eco-cities. Assuming that the environmental value of a waterscape reflects land value, waterfront spaces in Osaka City were selected and the impact of their waterscapes on land value was considered. It will be necessary in the future to further clarify the impact in question by conducting quantitative analysis based on the site location factor which is considered for land appraisal.

Key words: Human well-being, ecosystem services, environmental value, eco-cities, waterscape, land value

Данное исследование фокусируется на изучении береговой линии, которая является уникальной частью естественной экосистемы в пределах города и обеспечивает экологическое благополучие человека, содействует преобразованию современных городов в эко-города. В статье рассматривается степень влияния наличия и экологической ценности прибрежных пространств в земельном фонде на его общую стоимость. Необходимо развивать подобные исследования с применением количественного анализа различных, в том числе местных факторов, которые оказывают влияние на процедуру оценки земельного фонда.

Ключевые слова: благосостояние человека, экосистемные услуги, экологическая ценность, ЭКО-города, водоем, стоимость земли.

Introduction

Since ancient times, humankind has been a part of the planet's ecosystem. Today, with this fact being reaffirmed, the elucidation of the human-ecosystem services relationship plays a role as a key to solving critical global environmental issues. One sees here a fledgling of the consciousness of many people who have begun to recognize that the ecosystem which since the Industrial Revolution had appeared to be infinite is actually finite, as it is revealed that environmental issues are of grave importance as they affect the survival of the ecosystem. This represents a significant change in mindset and thinking towards the ecosystem than previously. In other words, it is nothing but humankind admitting that continuing to soundly coexist with the ecosystem is the one and only sustainable condition.

Now, the question arises as to what the relationship between humankind and ecosystems is. As a way of looking at this question, one could focus upon the flow of things, or the interacting forces which connect

humankind and the ecosystem. Moreover, with the addition of an economic viewpoint, the notion of ecosystem services was developed based on which study and research has been carried out concerning concrete measures for sustainability, by viewing the relationship from a comprehensive perspective.

Meanwhile, with the further advancement of urban congestion through an accumulation of population and functions, cities have lost natural elements such as greenery and water, in other words, they have fewer natural amenities and comfort, resulting in the tendency of eroding urban attraction. The waterfront spaces remaining in cities today are therefore revalued as precious urban spaces which can provide us with such natural amenities and comfort.

Focusing on waterfront spaces which are regarded to have such advantages of natural amenities and comfort in today's cities, this study aims to consider the impact on land value of waterfront spaces with its locational advantages, by assuming that the potential environmental value of waterscape is manifested by economic value in the form of land price.

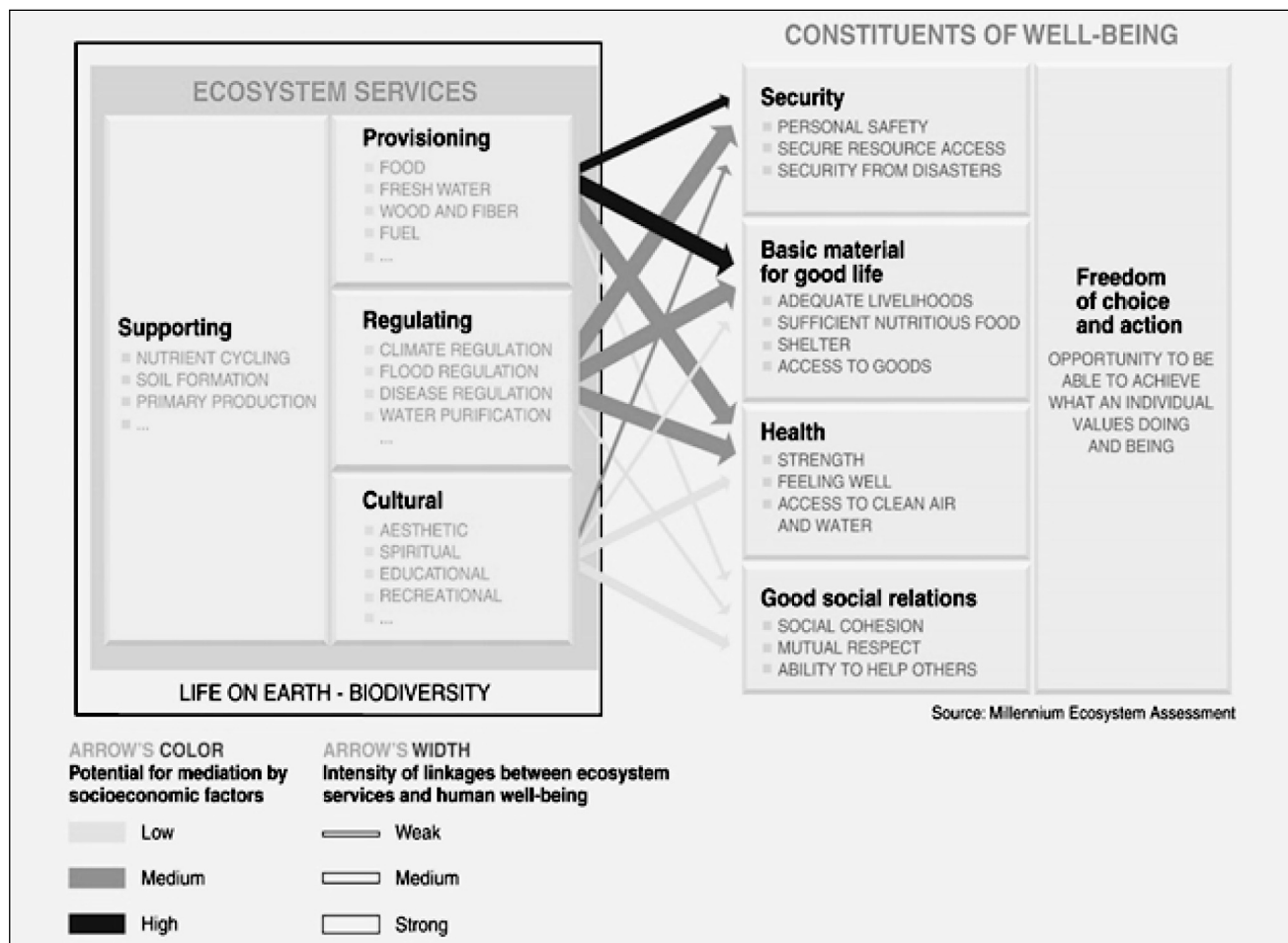


Fig. 1. Relationship between ecosystem services and human well-being

Relationship Between Ecosystem Services And Landscape

Humankind has led a diverse lifestyle and activity while benefiting tremendously from the ecosystem. It has also adopted various approaches towards the ecosystem to enhance its convenience. Both humankind and the ecosystem have repeated their mutually beneficial or at times conflicting interaction. The concept of ecosystem services is based on the reevaluation of such relationship and its review from an economic perspective, in order to strengthen motivation concerning ecological regeneration and restoration.

The Millennium Ecosystem Assessment called for by the United Nations, as shown in Figure 1, correlates to human well-being, thereby aiming to improve the level of diverse well-being. The basic services which ecosystems bring to humankind are divided into four categories; provisioning, regulating, cultural, and supporting services, the depiction of which is as follows:

Firstly, provisioning services provide materials concerning human activities such as livelihood and industry, including water, food, fuel, fibre, chemicals and genetic resources. They are services viewed from the perspective of the utility value of natural resources.

Secondly, regulating services mitigate the risk effect that nature has on people, including the control of climate, disease and flood, and detoxification. Such risk increases in reverse, in proportion to the degree of excessive human activity and the progress of overdevelopment.

Thirdly, cultural services utilize natural resources from the ecosystem indirectly and as a background element, including spiritual value, ideas, recreation, aesthetic benefits, education, benefits as a collective, and symbolic benefits. They have favourable influences on the human spirit and intellectual activities, and are based on rare and unique values.

Fourthly, supporting services are the foundation which support the ecosystem, including soil formation, nutrient cycling and primary production. Their quantitative and qualitative soundness has a great influence on the productivity and growth of the tropical natural environment.

While, human well-being is divided into five categories; security, basic material for good life, health, good social relations, and freedom of choice and action. The depiction of each category is socially understood, as shown in Figure 1.

In this study, the impact on land value of urban waterscape development and regeneration as part of



Photo 1. High-rise condominiums along the Dojima River, Osaka City (Photo by the author)

ecosystem services was considered, while focusing on cultural services of the above ecosystem services, which involve the creation of eco-cities and human well-being that are increasingly important urban issues.

Urban Landscape and Land Value — Osaka City

As the subject of this study, the waterfront spaces along the river that meanders through the city of Osaka where development and regeneration of such spaces have been actively undertaken in recent years, were selected.

Osaka is a port city situated at the mouth of the Yodo River which originates in Lake Biwa, the largest lake in Japan and flows into the Seto Inland Sea, where approximately 2.69 million people live in an area of approximately 225 km², as of 1st October, 2015. It is the economic and commercial hub of western Japan and also an international harbour city with vibrant trading.

In the Edo period, Osaka was prosperous with maritime trade and commerce where products were distributed from and throughout Japan, and was known as a water city with a great network of waterways perfect for water transportation. However, due to postwar motorization, many waterways were filled in to construct urban highways and city roads. This resulted in the loss of major waterfronts which were a representative natural element in Osaka City, thus reducing urban natural amenities and comfort. At the same time, urban verticalization that spoilt views, took away the mental amenity of city dwellers to enjoy distant views.

However, having a mature society today which places greater importance on environmental value rather than economic value, sparse urban waterfront spaces have been reappraised based on the growing social need for urban natural amenities and comfort. This tendency has generated a demand to reside by waterfronts. The development of high-rise condominiums (called 'mansions' in

Japan) located near a river mouth, for example, those shown in Photo 1, has been vigorously undertaken, and an increasing number of people are leaving the congested city centre to such hi-rises blessed with an open atmosphere and excellent view.

The development and regeneration of such waterfront spaces contributes to the creation of a pleasant urban landscape, while its valuation is reflected in land prices as property value under the system for private ownership of land in Japan. To this end, this study adopted as data, official land prices published annually by the Land Appraisal Committee under the Ministry of Land, Infrastructure, Transport and Tourism.

The sites for the study subject were the waterfront area near the mouth of the Dojima River in Nishi-ward, Osaka City. This is a district officially zoned for commercial use as part of the city's urban planning. Selecting two sites in the area of which the land had been appraised and which had similar locational conditions near the river, the change of the official land prices of 2008 and 2015 were examined. Table 1 shows the results of a survey based on such prices.

Table 1. Official land prices of Nishi-ward, Osaka City (Unit: Vm²)

Year of survey	2008	2015	Change rate (%)
Site A	359,000	305,000	0.84
Site B	503,000	456,000	0.91

According to Table 1, the official land price at a selected site with good waterfront landscape declined during the seven years from 2008 to 2015 in the range of 10 to 20%. This is thought to be due to the prolonged domestic recession triggered by the collapse of Lehman Brothers, which affected the price of land.

However, on the contrary, the actual sales price of high-rise condominiums at such sites showed a trend of rising prices. High-rises to be built on a site with good waterfront landscape enjoy greater demand as they have better natural amenities and comfort in urban life.

The author acknowledges that it is necessary to analyse the impact on land value of waterfront landscape, by using evaluation factors of the official land price, because such price is obtained through a comprehensive evaluation based on evaluation factors such as land form, traffic convenience, and use district. Furthermore, the author thinks that it is necessary to consider economic growth rate as an evaluation factor.

Summary

This study examined the impact on land value of waterfront landscape, using cases of Osaka City, by correlating ecosystem services with waterfront spaces as an urban environment. Although the results presented are

not sufficient, this study is however considered as a first phase approach, in order to transform contemporary cities which are increasingly congested and highly functional to eco-cities. While landscape issues are often assessed by experts qualitatively based on aesthetics and

their harmonious nature, it is important to conduct quantitative analyses based on locational factors used for land appraisal as well as the economic growth rate, in order to clarify the potential environmental value of the waterfront landscape.

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