

How to Keep the Sustainability of the Landscape Resources of the East Coast in South Korea

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The purpose of this study is to present the conditions and methods for keeping the sustainability of the landscape resources of the East Coast of Gangwon province, the republic of Korea by investigating the landscape resources management in the area and pointing out its problems. The problems of the landscape resources management are: 1) the disturbance of the persistence of life by reclamation, the population reduction in the ecosystem due to the overload in environmental capacity, and the severance of space between land and water. 2) the reduction of the benefits from indirect experience by interfering with the conservation of fluxes -- the manipulation of horizontal arrangement of the landscape resource, the visual disturbance by the construction of high-storied buildings, and the disharmony between the color/image and the environment. The means for keeping sustainability of the landscape resources include the regulations of development and use, the change in the recognition of the value of landscape resources and the moral system, and the improvement of resource management skills.

Key words: Coastal Landscape Resources, Sustainability, Persistence of the Life, Preservation of the Fluxes, Landscape Resources Management, Non-material Factors.

1. Introduction

The coastal areas give us the aesthetic and symbolic benefits in the harmony of physical facilities, natural environment, and water. The East Coast in Gangwon is of great value of landscape resource because of retaining a gift of the heaven, the nature which are formed with the coastal line in lengths of 213.2Km and having abundant historical and cultural resources. Those places, however, are facing the danger of losing their value as the result of the imprudent tourist development and human habitat along the coast. Under these critical situations, this study investigates the present conditions of the landscape resources on the East Coast, Gangwon province, South Korea, to suggest alternatives for keeping the sustainability. We are raising several points of landscape resources through the research on the actual conditions and establishing

the sustainable conditions and ways of them through the survey for visitors' satisfaction.

This study deals with the scenery of the nature and art, the former contains the topography, the surface of the sea water, a dune, an ecosystem of the coast which are related to the actual state of the east coast and the latter includes scenery of cities, fishing villages, streets, bridges, and harbors. Furthermore, the mental factors such as view, stability, and pleasantness are also the object of analysis. The coast can be defined as the space where the various occasions of the nature happen and where the land, the sea and the air areas meet, whose definition is similar to that of the shore.

The artificial landscape resources on the coast covers a scope within 1km from the both side the coast dune because they are located in the coast area and because it is not necessary to contain all area coming within the field of the vision. There are a few uninhabited islands on the east coast, but this study includes things we can see with the naked eyes even though they are far from the scope within 1 km.

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The east coast is restricted to the four cities (Samch'ok-si, Gangneung-si, Donghae-si, Sokch'o-si) and two counties (Gosong-gun, Yangyang-gun) among Gangwon province which are formed along the line route seven in the surface street. We are examining the sorts and characteristics of the landscape resources which are distributed in these areas using the established literatures and are carrying out the survey for visitors who are taking a sight-seeing on the east coast in order to make counterproposals and to take a census of their satisfaction about landscape resources policies. The frequency analysis and the regression analysis are applied for this investigation using the SPSS 10.0.

2. Research Design

The general research of sustainability can be measured by an environmental criterion. Ministry of Science and Technology in South Korea¹⁾ try to present it after being stimulated by the U.S.A. index development and Gyui-goun, Kim²⁾ did from various points of view such as the ecological side, the quality of the life, equilibrium, division of the roles.

The sustainable development index should be developed covering all the cause, effect, response at the same time. This idea is reflected in the OECD's environmental monitoring index system, 'the process of Pressure-State-Response'. The latest established researches consented to this trend and advocated correlation and synthetic approach about the cause of environmental issue.

Needless to say, it is possible to measure the sustainable landscape resource and make a counterproposal applying the above index. These methods are, however, lack of coping with space disjunction of the subject of study. That is to say, it is impossible to measure all the landscape resources distributed in a vast range even though the subdivided index of density and distance are established.

This research used a mixed way between a wide scope investigation and a scanning investigation which are used in the strategic environmental effect measurement of the natural resource.

We inquired into the way of manage the landscape on the east coast and the measure its level at present. The satisfaction analysis for visitor is used for this study because the subjectiveness is intervened in the analysis when

the administrative subject judge its effectiveness.

Now some local government on the east coast are building the all kinds of development projects or are carrying on those business. The street construction and artificial facilities at the border of land and sea result in the sand erosion and the loss of the landscape resource on the coast.

Some mistake of the landscape resources management is attributed to competitive regional development and development-oriented and outcome-oriented consciousness after the local autonomous government system opened in South Korea. In addition, it can also be caused by a wrong application of the management skill the rupture of interchange between the central and local government and lack of professional public officials on this field.

The sustainability of the landscape resources refers to preserve their own ecological property and to maintain harmonious relations one another. That is regarded as the core of natural resources and is settled by the following two conditions.

At first, in the side of contents, the function of ecological circulation between the class of natural resources should not be hindered. That is, the resources between sea and sand, sand and land, land and vegetables etc. should have horizontal correlation with one another. This comes under an indispensable condition because it excludes the artificial intervention and has direct connection with the duration of life, the essence of natural resources.

Second, in terms of external form, the flow of resources should continue. 'Conservation of the flow' cannot be interrupted by the artificial intervention, horizontal disposition which natural resources form with spontaneous generation. This conforms to an sufficient condition because it have an important effect on visual activities even though it is indirectly concerned in the existence of life.

What conditions make sustainability of landscape resources sufficient? The landscape resources, an object of sustainability, is mainly physical factors, for example, natural topography, open space, foundation facilities on the coast, streets, buildings, installations, land, water, and trees. The means of getting sustainability of these physical factors is immaterial factors, for instance, a social system, a culture, an institution, administrative law and regulations, intention.

3. Analysis of Sustainability

3.1 Sustainability analysis of practical management

3.1.1. The management of natural resources

There are sandy beaches, the scene of sea, islands, a rock wall, a sea cliff by erosion of the sea, land vegetables, lakes, rivers, mountains, hill area, sky, sunrise as natural landscape resources, the management objectives among them are concrete natural resources, sandy beach, island, a sea cliff by erosion of the sea, land vegetables (a pine forest), lakes and rivers and so on.

The sandy beach is a practically useful space for the coast development. Erosion and sweeping away phenomena of the coast are making rapid progress due to the introduction of artificial structures such as roads, a breakwater, the tourist infrastructure, the port facilities having no concern with environmental capacity. In the regional side, the erosion has been generated in Gangneung, Sokch'ŏ while the accumulation has been come into Gosŏng. The consequences are that ocean current are changing according to artificial facilities conforming to sustainability conditions.

A pine forest is the world coastal landscape resource. The construction of streets and railroad to expand traffic equipments, a dwelling by regional residents, and agricultural and commercial business are doing damage to the distributed space of pine forests. These development actions make the tourists uplift their access and allure their sightseeing, so they are exposed to the objects for the use. The pressure of human's activities about the environment brings about the change of environmental state³⁾.

The access to pine forests should be allowed to minimize because their sustainability has a direct effect on plants and animals. The severance of crosscutting in an ecosystem caused by the construction of roads should be excluded. Besides, the facilities for eliminating a large scale pollutants reduce the ecological and aesthetic value because the edges of the water are destroyed and the utilization of the environs are changed by establishment of circular roads on the natural lakes lying adjacent to the coast.

3.1.2 The management of the residential districts and the port facilities.

The residential districts on the coast area are flooded with the reckless buildings. The skyline leaving around landscape out of consideration, the construction development destroying the natural topography, and the incongruity of a shape, an arrangement, a scale, a color, and the quality and so on injuring the landscape. In case of the urban, a high-rise apartment building, an extra-large lodging and commercial building obstruct the prospects of Korean mountain range. The right of a prospect is damaged by the development of monopolistic buildings over the seascape (a hotel, a transient hotel, an apartment, an office etc.) and insufficiency of the prospect centers³⁾. In the farm and fishing villages, the uniform buildings having no concern with regional images and the function-centered artificial constructions are discordant with around landscape. The scenery of a fishing port is spoiled and the images of a special fishing village are deficient by the accommodation facilities such as a resort hotel, a motel etc. and the buildings destroying the natural topography.

The most serious problem is to build the coastal roads and to secure the all kinds of fishery facilities by reclaiming land from the sea. In recent, the present state of a port and a harbor is to build the residents' common institutions imprudently in order to improve the tourist income as an alternative activity in consequence of reduction of a fishing industry. This reduces the value of port seascape because they are simple in the side of a shape, an arrangement, a scale, a color, and the quality and so on.

3.1.3. The management of historical and cultural landscape resources

From the first, the establishment of historical landscape resources has the optimum about the landscape on the coast, but the development of all kinds of buildings, facilities reduce the value of the right of the prospect. Moreover, a form, a color and the quality of the road, a resort facility, an information equipment etc. deteriorate the value of the landscape.

The permanency of life as a sustainable condition of historical landscape resources can be realized by preserving, repairing and mending the original form of a structure continuously. A neighboring green tract of land, however, is

damaged and there is no support of finding and succeeding the historical landscape positively, so the historical investigation data are lack for their restoration.

3.1.4. Management of tourist resources

The landscape resources of the East Coast include provincial and municipal parks, swimming beaches, raw fish restaurants, and accommodation facilities. However, the images of these tourist resources are getting bad because of the sea pollution from sewage and wastewater, floating matters, and garbage. Also, coastal military facilities such as barbed-wire entanglements and guard posts defile the appearance of and limit access to landscape resources.

Sea was reclaimed to build convenience facilities such as parking lots, bungalows, and kiosks, and mountains and hills were cut to construct large accommodation facilities.

To summarize the actual condition of the management of landscape resources in this area, indiscreet development is increasing in land and beach, and signs and convenience facilities are insufficient. Also, the design of the facilities lacks harmony because their shapes, arrangement, size, and color do not match the images of nearby landscape resources.

3.2 The tourists' satisfaction with the management of landscape resources

We conducted a survey between August 15 and August 16, 2003 in order to assess the customer satisfaction with the management of landscape resources. The participants of the survey were tourists whose final destinations were the beaches in the 6 regions of the East Coast.

<Table 1> The analysis of the visitors' satisfaction

Dependent variable	The satisfaction with management of landscape resources on the East Coast			
	B	Bata	t	Sig.
The adequacy of management system	.217	.191	3.751	.000
The adequacy of management skill	.183	.163	2.922	.004
The environmental intimacy of the coastal land use	.160	.169	4.031	.000
The effectiveness of management policy	.303	.299	6.898	.000
The recognition of the value of landscape resources	.162	.174	4.398	.000
The attitude of tourists	4.282E-02	.042	1.154	.250
The access to landscape resources	.120	.122	3.181	.002
The convenience of management facilities	.106	.108	2.625	.009
The level of regulation on use	-1.304E-02	-.013	-.340	.734
Constant	-.561		-3.827	.000
R square	.803			
F-Value	86.314***			

* p<0.05 ** p<0.01 *** p<0.001

The survey was conducted in the Gangneung rest area, the crossroad of the 6 regions, by interviews where interviewers briefly explained about the management of landscape resources in

the East Coast to the participants and induced their responses. The sample was tourists in every tenth vehicle entered the rest area. Using SPSS 8.0., we conducted regression analysis and

frequency analysis of the survey data.

The result of the survey showed that 27% (54 participants) of the tourists were satisfied with the management of landscape resources, 38% (76 participants) neither satisfied nor dissatisfied, 27% (54 participants) dissatisfied, and 6% (12 participants) very dissatisfied. According to Shin⁵⁾, the most of the tourists were content with the landscape resources in Gangwon province, with a survey score of 4.09-4.64 out of 5. However, our survey found out that the satisfaction with the management of landscape resources was not high.

We selected nine factors which are expected to affect the level of the management of landscape resources in the East Coast: the adequacy of management system, the adequacy of management skill, the environment-friendliness of coastal land use, the effectiveness of management policy, the recognition of the value of landscape resources, the attitude of tourists, the access to landscape resources, the convenience of management facility, the level of regulation on use.

A multiple regression analysis was conducted in order to find out how much the factors presented in <table 1> have effect on the satisfaction with the management. This analysis used nine variables and the consequence is that R square is 80.3%, so the power of explanation is strong.

In the coefficient analysis, the significant probability of T value of seven variables among nine shows us the statistical significance, and that of two variables is insignificant.

When we see the absolute value of β which means the comparative significance of coefficients, the value of 'the effectiveness of management policy' is 0.299, that means this variable has the most strong power of explanation among nine independent variables.

The adequacy of management system, the recognition of the value of landscape resources, the adequacy of management system, the recognition of the value of landscape resources, the environmental intimacy of the coastal land use, the adequacy of management skill, the access to landscape resources, and the convenience of management facilities go through due formalities according to the β value.

Our research framework lists social factors such

as policy, system, legislation, and cultural-psychological factors such as values and custom as non-material factors for the preservation of the life and fluxes of landscape resources.

Our analysis shows that the effectiveness of policy and the adequacy of system are the most important means for the sustainability of the landscape resources in the East Coast. However, the adequacy of management skill and the level of regulation on use were not statistically significant and thus did not appear to affect the sustainability.

3.3 The Problems of landscape management

The value of landscape resources is in the benefit of direct use and indirect experience of them. Therefore, the managerial problems of landscape resources should be found in factors which interfere with these two benefits.

The persistence of life, the first condition of the sustainability of landscape resources can be disturbed by from reclamation, the population reduction in the ecosystem due to the overload in environmental capacity, the severance of land and water space. They reduce life by destroying or transforming landscape resources. Some examples are the destruction of lakeside space to build tourist facility, the partial reclamation of sea to construct road or structure in harbors and ports. A large sandy beach was developed into a tourist complex in Hajodae, and the coastal ecosystem was completely transformed by the construction of a parking lot in Daepo-Hang, which cut a mountain adjacent to seashore.

Secondly, the manipulation of horizontal arrangement of the landscape resource, the visual disturbance by the construction of high-storied buildings, and the disharmony between the color/image and the environment reduces the benefit from indirect experience by interfering with the conservation of fluxes. Landscape resources such as sea, sky, sunrise, and pine forest lost their beautiful view by the construction of high-rise apartment complexes, large accommodation facilities, and fishery facilities.

In particular, the access to driving courses with great scenery of seashore and pine forest is limited because of military facilities, and resting facilities do not match with landscape resources and form images that lack uniqueness and energy.

The skyline was ruined by the irrelevant location of high-storied buildings, and the scenery was spoiled by the intimidating large industrial facilities.

4. Ensuring sustainability

The means for securing the sustainability of landscape resources are political and economical decision, legislation, policy objective, environment-friendly consciousness, and management skills in sympathy with the nature; people select them in the combining process of non-material factors such as economy, culture, system, management, people, custom, tradition, attitude, favor, and behavior.

By these means, landscape resources can form a self-control mechanism which meets the internal and external conditions and achieve the sustainability. If it does not happen, there must be an error of repetition or a deviation from the ecological cycle, which are serious situation. In this case, the ecological cycle should be restored and the coastal landscape should be protected by the legislations which further regulates the development and use of landscape resources, the change of the moral system and recognition of the value of the resources, and the improvement of the resource management skills.

A systemic regulation is needed in the East Coast where lakes and rivers are adjacent to seashore. One possible alternative is a zoning system which establishes scenic protection zones to limit development in coast areas. One alternative policy is to prevent the damage of landscape resources by the assess of environmental effects before the construction of public facilities, architectural structures, and fishery facilities.

The management of landscape resources should be strengthened by the administrative guidance and regulation of small-scale use and development such as cultivation and the construction of accommodation facilities and fishing ports. In order to maintain the true sustainability, the recognition of the value and benefit of landscape resources and the change in the moral system should be accompanied.

The best management skills can restore to some degree the damage done by the development of landscape resources. It is considered that the natural resources can be

restored at the expense of significantly high sunk cost, unless the persistence of life is lost. Therefore, various skills and knowledge which can keep sustainability of landscape resources should be applied to the construction of public facilities and architectural structures, excluding the reclamation of lake and sea.⁶⁾ At the time of the restoration, the landscapes of land and coast, which are closely related to each other, should be naturally connected and in harmony. Also, it is needed to develop the management skills which can improve the visual effect by making the image, color, and arrangement of facilities in harmony with the natural resources.

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