

Evaluation about Existence Effect of the Greenbelt Combined with River or Parkway by a Questionnaire Survey for Residents

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Synopsis

In order to evaluate the effect of the greenbelt combined with river or parkway, a questionnaire survey was carried out for the inhabitants in the neighborhood of three residential areas with greenbelts which were located in Hyogo Prefecture. In the survey, consciousness for the existence effect for various aspects, comprehensive evaluation and views of the greenbelt, were asked. The results from the survey are explained as follows; 1) the comprehensive evaluation depends on the sense of effects, like air purification, mental contentment, townscape beautification and community spirit cultivation, and 2) these effects are influenced by feeling of mental comfort, and scenic beauty in four seasons.

KEYWORDS: greenbelt, disasters prevention planning, questionnaire survey, conscious evaluation

1 Introduction

Recently, the greenbelt combined with river or parkway, is beginning to be considered as important facility in the planning of a greener, fire-proof city. Generally speaking, effectiveness of parks and open space is considered to have two major effects, that is, existence effect and use effect. The existence effect exerts influence on the urban function and environment, such as fire-break zone, buffer axes, while the use effect means usefulness or comfort on the users who visit there.

In the case of greenbelt's effect, the existence effect is considered to be more important than the use effect. There are a lot of studies from the view point of the use effect in the past, but few reports from the view point of the existence effect.

In this study, we investigated three cases of greenbelt which have been completed as a wide greenbelt with river or canal and a riverside parkway along the Shukugawa Park in Nishinomiya City (Shukugawa River), the Unga Park in Himeji City (Sotoborigawa River) and the Hiratanigawa Open Space in Sanda City (Hiratanigawa River), all situated in Hyogo Prefecture. Then we carried out a questionnaire survey for residents who live in the neighborhood of the greenbelt. The results were analyzed on their consciousness for

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greenbelt and the comprehensive evaluation of the greenbelt for various spatial functions.

2 Method of Questionnaire Survey

In November 1998, a questionnaire survey was carried out in three areas as listed in Table-1, obtaining cooperation from the resident society of the neighborhood block in distribution and collection of the

Table-1 Proportion of the Greenbelt for Survey and Number of Respondents

Name of greenbelt	Width of greenbelt	Length of survey area	Number of respondents
Shukugawa Park (Nishinomiya City)	about 60 m	4.1km	357 (upper stream) 279 (lower stream)
Unga Park (Himeji City)	about 70 m	1.8km	559
Hiratanigawa Open Space (Sanda City)	about 86 m	2.0km	251

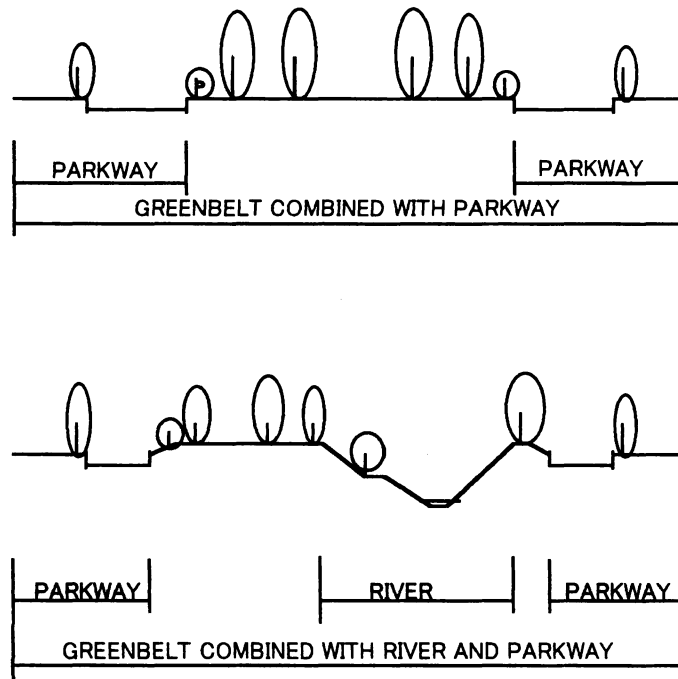


Figure-1 Typical Cross Section of Greenbelt



Photo-1 View of the Shukugawa Park

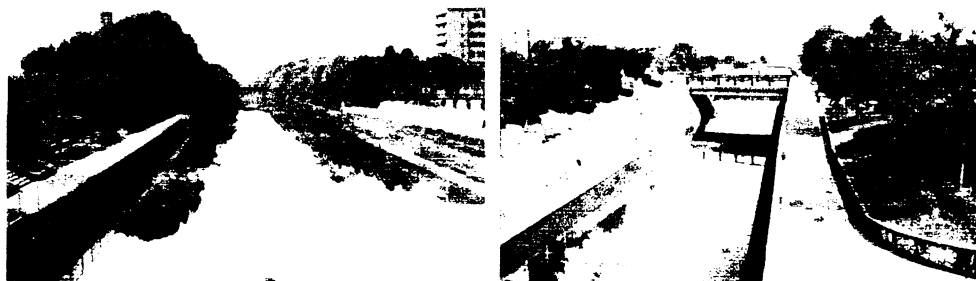


Photo-2 View of the Unga Park

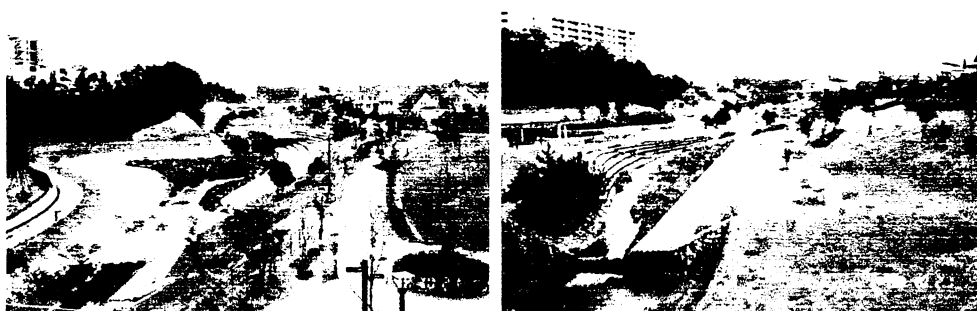


Photo-3 View of the Hiratanigawa Open Space

Table-2 Feeling of the Greenbelt

feeling 1	pleasant to walk or jog	feeling 7	dangerous for children because of possible risk of falling into river
feeling 2	comfortable to pass through	feeling 8	beautiful landscape composed of river, trees and nearby mountain
feeling 3	likely to hang around on the way	feeling 9	the cycle of the seasons
feeling 4	relax to rest	feeling10	beautiful trees along the banks
feeling 5	play in the water	feeling11	dangerous at night
feeling 6	safe for children	feeling12	hotbed of juvenile delinquency

Table-3 Setting the Items of the Existence Effect

①	firebreak zone	⑧	control of urban development
②	refuge place, center for relief and recovery activities	⑨	increase in the land value of neighboring real estate
③	control of floods	⑩	mental contentment
④	cooling the urban thermal environment	⑪	townscape beautification
⑤	reduction of the noise	⑫	serenity from the disaster
⑥	windbreak zone	⑬	community spirit cultivation
⑦	air purification		

questionnaires. As a result, we got the answers enough to be statistically analyzed.

The contents of questionnaire were composed of five items, 1) respondent's attribute, e.g. habitation, sex, age, address, occupation, etc. 2) feeling of the greenbelt as shown in Table-2, 3) existence effect which are

shown in Table-3, 4) comprehensive evaluation of the greenbelt, 5) respondent's views on the greenbelt.

3 Evaluation about the Existence Effect of Greenbelt

Each item, listed in Table-3, was asked to be evaluated whether it seemed to be important or not for existence effect. In addition, the most important three items among all 13 items, was also asked to be voted. Figure-2 shows the priorities of the existence effect, that is, the share of the items selected for the most important three items.

Though surveying greenbelt were different in situation, the kind and order of three valuable items were almost common in the surveyed four districts. First item is a psychological effect in the existence of the green ⑩; residents can be impressed and feel the cyclic change of the seasons and serenity. Second item is a scenery effect ⑪; townscape is felt to be improved by the existence of the greenbelt. Third item is an environmental effect ⑦; air purification.

On the other hand, the percentage for disaster-prevention effect, for example, ① firebreak zone, ② refuge place, are considerably small, accounting about 5-10%. It seems that the disaster-prevention effect does not appear large usually except for in the time of disaster.

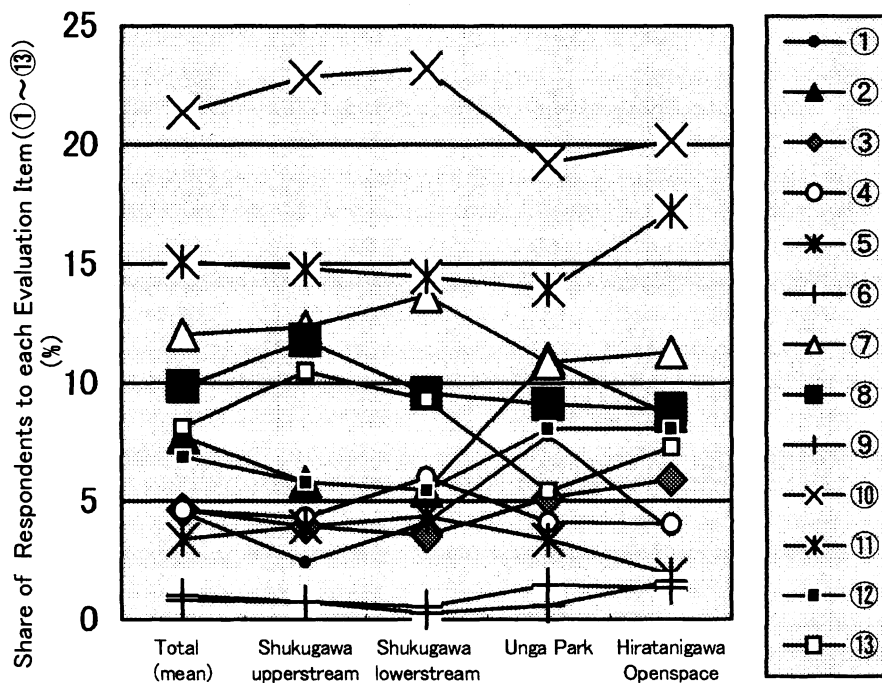


Figure-2 Priorities in Existence Effect

1) Relationship between distance from greenbelt and existence effect

Figure-3 shows the share of respondents who voted feeling existence effect ⑩, by the time distance to greenbelt from home on foot. The percentage decreases according to the time distance from the greenbelt. In other words, the percentage of respondents who feel the existence effect is on the increase, by approaching to there. It seems that the residents live in the nearer place, the more strongly feel the existence effect of the

greenbelt.

2) Relationship between frequency of visiting and existence effect

Figure-4 shows the relationship between respondents to item ⑩ and frequency of visiting greenbelt. It can be said that inhabitants visit the greenbelt more frequently, the more responsive to the existence effect.

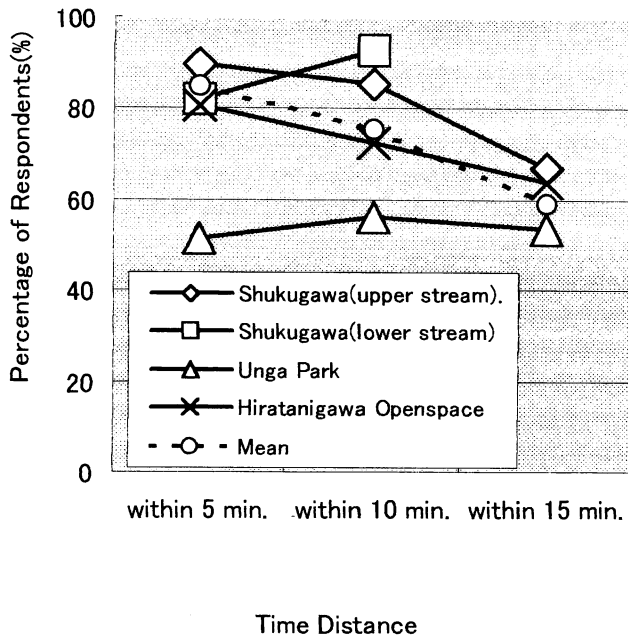


Figure-3 Percentage of Respondents to Item ⑩ by Distance from Greenbelt

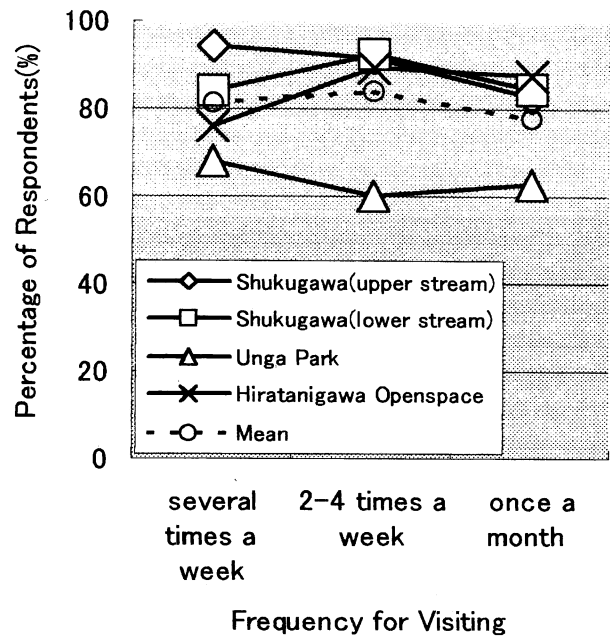


Figure-4 Percentage of Respondents to Item ⑩ by Frequency of Visiting

4 Comprehensive Evaluation of Greenbelt

1) Usefulness of greenbelt

The comprehensive evaluation of the greenbelt was estimated by asking each resident that whether the greenbelt was useful for personal lives and/or community respectively. The results are shown in Figure-5 and Figure-6. By making a comparison between Figure-5 and Figure-6, the number of respondents who felt useful for their community were slightly greater than that for their personal lives. It seems that there are some people, nearly one tenth or one fifth of resident, who do not feel the benefit of the greenbelt.

2) Influence Factor to Comprehensive Evaluation of the Greenbelt

In order to explain which item, that is, respondent's attribution, greenbelt's feeling or existence effect, greenbelt's usefulness evaluation depends on, an analysis by means of quantification theory type II was applied. Table-4 and Table-5 shows the result of analysis. As the result of analysis, usefulness for the life was influenced by greenbelt's feeling "feeling 1" and existence effect "item ①⑦⑩⑬", especially ⑩ and ⑬, more strongly, and then usefulness for the community was relative to "feeling 1" and "item ①⑦⑪⑬", above all ⑪ and ⑬.

In other words, inhabitants think as follows, the greenbelt is useful both for their personal lives on account of feeling of seasons and ease, and also is useful for their common community on account of

spacious townscape and cultivation of community spirit.

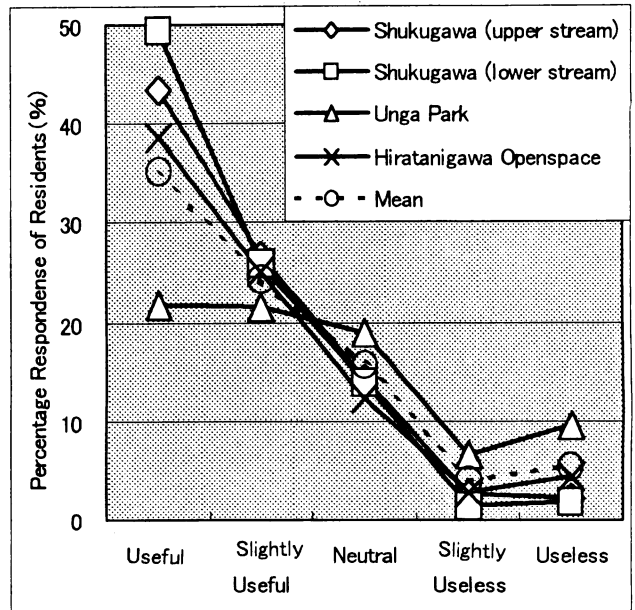
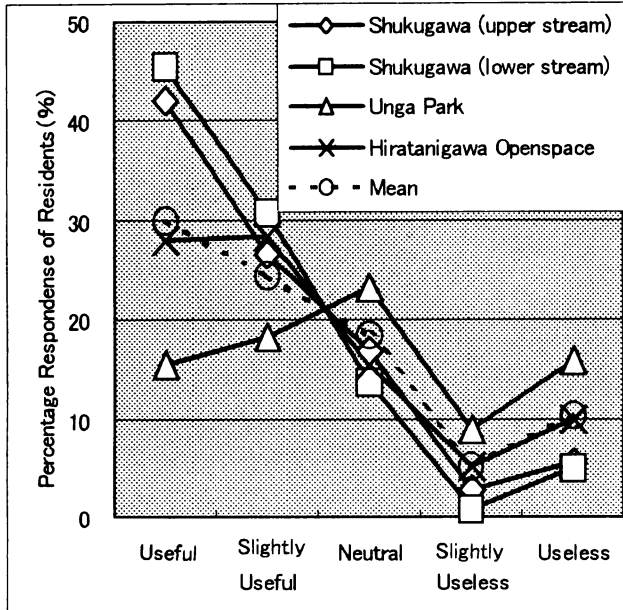


Figure-5 Usefulness of Greenbelt for Personal Life

Figure-6 Usefulness of Greenbelt for Community

Table-4 Usefulness Evaluation for the Personal Life

influence factor	partial correlation coefficient	range of category score
feeling 1	0.2131	0.5707
item ①	0.1462	0.6321
item ⑦	0.1555	0.6954
item ⑩	0.2388	2.1597
item ⑬	0.2473	1.3410
multi-correlation coefficient	0.4223	

Table-5 Usefulness Evaluation for the Common Community

influence factor	partial correlation coefficient	range of category score
feeling 1	0.1215	0.3167
item ①	0.1436	0.4489
item ⑦	0.1645	0.6440
item ⑪	0.2554	0.9648
item ⑬	0.2843	1.7390
multi-correlation coefficient	0.4236	

3) Influence Factor to Existence Effect of the Greenbelt

Then, we analyzed the existence effect using quantification theory type II to explain which item listed in Table-2 influenced on it. From Table-6, the item ⑩ was strongly influenced by feeling-1,2,9; the item ⑪ was relating to feeling-1,8,10; the item ⑬ was relating to feeling-1,2,8. It is summarized to say that the

greenbelt which gives residents comfort to pass through and feeling of four seasons to the inhabitants or has beautiful trees along the banks, and scenic beauty are evaluated strongly as existence effect by residents.

Table-6 Result of the Quantification Analysis (Type II):

Partial Correlation Coefficient and Range of Category Score for some items of Existence Effects

existence effect feeling type	⑩		⑪		⑬	
	p.c.coef.	range	p.c.coef.	range	p.c.coef.	range
feeling 1	0.1711	0.6049	0.1376	0.5250	0.1236	0.5318
feeling 2	0.1949	0.6249	0.1566	0.5454	0.2043	0.8074
feeling 3	0.0443	0.3009	0.0413	0.3051	0.0503	0.3927
feeling 4	0.0164	0.0694	0.0017	0.0077	0.0990	0.5142
feeling 5	0.0761	0.3360	0.0787	0.3769	0.0039	0.0208
feeling 6	0.0033	0.0117	0.0040	0.0155	0.0378	0.1661
feeling 7	0.0042	0.0191	0.0043	0.0211	0.0478	0.2637
feeling 8	0.1700	0.5568	0.1926	0.6880	0.1634	0.6409
feeling 9	0.2353	0.8295	0.1053	0.3974	0.1089	0.4573
feeling 10	0.1447	0.4679	0.2182	0.7698	0.1149	0.4503
feeling 11	0.0029	0.0088	0.0377	0.1220	0.0502	0.1822
feeling 12	0.1084	0.5098	0.1010	0.5026	0.0662	0.3872
multi-correlation coefficient	0.3398		0.3061		0.2560	

p.c.coef.: partial correlation coefficient, range: range of category score

5 Summary and Issues

The results from the questionnaire survey will be summarized as follows.

1. Among the items of existence effects of riverside greenbelt, the item “air purification”, “mental contentment”, “townscape beautification” and “community spirit cultivation” were thought valuable by neighboring residents. These items are relating to the comprehensive evaluation of the greenbelt for their personal lives and common communities.
2. The existence effect depends on the feeling such as giving inhabitants comfort to pass through and feeling of four seasons or beautiful trees along the banks and scenic beauty. So the greenbelt is considered to be useful for daily lives of the neighbors and their community.

The ribbon green space which have been completed in order as riverside park has various function, for example, urbanization control, environment purification, prevention of disasters, beautification of townscape and others more or less. It is necessary to study what sort of factor influence to comprehensive evaluation of the greenbelt. Therefore analysis of the relation between the greenbelt and inhabitant’s consciousness will be necessary in more detail.

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