

Comparative Research of Green Belt in Japan and China for City Safety - A Case Study of Beijing and Kobe -

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Abstract

This research aims to grasp the basic knowledge of green belt, which exerts far-reaching effects upon safety, by comparing the revelation of the green belt of the two cities-Japan and China.

In result, features of both countries were clarified. The green belt of Japan emphasizes on the function during emergency cases such as natural disasters, while the green belt in China, stresses its' function toward social safety in usual status, such as crimes, accidents or environmental pollution. Also, the function of the green space at normal situations has many in common between these two countries; however, the concepts differ according to geological or social system.

Key Words : Buffer Green Belt, landscape, Disaster Prevention Base, Fire Preventive Planting

I. FOREWORD

Both cities of Japan and China have suffered from earthquakes and flood ravages in the past. Also from the modern era, both cities has been exposed to air pollution and noises made from industrial factories and traffic, effecting lives of citizens. Safety measures were devised from the primary stage of urban planning to protect lives and health of the citizens, also people are now more concerned in the urban green's role in safe and secure lives. This research focuses on the green belt, which is profoundly related to urban network, and compares the concept of Japan and China to grasp the basic knowledge of the green belts 'layout and its' structure for further safeness in the city.

II. METHOD

First, documents from past history concerning the safeness of the green belt, of Kobe and Beijing were abstracted and organized, since these two cities are known for its' consideration towards city safety and also, both cities has experienced the earthquake disasters.

Next, the layout and structure of the green belt in both countries were examined. The universal similarities and regional differences were examined to organize the Asian way of the green belt.

For document liquidation, 'Master Plan of Parks and Open Spaces' of Kobe and Beijing were primarily used to data analysis. Other documents include, 'Systemic Planning of Green Space in Beijing'(2002) 'Master Plan of Green in Kobe'(2000), 'Data explaining the regulations of Beijing City Castle Town'(1995), 'Agency for City Planning of Beijing'(1998), and 'Beijing Municipal Institute of City Planning &

Design'(1992).

Recent studies of urban green in China and Japan were used. 'A Comparative Study of the Legal Systems Governing the Conservation and Maintenance of traditional Landscapes, including Gardens, with Japan, Korea, and China'(Ye, et al 2000), clarifies the conservation establishment of the three countries, such as the traditional landscapes, summarizing the Asian knowledge of the landscape. Other studies, such as the 'Comparative Study of a Plan for Urban Landscaping in Japan and China'(Shen, et al 2002), compares the master plans of the two countries and clarified the attitude and the process towards planning the urban landscape.

On the basis of past achievements, this research narrows the target to the 'green belt', which plays an important role in making the green network in cities, and seeks to examine the perspective of green belt in a city safety point of view.

III. COMPARISON OF GREEN BELT MASTER PLANNING BETWEEN KOBE AND BEIJING

Kobe and Beijing as mentioned previously, has been noticed since both cities has suffered from natural disasters, such as the earthquake. The main urban area of Kobe is a narrow maritime area that stretches its' city center aside from the surrounding mountains and the sea at its south. The urban area is made in a reticular pattern, which is made from the rivers and roads that stream in a longitudinal direction and from shoreline that spreads in a transversal direction. The urban areas of Beijing in the other hand, lies in the level plain and its' axis line running in four cardinal points, but also is constructed with roads that runs in a circinate and radial pattern.

According to the 'Basic Planning of Green' in Kobe,

the measures of 'safe and security' of the city, is highly positioned, and the perspective towards green disaster prevention (a area which is made to abate damages caused from earthquakes and flood disasters) is strongly reputed. The measure indicates that, 'safe and secure urban formation made from network of various types of green space' as an important article, further out, in developing green spaces coalition with the range of disaster-prevention facilities would be the priority issue, according to the characteristics the urban area holds(Fig. 1). Especially for improvements for the urban areas that are already made, the guideline of 'Formation of Disaster Prevention Green space Axis' was considered as primary importance. The contents of this guideline is to develop secure urban areas by planning planting strips and open spaces alongside of the water channel or the gridiron street networks, preventing the fire to expand during casualty, and to respond to smooth rescue efforts. Also at the same time, contributory toward interregional interchange, betterment of urban environment, and ensuring bioenvironmental space were also indicated (Fig. 2).

On the other hand, 'Basic Planning of Green' of Beijing, held keywords such as 'safety' and 'buffer' by green: however, the green had no meaning of preventing disasters. As shown in figure 3, preparation plan of green relating with city safety, are

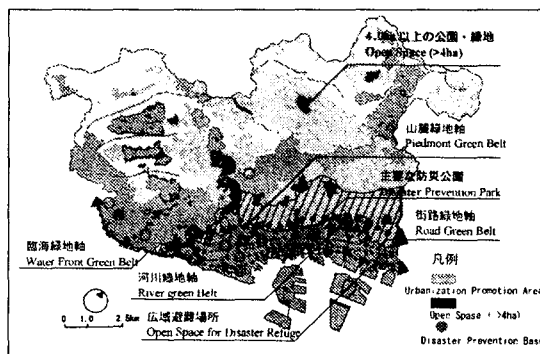


Fig. 1. Layout of Parks and Green Spaces Contributing Disaster Prevention (Kobe)

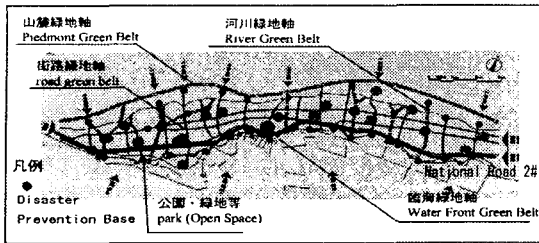


Fig. 2 Image of Green Axis Disaster Prevention and Formation of the Disaster Prevention Bastion (seashore area of Kobe)

forming green belts along the axis line of the city, beltways, radial road and rivers. The width of the green belts made by the main beltways are 100~200 meters wide, which also contributes to city environments, safety isolation (blocking casualty) and upgrades the city landscape. The green belts have two divisions, which are 'Landscape and Buffer Green Belt' and 'Buffer Green Belt'. The 'Landscape and Buffer Green Belt' which are located by the beltways shows expectation towards landscape, and for the 'Buffer Green Belt', which are located along rivers and the streets, are expected to prevent windbreak and sand.

Table 1, shows the comparison of the green belt concerning safety in Kobe and Beijing. According to this table, the following characteristics can be pointed

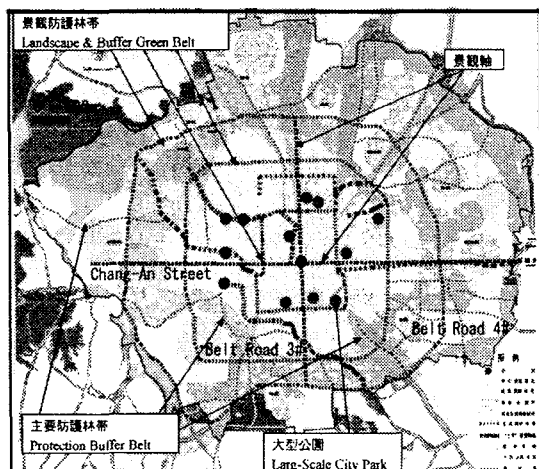


Fig. 3 Basic Concept of the Systemic Planning of Green Space (Beijing)

out.

1. The Name of the Green Belt

Kobe, experiencing the great earthquake that occurred ten years ago, the green belt are called disaster prevention axis, which can be read that the green spaces are expected and its' main object is to form networks of fire prevention.

Beijing has had earthquakes, but never suffered from catastrophic fires, did not consider the green belt for fire prevention. The green belt that is named 'Protection Green Belt' partly has disaster prevention, but its' function involves various types of dangers.

2. Function of the Green Belt in Times of Emergency

The green belts in both countries have the common function of separating the industrial region from residential district, but from all the sections, this was the only commonality. The functions and the way of thinking towards the green belt differ between the two countries. In Kobe, the green belt's function had prior correspondence towards natural disasters, such as fire prevention in urban areas, manipulation of escape route for evacuees, and alleviation of water damages. In Beijing, the green belts' function was to protect surrounding areas such as the high-voltage lines and media communication wire, avoiding sand from the hygiene standpoint, protecting facilities and institutions using the green belt.

3. Function of the Green Belt in the Usual Status

The common points of the two cities are that both cities had improvement towards city amenity, ensuring bioenvironmental space, and noise and air

pollution abatement. These points are the basic functions of green, not only for these two cities, but also for any other cities. The different points between these two cities were that Kobe had functions such as contributory toward interregional interchange; meanwhile, Beijing had function to upgrade the landscape. This functional differences show that both countries had came up with different issues.

4. The Cross Section and the Network of the Green Belt

The cross section of the green belt shows that both

countries distributes along rivers and roads. But the widths of the green belt differ. Having broad land, Beijing has a wide strip of plantation, but Kobe, on the other having little space, makes efforts in sew up the green belt as wide as possible by using vertical lines such as sea walls and elevated bridge piers of roads.

The networks of the green belt also differ in both countries; this can be speculated in result of natural and social backgrounds.

IV. RESULT

Table 1. Comparison of the Green Belt among Japan and China Considering City Safety

	Beijing	Kobe
Name	都市防護林帶 City Buffer Green Belt	防災緑地軸 Disaster Prevention Green Belt
Division	1) 都市防護林帶 Landscape & Buffer Green Belt 2) 防護林帶 Buffer Green Belt	1) 街路緑地軸 Street Green Belt 2) 河川緑地軸 River Green Belt
Functions during emergency	<ul style="list-style-type: none"> · Protection of high-voltage lines · Protection of media communication wire and facilities · Securing good hygiene · Separating factories and homes · Isolating important institutions from roads (security) 	<ul style="list-style-type: none"> · Fire prevention in urban areas · Escape route for evacuees · Separating factories and homes · alleviation of water damages
Functions during usual status	<ul style="list-style-type: none"> · Upgrading city amenity · Upgrading landscape · Ensuring bioenvironmental space · Noise and air pollution abatement 	<ul style="list-style-type: none"> · Upgrading city amenity · contributory toward interregional interchange · Ensuring bioenvironmental space · Noise and air pollution abatement
Cross section	Major river as axis 	Major river as axis
	Major roads as axis 	Major roads as axis
Network	Circularity and radiate network 	Grid-like network

The action assignments for these two countries are as follows.

The first feature of the green belt is its' function in cases of emergency. According from table-1, Beijing holds five issues, while Kobe holds four issues. As mentioned previously, these cities only have one issue in common. The major difference of the green belt, was that Kobe had its' focus towards natural disaster provision such as the earthquakes and water damages, but Beijing had its' focus towards social safety rather than natural disasters. This can be speculated by the keywords of each city: Kobe had keywords such as 'fire prevention in urban areas' and 'manipulation of escape route for evacuees' while Beijing had keywords such as 'protection of surrounding areas such as the high-voltage lines and media communication wire' and 'protection of facilities and institutions'. The perspectives of safety differ, reflecting each country's social system, leading to distinctive function of the green belt.

The second feature focuses on the function of the green belt in usual status. At the usual status, 75 percent of issues were in common. The contents are, as mentioned before, the basic function of green. The fundamental difference is that Kobe aims the green space for contributory toward interregional interchange of citizen's daily lives, while Beijing aims to upgrade urban landscape. This result is probably because the interest of the formulator differs in these two countries.

The third feature focuses on the network of the green belt. The networks of the two countries differ according to the geographical form and location. Kobe expands its' network in a grid-like figure, dividing the areas into small blocks to avoid fire from spreading, which indicates that the function focuses in emergency cases in Kobe. On the contrary, Beijing's circularity and radiation network provides good figure for urban ecology environments, but compared to the

grid form, the response meager during emergency cases, indicating that Beijing focuses in the usual status.

V. CONCLUSION

Modern meaning of the green belt begun in England, however the basic form was the pastoral land, surrounding the city area in a ring form, having its' main purpose to avoid overgrowth of the city. These green belts were used in city planning such as London, Adelaide, and Amsterdam. Gradually, the meaning of the green belt changed, given a new role such as an open space, which was seen in cities of the United States. The green belts which were studied in this research, has its original name: such as 'circularity green space' (China), or 'green axis' (Japan) which both surpasses the original meaning of the green belt and expected to develop into a variety types of the open spaces.

This research compares the green belt of both Japan and China, to organize the perspective of the green space of the two countries. It was clarified that the planning of green and its' attitudes reflects the country's social system. The emphases towards disasters differ according to regional conditions, but both countries had common concept to use the green belt to protect the city. This usage of the green belt may be one of the characteristics in Asian countries.

However, this research mainly analyzes both countries' city safety perspective, but further examinations concerning both countries' natural and social systems are still in more necessity.

The goal of the research is to maximize the safety and to protect the city from disasters and dangers, in order to do so, continuous research of green space and its' classification of the issues are to be solved, especially in the countries of Eastern Asia.

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