

Methodologies and Challenges of 'View Protection Areas' for Landscape Planning in Japan

Masaru Miyawaki

Graduate School of Environmental Studies, Nagoya University, Japan

Keywords: View protection area, Landscape planning, Visual impact assessment, Mt. Fuji, Japan.

Abstract

This paper focuses on the methodologies of 'view protection areas' for landscape planning in Japan. Historically, view protection areas were studied the ad hoc way and the methods of visual impact assessment and building regulations are still under development. The characteristics of objects for viewing and the distance of regulation to these objects are different for each case. View protection areas were officially adopted in landscape plans at local authority level after the first Japanese landscape law (no.110/2004) was passed.

The author studied not only the history of view protection areas for Japanese landscape planning but the recent challenges for view protection from central Tokyo to Mt. Fuji. Through case studies, this paper estimates the influences of the earth's curve and light refraction over a distance of 100 km are estimated, also giving information on regulation methods and the effects on view protection areas. Moreover, this paper offers information on regulation methods and the effects of view protection areas, through the author's experience gained from the urban design committee of Shibuya City and Minato City in Tokyo.

1. Introduction

There are some case studies on view protection areas in Japan but no paper discloses the history and methodologies of visual impact assessment in Japan. As there are no regional systems in Japan, local authorities (prefectures, cities, towns and villages) are responsible for landscape planning, by law. In Kyoto, people were interested in the East Mountain views from the Kamo River side by 'greenery zoning' from 1930, but view protection areas were not a part of landscape planning until 2007.

The oldest example of view protection areas was near the castle of Matsumoto in 1973. The methodologies of view protection areas were developed the ad hoc way till today. Moreover, the control methods are not easy to research as the information on assessment and controls are not usually published. Therefore, the author has presented a few examples of assessments not only through researches but also through the author's involvement in urban design committees.

The objective and methodology of this paper is to clarify the history and typologies of view protection areas in Japan. After the characterization of typologies of Japanese view protection areas and the methods of regulations, this paper proposes new viewpoints and view protections from Tokyo to Mt. Fuji including technical corrections of height.

2. History and Typologies of View Protection Areas

The concept of view protection areas started with the mod-

ernization of Japanese cities in the 1970s. Many cities were damaged by the Second World War and many historic buildings were demolished during modernization. Only historic monuments like temples and shrines were protected under the *Law for the Protection of Cultural Properties 1950*, but their number was limited in the case of urban areas.

The first case of view protection area with respect to historic monuments was by Prof Sachio Otani from the University of Tokyo. His research report on the landscape management at Matsumoto castle in downtown Matsumoto City was related to the central mountain ranges named the 'Japanese Alps', in 1973. This report focused on the height control of buildings near the castle for its surrounding mountain views. The regulation methodology defined three viewpoints at the front of the castle, using height control at the maximum elevation angle of two and three degrees which respect the surrounding views of mountains (Fig.1 and Fig.2). Matsumoto City adopted the concept of this report for view protection areas and followed the height control.

The second case of view protection areas was seen in Kurashiki City and Okayama Prefecture, located near Hiroshima, western Japan, in 1990 and 1992. During this period, people worried about the emergence of high-rise buildings at conservation areas under the pressures of economic development. The local governments had to protect the cultural properties of historic buildings and gardens from the development of high-rise buildings. They made an effort to reduce the visual impact with respect to cultural properties and covered the view protection areas (Fig. 3 and Fig. 4).

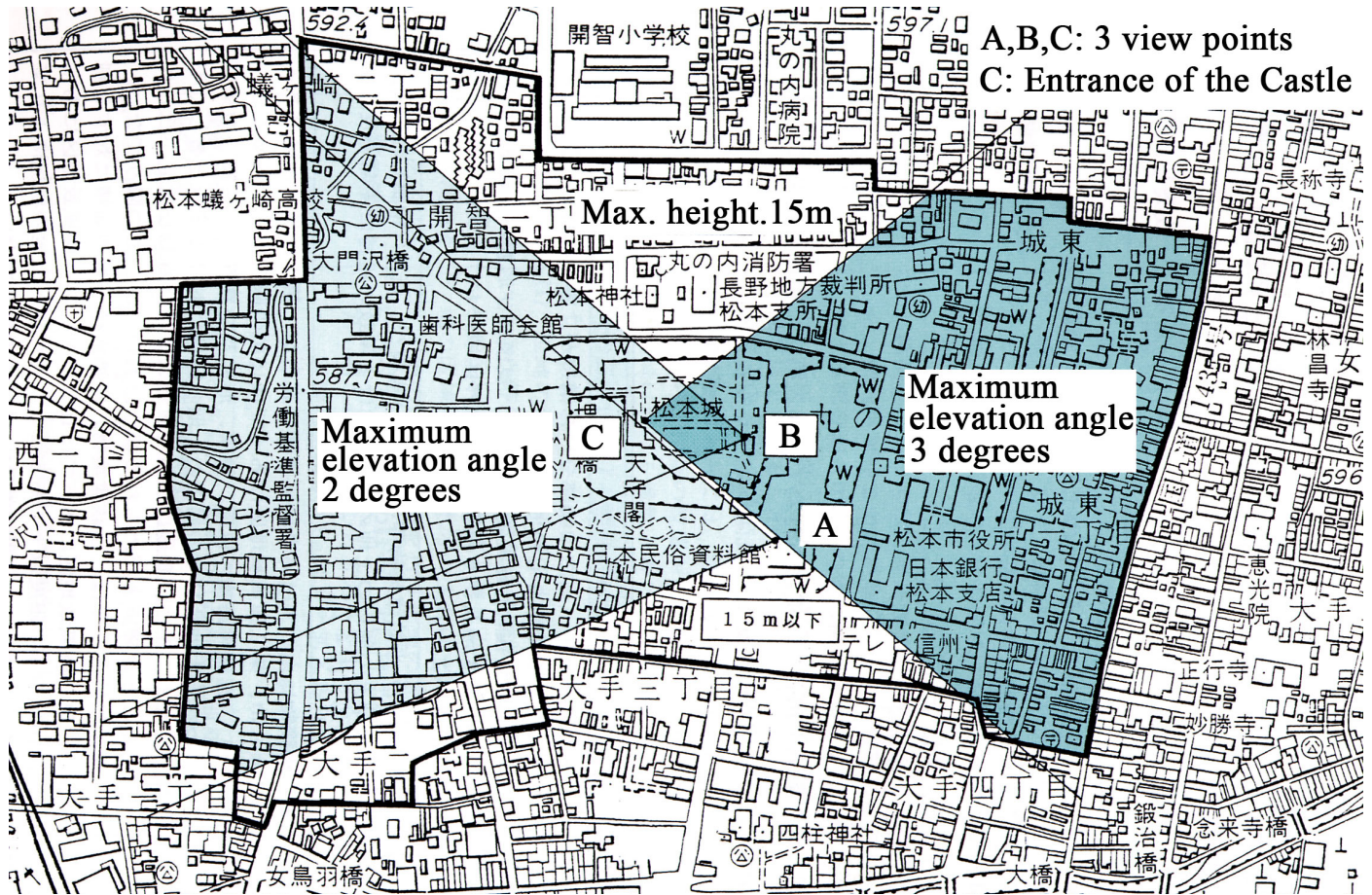


Figure 1 - Three view protection areas, reported by Prof Sachio Otani of the University of Tokyo, for the view protection at Matsumoto castle, in 1973 (reproduction in 1986). Credit: Matsumoto City.



Figure 2 - View of Matsumoto castle and its surroundings from viewpoint B, located in the view protection map of Figure 1. Credit: Masaru Miyawaki.

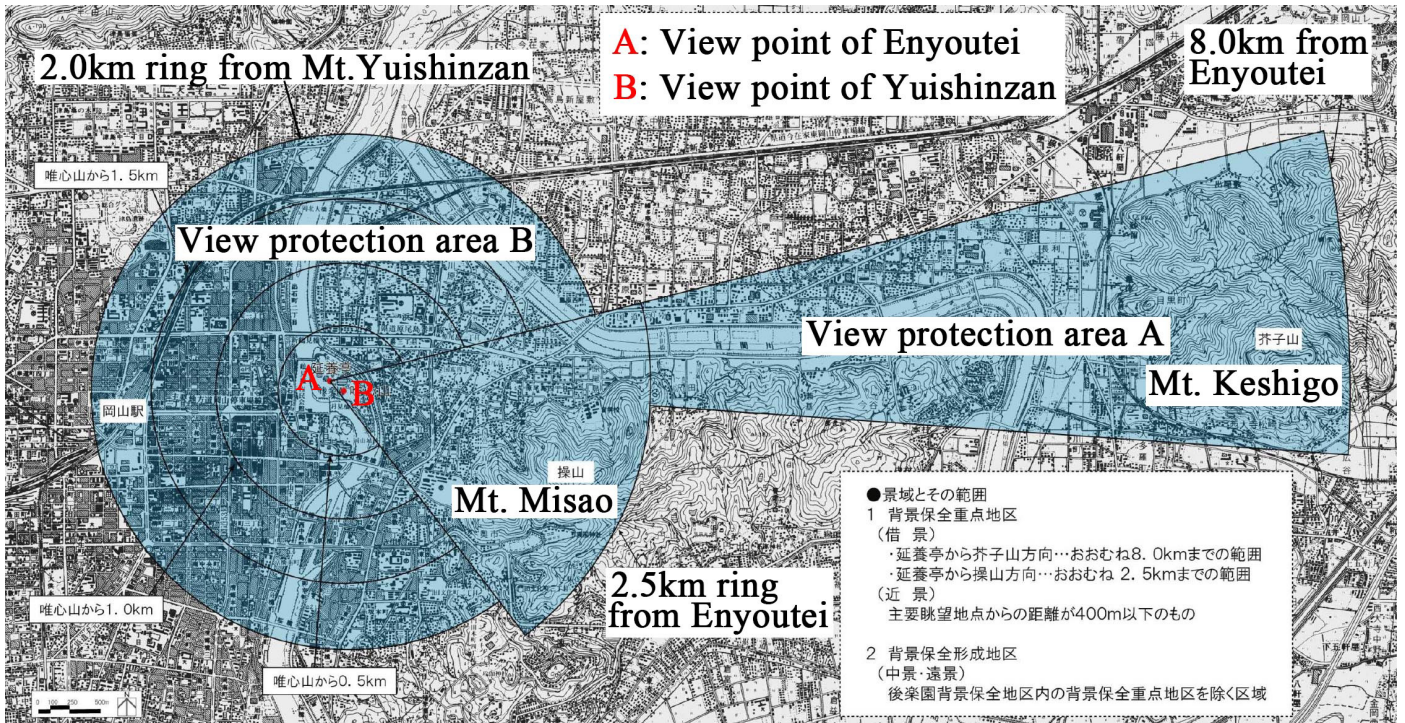


Figure 3 – Two view protection areas designated by Okayama Prefecture with the landscape ordinance in 1992. The viewpoint of Enyoutei (A) reveals the view from the villa in the Japanese garden ‘Korakuen’, established in 1700. The longest view measures 8 km till Mt. Keshigo which is outside the garden but the view was originally designed from the garden. The other viewpoint of Yuishinzan (B) shows the view from the small mount in the garden. The view measures 2 km in the central area of Okayama City. The two view protection areas were adopted in the landscape plan of Okayama City by the landscape law in 2007. Credit: Okayama City.



Figure 4 – The 8 km view from the viewpoint of Enyoutei (A) till Mt. Keshigo. The mountain is located on the outside of Kourakuen garden of Okayama City. Credit: Masaru Miyawaki.

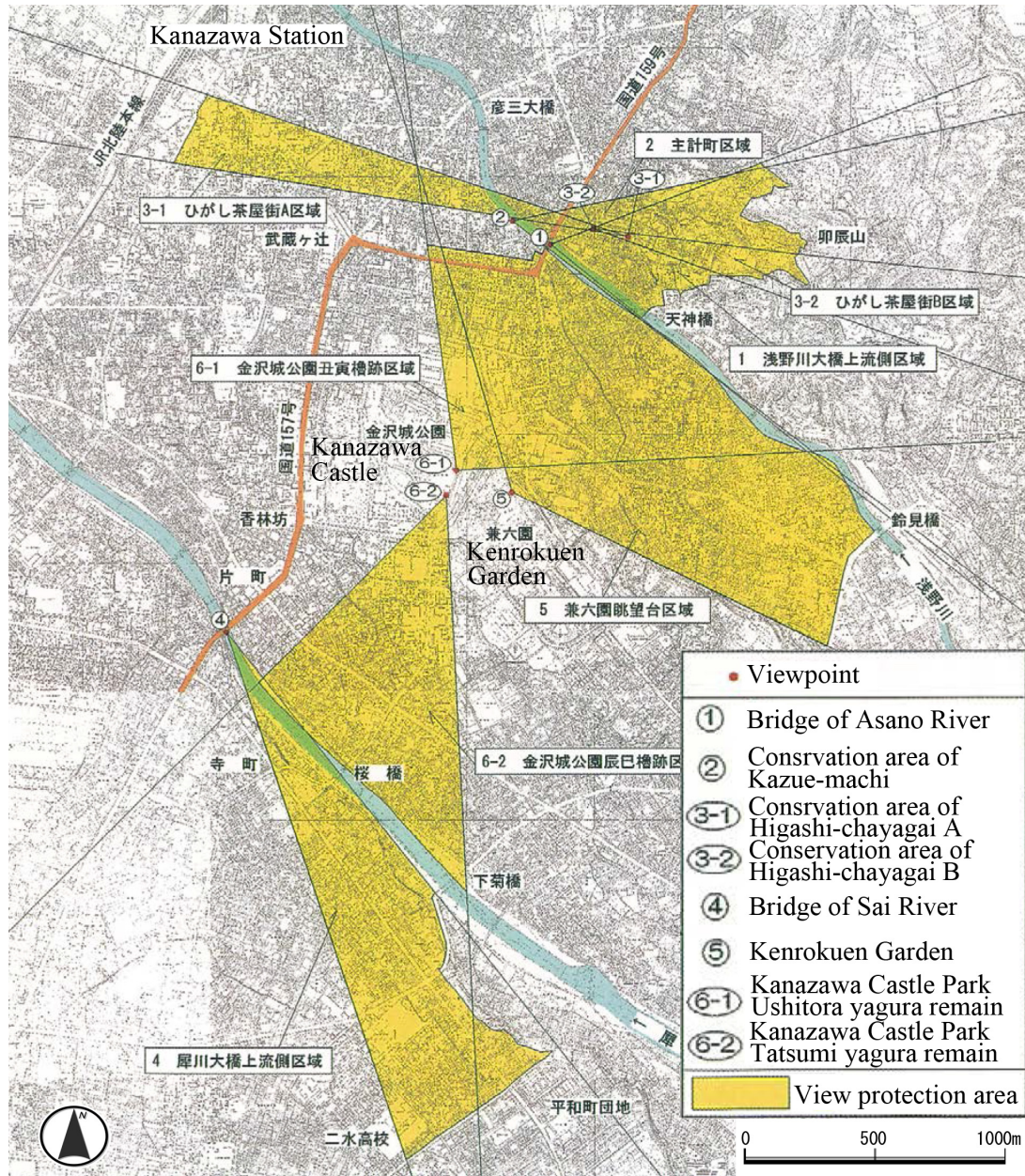


Figure 5 - Eight view protection areas published by the City's ordinance in 2003 and designated in the landscape plan of Kanazawa City by the landscape law in 2009. Credit: Kanazawa City.

The third case of view protection area was researched for all viewpoints in Kanazawa City from 2001 onwards. Kanazawa City assigned eight view protection areas to the historic townscape, city panoramas, and mountains, adopted by the landscape ordinance in 2003 and the landscape plan in 2009 (Fig.5). For example, in the view protection areas of Kanazawa City, there were risks involved in high-rise buildings in front of the national conservation area from the viewpoint 3-1 (Fig.6). The visual impacts of such developments were simulated depending on the height of the buildings on the historic street axis (Fig.7).

After the first Japanese landscape law (no.110/2004), Kyoto and Tokyo adopted a more general method for view protection areas in 2007. The methods for landscape planning in

Japan are well known. In the case of Kyoto City, 38 sites were picked for view protection areas and surrounding assessment areas with three types of visual impact assessment and regulations. The first is the view from the riverside and parks to the historic 'Gozan no Okuribi', a spiritual festival in which five giant bonfires are lit on mountains surrounding Kyoto (Fig.8, Fig.9, and Fig.10). The second is the surrounding assessment area (max. 500 m distance) for historic gardens, temples, and so on (Fig.9 and Fig.10). The third is the design control area respecting the view (max. 3 km distance; Fig.9 and Fig.10). The height regulations of Kyoto City are used in the urban area, but the height control of the view protection areas is severer than the height regulations. In the case of Tokyo metropolitan government, a local au-



Figure 6 - The view from the viewpoint of 3-1 (Conservation area of Higashi-chayagai A). Credit: Masaru Miyawaki.



Figure 7 - The simulation of the visual impact of high-rise buildings (from 16 m to 31 m in height) from the viewpoint of 3-1. Credit: Kanazawa City.



Figure 8 – The image of ‘Gozan no Okuribi’, a spiritual festival where five giant bonfires, forming characters, are lit up on the mountains surrounding Kyoto every year, on 16 August. Credit: Kyoto City.

thority managing the territory of the prefecture, the four view protection areas to historic buildings like the National Diet Building (1936), the National Guest House of Akasaka Palace (1909), Meiji Memorial Picture Gallery (1926), and Tokyo Station (1914) were adopted in the landscape plan of Tokyo by the landscape law (2007; Fig.11 and Fig.12). In this case, the view protection areas are through the city boundaries, so they are at the prefectural scale. The view protection areas are limited to only the width of the top of symmetric buildings, from its front and back.

Moreover, the ten surrounding assessment areas were adopted for the following historic gardens in Tokyo: Hamarikyū Gardens (17 century, Fig.13), Kyūshibarikyū Garden (17 century, Fig.13), Kiyosumi Garden (1891), Shinjuku Gyoen (1906), Koishikawa Botanical Gardens (1681), Koishikawa Kōrakuen Garden (1629), Rikugien Garden (1695), Kyū-iwasaki-tei Garden (19 century), Kyū-furukawa Gardens (1917), and Tonogayato Garden (1915). For the historic centre in Tokyo, viewpoints were added to the surrounding assessment area of Tokyo Imperial Palace which had replaced from the Castle of Edo and moat system after Meiji Revolution (1868).

For understanding the characteristics of major view protection areas, this paper uses the following typologies according to objects:

1) The surrounding protection of historic gardens: Okayama (1992), Kyoto (2007), and Tokyo (2007).

2) The view protection to historic buildings and townscape: Matsumoto (1973), Kurashiki (1990, 2014), Kanazawa (2003), Kyoto (2007), Tokyo (2007), Hikone (2007), Yokohama (2007), and Minato (2015).

3) The view protection to the mountain: Morioka (1984), Okayama (1992), Kanazawa (2003), Kyoto (2007), Kagoshima (2008), and Ishikawa (2008).

4) The view protection to the sea: Yokosuka (2006), Kagoshima (2008), and Ishikawa (2008).

5) The view protection to the city: Kanazawa (2003).

6) The view protection to historic characters: Kyoto (2007).

The surrounding protection of historic gardens was first applied in the case of Okayama Korakuen and the concept was diffused to the gardens of Kyoto and Tokyo. The view protection areas to historic buildings were effective in the central areas for controlling new developments outside of conservation areas in Japanese cities. Therefore, view protection areas to historic buildings used a quick method to manage new developments if they remained in the centre of modern cities in Japan. On the other hand, view protection areas to the mountain, the sea, or the city could be used as a method for landscape management for their identity in the territory. Only the case of Kyoto shows the view protection areas to objects of historic characters on the mountains during the spiritual festival. There are minimum views in the cities but efforts are on to preserve their visual identities by landscape planning.

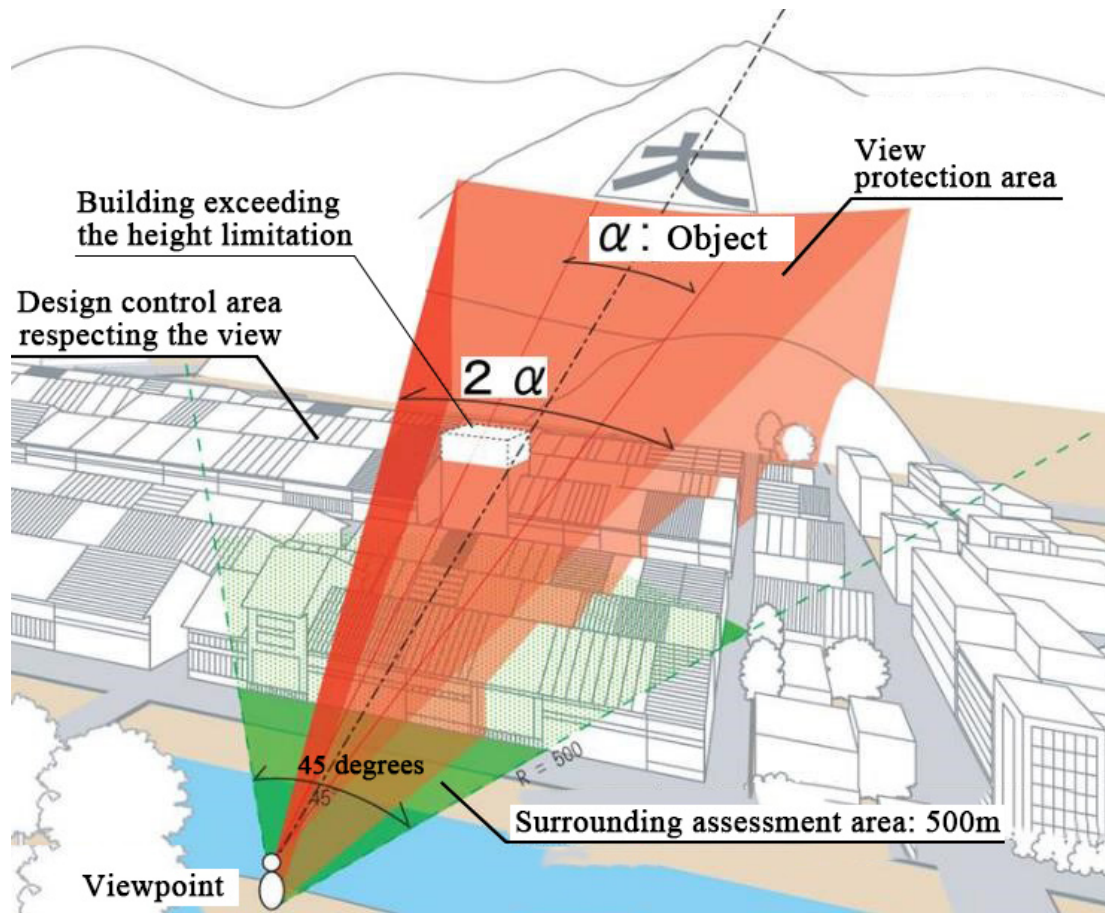


Figure 9 – Three types of control areas are designated in the landscape plan of Kyoto by the landscape law (2007). The first is the view protection area (in red), the second is the surrounding assessment area (in green, max. 500 m distance), and the third is the design control area respecting the view (max. 3 km distance). The widths of the view protection areas are designated by twice the width of the object of historic characters. Credit: Kyoto City.

3. Visual Impact Assessment

The varied methodologies of view protection areas are developed with an attempt to introduce it to the landscape plans. The distance of assessment is important for view protection of objects from its front and back. This paper defines four distances depending on objects in Japanese landscape plans: neighbourhood view (0-500 m), short view (500 m-3 km), medium view (3-6 km), and long view (over 6 km), as seen in the following cases:

- 1) Neighbourhood view (500 m): historic gardens and monuments (Kyoto).
- 2) Short view (500 m to 3 km): historic buildings (Matsumoto, Kurashiki, Kanazawa, Hikone, Yokohama, and Minato), historic gardens, and monuments (Kyoto, Tokyo).
- 3) Medium view (3 km to 6 km): historic building (Tokyo), and mountain (Ishikawa).
- 4) Long view (over 6 km): mountain (Okayama).

The historic gardens and monuments have very sensitive surroundings where higher impact evaluation could reach from the neighbourhood to a few kilometres away. The short view

protection areas, from 500 m to 3 km, can control panoramic views or wider views for monuments. In the case of Ishikawa Prefecture, the panoramic road is also controllable up to 4 km for the mountain in the field. In the case of Okayama City, the long view, over 6 km, is controllable to the mountain in the non-urbanized areas.

On the other hand, view protection areas in the centre of Tokyo reach from 2 km to 4 km and the protected widths of the objects are limited from 20 m to 90 m. In the European situation, the longest view of St Paul's Cathedral (protected width of 300 m) and its back protect around 19 km from King Henry's Mound at Richmond Park in Greater London. Similarly, the protected view of the Louvre Palace and its back reaches around 8 km from the Arc de Triomphe in Paris. These are similar to the cases in Tokyo as the type of view comes from the view protection areas in urbanized areas.

The methodologies of visual impact assessment have not been researched well as the information of the assessment is not usually published in Japan. Private developers could realize their projects without making any announcements and the local governments would not publish their control.

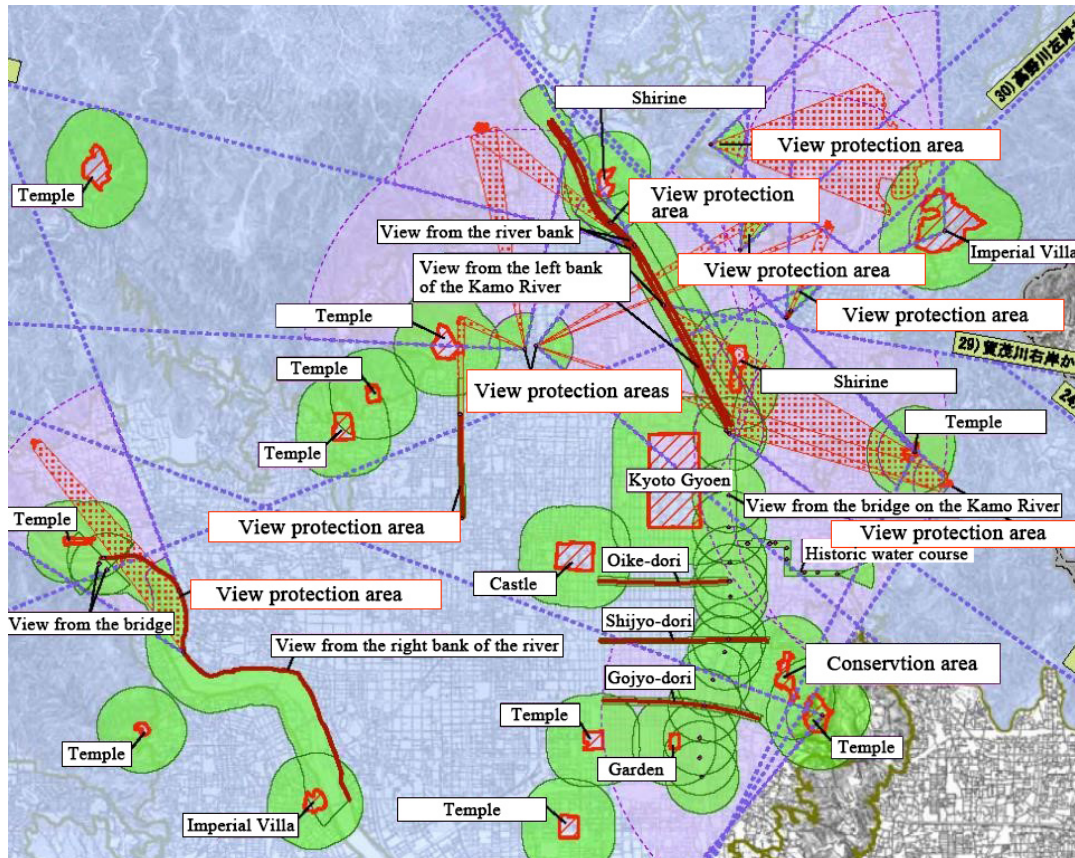


Figure 10 – A central part of the view protection map of the landscape plan of Kyoto (2007). View protection areas (in red dots), the surrounding assessment areas (in green), and the design control areas respecting the view (in violet), cover all the important monuments and views. Credit: Kyoto City.

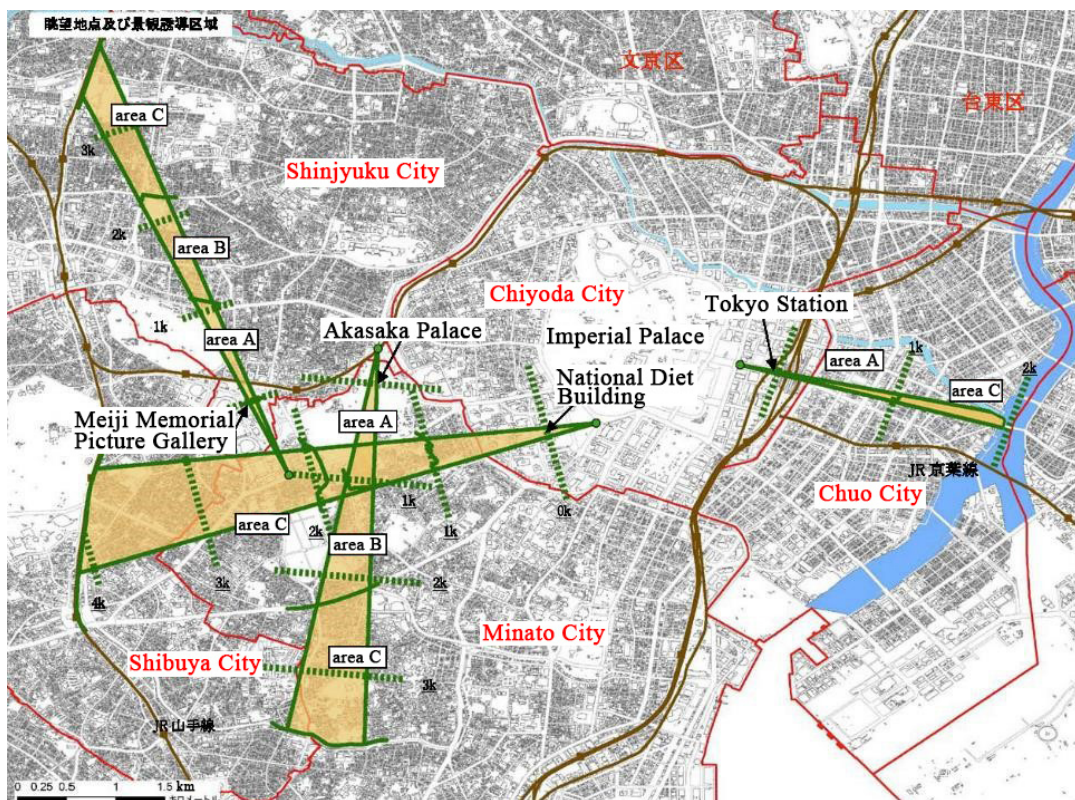
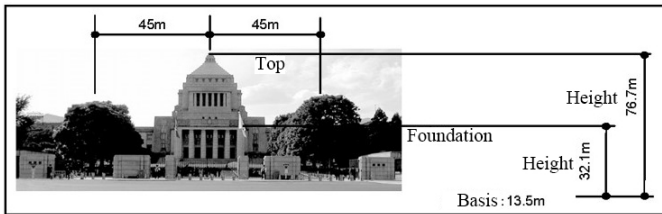
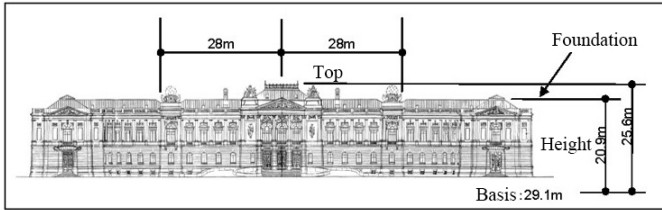


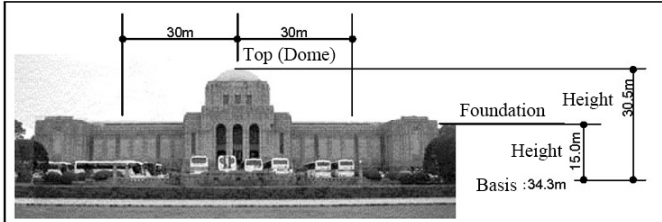
Figure 11 – Four view protection areas (in yellow) in the landscape plan of Tokyo (2007). All viewpoints are on the streets. The effect of the view protection appear behind historic buildings in the case of many skyscrapers in Tokyo. Credit: Tokyo metropolitan government.



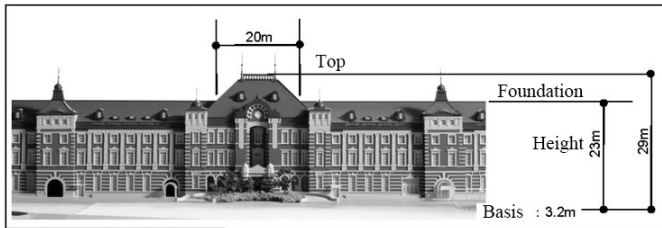
the National Diet Building (1936)



the National Guest House of Akasaka Palace (1909)



Meiji Memorial Picture Gallery (1926)



Tokyo Station (1914)

Figure 12 – Four historic buildings of Tokyo as the object of view protection (2007). View protection is limited to only the width of the top of symmetric buildings from its front and back. Credit: Tokyo metropolitan government

The visual impact assessment is not for environmental impact assessment (EIA) by the environmental law in Japan but for landscape assessment which is requested by the landscape law or landscape ordinances.

The first case of visual impact assessment at view protection areas was attempted by balloons to survey the real height of the project in Kurashiki City. The balloons were visible and it was easy to understand the impact on the historic centre of Kurashiki City. In this case, the height of the project was reduced from five floors to four while other changes included colour modification and design change to Japanese style. There are some practices of visual impact assessment in Kurashiki City.

The second case of visual impact assessment at the view protection areas was conducted with visibility check maps for long distance, by Okayama Prefecture.

After the Okayama case, Kurashiki City adopted the developed method and has been using the visibility check map for short distances of 1 km since 2014 (Fig.14). The visibil-

ity check map can help to quickly evaluate the visual impact from the viewpoints.

The visual impact assessment case of Tokyo was conducted with the height regulations of new buildings at areas A and B (Fig.11). The height of new buildings behind the historic buildings at areas A and B should be reduced. Area C, at the longer distance, is the consulting area for reduction of visual impact but the height control is ambiguous.

Moreover, the author's ten year experience as an urban design committee director of Shibuya City helps shed light on view protection areas in Tokyo following the landscape law. Neighbourhood surrounding views are projected very often and usually presented by computer simulated 3D images from the viewpoints which are indicated on the map of landscape plans in Tokyo. After visibility checks, the methods of regulations and mitigations were used as follows: the reduction in the height of buildings; the reduction in the impact of design, colour, and advertisement; planting trees for the reduction of the impact of buildings; and the creation of public spaces, etc. There are many practices of visual impact reduction but the actual controls are not published in Tokyo. However, the effects of the landscape plan and visual impact assessment have been seen recently. An example of this is the Shinjyuku Gyoen Park of Tokyo where the landscape looks vastly better than before due to the landscape plan of 2007 (Fig.15 and Fig.16).

4. Research on the Longest View to Mt. Fuji

The author has presented the latest challenges of view protections for Mt. Fuji, from Tokyo Tower and the new national stadium designed for Tokyo 2020 Olympic Paralympics Games.

The first example for the view protection area from the panoramic deck of Tokyo Tower to Mt. Fuji (UNESCO site, 2013 inscription) was proposed by the author as a member of the committee of Minato City in 2013. The proposed view distance of 97.3 km from the deck of Tokyo Tower (145 m height) to Mt. Fuji (3,776 m height) is the longest example in the world (Fig.17). The view was from the same location where the formal guest house 'Kouyoukan' originally stood. The old photo shows Mt. Fuji from the guest house in the 1920s (Fig.18). Today, Mt. Fuji is visible from Tokyo for more than a hundred days a year. This paper cleared the visibility of long distance and the necessity of the height correction by the earth's curvature and light refraction during the 97.3 km distance from Tokyo Tower to Mt. Fuji (Table 1 and Fig.19). This paper cleared the visibility of Mt. Fuji and proposed the width of view and maximum building height in order to create the view protection area. In this case, it is revealed that

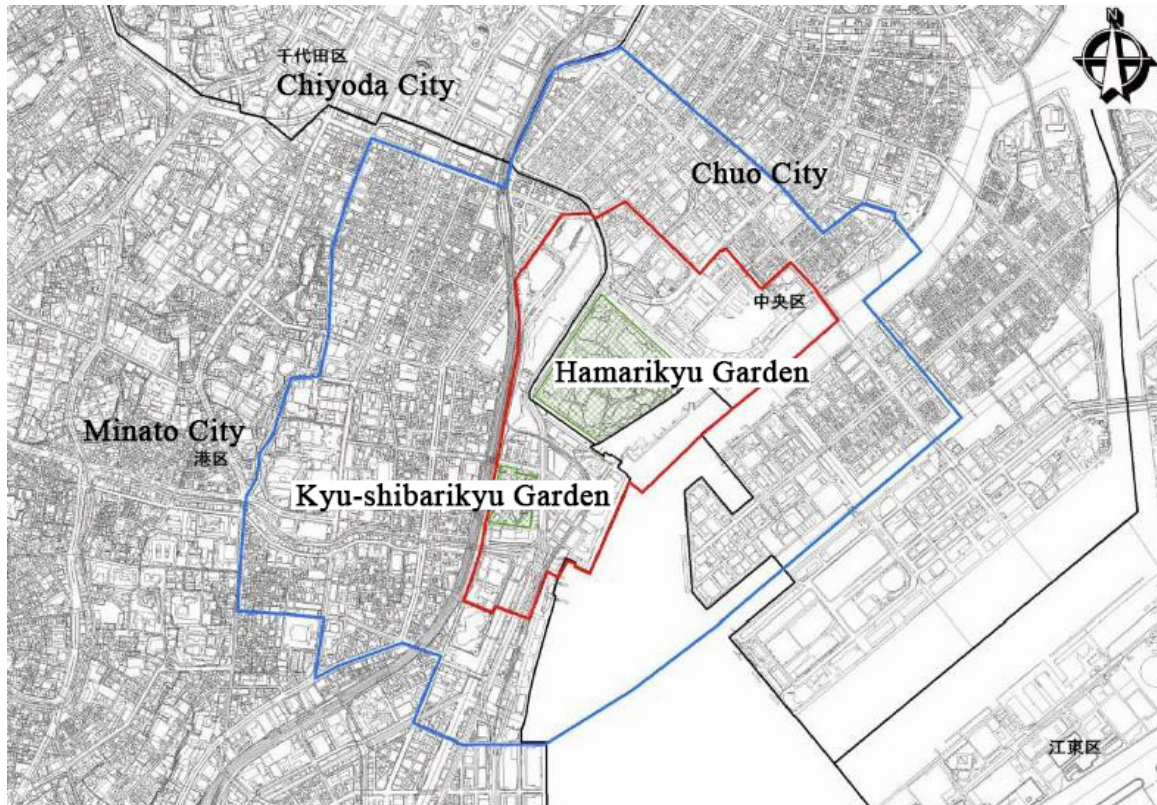


Figure 13 – An example of the surrounding assessment areas of ‘Hamarikyu Garden’ and ‘Kyu-shibarikyu Garden’ in the landscape plan of Tokyo (2007). There are two types of surrounding assessment areas. The red line signifies the design and advertisement control area that is lined at a distance of 300 m from the gardens. The blue line signifies the limit of the visual assessment area with a computer simulator. In these areas, viewpoints are designated in the gardens. Credit: Tokyo metropolitan government.

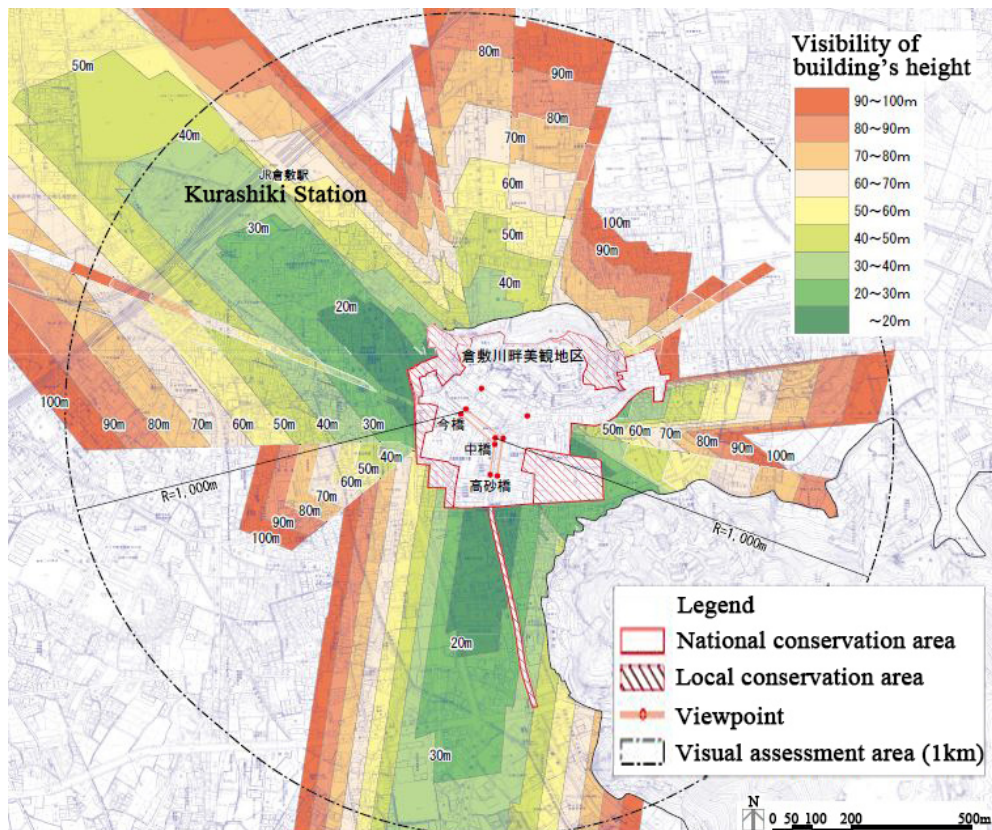


Figure 14 – Visibility check map of Kurashiki City (2014). Credit: Kurashiki City.



Figure 15 – Shinjyuku Gyoen Park landscape before the landscape plan of Tokyo (2007). Credits: Masaru Miyawaki.



Figure 16 – The park landscape seen after the landscape plan (same location as Fig.15, 2016). The difference lies in the removal of the car parking tower advertisement in front of the historic French style garden. Credits: Masaru Miyawaki.

the visibility should be corrected by the earth's curvature and light refraction for the long view, depending on distances. There is no example of visual impact assessment which calculates visibility correction for the earth's curvature and

light refraction in Japanese landscape plans. Following this proposal, Minato City had at least respected the view from Tokyo Tower to Mt. Fuji inside the city boundary and adopted the height regulations by city planning law,

Table 1 – The matrix of the distance and the maximum height of buildings for the view protection from the deck of Tokyo Tower to Mt. Fuji. The corrections of the earth's curvature and light refraction used the following formula: subduction (m) = [distance (km)]²/14.73. An example of the height correction of Mt. Fuji (distance of 97.3 km) is 3,133.1 m a.s.l. height (original height is 3,776.2 m a.s.l.). This table shows that influences depend on the distances to objects.

Objects	Distance from the deck of Tokyo Tower	Maximum height for the view protection	Correction of the maximum height	Height of mountains	Correction of the height of mountains
Azabujyuban Station	854.4 m	156.2 m	154.6 m		
Hiroo Station	2,195.4 m	173.8 m	169.8 m		
Ebisu Station	3,449.7 m	190.3 m	184.3 m		
Nakameguro Station	4,456.1 m	203.5 m	196.1 m		
Youga Station	10,683.7 m	285.3 m	272.0 m		
Mt. Hirugatake	58,146.8 m			1,672.7 m	1,443.2 m
Mt. Fuji	97,330.5 m			3,776.2 m	3,133.1 m

but the view protection area was not created by the landscape law because of problems of the intercity scale.

There remain other risks for view protection because of the developments of skyscrapers surrounding Tokyo Tower. Therefore, the view to Tokyo Tower itself was created as a surrounding assessment area of Tokyo Tower, for the historic monument of cultural property, with some viewpoints in the landscape plan of Minato City by the landscape law in 2015.

5. Challenges for the new viewpoint to Mt. Fuji

The latest research example is of the new view in Shibuya City. The extremely long view from the garden of 'Meiji Shrine Gaien' to Mt. Fuji was proposed to the urban design committee of Shibuya City in 2016, as ICOMOS (International Council on Monuments and Sites) Japan issued the state of view from 'Meiji Shrine Gaien' to the UNESCO site of Mt. Fuji behind the new national stadium for Tokyo 2020 Olympic Paralympics Games. Originally the historic garden 'Gaien' had been designed by the street axis to Mt. Fuji. The 1964 Olympic Games stadium had blocked the view to Mt. Fuji for a long time. Following the design competition for the new stadium at the same location and the destruction of the old stadium, the view from the garden to Mt. Fuji appeared to the public in 2016 (Fig.20 and Fig.21). The landscape plan of Shibuya City did not indicate any view protection areas because the view had been forgotten for a long time. The author, as the director of the urban design committee of Shibuya City, advised to respect the new views from the

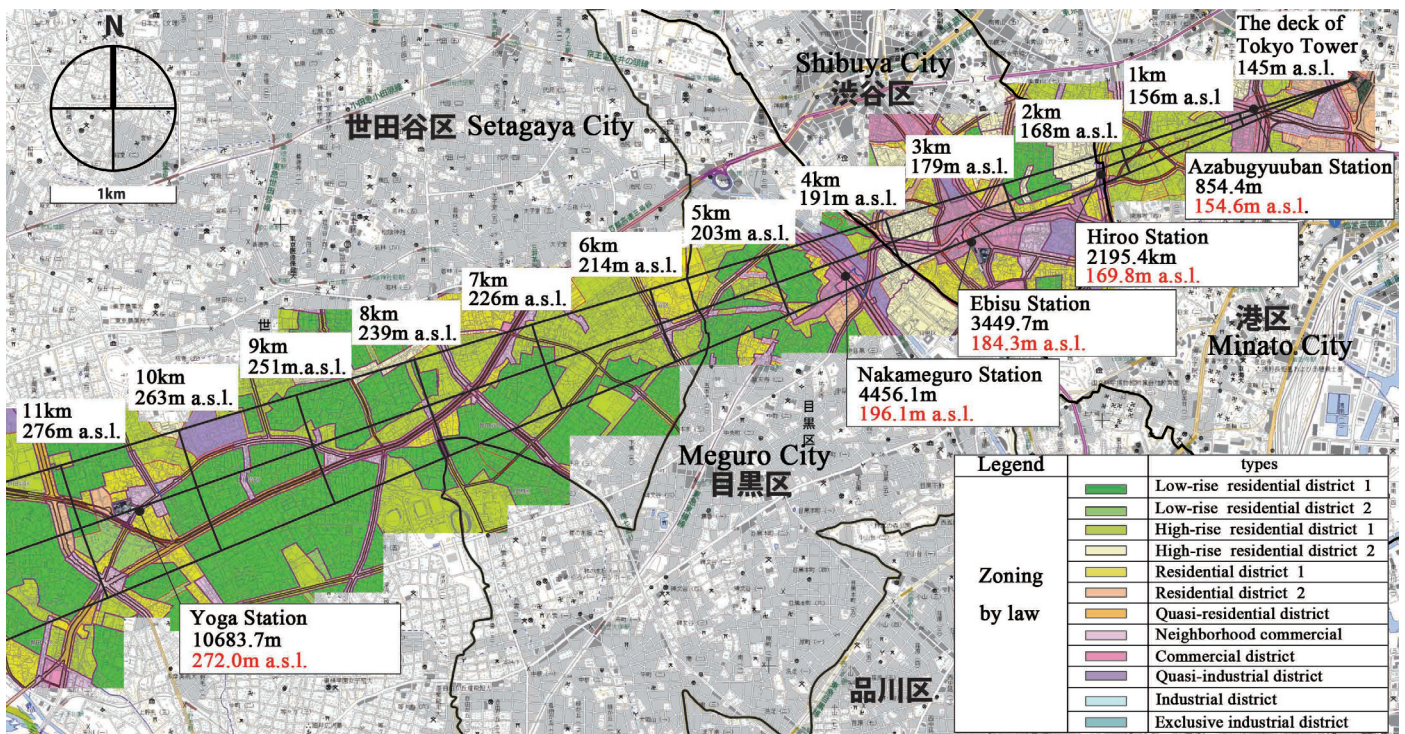


Figure 17 – A proposal of the view protection area from the deck of Tokyo Tower to Mt. Fuji. This map shows the maximum height of the buildings, respecting the view according to the distance from the viewpoint. The width of the view corresponds to the proposed width of the object (4b) in Fig.19. Credit: Masaru Miyawaki.



Figure 18 – An old photo of Mt. Fuji from the formal guest house 'Kouyoukan' (1920s).

ground floor and panoramic corridor of the new stadium by using the computer simulation from 2016 to 2017. The methodology of height correction by the earth's curvature and light refraction was officially applied and the 3D simulator cleared the problems of surrounding urban areas to protect the view to Mt. Fuji from the panoramic corridor of the new stadium.

In conclusion, this paper declared that there was no visibility from the ground floor of the stadium or from the park side after construction. The urban design committee therefore called the promoters and architects to keep the views from the higher level of public spaces of the panoramic corridor for mitigation.

Tokyo is an ever changing metropolis with no conservation area. Even then, the view protection areas are possible to apply in order to protect the identity of the landscape and the visibility for public.

6. Conclusion

This paper reviews the history of Japanese view protection areas. The trials for the view protection areas were conducted by local authorities in order to reduce the visual impact of the new developments from the '70s. After the landscape law of 2004, some view protection areas were attached with the landscape plans by law. Their methodologies and plans for the view protection areas are varied. This paper explains the view protection areas as effective, not only for historic towns like Kyoto, but for modern cities like Tokyo as well.

It is clear from the case studies that objects such as the historic garden, the historic building, the historic townscape, the mountain, the sea, the city, and the historic character vary for view protection areas. The methods of the regulations also vary. The distances and widths of view protection areas are different for each situation.

Although the results of the visual impact assessment for actual projects are usually not published in Japan, this paper gives examples of recent landscapes changed for the better by view protection areas.

From the author's experience of urban design committees in Tokyo, the proposed extremely long views from Tokyo to



Figure 19 – A recent photo of Mt. Fuji from the deck of Tokyo Tower (Jan. 2013, 52.5mm lens; human eye view). Fig.18 and Fig.19 are situated at the same place. The Tokyo Tower (registered building) was built in 1958. The proposed view width of frame 4b (four times of width b) in the photo corresponds to the width of the view protection area in Figure 17. Credit: Masaru Miyawaki.



Figure 20 – The view of Mt. Fuji from the street of ‘Meiji Shrine Gaien’, in front of the Meiji Memorial Picture Gallery in 2016. Credit: Research Group of the Vista of Fuji-mi-zaka (Fujimizaka Chobou Kenkyukai).

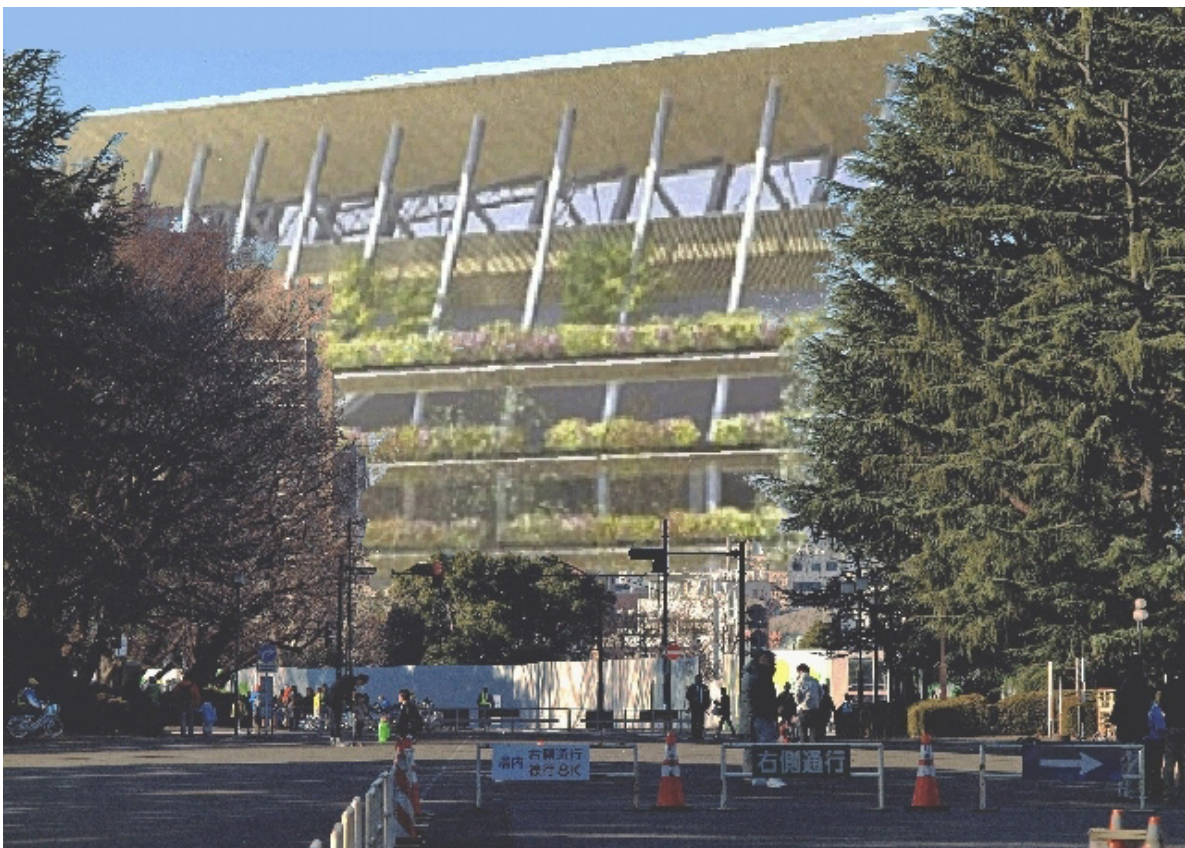


Figure 21 – Visual impact simulation from the same viewpoint of Figure 20. The view to Mt. Fuji is blocked by the new stadium from the park side. However, the stadium is designed to include a green facade and public space of the panoramic corridor on the higher level. Credit: Research Group of the Vista of Fuji-mi-zaka (Fujimizaka Chobou Kenkyukai).

Mt. Fuji (about 100 km distance) are analysed as the very symbolic views that should be protected for the future. This paper noted the necessity of the height correction by the earth's curvature and light refraction for such long views,

and the necessity of territorial coordination between local governments for creating a territorial landscape plan.

References

- Masaru Miyawaki, Jun Iwata (2013), A Study on the Historic View Protection from the Tokyo Tower to Mt. Fuji, A Landscape Assessment of the History of Tokyo Tower and the View to the Mt. Fuji, the Journal of the City Planning Institute of Japan, Vol.48, No.3, pp.1047-1052.
- Yukio Nishimura, Masaru Miyawaki et al. (2003), Landscape Planning in Japan, Gakugei-shuppan-sha, p.198 (In Japanese)
- Giorgio Gianighian, Matteo Dario Paolucci, Masaru Miyawaki et al. (2011), Il restauro in Giappone: architetture, città, paesaggi, Alinea Editrice, p.240 (In Italian).
- Masaru Miyawaki (2013), Landscape and Urban Design, Asakura-shuppan, p.142 (In Japanese).
- Masaru Miyawaki, Manami Fujiwara (2014), A Study on the Landscape and Visual Impact Assessment of the TOKYO SKYTREE, Focused on the Zone of Theoretical Visibility and the Zone of Visual Influence, the Journal of the City Planning Institute of Japan, Vol.49, No.3, pp.747-752.
- Masaru Miyawaki, Jun Iwata (2015), A Study on the Estimate of the Zone of Visual Influence for the High-rise Buildings, Evaluation of the Tower of Wind, the Chiba Port Tower, the Chiba Thermal Power Plant and Yokohama Landmark Tower, the Journal of the City Planning Institute of Japan, Vol.50, No.3, pp.1122-1129.
- Research Group of the Vista of Fujimizaka (Fujimizaka Choubou Kenkyukai) : <http://fujimizaka-hozen.sakura.ne.jp/>
- Landscape Plan of Matsumoto City, Zoning map of the landscape plan (in Japanese): <https://www.city.matsumoto.nagano.jp/shisei/matidukuri/keikan/keikankeikaku/keikannkeikaku.files/honpen5.pdf>
- Landscape Plan of Okayama City, A chapter of the view protection area (in Japanese): <http://www.city.okayama.jp/contents/000009135.pdf>
- Landscape Plan of Kanazawa City (in Japanese): http://www4.city.kanazawa.lg.jp/data/open/cnt/3/15212/1/keikankeikaku_03_1syoun.pdf
- A procedure of the view protection area of Kanazawa City (in Japanese): <http://www4.city.kanazawa.lg.jp/29020/keikan/jourei/cyoubou/>
- Landscape of Kyoto (in English): <http://www.city.kyoto.lg.jp/tokei/page/0000057538.html>
- Landscape Policy of Kyoto City (in English): <http://www.city.kyoto.lg.jp/tokei/cmsfiles/contents/0000061/61889/HP-English.pdf>
- Landscape Plan of Tokyo metropolitan government (in Japanese): <http://www.toshiseibi.metro.tokyo.jp/kenchiku/keikan/keikaku.pdf>
- Japan Sport Council, Competition of the new national stadium of Tokyo 2020 Olympic Paralympics Games: <http://www.jpnsport.go.jp/corp/english/activities/tabid/391/Default.aspx>