Sense of Place

Cultural Ecosystem Services

Uttam Kumar Tamboli　　　　**Ecosystem Services Report**　　　　**Environmental Management**

Contents

Introduction

Cultural ecosystem services received international recognition as part of the Millennium Ecosystem Assessment Project (2005), which proposed the valuation of ecosystem services, defined as regulatory, provisional, ecosystem support, and cultural services given to us by nature at no cost. (Gavitt & Smardon, 2019)

Services	Comments and Examples	
Aesthetic	Finding beauty or aesthetic value	
Recreational	Opportunities for recreational activities	
Educational	Opportunities for formal and informal education and training	
Spiritual and inspirational	Source of inspiration, religious attachment	
Functions	**Ecosystem Processes**	**Goods and Services**
Information functions	*Opportunities for cognitive development*	
Aesthetic information	Attractive landscape	Enjoyment of scenery
Recreation	Variety for recreation use	Travel for ecotourism Outdoor sports
Cultural/artistic information	Natural feature variety with cultural artistic value	Use of nature in books, film, painting, folklore, symbols
Spiritual and historic information	Natural feature variety with spiritual and historic purposes	Use of nature for religious and heritage value
Science and Education	Natural variety with scientific and education value	Use of natural systems for school exercises and scientific research
Functions and Services	**Description**	**Examples**
Cultural Services	*Enhancing emotional, psychological and cognitive well being*	
Aesthetic	Sensory enjoyment of functioning ecological system	Proximity to scenery and open space
Recreation	Opportunities for rest, refreshment and recreation	Ecotourism, bird watching, outdoor sports
Science and education	Use of areas for natural field lab and natural reference areas	Scientific and educational activities
Spiritual and historic	Spiritual or historical information	Use of nature as symbol or natural landscape with significant religious value

Adapted from the Millennium Ecosystems in Wetlands Report [1]; De Groot et al. [4] (p. 397); Faber et al. [5] (p. 123).

Fig-1: Functions, Description & Example of Ecosystem & Cultural Services. (Gavitt & Smardon, 2019)

It is evident from fig-1 that ecosystems such as urban greenspaces, community parks, gardens, forest reserves etc., offer a wide range of cultural services which are beneficial for human beings. These services positively impact our physical, psychological, and social well-being by providing aesthetic enjoyment, opportunities for recreational activities, social engagement, community interactions etc. Also, the illustration (fig-2) showcased by (Hartig *et al.*, 2014) signifies that all these services are interconnected and work holistically to exert an all-round positive experience to human beings and other living creatures of the planet.
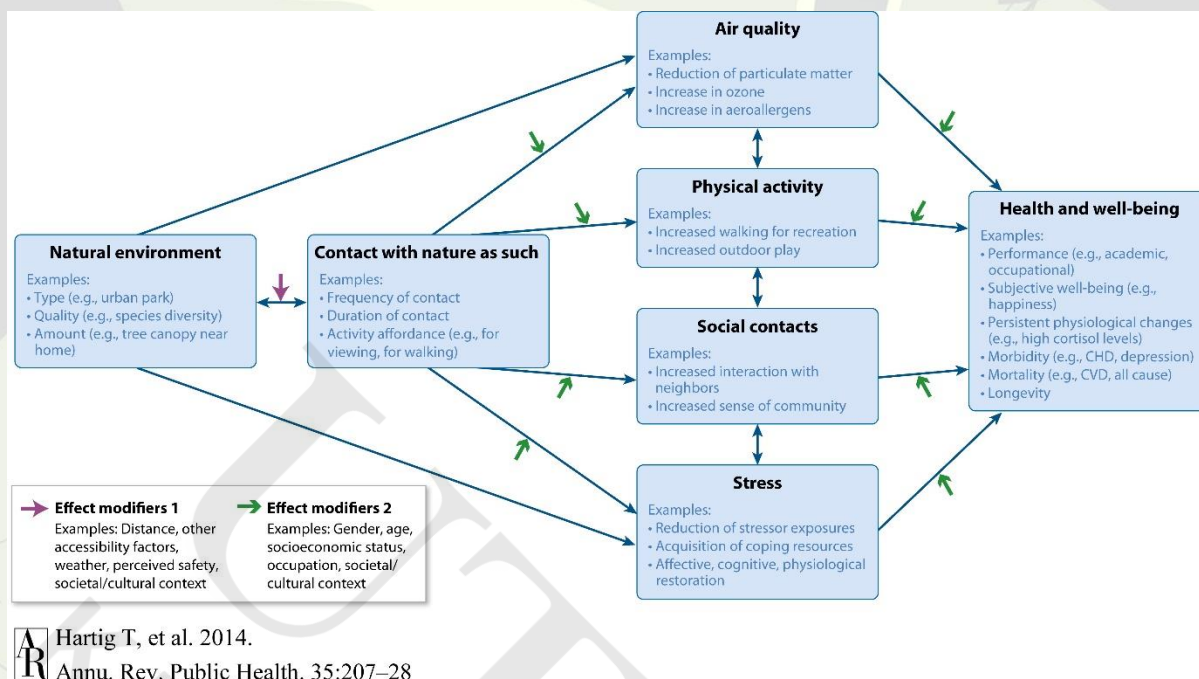
Air quality
Examples:
• Reduction of particulate matter
• Increase in ozone
• Increase in aeroallergens

Physical activity
Examples:
• Increased walking for recreation
• Increased outdoor play

Natural environment
Examples:
• Type (e.g., urban park)
• Quality (e.g., species diversity)
• Amount (e.g., tree canopy near home)

Contact with nature as such
Examples:
• Frequency of contact
• Duration of contact
• Activity affordance (e.g., for viewing, for walking)

Social contacts
Examples:
• Increased interaction with neighbors
• Increased sense of community

Health and well-being
Examples:
• Performance (e.g., academic, occupational)
• Subjective well-being (e.g., happiness)
• Persistent physiological changes (e.g., high cortisol levels)
• Morbidity (e.g., CHD, depression)
• Mortality (e.g., CVD, all cause)
• Longevity

Stress
Examples:
• Reduction of stressor exposures
• Acquisition of coping resources
• Affective, cognitive, physiological restoration

→ **Effect modifiers 1**
Examples: Distance, other accessibility factors, weather, perceived safety, societal/cultural context

→ **Effect modifiers 2**
Examples: Gender, age, socioeconomic status, occupation, societal/cultural context

Hartig T, et al. 2014.
Annu. Rev. Public Health. 35:207–28

Fig-2: Cultural & Ecosystem Services by Greenspaces. (Hartig *et al.*, 2014)

Why it's important to Protect and expand this Ecosystem service and associated cultural services?

(Leng *et al.*, 2023) emphasized the severity of this problem by stating that cities in the Global South have a far lower exposure to green space than cities in the Global North, with the former having almost twice as much inequality. With this, the authors further mentioned that it is still difficult to provide everyone with access to inclusive green spaces, particularly in the Global South's less developed nations. This sentiment also corresponded with (Chen *et al.*, 2022) who emphasized the need to optimize strategies for ensuring environmental justice and efficient greenspace accessibility.

Moreover, its importance holds more gravity in the post-pandemic world as emphasized in the study (Lee, Mai and Park, 2023) which highlighted that heightened psychological distress and significant rise in mental illness cases which is also reported by (World Health Organization, 2022) drawing attention to the detrimental effects on people's mental health and wellbeing, including an increase in suicidal behavior and barriers to receiving mental health care.

Sense of Place – A Cultural Service under Ecosystem Services

As per the study ('Self and Place: Journeys in the Land,' 2012), "Sense of place" refers to an individual's relationship with a place and can have various applications in various contexts, including physical, social, emotional, and philosophical aspects. According to social geographers Carter, Dyer, and Sharma (2007), "structural forces shape sense of place, rendering the specifics

of each place-meaning open to contestation by alternative voices within class, gender, or race divisions at any locality" (p. 755). According to Kyle and Chick (2007), "sense of place" encompasses both place identity and place attachment and is the largest human notion of place. The study also emphasized that modern lives have weakened our feeling of location, which calls into question the depth and reliability of our sense of self—particularly when it comes to our relationship with the natural world.

Travelling in nature can help cultivate a sense of place, which contributes to a stronger sense of self. This has implications for people who are looking for a deeper connection to nature and personal growth.

Apart from this, a piece of interesting information was highlighted in (Huang *et al.*, 2024) that Seasonal variations have a substantial impact on the provision of cultural ecosystem services. Also, parks situated in the close and distant suburbs exhibit greater variations in cultural Ecosystem services than parks located in the city center region. This can be a prevalent factor in shaping the sense of place of an individual.

Issues and Challenges related to Greenspace & Associated Sense of Place

Consider a hypothetical situation where elderly individuals, grappling with health issues like diabetes and hypertension, find themselves without access to green spaces and are brought in a situation where they could easily access green spaces. Imagine the benefits to their health and social connectivity with such a minor change in sense of place. Similarly, consider the younger generation, currently ensnared by indoor activities and screen time. The transition to engaging in outdoor activities within green spaces could foster more meaningful social interactions and enhance their self-esteem.

However, the reality of accessing green spaces is far from straightforward. Barriers such as commuting challenges, the demands of a busy lifestyle, and the conditions of parks themselves often stand in the way. Furthermore, inclusivity remains a critical issue. It is paramount that every community member feels a sense of belonging, regardless of their identity or abilities which are highly influenced by the sense of place.

With rapid urbanization, greenspaces and their accessibility by the human population are decreasing. This is an important issue because the presence of a space with greenery provides many cultural services and their absence is becoming the main contributor to poor mental health ultimately facilitating severe disease in high-income nations. (White *et al.*, 2021)

As per (Friends of the Earth, 2024) and their research based on the Office of National Statistics on gardens, 1,108 neighborhoods (or nearly 1 in 5) with a population of 9.6 million lack exposure to green space in the UK.

As per (Cerkauskaite *et al.*, 2023), greenspace privilege and inequality in accessibility can lead to disparities in mental and physical health. Moreover, this study has found a link between living in low-greenness environments and higher diastolic blood pressure and further suggests that living near green spaces may lower the risk of cancer, cardiovascular and respiratory disorders, and other health concerns.

Hence, their accessibility to all members of society is crucial for people's minds and bodies to function properly and shape a positive sense of place for them.

Importance of Sense of Place as a Cultural Service of Ecosystem Services

Social Benefits:

As per the study (Kuo, 2003), research conducted in inner-city Chicago revealed that the presence of trees and well-kept green spaces resulted in several social benefits, such as improved perceptions of safety, increased supervision of children outdoors, and lower rates of crime. These results demonstrate how urban greening initiatives can convert unwelcoming spaces into welcoming environments, fostering a sense of community, and contributing to safer neighbourhoods. The study emphasizes the importance of incorporating arboriculture into urban planning to create healthier and more vibrant communities which were justified by the statistics where a higher level of green cover had 73% more participation of individuals in social activities as compared to barren land. This can be supported by (Stangierska *et al.*, 2023) which expressed the necessity of providing green areas with a variety of activities to provide opportunities for outdoor involvement and facilitate social engagement.

Psychological & Physical Benefits:

The paper (Jennings, Larson and Yun, 2016) defined health using the definition given by the World Health Organization as a condition of whole physical, mental, and social well-being, not just the absence of illness or disability. The Healthy People 2020 project conducted in the United States recognizes and stresses the importance of social determinants of health as critical elements in health promotion.

The paper also discusses the phrase "time outdoors" which is prescribed by medical professionals to enhance physical and psychological health which signifies that the benefits of greenspaces are recognized and respected by the medical world as well. This can also be understood by the findings of ('Self and Place: Journeys in the Land,' 2012) which discussed popularity gaining journey popularity-oriented outdoor therapy programs such as 'the Australian Bush Adventure' which helps people spend quality time in greenspaces, reconnect with the natural world and improve their cognitive functioning with the help of its cultural services.

The authors of the paper also emphasized that the ecological approach to education and therapy practice in natural places is more than just a context or setting. They can serve as catalysts, challenges, inspirations, solace, and rewards, fostering a greater sense of belonging and connection to the place.

In terms of Physical Benefits, (Wolch, Byrne and Newell, 2014) expressed the relation between obesity in children and proximity to greenspaces and stated that children with more and easy access to greenspaces are less obese as compared to the ones who don't. Also, the results were similar in the case of adults. Moreover, another interesting result which was discussed in that paper was that access and activity were positively influenced by the sense of place which is a compound effect of better aesthetic, size presence of trees, sidewalks, and retail shops.

Apart from this, (Gaston *et al.*, 2023) studied the impact of green space exposure on sleep in individuals. They found that low/moderate exposure to greenspace related to poorer sleep across racial/ethnic groups, suggesting that it may benefit all individuals in improving sleep health. Moreover, this is also highlighted by (Zhang *et al.*, 2023) who pointed out that greenness exposure positively correlated with lung function in under-60s, females, and urban populations.

Learning & Educational Benefit

(Gavitt & Smardon, 2019) expressed an interesting benefit of the sense of place in terms of learning and education activities. The authors mentioned that the scenic beauty, environment and other features of a greenspace trigger inspiration and positive emotion for learning, and research and also boost curiosity for historical heritage and inspiration for art-related activities.

Case Studies & Comparative Analyses of Sense of Place with Other Cultural Services
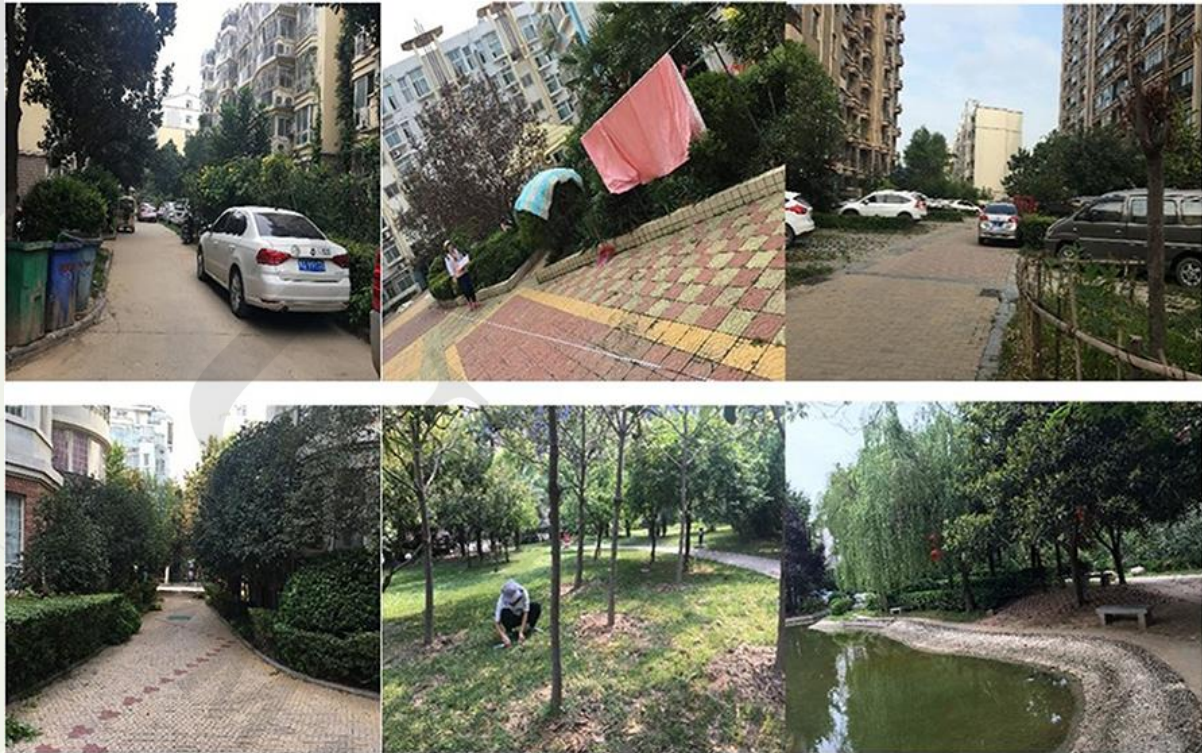

Fig-3: Variations in the quality of management of greenspaces in residential communities that score best (below) and lowest (above) on the cultural ecological services (CES). (Mao *et al.*, 2020)

The paper (Mao *et al.*, 2020) evaluated the response of satisfaction of cultural ecosystem services of urban residential greenspaces in Zhengzhou, a city in China (show in fig-3) having an area of 7,446 km2 and 9.88 million inhabitants as of 2018. A face-to-face survey was conducted, and 4519 citizens of the city were interviewed to analyze their views on cultural ecosystem services. Out of all, a Sense of Place and Neighborhood relations i.e., social engagement were highly prioritized by the respondents (shown in fig-4).
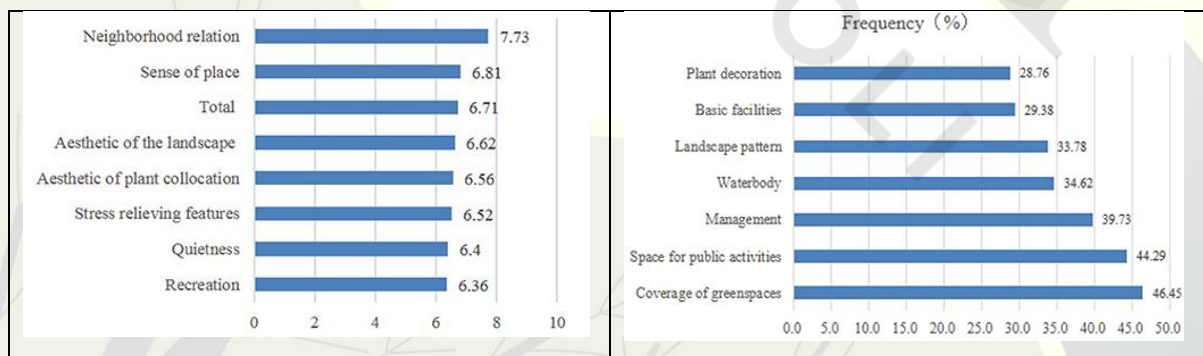

Fig-4: Graph of Response on Cultural Ecosystem Services. (Mao *et al.*, 2020)

Moreover, the paper also covered the response to the features and facilities of green space (shown in fig-4). Out of all the concerns shared by the respondents for the conditions of the

cultural services, greenspace coverage scored the highest followed by space for public activity and management of the facilities which are strong indicators of a good sense of place. These scores were evident because the authors also mapped the satisfaction and dissatisfaction ratings of those features and facilities as well (shown in fig-5).
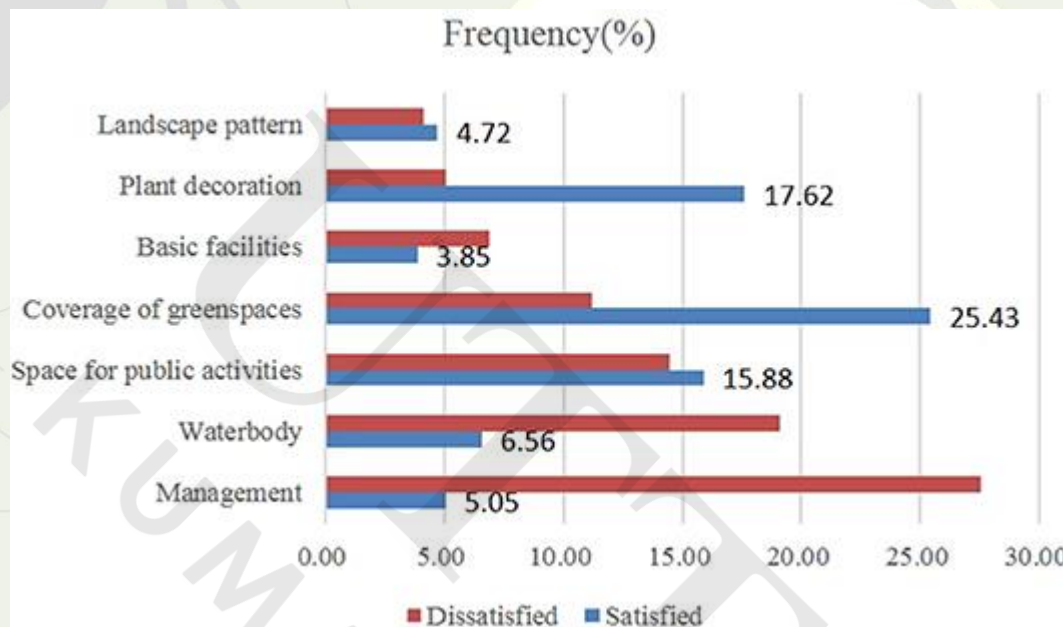

Fig-5: Graph of Satisfaction & Dissatisfaction rating of facilities in greenspaces. (Mao *et al.*, 2020)

Out of all the scores, dissatisfaction with management was highly rated by the respondents, which is a concerning issue that negatively impacts the sense of place. This was followed by dissatisfaction with the condition of the water body and space for public activities, which also cater for the same.

(Gavitt & Smardon, 2019) conducted similar research which carefully analyzed the ecosystem and cultural services of Cazenovia Lake, a water-based scenic landscape in New York, United States with the prime intention of understanding how the community values the lake. The authors, with the results of their survey, found that like the case study discussed above, respondents were majorly concerned about maintaining the water quality and aquatic habitat of the lake as they found it prevalent for the perception of sense of place of the lake. Similarly, walking, neighborhood engagement and sightseeing were major interests for the people as well. Another interesting outcome of this research was that most of the respondents were a part of social & environmental non-profit activities which indicates their mindset for community engagement and upliftment which is also influenced by a sense of place and belonging.

Moreover, the study (Nawrath, Elsey and Dallimer, 2022) done in Nepal on Greenspaces also highlighted in their result section that the most favored ecosystem services were cultural ones,

such as those that offered places for leisure or that encouraged analytical, symbolic, spiritual, or religious activities during mental or intellectual interactions with green spaces.

Actions to Maintain & Enhance Delivery of Sense of Place & related Cultural Services

Presence of Both Public & Private Greenspaces:

(Wolch, Byrne and Newell, 2014) pointed out the different features of both public and private Greenspaces where public spaces are rich with nature conservation spaces, parks and reserves, athletic fields, greenways and paths, riparian areas such as streams and riverbanks, community gardens, street trees etc. On the other hand, private spaces include communal areas, backyards, and corporate campuses etc., Though both will provide a slightly different sense of place, however, both are essential to cater for the demand for cultural services of the growing human population such as air pollution reduction, urban noise reduction, temperature regulation etc. Hence efforts should be made to make the public ones more accessible and the private sector to keep their greenspaces high on their priority list.

Addressing Environmental Injustice & Ensuring Inclusivity:

(Wolch, Byrne and Newell, 2014) also addressed the disparity in the accessibility of greenspace based on ethnic groups and between groups in different levels of socio-economic affluence. This also impacts the sense of place for greenspace as the ones who are standing low on the socioeconomic ladder have lower chances of experiencing a positive sense of place and associated ecosystem services than the ones who are on top of the ladder.

Prioritizing Greenspace in Urban Planning:

Due to the rise in population and urbanization, the areas which become the prime victim of clearance or conversion are greenspaces. Hence prioritizing them in urban planning and protecting them even with minimal economic benefit is the way to protect the ecological sense of place. The work in Hangzhou city in China (Wolch, Byrne and Newell, 2014) is a commendable example (shown in fig-6) which includes the conversion of abandoned factories into parks, the refurbishment of green areas next to abandoned canals, beneath and beside major highways and railroad tracks, and the widespread planting of trees in city streets. Another example mentioned in the paper was of New York's High Line, an artificially created greenspace over the abandoned elevated train line spur (also shown in fig-6). Both had the primary objective of improving the ecological sense of place in an urban setting.
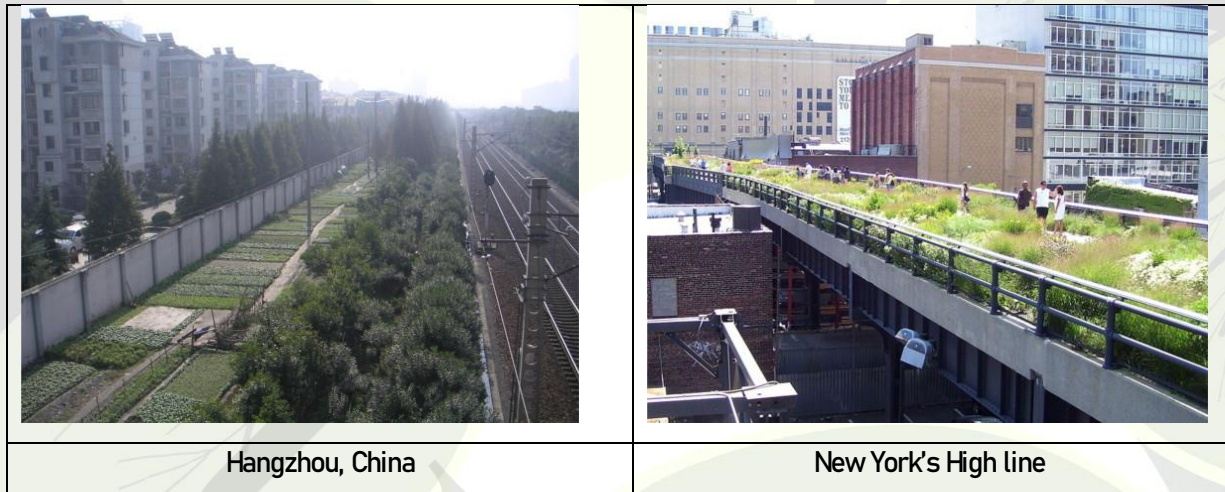
| Hangzhou, China | New York's High line |

Fig-6: Examples of Greenspace Creation in Urban Areas. (Wolch, Byrne and Newell, 2014)

Conclusion

Based on the research data, insights, and observations, determining the individual significance of each factor may be challenging. However, the concept of "Sense of Place" emerges as a key component within the spectrum of cultural ecosystem services due to its intricate connections with other ecosystem services. Hence if all of them are good then it will collectively create a positive sense of place. In an era characterized by a growing population, rapid urbanization, and escalating mental, social, and physical health issues, maintaining a positive connection with green spaces becomes increasingly vital. Furthermore, it is essential to address and resolve issues related to environmental injustice, social inclusivity, and universal access to green spaces. Implementing projects like those in Hangzhou, China, and New York's High Line in the United States worldwide can significantly contribute to fostering a positive sense of place. Such initiatives represent progressive steps towards achieving a harmonious relationship between humans and their environment.

References:

1) Cerkauskaite, S., Kubilius, R., Dedele, A. and Vencloviene, J. (2023) 'Association between greenery and health indicators in urban patients with symptomatic heart failure: a retrospective cohort study in Lithuania', International Journal of Environmental Health Research, pp. 1-12.

2) Chen, B., Wu, S., Song, Y., Webster, C., Xu, B. and Gong, P. (2022) 'Contrasting inequality in human exposure to greenspace between cities of Global North and Global South', Nature Communications, 13(1), pp. 4636.

3) Gaston, S., Sweeney, M., Martinez-Miller, E., Jones, R., James, P., Jackson, W. B., Sandler, D. and Jackson, C. (2023) '0240 Greenspace in Relation to Sleep Health among a Racially and Ethnically Diverse Cohort of US Women', Sleep, 46(Supplement_1), pp. A106-A106.

4) Hartig, T., Mitchell, R., Vries, S. d. and Frumkin, H. (2014) 'Nature and Health', Annual Review of Public Health, 35(1), pp. 207-228.

5) Huang, S., Xiao, X., Tian, T. and Che, Y. (2024) 'Seasonal influences on preferences for urban blue-green spaces: Integrating land surface temperature into the assessment of cultural ecosystem service value', Sustainable Cities and Society, 102, pp. 105237.

6) Jennings, V., Larson, L. and Yun, J. (2016) 'Advancing Sustainability through Urban Green Space: Cultural Ecosystem Services, Equity, and Social Determinants of Health', International Journal of Environmental Research and Public Health, 13(2), pp. 196.

7) Kuo, M. (2003) 'The role of arboriculture in a healthy social ecology', Journal of Arboriculture, 29.

8) Lee, K. O., Mai, K. M. and Park, S. (2023) 'Green space accessibility helps buffer declined mental health during the COVID-19 pandemic: evidence from big data in the United Kingdom', Nature Mental Health, 1(2), pp. 124-134.

9) Leng, S., Sun, R., Yang, X. and Chen, L. (2023) 'Global inequities in population exposure to urban greenspaces increased amidst tree and nontree vegetation cover expansion', Communications Earth & Environment, 4(1), pp. 464.

10) Mao, Q., Wang, L., Guo, Q., Li, Y., Liu, M. and Xu, G. (2020) 'Evaluating Cultural Ecosystem Services of Urban Residential Green Spaces From the Perspective of Residents' Satisfaction With Green Space', Frontiers in Public Health, 8.

11) Nawrath, M., Elsey, H. and Dallimer, M. (2022) 'Why cultural ecosystem services matter most: Exploring the pathways linking greenspaces and mental health in a low-income country', Science of The Total Environment, 806, pp. 150551.

12) 'Self and Place: Journeys in the Land', (2012) Ecopsychology, 4(4), pp. 319-325.

13) Stangierska, D., Fornal-Pieniak, B., Szumigała, P., Widera, K., Żarska, B. and Szumigała, K. (2023) 'Green Physical Activity Indicator: Health, Physical Activity and Spending Time Outdoors Related to Residents Preference for Greenery', International Journal of Environmental Research and Public Health, 20(2), pp. 1242.

14) White, M. P., Elliott, L. R., Grellier, J., Economou, T., Bell, S., Bratman, G. N., Cirach, M., Gascon, M., Lima, M. L, Lõhmus, M., Nieuwenhuijsen, M., Ojala, A., Roiko, A., Schultz, P. W., van den Bosch, M. and Fleming, L. E. (2021) 'Associations between green/blue spaces and mental health across 18 countries', Scientific Reports, 11(1), pp. 8903.

15) Wolch, J. R., Byrne, J. and Newell, J. P. (2014) 'Urban green space, public health, and environmental justice: The challenge of making cities 'just green enough'', Landscape and Urban Planning, 125, pp. 234-244.

16) Zhang, W., Peng, W., Cai, J., Jiang, Y., Zhou, C., Zha, Z. and Mi, J. (2023) 'Residential surrounding greenness is associated with improved lung function in adults: a cross-sectional study in eastern China', BMC Public Health, 23(1), pp. 632.

17) Friends of the Earth (no date) Access to green space in England: Are you missing out?. Available at:https://friendsoftheearth.uk/nature/access-green-space-england-are-you-missing-out (Accessed: 26 February 2024).

18) Gavitt, J. M., & Smardon, R. M. (2019). Calculating Cultural Ecosystem Services as Part of Greenspace Management? Fábos Conference on Landscape and Greenway Planning, 6(1). [Online] Available at: https://doi.org/10.7275/r6br-qe22

19) World Health Organization, 2022. *Mental Health and COVID-19: Early evidence of the pandemic's impact: Scientific brief, 2 March 2022*. [online] WHO. Available at: <https://www.who.int/publications/i/item/WHO-2019-nCoV-Sci_Brief-Mental_health-2022.1> [Accessed 4 March 2024].