Evaluation on Green Open Space as Health Promoter with Salutogenic Approach City Forest BSD I as Case Study

by Ayu Larasati

Submission date: 19-Aug-2019 03:35PM (UTC+0700)

Submission ID: 1161366007

File name: 60833_Ayu_Larasati_Evaluation_on_Green_Open_Space_as_Health_Promoter_with_Salutogenic_Approach_City_Forest_BSD_I_as_Case_Study_3959_1789186770.docx (19.91M)

Word count: 6627

Character count: 38288

Langkau Betang, Vol. n, No. n, Tahun n
Terakreditasi Peringkat 3 (S3)
DOI: 10.26418/lantang.vnin.

EVALUASI RUANG TERBUKA HIJAU SEBAGAI PROMOTOR KESEHATAN DENGAN PENDEKATAN *SALUTOGENIC*: TAMAN KOTA BSD I SEBAGAI STUDI KASUS

Ayu Larasati
Universitas Pelita Harapan, Lippo Karawaci
ayu.larasati@uph.edu

Rosdiana Pakpahan
Universitas Pelita Harapan, Lippo Karawaci
rosdiana.pakpahan@uph.edu

Abstrak

Perilaku *sedentary*/pasif telah meningkatkan resiko terkena *non-communicable disease* yang menimbulkan munculnya kebutuhan untuk mendorong terciptanya gaya hidup aktif melalui aktivitas fisik yang dilakukan di ruang terbuka. Akan tetapi, jumlah dan desain ruang terbuka hijau (RTH) dengan fokus sebagai promotor kesehatan masih belum cukup. Oleh karena itu, evaluasi desain dilakukan untuk mengetahui permasalahan dan solusi yang terdapat pada RTH sekarang ini. Evaluasi desain ini menggunakan indikator desain yang diekstrak dari Lima Tanda Vital *Salutogenic* untuk mengidentifikasi kualitas desain pada RTH yang terpilih sebagai studi kasus. Data untuk penelitian ini didapatkan melalui survey site, pengamatan site, dan wawancara dengan 30 orang: 25 pengunjung, 2 staf, dan 3 pengusaha. Evaluasi pada RTH terpilih menekankan pentingnya latar belakang hutan sebagai daya tarik utama karena menyediakan keteduhan yang nyaman dari pepohonan, RTH juga harus berada pada lokasi strategis sehingga mudah dicapai dengan berbagai mode transportasi dan rute, *legibility* dicapai terutama melalui jaringan pergerakan: jalan setapak dan pintu masuk yang jelas, serta *permeability* dicapai melalui pemilihan pohon dengan ketinggian rata-rata lebih dari 5 m yang tidak menghalangi pandangan, spot aktivitas yang jelas (*activity pods*), dan pagar yang transparan.

Kata-kata Kunci: *sedentary*, perilaku, ruang, hijau, *salutogenic*

EVALUATION ON GREEN OPEN SPACE AS HEALTH PROMOTER WITH SALUTOGENIC APPROACH: CITY FOREST BSD I AS CASE STUDY

Abstract

Sedentary/passive behavior has increased the risk of non-communicable disease, which incites the need to promote an active lifestyle through outdoor physical activities. However, green open space (GOS) amount and design that focus as health promoter have not yet been sufficient. Therefore, design evaluation is conducted to acknowledge recent issues and potential solutions as design considerations for next GOS that focuses on health. Evaluation of GOS design quality uses design indicators that are extracted from Salutogenic Five Vital Signs to identify and assess design quality at selected GOS as a case study. The data for this study is gathered through site surveys, two months observations, and user interviews: 25 visitors, two staff, and three entrepreneurs. Evaluation at selected GOS highlights the importance of forest setting as major attractions because it provides comfortable shades of trees. Also, GOS should be located at a

strategic point to be easily accessed by different kind of transportation modes and routes. Moreover, legibility is achieved highly by movement network: path and clear main entrance, and permeability are achieved through the selection of more than five meters height of trees that clear the visual obstacles, clear spots of activities (pods), and transparent fences.

Keywords: sedentary, behavior, green, space, salutogenic

1. Introduction

The modern technology which promotes more efficient works (and instant) without involving physical energy has caused sedentary occupation. It leads to 6-8 hours of working on sitting in front of a laptop or computer. Because of this routine, the study finds that 59% of office workers in Jakarta have insufficient physical activity (Abadini, 2019). Low physical activity or sedentary behavior is the type of "passive" activities that need low energy expenditure at or below 1.5 metabolic equivalents (MET) for instance sitting, working in front of the computer, playing games on the laptop, watching movies, or reading. (Tremblay, 2015). These low physical energy activities relate strongly to the cultivation of fat on the body, which causes obesity and other non-communicable diseases such as cardiovascular disorder, cholesterol, diabetes, and metabolic syndrome. Furthermore, the increase of non-communicable diseases as a cause of death in Indonesia has raised the awareness from Health Ministry to combat this disease through health promotion and preventive measures through healthy lifestyle (Faizal, 2012). Therefore, reducing the risk of sedentary behavior leads to the promotion of an active lifestyle that refers to physical activities.

Physical activity has been known as the activity that reduces the risk of disease and death and stress (Abadini, 2019). The low physical activity, on the other hand, increases 6-10% possibilities of being infected by non-communicable disease (Abadini, 2019). Also, physical activity refers to running and walking in the outdoor space especially in natural environment shows more significant improvement in mental health because it is associated with greater feelings of revitalization, positive engagement, and decreases in confusion, anger, depression, and stress (Coon, 2011). Besides, physical activity also helps to form a sense of will and motivations through its active movement (Savitri, 2017). Through its positivity encouragement and creation of will and motivation, physical activities help to form Sense of Coherence (SOC) which is the self-sufficient mindset to overcome problems and challenges in life that give positive effect in generating mental well-being and physical health. Therefore, health is generated through active activities, and these activities generate SOC that creates mental and physical health.

Consequently, physical activity provides positive benefits which need the outdoor space with a natural setting or green open space (GOS) to mediate this activity. However, following the rapid development of housing estate, green open space (GOS) in Jabodetabek (Jakarta, Bogor, Depok, Tangerang, and Bekasi) as the most developed areas in Indonesia has shown Jakarta GOS only accounts for 10 %, Bogor reaches to 54.7 %, Depok has 50 %, and Tangerang consists of 17 % (Zain, 2015). Specifically, the increased demand for GOS in South Tangerang that accounts only for 9 % has confirmed the critical conditions of urgent needs for GOS in South Tangerang. With the minimum 30 % GOS to be achieved, South Tangerang need to increase their green open space in terms of quantity and quality. Not only to increase the amount of GOS but also GOS design should create a place that acts as health promotor through encouragement on an active lifestyle. Thus, the GOS becomes an

important place that is not only available in terms of quantity but also as the place that contributes to health promotion.

However, along with the rise of increasing demand for open space in South Tangerang, GOS design has not yet been conducted on health as focus, rather tend to have a limited concern in terms of quantity. With the rise of needs to create a place that promotes health through an active lifestyle, the next GOS that will be built should consider the salutogenic-based design to achieve the design that contributes as health promotor. Therefore, the evaluation of GOS design is conducted to identify current problems and suitable potentials improvement as solutions for next GOS project.

The evaluation of GOS is conducted through an assessment on selected GOS as research object based on salutogenic-based architecture design criteria. The salutogenic theory at first is discovered by Antonovsky and later developed as architectural design evaluation by Vandeerkay through 5 Vital Signs: diversity, nature, legacy, authenticity, and vitality. These Vital Signs are extracted to provide design indicators that assess design quality of the research object. The research object is the highly popular city forest in BSD City that provides facility from recreational, physical exercise or sports, education, and commercial. Through these complete facilities, the city forest has potentially fulfilled Five Vital Signs of Vanderkaay. Thus, the research evaluates the city forest in BSD City through salutary perspectives to acknowledge the problems and potential of successful GOS.

2. Theoritical Framework

Salutogenic Theory

The salutogenic theory is discovered by Antonovsky as the thinking that focuses on promoting health, rather than on disease prevention: "what causes health, rather than what causes disease." Based on Antonovsky, health can be achieved towards person capability to cope with stresses. He defines this capability as Sense of Coherence (SOC). SOC refers as self-sufficient and confident of overcoming challenges which are defined in three sense: comprehensibility, manageability, and meaningfulness. Comprehensibility means the person understand his problems as the challenges that will enhance his knowledge and experience. Next, manageability means the person's capability to overcome challenges with his skills and resources. Last, meaningfulness explains the person's will and motivation to overcome the challenges. People with strong SOC have a low-stress level that leads towards a healthy life.

Further development toward architectural health care design as developed by Alan Dilani shows the relation between physical elements of the built environment with mental well-being. His studies, called as psychosocially responsive design interprets 3 SOC into physical architectural elements. The orientation that influences the perceptive dimension through landmarks, nodes, movement networks, and boundary help to form the comprehensibility. Manageability, on the other hand, is applied through passive design that utilizes natural resources (natural lights) and the interior space that stimulates mental restoration through ergonomic design. Last, meaningfulness comes from activities that engage in a communal setting and through diverse forms of arts, for instance, arts, music, cultural activities that encourage positive distractions (Dilani, 1900, Ziegler, 2009). Thus, Dilani studies first show the concrete interpretation of SOC in architectural elements.

Salutogenic-based Design as Design Criteria and Indicators

Development in design from the salutary lens comes to design evaluation that is studied by Tye Farrow and Vanderkaay. Their studies refer to the attachment on the emotional response towards build environment that influences the SOC, as supported before by Dilani and Heerwagon. The positive experience in architecture encourages positive emotional response towards occupants. The positive emotional responses can be achieved through 5 vital signs that define the successful character of the place that promotes healthy wellbeing. These vital signs are diversity, vitality, nature, vitality, authenticity, legacy. Each of these vital signs will be explained in the sections below:

Diversity and Vitality

Diversity relates directly with vitality because diversity generates vitality. Diversity refers to the variety of activities and uses which provide the opportunity for social interactions creates a lively place. The liveliness of the place refers to the richness of the social contacts and engagement that form community ties. Social interactions are more fruitful when different kind of ages and gender meet and gather in one place because these interactions provide more variety of activities and a more extensive range of time for a place to be used. For instance, the GOS can be used for children and elderly in the morning and office workers (adults) in the afternoon and night, which provide a wide range of time for people to use the place. Through this wide range of uses, the place that is actively used by people become the attractions for people themselves because people are attracted by other people who create vitality of the place (Jacob, 1961). Moreover, to ensure the people become attracted towards the diversity of the activities, the place needs to provide transparency or visual and physical permeability. Permeability allows people to see the variety of activities and move within the area freely. Furthermore, mentioned by Dilani, social engagement provides social (community) support, which gives resources in overcoming the challenge or problems in one person's life. Therefore, the place that provides diversity and produces vitality help to create SOC.

Summarily, creating a place that provides diversity and later generates vitality, relates with the essence to build a place that encourages social interactions. The sociable place should provide space that generates a different kind of activities and uses. The activities are not limited to recreational or sports activities, but also towards cultural activities such as arts, music, and social activities. Moreover, the place becomes the "neutral" place which opens to different kind of ages, gender, religion, and ethnicity that provides the opportunity for a wide range of time to use the place, enhance cultural exchange, and acknowledge their community member. Besides, the place should have visual and physical permeability to attract people to come and gives comforts for people to do activities in the area.

Nature

Green open space links directly with physical and psychological health. In terms of physical health, nature with it is distinctive becomes the attraction for people to come and use the GOS. Also, the nature setting generates specific activities that can be activated only on natural settings, for instance: boating on the river, hiking at the mountain, etc. With these opportunities, nature increases the variety of activities and uses which enrich the diversity and strengthen vitality. Moreover, in the terms of psychological health, natural setting reduces stress and distracts people from everyday life problems through stimulating the human sense: visual through colors (ex: sea and tree colors), smells (ex: smell of forest), and tactile (ex: feeling of the textures on the grass, mountains topography)(Karaca, 2018). "Activities that engage with nature include recreational and physical exercise provides relaxation and create bonds with the place itself" (Robinson, 2006; Maass, 2017, and

Karaca, 2018). Therefore, the activities that are engaged with nature help to create positivity (sense of self-confident and sufficient) through stimulation of human sense that forms SOC.

Authenticity

Authenticity refers to the acknowledgment of the local character at a particular place that forms the identity of the place itself (Ziegler, 2019). Identity of the place provides knowledge of who and what we are that stimulates the sense of belonging. Sense of belonging forms the bond with the community. Ties with the community help to create the SOC because it provides supports through its bond that acts as resources (manageability) and understanding the meaning towards the problems or challenges (meaningfulness). Therefore, the authenticity of the place becomes the aspects of design to form the place that form SOC.

The local character that forms the identity of the place is expressed towards distinguishing physical characteristics of the built environment that shows local symbols, meaning, and values. These distinguished local characters in physical elements create a sense of familiarity that gives comforts and attachment for the people to come and use the place (Karsono, 2014). The physical built environment that encourages a positive response from the people indicates good accessibility and legibility. Accessibility means easy access and well-connected networks to approach the space (Karsono, 2014). Suggested connections consider walkable distance within 400 m from residential areas (Urban Design Compendium, 2000). Later, legibility refers to the perceptual dimension of space, acknowledges the clear structure of the place gives comforts for people to come and use the place. Also, the clear structure of the place which is created through landmarks, nodes, movement networks, and boundary make the place to be easily understood and form particular mental image/impressions. Moreover, local characteristics provide visual interest through its physical elements because local character resists uniformity and create the uniqueness of the place (Frampton, 1983; Kelbaugh,2003). Thus, the place that shows authenticity through the physical built environment indicates the integrated uses of accessibility and legibility through a distinctive local character in their physical elements.

Legacy

Discovering meaning in life for individuals closely links with legacy (Karaca, 2018). Achieving meaning in life is earned through generativity, which means to nurture the next generations and encourage people to achieve their goals (Erikson, 1900, Smith, 2017). Meaning in life is not achieved through the quantity of life that accounts on material, but in quality of life, which refers to leave a legacy for the next generations. Meaning in life creates the will and motivation to overcome the challenges or problems in a person's life because it gives a specific purpose in life. Thus, legacy forms the SOC as it develops a clear purpose that generates motivation and will to overcome their problems in life.

In designing the place that holds the legacy as its value, the legacy comes in different kind of perspectives: ecosystem preservation and education as political, historical and cultural preservation through heritage buildings and nature as an educational setting. Ecosystem preservation comes in terms of sustainable design that ensure the existing ecosystem is maintained for future generations. As the ecosystem is the nutrient-service provider for the inhabitants that produce food, fibers, protections towards disease, pollutions, and climate changes, its existence is very crucial. The utilization of natural resources is highly encouraged in design to minimize the energy usage that harms the ecosystem, especially in utility system (electrical energy, HVAC system). Another encouragement is also to

recycle and reuse the waste disposal and rainwater that will reduce the water usage and dependence from the main source of water.

Moreover, from educational perspectives, heritage buildings, and another physical element on the built environment provides traces of place transformation from time to time. The new and old element reflect time continuity of the place that provides knowledge about the place history and cultural memory that shape the community identity. These knowledge provide an opportunity for future generations to identify and remind them of the community values. Also, recognizing the same ethical values bring people together as one united community, which is not only as cultural ties but also as economic survival (Lee Kuan Yew). Furthermore, learning from nature is also education that provides an opportunity for people to appreciate their essential functions and biodiversity as part of the place richness. Therefore, legacy seeks to make the people appreciate their local richness towards physical and natural element on their built environment, which help to form SOC through community ties and stable personal identity.

Summarily, the Five Vital Signs: diversity, vitality, nature, authenticity, and legacy present the is design criteria for designing the place that forms SOC. These Five Vital Signs are interpreted as salutogenic design indicator for the physical built environment that forms behavioral setting to build SOC as shown on the table below:

Table 1. Physical Built Environment as Salutogenic Design Indicator

Vital Sign	**Salutogenic Design Indicator**
Diversity and Vitality	1. Provide a specific point for different kind of activities: sports, recreational, social, cultural. 2. Visual and physical permeability 3. The place is neutral ground
Nature	1. The place has natural elements or integrated the natural ecosystem. 2. The place integrates physical activities with its natural settings. 3. The place stimulates human sense: sight, smell, sound, and tactile.
Authenticity	Accessibility 1. The place is easily approached by multiple transportation modes and routes. 2. The place is located within a walkable distance, which is 400 m or 15 minutes from residential. 3. The place has designated public facility that is accessible and affordable for people that have different kind of age and residential locations. Legibility 1. The place has clear orientation through landmarks, nodes, movement network, and boundary. 2. The place has physical elements that show local character, symbol, and meaning as the community identity.
Legacy	Ecosystem Conservation

1. The place puts efforts in preserving the ecosystem.
2. The place indicates designs that aim to reduce energy usage by utilizing energy resources.
3. The place provides a waste or water recycle system in their design.

Educational Purpose

1. The place has heritage buildings or physical elements that have cultural and historical backgrounds as an educational purpose.
2. The place utilizes the natural elements to provide knowledge for the users.

3. Research Method

The research uses the qualitative method to evaluate the GOS design based on Five Vital Signs by Farrow and Vanderkaay. First, the five vital signs are studied through literature review and extracts the design criteria as design indicator that should be accommodated for health promoter space. Design criteria derive from Vanderkaay five vital signs: diversity, vitality, nature, authenticity, and legacy. Diversity emphasizes a variety of activities and uses that contains multicultural functions serve as a generator for the creation of social space. Vitality is the positive result of social space: the place attracts people to come and stay., which generate liveliness of the place. Nature provokes human sense through its beauty and enriches the variety of activity through its distinguish setting which reduces stress and provides relaxations. Authenticity creates a sense of belonging through the expression of local character which attracts and tie people together as a community. Last, legacy refers to the continuity of personal identity through the projections of communal identity that is reserved in the form of tangible (ecosystem) and intangible (education) knowledge. Thus, the embodiment of five vital signs in the physical built environment creates a place that promotes health.

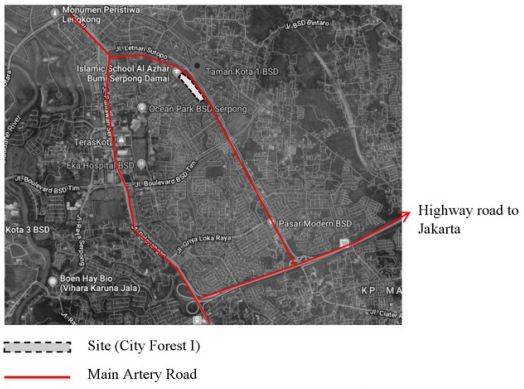

Figure 1. Site Location of City Forest BSD I
Source: Google Map, 2019

Next step is choosing the site that is suitable as a research object. The research object should potentially meet the Five Vital Signs of Farrow and Vanderkaay. Based on-site observation and information gathered by articles and journals, the selected research object is City Forest I BSD City that is located in South Tangerang, BSD City. The City Forest is the green open space that potentially meets the required criteria of salutogenic space design. First, the GOS provides space and facilities to do physical exercise, for instance, jogging track and other sports facilities. Second, the GOS is the reforestation area that provides natural setting as the background of physical activities for instance running and walking along the forest which encourages the opportunity to stimulate the human sense: visual (view of the forest), hearing (sounds of birds), and smell (of trees). The city forest with its forest nature provides a meeting point for social gathering: sitting area. The GOS also provides space for children, for instance, children playground, and a specific jogging track that enhances the tactile sensitivity for the elderly. Besides, the GOS also provides local character in the form of local food which is sold near the picnic area. Moreover, the GOS also provides knowledge for different kind of tree species and the importance of waste recycling. From the sustainable ecosystem perspective, the GOS, as the city forest aims to be the lung of the city which plant more than 60 different species of trees and 2,500 trees (Mugi, 2014). Therefore, the city forest I BSD is selected as a suitable research object.

After the site selection, the Five Vital Signs of the selected GOS is investigated further based on data analyses that is gathered through site surveys, observations, and user interviews. Site survey, observations, and interviews are conducted to collect data based on reference on salutogenic design indicator on the physical built environment that are derived from Five Vital Signs. The survey and observations are conducted in 2 weeks, and interviews are conducted in the next two weeks. The survey and observations aim to recognize the salutogenic design indicators on physical built environment at selected GOS: the site condition, facilities availability, quality, and its locations, type of activity, uses, and its locations and availability of sustainable and educational design. The interviews are conducted with 30 respondents: 25 visitors, 2 service staffs, and 3 commercial staffs to collect data about their user's perceptions and general satisfactions, their type of activities, permeability, accessibility, and legibility. After collecting data and gathering information, the next step is to investigate any problems or issue that occur at the site, incongruity with the Five Vital Signs, and the potential solutions regarding Five Vital Signs at selected GOS. Later, based on this investigation, the evaluation is conducted to determine the GOS design quality as health promotor space and provide design considerations for next GOS projects.

4. Result and Discussion

Diversity and Vitality

The City Forest BSD I (CF I) has provided facilities for different kind of activities and uses, includes the sports, recreational, and social. Based on-site survey and observations, CF I has provided sports facilities, includes jogging track, sit-up, pull, and push-up equipment. For recreational activities, the GOS has provided playground areas for children, small restaurants, and temporary local food stall. For social activities, the GOS has provided sitting areas (benches). Jogging track connects all facilities that run along the periphery of the GOS, and each type of activities are collected into pods. With this design, each facility has its focus point of activities that helps the visitors to have clear spots to do their chosen activities. However, there are spontaneous social activities that are conducted at spots that do not have a clear boundary and remains scattered on the arid landscape within CF I area. The activities

include playing badminton and picnic, which show the inconsistency in providing clear spots for social activities to be conducted within the area. Therefore, the GOS needs to consider a landscape design that helps to provide a clear boundary for social spots.

Figure 3. Activity Pod (left), playing badminton (right)
Source: Author's Documentation

Based on interviews, 60 % (18 people from 30 people) stated they found the diversity of activities and uses are enough. The other 40 % stated they found the GOS has not yet provided the variety of activities and uses because the facilities are not maintained well, which limit their choices of activities. The reduced maintenance of facilities limits, specifically the children activities stimulate the commercialized play area for children. The commercialized children play area includes children car rental, playhouses, painting, sand-play, and target-shooting play equipment. Also, the commercialized children play facilities do not have specific spots and only available at a particular time, which is during the weekend only. Not only the children activities but also the elderly specific activities are still limited both in the aspect of facilities and publication. The elderly specific facility is limited into reflection track that enhances the tactile sensitivity of the elderly within the area and the communal sports activities, for instance, tai chi, are only conducted at weekends with limited publications. Thus, the specific activity for children and elderly are still limited, which GOS need to improve their facilities and increase the frequency of elderly activities and publication.

Figure 3. Unused Children Playground (left), Commercialized Children Equipment (right)
Source: Author's Documentation

Figure 3. Commercialized Children Equipment
Source: Author's Documentation

Furthermore, the highest chosen activities at CF I is the sports activities with 83,33 % respondents (25 people) choose to run or jog along with the jogging track (Table 1.). Recreational and social activities become the second priority when visitors come to this area. The recreational activities include picnic/family gathering, eating at the permanent restaurant or temporary food stall, accompanying children to play become the choice of recreational activities and family gathering as the most preferred activity that accounts for 10% or 3 people from 30 people (Table 1.). Last, the social activities include internet or wifi, social gathering, sitting, chatting, and selfie with the most preferred social activity is chatting, account for 16.67% or 5 people from 30 people (Table 1.). However, cultural activities have not yet provided at CF I because it has a limited area to perform cultural activities. Also, it has not provided facilities for significant scale events, for instance, empty field to accommodate the mass of people (more than 100 people), availability of storage, green room, and toilets. Consequently, there are other options for these events to be conducted, for instance, a shopping mall, parks or empty area that provide a larger empty area for cultural event equipment that draws publics or mass of people. Thus, CF I needs to improve and maintain their main and supported facilities for enriching its diversity of activities to create vitality.

Table 1. Type of Activities

Sports	**Number of People**	**Recreational**	**Number of People**	**Social**	**Number of People**
Jogging	25/83.33%	Picnic/Family Gathering	3/10%	Internet	3/10%
Walking	11/36.67%	Eating	2/6.67%	Social Gathering	3/10%
Push-Pull Up	6/20%	Accompanying Children	2/6.67%	Sitting	2/6.67%
Gymnastic	5/16.67%			Chatting	5/16.67%
				Selfie	2/6.67%

Source: User Interview, 2019

Consequently, regarding the visual and physical permeability, 83,33 % respondents or 25 people from 30 people stated the GOS has provided permeability of activities in both visual and physical. Since the GOS selects the high height of trees and the area do not use the solid external fence, the people from outside still can see the internal activities. Moreover, from inside, the usage of the high height of trees (more than five meters height) and without further locate any shrubs, bushes, medium-height trees, and fences, the area provides visual permeability from activity point to another. Besides, with the jogging track that runs along the periphery, people from outside can see the activities that happen along the track.

Figure 3. Permeability of CF I
Source: Author's Documentation

Moreover, 26 respondents, accounting for 86,67 %, agreed that the GOS is open for any different ages, gender, religion, and ethnicity. They mentioned that they could see the shared-activities that take place along the jogging track, activity pods, and another spontaneous picnic area. Also, they do not find any problems that occur during their visits between different kind of ages, gender, religion, or ethnicity. The rest of the respondents account for four people out from 30 people mentioned the place has not yet given welcoming gestures because of the unavailability of cultural events that can gather all people to meet as the community. Thus, CF I has provided opportunities for people, regardless of any ages, gender, religion, and ethnicity to come and do the activities, but further development needs to consider the communal and cultural activities to build and connect communities.

Summarily, the CF I has fulfilled the whole 3 points of diversity and vitality with limitations on cultural activities, elderly and child-specific activities. The three points are: GOS has provided a different kind of activities, it has visual and physical permeability, and opens to all different kind of ages, gender, religion, and ethnicity, as can be seen through the diagram below. Thus, the next development needs to improve facilities, especially on children and elderly-related activities, maintain all facilities, and add facilities for cultural activities.

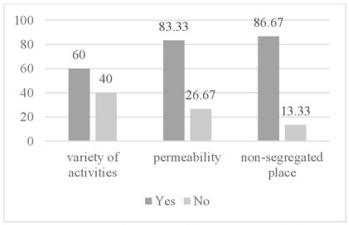

Diagram 1. Salutogenic Design Indicator in Diversity and Vitality Criteria (Percent)
Source: User Interview, 2019

Nature

CF I is the GOS that select the forest as their natural setting to become the lung of the city. However, the natural setting has not yet integrated fully with the activities within. Approximately half of the respondents account for 56,67 % mentioned they have not yet found any integrated activities with the forest setting and expect to have a more natural ecosystem to be integrated with the GOS. The highest preference of natural ecosystem that expected to be added is river and grassland which each

account for 23.33%. Expectations on grasslands, include flower gardens and grass addition derive from the dull and arid landscape at GOS and the water elements are expected to be added because the water element encourages children-related activities, especially water features as a playground. Even though the GOS has not yet achieved the maximum potential of its natural setting and integrated activities, 76,67% or 23 people found their sense are stimulated through the view of trees, sounds of birds and bugs, and comfortable shades of trees that create a tranquil atmosphere. Besides, they also found that they feel relaxed during the visits, which become their reasons to visit the place.

Moreover, 96.67% of respondents found the place is attractive because of its positive nature effect: cool temperatures because of tree shades and tranquility. Therefore, the CF I with its forest settings has become the major attractions for people to come, but still need to increase integrated activities with landscape improvement and addition of water elements. Summarily, the CF I has fulfilled 2 out of 3 indicators of nature design criteria: CF I has a natural setting that stimulates the human sense, but need to be integrated with nature-specific activities. Potential development is adding water elements and improving the landscape.

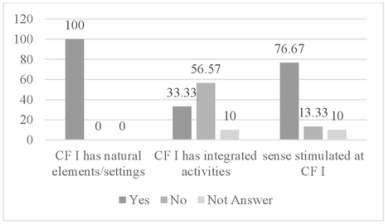

Diagram 2. Salutogenic Design Indicator in Nature Criteria (Percent)
Source: User Interview, 2019

Authenticity

Regarding authenticity, the place is assessed by two criteria: accessibility and legibility. Based on accessibility, 96,67% respondents stated CF I is easily accessed by different kind of transportations even though the length of time is varied from 10 minutes to 2 hours by motorcycle or online transportation, 30 minutes by foot, and 30 minutes to one hour by private car. The variety of time shows that the distance between CF I and their residentials are not walkable. Since the CF I is located along the primary road that links directly to the main artery road with clear entrance, the location is easily recognized and approached by visitors. However, the place has not yet provided specific public transportation that links between city nodes and CF I, which causes the visitors to use their vehicle or online transportations. Furthermore, based on legibility, 66.67% respondents or 20 people from 30 people stated they have clear orientation about the place even though the place has not yet provided distinctive local character through its physical elements of the built environment. However, movement network: path (jogging track) and landmark (main entrance square) have provided clear orientation for visitors. Main entrance square is located at the middle of the area which is surrounded by taverns and food stalls that connect pathway (jogging track) that runs along the periphery of the GOS. Therefore, based on accessibility and legibility, CF I has fulfilled each one indicator from two criteria: the place is easily accessed by different types of transportation mode and has clear orientations within the area, which is shown at the diagram below:

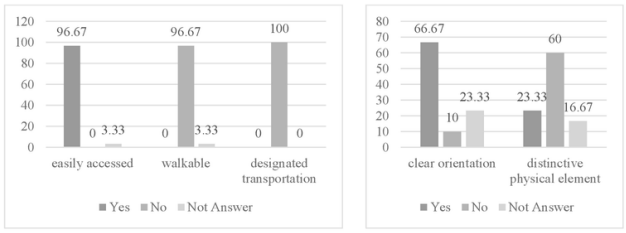

Diagram 3. Salutogenic Design Indicator in Authenticity Criteria
Source: User Interview, 2019

Legacy

The last vital sign is legacy, which is assessed through two criteria: sustainability and educational purpose. From the aspect of sustainability, 63,33% respondents recognize that GOS is the reforestation effort to be the lung of the city, which considers one of the efforts to sustain the ecosystem. However, the efforts to sustain the ecosystem has not yet further developed in other forms. 53,33 % respondents or 16 people from 30 people stated that CF I has not yet provided a design that specifically aims to reduce the energy usage. Moreover, only 14 people or 46,67 % found that the waste recycle system is enough for its sorting effort. However, the other nine respondents have not yet found the waste sorting process only is enough. Furthermore, from the educational perspective, the GOS do not have any cultural and historical buildings or other physical built environment within the area. However, the GOS has put efforts to provide knowledge by utilizing its forest setting: recognizing tree names and species, but the conditions of the signage quality are poor, and the quantity of the signage and trees themselves have been reduced. Summarily, CF I has fulfilled only one design indicator of legacy, which is ecosystem preservation.

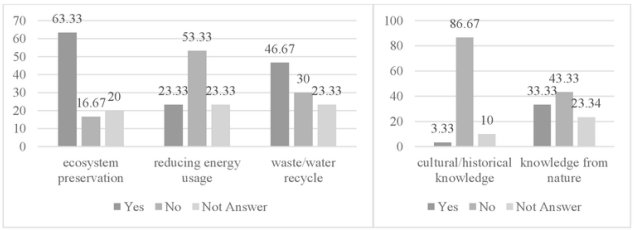

Diagram 3. Salutogenic Design Indicator in Legacy Criteria (In Percent)
Source: User Interview, 2019

Figure 1. Tree name and species signage (left and middle), waste sorting disposal (right)
Source: Author's Documentation

Overall, the City Forest BSD I has fulfilled all three indicators of diversity and vitality signs, but with limitations on children and elderly-related activities and needs to provide facilities for large scale of cultural activities. In terms of nature, the GOS has fulfilled 2 out of 3 indicators, which needs to integrate nature-based activities. Consequently, CF I only fulfilled one out of 3 indicators for accessibility and one out of 2 indicators for legibility which shows the needs to provide designated public transportation and integrate local characters within the area. Last, in the term of legacy, the GOS has fulfilled only one out of 3 indicators for sustainable preservation and one out of two indicators for educational purpose which show the need for the GOS to improve its facilities and signage to give better opportunities for the visitors to gain knowledge-based nature setting. Therefore, from total 16 indicators of salutogenic design, CF I only fulfill approximately eight indicators out of 16 indicators with two indicators remain limited: limitation on cultural, children, elderly-specific activities, and educational purpose.

Through the salutogenic evaluation on selected GOS, the considerations on next GOS projects should consider the integrations of natural setting because its distinctive feature becomes the major attractions. Not only the unique feature, but also the effect of trees shade creates cool and tranquil atmosphere. Nature also provides more options for people because it provides specific activities that can be done only in nature setting. The GOS also needs to encompass all sports, recreational, social, and cultural activities that open for all ages and concern to provide children and elderly-specific activities. Next, for easy access, the location of the GOS should be located at strategic locations that are easily approached by different type of transportation modes and routes. Visitors do not concern with the 15 minutes walking distance and prefer the availability of designated public transportations that links the city nodes to CF I. Even though CF I does not have distinctive local character in their physical built element, but legibility can be achieved through clear movement networks and specific spots or pods of activities. Last, nature has potential as knowledge providers through its setting and ecosystem content that make people to appreciate and acknowledge their own local richness. Thus, nature is the most important element in generating salutogenic place and it needs facilities and stabil maintenance to support the nature itself.

5. Conclusion

A green open space that aims to be salutogenic should integrate nature as the setting because nature is the major attractions for people to come. The people itself, even without high quality of

facilities inside the GOS, will produce spontaneously variety of activities which potentially create vitality of the place. Moreover, strategic location and multiple choices of transportations become vital for the people to achieve the place, rather than the necessary of walkable 15 minutes distance. Consequently, pathway and square as movement network is the significant element to form legibility of the place, rather than signage. Last, legacy is fulfilled through the natural setting itself both in ecosystem preservation and educational term, which should be emphasized by supported good quality of facilities.

6. References

Book Source: Mittelmark, Maurice B., et all. (2017). The Handbook of Salutogenesis. Switzerland: Springer International Publishing

Lynch, Kevin. (1960). The image of the city. Cambridge, Mass.: MIT Press

Jacobs, Jane. (1961). The death and life of American cities. New York: Random House

Kelbaugh, Douglas. (2017). Repairing the American Metropolis: common place revisited. [S.l.]: Univ of Washington Press

Carmona, Matthew, et all. (2010). Public places, urban spaces: the dimensions of urban design. Amsterdam : Elsevier

Journal Source: Bergstrom, M., Hansson, K., Lundblad, A-M., & Cederblad, M. (2006). Sense of Coherence: definition and explanation. International Journal of Social Welfare, 15(3), 219-229. Retrieved from https://doi.org/10.1111/j.1468-2397.2006.00410.x

Commissaris, Dianne, et al. "Interventions to Reduce Sedentary Behavior and Increase Physical Activity during Productive Work: A Systematic Review." Scandinavian Journal of Work, Environment & Health, vol. 42, no. 3, Scandinavian Journal of Work, Environment & Health, May 2016, p. 181.

Cohen, D., Sturm, R., Han, B., & Marsh, T. (2014). Quantifying the Contribution of Public Parks to Physical Activity and Health: Introducing SOPARC. In Quantifying the Contribution of Public Parks to Physical Activity and Health: Introducing SOPARC (pp. 1-16). RAND Corporation. Retrieved from http://www.jstor.org/stable/10.7249/j.ctt14bs3fd.2

Coon, J Thompson et all. (2011). Does Participating in Physical Activity in Outdoor Natural Environments Have a Greater Effect on Physical and Mental Wellbeing than Physical Activity Indoors? A Systematic Review. Environment Science and Technology Vol. 45 No. 5: 1761-1772

Harrington, J. (1991). Work Related Disease And Injuries. BMJ: British Medical Journal, 303(6807), 908-910. Retrieved from http://www.jstor.org/stable/29713289

Karaka, Elif. (2018). Salutogenic Approach for Designing Restorative Environments. The Journal of Academic Social Science, 6 (67), 116-131. Retrieved from: https://www.researchgate.net/publication/323937363_SALUTOGENIC_APPROACH_FOR_DESIGNING_RESTORATIVE_ENVIRONMENTS

Tremblay, Mark S et all. (2017). Sedentary Behavior Research Network (SRBN) – Terminology Consensus Project Process and Outcome. International Journal of Behavioral Nutrition and Physical Activity 14:17

Website Source: Faizal, Elly Burhaini. (2012). Indonesia Announces Wide Ranging Actions to Address Non-Communicable Disease. Retrieved from https://ncdalliance.org/es/news-events/news/indonesia-announces-wide-ranging-actions-to-address-non-communicable-diseases

Smith, Emily Esfahani. (2017). Psychology shows it's a big mistake to base our self-worth on our professional achievement. Retrieved from https://qz.com/990163/psychology-shows-its-a-big-mistake-to-base-our-self-worth-on-our-professional-achievements/

Sidiq, F. (2009). Residents demands more green space as South Tangerang grows. Retrieved from https://www.thejakartapost.com/news/2019/01/15/residents-demand-more-green-space-as-south-tangerang-grows.html

Quarino, A. (2014). Perbandingan Rerata Jumlah Langkah sebagai Penanda Aktivitas Fisik antara Pekerja dengan Sindroma Metabolik dan Tanpa Sindroma Metabolik (Master Thesis). Retrieved from: http://lib.ui.ac.id/file?file=digital/20367219-SP-Albertus%20Quarino.pdf

Ziegler, E. (2009). Application of a Salutogenic Design Model to the Architecture of Low-Income Housing (Master Thesis). Retrieved from: https://open.library.ubc.ca/cIRcle/collections/ubctheses/24/items/1.0135612

Niedermeier, Martin, et al. "Affective Responses in Mountain Hiking—A Randomized Crossover Trial Focusing on Differences between Indoor and Outdoor Activity." PLoS One, vol. 12, no. 5, Public Library of Science, May 2017, p. e0177719.

Evaluation on Green Open Space as Health Promoter with Salutogenic Approach City Forest BSD I as Case Study

ORIGINALITY REPORT

1%	0%	0%	1%
SIMILARITY INDEX	INTERNET SOURCES	PUBLICATIONS	STUDENT PAPERS

PRIMARY SOURCES

1	Submitted to Intercollege Student Paper	<1%
2	repository.essex.ac.uk Internet Source	<1%
3	Submitted to American University in Cairo Student Paper	<1%
4	Gun Faisal. "ARSITEKTUR MELAYU: IDENTIFIKASI RUMAH MELAYU LONTIAK SUKU MAJO KAMPAR", LANGKAU BETANG: JURNAL ARSITEKTUR, 2019 Publication	<1%

Exclude quotes	On	Exclude matches	Off
Exclude bibliography	On		