

# A STUDY ON IMPORTANCE OF BLUE SPACE IN URBAN PARKS TO HUMAN WELL-BEING, WITH REFERENCE TO COLOMBO CITY, SRI LANKA

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## Abstract

*Urbanization reach to human with lot of positive and negative impacts on their lifestyle. Urban parks are introduced to create healthy living environments in urbanized areas. Blue spaces and Green spaces are two relative terms, but with different meanings, used in urban parks. The two spaces collectively play an important role in achieving health and well-being through urban parks. The study is focused on the blue spaces in urban parks.*

*Health and well-being is a widely discussed field in research. Main three pillars of human well-being identified as, mental well-being, physical well-being and social well-being. The main objective of the study is highlighting the importance of blue spaces in urban parks to human well-being under three categories, mental, physical and social well-being. The study designed as a non-systematic qualitative research, by analyzing three urban parks in Colombo city as case studies. The data collected through maps, photographs and observations. The data analyzed as a parallel analysis with three case studies.*

*Among three selected urban parks, 'Diyatha Uyana' park has 'very positive' support from blue spaces to mental and social well-being, while having 'moderate support' to physical well-being. In 'Weras Ganga' park has 'very positive' support from blue spaces to mental and physical well-being and 'moderate' support for social well-being. In 'Urban Wetland Park', has 'negative' support from blue spaces to mental and social well-being and 'moderate' support for the physical well-being.*

*Further studies need to be carried out with quantitative measures to identify the influence of blue spaces to human well-being, produce parameters for blue spaces and can implement the results in planning and designing stages of urban parks in cities.*

**Keywords:** Urban Parks, Blue Spaces, Mental Well-being, Physical Well-being, Social Well-being

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## **Introduction**

Around 55% of the global population currently living in an urban area or a city. Day by day, the attraction of people to urban areas is greatly increasing, due to upgrade the facilities and living conditions. With the population growth, the density of urban areas increases and it cause to create a lot of problems on human lives. As a result of occupying the lands excessively in urban areas, the natural environment has disappeared. It create lot of environmental, social, physical and mental health issues on the resident people. In the 19<sup>th</sup> century, the boulevard parks and landscape parks constructed focusing to create more beautiful and healthy urban environment for the wealthier people and growing working class in cities. Later, urban parks were created to emphasize the recreational needs of the middle class people in cities.(Völker & Kistemann, 2013)Many studies found that in recent time, introduction of urban parks to cities created many positive impacts on resident's life style, including health and wellbeing, social cohesion, economical benefits, reduction of urban heat island effect, improve bio diversity and air quality etc. (Konijnendijk, Annerstedt, Nielsen, & Maruthaveeran, 2013)

The 'blue space' can define as all the hydrographic features that can be all the waterbodies (estuaries, lakes, ponds, reservoirs, marshes etc.) or surface water drainage network (canals, ditches streams and rivers). (Haefnera, Jackson-Smith, Buchert, & Risley, 2017)'Blue space' or more generally, water, can consider as one of the main element in urban parks, among other elements such as, green space (vegetation), seatings, pathways, jogging tracks and bicycle tracks, structures, scenic views etc. In the current developments of Colombo city, it is clearly identified that almost all the urban parks developed based on a water body or a wet land, or at least an artificial water body. That is because, the water carries the quality of attracting people. And also, presence of water support to establish natural habitats and ecosystems. Apart from the many benefits from a blue space in an urban park, this paper focus on the benefit to the human well-being. Human well-being can achieved in different dimensions; physical well-being, mental well-being and social well-being. The objective of the paper, to discuss the capacity of 'blue space' has, to achieve all three dimensions of human well-being.

This paper first examine the current perspectives about blue space in urban parks and human well-being, and try to emphasize important findings from different researches. Then, as a second phase, try to identify the use of blue spaces in urban parks in Sri Lanka, with reference to Colombo city and further discussion on the current functions.

## **Literature Review**

### **Urban Parks**

Urban parks are defined as open space areas, mostly dominated by vegetation and water, and generally restricted for public use, including recreation, aesthetic appreciation, cultural and education purposes. (Konijnendijk, Annerstedt, Nielsen, & Maruthaveeran, 2013) It's an essential need to introduce parks (open public spaces) to urban areas to improve the quality of life of citizens. Urban parks are mostly larger, but according to its scale, can identify in different classifications, such as, mini parks, neighbourhood parks, community parks. (Assali, 2015)

Moreover, urban parks help to promote health and well-being of people, increase social relationships, contribute economy and promote tourism, value addition to lands, increase bio diversity, improve air quality, reduce the heat island effect and water management and many more.(Konijnendijk, Annerstedt, Nielsen, & Maruthaveeran, 2013) Among the countless benefits from urban parks, many studies were carried out in search of health benefits of them. In the

review of the study by Sadeghian&Vardanyan (2013) mentioned that the stress level of the people who exposed to natural environment, has decreased rapidly as compared to the people who exposed to urban environment, their stress level remained high. Also, it is evidenced that the patients in an hospital whose rooms were facing a park had a 10% faster recovery and needed 50% less strong pain relieving medication as compared to patients whose rooms were facing a building wall.(Bolund & Hunhammar, 1999) So, it is clearly identify that urban green spaces can positively impact to the human well-being.

### **Human Well-being**

'Health'and 'Well-being' are two terms which cannot be separately discussed. The definitions for health can vary over time, but in this review, used the general definition of the World Health Organization (WHO) in 1948. The term 'Health' is defined as "a state of complete physical, mental and social well-being and not merely the absence of disease or infirmity". 'Well-being' is a complex measurable subjective state of consciousness, (Völker & Kistemann, 2011) which can be defined as "positive, social and mental state; it is not just the absence of pain, discomfort and incapacity.(Konijnendijk, Annerstedt, Nielsen, & Maruthaveeran, 2013)

Human well-being can identified in major three categories; Mental well-being, Physical well-being and Social well-being. According to World Health Organization, mental well-being is "a state of well-being in which an individual realizes his or her own abilities, can cope with the normal stresses of life, can work productively and is able to make a contribution to his or her community." It can achieved through attention restoration, stress reduction and evoking positive emotions. American Association of Nurse Anaesthetists describe physical well-being as, "***The lifestyle behaviour choices you make to ensure health, avoid preventable diseases and conditions, and live in a balanced state of body, mind and spirit.***"It can achieved by promoting physical activity in daily life as well as leisure time through walkable environments. "Social wellbeing is defined as an individual's self-report of the quality of his or her relationship with other people, the neighbourhood, and the community." (Keyes & Shapiro , 2004) It can achieved through social integration, social engagement and participation, and through social support and security. (Abraham, Sommerhalder, & Abel, 2010) In the same study mentioned that the landscape has a significant potential to promote all forms of human well-being.

### **Blue Space and Human Well-being**

The'green spaces' introduced to the cities, as a solution for issues from urbanization on people's life style.After many studies, there is a consensus that the green spaces positively contribute to human health and well-being. (Völker & Kistemann, 2013)In the field of research, various studies were done observing the relationship between green space in landscape and human well-being, containing water as an element of green spaces. (Völker & Kistemann, 2013)However, urban blue spaces received less attention from researchers, than the green spaces.Because, generally, the 'blue space' included under the umbrella term 'green space' along with the urban parks and open spaces. (Haeffner, Jackson-Smith, Buchert, & Risley, 2017)In the current pool of literature, the relationship of water and health exclusively discussed in the fields of environmental ecology, toxicology and microbiology, but, the lack of research focusing on 'blue space' created a research gap for initiating this study. (Völker & Kistemann , 2011)

Some researches argued that the blue spaces provide different kinds of benefits to users, than the green spaces. They sensed in different ways, from running/flowing water, falling water to still water. People visit urban blue spaces for different type of uses, and they provide important

environmental, economic, social and anthropogenic benefits. (Haeffner, Jackson-Smith, Buchert, & Risley, 2017) In the modern societies, urban blue spaces functioning as favorite places to spend leisure time and for recreational activities, restoring people from everyday stress, and help to enhance physical and mental well-being. (Völker & Kistemann, 2013) Therefore, in many researches urban blue spaces considered as 'therapeutic landscapes' which helps to enhance public health aspects.

Blue spaces are also hold an important role in landscape perception, preference and landscape design as a part of the natural landscape. (Völker & Kistemann, 2011) In the same study, mentioned that, blue spaces are important in people's evaluation of landscapes. The most preferred views by people contained two-thirds of water, and those views with less than one-third of water or scenes containing only water were rated less positively, which implicate the importance of diversity, edges and borderlines of water and the land connectivity. (White, et al., 2010)

In the study of Völker & Kistemann (2011), mainly highlighted four benefits for health and well-being related to blue space, which can be identified as, perception and preference, landscape design, emotions, and restoration and recreation, apart from direct health benefits from blue spaces.

Though, the main focus in the literature review leads to the facts that are relevant only to the mental, physical and social well-being.

- **Mental Well-being**

- Perception and Preference

A study by Ulrich & Simons, (1991) on psychological effects by natural and urban scenes, using 18 subjects viewed sixty color slides in three categories, 1) nature with water, 2) nature dominated by vegetation and 3) urban environments without water or vegetation, was found that the scenes with water had more beneficial influence on psychological states. In addition, views of vegetation especially water appears to be more effective in maintaining attention and arousal. (Ulrich & Simons, *Stress Recovery During Exposure to Natural and Urban Environments.*, 1991) The water plays an important role in the perception of nature, and sensual perception of blue space are sound of water, its colour, clarity, motion and context. (Völker & Kistemann, 2011) According to the findings of White, et al. (2010), people mostly preferred the scenes presence of water and aquatic environments associated with more restorative sounds, colours and variable movements for relaxing, than green and built environments. The human perception is also affected by the context of blue space. Water connected with naturalness increase its visual rating, (Smith, Croker, & McFarlane, 1995) so, nature and scenery can consider as the main perceptive factors generate with blue spaces. The factors of preference for blue space are highly correlated with perception (Völker & Kistemann, 2011), as the study of Asakawa, Yoshida, & Yabe, (2004) found that the 'recreational use' and 'nature and scenery' were highly related to the preferences of residents.

The landscape with blue spaces are highly desired by humans for perceptive reasons, include of wide stretches of water, waterscapes with extensive views, natural and urban scenes containing with water, large water bodies, wild scenery containing water, river scenes, lakes and canals etc. (Völker & Kistemann, 2011)

### Restoration and Recreation

When people running after their ordinary daily demands, the psychological, physiological and social resources get depleted and the 'Restoration process' involving to the renewal of those conditions. The study by Ulrich (1983) mentioned that the environments include vegetation and water can have a positive impact on psychological states, when people are in the restoration process or recovery from stress. The restorative experiences are highly correlated with blue spaces. The blue spaces has a significantly greater effect on restoration or stress reducing ability than urban and natural contexts. (Völker & Kistemann, 2011; White, et al., 2010) In supporting those findings, Korpela, Yle'n, Tyrva''inen, & Silvennoinen, (2010) found that the waterside environments have a higher restorative experience than urban woodlands.

In Karmanov & Hamelb, (2008)'s study describe that the blue spaces in urban and natural contexts have stress reducing, mood enhancing, mental attention expanding powers. Some of the interesting quality of blue space are it's reflecting quality and the ability to create diversity along with the lands. They are also identified as restorative effects. (Völker & Kistemann, 2011) Also, in the study of Wilkie & Stavridou, (2013) revealed that the locations with pleasant waterscapes have more restorative qualities than locations with negative imagery or unpleasantwatersacapes and those spaces without water.

When people look at natural landscape, with natural elements like water or vegetation, they unconsciously release emotional reactions which are helped to recover their stress level. Also, while looking at a pleasant landscape, negative feelings and thoughts will replaced by positive feelings. (Ulrich & Simons, 1991; Abraham, Sommerhalder, & Abel, 2010)It is also recorded in the study of Völker & Kistemann (2011), the water is preferred by people in a relaxed or happy mood than those who are in stress. It further mentioned that, urban environments with water are rated even higher than natural settings without water.

So, these studies consolidate the idea, the water has a significant quality to increase the mental well-being by improving restorativeness, recreation, interest and attention.

#### • **Physical Well-being**

The Recreational facilities can consider as the way of achieving physical well-being from water. In the study of SMARDON, (1988), recreational experiences classified into four categories, 'Kinetic recreational experience', 'Situation-based recreational experience', 'Harvest experience' and 'Aesthetic experience'.

Physical well-being is fallen to the category of 'Kinetic recreational experience', which include the higher degree of motion on water, like boating, and the water edge recreation like cycling or jogging. (Völker & Kistemann, 2011)

Green spaces and Blue spaces contribute in a positive manner to maintain public health by creating an appropriate space for physical exercise to improve physical well-being. (Li & Pussella, 2017) The physical activities which are provided in urban parks with blue spaces, provide positive health effects of prevention of cardiovascular illnesses, obesity, cancer, anxiety and depression. (Völker & Kistemann, 2011)

So, blue spaces are important achieving physical well-being, which gives direct and indirect health benefits.

- **Social Well-being**

Public spaces such as urban parks are important to create social well-being, by providing opportunities to high level of interaction between people from different social, ethnic backgrounds and creating a meeting place. (Li & Pussella, 2017) Presence of water in urban parks attract people to the spaces, and these spaces support to development of local communities and social ties, and people be able to establish relationships, interacting with others, participate in society work and create the feelings of acceptance. (Konijnendijk, Annerstedt, Nielsen, & Maruthaveeran, 2013)

In the study of Haeffner, Jackson-Smith, Buchert, & Risley, (2017) found that the households of Utah, are positively impacted by active and passive interactions with their local blue spaces. Most households rated that the blue spaces have positively impact on their quality of life and most households viewed their waterways having a positive influence on their neighbourhood. Also, the results of the study suggest that the respondents who spent time and more familiar with the waterway were likely to report more positive impacts on their households from interacting with their local waterway through visiting, walking, playing and experiencing sights, sounds and habitats of wildlife. (Haeffner, Jackson-Smith, Buchert, & Risley, 2017)

### **Urban Parks, Blue Spaces and Colombo City**

Sri Lanka, is a country which is undergone a rapid development during last decade. Colombo city, as the commercial capital of the country, was nominated as one of the fastest growing urban cities in South Asia by the World Bank in 2013. Colombo metropolitan area is very important as the main economical hub of Sri Lanka, and, it is responsible for more than 80% of the country's industrial output, and 50% of the Gross Domestic Product (GDP). (Li & Pussella, 2017)

Due to the development of infrastructure facilities, job opportunities and quality of life when compared with rural areas of the country, the general public attract and settle down in and around the Colombo urban area and suburbs. So, Colombo city and its' suburbs, are getting urbanized through the time. To reduce the bad consequences of rapid urbanization, urban green spaces act a remarkable role in the city.

In recent years, open water body development and revitalization has become a popular feature in urban green spaces development. (Ratnayake, Wickramaarachchi, & Wattege, Urban water body recreational development and revitalizing program in Sri Lanka: Public perception and willingness to pay, 2017) When considering the Colombo city development, considerable amount of green spaces develop along with the water body or a wet land. (i.e. –Diyatha Uyana, Urban Wetland Park, Weras Ganga Park, Beddagana Wetland Park) These public parks include of blue spaces enhance the city environment ecologically, socially and culturally. (Li & Pussella, 2017) According to the current observations, the people in the Colombo city, are more attracted to the urban parks with natural water bodies, and in other parks have included even an artificial water bodies.

Since the population growth of Colombo city records the lowest rate (1.1%) in the South Asian region (according to the world development indicators defined by World Bank in 2017), the

22.6% of the country population live in urban areas, and among those urban population 15% live in the Colombo city. So, this scenario is not so good when it is compared with other urban areas. (Li & Pussella, 2017) In the study of Li & Pussella (2017), found that the total green spaces in the Colombo city is 5.02 km<sup>2</sup> by 2015, which is 13.4% of the total area (37.29km<sup>2</sup>), and the per capita green space is 7.16m<sup>2</sup>. 'Per capita green space' is the one of the standard leading parameter, which represent the extent of green area in square meters (m<sup>2</sup>) for a single citizen. World Health Organization (WHO) has defined the per capita green space should be 9m<sup>2</sup> to provide a better quality life.

So, Colombo would face to severe problems in near future, if the policy makers and city planners do not pay their attention to increase the green spaces and blue spaces within the city, to facilitate the people.

### Conceptual Framework

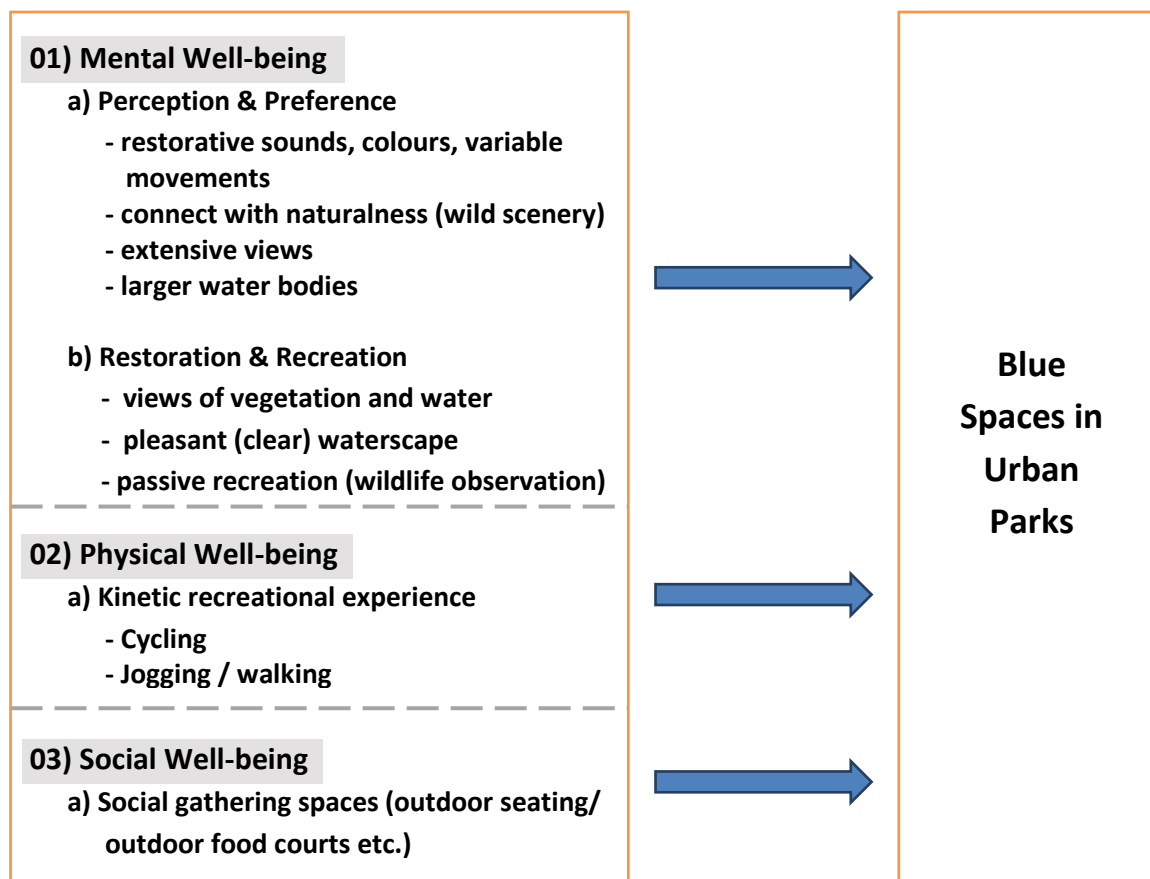


Fig.1– Conceptual Framework  
Source: author

### Methods

This study is organized as a qualitative analysis of blue spaces in urban parks in the Colombo city, by selecting three case studies. The criteria for selecting case studies, is the urban parks which include blue spaces and public access with higher functioning rate.

The methodology to collect the data in the study is 'Participant Observation', which is widely used methodology in many disciplines like, anthropological and sociological researches and is a typical methodological approach of ethnography. (Kawulich, 2005; Baker, 2006) Observation is an important tool in this research to understand more about the situation, to assess how people in the setting interact with the surrounding and how the things are organized. (Kawulich, 2012; Baker, 2006) As an example, the studies of 'Adiati, Lestari, & Wiastuti, (2018) about public parks in Jakarta' and 'Jasmani, Ravn, & Bosch, (2015) about Small urban parks' used the observation as a data collection tool. The stance of the researcher when performing the observations is much important for the validity of the study. (Kawulich, 2012) 'Direct observation' method used as a 'complete observer' stance used in the study which is not interact with the people or objects in the site.

To increase the validity and reliability of the study, several measures were taken. Each park visit two times in two different days and times during weekends (Saturday and Sunday – morning and evening) to collect the data. The data collection was conducted as a 'selective observation' focused only on certain aspects, identified from the literature review. In the study used more than one data collection method. To record the data, used a checklist, with a rating scale to list out possible activities and elements in the parks. A camera was used to video record and take photographs in each park during separate visits. To minimize the personal bias and gender bias, a female investigator involved to collect and analyze the data, who is from the same study background.

### **Limitations**

The study conducted within a short time period, so, the first phase of the study concentrate the qualitative analysis, whereas, the second phase need to be developed with a quantitative analysis. This study collected data only in weekend days and further studies need to be extended to weekdays and different time of the day, also.

### **Analysis**

The impact of blue spaces in Urban Park to human well-being, was analyzed under main three categories identified in literature review; Mental well-being, Physical wellbeing and Social well-being. In the study, consider three urban parks in Colombo, 'Diyatha Uyana Park in Battaramulla', 'Weras Ganga Park in Bellanwila' and 'Urban Wetland Park in Nugegoda'.

#### **• Case Study 01 –Diyatha Uyana Park**

As it derives by the name "Diyatha Uyana", which means water garden or Water Park, the whole area developed based on water features. Diyatha Uyana Park is located Battaramulla area, which built along the banks of Diyawanna Oya and opened for public on 2012 September. The total area of the park is around 21 acres, where include 800 meters long walking path, children play areas, seating spaces, natural habitat spaces, aquarium, food stalls, vendor stoles and many other. It is also measured that, around 10,000 visitors visit per day on week end and about 5000 people visit on week day.



**Fig.2**– Location – Diyatha Uyana Park  
Source: Google Earth, edited by author



**Fig.3**– Large waterbody  
Source: author

Diyatha Uyana park bounded to a fascinating a large waterfront, 'Diyawanna Oya', which gives an extensive views of the surrounding vegetation, and many high risers at the horizon. The people can't access to the edge of the water body, but, can experience the movement of the water and the sound effects of the natural water meets the ground. The colour of the water appears pleasant.

Diyatha Uyana Park designed with several isolated islands surrounded with water and waterlogged vegetation, which allows to grow natural plants and habitats. Most of the people, especially children, loved to watch the wild sceneries of birds and small animals in those islands.

The people who use this park, always tend to gather near to the water body, and the seating facilities also provided near the water features. Also, the people have great opportunity to passive recreation with blue spaces by sensing, sighting and hearing the nature.



**Fig.4**– Gathering spaces  
Source: author



**Fig. 5**– Seating spaces  
Source: author

All these factors influence people to increase their mental well-being by restoration, overcome everyday stress and increase perceptive feelings.

DiyathaUyana park providing facilities for walking and jogging, with a circular walking pathway, but most of the people use this facility not as an exercise, but as a relax walk. The walkways also designed with blue spaces, help people to give attractive view. A children play areas placed in a land faced to water body, which also provide facilities to effective child play.



**Fig. 6–** Jogging/walking tracks  
Source: author



**Fig. 7–** Children play spaces  
Source: author



**Fig. 8–** Seating and play spaces  
Source: author

DiyathaUyana Park mostly cater for social gathering. People in every age category from infants to older people, visit the park in large numbers, during weekends than weekdays. With the facilities provided in the park, food courts and vending places, people attract to the park as groups and families. They mostly halted and gathered around blue spaces inside the park.



**Fig. 9–** Outdoor gathering areas  
Source: author

### • Case Study 02 – Weras Ganga Park

Weras Ganga Park is located within highly residential and highly functioning area, due to Bellanwila Rajamaha Viharaya (Temple). The park was opened in 2014, including bicycle tracks, jogging/walking tracks and food court. The area of the park surrounded by 2.9km jogging/walking track, include 103 acres. The area of the park consist of many private properties (residences and paddy fields) and religious spaces (PillewaBodiraja Temple).



**Fig.10**– Location – Weras Ganga Park  
Source: Google Earth, edited by author

‘Weras Ganga Park’ constructed reclaiming previous marshy land, currently disclose a large water body to the public. Considering the influence of the blue space in mental well-being, a



**Fig. 11** – Large waterbody  
Source: author

large water body with extensive views of the surrounding vegetation create a positive perception in human mind. The movement of waves, sound and pleasantness of water help for mental restoration purpose. The park also consist of isolated islands and paddy lands which attract birds and animals. To relieve from everyday stress, the sceneries of wildlife and passive recreation activities with the water body influence in a higher rate.

The Weras Ganga Park majorly catered for kinetic recreational experiences, for cycling and jogging, which include 2.9 km track surround the water body. Cycling is one of the famous and well established activity in this park. The two separate tracks for jogging and cycling, fallen along with the waterbody. So, the presence of blue space, considered as a positive factor for the people who are using the jogging track and cycling track.



**Fig. 12** – Bicycle tracks  
Source: author



**Fig. 13** – Jogging/ Walking tracks  
Source: author

Weras Ganga Park allocate a limited space for community gathering with the food court. But, the important thing is the water body of the park certainly influence for selecting the suitable space for public gathering. The most usable area of the park, except of jogging and cycling tracks, is the seating area in front of the water body. Mostly, the youth people and families use this space in their leisure time.



**Fig. 14**– Outdoor gathering/ seating area  
Source: author

### • Case Study 03 – Urban Wetland Park

The 'Urban Wetland Park' is located in the middle of highly residential area, Nugegoda, which was opened in 2013. This park include 1.45km long jogging/walking track, seating areas and gathering areas. The area include 8.8 acres land besides of Kirulapana canal.



**Fig. 15**– Location – Urban Wetland Park  
Source: Google Earth, edited by author

The 'Urban Wetland Park', is designed based on a water body, up to now it is unable to get the maximum outcome from it. The impact from the blue space to human well-being can identify in a very lower level. It is a canal which is not very wide, and doesnot contain very positive views to the users, very limited vegetation appears with neighbourhood residences. The waterbody, also contain unpleasant (polluted) water with an odor smell, the colour of the water remains green, and can't identify a flow of the water. All these create a negative impact on mental well-being, therefore, very limited public use this space, mostly, the youth lovers, joggers and walkers. The park contains some non-accessible islands for habitat generation, where can identify some birds and animals, attract people for passive recreation.



**Fig. 16**– Polluted water  
Source: author



**Fig. 17**– Along the canal  
Source: author



**Fig. 18**– Unpleasant views  
Source: author

The Urban Wetland Park, is mostly support for the physical well-being of people, 1.45km long circular jogging/walking track is proposed parallel to the canal branches. As per the findings from literature review, people love to do their jogging or walking along a waterbody, so, here that factor fulfilled. But, the water doesn't sense very positively, because of its' unpleasantness.



**Fig. 19**– Jogging/ Walking tracks  
Source: author



**Fig. 20**– Jogging/ Walking tracks  
Source: author

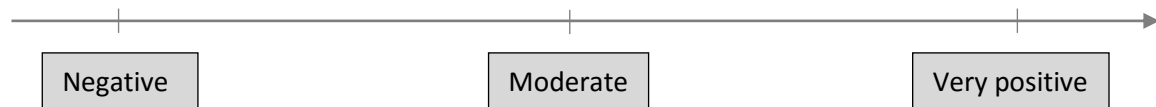
The influence from the blue space, for social well-being can observe at very low degree, some spaces for social gathering provided in the park beside a waterbody. But, people do not use that space, sometimes the quality of the water, the surrounding views and the facilities provided might not in a satisfactory level.



**Fig. 21**– Public seating area without function  
 Source: author

### Summary

	<b>Case study 01 – Diyatha Uyana Park</b>	<b>Case study 02 – Weras Ganga Park</b>	<b>Case study 03 – Urban Wetland Park</b>
<b>Mental Well-being</b>	<u>Very positive</u> support from blue space	<u>Very positive</u> support from blue space	<u>Negative</u> support from blue space
<b>Physical Well-being</b>	<u>Moderate</u> support from blue space	<u>Very positive</u> support from blue space	<u>Moderate</u> support from blue space
<b>Social Well-being</b>	<u>Very positive</u> support from blue space	<u>Moderate</u> support from blue space	<u>Negative</u> support from blue space



### Conclusion

Blue spaces and Green spaces are the most valuable resources in nature to the human, both have impacts on human health and well-being. Blue spaces consider as one major element in urban parks, which can create huge impact on human lives. In general sense, blue spaces consider under the term of green spaces. Most of the studies in the field also, focused on the impacts of green spaces to human health and well-being and very few studies have focused on blue spaces. This study contributes to search how the blue spaces in urban parks, impact to human well-being with supporting three case studies.

In the literature review identified, human well-being describe under major three categories, 'Mental well-being', 'Physical well-being' and 'Social well-being'. Blue spaces are influence on people in different way than green spaces. It enhance perceptive experiences and preferences, mental restoration and emotions, recreational experiences under mental well-being. In physical well-being scenarios, blue spaces increase recreational activities and control deceases like obesity, cardiovascular illnesses, cancers and depression etc., through facilitating physical exercises to the body. Also, blue spaces create platform for social gathering which increase the social well-being.

Three urban parks in Colombo city, were selected as case studies and data were collected through maps, photographs and personal observations. In the analysis conclude to, the blue spaces in 'DiyathaUyanaPark' is very positively used for mental and social wellbeing and moderately used for physical well-being. In 'Weras Ganga Park', blue spaces support very positively for mental and physical well-being, but moderately for social well-being. The blue spaces in 'Urban Wetland Park' negatively support for mental and social well-being and moderately support for physical well-being.

However, the current research base on blue spaces and health & well-being, is insufficient for gain a better attentiveness from the professionals and public, this study tries to cast an understanding about blue spaces in cities. Further researches are encouraged in quantitative measures on blue spaces and health & well-being.

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