



ESTONIAN UNIVERSITY OF LIFE SCIENCES
Institute of Agricultural and Environmental Sciences

Menaka Shrestha

**GREEN SPACES DEVELOPMENT IN
KATHMANDU**

ROHELISTE ALADE ARENDAMINE KATMANDUS

Master's Thesis

Curriculum in Landscape Architecture

Supervisors: Dr. Joanna Tamar Storie

Dr. Anna Wilczynska

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<p>Arengumaades laieneb linnaelanikkond tänu suurematele võimalustele ja kõrgemale elatusasemele kiiremini kui maarahvastik, mille tulemuseks on linnastumine. Nepali pealinnas Katmandus elab 1,57 miljonit elanikku, aastane kasvumäär on 3,29%. Selline linnastumise surve põhjustab kiireid muutusi piirkonna linnamaastikus. Ka Katmandu rohealade praegune olukord on linna kasvava linnastumise ja elanikkonna suurenemise tõttu keeruline. See lõputöö käsitleb Katmandu parkide ning nende hetkeolukorra ja kasutusvõimaluste uurimist. Selleks vaatasin Katmandus viit erinevat parki. Valik tehti veebiküsitluse küsimustega, mis viidi läbi 45 Katmandu elanikuga. Katmandu parke on veebiküsitluse küsimuste põhjal uuritud järgmistel juhtudel: eelistatud tegevused, nagu pargis, probleemid, rajatised, eelised ja parendusvajadus. Samuti on iga uuringuparki hinnatud parkide asukohta, parkide ajaloo, haljastuse liikide, rajatiste, ligipääsetavuse ja ohutuse alusel. Lõpus on arutelu ja järeldus, kus arutatakse tulemusi ja kirjanduse ülevaadet, võrreldakse neid ja lõpetatakse järeldusega.</p>			
Märksõnad: rohealad, pargid, kasutusala, taju, linnastumine			

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<p>In developing nations, the urban population is expanding quicker than the rural population due to more possibilities and a higher standard of living, which results in urbanisation. Kathmandu, the capital city of Nepal, has 1.57 million residents, with an annual growth rate of 3.29%. Such urbanisation pressure results in rapid changes in the urban landscape pattern of the region. Also, Kathmandu's current state of green spaces is challenging due to the increasing urbanisation and population expansion of the city. This thesis is about studying parks in Kathmandu and their current situation and uses. For this purpose, I looked at five different parks in Kathmandu. The selection was the result of online survey questions conducted with 45 residents of Kathmandu. Parks in Kathmandu have been examined based on online survey questions in the following cases: activities preferred, like in the park, problems facing, facilities, benefits and improvement needed. Also, each survey park has been assessed according to the location of the parks, history of the parks, types of greenery, facilities, accessibility, and safety. In the end, discussion and conclusion are provided, where results and literature review are discussed, compared, and concluded with the conclusion.</p>			
Keywords: Green spaces, Parks, Uses, Perception, Urbanisation			

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1. CHAPTER ONE: INTRODUCTION

1.1 Overview

The thesis discusses the topic of green space development in Kathmandu. Kathmandu, the capital city of Nepal, has experienced tremendous urbanization over the past three decades (Thapa & Murayama, 2011). There are currently 1.57 million residents, with an annual growth rate of 3.29% (Thapa & Murayama, 2011). Such urbanisation pressure results in rapid changes in the urban landscape pattern of the region by adding more construction and causing the loss of natural lands. The current state of green spaces in Kathmandu is challenging due to the city's increasing urbanization and population expansion. The majority of the green spaces in Kathmandu need to be better maintained. Also, most of the traditional green areas of Kathmandu, such as public parks and gardens, have been shrinking due to the rapid population growth of the city (Thapa, 2021).

Kathmandu was chosen for this study because it is one of the most populated cities in Nepal, with rapid urbanisation and population growth. As the capital city of Nepal, it serves as the political, economic, and cultural hub of the country, making it an important site for studying urban development challenges. Despite being surrounded by breath-taking natural landscapes, Kathmandu faces challenges in preserving green spaces within its urban core. The scarcity of accessible and well-maintained green spaces highlights the urgency of addressing the issue of urban greenery.

This study covers all the benefits of green spaces that people are getting and also their preferences in green spaces. Furthermore, it also covers all the problems that are facing by residents of Kathmandu and the facilities that green spaces in Kathmandu is lacking. Also, the study will assess the location, history, greenery, facilities, accessibility, and safety of green spaces. According to the results of the online survey form, many improvements need to be made in the green areas of Kathmandu as green spaces are much more needed in Kathmandu.

1.2 Aim and the importance of the study

This study aims to assess the current state of green spaces in Kathmandu, citizens' interest in green spaces, the benefits they are getting from these areas, and the problems they are facing nowadays. Also, the aim is to study the facilities needed in green spaces and the improvements that need to be made in the green areas of Kathmandu.

1.3 Thesis objectives

Main objectives of the study are summarized as follows:

- To study the functionality of green spaces in Kathmandu.
- To study the perception of green spaces by Kathmandu inhabitants.

1.4 Research Questions

- 1) Who and how is using green spaces in Kathmandu?
- 2) How do inhabitants perceive green spaces in Kathmandu?
- 3) How do green spaces in Kathmandu look and function?
- 4) How are green spaces in Kathmandu currently managed and developed?

1.5 Thesis structure

The thesis framework is divided into five chapters, and it is about green space development in Kathmandu. Each Chapter is explained briefly below.

Chapter One is an introduction to this thesis's main topic, which summarizes the entire thesis. In this section, the aim of the study, thesis objectives, and research questions are stated, along with a summary of all the chapters. **Chapter Two** is the literature review of the thesis. This section explains urban landscape and urbanization processes, green and blue infrastructure, their types, and their importance for humans and nature. In addition to that, it also explains the uses and perceptions of green spaces. **Chapter Three** shows the methods used to achieve the research objectives. The main research method is based on an online survey form, and it was conducted to know people's preferences about green spaces, the benefits they are getting from these areas and the current state of green spaces. The results are described in Chapter Four. **Chapter Four** shows the results. This chapter used several graphs, pie charts, spider diagrams and images to illustrate how respondents responded to the survey. **Chapter Five**, "Discussion and Conclusion," reflects on the research's main findings. In this chapter, results have been taken together in the context of theory findings and research questions are answered. The thesis is finalized with references, and all the materials used in the research are added as appendices.

2. CHAPTER TWO: LITERATURE REVIEW

2.1 Green spaces and Urban parks

Green spaces and urban parks are terms often used interchangeably to describe areas within urban environments. They are designated for natural or semi-natural elements that offer recreational, social, and ecological benefits to residents and visitors.

Green spaces refer to any open areas or spaces within urban settings that are covered with vegetation, trees, grass, or other forms of plants. They can include parks, gardens, green corridors, community gardens, and even vacant spaces with natural vegetation. In general, green structures are classified into two types: natural environments that have not been influenced by human activity, such as national forest parks, and man-made green environments for various purposes, such as urban parks, green sidewalks, botanical gardens, and so on. (Javadi & Nasrollahi, 2021)

Urban parks are a specific type of green space that is deliberately designed, developed, and managed by local governments or authorities for public use and enjoyment (Chiesura, 2004). Parks are often larger and more formalised than other green spaces, that offer various recreational amenities, such as playgrounds, sports facilities, walking paths, and seating areas (Chiesura, 2004). They also serve as gathering places for the community, cultural events, and social activities (Ayala-Azcárraga et al., 2019). Urban parks come in various forms and serve different purposes that cater to the diverse needs and preferences of urban communities. Here are some common types of urban parks:

2.1.1 Neighbourhood Parks

Neighbourhood parks are small to medium-sized green spaces that are located within residential areas. These parks are designed to serve the needs of the local residents and communities. These parks often include playgrounds, walking paths, benches, and open lawns. Neighbourhood parks are designed to provide opportunities for individuals as well as families and also to engage in recreational activities, socialize, and enjoy nature which are close to their homes. They contribute to a sense of community and serve as gathering places for neighbours to interact and build relationships. (Zhai et al., 2020)

2.1.2 Pocket Parks

Pocket parks are small, unused, or irregularly shaped urban spaces. They are strategically placed in densely populated or commercial areas where larger parks may not be feasible. Pocket parks provide pedestrians and workers a place to relax in hectic metropolitan settings. Despite their small size, pocket parks can feature seating areas, plantings, and greenery, adding to the urban aesthetic and contributing to the overall urban environment. Furthermore, they were created in the 1960s. Many studies have indicated that when pocket parks are seen as appealing and safe sites, residents are more likely to engage in physical activity with their children. (Nordh & Østby, 2013)

2.1.3 Town Square Parks

A town square is a public space in the centre of a town or city that is often used for community gatherings, events, and celebrations. It is typically a large open area that may include benches, seating areas, fountains, statues, or other decorative features. The town square, often referred to as a civic center, city square, urban square, market square, or piazza, which holds significant importance in urban design (Zawidzki, 2016). Furthermore, the greenery of town squares includes flower beds, trees, plants, shrubs, and other landscaping elements.

2.1.4 Temporary Parks

Temporary parks, also known as pop-up parks, are innovative and temporary green spaces created from underutilized or reclaimed areas. These parks are typically set up for a short period and aim to activate unused spaces, providing opportunities for people to gather, relax, and engage in community activities. Temporary parks often involve low-cost and adaptable installations, making them flexible and easily transformable based on community needs. They can be used to test ideas for potential permanent park spaces or as temporary solutions to enhance the urban environment. (Salvo et al., 2017)

2.1.5 City and Cultural Parks

City and cultural parks are both essential components of urban landscapes. City parks are large green spaces located within urban areas, which are designed to serve the recreational, social, and cultural needs of residents and visitors of the urban areas. These parks are often located in the centre, and also they are easily accessible to a diverse population of the city. City parks are characterised by their size, which offers areas for various outdoor activities and leisure pursuits. Cultural parks are specialised parks designed to celebrate and showcase a specific region's or community's cultural heritage, history, and artistic expressions. These parks often incorporate unique cultural and creative elements and also make them distinctive and representative of the local identity. (Loughran, 2020)

2.2 Importance of green spaces

Green spaces, such as parks, gardens, and natural areas, play a vital role in enhancing the quality of life for individuals and the overall well-being of communities. They are essential for creating a healthy environment and providing various benefits to people and wildlife (Jenks & Jones, 2009). On the one hand, green spaces provide environmental benefits such as improved air quality, reduced noise pollution, climate regulation, support for

biodiversity, and the preservation of natural habitats (Environmental Protection Agency, 2017). On the other hand, it provides benefits for humans, such as physical, mental, social, and economic benefits (Environmental Protection Agency, 2017).

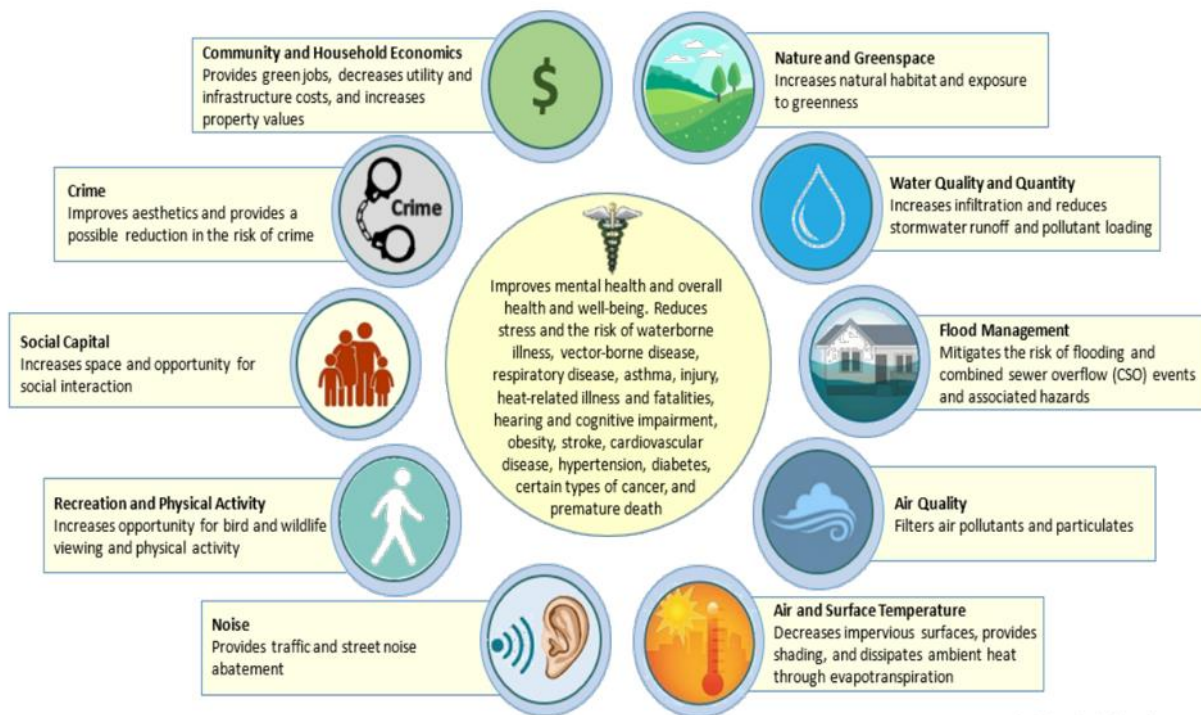


Figure 1. Environmental, social, economic, and health benefits of green spaces (Environmental Protection Agency, 2017).

2.2.1 Environmental importance of green spaces

Green spaces play a crucial role in the environment. It provides a range of environmental benefits, such as climate regulation, improved air quality, reduced noise pollution, soil conservation, and support for biodiversity. Firstly, green spaces, such as parks, gardens, and forests, help to mitigate climate change by absorbing carbon dioxide through photosynthesis (Farkas et al., 2023). They have a good impact on the urban climate and help to reduce the urban heat island effect (Farkas et al., 2023). Also, they absorb many hazardous substances from the air, reducing air pollution and play a crucial role in reducing

the sound emissions which are generated by road traffic (Cicea & Pirlogea, 2011; Brambilla et al., 2013). Similarly, Green spaces in urban areas help to reduce rainwater runoff (Zhang et al., 2012).

Furthermore, green spaces support biodiversity conservation by providing habitats for various plant and animal species (Farkas et al., 2023). Green spaces also serve as refuges for endangered and threatened species, contributing to their preservation and enhancing the ecosystem (Farkas et al., 2023). Additionally, it can provide habitats for less tolerant bird species that cannot survive in a dense network of buildings and impervious surfaces (Wong et al., 2023).

Overall, green spaces play a vital role in mitigating climate change, managing water resources, conserving biodiversity, improving air quality, and reducing noise pollution. As a result, green spaces need to be properly maintained for a sustainable future, as they contribute to the overall health of our planet and enhance the resilience of ecosystems.

2.2.2 Human related importance of green spaces

Green spaces are extremely important for human health and quality of life. Green spaces and other nature-based solutions can improve the quality of urban settings, boost local resilience, promote sustainable lifestyles, and improve urban residents' health and well-being (World Health Organisation, 2017). They also promote physical fitness and an active lifestyle. They offer spaces for recreational activities such as walking, running, jogging, cycling, and playing sports. Engaging in physical exercise in green environments helps to maintain fitness, improves cardiovascular health, strengthens muscles, and enhances overall physical well-being.

Green spaces offer many benefits for park users, including cognitive, emotional, and psycho-sociological advantages like stress reduction and improved attention. They also provide personal benefits such as improved physical activity and well-being. Additionally,

green spaces promote cultural ecosystem services essential to urban society and serve as social hubs for gatherings, picnics, and events, fostering connections and a sense of belonging among individuals. (Berman et al., 2008; Ugolini et al., 2022)

Furthermore, green spaces enhance the aesthetics of urban areas, making them more visually appealing and improving residents' overall quality of life. The presence of greenery, trees, and flowers creates a pleasant and inviting atmosphere, promoting a sense of pride and attachment to the surroundings. During the COVID-19 infections, urban green spaces played an important role in alleviating the human well-being consequences of 'lockdown policies,' particularly social isolation and mental health (Davies & Sanesi, 2022).

In summary, green spaces play a crucial role in enhancing human well-being. They offer mental and physical health benefits, create opportunities for social interaction, and contribute to the overall aesthetics of communities.

2.3 Use and perception of green spaces

The use and perception of green spaces play a significant role in how these areas are valued and integrated into communities. Both factors are interconnected and can influence each other. Also, Green spaces are crucial for people's well-being and environmental sustainability (Jenks & Jones, 2009). The characteristics of such areas and user satisfaction with them have an impact on the types and frequency of park activities (Gozalo et al., 2019). Also, understanding how these aspects interact is crucial for developing effective designs for these areas (Gozalo et al., 2019). People use green spaces in various ways, depending on their preferences, needs, and the creation of the specific green space (Gozalo et al., 2019). Furthermore, user factors like age, gender, and education may influence green space use, but the emphasis is shifting towards adaptable green space features due to the

unchangeable nature of these demographic characteristics (Bedimo-Rung et al., 2005; Schipperijn et al., 2010).

The contextual setting of urban areas is highly correlated with perceptions of the natural environment, especially green space. Also, People's perceptions of green spaces vary by location, environment, socioeconomic status, and demographic background (Haq & Ahmed, 2017). Furthermore, Public perceptions of green space utilisation and behavioural characteristics have been shown to change depending on cultural and social background, as well as preference for natural and urban settings (Haq et al., 2021). The goal of meeting the needs of visitors and urban residents to green spaces influences use patterns, urban planning, and management (Jim & Shan, 2013). Also, green areas positively affect the psychological behaviours and social lives of people who use them (Sen & Guchhait, 2021).

People use green spaces for recreational activities, socialising and gathering, physical exercise and well-being, and education and learning.

1) Recreational activities:

Green spaces offer a range of recreational activities that cater to people's leisure and enjoyment. People use green spaces such as parks, urban forests, and gardens for recreational activities such as picnicking, playing sports, running, jogging, walking, cycling, and enjoying nature. Recreational activities in green spaces allow individuals to disconnect from their everyday life and reconnect with nature. These activities promote relaxation while also supports physical fitness, mental well-being, stress reduction, and a healthier lifestyle. (Bell, 2008; Gómez-Baggethun et al., 2013)

2) Socialising and Gathering:

Green spaces serve as meeting points for socialising and community gatherings. People visit parks and green areas to socialise with friends and family, have outdoor events or

parties, or participate in group activities and games. Socialising in these spaces enriches relationships, promotes well-being, and strengthens the fabric of local communities. (Heikinheimo et al., 2020)

3) Education and Learning:

Green spaces serve as outdoor classrooms and learning environments. Schools, universities, and educational institutions use nearby parks, open fields, and gardens for environmental education, and outdoor lessons. These spaces provide dynamic settings for experiential learning, sparking curiosity and nurturing a sense of wonder among learners of all ages.

Overall, green spaces serve diverse purposes, offering recreational activities, social interactions, and physical and mental well-being opportunities. Similarly, they provide areas for environmental education, biodiversity conservation, and cultural events. Green spaces are vital in enriching lives, promoting sustainability, and creating thriving communities.

2.4 Impacts of urbanisation on green spaces

Urbanisation is the shift from a rural to an urban society and involves increasing the number of people living in urban areas. Also, social, economic, and political developments lead to urban concentration and growth in large cities, and a shift from rural to metropolitan organisational and governance structures. (Britannica, 2023; Libretexts, 2021)

Urbanisation has significant impacts on green spaces, which are vital components of the urban ecosystem. As cities expand and develop, natural landscapes are transformed into

built environments to accommodate the growing population and urban infrastructure. Habitat loss and fragmentation, reduced biodiversity, loss of ecosystem services, increased urban heat island effect, pollution and degradation are the impacts caused by urbanisation on green areas (Libretexts, 2021; Richards et al., 2017; Gu, 2019; Najah et al., 2023). The following are more detailed impacts of urbanisation on green spaces:

1) Loss of Green Spaces:

Urbanisation often results in the conversion of green spaces into residential, commercial, or industrial areas. As cities expand, natural habitats, parks, and open green areas are lost, leading to reduced biodiversity and ecological functions. (Libretexts, 2021)

2) Increased Pressure on Urban Parks:

There is greater demand for recreational spaces, and urban parks as the urban population grows. Overcrowding in parks can lead to wear and tear, reduced plant health, and decreased quality of the recreational experience. (Richards et al., 2017)

3) Pollution and Degradation:

Urbanisation increases pollution, including air and water pollution, noise pollution, and land pollution. These pollutants can adversely affect the health of green spaces, vegetation, and wildlife. (Gu, 2019)

4) Loss of Ecosystem Services:

Urbanisation can diminish the ability of green spaces to provide essential ecosystem services, such as air and water purification, carbon sequestration, and temperature regulation. This loss can have detrimental effects on the overall environmental health of the city. (Richards et al., 2017)

5) Urban Heat Island Effect:

The increased concentration of buildings and paved surfaces in urban areas leads to the urban heat island effect, where cities experience higher temperatures than surrounding rural

areas. This heat can negatively impact green spaces and reduce their ability to provide cooling benefits. (Najah et al., 2023)

So, to mitigate the negative impacts of urbanisation on green spaces, cities must prioritise sustainable urban planning, protect and preserve existing green areas, and build green infrastructure. Integrating green spaces into urban landscapes is essential for building resilient, healthy, and liveable cities that provide numerous environmental, social, and economic benefits for current and future generations.

2.5 Facilities needed in green spaces

Green spaces contribute to a better and more sustainable environment by improving the general quality of life in communities, promoting biodiversity, mitigating the consequences of urbanisation, and contributing to a healthier and more sustainable environment (Farkas et al., 2023). As a result, green spaces require a diverse range of facilities to fulfil the needs and desires of the community and also to promote physical, mental, and social well-being. These facilities play a crucial role in transforming green spaces into dynamic and appealing spaces (Artmann et al., 2017). Seating areas, playgrounds, walking paths, toilets, dustbins, sports and recreational facilities, picnic areas, and accessible paths are the much-needed facilities in green areas. The following are more detailed facilities needed in green spaces:

1) Seating Areas:

Seating areas are an essential facility in green spaces that provide comfortable and inviting spaces for park visitors. Comfortable seating areas, such as benches, chairs, and stone platforms, should be properly placed throughout the green space. These seating areas offer places to rest, relax, and enjoy the natural surroundings for visitors, making the park more inviting and user-friendly. (Artmann et al., 2017)

2) Playgrounds:

Green spaces should feature well-designed and safe playgrounds with age-appropriate play equipment, swings, slides, climbing structures, and sandboxes. Playgrounds encourage children's physical activity, imaginative play, and social interactions, making the park attractive to families. (Kim et al., 2020)

3) Walking paths:

Well-maintained walking and jogging paths are essential for promoting physical activity and providing opportunities for residents to stay active and connect with nature. (Artmann et al., 2017)

4) Sports and Recreation Facilities:

Sports fields for soccer, baseball, softball, and other team sports, as well as tennis courts, and basketball courts, attract sports enthusiasts and encourage physical fitness and friendly competitions. (Kim et al., 2020)

5) Water Fountains:

Providing water fountains encourages hydration and helps visitors stay refreshed during their time in the green space. (Artmann et al., 2017)

6) Trash and Recycling Bins:

The placement of trash and recycling bins throughout the park promotes cleanliness and make the park remains clean and tidy which encourage visitors to visit the park frequently.

7) Information and Signage:

Providing informative signage, maps, and interpretive panels helps visitors navigate the park, learn about its history and features, and understand any rules or guidelines.

8) Picnic areas:

Picnic areas in green spaces provide designated spots with picnic tables or benches for families and friends to gather, enjoy meals, and relax amidst nature. (Artmann et al., 2017)

By incorporating these facilities into green spaces, cities and communities can create inclusive and inviting environments that cater to various interests, age groups, and recreational preferences, enhancing the overall well-being and satisfaction of park users.

3. CHAPTER THREE: MATERIALS AND METHODS

This chapter will discuss several data collection methods that will assist in completing the research. This chapter is further split into four stages as presented, Figure 2.

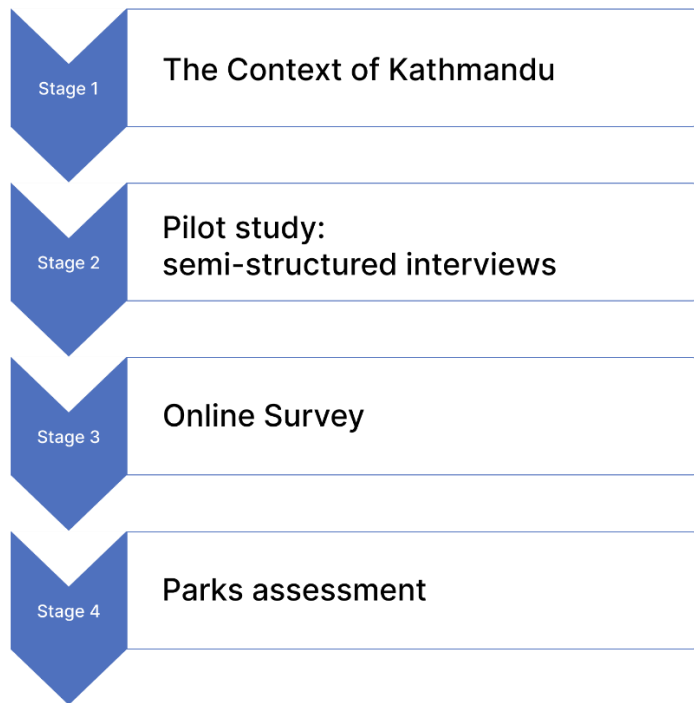


Figure 2. Research Process (By Author)

3.1 Stage 1 - The context of Kathmandu

3.1.1 Geographical location of Kathmandu

Kathmandu is Nepal's capital and the centre of the country's most populous urban area. Kathmandu is located between the latitudes of $27^{\circ}38'32''$ and $27^{\circ}45'7''$ north and the longitudes of $85^{\circ}16'5''$ and $85^{\circ}22'32''$ east. The city has an average elevation of 1350 meters above sea level and a subtropical, cool, and temperate climate. Throughout the year, the highest and lowest temperatures typically fell within 29.7°C in May and 2°C in

January. Furthermore, Kathmandu is located within the Bagmati river system of the valley, which has served as the city's primary drinking and irrigation water source. (Thapa et al., 2008)

The city is surrounded by the Himalayan Mountain range, with several peaks, including the famous Mount Everest, in close proximity to the city. The Bagmati River flows through the eastern part of Kathmandu, and Kathmandu is a gateway to the Himalayas and is known for its cultural heritage and historic sites.

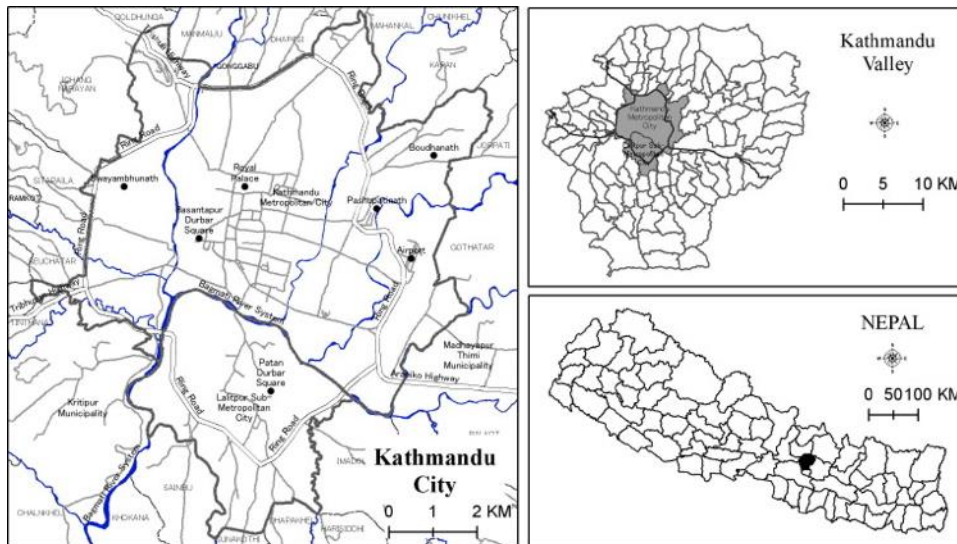


Figure 3. Map of Kathmandu (Thapa et al., 2008)

3.1.2. Demographics of Kathmandu

The current population of Kathmandu in 2023 is 1,571,000, a 3.29% increase from 2022. The population growth rate has decreased in recent years, as shown in Table 1. However, the highest population growth rate was 4.15% in 2018. The following table shows the population growth rate from 2011 to 2023.

Kathmandu - Historical Population Data		
Year	Population	Growth Rate
2023	1,571,000	3.29%
2022	1,521,000	3.33%
2021	1,472,000	3.37%
2020	1,424,000	3.49%
2019	1,376,000	3.46%
2018	1,330,000	4.15%
2017	1,277,000	4.07%
2016	1,227,000	4.07%
2015	1,179,000	4.06%
2014	1,133,000	4.14%
2013	1,088,000	4.11%
2012	1,045,000	4.08%
2011	1,004,000	4.04%

Table 1. Population Data of Kathmandu from 2011 to 2023 (Macrotrends, 2023).

3.1.3. Current situation of green and public spaces

The Kathmandu Valley Development Authority has identified 488 open spaces within Kathmandu. Among these, 58% of the area is used for public activities such as public gatherings, concerts, sports and recreational activities. These open spaces vary in size, services, and function. (Thapa, 2021)



Figure 4. A potential green necklace for Kathmandu (Thapa, 2021).

The current situation of green spaces in Kathmandu is challenging due to the rapid urbanisation and population growth of the city (Thapa, 2021). Most of the existing green spaces in Kathmandu are not properly maintained. Furthermore, most of the traditional green spaces in Kathmandu, such as public parks and gardens, have been shrinking due to the rapid urban development in the city (Thapa, 2021). Also, open spaces are essential to a city's social, cultural, environmental, and aesthetic life, but nowadays, they are fast shrinking in Kathmandu (Chhetri, 2020). As Kathmandu expands rapidly, these public spaces are getting smaller every day. Open areas on the city's outskirts are also being quickly developed into residential homes and commercial buildings (Chhetri, 2020).

So, by raising awareness, organising events and activities, and working with relevant stakeholders, it is possible to promote open and public spaces in Kathmandu.

3.1.4. Climate

The city of Kathmandu, situated at an altitude of 4,297 feet (1,310m), has a mild, subtropical climate. Summertime temperatures between May and August range from 67°F to 81°F (19°C to 27°C), whereas wintertime temperatures between November and February typically range from 36°F and 68°F (2°C to 20° C). In Kathmandu, during the rainy monsoon season, there is an average rainfall of 7.8 to 14.7 inches (20 to 37 cm) between June and August. May and June can be hot and humid until the monsoon rains arrive. The temperatures in spring (March to April) and autumn (October to November) are pleasant, while November to February is dry but can be very cold, especially at night.

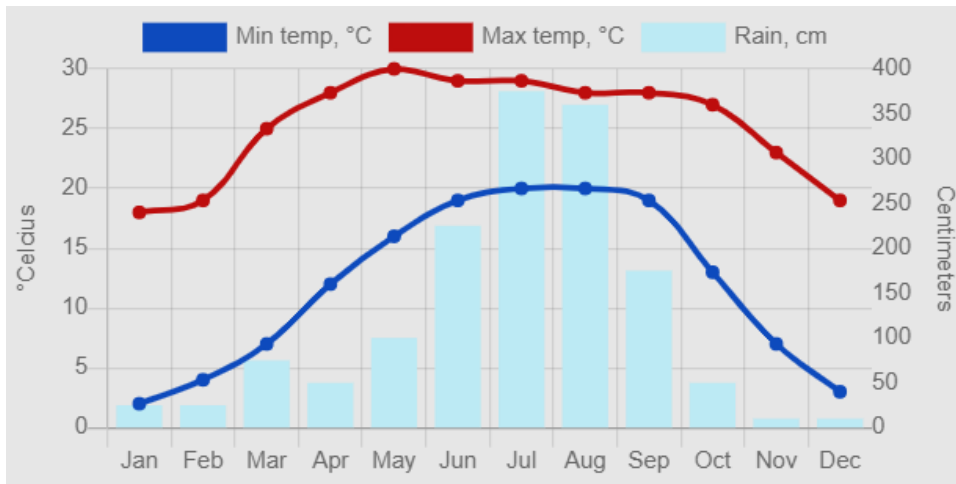


Figure 5. Graph of minimum temperature, maximum temperature, and rainfall from January to December (Tripreport, 2023).

3.2 Stage 2

3.2.1 Pilot study - semi-structured interviews

A total of eight open-ended questions were prepared, focusing on respondent's favourite park, what they like, what they prefer to do in the park, the benefits they are getting from the park, and the problems they are facing nowadays. Then, the interviews were conducted

online in Nepali, and all information was recorded in audio, which was later transcribed and translated into English. A total of 5 people were interviewed where 2 respondents are 18 years old and 3 respondents are 20, 26 and 61 years old. This study was a base for the development of survey questions. Based on the interviewees' responses, options like running, meeting friends, spending time alone, etc., were made for each of the eight open-ended questions. Then, for each option, like running, sub-options were made in the range of 5 Likert-type range, from completely disagree to completely agree.

3.3 Stage 3

3.3.1 Online Survey

The questionnaire was divided into two parts. The first section gives a brief explanation of green spaces so that people can understand them better before answering the survey questions. Later in the part, the same section continues with background information such as gender, age, occupation, educational level, and disabilities. The second section includes eight open-ended questions concentrating on respondents' favourite park, their preferences in the park. Also, the benefits people are getting from the park and the challenges they are facing.

The survey was carried out with Kathmandu citizens 18 years old or above. These surveys were carried out across different age groups of Kathmandu. This survey was carried out during March 2023 to understand the perceptions of people and the current situation of green spaces. At first, the survey form was posted online in a Facebook group, but only a few people responded. So, later with the help of my sister, local residents of Kathmandu from different locations of Kathmandu filled out the survey form. Altogether, 45 people filled out the survey form. The survey form is in the appendix section of the thesis.

Responses of demographics were analysed by making pie charts of gender, where 48.9% are male and female; age groups, where 53.3% are from 21-30 age group; occupation,

where 48.9% are students; educational level, where 53.3% have done bachelor's degree, and disability, where 95.6% don't have a disability and respondents favourite parks by making a graph. Similarly, responses of each question which are in the second section of the questionnaire were analysed by calculating the average responses, and based on average responses, spider diagrams were made for each question by using Microsoft Excel LTSC.

3.4 Stage 4

3.4.1 Parks assessment

The survey parks were assessed according to the location of the parks, history of the parks, types of greenery, facilities, accessibility, and safety. Each of the survey parks is assessed by photo analysis. Also, the location of each survey park was pointed out using Google Maps (Google 2023).

4. CHAPTER FOUR: RESULTS

4.1 Pilot study

Altogether, five responses were collected from interviews, and respondents said they visit the park to relax and release stress. Also, to enjoy the greenery view and meet with friends. Respondents mentioned that the parks need to be properly managed and there need to be more facilities like dustbins, sitting places, smooth paths etc. People mentioned that parks are in crowded places and there is garbage and waste in the park.

4.2 Survey results

The findings of this research are presented in the following chapter. An online questionnaire was conducted in March 2023 to better understand people's perspectives and the current state of green areas. In this chapter, the results of the questionnaire are presented.

4.2.1 Gender

Out of 45 respondents, the percentage of both male and female are 48.9% (22) and the percentage of non-binary is 2.2% (1) as shown in Figure 6.

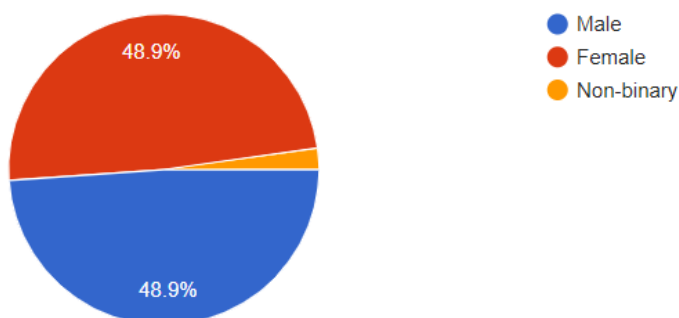


Figure 6. Share of gender responses (By Author)

4.2.2 Age groups

Out of 45 respondents, the majority of the responses came from the age group of 21–30 years (53.3%), 10 people are below 20 years (22.2%), 7 people between 31 and 50 years (15.6%) and 4 people in the range of 51-70 years (8.9%). But there was no response from age group above 70 years. Full results are shown below in Figure 7.

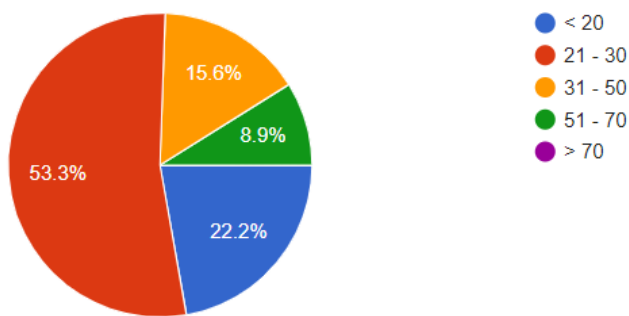


Figure 7. Share of age group responses (By Author)

4.2.3 Occupation

The majority of the participants are students (48.9%). Only a few are employed (35.6%) and 11.1% are unemployed. Similarly, Homemaker and retired people percentage is 2.2% as shown in Figure 8.

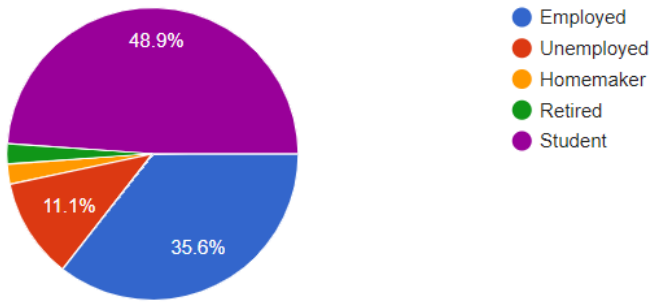


Figure 8. Share of occupation responses (By Author)

4.2.4 Educational level

Out of 45 respondents, most of the respondents have bachelor's degree (53.3%), 26.7% have master's degree. Only 13.3% have a high school degree, 4.4% have a doctoral degree and 2.2% have a diploma degree as shown in Figure 9.

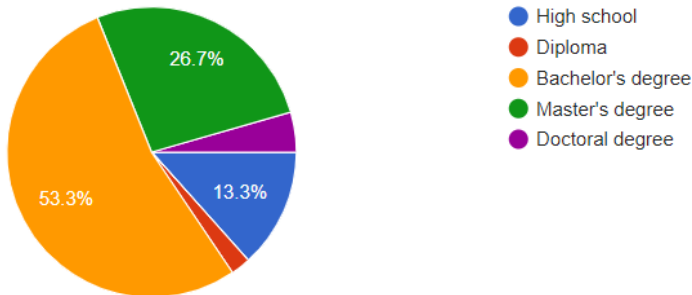


Figure 9. Share of educational level responses (By Author)

4.2.5 Disability

Out of 45 respondents, 95.6% responded that they don't have disability while 4.4% responded that they have disability as illustrated in Figure 10.

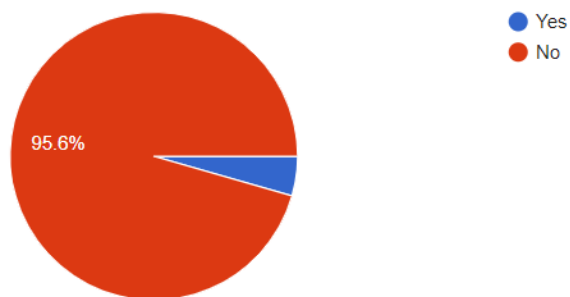


Figure 10. Share of disability responses (By Author)

4.2.6 Favourite parks

In the second section of the questionnaire, it was asked which Park people mostly go to in Kathmandu. The majority of the people mentioned going to UN Park, a few people mentioned going to Ratna Park. Others responded that they go to Godawari, Garden of Dreams, Shankhamul Park, and Kathmandu Fun Park, which is shown in Figure 11.

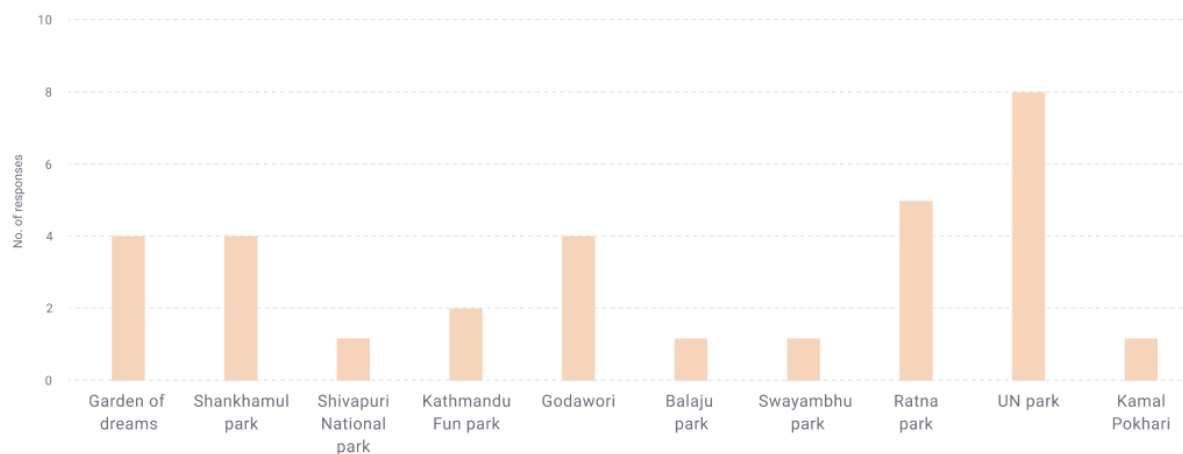


Figure 11. Responses on favourite park - number of people who mentioned particular park. (By Author)

4.2.7 Preferences of respondents per park

4.2.7.1 Ratna Park

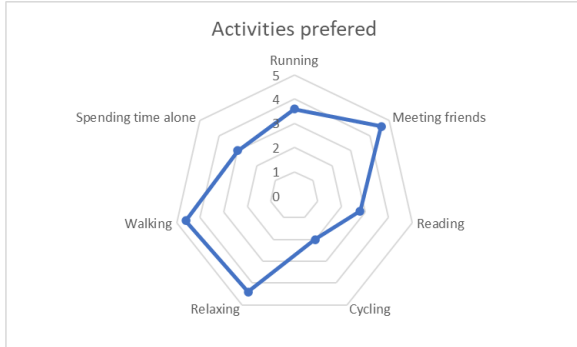


Figure 12. Average responses on activities preferred (By Author)



Figure 13. Average responses on their likes (By Author)

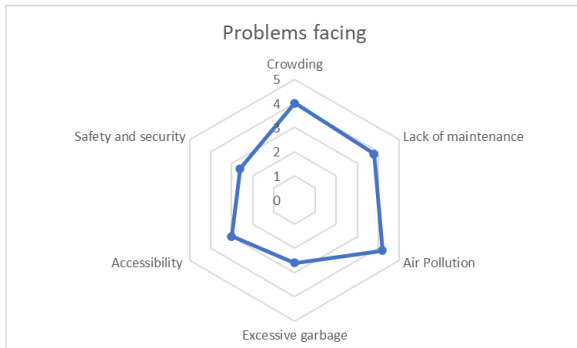


Figure 14. Average responses on problems facing (By Author)



Figure 15. Average responses on facilities (By Author)

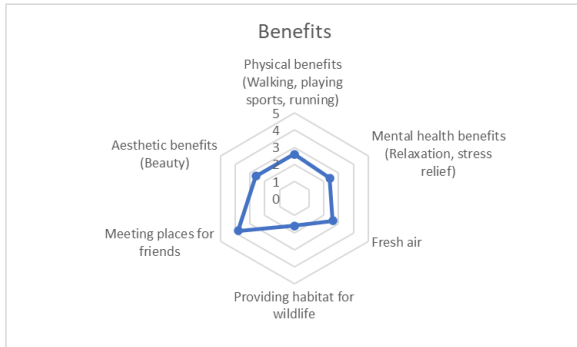


Figure 16. Average responses on benefits (By Author)



Figure 17. Average responses on improvement needed (By Author)

In Ratna Park, people prefer to meet friends and walk (4.6) while relaxing (4.4), as shown in Figure 12. Similarly, the majority of participants liked flowers (4.4) and benches (4). Full results are shown in Figure 13.

Participants considered Ratna Park's air pollution as a problem (4.2) and crowding as a problem (4), as illustrated in Figure 14. Similarly, participants rated accessible paths (4.6) and dustbins (4.2), as shown in Figure 15. Additionally, the majority of participants rated meeting places for friends (3.8). Further replies are shown in Figure 16.

Furthermore, participants rated improving accessibility, keeping the grass and plants well-maintained, repairing broken benches, and improving safety and security (4.4), as shown in Figure 17.

4.2.7.2 UN Park

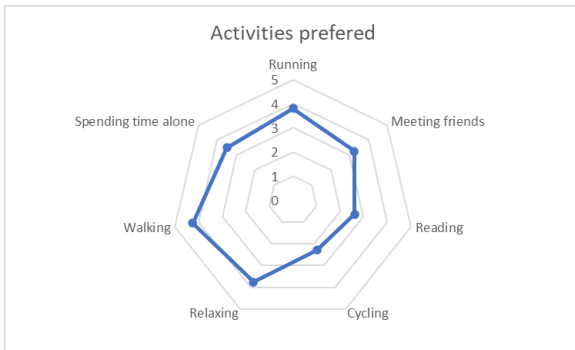


Figure 18. Average responses on activities preferred (By Author)



Figure 19. Average responses on their likes (By Author)

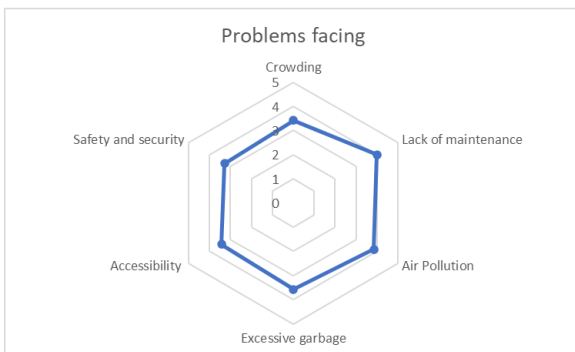


Figure 20. Average responses on problems facing (By Author)



Figure 21. Average responses on facilities (By Author)

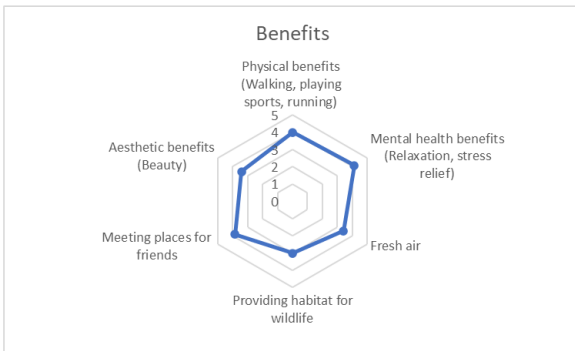


Figure 22. Average responses on benefits (By Author)



Figure 23. Average responses on improvement needed (By Author)

In UN Park, people prefer to walk (4.25), as illustrated in Figure 18. Full results are shown in Figure 18. Similarly, most people liked flowers (4.14), while they liked benches and scenic landscapes (3.71). Additionally, participants considered lack of maintenance as a problem (4), and further replies are shown in Figure 20.

Most participants rated dustbins (4.71) and toilets and accessible paths (4.28), as illustrated in Figure 21. Furthermore, they rated mental health benefits (4.14) and physical benefits (4), as shown in Figure 22. Most people rated keeping the grass and plants well-maintained and adding better lighting (4.57). Full results are illustrated in Figure 23.

4.2.7.3 Garden of Dreams

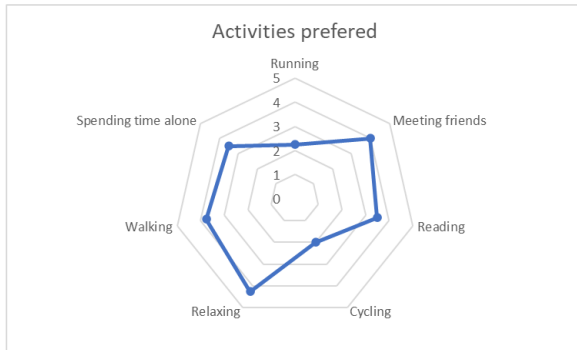


Figure 24. Average responses on activities preferred (By Author)



Figure 25. Average responses on their likes (By Author)

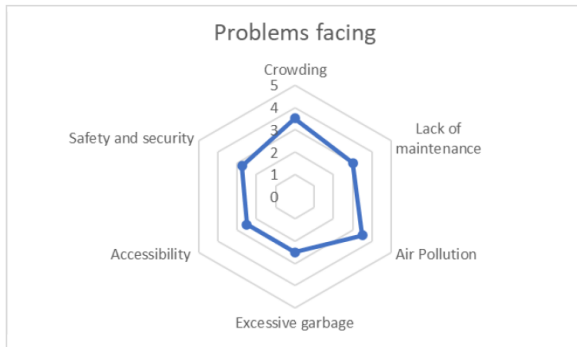


Figure 26. Average responses on problems facing (By Author)



Figure 27. Average responses on facilities (By Author)

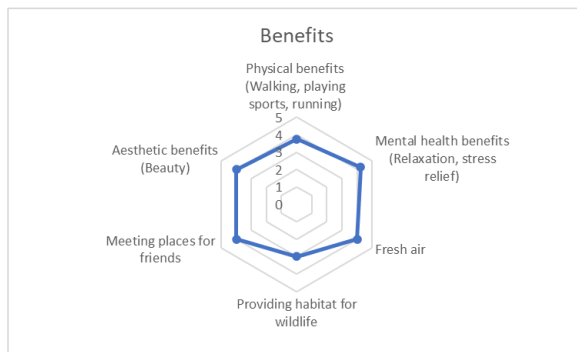


Figure 28. Average responses on benefits (By Author)



Figure 29. Average responses on improvement needed (By Author)

In the Garden of Dreams, people prefer to relax (4.25) while meeting friends (4), as shown in Figure 24. Similarly, most people liked flowers (4.5), and further replies are illustrated in Figure 25. In addition, participants considered Garden of Dreams crowding and air pollution as a problem (3.5), as shown in Figure 26.

The majority of participants rated benches, toilets, and dustbins (3.75), as illustrated in Figure 27. Similarly, they rated mental health benefits (4.25), which is the highest rating, and further replies are shown in Figure 28. Furthermore, most people rated keeping the grass and plants well-maintained (4), as illustrated in Figure 29.

4.2.7.4 Shankhamul Park

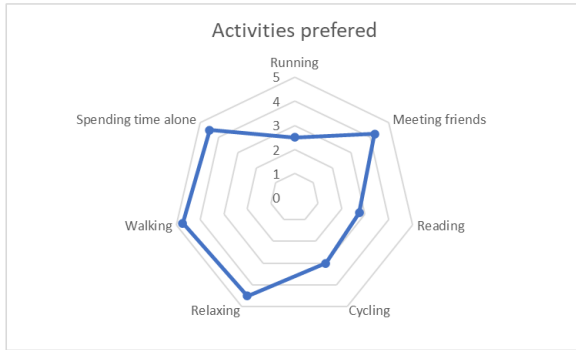


Figure 30. Average responses on activities preferred (By Author)



Figure 31. Average responses on their likes (By Author)

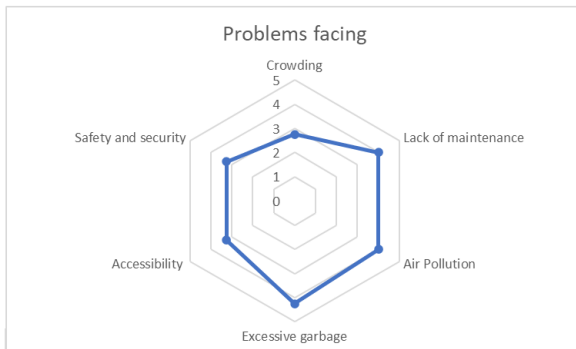


Figure 32. Average responses on problems facing (By Author)



Figure 33. Average responses on facilities (By Author)

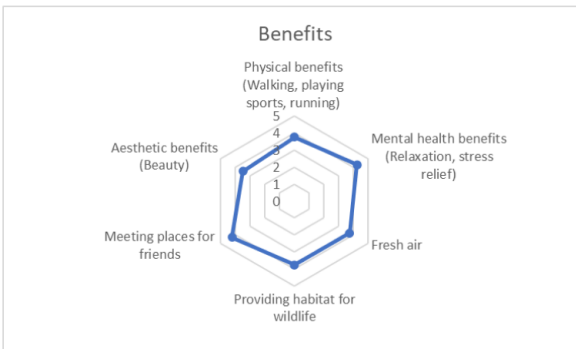


Figure 34. Average responses on benefits (By Author)



Figure 35. Average responses on improvement needed (By Author)

In Shankhamul Park, people prefer to walk (4.75) while relaxing and spending time alone (4.5), as shown in Figure 30. Similarly, the majority of participants liked flowers (4.25). Full results are shown in Figure 31.

Participants considered excessive garbage as a problem (4.25) and lack of maintenance and air pollution as a problem (4), as illustrated in Figure 32. Similarly, most participants rated

dustbins (4.5) and toilets and accessible paths (4), as shown in Figure 33. Additionally, the majority of participants rated mental health benefits and meeting places for friends (4.25). Further replies are shown in Figure 34. Furthermore, participants rated improving safety and security (4.25), as shown in Figure 35.

4.2.7.5 Godawori

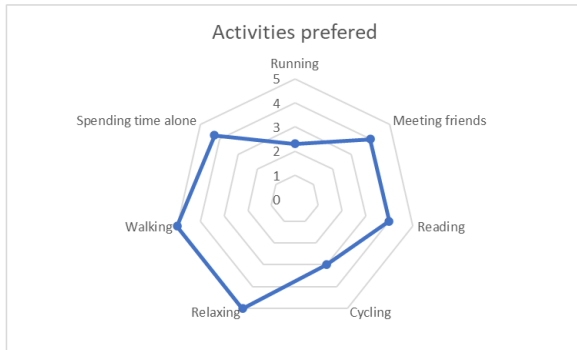


Figure 36. Average responses on activities preferred (By Author)



Figure 37. Average responses on their likes (By Author)

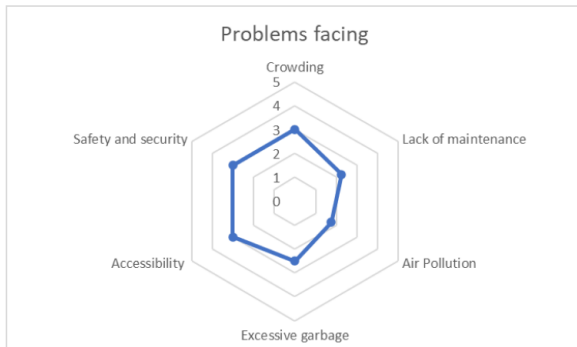


Figure 38. Average responses on problems facing (By Author)



Figure 39. Average responses on facilities (By Author)

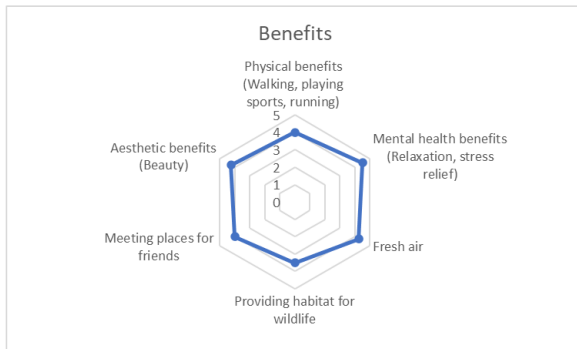


Figure 40. Average responses on benefits (By Author)



Figure 41. Average responses on improvement needed (By Author)

In Godawori, people prefer to walk and relax (5), as illustrated in Figure 36. Full results are shown in Figure 36. Similarly, most people liked flowers and scenic landscapes (4.5), while they liked trees (4.25). Additionally, participants considered Godawori's crowding as a problem (3), and further replies are shown in Figure 38.

The majority of participants rated benches and dustbins (4), as illustrated in Figure 39. Furthermore, they rated mental health benefits (4.5), as shown in Figure 40. Most people rated repairing broken walkways and stairs (4). Full results are illustrated in Figure 41.

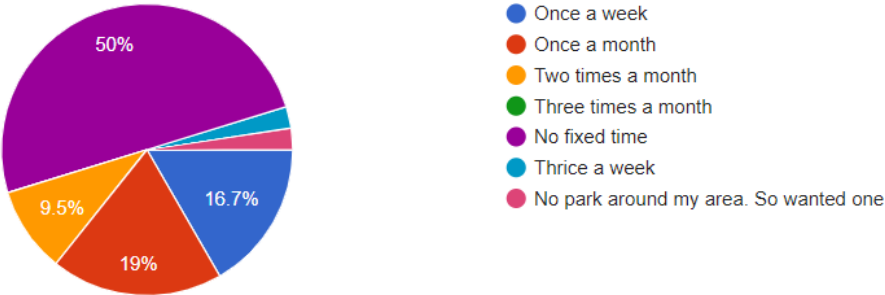


Figure 42. Share of responses on how often people visit park (By Author)

Out of 45 respondents, 50% of respondents said that they don't have fixed time to visit the park. 19% of respondents said that they visit the park once a month, 16.7% of respondents said that they visit the park once a week and 9.5% said that they visit the park two times a month. Full results are shown above in Figure 42.

4.2.7.6 Average responses for parks

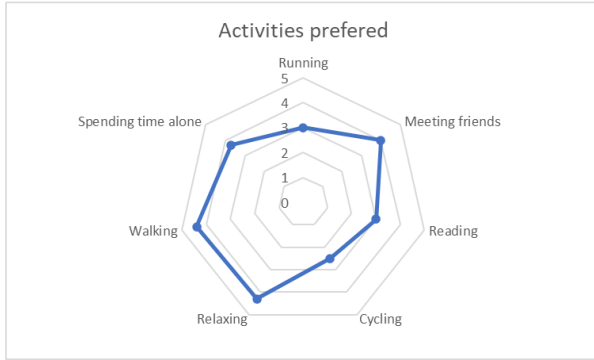


Figure 43. Average responses on activities preferred (By Author)



Figure 44. Average responses on their likes (By Author)

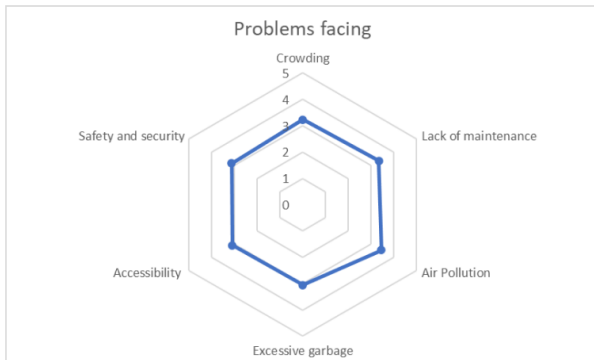


Figure 45. Average responses on problems facing (By Author)



Figure 46. Average responses on facilities (By Author)

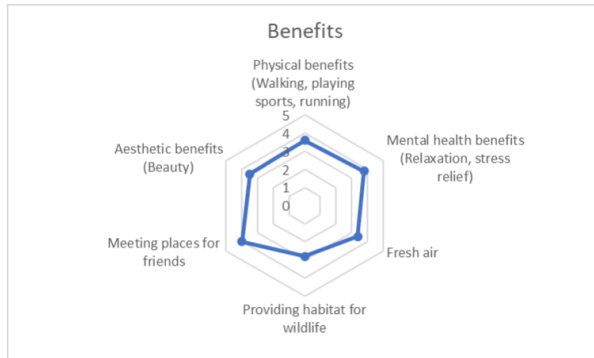


Figure 47. Average responses on benefits (By Author)



Figure 48. Average responses on improvement needed (By Author)

In parks, people prefer to walk (4.4), while they prefer to relax (4.3), as shown in Figure 43. Similarly, the majority of participants liked flowers (4.13) and scenic landscapes (4) in parks. Full results are shown in Figure 44.

Participants considered Park's air pollution as a problem (3.45), which is the highest, as illustrated in Figure 45. Similarly, participants rated dustbins (4.13) and toilets and accessible paths (4), as shown in Figure 46. Additionally, the majority of participants rated meeting places for friends (4). Further replies are shown in Figure 47. Furthermore, participants rated improving accessibility and keeping the grass and plants well-maintained (4), as shown in Figure 48.

4.3 Parks assessment

The parks in the study were evaluated based on their location, history, greenery, facilities, accessibility, and safety.

4.3.1 Ratna Park

1) Location



Figure 49. Ratna Park location (Google, 2023)

Ratna Park is located in the heart of Kathmandu. It is situated in the central part of the city, specifically in the area known as Jamal. Ratna Park is a public park and one of the oldest

parks in Kathmandu. It is a bustling and vibrant area surrounded by commercial buildings, shops, and restaurants. (Diwakar, 2021)

2) History

Ratna Park was established in 1964. It was named after Queen Ratna Rajya Lakshmi, the Queen of King Mahendra Bir Bikram Shah, who ruled Nepal during that time. (Diwakar, 2021)

3) Greenery

Ratna Park has a variety of trees, including tall and mature species. The open lawns are well-maintained, adorned with lush green grass that invites visitors to relax, have picnics, or engage in recreational activities. Furthermore, it has well-maintained gardens and flowerbeds which makes the area more pleasant.



Figure 50. Greenery view of Ratna Park (Kumar Shrestha, 2023)

4) Facilities

Ratna Park in Kathmandu offers a range of facilities to enhance the visitor experience and provide a comfortable and enjoyable environment. The park offers seating areas throughout its premises, including benches, and stone platforms, allowing visitors to relax and enjoy the surroundings. Also, it has walking paths for walking, running, and jogging.



Figure 51. Sitting areas and walking path of Ratna Park (Kumar Shrestha, 2023)

5) Accessibility

Ratna Park is easily accessible, located in the city centre, and surrounded by busy streets. It has well-maintained and paved pathways throughout its premises. These pathways are wide enough to accommodate wheelchairs. But it doesn't have ramps or accessible entrances, especially for wheelchairs.

6) Safety

The park is equipped with security measures to ensure the safety of visitors. It is equipped with lighting facilities, allowing visitors to enjoy the park even during the evening. Adequate lighting provides visibility and safety during night-time visits. Furthermore, this park is fenced with metal bars.

Respondents' opinions

According to the information collected, most of the people prefer to meet friends and relax in Ratna Park due to its pleasant environment. This park, with suitable flowers and benches, provides a pleasant atmosphere for the residents. Since this park is located in the city centre, problems like crowding and air pollution are facing by residents. Participants mentioned that accessible paths and dustbins are much-needed facilities in this park. Furthermore, the

majority of participants mentioned that this park is suitable for meeting friends as it is located in a well-known area. Accessibility, safety and security are needed to improve in this park because it doesn't have smooth paths and it is located in the busiest area.

4.3.2 UN Park

1) Location

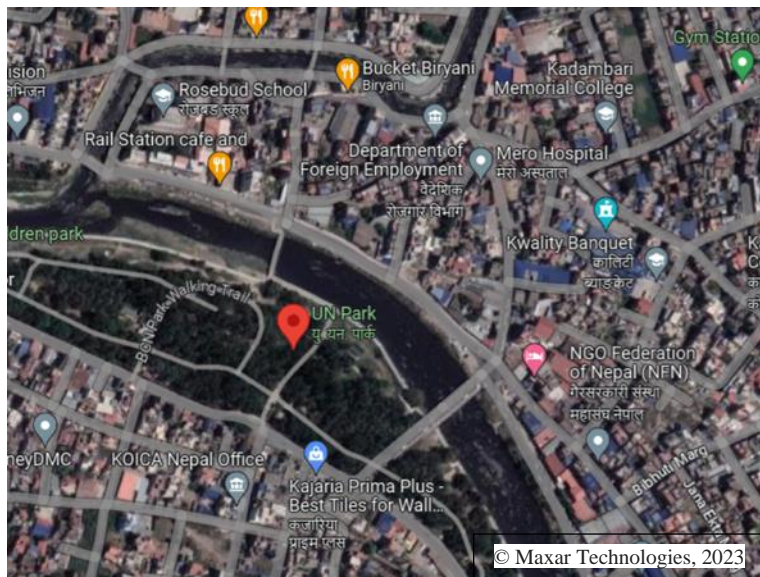


Figure 52. UN Park location (Google, 2023)

United Nations Park, also known as the UN Park, is located on the bank of Bagmati river in Jwagal, Lalitpur. The park is easily accessible from different parts of Kathmandu, and it serves as a recreational space for both locals and visitors. (Diwakar, 2021)

2) History

UN Park is historically significant in Kathmandu. The park was established in 1967 to symbolise the long-standing partnership between Nepal and the United Nations. (Diwakar, 2021)

3) Greenery

UN Park in Kathmandu has abundant trees, shrubs, flowers, and plants that invite visitors to relax and enjoy nature, but there needs to be more maintenance. This park has trees, but there is little variety of flowers, and they need to be well-maintained.



Figure 53. Greenery view of UN Park (Kumar Shrestha, 2023)

4) Facilities

UN Park in Kathmandu offers some facilities to enhance visitors' experience. The park provides facilities like walk paths, seating areas, and playing equipment. But it doesn't have well-designed and well-maintained walking paths, seating areas aren't properly managed, and there isn't enough playing equipment for children. It also offers picnic areas, but there is a lack of tables and seating arrangements.



Figure 54. Sitting areas and walking path of UN Park (Kumar Shrestha, 2023)

5) Accessibility

UN Park is well-connected by roadways, and public transportation options such as buses and taxis are available to reach the park. But this park is not properly fenced. It has pathways throughout its premises for easy movement, but for wheelchairs, it might be a bit difficult.

6) Safety

UN Park is not properly managed, and there is a lack of safety and security. This park isn't equipped with lighting facilities and also isn't properly fenced.

Respondents' opinions

According to the participants' opinions, most of the people prefer to walk in UN Park due to its pleasant environment. Also, most people like flowers, but there is a lack of maintenance in this park. Participants mentioned that there is a lack of dustbins, toilets and accessible paths in this park. Furthermore, most participants mentioned that the grass and plants of this park should be well maintained, and lighting should also be added as there is a lack of maintenance in this park.

4.3.3 Garden of Dreams

1) Location



Figure 55. Garden of Dreams location (Google, 2023)

The Garden of Dreams, also known as Kaiser Mahal Garden, is located in the heart of Kathmandu. It is situated in the Thamel neighbourhood, a popular tourist area known for its shops, restaurants, and accommodations. The Garden of Dreams is a well designed garden that offers a peaceful escape from the bustling city. (Katwal, 2022)

2) History

The Garden of Dreams was built in 1920. Kishore Narshingh, an architect, designed the Garden of Dreams, inspired by the gardens of Europe. It is a 6,895-square-meter garden which has a variety of trees, flowers, shrubs, water fountain and a pond. (Katwal, 2022)

3) Greenery

Garden of Dreams has a unique construction and has a variety of flowers, trees and plants to observe. It has well-maintained lawns, providing open spaces for visitors to relax and enjoy the natural surroundings. The greenery of the Garden of Dreams includes a variety of ornamental trees and shrubs, adding depth and texture to the landscape.



Figure 56. Greenery view of Garden of Dreams (Kumar Shrestha, 2023)

4) Facilities

The Garden of Dreams, also known as Kaiser Mahal Garden, offers a range of facilities to enhance the visitor experience. The garden has benches and rest areas for visitors to take a break, sit, and admire the scenery. Also, it has well-maintained walking paths for walking, running, and jogging. Furthermore, it has ponds, fountains, and water features that further enhance the beauty of this park.

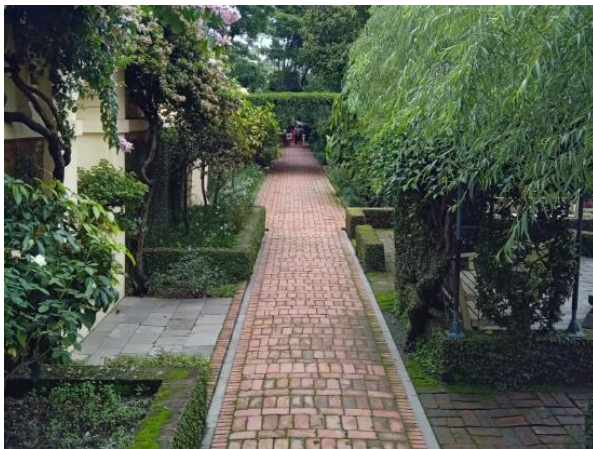


Figure 57. Walking path and sitting areas of Garden of Dreams (Kumar Shrestha, 2023)



Figure 58. Water fountain of Garden of Dreams (Kumar Shrestha, 2023)

5) Accessibility

Garden of Dreams is easily accessible and well-connected by roadways. Also, public transportation options such as buses and taxis are easily available to reach the park. This park has wheelchair-friendly pathways, allowing individuals using wheelchairs to navigate the park easily, but entrances of this park aren't accessible for wheelchairs. The paths are well-paved for smooth movement throughout the park.

6) Safety

Garden of Dreams aims to provide visitors with a peaceful and pleasant environment. This park is equipped with security measures. It has lighting facilities as well as surrounded by high walls.

Respondents' opinions

According to the information collected, the majority of people prefer to relax and meet friends in the Garden of Dreams due to its pleasant surroundings. Also, most people like flowers, but there is a crowding problem as most residents visit this park due to its beautiful scenic landscape. Participants mentioned that benches, toilets, and dustbins are much-

needed facilities in this park. Additionally, most of the people are getting mental health benefits from this park due to its greenery and pleasing environment.

4.3.4 Shankhamul Park

1) Location



Figure 59. Shankhamul Park location (Google, 2023)

Shankhamul Park is located in Shankhamul, a residential area in the city of Kathmandu, Nepal. It is situated in the southern part of Kathmandu Valley. Shankhamul Park is accessible from various parts of Kathmandu, and the park is within walking distance for residents.

2) History

The Non-Resident Nepali Association built Shankhamul Park in the Shankhamul Ghat area, which is located at the bank of the Bagmati River. A statue of a conch shell (Shankha) is in this park. (Diwakar, 2021)

3) Greenery

In Shankhamul Park, there are a variety of tree species that provide shade, enhance aesthetics, and contribute to the overall greenery of the park. Also, this park has shrubs and plants that invite visitors to relax, but they don't have a variety of flowers. Furthermore, some areas of this park are covered with mowed grass, and some informal paths show this park isn't properly managed.



Figure 60. Greenery view of Shankhamul Park (Kumar Shrestha, 2023)

4) Facilities

Shankhamul Park in Kathmandu provides facilities such as sitting areas and walking paths to enhance the visitor experience. But sitting areas aren't proper to sit and chitchat with friends. Additionally, it has walking paths which aren't properly maintained. Besides that, it has some informal walking paths for walking. There is also a sculpture known as Shankha in this park.



Figure 61. Sculpture (Shankha) and walking path of Shankhamul Park (Kumar Shrestha, 2023)

5) Accessibility

Shankhamul Park in Kathmandu is easily accessible to both residents and visitors. The park has good connectivity with public transportation. It is close to major roads and bus routes, making it easily accessible for those using public buses or taxis. But it has some informal walking paths that aren't accessible for wheelchair users.

6) Safety

Shankhamul Park is equipped with lighting facilities, allowing visitors to enjoy the park even during the evening hours. Also, some part of this park is fenced with metal bars, but this park isn't properly managed.

Respondents' opinions

According to the responses of participants, most of the people prefer to walk and relax in Shankhamul Park because of its calm and peaceful environment. This park, with suitable flowers and greenery, provides a pleasant atmosphere for the residents. Problems like excessive garbage, lack of maintenance and air pollution are facing by residents because

this park is located in the busiest area. Participants mentioned dustbins, toilets, and accessible paths are much-needed facilities in this park. In addition, safety and security are needed to improve in this park because it is located in a busy area.

4.3.5 Godawori

1) Location



Figure 62. Godawori location (Google, 2023)

Godawori is situated in the southern part of Kathmandu, in Godawori district, approximately 10 kilometres southeast of Kathmandu. Godawari Park is a popular recreational area known for its beautiful gardens, walking trails, and picnic spots. (Sonang, 2020)

2) History

Godawari was established in 1962 AD. It also has a botanical garden, which was designed by two British designers, G.A.C. Herklots and Tony Schilling. It is well-known for being a centre for plant conservation, education, research, and recreation. It covers an area of 82

ha. of varying topography, among which 40 ha. has been transformed into various garden units. (Sammohan, 2023)

3) Greenery

The place is famous for its natural beauty and the botanical garden. Lots of local and foreign tourists visit this place. One can enjoy the view and take photographs of the beautiful nature. It is also surrounded by dense jungles and has 4,500 specimens of flowering and non-flowering plants. There are a variety of tree species that enhance the overall beauty of the park. (Sammohan, 2023)



Figure 63. Greenery view of Godawori (Kumar Shrestha, 2023)

4) Facilities

Godawori provides picnic areas where people can enjoy with their families and friends, but picnic areas aren't properly managed because there aren't proper picnic tables, and grill facilities. It is also a popular trekking and hiking destination near Lalitpur's Pulchowki Hill. Besides that, there are numerous hotels and resorts where visitors can relax during their visit. Also, there are walking paths that need to be well-maintained. Furthermore, there are sitting areas, like benches, which seem dirty.



Figure 64. Walking path and seating areas of Godawori (Kumar Shrestha, 2023)

5) Accessibility

Godawori is well-connected by roadways and public transportation such as buses and taxis. It has walk paths throughout its premises for easy movement, but not accessible for wheelchairs because they aren't smooth, and also, in some places, there are ups and downs. Additionally, it doesn't have ramps.

6) Safety

There is a lack of safety and security in Godawori, and it needs to be properly managed. Furthermore, there aren't any lighting facilities in this park.

Respondents' opinions

According to the participants' opinions, most of the people prefer to walk and relax in Godawori due to its peaceful and greenery environment. Also, most people like flowers, trees and scenic landscapes, but this park has a problem of crowding, safety and security because most people come here to enjoy nature and views. There is a lack of benches and dustbins in this park. Furthermore, most participants mentioned that the walkways and stairs are broken and unrepaired, but most people are getting mental health benefits due to its greenery view.

5. CHAPTER FIVE: DISCUSSION AND CONCLUSION

5.1 Discussion

The aim of this study was to assess the current state of green spaces in Kathmandu, citizens' interest in green spaces, the benefits they are getting from these areas, and the problems they are currently facing. For that, four research questions were stated. First, **who and how is using green spaces in Kathmandu?** In the literature review, it says People use green spaces in a variety of ways, depending on their preferences, needs, and the creation of the specific green space (Gozalo et al., 2019). Furthermore, user factors such as age, education, and gender may be related to green space use (Bedimo-Rung et al., 2005). Green spaces are used for recreational activities such as running, walking, jogging, playing sports, cycling, and enjoying nature; socializing and gathering such as meeting friends, and community gatherings; physical exercise and well-being; and education and learning (Heikinheimo et al., 2020; Gómez-Baggethun et al., 2013).

While the study revealed that most people in the 21-30 age group use green spaces irregularly for meeting friends, walking, and relaxing. Besides that, some use green spaces for running, reading, spending time alone, and cycling, which is exactly the same as mentioned in the literature review.

The second research question was, **How do inhabitants perceive green spaces in Kathmandu?** In the literature review, it says people perceive green spaces as multifunctional spaces that offer physical, mental, and social benefits while also contributing to the city's aesthetics and cultural identity. (Environmental Protection Agency, 2017).

While the study showed that the majority of people perceive green spaces as places to socialise, meet, and enjoy leisure time. Similarly, people also perceive green spaces for physical, mental, environmental, and aesthetic benefits, which is same as mentioned in the literature review.

The third research question was, **How do green spaces in Kathmandu look and function?** According to the literature review, green spaces such as urban parks, urban forests, and town squares have trees, vegetation, benches, seating areas, fountains, statues, and landscaping elements which play an important role in improving people's quality of life and the general well-being of communities. They are essential for maintaining a healthy ecosystem and delivering several advantages to humans and wildlife.

While the study revealed that the appearance of green spaces in Kathmandu can vary based on their location, size, and level of development. Green spaces in Kathmandu have flower beds, benches, scenic landscapes, trees, shrubs, and fountains to enhance the visitor experience. It helps visitors to relax and enjoy the natural surroundings. Also, it mostly offers physical and mental health benefits and meeting places for friends.

At last, the fourth research question was, **How are green spaces in Kathmandu currently managed and developed?** According to the literature review, in green spaces there are facilities such as seating areas, playgrounds, walking paths, water fountains, dustbins, and picnic areas. These facilities play a crucial role in transforming green spaces into dynamic and appealing environments (Artmann et al., 2017).

While according to the results, there are facilities like benches, walking paths, playing equipment, picnic areas, and dustbins in the green spaces of Kathmandu, but they aren't properly managed in some green spaces. Some green spaces are lacking accessible walking paths and seating areas. Also, green spaces are currently facing numerous problems like air pollution, crowding, and excessive garbage. So, efforts should be made by the government and organisations to improve the situation. There should also be plans to promote urban forestry and parks to increase green spaces in the city. These initiatives make Kathmandu more beautiful and help with issues like air pollution, crowding, and others.

5.2 Conclusion

The development of green spaces in Kathmandu represents a crucial endeavour in creating sustainable and liveable urban environments. Kathmandu faces significant challenges as the city experiences rapid urbanisation and population growth. This paper's literature review describes the green spaces and urban parks, its importance, its uses, impact of urbanisation and facilities needed in green spaces.

This study proved that there is a significant number of green spaces in Kathmandu, but they aren't properly managed and problems like crowding and air pollution are faced by residents. Flower beds, trees, plants, shrubs, and landscape elements are all important elements in green spaces, but currently, they aren't properly taken care of. While the study revealed that many people value such elements in green spaces.

The establishment of parks, gardens, and urban forests has provided Kathmandu's residents and visitors with valuable opportunities for recreation, relaxation, and communication with nature. These green places help people to reconnect with nature and improve their physical and mental health. However, with the increasing pressure of urbanisation, it is essential to prioritize the conservation and expansion of green spaces. Collaboration between governmental authorities, non-governmental organizations (NGOs), local communities, and private stakeholders is critical to ensure that these valuable places are protected and accessible to all. Moreover, urban planning and land use rules and regulations must prioritize the preservation of existing green spaces while identifying potential areas for new green developments.

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7. APPENDIX

Online questionnaire can be referred in the link attached below.

<https://forms.gle/HtDMoPM3BHeX4pNg7>

Green spaces in Kathmandu

Hello!

This survey is about the current condition of green spaces in Kathmandu city. Green spaces, which include areas such as parks, forests and meadows are essential for the well-being of the city and its residents as it helps to reduce air pollution, improve physical and mental health and enhances biodiversity. This is particularly important in Kathmandu, as pollution is increasing daily and green spaces can offer a respite from the busy and crowded streets.

The information gathered in this survey will tell about the citizen's interest in the park, the benefits they are getting from it, and the present condition of parks in Kathmandu. The results will then be utilized to make recommendations to improve the urban green spaces in Kathmandu for citizens in terms of quality and improvement of the existing conditions.

This survey is conducted by Menaka Shrestha in association with her master's degree student research work on green spaces in Kathmandu at the Estonian University of Life Sciences.

No personal information is needed and none will be collected: all respondents remain anonymous. Only people aged over 18 should take part. The collected and analyzed data will be used only for the purpose of this master thesis.

Please answer the questions carefully.

For more information or if you have any questions, please contact me at menaka@emu.ee

Please choose your gender

- Male
- Female
- Non-binary

Please choose your age group *

- < 20
- 21 - 30
- 31 - 50
- 51 - 70
- > 70

Please choose your occupation

- Employed
- Unemployed
- Homemaker
- Retired
- Student

Please choose your educational level *

- High school
- Diploma
- Bachelor's degree
- Master's degree
- Doctoral degree

Do you have a disability?

Yes

No

Which Park do you mostly go in Kathmandu? Please name it.

Your answer _____

What do you prefer to do in this park?

Running

Completely Disagree

Disagree

Neither agree nor disagree

Agree

Completely Agree

Meeting friends

- Completely Disagree
 - Disagree
 - Neither agree nor disagree
 - Agree
 - Completely Agree
-

Reading

- Completely Disagree
- Disagree
- Neither agree nor disagree
- Agree
- Completely Agree