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Urban Green Spaces in Paramaribo: perceptions, uses and management

by

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EXECUTIVE SUMMARY

Keywords: urban green spaces, ecosystem services, urban parks, qualitative survey

Urban Green Spaces (UGSs) have assumed an increasingly crucial role in improving the urban environment and overall quality of life. A lack of knowledge and awareness about urban greenery, has prompted research on urban green spaces in Paramaribo. The first objective was to analyze perceptions, uses and importance of UGS in Paramaribo and to identify the factors by which these are influenced. The second objective was to identify the perceived ecosystem services provided by these green spaces and to analyze how these spaces are managed and maintained. This study has been conducted in three urban green spaces in Paramaribo, namely: the Cultuurtuin, the Palmentuin / Wakapasi, the Prof. Mr. Dr. Coen Ooftplein and amongst residents in Paramaribo, through online questionnaires and live-interviews. The results show that the perceptions are given by describing UGS (54%), by giving examples of UGS (41%) or by mentioning the benefits perceived by green spaces (5%). The most preferable characteristics in an urban green space are: the presence of enough nature, cleanliness and maintenance, a peaceful environment; presence of various plant species and the presence of good facilities. Nearly all respondents (98%) consider UGS as important or very important for the quality of life. The most common activities in the green spaces are: to enjoy nature, recreation and relaxing, playing of children, and taking a walk through the park. The choice to visit a particular green space is based on: the expectations of the people, accessibility, distance to the space, the calmness and greenness of the environment and existing options for a park. The nuisances identified in all three areas are the presence of vagrants, litter, vandalism, noise disturbance and insecurity. Significant associations were found between gender and safety aspects, between the age group of 20 to 39 and the movement activities, between time spent and safety and between distance and the number of visitors. The ecosystem services that people experience the most in the green spaces are: cooling the environment, peaceful environment, recreation and ecotourism, air quality regulation, beautifying the environment, storage of carbon dioxide and cultural historical value. Respondents are most satisfied with the maintenance of the Coen Ooftplein and the Wakapasi and least satisfied with the maintenance of the Cultuurtuin, the Palmentuin and the living environment of Paramaribo residents. The main bottlenecks in maintenance of the three green spaces are: finances, manpower and equipment. The results can very well be used by management authorities to improve the green spaces, in order to attract more users and to offer various experiences for the different user groups.

Chapter 1   Introduction

1.1   Background information

Urbanization stands as one of the primary global development trends in the twenty-first century (Arnold, 2018). Presently, half of the world's population resides in urban areas, and this figure is projected to reach 70% by 2050. This increasing urbanization profoundly impacts both the urban environment and the well-being of city dwellers (Farahani, 2018). Given the rapid pace of urbanization and the increasing complexity of urban living, Urban Green Spaces (UGSs) have assumed an increasingly crucial role in improving the urban environment and overall quality of life. As emphasized by Aziz et. al (2011), they also play a pivotal role in establishing socially and environmentally sustainable cities.

Urban green spaces offer essential ecosystem services (ESs) to urban populations. They help regulate urban temperatures, mitigate noise pollution, counteract the urban heat island effect, and enhance air quality (Chen, 2020). Furthermore, UGSs contribute to climate change mitigation through actions such as absorbing greenhouse gases, storing and sequestering carbon through urban vegetation, and reducing the risk of flooding by capturing and retaining precipitation (Armson, 2013) (Ying, 2023). Additionally, UGSs provide vital habitats for wildlife, thereby contributing to the preservation of biodiversity (Zhang B. X., 2015).

UGSs put significant contributions to public health and well-being (WHO Europe, 2017). The importance of urban green spaces has also been recognized worldwide under the Sustainable Development Goal 11, "Sustainable cities and communities" (United Nations, 2023). UGSs play a pivotal role in enhancing the physical fitness of urban residents, alleviating stress, and reducing levels of depression and anxiety (Aziz N. A., 2011) (Paul, 2020). Furthermore, UGSs serve as communal hubs, fostering social interaction and potentially strengthening relationships within neighborhoods (Mao, 2020). In summary, Urban Green Spaces are vital indicators of the quality of life in urban areas (Sen, 2021). Well-distributed UGSs can significantly enhance the quality of the environment and the overall quality of life in urban regions.

The World Health Organization (WHO) encourages governments to increase the provision of Urban Green Spaces (UGS). However, this presents challenges for governments, especially in developing countries, both in expanding UGS and maintaining them (Peschardt, 2012). Furthermore, there is a limited body of research available on UGS, which is essential for formulating effective UGS policies. The global trend of urbanization leading to a decrease in

urban green spaces is also noticeable in Suriname. Therefore, it is necessary to research the perceptions and uses of these spaces by the local community which will help to improve the existing management practices of UGS and create new green space in accordance with local community needs and expectations.

1.2   Problem description

Paramaribo, with approximately 240,924 inhabitants (Statistiek, 2021) is the largest city in Suriname and has experienced uncontrolled urban expansion in recent decades (Fung-Loy, 2019). Where earlier trees were planted in the main streets, in recent years, trees, urban forests and other vegetation have increasingly been removed for residential or infrastructural projects. With housing allotment projects it is noticed that almost all the present greenery is removed. The absence of green policy contributes significantly to the above-mentioned problems. One possible explanation could be that decision-makers and people in general, are not sufficiently aware and appreciative of urban greenery and its benefits. There is in fact little known on the perceptions of Surinamese society about UGS and its ecosystem services, as well as on how the green spaces are used. Low awareness, among both policy makers and city dwellers and a limited capacity, results in insufficient inclusion of greenery in urban planning in Paramaribo. Gaining a better understanding of the perceptions that city dwellers have about UGS and relevant ecosystem services, can help to shift the public discourse in favor of improved urban policy when it comes to green spaces.

1.3   Objectives and Research Questions

The hypothesis, objectives and research questions designed to achieve this study are as follows:

Hypothesis 1: In Paramaribo, the perception, utilization, and management of Urban Green Spaces (UGS) are significantly influenced by factors related to urban planning, user characteristics and UGS characteristics.

Objective 1. To analyze perceptions, uses and importance of UGS in Paramaribo and to identify the factors by which these are influenced. This will give us a better understanding of what people think about UGS and what their need is.

Q1. What are the perceptions, preferences and importance of UGS?

Q2. Which socio-economic factors influence these perceptions,

preferences and importance of UGS?

Q3. How are UGS used by the local community?

Q4. Which factors influence the effective use of UGS?

Hypothesis 2: The perceived ecosystem services offered by urban green spaces are closely associated with the effectiveness of their management and maintenance, with well-maintained green spaces being more likely to provide a broader range of ecosystem services as perceived by the community.

Objective 2. To identify the perceived ecosystem services provided by these green spaces and to analyze how these spaces are managed and maintained. The resulting information can provide useful insights for policy makers to establish green policy.

Q5. What are the perceived ecosystem services provided by UGS?

Q6. How are the UGS managed and what are the bottlenecks in this?

1.4   Thesis outline

Chapter 2 is the literature review, wherein previous research conducted in different countries, relevant to this research, has been explored.

Chapter 3 provides background information on the three researched green spaces. The various functions and the current situation of the areas are described.

Chapter 4 discusses the mixed method approach to the research.

Chapter 5 describes the participants and discusses the principal findings with relation to the different research questions. The limitations in this research are also mentioned.

Chapter 6 concludes the main findings of this research and gives suggestions for future research.

Chapter 2   Public urban green spaces: definition, functions and uses

Before starting the research in Paramaribo, a literature study, was conducted, including 44 articles and reports, regarding perceptions and use of urban green spaces in developed and developing countries.

2.1   Defining urban green spaces

The interpretation of urban green spaces varies among different fields, contingent upon the research's objectives (McDonnell, 2011). For this research, the definition used by Schipperijn was applied, because this research is limited to publicly accessible spaces that can have both a man-designed character and a natural character. This definition reads as follows: "Urban green space (UGS) is defined as all publicly owned and publicly accessible open space with a high degree of cover by vegetation, e.g. parks, woodlands, nature areas and other green space. It can have a designed or cultural character as well as a more natural character" (Schipperijn, 2010). In order to have a better overview of the various definitions used in different literature, Taylor and Hochuli (2017) made an inventory of definitions used in 125 journal articles. Two types of categorizations were distinguished. An overview of the first categorization is given in table 1.

Table 1: Six types of definitions to describe greenspace

Definition type	Description	Example
Acknowledged range (n=5)	A definition that acknowledged the range of what can be considered "greenspace"	"greenness describes level of vegetation, ranging from sparsely-landscaped streets to tree-lined walk-ways to playfields and forested parks.
Definition by examples (n=17)	Examples were provided to illustrate what is meant by greenspace	"combined areas of open land, cropland, urban open land, pasture, forest and woody perennial"
Ecosystem services (n=3)	Examples that embody ecosystem services, such as urban agriculture, and/or a reference to serving human needs	" a type of land use which has notable contributions to urban environments in terms of ecology, aesthetics or public health, but which basically serves human needs and uses"
Green areas (n=4)	A reference to 'green' and/or 'natural' areas without further explanation	"the area investigated included substantial green elements"
Land uses (n=6)	Generic land uses described as greenspace	"recreational or undeveloped land"
Vegetated areas (n=21)	Areas that feature vegetation	"green in the sense of being predominantly covered with vegetation"

In the second categorization, two different interpretations of green spaces were used: one based on "natural vegetation" and the other based on "human influence" (see table 2). In the first interpretation green space is referred to as bodies of water or areas of vegetation in a landscape, such as forests, street trees, farmland, coastal areas or food crops. This

interpretation refers to an overarching concept of nature, or natural areas in general. The second interpretation represents urban vegetation, including parks, gardens, yards, urban forests, and urban farms. Here a human-focused land-use is considered, that requires human involvement and planning to ensure conservation of the space. The presence of facilities, make the space valuable to urban residents. This emphasizes the importance of human and non-human interactions.

Table 2: Nature-and human based interpretations of greenspaces

Greenspace as nature	Greenspace as urban vegetated areas
"Greenspaces broadly encompass publicly accessible areas with natural vegetation, such as grass, plants or trees (and may include) built environment features, such as urban parks, as well as less managed areas, including woodlands and nature reserves"	"Greenspace is defined as any vegetated land adjoining an urban area…and includes bushland, nature reserves, national parks, outdoor sports fields, school-playgrounds and rural and semi-rural areas immediately adjoining an urban area"
"The conceptualization of greenspace in this review include both urban and non-urban green from natural and semi-natural landscapes to the countryside and urban parks"	Urban green spaces – that is forests, trees, parks, allotments or cemeteries-provide a whole range of ecosystem services for the residents of a city"

2.2   Perceptions, preferences and importance of urban green spaces

People's perception of UGS deals with the view people have on UGS and its characteristics (Jim, 2013) and the attitude people have towards green spaces as environmental unit and outdoor recreational component (Ahmed, 2003).

'Perception' may be determined by the personal values and experiences in the green spaces and socio-cultural conditioning of users (Farahani, 2018). Research in China showed that the perception differed with the socio-economic characters of respondents such as, gender, age, marital status, education, occupation and district of residence (Jim, 2013).

'Preference' can be defined as "liking one area of land or landscape better than another". It is a general characteristic of humans to prefer a setting in which they experience comfort (Farahani, 2018).

The *importance* of a green space is based on the benefits people retrieve from a certain space compared to other everyday spaces or activities, leading to a better quality of life (Cohen, 2012).

2.3   Use of urban green spaces

Use of UGS is often defined as any sort of visit to an urban green space, regardless the duration of the stay or the activities, e.g. passing through, on the way to a destination, is also counted as use (Schipperijn, 2010). The use of UGS is best represented with the socio-ecological model of Schipperijn (2010). According to this model a person's behavior is influenced by individual factors (e.g., age, education, personal experiences) and environmental factors (e.g., physical environment). Four individual and community-based factors were associated with the use of green spaces. The first factor "community attachment" deals with the use of a space due to a sense of ownership. The "image dimension" is about the quality and functions that are expected to be present in a space. The "perception of safety" strongly affects the level of use. "Social cohesion" are the interactions between different kind people in a green space (de la Barrera, 2016).

The use of UGS has been studied with different scopes and objectives. These can be categorized into three main groups. In the first group the focus is on the different reasons or motivations to visit an UGS. For example, in Amsterdam, 'to relax' was found to be the most important motivation, followed by 'to be in nature', and 'to escape from the city'. In Guangzhou, 'to enjoy fresh air and beautiful scenery' and 'to relax' were identified as the main motivations. Urban green space visits in Hong Kong were mainly motivated by the possibility of practicing physical exercise and contact with fresh air. The second group includes studies conducted in cities like Hong Kong Guangzhou and, New Zealand, in which the benefits related to UGS are assessed. In the third group the preferred features and characteristics of urban parks are studied. These include amongst other: naturalness, neatness, sociability and spaciousness (Madureira, 2018).

Factors influencing the effective use of UGS

Research in South California found that use of local green spaces is lower in low – income neighborhoods (Cohen, 2012). Conversely, in another research in Scotland it was found that green spaces in lower income neighborhoods are more frequently used than those in higher income neighborhoods. Differences in the use of green spaces can also be associated with different ethnicities, between immigrants (tourists) and local users and related to gender and age (de la Barrera, 2016). Physical characteristics also influence the use of UGS such as: the physical structure of green spaces, size, maintenance quality, lighting, variety of infrastructure, availability of activities and facilities for people with disabilities (de la Barrera, 2016). Distance is also a main factor influencing the use of green space (Schipperijn, 2010). A rule

of thumb from the WHO is that urban residents should be able to access public green spaces at 300 meters' linear distance (around 5 minutes' walk) of their homes (WHO Europe, 2017).

2.4   Ecosystem Services provided by urban green spaces

Although UGS are often used as outdoor recreational spaces, it has a lot more benefits, which can be derived from ecosystem services. Ecosystem services are defined as the "direct and indirect contributions of ecosystems to human well-being". This definition is from The Economy of Ecosystems and Biodiversity (TEEB) (Braat, 2012) and implies that mankind is strongly dependent on well-functioning ecosystems and natural capital. The ecosystem services cascade (ESC) is used to illustrate this relationship (Zhang C. L., 2022).
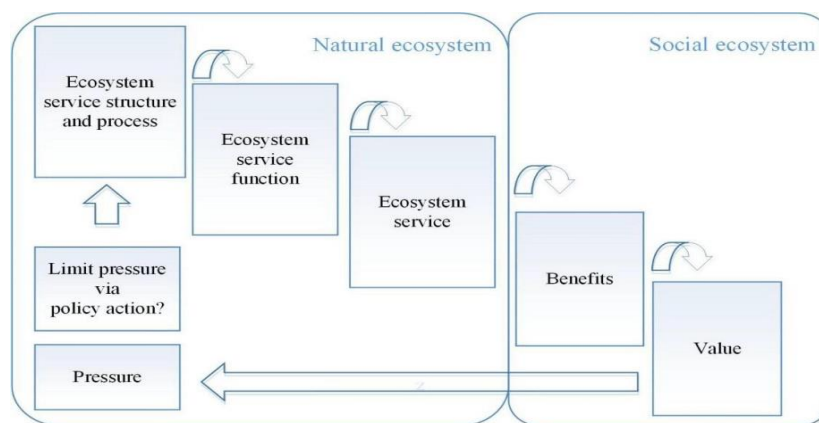
Figure 1: The Ecosystem Services Cascade Model

According to TEEB, ecosystem services can be categorized in four main types (Wittmer, 2013): provisioning services, regulating services, cultural services and habitat or supporting services.

Provisioning services are the material or energy outputs from ecosystems. These are tangible goods or services that can be directly used, by human beings, such as:

- Products from agriculture, forestry and fishery/aquaculture, such as: crops and timber.
- Wild plants and wild animals and their outputs; e.g., wild berries, mushrooms, honey.
- Genetic material from wild plants for the use in biochemical and pharmaceutical industries.
- Water for drinking and non-drinking purposes; e.g. groundwater recharge (Burkhard, 2017).

Regulating services are the services that ecosystems provide by acting as regulators. These services are not directly consumed as goods but provide many direct benefits (Burkhard, 2017) such as:

- Regulating the global and local climate through evapotranspiration and by providing shade.
- Reducing urban heat island effects.
- Carbon storage by vegetation; reduces the greenhouse effect.
- Providing clean air and water by removing pollutants such as ozone (Dwyer, 1992).
- Regulating urban hydrology e.g., by reducing the rate of storm water runoff.
- Noise reduction: tall dense trees can reduce noise by at least 50% (Urban, 2021).
- Crop pollination, this is supported by insects, butterflies and birds (Burkhard, 2017) .
- Soil protection: the root network of grass, herbs, shrubs and trees, physically keeps soil
- together, thus avoiding erosion and loss of fertile soils (Burkhard, 2017).
- Pest control: ecosystems are habitat for natural enemies, who play a key role in pest control, such as birds, mammals and spiders (Burkhard, 2017).

Cultural ecosystem services are the intangible benefits that contribute to human well-being, such as:

- The presence of urban trees and green spaces lead to reduced stress and improved physical and mental health for urban residents.
- Recreational outdoor activities e.g., walking, leisure fishing, snorkeling and bird watching.
- Scientific and educational interaction: researches and outdoor (nature) education.
- UGS, especially trees, make cities aesthetically more appealing and a more pleasant place.
- UGS are often places for people to socialize with each other.

Habitat and supporting services underpin almost all other services by providing habitats for flora and fauna and conserving a diversity of urban ecosystems. Food, water and shelter is provided to plants and animals to survive (Van Leeuwen, 2010).

Disadvantages of UGS

UGS do not only deliver benefits to society, but they can also be perceived adversely. Some UGS can be seen as dangerous places and people might fear going there. Some people may also be allergic for pollen from urban vegetation. Sometimes, when there is much crowd, conflicts may occur between visitors (Schipperijn, 2010). Trees, especially old or diseased trees, can fall and cause accidents to visitors.

Chapter 3   Description of the study area

3.1   Demarcation of research area

The study area for this research is Paramaribo, the capital of the Republic of Suriname, a developing country located in the north of South America. Three public urban green spaces comprising of public parks, green squares, and forest fragments (figure 2) have been identified to carry out this study. Paramaribo comprises 12 ressorts spanning over 182 km^2 and UGS surveyed are situated within the limits of Blauwgrond, Rainville and Centrum ressorts.

The area of research interest is presented by two groups of objects:

Group 1: Three public UGSs located in Paramaribo, namely: Cultuurtuin, Palmentuin/Wakapasi and Prof. Mr. Dr. Coen Ooftplein (table 3);

Group 2: Residential areas in Paramaribo.
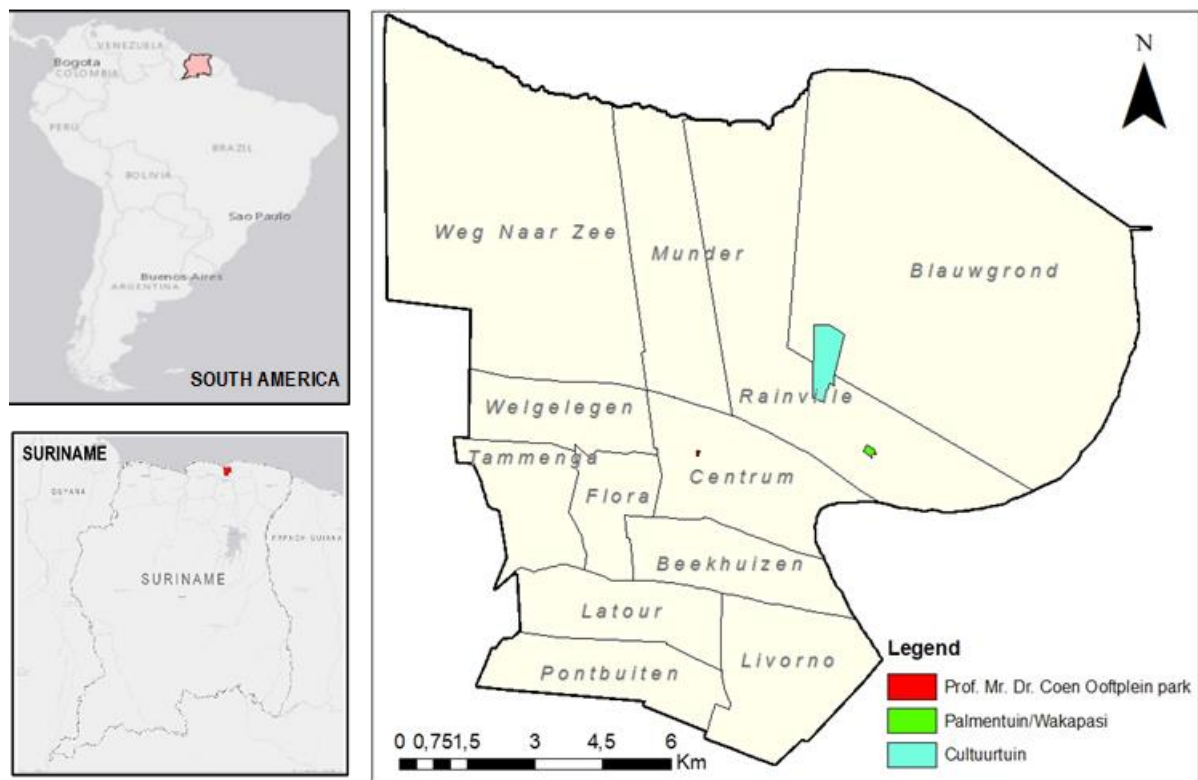
Figure 2: Location of surveyed UGS in Paramaribo

The three UGSs were selected based on criteria's, similar in a study done in Santiago (de la Barrera, 2016), namely:

- The UGS should be located within the district of Paramaribo in a residential area;
- The UGS should be accessible to all residents (public space);

- The UGS should be amongst frequently visited spaces in Paramaribo;

- The UGS should have a vegetation cover of over 30%, considering trees, shrubs and lawns;

- The UGS should possess at least one piece of infrastructure and/or facility (e.g. benches).

Table 3: Characteristics of surveyed UGS in Paramaribo

Space	Total area (m²)	Green area	
		(m²)	% of total area
Cultuurtuin	810906.29	488504.37	60.24
Palmentuin / Wakapasi	38153.62	33269.95	87.21
Prof. Mr. Dr. Coen Ooftplein	7471.28	3772.25	50.49

3.2   The Cultuurtuin

The Cultuurtuin originated as part of an Agricultural Experimental Station, which was founded in 1903. The Cultuurtuin is managed by the Nature Parks Foundation (STINAPA), which comes under the Ministry of Agriculture, Livestock and Fisheries.

Figure 3: Demarcation of the Cultuurtuin

There are many institutions located in the Cultuurtuin, including the Paramaribo Zoo, Telesur, the Surinamese Television Foundation (STVS) and the Ministry of Agriculture, Livestock and

Fisheries. The Cultuurtuin is known for its versatile functions and values, namely (STINAPA, 2021):

-   Recreational function: The Paramaribo Zoo and the Orchideeëntuin are situated here as well as a number of sports fields, playgrounds, jogging tracks etc.

Figure 4: Outdoor activities in the Cultuurtuin

-   Educational function: Plant materials from the Cultuurtuin are used for research in botany and taxonomy. Educational day trips and treasure hunts are also organized here.
-   Residential function: The part known as the Kampong originally served as a residence for workers of the Agricultural Experimental Station in the Cultuurtuin and is still inhabited.
-   Nature value: The tree collection in the botanical garden is unique in its kind. The forest is representative of the original coastal vegetation of Suriname. The diversity of plants is very large, counting 239 species (STINAPA, 2021), with an average of 55% economic value and 45% ecological value (Troenosemito, 2021).The vegetation is also important for many birds, butterflies, reptiles and mammals.
-   -Commercial value: The Orchideeëntuin and the Paramaribo Zoo are an important source of income.

In the past ten years, some parts of the Cultuurtuin have been issued to individuals or institutions as a result of which, only 20 hectares is now left of the Cultuurtuin (Troenosemito, 2021). The Cultuurtuin is in an unguarded and poorly maintained situation, resulting in illegal waste dumping and presence of drug addicts and vagrants, posing a danger to both visitors and residents. Vandalism translates mostly in the destruction of furniture in the Orchideeëntuin. Due to overdue maintenance and fallen trees, large parts of the forest have become impassable.

3.3   The Palmentuin / Wakapasi

The Palmentuin ("Palm garden"), approximately 3.8 ha, is the oldest public garden which was established around the same time as the city Paramaribo between 1652 and 1667. It is part of the Historic Inner City of Paramaribo which is inscribed on the UNESCO World Heritage List (PLANTPROP, 2010).

The Palmentuin is being managed and maintained by the Directorate Culture of the Ministry of Education, Science and Culture. The Cabinet of the President however determines policy regarding the Palmentuin. The SGES (Suriname Built Heritage Foundation), the Monuments Commission ('Commissie Monumentenzorg') and the UNESCO have an advisory role regarding policy of the Palmentuin, because of its monumental status (PLANTPROP, 2010).
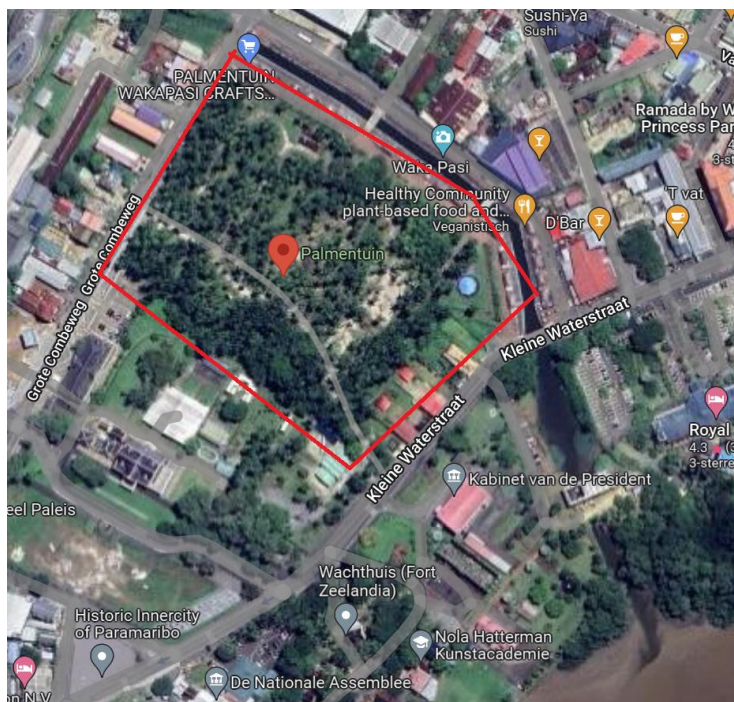
Figure 5: Demarcation of the Palmentuin/Wakapasi

About 95% of the vegetation consists of South American Royal palms (Roystonea oleracea). There are also other trees, shrubs and grass lawns in the garden. The epiphytes in the trunks of the palm trees, attract birds, small reptiles and insects (PLANTPROP, 2010). There are several trenches in the Palmentuin which flow into the Sommelsdijckse Kreek. The following objects are present in the Palmentuin: a fountain (though not functioning), 4 huts, 2 wooden bridges, benches, waste bins, an old historic grave, a monument ('jongetje Klas"), a toilet building (though out of order), an office building and a fitness centre.

The playground is the most visited part of the Palmentuin. Other activities are: walking/jogging, training dogs, picnicking, photo shoots and film recordings, fitness exercises, martial arts and socializing.

The Wakapasi (Surinamese for walkway), in full Wakapasi Craft & More, is a promenade along the Palmentuin. It was built in 2019 with the intention to show tourists what Suriname has to offer in the field of craft. There are 24 cabanas, in which stallholders offer artisan products, food and drinks. There is also an administrator's office and a toilet building. The Wakapasi is a very well visited promenade, where people mainly go to socialize with friends and families. Because of the beautiful design of this place, photo-shooting is a major activity.

Figure 6: The Palmentuin/Wakapasi area

3.4   Prof. Mr. Dr. Coen Ooftplein

The Prof. Mr. Dr. Coen Oofplein is demarcated by the: H.D. Benjaminstraat, Borretstraat, Prof. dr. Kernkampweg and the Verlengde Gemenelandsweg. Because of the situation opposite the Fernandes Bakery, this square is also known as the Fernandesplein. The Directorate of Public Green and Waste Management is responsible for the management and maintenance of the square. In 2008 this square was completely redesigned, with a new playground in collaboration with the Innerwheel Club Paramaribo. Benches were placed, a fence was built around the square, a toiletbuilding was build and new trees and shrubs were planted. The playground was officially named "Het innerwheeltje" and the square was officially named "Prof. Mr. Dr. Coen Ooftplein", after the late Prof. Coen Ooft. Since this redesign, the maintenance of the playground is done by the Innerwheel Club (Afvalbeheer, 2021). This square is pleasant for

visitors because of the many trees, shade, presence of a gazebo and pigeons. The square is fenced and safe for children.
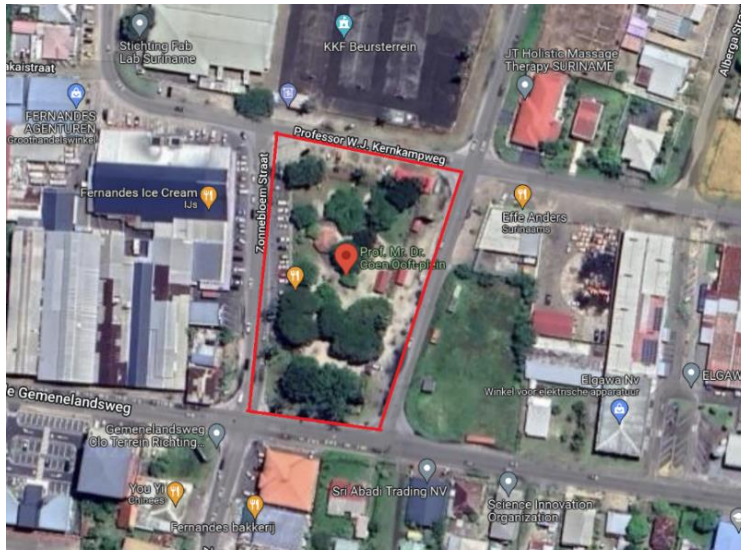
Figure 7: Demarcation of the Coen Ooftplein

This playground is centrally located. The Fernandes bakery is just opposite the square for food-consumption. Outside of the square there are some food stalls present, where snacks and fruits are sold. There is ample parking available. People also use the square to celebrate children's birthday parties or for picnics with family. School trips are also organized for primary school children. In 2020, this square had again undergone a complete rehabilitation, during which the toilet building, which had been out of function for years, was made usable again. In December 2020, for the first time a Christmas Park was held here (Afvalbeheer, 2021).

Figure 8: Playground at the Coen Ooftplein

Chapter 4 Methodology

The survey was conducted from 14th September 2020 to 31th August 2022 and 212 responses were obtained. This sample size was assumed to be sufficient to generalize the findings of this study as it satisfied at a 95% confidence level with a ±5% margin of error.

For the purpose of this study four questionnaires were produced, namely for visitors of the Coen Ooftplein, the Palmentuin, the Cultuurtuin/Wakapasi and for households in Paramaribo. Each questionnaire consisted of four parts and was developed based on literature reviews for qualitative data collection. The first part was prefaced by an explanation of the purpose of the study and asked for consent of the respondents. The second part included questions about general perceptions about green spaces. In the third part, specific questions were asked about the studied UGS or about green in the respondent's living environment. The last part of the survey included questions about socio-economic demographics (age, gender, education, income-class and place of residence). See appendix 1 for the questionnaires of the Cultuurtuin (which is identical to the questionnaire of the Coen Ooftplein and Palmentuin) and the questionnaire for households in Paramaribo in appendix 2. In appendix 3 the research questions are broken down into components and a description of the results are given.

4.1   Field Survey

The questionnaires for the three UGSs were administered both online and physically in the field. The questionnaire, intended for households in Paramaribo, could only be completed online.

4.1.1   Choosing sample size

This survey is qualitative research, because it involves more categorical data to understand the perceptions, opinions, experiences and socio-economic data of the respondents. Regarding sample size for qualitative interviews different guidelines are given for different categories of research. This thesis research is based on the category "grounded theory". Grounded theory (GT) is a research method concerned with the generation of theory, which is 'grounded' in data. It is used to uncover such things as social relationships and behaviors of groups, known as social processes (Noble, 2016) For the grounded theory methodology, a sample size of 20 to 30 is recommended by researcher Creswell and a sample size of 30 to 50 is recommended by researcher Morse (Mason, 2010). On the basis of this, a sample size between 30 and 50

was chosen for each questionnaire. Ultimately, after completion of the questionnaires, there were respectively 47, 54, 44 and 67 respondents for the Coen Ooftplein, Cultuurtuin, Palmentuin and the Paramaribo households.

4.1.2 Online questionnaire

Due to the COVID-19 pandemic the option of online questionnaires was chosen for this research. Data was collected between September 2020 and February 2021. The online questionnaires were posted on the Facebook page of Tropenbos Suriname and of the researcher, on the project website: www.groenparamaribo.org and it was also emailed to the researcher's personal network.

4.1.3 Live-interviews

In periods of reduction in COVID-19 cases, live-interviews were also taken. These were conducted on random days, both during the week and at weekends, usually in the afternoon until early evening, with the exception of the Cultuurtuin (Paramaribo Zoo and Orchideeëntuin) where the interviews were also held in the morning. The target group were both visitors and sellers in the various areas, chosen randomly at the moment of the interview.

4.1.4 Statistical processing of the results

To investigate the influence of socio-economic and other factors on the perception and usage of UGS (hypothesis testing), the following method was applied:

- The existence of a relationship was determined through the Chi-square statistics.
- The strength of the relationship was determined with the Cramer's V test.
- The description of the relationship was done by descriptive statistics using charts.

All the above-mentioned statistical analyses were done using the software "Microsoft Excel".

For the analysis of the data, the null hypothesis is that no relationship exists between the categorical variables in the population; they are independent (Crewson, 2016). If the calculated Chi-square statistic does not meet or exceed the critical value from the Chi-Square distribution-table, the null hypothesis (H_0) cannot be rejected. The Chi-square distribution table is found in appendix 4. The existence of a significant association can also be determined

by the p-value. To make a conclusion about the hypothesis with a 95% confidence, the p-value should be less than 0.05. The Cramer's V test is used to identify the strength of the correlation between two categorical values. Cramer's V value is between 0 and 1. A value equal to zero, indicates that the variables are not associated with each other, between 0.1 and 0.3 indicates a weak association, between 0.4 and 0.5 indicates a medium association and a value greater than 0.5 indicates a strong association. A value of one indicates that the variables are perfectly associated (Döring, 2018).

The pedestrian accessibility to urban green spaces was calculated using the module Network Analyst ArcGIS 10.8 software. With the functional capabilities of this module, a road network graph was constructed and pedestrian accessibility to urban green squares was calculated for the residents of Paramaribo. To accomplish this, a geospatial data was utilized, which was freely available on the website www.extract.bbbike.org. The pedestrian walking speed was assumed to be 4 km/h. To create the pedestrian accessibility zone for each facility using the "New Service Area" option, a computation layer was generated. When implementing this option's functionality, polygons are created, with edges positioned at a uniform distance, travel time, or another unit of delay reaction from the accessibility zone (area of interest).

4.2 Observation and description of the UGS

The description of the UGSs was done by field (in situ) observations and from literature made available by the relevant organizations. The field observation process involved the following dimensions:

- Physical environment of the green space: the facilities present or absent, the type of greenery and other objects present.
- Activities of users in the green space: different kinds of activities performed by visitors of the space.
- Maintenance of the green space: how maintenance is done, the good and bad aspects of the maintenance, what is lacking in the maintenance.

4.3 Institutional interviews (live and online)

Interviews were conducted with institutions responsible for the management and maintenance of green spaces, with the aim of finding out how the management takes place and identifying any bottlenecks. Due to the COVID pandemic some of these interviews were taken in person and some were asked by email.

Chapter 5 Results and Discussion

This chapter presents the results and discussions, categorized per research question. In the discussions, links have been established with findings from similar studies in other countries.

5.1 General description of the respondent population

In this paragraph a general description is given of the respondent population (total 212 respondents). Figure 9 shows the overall socio-economic data of the respondents graphically.
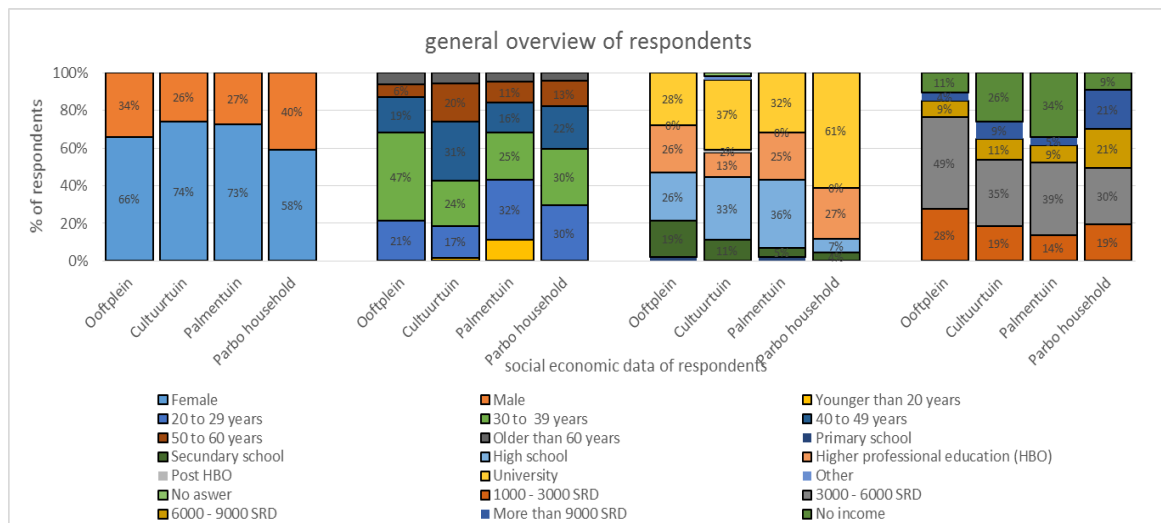
Figure 9: Socio-economic data of all respondents

Two-thirds of the respondents were women. It is noteworthy that most of the respondents were people with a university education. This may be due to the fact that the surveys were published online. Access to the internet, willingness and ability to use their internet to fill out an academic survey were factors which probably played a role in this. A complete overview (socio-economic data) of the respondents is given appendix 5.

Visitors often go to an UGS with a group of people (family and friends). In figure 10 the composition of this group of visitors is given by age. The three spaces were the least visited by senior citizens (over 60 years of age). This could be because there are no facilities or activities present for seniors. The presence of playgrounds could be too noisy for them, or they do not prefer a large space where they have to walk a relatively long distance. Furthermore, it is remarkable that children between 0 and 12 years old are the largest visitors group to the Coen Ooftplein and to a lesser extent also for the Cultuurtuin. This is due to the presence of the playground at the Coen Ooftplein and in the Paramaribo Zoo.
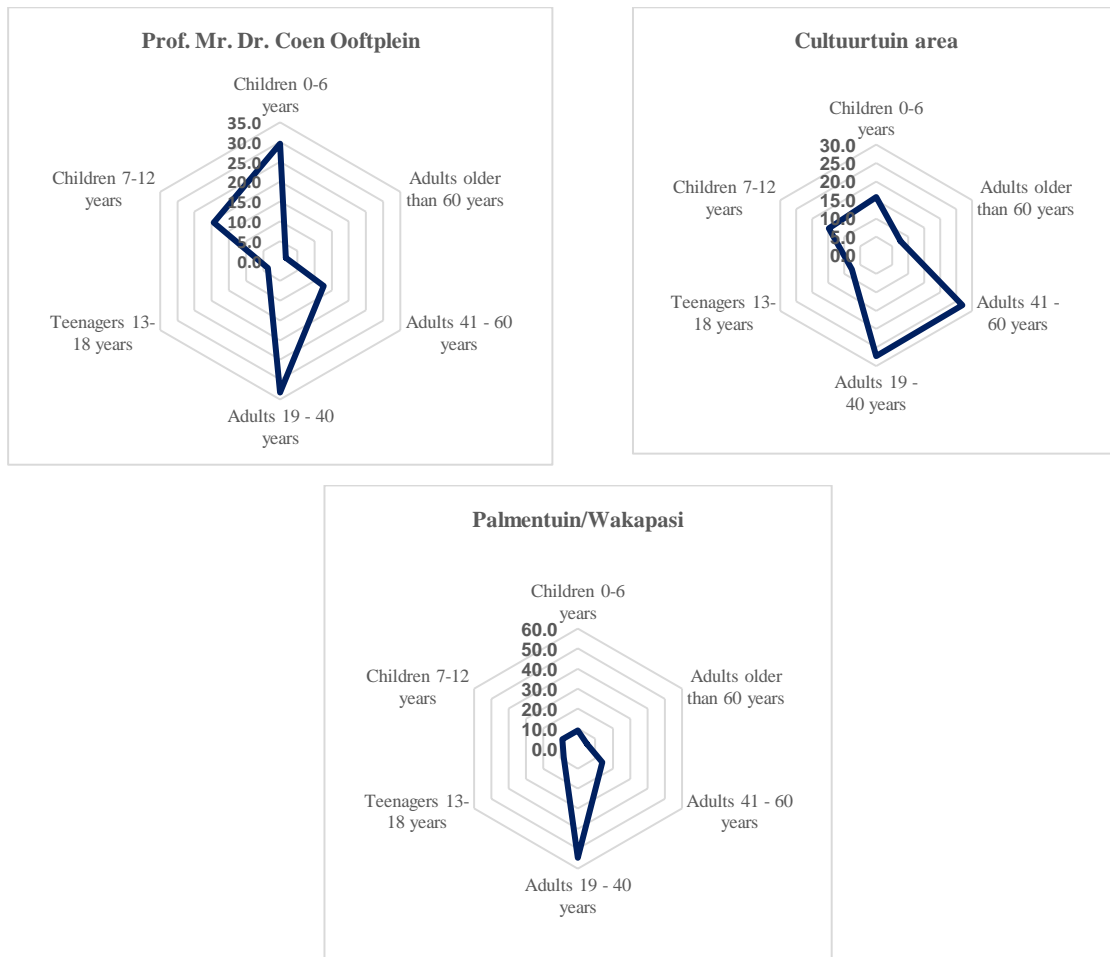
Figure 10: UGS profile depending on the age of visitors

5.2 What are the perceptions, preferences, and importance of urban green spaces?

In this paragraph the results are presented of the first research questions: "What are the perceptions, preferences and importance of urban green spaces?"

5.2.1 Perceptions on UGS

A total of 195 respondents gave their interpretation on urban greenery. This question was an open question. The answers were categorized, according to two types of categorizations, given in section 2.1. The first categorization was based on defining or describing urban greenery. The three categories that emerged from this are:

Category A: Descriptive answers: what can be considered greenspace.

Category B: Examples given to illustrate greenspace.

Category C: Ecosystem services (benefits) perceived by greenspaces.

In the second categorization the answers of the respondents were categorized according to the distinction between natural and human-influenced areas. The three categories that emerged from this are:

Category N: Urban greenery is characterized as natural green spaces.

Category H: Urban greenery is characterized as green spaces under influence of human

Table 4: Overview of the categories of perception of urban greenery

First categorization based on defining/describing urban greenery		
Category	**% respondents**	**Examples of answers**
A	54%	- Presence of trees, forest and plants in an inhabited area - Urban greenery is understood to mean forest fragments, parks, squares, playgrounds, trees along streets and other green plants (including lawns) - Area with many trees
B	41%	- Trees, lawns, squares with flowers and controlled lawns - Preserved parts of the city with only trees and plants, like a park - Existing trees / parks with greenery
C	5%	- Parks, squares, and plants, which serve to beautify and cool the environment - Sufficient and ornamental plants for shade and for sufficient oxygen - In the midst of a busy day for rest, jogging, picnicking, playing etc.
Second categorization based on nature or human-influence		
Category	**% respondents**	**Examples of answers**
N	10%	- A city with enough forest - A lot of forest - Nature
H	65%	- Trees and plants in the city in public places such as parks, roadsides, playgrounds and so on. - Lots of trees along the streets, in the squares and in the yards. - Lots of trees and plants and spaces that have been specially created, e.g., walking parks

N/H	25%	- The elements mentioned can also occur in "natural green" spaces or in green spaces created or maintained by man - All plants and trees in a built-up environment that have arisen both naturally and through human action. - Everything green in the area, trees, grass, etc., flowers, etc.

Category N/H: If no clear distinction could be made between the above categories.

In table 4 an overview is given of the categories of perception of urban greenery. A large proportion of the respondents gave their perception of urban green through descriptions or definitions. The perception was thus given based on what a green space is (description) or on the basis of what it should be (definition). This was regardless of the status of the urban green space. The fact that most of the respondents were able to give their perception of UGS may also be due to the high education level of most of the respondents. Those who did have an understanding of urban green but could not describe it, indicated this on the basis of existing examples of green spaces.

When comparing the perceptions of UGS of this research to the findings of Lucy Taylor's study (2017), a mutual pattern is shown. In both studies, the majority of the respondents (more than 50%) express their perception by defining or describing urban green. A lesser part (30 to 40%) describes urban green by giving examples of green spaces. In both studies, a small proportion express their perception based on the benefits provided by urban green. This indicates that only a small part was very aware of the ecosystem services that are provided.

5.2.2 Preferences within an UGS

The respondents could choose 5 characteristics out of 18, which they preferred the most in an UGS. The results show that 5 most preferred characteristics, in descending order, are:

1) The presence of enough nature
2) Cleanliness and maintenance
3) Peaceful environment
4) Presence of various plant species
5) Presence of good facilities

In the graph below an overview is given of all preferences of the 212 respondents regarding urban green space.
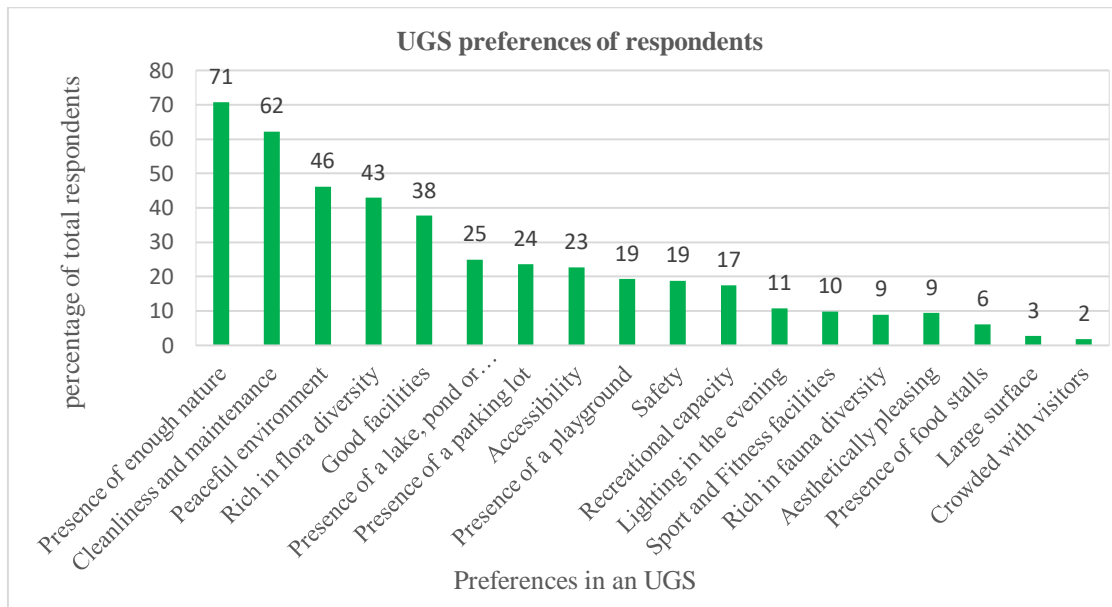
Figure 11: Preferences of respondents (%) in an UGS

Note: Good facilities indicate the presence of benches, waste bins, toilets, taps, etc. Accessibility means the extent to which an UGS is accessible (for example, wheelchair-friendliness, paid/unpaid entrance; open or closed entrances).

Suriname is one of the greenest countries in the world, with 94% forest cover, which mainly occurs in the Southern and in rural areas of the country. The reflection of this in Paramaribo are the existing UGS such as the Cultuurtuin and the Palmentuin. If respondents choose to visit a green space, they expect a complete experience of being in nature. Therefore, not only presence of nature and a diversity of flora is desirable, but also the silence of nature is a very preferred characteristic. About the same characteristics also emerged as most preferred from a study done in three Portuguese cities (Madureira, 2018), namely "cleanliness and maintenance", "richness in plant species"," presence of enough nature" and "peaceful environment (tranquility)". In a study done in 3 cities of Pakistan, the demand for nature, was highlighted especially by those living around roadside locations (Qureshi, 2013). These examples show that not only in Suriname, but also in other countries people prefer the presence of the green calming elements (namely nature, various plant species and tranquility) in a green space. Cleanliness and maintenance and the presence of the necessary facilities are the basic conditions.

5.2.3 Rating of the status of characteristics in the UGS

The respondents in the three UGS were asked to rate (good, moderate or bad) the various characteristics present in the space. Figure 12 shows the 5 characteristics that were mostly

indicated as good. In all three green spaces "accessibility", and "presence of enough nature" were dominantly chosen as the characteristics valued as "good". "Presence of a playground" was also valued as good in the Palmentuin and Ooftplein. In the Cultuurtuin, "rich in flora diversity" was chosen, because this space is the only nature park in Paramaribo, with many different plant species.
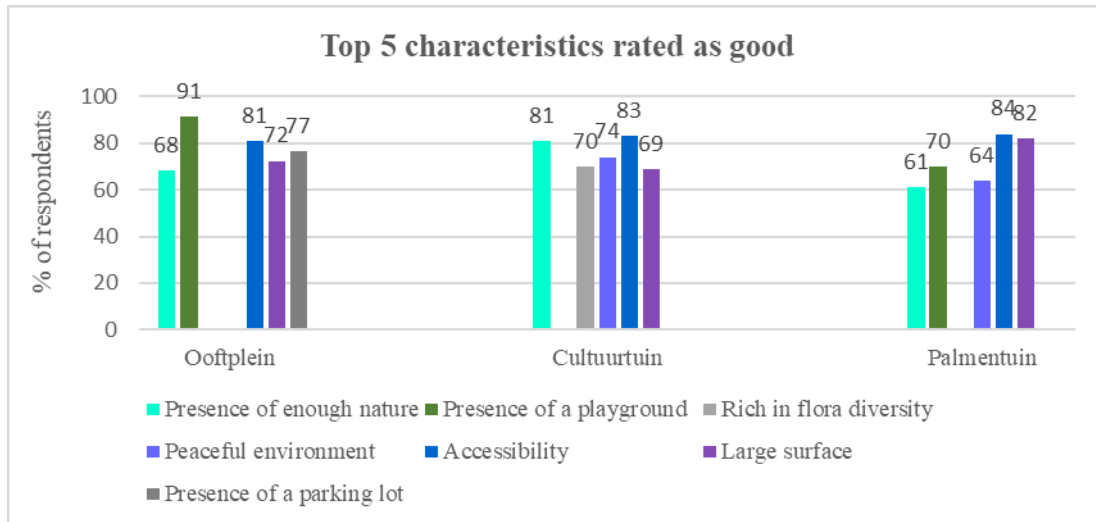
Figure 12: Characteristics rated as good in the UGS

Figure 13 shows the 5 characteristics that were mostly indicated as bad. The presence of some characteristics indicated as "bad" were not applicable for the green space. These were: "presence of a lake", "rich in fauna diversity" and "sport and fitness facilities. On the other hand, the aspect of "lighting in the evening" was not optimally present in the Cultuurtuin, while it is a necessity for this area. This is also linked to the aspect of "safety", also rated as bad, in both the Cultuurtuin and the Palmentuin. The "bad" rating of "cleanliness and maintenance" in the Palmentuin does not apply for Wakapasi. Here the maintenance was good. At the Ooftplein "good facilities" were rated as bad. This was because the toilets were out of order during the period of the questionnaires. In the meantime, the toilets have been renovated and put into use again. It is striking that the "presence of food stalls" was experienced as bad at all 3 locations. This indicates that respondents expect more food stalls on these locations.
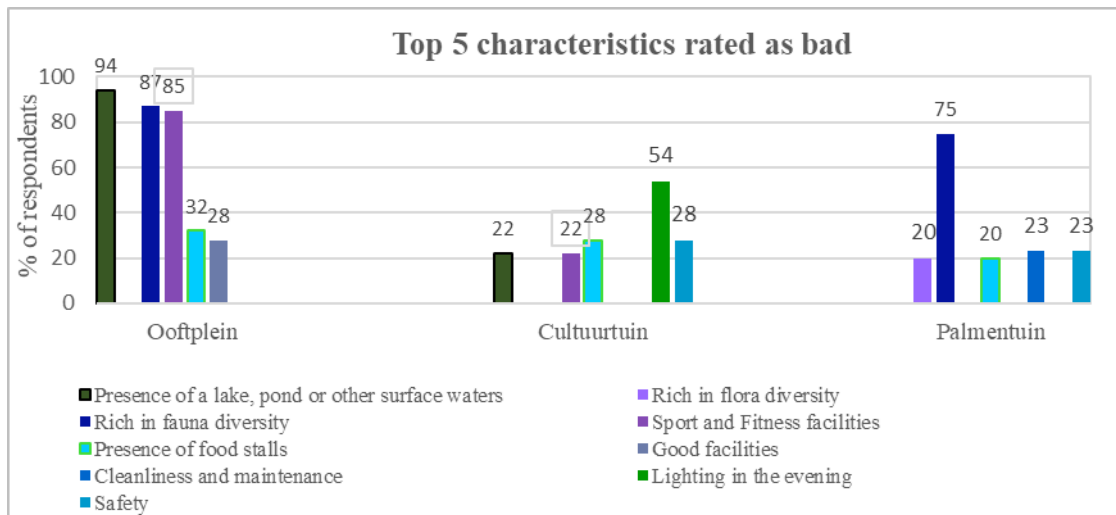
Figure 13: Characteristics rated as bad in the UGS

5.2.4   The importance of an UGS

5.2.4.1 Importance of an UGS

The biggest part of the respondents (in total 98%) considered UGS as important or very important for the quality of life. This is apparently due to the fact that people experience the benefits of greenery. The respondents substantiated their opinion with the reasons why an urban green space is important. The main reasons were that UGS are good for mental health, provide oxygen and have a cooling effect on the living-environment (figure 14).
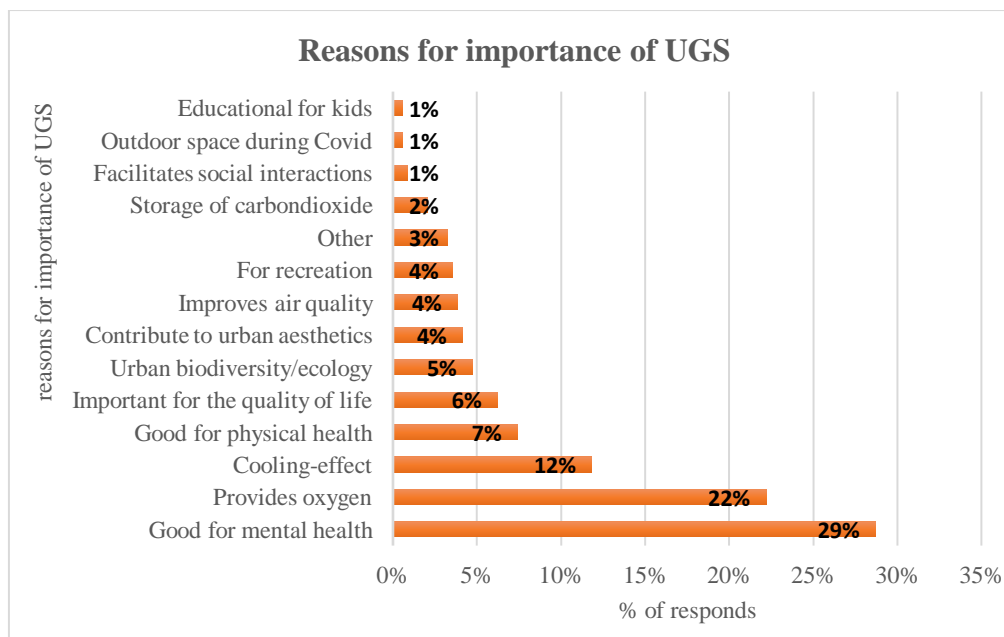
Figure 14: Reasons for the importance of UGS

The importance of UGS has been examined through various studies. A study done in Denmark (Schipperijn, 2010) showed different benefits, such as: trees removing air pollutants, physical and psychological health benefits, and climate regulating. A study done in Chile in 2017 showed that all types of green interventions, significantly increased the perceived happiness levels and reduced the perceived stress levels (Navarrete-Hernandez, 2021).

5.2.4.2 Opinion on greenery in the living environment

In the questionnaire for households of Paramaribo respondents (total 67) were asked for their nopinion on greenery in their living environment. With regard to the presence of green spaces, the majority indicated that there is not enough in their living environment (figure 15). This indicates that there is a need for more green spaces. For the neighborhoods (25 out of the 30) where two or more respondents indicated that there were insufficient greenspaces, a comparison was made with the urban greenery classification map of Paramaribo. This map was produced within the project "Towards a greener and more livable Paramaribo" and can be found on the website of the project (Paramaribo, 2020). The specifications regarding these comparisons are shown in appendix 6. In the neighborhoods for which it was indicated that there is insufficient green space, the map showed there was more infrastructure and buildings and/or grass present. Only in the residential area Uitvlucht a forest fragment was found and in the northern part of the residential area Kwatta (Paramaribo) there are several forest fragments present. These parts have almost no buildings or infrastructure.
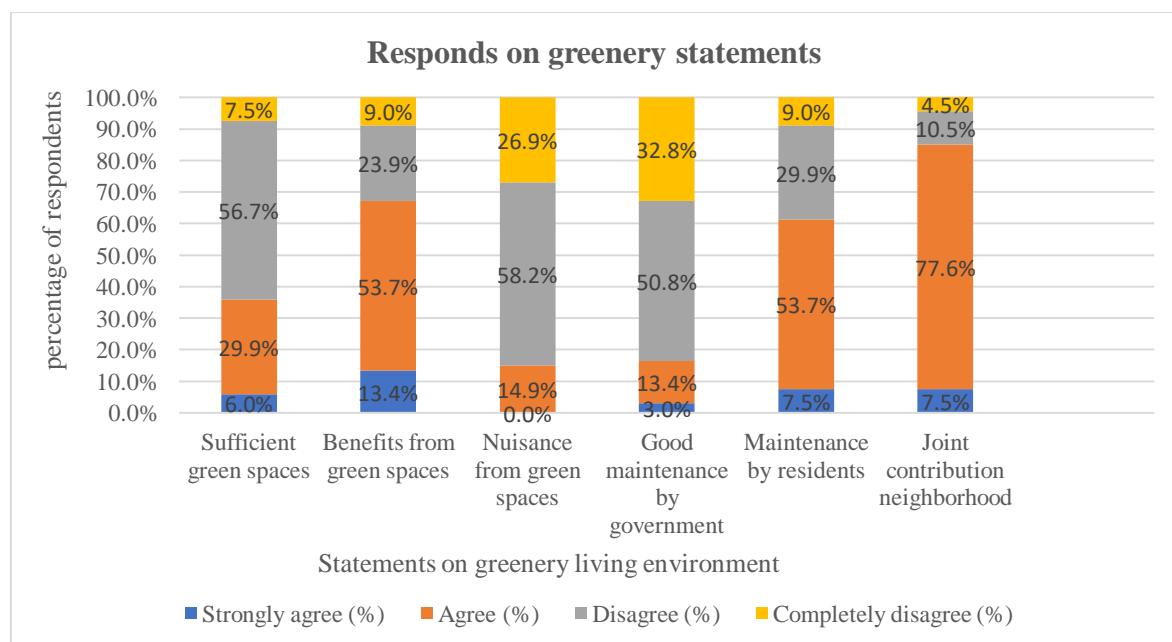
Figure 15: Statements about greenery in living-environment

More than half of the respondents agree with the fact that they retrieve some kinds of benefits frietom the UGS in their neighborhood. This is an indication that people are aware of the benefits or (ecosystem services) provided by urban green. For those who indicated that they benefit from the UGS in their neighborhood, it was checked in which way they benefit from these. The results showed that jogging and enjoying the green nature are the most common ways. However, only those who "enjoy the nature" largely indicate that they benefit from urban green, while those who go for jogging or walking, largely indicated that they don't benefit from the urban greenery (see: figure 16).
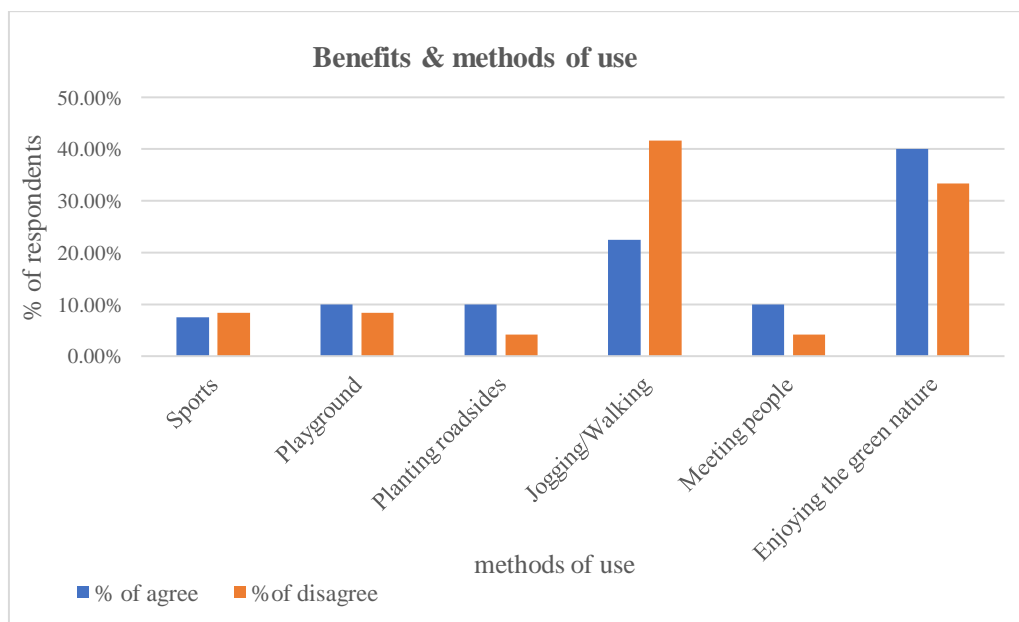
Figure 16: Percentage of respondents benefiting from green spaces

Important information from figure 15 for policy makers is that the majority of residents are not satisfied with the maintenance by the government. This could be the reason that the majority maintain their living environment themselves, which is a good initiative. The government does not have an inexhaustible capacity of finance and manpower to maintain all the public green in the whole country, making it a better option that residents ultimately take responsibility for maintaining their verges themselves. It is remarkable that the majority rather choose to jointly (in collaboration) maintain the public green space in their neighborhood.

For the respondents who indicated that they maintain the greenery in their living environment themselves, the socio-economic class to which they belong was checked. The results showed

that the self-maintenance of green areas in residential areas is not necessarily linked to a particular income class.
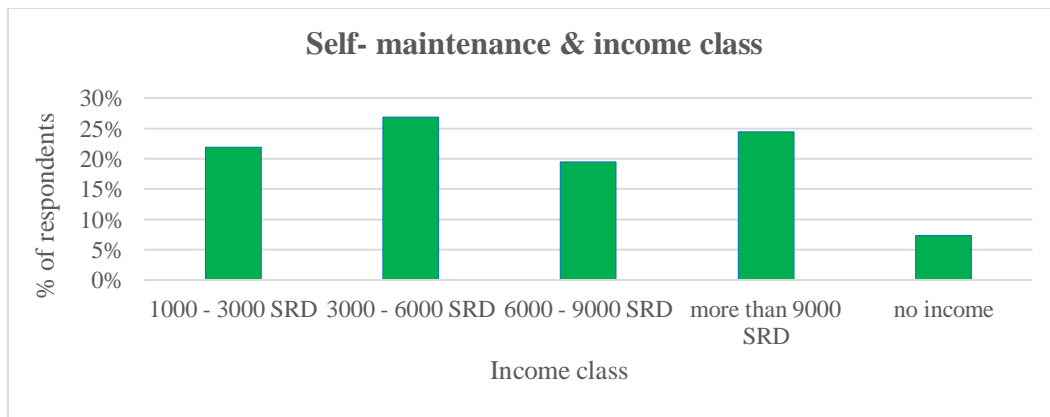
Figure 17: Percentage of respondents self-maintaining and income class

5.3   Which socio-economic factors influence these perceptions, preferences and importance of UGS?

In this paragraph the results are presented of the second research questions: "Which socio-economic factors influence these perceptions, preferences and importance of UGS?"

5.3.1   *Influence of socio-economic factors on perception of UGS*

The association between the three perception categories (A, B & C) and the different socio-economic factors (gender, age, education and income-class) were determined through the chi-square statistics as described in paragraph 4.1.4. The null hypothesis was, that there exists no relationship between the perception categories and the socio-economic factors. The results showed that no significant association was found between the socio-economic factors: gender, age, education, income class and the perception of UGS.

Table 5: Association between perception and socio-economic factors

Association	calculated chi-square value	Degrees of freedom	critical chi-square value	p-value	Conclusion
Perception & Gender	3.66	5	11.07	0.60	Fail to reject H0
Perception & Age	24.59	25	37	0.49	Fail to reject H0
ijalPerception & Education	33.94	25	37	0.11	Fail to reject H0
Perception & Income class	13.54	20	31.41	0.85	Fail to reject H0

On the contrary in a study done in in Guangzhou, China significant differences in perception were found across most socioeconomic variables, including gender, age, marital status, education, occupation, and district of residence. The sample size consisted of 59`5 respondents (Jim, 2013). A study done in two Ethiopian cities in 2018 also showed that amongst other gender, age, education level, and level of awareness are statistically significant predictors of perception (Gashu, 2019).

Apparently in this research, every respondent has an own perception of urban green. This is not linked to a specific gender, age class, level of education or income class. Each citizen observes and appreciates his or her living environment and the green aspects in his or her own way, depending on the person. Or it could also be that choosing a larger sample size might have led to some association.

5.3.2 *Influence of socio-economic factors on preferences of UGS*

Paragraph 5.2.2 has shown the 5 most preferred characteristics in an UGS. In this paragraph the influence of socio-economic factors on these five preferences are tested. Although "safety" was not on the list of the top 5 characteristics, this association has also been investigated, because literature shows an association between "safety" and gender. Table 6 shows that no significant association was found between the socio-economic factors: gender, age, education, income class and the 5 preferences in an urban green space. Though there was a significant association found between gender and safety aspects (safety and lightning in the evening), with a strong Cramer's V correlation coefficient of 0.8.

Table 6: Association between the UGS characteristics & socio-economic factors

Association	calculated chi-square value	Degrees of freedom	critical chi-square value	p-value	Conclusion
5 UGS char.& Gender	6.10	8	15.51	0.64	Fail to reject H0
5 UGS char.& Age	16.75	20	31.41	0.67	Fail to reject H0
5 UGS char.& Education	19.60	28	41.34	0.88	Fail to reject H0
5 UGS char.& Income class	5.42	16	26.30	0.99	Fail to reject H0
Safety & Gender	41.45	1	3.84	1.21E-10	Reject H0 (Cramer's V = 0.8

The overall ratio between female and male respondents is 67%: 33%, but for safety aspects we see that more women (75%) have chosen safety as one of the most important preferences. The fact that safety is a very important aspect for women can be explained by the fact that women are generally more vulnerable than men to violence and harassment. Sexual harassment and other forms of sexual violence to women and girls in public spaces, occurred often in many countries. Because of this, women are very much aware of safety in public spaces. This association between gender and safety has also been found in a study in the United Kingdom, where concerns about personal safety are also an important constraint for women to visit public places (Navarrete-Hernandez, 2021). From the above it can be concluded that not only in Suriname as a developing country, but also in developed countries, women don't feel safe in a public space.

Though in this research no significant association was found between the socio-economic factors and the preferences in an urban green space, a number of studies have been conducted abroad on identifying the preferences of specific population segments. Alves et al. (2008) studied the preferences of the elderly in Britain. To them, the most important characteristics of local parks were non-visible nuisance (dog fouling, vandalism), presence of trees, and utilities. Ode Sang et al. (2016) reported that women and older residents appreciated the aesthetic value of greenery more than men and younger people did.

5.4 How are UGS used by the local community?

In this paragraph the results are presented of the third research questions "How are UGS used by the community?"

5.4.1 Which UGS are generally most visited in Paramaribo

In table 7 an overview is given of the UGS most visited. This overview is produced from the online questionnaire for households in Paramaribo (67 respondents). The priority is indicated in order. The Palmentuin seems to be one of the favorite places. Especially after setting up Wakapasi in 2019, many visitors are attracted to this space. The second best visited is the Cultuurtuin, with the Paramaribo Zoo, the Orchideeëntuin, and the joggings activities in this area.

Table 7: Percentage of respondents visiting green spaces in Paramaribo

Priority no.	UGS	Percentage of respondents (%)
1	Palmentuin	71.7
2	Cultuurtuin	55
3	Onafhankelijkheidsplein	48.3
4	Waterkant	46.7
5	Fort Zeelandia	26.7
6	Prof. Coen Ooftplein	16.7

5.4.2 Activities in an Urban Green Space

The respondents of the questionnaires for Coen Ooftplein, Cultuurtuin and Palmentuin indicated what their activities were in these spaces, while the Paramaribo residents gave the overall indicated uses of green space. Overall, the deployed activities were ranked as followed, starting with the most engaged activity:

1) Enjoy nature/fresh air   3) Play area for children

2) Recreation / Relaxing   4) A walk through the park

An overview of the activities in an urban green space is given in figure 18.
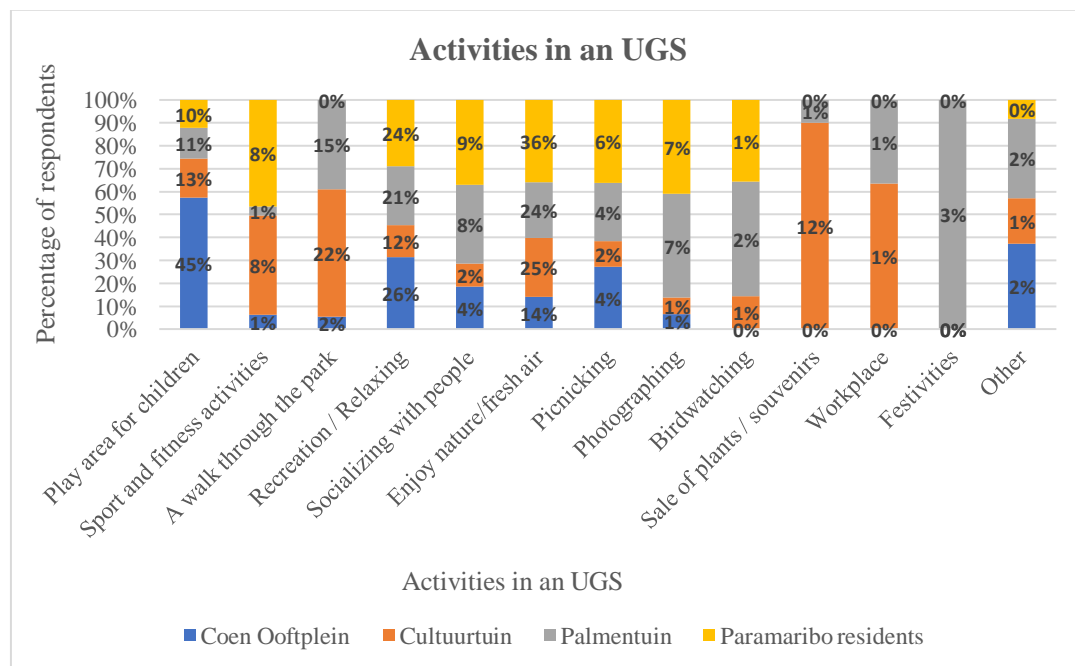
Figure 18: Percentage of respondents for activities in the UGS

Note: in the category "other", answers were included, such as: research and education, meditation, `study, waiting for family members etc.

The highest chosen activity for the Coen Ooftplein is "play area for children", which is obvious, because of the presence of the playground. This is also apparent from the target group (children in the age category from 0 to 12 years) that go to this space (see: figure 10).

Respondents of the Cultuurtuin, Palmentuin visit these places to be in nature, enjoy it and get some rest, perhaps after a busy day or busy week. It could well be that people would use the UGS differently if facilities were present for other activities. For example, if there were more sports facilities in the UGS, it might turn out that this is also a very common activity in a UGS. The main activities found during this research were quite similar to other countries. In a study conducted in Amsterdam, 'to relax' was found to be the most important motivation, followed by 'to be in nature', and 'to escape from the city' (Madureira, 2018). In Guangzhou, 'to enjoy fresh air and beautiful scenery' and 'to relax' were identified as the main motivations (Madureira, 2018). In Copenhagen the main activities were: 'socializing' and 'rest and restitution' (Peschardt, 2012). Unlike in Copenhagen, in Suriname, "socializing" is not a main reason to go to an urban green space. This could well be due to the heterogeneous population of Suriname, in contrast to the homogeneous composition in Copenhagen.
The respondents of the three UGS were also asked if they desired some other activities in the UGS, rather than the existing ones. The different answers are given appendix 7.

5.4.3 Frequency of visits

The respondents of the three UGS were asked how often they visit these spaces. The frequency of visits to the Coen Ooftplein, is very diverse for the various respondents. Most of the respondents visit the Palmentuin once every few months. For the Cultuurtuin, the frequency has been indicated for the different spaces that are visited here. The Paramaribo Zoo, is the most visited place and the majority visit this place once a year. The second most visited place is the Orchideeëntuin. The surveys showed that the people who visit on a daily basis either live or work in the Cultuurtuin. Table 8 shows the percentage of respondents per frequency of visit.

Table 8: Percentage of respondents per frequency of visits to the UGS

	Ooft plein	Palmen tuin	Cultuurtuin area							
			Zoo	Orchid	Jog-ging	Fitness	Forest track	Inst-itute	Work-place	Resi-dence
Daily	0	0	0	0	0	0	0	2	9	6
Each week	11	9	7	24	15	9	11	6	4	4
Once/month	11	5	0	0	0	0	0	0	0	0
Twice/month	4	0	0	0	0	0	0	0	0	0

Few times/month	21	20	6	11	2	2	4	6	4	2
Once/few months	26	45	13	19	9	6	11	6	2	4
Once a year	17	16	59	13	9	4	11	9	0	0
1st 2nd 3rd visit	11	5	0	0	0	0	0	0	0	0
Never	0	0	15	33	65	80	63	72	81	85

In a study, conducted in 2015 in three Portuguese cities, it was examined how often the UGS are visited (Madureira, 2018). It turned out that in the three cities Lisbon, Porto and Evora, respectively 69, 56 and 47 percent of the respondents visit an urban green space at least once a week. In another study conducted in Denmark results show that 43% of respondents visit green space every day and 91.5% visit green space at least once a week. The study showed that 66.9% of these respondents lived within 300m of green space. This indicates that distance to green space was not a limiting factor for most of the Danish population. The frequencies of the visits were also linked to the most common activity being "to enjoy the weather and get fresh air" for 87.2% of the respondents.

In contrast to Denmark, the main reason for frequent visits to an UGS in Paramaribo is not to "enjoy nature". The weekly visitors are more people who go to an UGS for their jobs, such as the plant sellers in the Orchideentuin or for jogging and fitness.

5.4.4 Duration of visit

The frequency and duration of visits is also dependent on the activities present. At the Coen Ooftplein people mostly go for playing-activities for their children, and stay there for two or three hours. In the Cultuurtuin, where the Zoo and the Orchideeëntuin, are the most visited places, the majority spent more than three hours. In the Palmentuin respondents spent about one or two hours. This could be because there are not many activities possible in the Palmentuin, besides enjoying nature, to relax, to walk or photography.

5.4.5 Use of urban green in residential areas

In the questionnaire of Paramaribo households, respondents could indicate if there was greenery present in their living environment. One respondent could choose multiple options. Almost 85 % of the respondents said to have greenery in their living environment. The respondents could also indicate what type of greenery they had in their neighborhood (table

9). It is striking that in the residential areas in Paramaribo there are more overgrown vacant plots and verges with vegetation, while green spaces that offer opportunities for movement occur only in a few cases. Parks are almost rare. The presence of overgrown empty plots could be due to lack of policy or measures from the government or because of owners living in the exterior.

Table 9: : Types of green spaces in the living environment

Type of green space	Percentage (of total 67 respondents)
Grass verge	31.3
Grass verge with plants	49.3
Trees along streets	31.3
Weeds on vacant lots	52.2
Grass fields	11.9
Sports fields	17.9
Playground	9.0
Parks	6.0
Forest	26.9

Table 9 represents the types urban greenery, while table 10 gives an overview of how respondents make use of this greenery. It is remarkable that the majority simply enjoy the green nature or they go for jogging or walking in their neighborhood. Comparing tables 9 and 10, shows that almost 17.9 % of the respondents have a sport field in their neighborhood, but only 7.5% make use of sports facilities. This could be due to bad maintenance or not easy accessibility or the present sport facilities are not applicable for the sport- interests of the people. The results show that the vast majority of people retrieve some kind of benefits from the greenery and green spaces in their immediate living environment, whether it is for sports or playing, jogging, walking or simply enjoying the beauty of nature. Only 22.4% indicate that they do not make use of the green spaces at all.

Table 10: How respondents make use of the green spaces in their neighborhoods

Use of green space	Percentage
Sports	7.5
Playground	9.0
Planting roadsides	7.5
Jogging/Walking	28.4
Meeting people	7.5
Enjoying the green nature	35.8
Not using the green spaces	22.4
Other	3.0

In the context of greenery in the living environment of the Paramaribo residences, it was also investigated what type of greenery people have in their own garden. The results of this are given in appendix 8.

5.5 Which factors influence the effective use of UGS?

In this paragraph the results are presented of the third research questions "Which factors influence the use of urban green spaces?"

5.5.1 Reasons for visiting a certain UGS

Respondents of the three UGS indicated why they chose these spaces to visit. The respondents of the Paramaribo households indicated their reasons for going to a random UGS. The respondents could choose more than one answer (table 11). The main conditions on the basis of which one makes a choice to visit a particular UGS in general were in descending order:

- The space should meet the expectations of the people;
- The space should be easily accessible;
- The distance one lives from the UGS;
- Whether it's a calm and green environment;
- There's no other (better) option for a park.

Table 11: Percentages of respondents on reasons for visiting an urban green space

Why the choice for this space	Coen Ooftplein	Cultuur-tuin	Palmen-tuin	Par'bo residents	Total (212)
It is easily accessible	12	22	22	44	100
The fitness facilities / playgrounds are better	17	5	5		27
It is the only or better option for a park	7	11	13	23	54
I live nearby	20	9	9	20	58
I work nearby	1	3	2		6
Size is big enough to spend time	8	10	7		25
It is safer here	8	4	7	7	26
It is a calm and green environment	5	24	22	1	52
This space meet my expectations	28	34	32	18	112
Other	3	3	3	2	11

Note: The category "other" contained answers like: well maintained, more visitors, animal's presence, better facilities (parking), no vagrants present etc.

Accessibility not only indicates whether the entrances to the spaces are always open to the public, but also whether it is free or paid. The latter is especially important, partly in view of the economic situation in the country. It is also remarkable that almost half of the respondents indicate that there was no better option for a park. Table 7 lists the main public UGS in Paramaribo and these are indeed limited in quantity.

Accessibility to green spaces is a clear driver for visitors. This has also been found in studies done Vietnam and Pakistan (Schetke, 2016). A study in Portugal also assessed the main motivations for using five distinct urban parks located in Coimbra (Pinto, 2021). Results showed that the main motivations were accessibility, distance to the park, transportation means, tranquility, landscape beauty and the UGS multifunctionality. The motivations are about the same as in Paramaribo. The difference lies in the landscape beauty and the UGS multifunctionality. These are not listed as motivations for visiting UGSs, but apparently it does apply. Since the establishment of Wakapasi, this area is more often visited. One of the reason for this may be the beautiful landscaping of this space, which is a good opportunity for photography.

In the questionnaire for the residents in Paramaribo 18% of the respondents indicated that they do not visit an urban green space. The main reasons were: they would rather visit a space outside Paramaribo; they don't have free time; bad maintenance of the green spaces and lack of facilities.

5.5.2 Accessibility for respondents

How often people visit an urban green space also depends on the means of transport available. It turned out that the vast majority of respondents have their own car to get to the various areas. This is shown in the graph below.
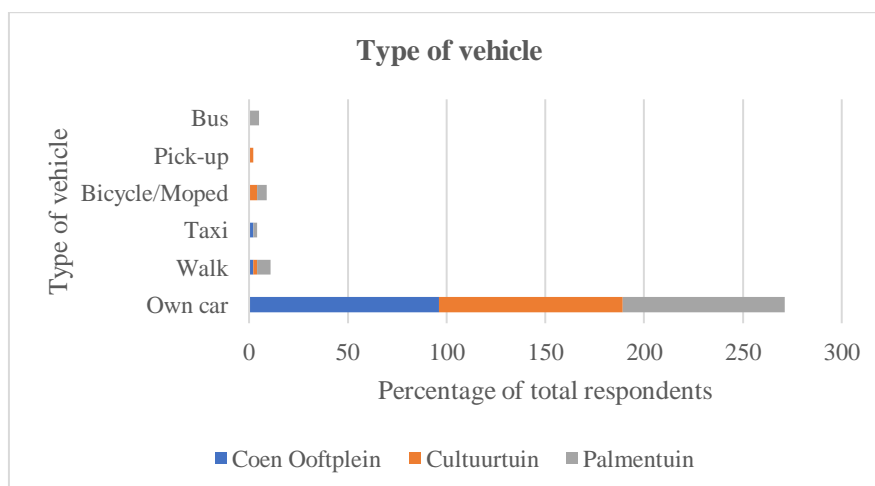
Figure 19: Percentage of respondents on types of vehicles

5.5.3 Experiencing nuisance

In addition to the enjoyment offered by the green spaces, visitors also experience nuisances in these spaces. It is striking that in all three spaces, vagrants caused the most nuisance, but this was the highest in the Palmentuin. Mainly due to the presence of huts and benches, the homeless (vagrants) are housed here. They create an unhygienic situation in the Palmentuin and also harass visitors.

Table 12: Percentages of respondents experiencing nuisances

	Coen Ooftplein	Cultuurtuin	Palmentuin	*Total*
Crowded with visitors	4	3	3	*10*
Noise disturbance	8	5	5	*18*
Trees are a hindrance	0	0	1	*1*
Criminal activities	2	6	7	*15*
Drunken people	5	0	2	*7*
Junks or vagrants	15	17	27	*59*
Unpaved or bad roads	0	4	1	*5*
Flooding	2	6	1	*9*
Litter	17	28	21	*66*
Unsafe place	5	6	5	*16*
Deforestation	0	7	0	*7*
Vandalism	5	11	3	*19*
Other	2	6	1	*9*
Total	*65*	*99*	*77*	*241*
None	15	17	12	

Note: Under the category "other" answers are included like: no security present, ants from trees, fallen trees, stray dogs, parking attendants etc.

To ensure optimal use of the green spaces, the nuisances must be tackled. Intervention of the government in this is very important. Nuisance caused by litter is highest in the Cultuurtuin. This is partly due to the fact that some parts of this area are deserted and the presence of junkies in this area. Poor maintenance also contributes to this. Tall grass on the roadsides and bushes along the roads are attractive for people to illegally dump waste here. Vandalism is mostly the case in the Orchideeëntuin where vagrants and junkies come to spend the night and destroy the features present here. Noise disturbance was mainly experienced at the Coen Ooftplein, caused by traffic.

Association between nuisances and frequency and time spent in an UGS

The association between the nuisances and the frequency of use and time spent in the green spaces, was tested through the Chi-square statistics. There was no significant association found between these variables (see table 13).

Although a large proportion of the respondents experienced nuisances, this is not a reason that people go to the places less often or stay less long. This could be due to the fact that there are few other options for parks, while there is a need to go such green spaces. In this way, despite all the burdens experienced, people still make use of these spaces.

Table 13: Association between nuisances and frequencies and time spent

Association	Statistic chi-square value	Degrees of freedom	Critical value from table	p-value	Cramer's V-test	Conclusion
Nuisances & frequency	22.44	30	43.77	0.84	0.16	Fail to reject Ho
Nuisances & time spent	10.91	20	31.41	0.95	0.13	Fail to reject Ho

5.5.4   Influence of factors on the use of an urban green space

Association between age, gender and activities

The association was examined between different categories of activities and the socio-economic factors: age and gender. These categories are based on the potential activities that may fall under areas of interest of various age groups or gender. For example, older people are more likely to sit and enjoy nature or to socialize and young people prefer exercise activities. The different categories of activities are:

- physical activities: play area for children, sport and fitness activities and recreation;
- socializing: socializing with people and picnicking;
- enjoying nature: a walk through the park and enjoy nature.

The null-hypothesis was that no relationship exists between the use (activities) in an UGS and the age or gender of the respondents. The only significant association (Cramer's V = 0.30) found, was between respondents between the age of 20 and 39 and the physical activities.

Table 14: Associations between age, gender and activities in an UGS

Association	Statistic chi-square value	Degrees of freedom	Critical value from table	p-value	Cramer's V-test	Conclusion
age 20-39 & physical activities	12.70	2	5.99	0.002	0.30	reject H0; variables dependent
age 50 up & enjoying nature & socializing	1.72	2	5.99	0.42	0.19	Fail to reject Ho
gender & physical activities	0.97	1	3.84	0.32	0.08	Fail to reject H0;
gender & socializing	1.97	1	3.84	0.16	0.18	Fail to reject H0;
gender & enjoying nature	2.53	1	3.84	0.11	0.10	Fail to reject H0;

The fact that a significant association was found between the age group 20 – 39 years might be because these young adults bring their small children to the playground or they are themselves physically more active than the other age categories.

Something similar has been found in a study done in Malaysia, where the age group between 26 and 32, had the highest probability to use the park for recreational purposes, while the 33-40 years group had the lowest probability (Aziz N. A., 2018). A study done in Copenhagen showed that people aged 50 to 65 years are more likely to visit the small public UGS for 'rest and restitution' than the younger age groups. Furthermore, the older people are also more likely to socialize (Peschardt, 2012). It might well be that a larger sample size is needed to find more significant associations. In the above two studies respectively 686 and 1,692 respondents participated. Or it might be that the other activities such as enjoy nature and recreation are done by everyone, regardless of age group or gender.

Association between frequency and distance, 4 common activities, socio-economic factors and perceived characteristics

In this paragraph the influence of distance to the UGS, the 4 common activities, the socio-economic factors (age, education and income class) and perceived characteristics on the frequency of visits has been investigated.

Frequency and distance

The distance between the visitor's residence and the visited UGS was determined using the module Network Analyst ArcGIS 10.8 software. A map with the demarcations of the ressorts in Paramaribo was placed over the OpenStreetMap map of Suriname. The mean center of each ressort and each UGS area was determined using the Mean Center tool within the Spatial Statistics module (figure 20). The distance was measured from the center (midpoint) of each ressort to each of the 3 UGSs. This system was used because the exact residential addresses of the respondents were not requested in the questionnaire, but they could simply indicate their neighborhood.
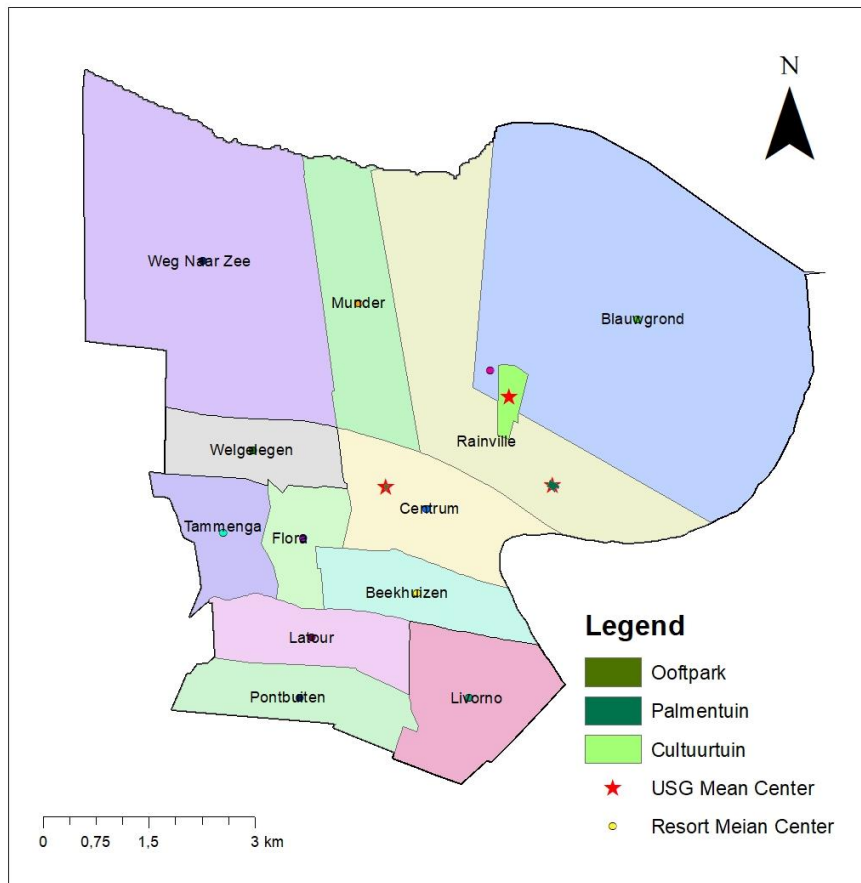
Figure 20: Location the mean centers of surveyed UGS in Paramaribo

These distances from the center of each ressort to each of the UGSs were categorized and used to establish the association with the frequency of visits in figure 21. It is remarkable that the frequency of "a few times per month" decreases remarkably when the distance exceeds 20 km. This also applies to the weekly visits.
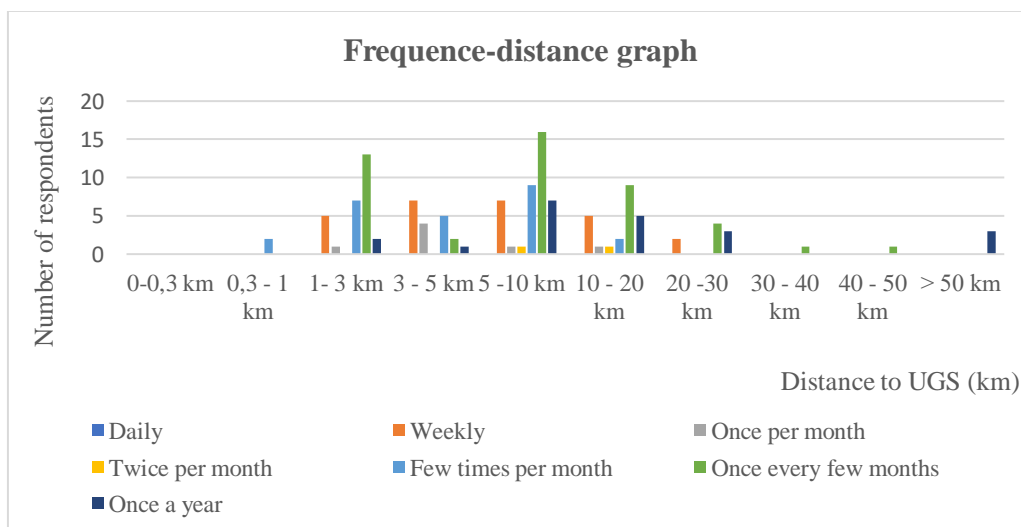
Figure 21: Association between the distances and frequency

Subsequently, it was checked how many respondents occur per distance category. The results show a decreasing trend in the number of visitors with increasing distance to the UGS (figure 22).
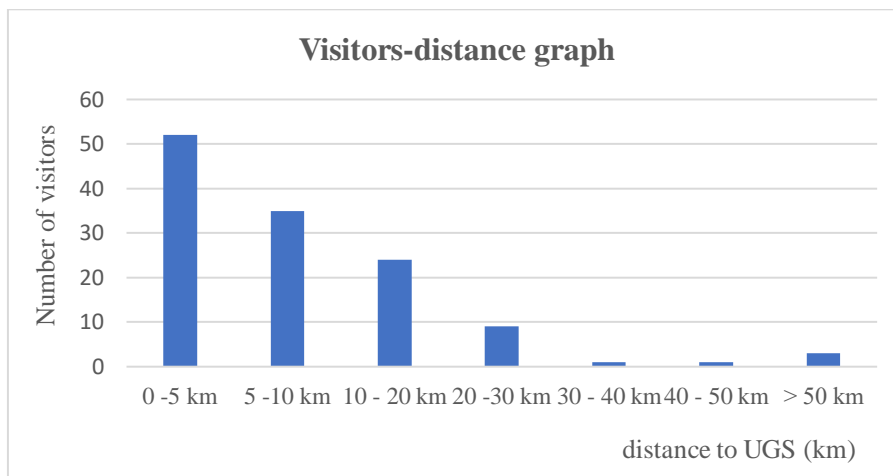
Figure 22: Association between the distances and number of visitors

That distance has a direct influence on the use of the UGS, has also been shown in other studies. For example, a literature review on various studies on urban parks has shown that having more local parks within walking distance, positively associates with park use, while the necessity of driving to reach a park often deterred use (McCormack, 2010).

Another study done in Helsinki, Finland, showed that a good number of green areas and easy access (*i.e.* short distance) to a recreational space increase the number of visits and people living close (nearer than 0.5 km) visited the green spaces more frequently (more than 4 times per week) (Shah, 2011).

Analyzing pedestrian accessibility to the park, it can be assumed that the residents of ressorts Weg naar Zee and Pontbuiten are least likely to visit it. The highest probability of park visitation indicated for residents of the Centrum, Rainville, the southern and western parts of Blauwgrond, and the southern and eastern parts of Munder.
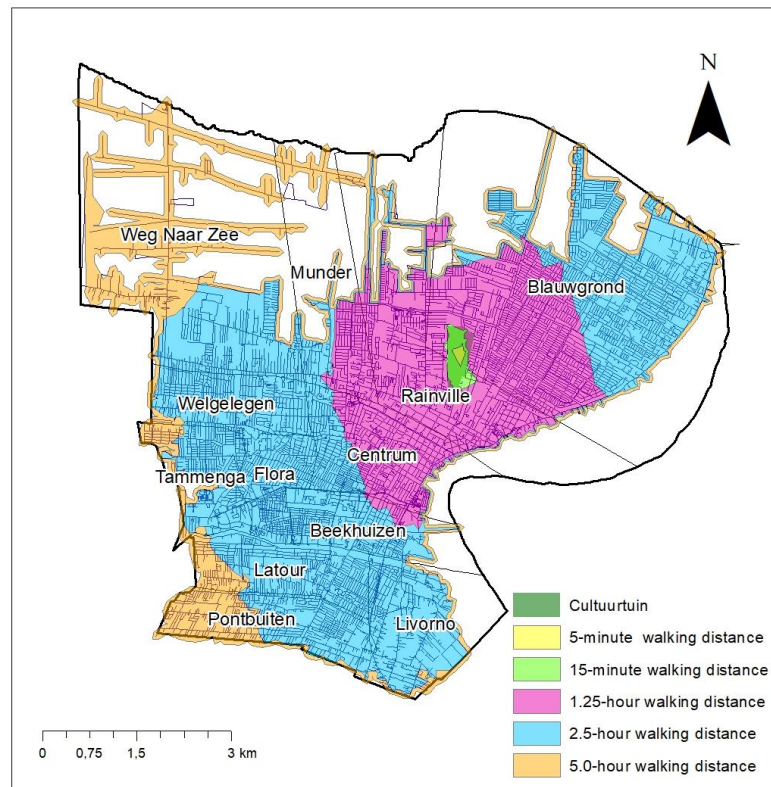
Figure 23: Pedestrian accessibility to the Cultuurtuin area for the residents of Paramaribo
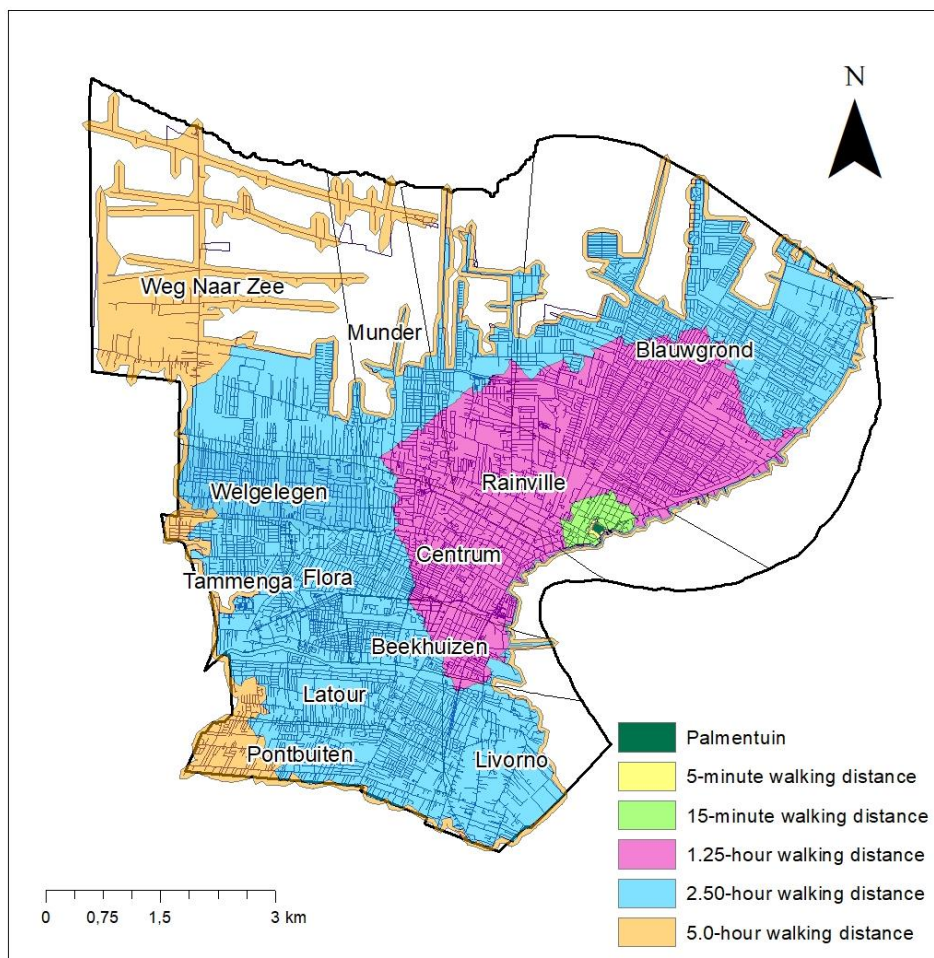
Figure 24: Pedestrian accessibility to the Palmentuin for the residents of Paramaribo

The most likely visitors to Palmentuin may be residents of the Centrum, Rainville, the southern and southwestern parts of Blauwgrond, as well as the northwestern and western parts of Beekhuizen.

Among the surveyed UGSs, Prof. Mr. Dr. Coen Ooftplein park is the most accessible, with a high likelihood of visitation for residents of ressorts such as Centrum, Rainville, Welgelegen, Tammenga, Flora, Beekhuizen, and residents of the eastern part of Latour Ressort.
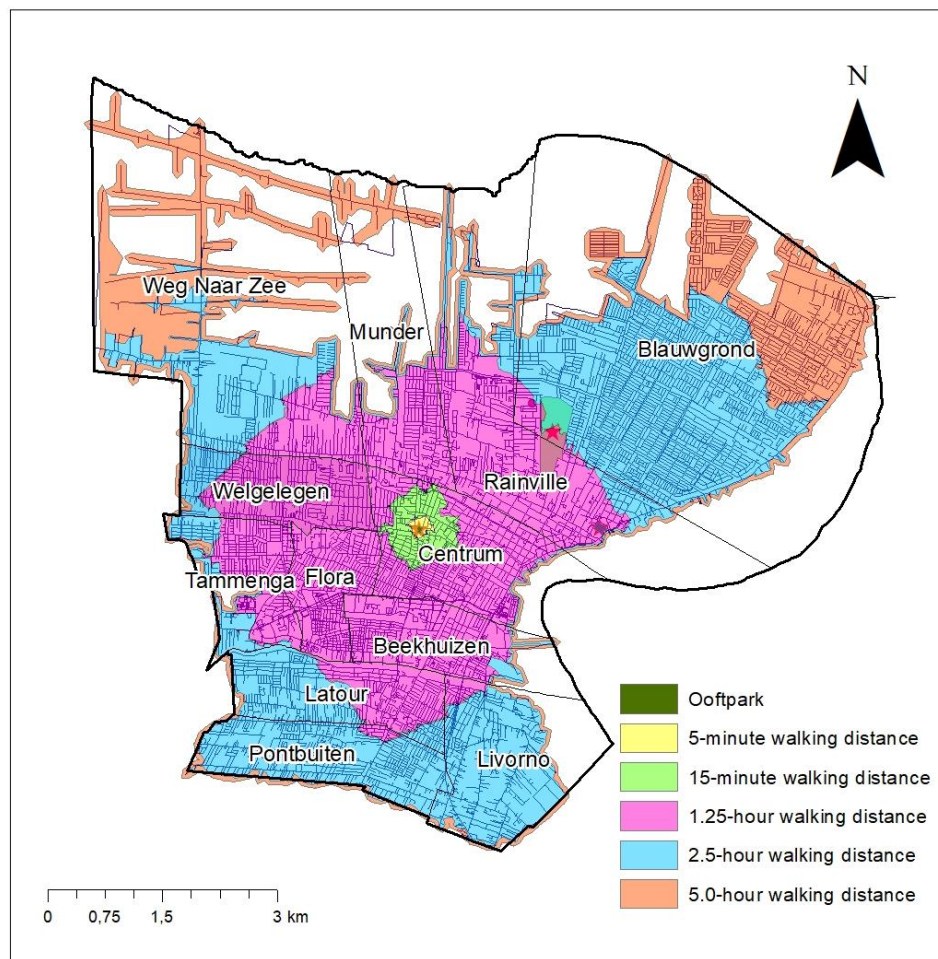
Figure 25: Pedestrian accessibility to the Coen Ooftplein for the residents of Paramaribo

This information proved to be valuable when conducting offline and online surveys of visitors to urban green spaces.

Association between frequency and other aspects

The associations between the frequency of visits on one hand and socio-economic factors, the 4 most common activities and the perceived characteristics on the other hand were investigated. The only significant association found was between frequency and the perceived status of presence of a playground (good, moderate bad).

Table 15: Associations between frequencies and other aspects

Association	Statistic chi-square value	Degrees of freedom	Critical value from table	p-value	Cramer's V-test	Conclusion
Frequency & 4 common activities *	28.21	24	36.42	0.25	0.17	Fail to reject H0
Frequency and socio-economic factors						
Frequency & age	34.21	35	49	0.51	0.22	Fail to reject H0
Frequency & education	51.87	42	58.12	0.14	0.25	Fail to reject H0
Frequency and income class	20.78	28	41.34	0.83	0.19	Fail to reject H0
Frequency and perceived characteristics of the UGS						
Frequency and safety	13.55	14	23.68	0.48	0.22	Fail to reject H0
Frequency & presence of nature	12.84	14	23.68	0.54	0.21	Fail to reject H0
Frequency & peaceful environment	12.81	14	23.68	0.54	0.21	Fail to reject H0
Frequency & presence playground	31.08	12	21.03	0.001	0.34	Reject H0
Frequency & presence of good facilities	16.97	14	23.68	0.26	0.24	Fail to reject H0
Frequency & accesibility	11.94	14	23.68	0.61	0.20	Fail to reject H0
Frequency & Cleanl/ Mainten	12.07	14	23.68	0.60	0.20	Fail to reject H0

*The 4 common activities are (see: paragraph 5.4.2): "play-area for children", "a walk through the park", "recreation/relaxing" and "enjoying nature".

The results showed that respondents who go to a UGS more often have the overall opinion that the presence of a playground is good (figure 26).
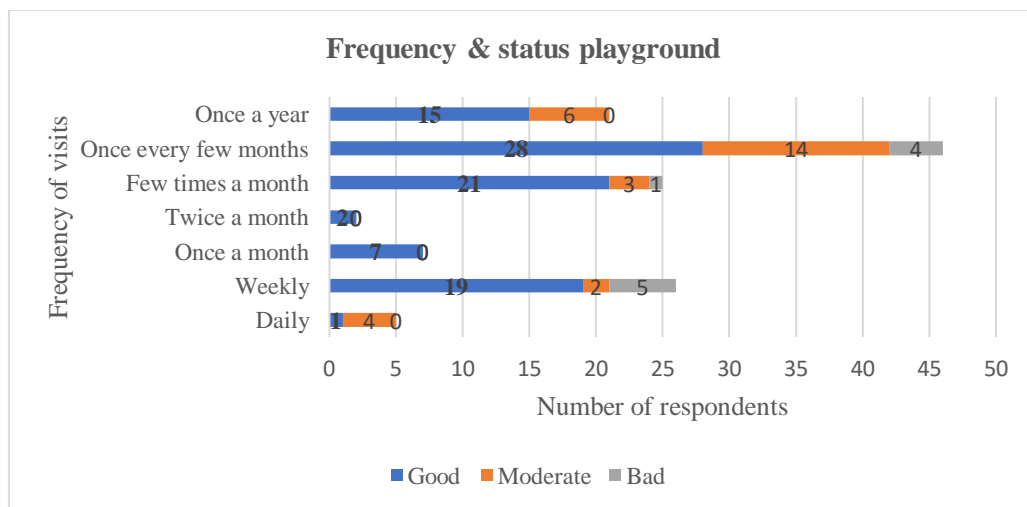
Figure 26: Association between frequency and the perceived status of playground

Influence of factors on time spent in an UGS

The association between the time spent on one hand and the 4 most common activities and the perceived characteristics on the other hand were examined. A significant association was found (Cramer's V-test = 0.26) between time spent and safety (table 16).

Table 16: Associations between time spent and the activities and perceived characteristics

Association	Statistic chi-square value	Degrees of freedom	Critical value from table	p-value	Cramer's V-test	Conclusion
Time spent & 4 most common activities *	7.641	15	25.00	0.94	0.09	fail to reject H0
Time spent & UGS characteristics						
Time spent & peaceful environment	8.685	10	18.31	0.56	0.17	fail to reject H0
Time spent & peaceful environment	15.27	10	18.31	0.12	0.23	fail to reject H0
Time spent & presence of playground	7.70	10	18.31	0.66	0.16	fail to reject H0
Time spent & good facilities	12.70	10	18.31	0.24	0.20	fail to reject H0
Time spent& presence of foodstands	7.15	10	18.31	0.71	0.16	fail to reject H0
Time spent& cleanliness&maintenance	14.34	10	18.31	0.16	0.22	fail to reject H0
Time spent& safety	19.64	10	18.31	0.03	0.26	Reject H0

* The 4 common activities are: "play-area for children", "a walk through the park", "recreation/relaxing" and "enjoying nature".

Among the people who spend an hour, two hours or two to three hours at an UGS, it is noticeable that fewer people report that safety is bad. Of people who stay for an hour or less, at least 31% indicated that safety is bad, while people who stay for about two or three hours, it is noticeable that the proportion who indicate that safety is bad is significant less.
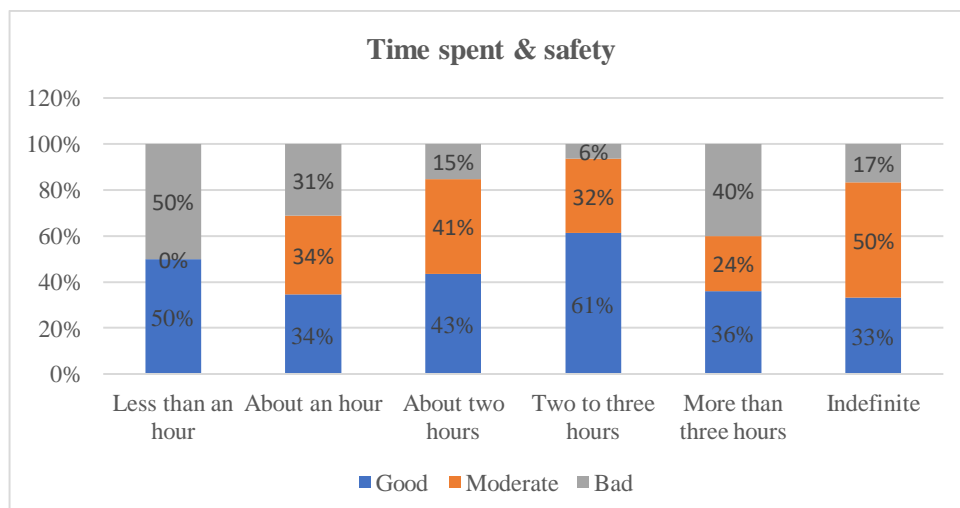
Figure 27: Association between time spent and perceived safety

The aspect of safety also plays an important role in the use of UGS in other countries. A study done in Santiago showed that there was a prevailing concern for safety, especially the danger of visiting green spaces at night, and the perception of being exposed to crime (de la Barrera, 2016).

5.6 What are the perceived ecosystem services provided by UGS?

During this research, it was also investigated which the perceived ecosystem services or benefits were for the respondents in an UGS. The ecosystem services that people experience the most in the three UGS or in their living environment are in descending order:

- Cooling the environment and combating heat stress,
- Peaceful environment,
- Recreation and Ecotourism,
- Air quality regulation,
- Beautifying the environment,
- Storage of carbon dioxide and
- Cultural Historical value (Palmentuin &Cultuurtuin).

The above-mentioned are the most chosen benefits by the respondents. These can be "felt" or "perceived" directly in the green space or which people know by general knowledge. The "felt" or "perceived" benefits are the "cooling of the environment", "peaceful environment", "beautifying the environment" and "recreation". From general knowledge respondents know that trees are important for the storage of carbon dioxide and for air quality regulation
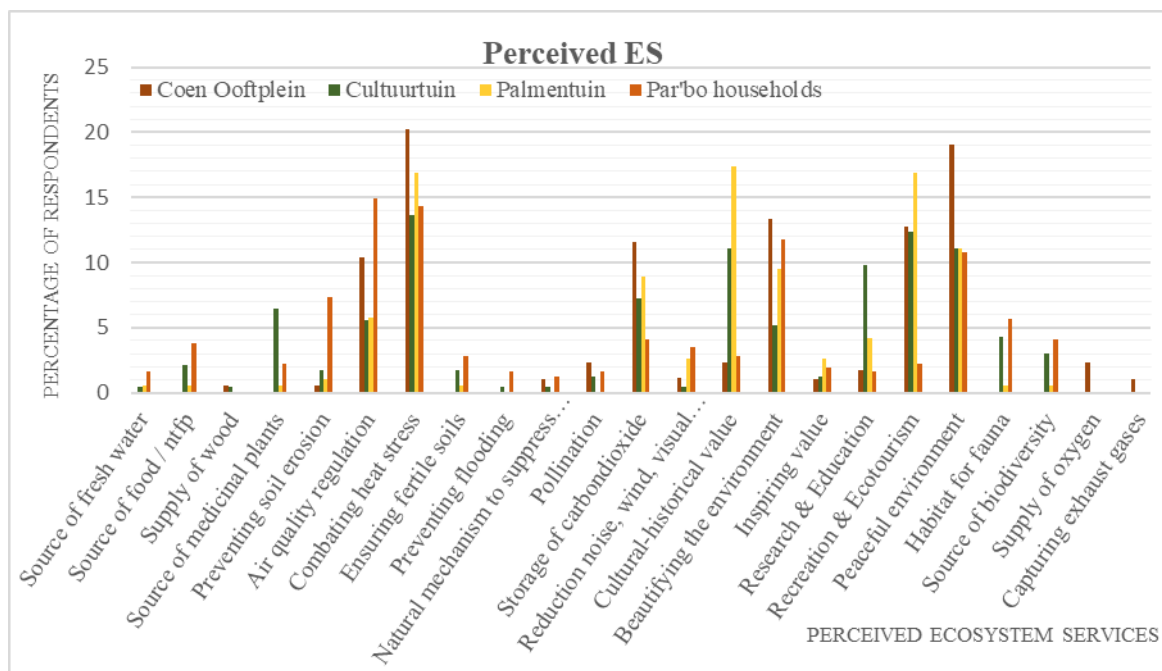
Figure 28: Overview of the perceived ecosystem services

A full overview of the perceived ecosystem services in the UGSs is shown in appendix 9.

Out of the 7 most frequently mentioned ecosystem services experienced in Paramaribo, "cooling the environment", "recreation" and "beautifying the environment", were also indicated as the three most important services in studies abroad. In a study done in Bangladesh, namely aesthetic value (beautifying the environment) and shading and cooling effect were identified as the most important benefits from greenspaces (Ahmed, 2003). In Hungary the ecosystem services which influence the visitors' levels of satisfaction and the self-reported quality of life were predicted. These services were: visual appearance of the UGS, the perception of nature, the perceived recreational capacity, habitat and microclimate regulation (Kothencz, 2017).

5.7 How are the UGS managed and what are the bottlenecks in this?

In this paragraph it is indicated how maintenance of the UGS takes place from the perspective of the visitors as well as the mangers of the spaces.

5.7.1 Perspective respondents on maintenance

In this part of the questionnaire respondents could indicate their opinion on the maintenance of the three urban green spaces and the living environment (Paramaribo households questionnaire). The results are shown in figure 29.
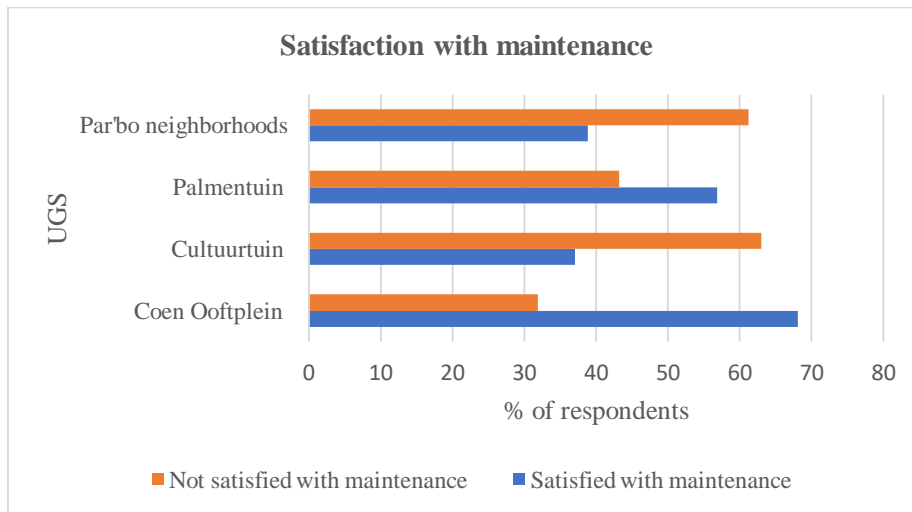
Figure 29: Overall satisfaction with maintenance in the UGS

Respondents were most satisfied with the maintenance of the ***Coen Ooftplein***. In their motivation, respondents indicated that dissatisfaction usually stems from litter on the site. In most cases, these are left behind by the visitors themselves or by vagrants who come to this space. This is usually the case in weekends when there are many visitors. During the period of the questionnaires, the toilets were also out of order, which made people dissatisfied with this square. Since december 2020 these are again open for public use.

As far as the ***Cultuurtuin*** is concerned, it can be noticed that the biggest part is not satisfied with maintenance. In their motivation, people have indicated that they are satisfied with the maintenance of the Paramaribo Zoo and the Orchideeëntuin. The dissatisfaction usually lies in poor maintenance of the area itself, especially the roads, the verges, the waterways, the trees, the botanical garden. The jogging-track is often inaccessible due to fallen trees or plants which grows towards the tracks.

A major problem within the Cultuurtuin is illegal waste dumping, done by outsiders usually. Furthermore, the many junkies in this area also create an unhygienic and unsafe situation in the area. The poor lighting contributes to this.

In the ***Palmentuin-area*** people have been interviewed both in the Palmentuin itself as well as at the Wakapasi. The live interviews showed that people were very satisfied with the maintenance of Wakapasi, while they were dissatisfied with the Palmentuin. There is usually litter in the Palmentuin. The waste bins are not emptied regularly. The presence of vagrants and poor lighting also causes discomfort for respondents. The maintenance of the palm trees is not optimal, causing hazards for visitors. The toilets in the Palmentuin are never open and the waterways and specially the pond, is poorly maintained.

Regarding the presence of maintenance employees, 65 to 70 percent of respondents, said they did not see any employees. This may be due to the fact that no maintenance employees are available for the space (for example, Cultuurtuin) or the employees are not present in the afternoon hours when these spaces are visited (for example Coen Ooftplein and Palmentuin). Concerning maintenance of the **greenery in the living-area** of Paramaribo, most respondents were dissatisfied about the maintenance. Reasons for this dissatisfaction included: no (optimal) maintenance by the government and presence of neglected plots or verges overgrown with weeds. These were a source of waste dumping and also posed a danger to traffic.

In addition to their opinion on the overall maintenance of the spaces, respondents were also asked to rate the maintenance of specific aspects. The results are given in appendix 10.

The interviewees of the Paramaribo households were also asked who maintains the green spaces in their residential area. Fifty percent of the respondents indicated that the local residents (owners) maintain the spaces themselves. Twenty-six percent indicated that the government does the maintenance of the greenery in their neighborhood. Nineteen percent indicated that the greenery in their area was not maintained at all.

5.7.2 Perspective green space managers on maintenance

Management of the Cultuurtuin

STINAPA has no maintenance employees under its management. As a result, no structural maintenance can take place in the Cultuurtuin. STINAPA relies heavily on the Ministry of Agriculture, Animal husbandry and Fisheries or the Directorate of Public Green and Waste Management for maintenance or removal of trees and maintenance of the roadsides (M. Jagroep, personal communication, August, 2021). According to the STINAPA, the 3 most important aspects for capacity enhancement in order to reach optimal maintenance are:

- Manpower and equipment: Director STINAPA will have to lead an implementation team with equipment;
- Staff training; training for tour guides; park rangers;
- Finances: grants/ partnerships and third-party funding.

Management of the Palmentuin

The Directorate Culture has 15 employees who take care of the daily maintenance of the Palmentuin. The maintenance includes getting rid of weeds on the site, clearing waste, clearing fallen leaves and branches. However, the number of employees is not sufficient to guarantee optimal maintenance. Assistance is requested from the Directorate of Public Green and Waste

Management for mowing the park, removal of waste and tree maintenance. For optimal maintenance of the Palmentuin, there should be a management council, consisting of representatives of: Cabinet of the President, Directorate Culture, District Commissioner and the Directorate of Public Green. Clear written agreements must be made about who is responsible for which task. The necessary capacity enhancement lies mainly in: financial resources, expertise and manpower (C. Braam, personal communication, May, 2021)

Management of Wakapasi

The management of the Wakapasi is done by the Wakapasi foundation. This foundation takes care of the maintenance of this space, the exploitation of the toilet building and security of the area. The finances for these are retrieved from the monthly contributions paid by the exhibitors, hiring a cabin here.

Nuisances experienced at the Wakapasi are odor from the Sommelsdijckse creek, loud music from cars, harassment of visitors by junkies, litter and vandalism (plants are stolen). The foundation is able to maintain and secure the Wakapasi on her own; there is no need to increase capacity. Although, for optimal management, it would be best to elevate this foundation to a parastatal company (S. Sweeb, personal communication, August, 2021).

Management of the Prof. Mr. Dr. Coen Ooftplein

The Coen Ooftplein is managed and overall maintained by the Directorate of Public Green and Waste Management of the Ministry of Public Works. The playground located on this square is maintained by the Innerwheel Club Paramaribo. The toilet building is rented to a contractor, who is responsible for maintenance and operation of the toilet building. For optimal maintenance of the square, staff is needed for two shifts: 7 to 3 am and 3 to 9 am; also in weekends. Maintenance is done from the state budget.

The bottlenecks that the directorate experiences with the maintenance are: lack of an aerial work platform for optimal maintenance of the trees; vandalism taking place on the playground equipment and garden furniture; no optimal presence of personnel; not optimal availability of material (e.g. hedge trimmers); no maintenance on weekends, due to government working hours (R. Kasantirto, personal communication, February, 2021).

The three aspects for capacity enhancement for optimal management of the square are:

- Purchase of equipment such as brushcutters and hedge trimmers;
- Rotation of working hours and making staff available for the afternoons and weekends;
- Donation of more exotic plants for the square.

From the above it can be concluded that optimal maintenance of green spaces is a challenge in Suriname. This not only the case in our country, but also abroad. From a study conducted in 2015 in Portugal, it turned out that in two of the three examined cities on average 50% was satisfied with the quality and in the third city a minor part of 39% was satisfied (Madureira, 2018).

A lack of finances is not always the cause of poor maintenance of public spaces. This is evident from the case study done in Karachi, Pakistan. Most of the parks here are managed on a financially self-sustaining basis but still people complain about the cleanness and maintenance of the spaces. The main reason for this is that most parks in Karachi have insufficient staff to fulfill maintenance responsibilities (Qureshi, 2013).

Maintenance of public spaces remains a challenge for the government, because in Paramaribo these spaces are not financially self-sustaining. This is certainly the case in the Palmentuin, Cultuurtuin and Coen Ooftplein. A clear difference is noticed with the Wakapasi, where maintenance and security are paid from a self-generated income-source. And this is clearly noticeable in the appearance of this space, it is aesthetically pleasing, very well maintained and neat toilets are available. Coen Ooftplein is also maintained in public private partnership, with the Innerwheel Club. There is also an overall satisfaction with maintenance of this space. From the above information, it is clear that the 3 most important aspects for capacity-enhancement are: finances, expertise & manpower and equipment. Sometimes organizational measures can also help to optimally maintain a space. For example, making maintenance personnel available in the afternoons and weekends, as indicated for the Coen Ooftplein or putting together a maintenance team for the Cultuurtuin. Awareness and written instructions to visitors couldalso reduce waste in the spaces. Residents of Paramaribo were moderately satisfied or dissatisfied with the maintenance of green spaces in their neighborhoods. The government does not have an inexhaustible source of manpower and finances to maintain all green spaces all over the country. But the government is the one who makes policy and can give incentives to households and neighborhoods for the maintenance of their immediate living environment.

The respondents could also give their opinion about their own responsibility and contribution for the maintenance of the green spaces. The results of these are given in appendix 11.

Finally, the respondents were asked what they think that the government should do in general, regarding green spaces in Paramaribo. The results are shown in appendix 12.

5.8. Constraints in the research

Some methodological constraints in the research were:

1) Two different sampling techniques were applied in this survey: live-interviews and online questionnaires. This might have led to potential biases. The distribution of an online survey via social media might have led to an underrepresentation of older people as well as lower - educated people. As the results showed that the majority of respondents consisted of high-educated people, there could have been a slight overrepresentation of this group in relation to the lower educated.

2) A limitation in the study was that the precise geographic location of the respondents was not available to measure the exact distance to the UGS. Due to privacy considerations the interviewees were not asked for their exact address.

3) The selection of the eighteen urban green space characteristics could be extended, or possibly some different characteristics could also be used. On the other hand, some characteristics could also be merged; for example, "Presence of enough nature" and "Rich in flora diversity", seems very similar, this could be one characteristic. Although it has been included as separate in several literatures.

4) Similarly, when naming the activities in an urban green space there are some that are roughly similar and that could in principle be placed under 1 category. In particular: "A walk through the park", "Recreation / Relaxing" and "Enjoy nature/fresh air/peaceful environment", could in principle be placed under one category.

5) When asked to select the 5 most preferred characteristics, the order in which they were listed may have played a role in indicating the requested. "Presence of enough nature" was first on the list, followed by "Rich in flora diversity". It may be because of this that these two were for sure on the list of the top 5 characteristics.

6) The risk (uncertainty) with online questionnaires is that when completing the questionnaire, the interviewee is not physically present at the location, while many questions were related to opinions, based on the physical conditions of the space.

7) Because the questionnaire for the Paramaribo households was also online, it was not possible to check whether people who do not live in Paramaribo have also completed the questionnaire.

Chapter 6   Conclusion and Recommendations

6.1 Conclusion

As a result of urbanization, much of the urban green has been removed for residential or infrastructural projects. Furthermore, the perceptions and use of present UGS are under-evaluated topics in Suriname, which led to the main objective of this research to analyze perceptions, uses and management of UGS in Paramaribo.

The results have shown that people's perceptions on urban greenery are mainly based on what a green space is (description) or on what it should be (definition) or by citing examples. The main preferences in an UGS, such as presence of nature, cleanliness and maintenance and good facilities, must be taken into consideration by the government when designing new and managing existing UGS to meet users' needs. This will increase people's satisfaction and the quality of life in cities.

One of the main strengths of this survey was the information gained on the main uses of the UGS in Paramaribo and the factors influencing these. The current activities of the users were based on the current possibilities which were present in the green space. For example, the presence of playgrounds leads to activity "play area for children"; the presence of greenery lead to activity "enjoying nature". This study revealed an association between users in the age category 20 to 39 years and the physical activities. The main motivation for visiting an UGS is that it should meet the user's expectations. What exactly one expects from a green space can be determined specifically by means of a survey. Accessibility and distance are also important for visiting a green space. The closer to home, the more often green spaces are used, which also has been shown in this study. It is therefore recommended that the government should bring green spaces closer to the people, also in the suburban areas. The few existing green spaces are currently concentrated in the center of Paramaribo. It is also very important to counteract or reduce the nuisance that people experience in a green space, mainly: vagrants, litter, vandalism, noise disturbance and insecurity. Special attention should be paid to the safety aspects, which affects the duration of visit and female visitors.

The greenery currently present in the citizen's living-environment consists largely of neglected plots with weed, grass verges and to a lesser extent trees and forest. The neglected plots, is more of a nuisance for the residents. Nearly all respondents consider UGS as important or very important for the quality of life. The cooling effect is very important here, especially in the context of climate change. The peace and relaxation offered by these spaces is also important for people's mental health. The main management constraints are finances, manpower and

equipment. Nevertheless, maintenance could already be improved with some organizational measures. It is recommended that residents are also involved in the maintenance of the green spaces, as many have indicated that they would like to help with this.

This study confirms the results from earlier studies, in developing and developed countries, about the preferences and use of UGS. It also adds to the international discussions on the use and importance of green spaces in cities.

This research can be seen as a first step towards collecting data on the use of UGS in Suriname. The results can very well be used by management authorities to improve the green spaces, in order to attract more users and to offer various experiences for the different user groups.

6.2 Recommendations

In this section recommendations are given for future research in order to reduce the knowledge gap on UGS for Suriname as well for other tropical cities with a similar demographic, geographical and socio-economical profile.

This study focused on exploring a set of factors associated with the use of green spaces in Paramaribo. However, it is necessary to better define how each of the factors leads to more frequent, intense and varied uses, in terms of both activities and the diversity of users. Such research also requires an integrated analysis of how different factors influence or empower each other.

This study provides a useful and still rare insight into the use of public parks and users' preferences in Paramaribo. Frequent studies on these aspects can help to better identify the needs for users and can lead to improving the green spaces in Paramaribo.

To identify the use of urban greenery in the residential areas, an online questionnaire was conducted that was open to all respondents in Paramaribo. To obtain more specific information about urban green in various ressorts, specific surveys must be carried out, for example in ressorts of various socio-economic classes or in urban and suburban areas. This could be an input for the governmental institutions to make policy on maintenance of urban green in different areas.

In this research only the perceived services by respondents were listed. There should be detailed research into the services offered by green spaces. This can increase vision for the importance of these spaces.

This study looked at the individual factors and the physical factors that influence the use of a green space. It is recommended to consider other factors that make a green space attractive for

the visitor. Developing a method to assess the attractiveness of green space as experienced by the users, is another issue worth exploring.

There is yet much research needed on the quality and use of greenspaces, not only in terms of perceptions, use and management of these spaces but also in terms of:

- How to improve the image that people have about green spaces.
- How green spaces can increase community attachment and social cohesion
- How higher quality spaces can encourage the use of these for leisure and entertainment activities by inhabitants.

The Directorate of Public Green and Waste Management (Direktoraat Openbaar Groen en Afvalbeheer), responsible for maintenance and management of public urban green spaces in Paramaribo, could employ this finding to prioritize the maintenance and development of the most popular public UGSs.

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List of appendices

Appendix 1: Questionnaires for the Cultuurtuin

Percepties over en het gebruik van stedelijk groen - Enquête voor bezoekers en inwoners van de Cultuurtuin

Dit studentenonderzoek maakt deel uit van het project 'Naar een Groen en Leefbaarder Paramaribo' welke als doel heeft het bevorderen van groen ten behoeve van een gezonde enleefbare woonomgeving. Meer informatie over het project is te vinden via www.groenparamaribo.org. Door de enquête in te vullen draagt u bij aan kennis en informatie voor verbeterde inzichten en besluitvorming omtrent stedelijk groen. Daarnaast ondersteunt u de wetenschappelijke vorming van (toekomstig) kader op dit gebied. Deze vragenlijst is slechts bestemd voor personen die de Cultuurtuin wel eens hebben bezocht.

*Vereist

Dit onderzoek is anoniem. Door mee te doen stemt u in dat uw antwoorden worden gebruikt ten behoeve van studentenonderzoek en het analyseren van de denkwijze van bezoekers ten aanzien van stedelijk groen. *

Markeer slechts één ovaal.

- Ga verder
- Ik doe niet mee

Algemene percepties

Vraag 1: Welke buiten-activiteiten doet u het liefst in uw vrije tijd? Maximaal 3 opties selecteren. *
Vink alle toepasselijke opties aan.

- Hengelen
- Jagen
- Kamperen
- Speeltuinen bezoeken
- Zwemmen

- Fietsen
- Joggen/Wandelen
- Wandeling in de natuur/park
- Boottripjes maken
- Anders:

Vraag 2: Wat verstaat u allemaal onder stedelijk groen oftewel groen in een bebouwde omgeving? *

_____

Vraag 3: Wat zijn volgens u de basis karakteristieken waaraan een urbane groene ruimte moet voldoen? *
Maximaal 5 opties selecteren.
Toelichting: met faciliteiten worden bedoeld: zitbanken, afvaltonnen, toiletten, kranen etc. Met toegankelijkheid wordt bedoeld :openbaarheid en de mate waarin het toegankelijk is (denk bv aan rolstoel vriendelijkheid, betaald/niet betaald, bereikbaarheid; ingangen wel danniet gesloten zijn op bezoektijden)
Vink alle toepasselijke opties aan.

- Aanwezigheid van voldoende natuur
- Rijk aan plantensoorten
- Rijk aan diersoorten
- Aanwezigheid van een meer, vijver of andere oppervlakte wateren
- Rustige omgeving
- Recreatieve capaciteit
- Aanwezigheid van een speelplaats
- Sport en Fitness faciliteiten
- Drukte met bezoekers

- Goede faciliteiten
- Groot in omvang
- Aanwezigheid van een parkeerplaats
- Aanwezigheid van eetkraampjes
- Toegankelijkheid
- Netheid en onderhoud
- Estethisch aantrekkelijk
- Veiligheid
- (Straat)verlichting in de avonduren
- Anders: _____

Vraag 4: Heeft u een eigen tuin waar u woont? Markeer slechts één ovaal.*

- Ja
- Nee
- Anders: —————————

Vraag 5: Wat denkt u dat de overheid over het algemeen zou moeten doen ten aanzien van groene ruimtes in Paramaribo? Graag de drie belangrijkste aanvinken.

- Meer groene ruimten opzetten waar mensen gebruik van kunnen maken
- Bestaande groene ruimten optimaler onderhouden
- Bij elke nieuw verkavelingsproject, een bepaald percentage groen opeisen
- Duidelijk beleid/wetgeving t.a.v. groen ontwikkelen
- Meer bomen planten in woonwijken
- Burgers stimuleren om meer bomen te planten
- Burgers stimuleren om hun bermen zelf te onderhouden
- Meer voorlichting naar de samenleving over het behouden van groen
- Anders:

Vraag 6: Als de overheid in uw omgeving een groene ruimte zou aanleggen, hoe zou u dat ingericht willen hebben? Kies de 4 opties die meeste prioriteit heeft bij u. *Vink alle toepasselijke opties aan* *

- Grasveld
- Bomen
- Straatbeplanting
- Sportterrein op verharde oppervlak
- Sportterrein op zand oppervlak
- Park met faciliteiten
- Verharde looppaden

- Zandpaden
- Speeltuin
- Bloementuin
- Waterwegen
- Aangeplant bos
- Anders

Vraag 7: Hoe belangrijk is de aanwezigheid van een groene ruimte voor u, voor een betere levenskwaliteit? Markeer slechts één ovaal *

- Heel belangrijk
- Belangrijk

- Minder belangrijk
- Helemaal niet van belang

Vraag 8: Zou u bovenstaand antwoord kunnen motiveren? Waarom groen wel of niet belangrijk is voor u? *

Cultuurtuingebied
De navolgende vragen hebben specifiek betrekking op het Cultuurtuingebied.

Vraag 9: Tot welke type bezoeker behoort u? Markeer slechts één ovaal. *
- Toerist
- Lokale bezoeker
- Anders:

Vraag 10: Uit hoeveel volwassenen en hoeveel kinderen bestaat uw groep als u naar de Cultuurtuin gaat?
Markeer slechts één ovaal per rij.

	1 persoon	2 personen	3 personen	4 personen	5 personen	6 personen	Meer dan 6 personen
Kinderen 0 – 6 jaar							

Kinderen 6 – 12 jaar						
Kinderen 12 – 18 jaar						
Volwassenen 18 – 40 jaar						
Volwassenen 40 - 60 jaar						
Volwassenen ouder dan 60 jaar						

Vraag 11: Welke plek binnen de Cultuurtuin bezoekt u en hoe vaak? *Markeer slechts één ovaal per rij.* *

	Dagelijks	Elke week	Een paar keren per maand	Eens in de zoveel maanden	Een keer per jaar	Nooit
Paramaribo Zoo						
Orchideeëntuin						
Trimbaan/Joggingspaden						
Fitness/Trainingsapparatuur						
Boswandeling						
Bezoek aan instituties/kantoren						
Werkplek						
Familiebezoek/Woonplek						

Vraag 12: Welk ander locatie wordt door u bezocht binnen de Cultuurtuin, dat ontbreekt in bovenstaande lijst?

Vraag 13: Hoe lang vertoeft u gemiddeld hier tijdens uw bezoek? Markeer slechts één ovaal. *

- Minder dan een uur
- Ongeveer een uur
- Ongeveer twee uren
- Twee tot drie uren
- Meer dan drie uren
- Anders:

Vraag 14: Hoe lang bezoekt u de Cultuurtuin al? Markeer slechts één ovaal. *

- Minder dan 2 jaren
- 2 tot 5 jaren
- 5 tot 9 jaren
- 10 tot 19 jaren
- 20 tot 29 jaren
- 30 tot 40 jaren
- meer dan 40 jaren
- Anders

Vraag 15: Wat zijn de voornaamste redenen voor (of activiteiten bij) uw bezoek aan een groene ruimte * in Paramaribo? Maximaal 4 opties selecteren. *Vink alle toepasselijke opties aan.*

- Speelgelegenheid voor de kinderen
- Voor sport en fitness
- Wandelen door het gebied
- Wandelen door de Zoo
- Zitten en relaxen
- Voor sociale interactie met anderen
- Om te genieten van de natuur
- Voor frisse lucht
- Voor kopen en verkopen van planten
- Om te picknicken
- Een boek lezen
- Fotograferen

- Vogels bekijken
- Onderzoek en educatie

- Tijd doorbrengen op electronische media
- Anders: _____

Vraag 16: Waarom kiest u ervoor om naar de Cultuurtuin te gaan ten opzichte van andere groene ruimten in Parmaribo? Meerdere antwoorden mogelijk. *

- Het is makkelijk toegankelijk
- De fitness faciliteiten / speelgelegenheden zijn beter
- Het is de betere of enige optie voor een park
- Het is groot genoeg om mijn activiteiten te ontplooien en voldoende tijd door te brengen,
- Anders: _____

- Ik woon niet ver ervandaan
- Ik werk niet ver ervandaan
- Het is veiliger hier
- Het is een rustige en stille omgeving

Vraag 17: Voldoet de Cultuurtuin aan de behoeften/verwachtingen die u heeft bij het bezoeken van deze* plek ? Markeer slechts één ovaal.

- Ja
- Nee

Vraag 18: Kunt u bovenstaande vraag motiveren: waarom wel of waarom niet? *

Vraag 19: Welke andere activiteiten zou u nog meer willen doen in de Cultuurtuin, maar de mogelijkheid daartoe bestaat er momenteel niet? *

Vraag 20: Welk waardering geeft u aan de volgende aspecten binnen het Cultuurtuin gebied? *
 (goed; matig of slecht).
Toelichting: met faciliteiten worden bedoeld: zitbanken, afvaltonnen, toiletten, kranen etc.Met toegankelijkheid wordt bedoeld: openbaarheid en de mate waarin het toegankelijk is(denk bv aan rolstoel vriendelijkheid, betaald/niet betaald, bereikbaarheid; ingangen wel dan niet gesloten zijn op bezoektijden) *Markeer slechts één ovaal per rij.*

	Goed	Matig	Slecht
Aanwezigheid van natuur			
Rijk aan plantensoorten			
Rijk aan diersoorten			
Aanwezigheid van een meer, vijver of andere oppervlakte wateren			
Rustige omgeving			
Recreatieve capaciteit			
Aanwezigheid van een speelplaats			
Sport en Fitnessfaciliteiten			
Drukte met bezoekers			
Goede faciliteiten			
Groot in omvang			
Aanwezigheid van een parkeerplaats			
Aanwezigheid van eetkraampjes			
Toegankelijkheid			
Netheid en onderhoud			
Esthetisch aantrekkelijk			
Veiligheid			
Straatverlichting in de avonduren			

Vraag 21: Welk transportmiddel gebruikt u het meest om naar de Cultuurtuin te komen? *
Markeer slechts één ovaal.

- Auto
- Bus
- Taxi
- Brom- of Motorfiets

- Fiets
- Te voet
- Anders:

Vraag 22: Ervaart u last van een van de volgende zaken in het Cultuurtuin gebied?

Meerdere opties mogelijk. *Vink alle toepasselijke opties aan* *

- Drukte van bezoekers
- Geluidsoverlast
- Bomen vormen een hinder
- Criminele activiteiten
- Dronken mensen
- Junkies of zwervers
- Onverharde / slechte wegen

- Wateroverlast
- Zwerfaval
- Onveilige plek
- Ontbossing
- Vandalisme
- Geen
- Anders

Vraag 23: Onderstaand treft u de voordelen of diensten, die geleverd kunnen worden door een groene ruimte. Welke zijn volgens u de 5 belangrijkste diensten die door de Cultuurtuin worden geleverd?* *Vink alle toepasselijke opties aan.*

- Bron van zoet water
- Bron van voedsel/bosbijproducten
- Levering van hout
- Bron van medicinale planten
- Tegengaan van bodemerosie
- Regulatie van de luchtkwaliteit
- Verkoeling van de omgeving en tegengaan van hitte-stress
- Zorgt voor vruchtbaardere bodems
- Tegengaan van wateroverlast
- Natuurlijk mechanisme om plagen en ziekten te onderdrukken
- Bestuiving

- Opslag van koolstofdioxide
- Vermindering van geluid, wind en visuele effecten
- Cultureel-historische waarde
- Het siert de omgeving
- Inspirerende waarde
- Onderzoek en educatie
- Recreatie en ecotoerisme
- Het brengt tot rust
- Habitat voor dieren
- Bron van biodiversiteit
- Anders:

Vraag 24: Bent u tevreden over de manier waarop dit park / gebied wordt onderhouden? *
Markeer slechts één ovaal.

- Ja
- Nee

Vraag 25: Kunt u bovenstaande vraag motiveren, waarom u wel of niet tevreden bent? *

Vraag 26: Kent u of ziet u de onderhoudsmedewerkers alhier? Markeer slechts één ovaal. *

- Ja
- Nee
- Anders:

Vraag 27: Wat vindt u van het onderhoud van de volgende aspecten binnen dit gebied? *
Markeer slechts één ovaal per rij.

	Goed	Matig	Slecht	Niet van toepassing
Het gebied in haar algemeenheid				
Wegen				
Bermen				
Speeltoestellen				
Sport-attributen/velden				
Joggingspaden / trimbaan				
Vegetatie				
Kanalen / vijvers				
Paramaribo Zoo				
Orchideeëntuin				
Zitbanken				
Afvaltonnen				

Vraag 28: Heeft u suggesties voor verbetering van de Cultuurtuin? Wat zou u veranderd willen zien? *

Vraag 29: Wie zou volgens u de verantwoordelijkheid moeten nemen voor onderhoud van de Cultuurtuin? Meerdere antwoorden mogelijk *

- Overheid
- Buurtbewoners
- Particulier organisatie
- Alle burgers
- Bezoekers
- An\

Vraag 30: Vind u dat u als lid van de gemeenschap enige verantwoordelijkheid draagt voor deze *
Groene Ruimte? Markeer slechts één ovaal.

- Ja
- Nee

Vraag 31: Kunt u bovenstaande vraag motiveren waarom u wel of geen verantwoordelijkheid draagt? *

Vraag 32: Bent u bereid bij te dragen aan beter onderhoud en verbetering van de Cultuurtuin? *
Markeer slechts één ovaal.

- Ja
- Nee
- Misschien

Vraag 33: Indien uw antwoord op de vorige vraag "ja" is in welke vorm zou u dan een bijdrage willen leveren?
- Entreeprijs (ticket)
- Via de belastingen betalen
- Fysiek helpen onderhouden (inspanning / arbeid). Graag onderstaand aangeven het aantal uren per week.
- Anders: _____

Algemene gegevens

Onderstaande vragen hebben betrekking op informatie die van belang is om analyses te kunnen uitvoeren met de verzamelde data. De vragen zijn volledig anoniem.

Vraag 34: Wat is uw woonwijk? (In de lijst kunt u selecteren uit Paramaribo, Wanica en Commewijne. Bij overige districten of buitenland zie de opties aan de onderzijde van de lijst.) Markeer slechts één ovaal *

- Abrabroki
- Aquarius project/Kwatta
- Aurora
- Benie's Park
- Bethesda
- Blauwgrond/ Twee kinderen
- Centrum
- Charlesburg
- Clevia
- Combe
- Cultuurtuin
- Cupido
- De boerbuiten
- De Goede Verwachting
- Elisabeth's hof/Flamingo Park
- Ephraimszegen
- Flora/Balona Park/Van Kessel Park

- Freso Project
- Gebied ten noorden Ringweg Noord
- Geyersvlijt
- Geyersvlijt Noord
- Half Flora
- Krepi
- Kwatta (Paramaribo)
- Land van Dijk
- Leonsberg
- L'Hermitage
- Livorno
- Maretraine 1+2
- Maretraite 3
- Maretraite 4
- Maretraite 5
- Maretraite 6
- Marowijne project
- Menkendam/Latour/Ramgolam
- Mon Plaisir
- Morgenstond

- Mottonshoop
- Munder
- Peu et content/Rensproject
- Pontbuiten
- Rainville
- Saron Noord
- Saron Zuid
- Surivillage projecten
- Tammenga
- Tourtonne 1+2
- Tourtonne 3
- Tourtonne 4
- Tourtonne 5
- Tourtonne 6
- Uitvlucht
- Via Bella/Flora
- Weg naar Zee
- Welgelegen (Kwatta)
- Wintiwai
- Zorg en Hoop 1
- Zorg en Hoop 2

Vraag 35: Wat is uw geslacht? Markeer slechts één ovaal.*
- Vrouwelijk
- Mannelijk
- Anders:

Vraag 36: Wat is uw leeftijd? Markeer slechts één ovaal.*
- jonger dan 20 jaar
- 20 tot 29 jaar
- 30 tot 39 jaar
- 40 tot 49 jaar
- 50 tot 60 jaar
- ouder dan 60 jaar

Vraag 37: Wat is uw op leidingsniveau? Markeer slechts één ovaal.
- GLO (basisonderwijs)
- MULO / LBGO
- Middelbaar onderwijs
- HBO
- Universitair
- Anders:

Vraag 38: Wat is uw beroep? Vind u uw beroep niet in onderstaande lijst, graag deze zelf invullen *
bij de optie "anders". Markeer slechts één ovaal.
- Leidinggevende beroep
- Wetenschappelijke beroep
- Arts
- Hogere Verpleegkundige
- Middelbare Verpleegkundige
- Onderwijsgevenden
- Sociaalwetenschapper
- Theoloog
- Bibliothecaris
- Kunstenaar/Artiest

- Technicus
- Informatica vakspecialist
- Paramedische beroep
- Militair / Politie
- Veiligheidsman

- Klein landbouwer
- Administratief medewerker
- Vakman
- Verkoper
- Anders:

Vraag 39: Wat is uw maandelijkse netto-inkomensklasse? Markeer slechts één ovaal *
- 1000 – 3000 SRD
- 3000 - 6000 SRD
- 6000 - 9000 SRD

- meer dan 9000 SRD
- geen inkomen

Vraag 40: Hoe lang woont u al in de Cultuurtuin? Deze vraag is alleen bestemd voor inwoners van de Cultuurtuin *.
- minder dan 2 jaren
- 2 tot 4 jaren
- 5 tot 9 jaren
- 10 tot 19 jaren

- 20 tot 29 jaren
- 30 tot 40 jaren
- langer dan 40 jaren

Vraag 41: Waarom heeft u ervoor gekozen om in de Cultuurtuin te wonen? Deze vraag is alleen bestemd voor inwoners van de Cultuurtuin. *Markeer slechts één ovaal.* *

- Het is de woonplaats van mijn ouders/grootouders
- Ik ben makkelijk aan een perceel gekomen hier
- Het is dichtbij centrum Paramaribo
- Gebied is rijk aan natuur
- Anders:

Appendix 2: Questionnaire for the households in Paramaribo

Percepties over en het gebruik van stedelijk groen - Enquête voor bewoners van Paramaribo

Dit studentenonderzoek maakt deel uit van het project 'Naar een Groen en Leefbaarder Paramaribo' welke als doel heeft het bevorderen van groen ten behoeve van een gezonde enleefbare woonomgeving. Meer informatie over het project is te vinden via www.groenparamaribo.org. Door de enquête in te vullen draagt u bij aan kennis en informatie voor verbeterde inzichten en besluitvorming omtrent stedelijk groen. Daarnaast ondersteunt u de wetenschappelijke vorming van (toekomstig) kader op dit gebied.
Deze vragenlijst is slechts bestemd voor personen woonachtig in Paramaribo.
*Vereist

Dit onderzoek is anoniem. Door mee te doen stemt u in dat uw antwoorden worden gebruikt ten behoeve van studentenonderzoek en het analyseren van de denkwijze van bezoekers ten aanzien van stedelijk groen. *

Markeer slechts één ovaal.

◯ Ga verder
◯ Ik doe niet mee

Algemene percepties

Vraag 1: Welke buiten-activiteiten doet u het liefst in uw vrije tijd? Maximaal 3 opties selecteren. *
Vink alle toepasselijke opties aan.

- Hengelen
- Jagen
- Kamperen
- Speeltuinen bezoeken
- Zwemmen

- Fietsen
- Joggen/Wandelen
- Wandeling in de natuur/park
- Boottripjes maken
- Anders:

Vraag 2: Wat verstaat u allemaal onder stedelijk groen oftewel groen in een bebouwde omgeving? *

_____

Vraag 3: Welke van de onderstaande publieke urbane groene ruimten bezoekt u in Paramaribo? *
Vink alle toepasselijke opties aan

Palmentuin

Fort Zeelandia

Waterkant

Cultuurtuin

Gladiolenplein

Vriendschapsplein

Coen Ooftplein

Onafhankelijkheidsplein

Vriendschapspark

Onafhankelijkheidsplein

Anders: _____

Vraag 4: Geef uw prioriteiten aan in de bovenstaande lijst (vraag 3). Let op: De top 3plaatsen die u het liefst bezoekt. *Vink alle toepasselijke opties aan.*

- Palmentuin
- Fort Zeelandia
- Waterkant
- Cultuurtuin
- Anders:

- Vriendschapsplein
- Onafhankelijk-heidsplein
- Gladiolenplein

- Prof. Dr. Coen Ooft Plein

Vraag 5: Waarom verkiest u de top 3 locaties gekozen in bovenstaande vraag?Meerdere opties mogelijk.
Vink alle toepasselijke opties aan.

- Ze zijn dicht bij huis
- Ze zijn makkelijk toegankelijk
- Ze voldoen aan de verwachtingen die ik heb van een groene ruimteEr zijn geen andere parken / recreatiegebieden in Paramaribo
- Het zijn veilige plekken om te vertoeven
- Anders:_____

Vraag 6: Wat is de reden voor u dat u geen groene ruimten bezoekt in Paramaribo? (Deze vraag overslaan indien vraag 4 en 5 ingevuld zijn). *Vink alle toepasselijke opties aan.*

- Ontbreken van faciliteiten in deze gebieden
- Slecht onderhoud van de gebieden
- Veiligheid is niet gegarandeerd
- De locaties zijn ver van huis
- Ik heb geen vrije tijd
- Ik heb geen idee welke de groene ruimten zijn in Paramaribo
- Ik bezoek liever een locatie buiten Paramaribo
- Ik ga liever winkelen of op familiebezoek
- Anders: _____

Vraag 7: Wat zijn volgens u de basis karakteristieken waaraan een urbane groene ruimte moet voldoen? *
Maximaal 5 opties selecteren.
Toelichting: met faciliteiten worden bedoeld: zitbanken, afvaltonnen, toiletten, kranen etc. Met toegankelijkheid wordt bedoeld :openbaarheid en de mate waarin het toegankelijk is (denk bv aan rolstoel vriendelijkheid, betaald/niet betaald, bereikbaarheid; ingangen wel danniet gesloten zijn op bezoektijden)
Vink alle toepasselijke opties aan.

- Aanwezigheid van voldoende natuur
- Rijk aan plantensoorten
- Rijk aan diersoorten
- Aanwezigheid van een meer, vijver of andere oppervlakte wateren
- Rustige omgeving
- Recreatieve capaciteit
- Aanwezigheid van een speelplaats
- Sport en Fitness faciliteiten
- Drukte met bezoekers
- Goede faciliteiten
- Groot in omvang
- Aanwezigheid van een parkeerplaats
- Aanwezigheid van eetkraampjes
- Toegankelijkheid
- Netheid en onderhoud
- Estethisch aantrekkelijk
- Veiligheid
- (Straat)verlichting in de avonduren
- Anders: _____

Vraag 8: Wat zijn de voornaamste redenen voor (of activiteiten bij) uw bezoek aan een groene ruimte *
in Paramaribo? Maximaal 4 opties selecteren. *Vink alle toepasselijke opties aan.*

- Speelgelegenheid voor de kinderen
- Voor sport en fitness
- Om te genieten van de natuur
- Voor recreatie / relaxen
- Voor sociale interactie met anderen
- Om in een rustige en stille omgeving te zijn
- Om te picknicken
- Fotograferen
- Vogels bekijken
- Onderzoek en educatie
- Anders: _____

Groene ruimten in uw woonomgeving
In deze sectie beantwoord u vragen die betrekking hebben op groene ruimten in uw woonomgeving.

Vraag 9: Wat is uw woonwijk? (Selecteer uit de onderstaande lijst). Markeer slechts één ovaal *

- Abrabroki
- Aquarius project/Kwatta
- Aurora
- Benie's Park
- Bethesda
- Blauwgrond/ Twee kinderen
- Centrum
- Charlesburg
- Clevia
- Combe
- Cultuurtuin
- Cupido
- De boerbuiten
- De Goede Verwachting
- Elisabeth's hof/Flamingo Park
- Ephraimszegen
- Flora/Balona Park/Van Kessel Park
- Freso Project

- Gebied ten noorden Ringweg Noord
- Geyersvlijt
- Geyersvlijt Noord
- Half Flora
- Krepi
- Kwatta (Paramaribo)
- Land van Dijk
- Leonsberg
- L'Hermitage
- Livorno
- Maretraine 1+2
- Maretraite 3
- Maretraite 4
- Maretraite 5
- Maretraite 6
- Marowijne project
- Menkendam/Latour/Ramgolam
- Mon Plaisir
- Morgenstond
- Mottonshoop
- Munder

- Peu et content/Rensproject
- Pontbuiten
- Rainville
- Saron Noord
- Saron Zuid
- Surivillage projecten
- Tammenga

- Tourtonne 1+2
- Tourtonne 3
- Tourtonne 4
- Tourtonne 5
- Tourtonne 6
- Uitvlucht
- Via Bella/Flora
- Weg naar Zee
- Welgelegen (Kwatta)
- Wintiwai
- Zorg en Hoop 1
- Zorg en Hoop 2

Vraag 10: Heeft u een eigen tuin waar u woont? Markeer slechts één ovaal.*
- Ja
- Nee
- Anders: ――――――――

Vraag 11: Kunt u aanvinken wat van toepassing is voor uw tuin? Meerdere opties mogelijk.
Vink alle toepasselijke opties aan.

- Ik heb meer dan 2 (grotere) bomen op mijn erf
- Ik heb 1 of geen grotere bomen op mijn erf
- De bodem is grotendeels bedekt met gras
- De bodem is grotendeels bedekt met grind
- De bodem is grotendeels bedekt met tegels of baksteen
- De bodem is grotendeels bedekt met (schelp)zand of aarde
- Er zijn voornamelijk sierplanten (bloemen)
- Er zijn voornamelijk fruitplanten
- Er zijn weinig planten in de tuin
- Er is een stukje beplant met gewassen
- Er is een haag/heg van groene struiken
- Er is een vijver in de tuin
- Anders: _____

Vraag 12: Kunt u toelichten waarom u voor deze inrichting van uw tuin heeft gekozen?
Vink alle toepasselijke opties aan.
- Ik hou van veel groen in de tuin
- Ik hou van tuinieren
- Ik kies eerder voor lagere beplanting dan hoge bomen
- Ik laat de begroeiing gewoon zijn gang gaan door gebrek aan tijd
- Ik kies eerder voor een verharde bodem vanwege minder onderhoud
- Anders:

Vraag 13: Zijn er groene ruimten aanwezig in de omgeving waar u woont? Indien   *
niet dan kunnen de vragen 14 en 15 worden overgeslagen. Markeer slechts één ovaal.
- Ja
- Nee

Vraag 14: Indien er wel groene ruimten aanwezig zijn in uw woonomgeving, kunt u beschrijven in welke vorm dit voorkomt? *Vink alle toepasselijke opties aan.*
- Gras berm
- Gras berm met beplanting
- Bomen langs straten (openbare ruimte)
- Leegstaand perceel met onkruid/wildgroei
- Grasveld/plein
- Sportveld
- Speeltuin
- Park
- Een stukje bos
- Anders:

Vraag 15: Maakt u gebruik van de groene ruimten in uw woonomgeving (zie vraag13 en 14)? Zo ja, kunt u aangeven op welke wijze u dat doet? *Vink alle toepasselijke opties aan.*

- Ik ga sporten op het sportveld
- Kinderen maken gebruik van de speeltuin
- Ik beplant de bermen
- Ik ga joggen/wandelen
- Ontmoeten van mensen
- Ik geniet van het groen; is rustgevend
- Neen, ik maak geen gebruik van de groene ruimten
- Anders:

Vraag 16: Wat is uw mening over onderstaande beweringen over groen in uw woonomgeving. *
Markeer slechts één ovaal per rij.

	Helemaal oneens	Oneens	Eens	Helemaal eens
Er is voldoende openbaar groen aanwezig in uw buurt				
U ervaart voordelen van de aanwezigheid van het openbaar groen in uw buurt				
U ervaart overlast van de aanwezigheid van het openbaar groen in uw buurt				
Het openbaar groen in uw buurt wordt goed en regelmatig onderhouden door de overheid				
Het openbaar groen in uw buurt wordt goed en regelmatig onderhouden door u zelf				
De buurt zou zelf gezamenlijk een bijdrage kunnen leveren of moeite doen voor onderhoud van openbaar groen in uw buurt				
De aanwezigheid van een openbare, groene ruimte is belangrijk voor de kwaliteit van het leven				

Vraag 17: Kunt u uw antwoord ten aanzien van de laatste stelling van de vorige vraag, motiveren? *

_____

Vraag 18: Onderstaand treft u de voordelen of diensten aan, die geleverd kunnen worden door een groene ruimte. Welke zijn volgens u de 5 belangrijkste diensten die door het groen in uw woonomgeving worden geleverd? * *Vink alle toepasselijke opties aan*

- Bron van zoet water
- Bron van voedsel/bosbijproducten
- Levering van hout
- Bron van medicinale planten
- Tegengaan van bodemerosie
- Regulatie van de luchtkwaliteit
- Verkoeling van de omgeving en tegengaan van hitte-stress
- Zorgt voor vruchtbaardere bodems
- Tegengaan van wateroverlast
- Natuurlijk mechanisme om plagen en ziekten te onderdrukken
- Bestuiving

- Opslag van koolstofdioxide
- Vermindering van geluid, wind en visuele effecten
- Cultureel-historische waarde
- Het siert de omgeving
- Inspirerende waarde
- Onderzoek en educatie
- Recreatie en ecotoerisme
- Het brengt tot rust
- Habitat voor dieren
- Bron van biodiversiteit
- Anders:

Vraag 19: Wat denkt u dat de overheid over het algemeen zou moeten doen ten aanzien van groene ruimten in Paramaribo? Graag de drie belangrijkste aanvinken.

- Meer groene ruimten opzetten waar mensen gebruik van kunnen maken
- Bestaande groene ruimten optimaler onderhouden
- Bij elke nieuw verkavelingsproject, een bepaald percentage groen opeisen
- Duidelijk beleid/wetgeving t.a.v. groen ontwikkelen
- Meer bomen planten in woonwijken
- Burgers stimuleren om meer bomen te planten
- Burgers stimuleren om hun bermen zelf te onderhouden
- Meer voorlichting naar de samenleving over het behouden van groen
- Anders:

Vraag 20: Bestaat de behoefte voor meer of andere soorten groene plekken in uw woonomgeving? *

- Ja
- Nee

Vraag 21: Als de overheid in uw omgeving een groene ruimte zou aanleggen, hoe zou u dat ingericht willen hebben? Kies de 4 opties die meeste prioriteit heeft bij u. *Vink alle toepasselijke opties aan* *

- Grasveld
- Bomen
- Straatbeplanting
- Sportterrein op verharde oppervlak
- Sportterrein op zand oppervlak
- Park met faciliteiten
- Verharde looppaden
- Zandpaden
- Speeltuin

- Bloementuin
- Waterwegen
- Aangeplant bos
- Anders

Vraag 22: Door wie worden de groene ruimten in uw woongebied onderhouden? *
Markeer slechts één ovaal.

- Overheid
- Buurtbewoners
- Eigenaren

- Particulier organisatie
- Wordt niet onderhouden
- Anders:

Vraag 23: Bent u tevreden over de manier waarop de groene ruimten in uw woongebied worden onderhouden?
Markeer slechts één ovaal. *
- Ja
- Nee

Vraag 24: Kunt u bovenstaande vraag motiveren waarom u wel of niet tevreden bent? *

_____

Vraag 25: Wat vindt u van het onderhoud van de volgende aspecten binnen uw woongebied gebied? *
Markeer slechts één ovaal per rij.

	Goed	Matig	Slecht	Niet van toepassing
Wegen				
Bermen				
Pleinen/Sportvelden				
Speeltoestellen				
Straatbeplanting				
Waterwegen				
Leegstaande percelen				

Vraag 26: Heeft u suggesties voor verbetering van uw woongebied? Wat zou u veranderd willen zien? *

_____

Vraag 27: Vind u dat u als buurtbewoner enige verantwoordelijkheid draagt voor onderhoud van de groene ruimten in uw woonomgeving? *
Markeer slechts één ovaal.

- Ja

- Nee

Vraag 28: Kunt u bovenstaande vraag motiveren waarom u wel of geen verantwoordelijkheid draagt? *

_____

Vraag 29: Bent u bereid bij te dragen aan beter onderhoud en verbetering van het groen in uw woongebied? *
Markeer slechts één ovaal.

- Ja
- Nee

Vraag 30: Indien uw antwoord op de vorige vraag "ja" is in welke vorm zou u dan een bijdrage willen leveren?

- "Groen" belasting betalen
- Fysiek helpen onderhouden (inspanning / arbeid).
- Graag onderstaand aangeven het aantal uren per week.
- Anders: _____

Algemene gegevens

Onderstaande vragen hebben betrekking op informatie die van belang is om analyses te kunnen uitvoeren met de verzamelde data. De vragen zijn volledig anoniem.

Vraag 31: Wat is uw geslacht? Markeer slechts één ovaal.*

- Vrouwelijk
- Mannelijk
- Anders:

Vraag 32: Wat is uw leeftijd? Markeer slechts één ovaal.*

- jonger dan 20 jaar
- 20 tot 29 jaar
- 30 tot 39 jaar
- 40 tot 49 jaar
- 50 tot 60 jaar
- ouder dan 60 jaar

Vraag 33: Wat is uw op leidingsniveau? Markeer slechts één ovaal.

- GLO (basisonderwijs)
- MULO / LBGO
- Middelbaar onderwijs
- HBO
- Universitair
- Anders

Vraag 34: Wat is uw beroep? Vindt u uw beroep niet in onderstaande lijst, graag deze zelf invullen * bij de optie "anders". Markeer slechts één ovaal.

- Leidinggevende beroep
- Wetenschappelijke beroep
- Arts
- Hogere Verpleegkundige
- Middelbare Verpleegkundige
- Onderwijsgevenden
- Sociaalwetenschapper
- Theoloog
- Bibliothecaris
- Kunstenaar/Artiest
- Technicus
- Informatica vakspecialist
- Paramedische beroep
- Militair / Politie
- Veiligheidsman
- Klein landbouwer
- Administratief medewerker
- Vakman
- Verkoper
- Anders:

Vraag 35: Wat is uw maandelijkse netto-inkomensklasse? Markeer slechts één ovaal *

- 1000 – 3000 SRD
- 3000 - 6000 SRD
- 6000 - 9000 SRD
- meer dan 9000 SRD
- geen inkomen

Vraag 36: Hoe lang woont u al in uw woonwijk? Markeer slechts één ovaal. *

- minder dan 2 jaren
- 2 tot 4 jaren
- 5 tot 9 jaren
- 10 tot 19 jaren
- 20 tot 29 jaren
- 30 tot 40 jaren
- langer dan 40 jaren

Vraag 37: Waarom heeft u ervoor gekozen om in uw woonwijk te wonen? Markeer slechts één ovaal.*

- Het is de woonplaats van mijn ouders/grootouders
- Ik ben makkelijk aan een perceel gekomen hier
- Het is een veilige buurt
- Gebied is rijk aan natuur/groen
- Anders

Appendix 3: Elaboration of the research questions

Components	Description	Results
Research question 1: What are the perceptions, preferences and importance of UGS?		
Perceptions on UGS	Description/Definition on UGS	Different categories of perceptions
Preferences on UGS	Choosing characteristics most preferred in an UGS. (based on literature research)	- presence of nature - good facilities -etc.
Importance of UGS	Importance for the quality of life	-very important -important -less important -not important
	Reasons for importance	Different reasons
	Opinion on aspects of greenery in the living environment	Strongly agree, agree, disagree, completely disagree
Research question 2: Which socio-economic factors influence the perceptions, preferences and valuation of UGS?		
Influence on perceptions	The association between the perception categories and the different socio-economic factors (gender, age, education and income-class)	Whether or not a significant association and the strength of this
Influence on preferences	The association between 5 most preferred characteristics and the different socio-economic factors	Whether or not a significant association and the strength of this
Research question 3: How are UGS used by the community?		
Most visited UGS' in Paramaribo	Choose three mostly visited UGS' from a listing of six spaces	-Palmentuin - Onafhankelijkheidsplein -etc.
Type of activities in an UGS	Listing the main activities when visiting an UGS	-Play are for children -sport & fitness activities -etc.
Frequency and duration of visits to an UGS	How frequent the UGS' are visited and for what length of time	-daily, weekly etc. - about one hour etc.
Number of years visiting an UGS	How many years the respondents have been visiting the UGS'	-about an hour -about two hours - etc.
Research question 4: Which factors influence the use of UGS?		
Reasons for choosing a certain UGS	Respondents could indicate which reasons make them choose a certain UGS in comparison to other spaces in Paramaribo.	- It is easily accessible - It is safer here -etc.

Accessibility	Which methods of transport are used for visiting an UGS	- own car, -bus, etc.
Experiencing nuisance	Respondents could indicate which kind of nuisance they experience in the UGS' and the association with frequency and duration of visits	- Criminal activities - Junks or vagrants - Litter etc. Whether or not a significant association and the strength of this
Influence of socio-economic factors on the activities	Associations were analyzed using Chi-square statistics	Whether or not a significant association and the strength of this
Influence of distance, 4 common activities, socio-economic factors and perceived characteristics on frequencies	Associations were analyzed using Chi-square statistics	Whether or not a significant association and the strength of this
Influence of common activities and perceived characteristics on time spent	Associations were analyzed using Chi-square statistics	Whether or not a significant association and the strength of this

Research question 5: What are the perceived ecosystem services provided by UGS?

Perceived Ecosystem services	The benefits they believe are provided by a particular UGS.	-Storage of carbon dioxide - Cooling the environment - etc.

Research question 6: How are UGS managed and what are the bottlenecks in this?

Opinion of respondents on maintenance of the UGS	General opinion on maintenance and specific aspects	A rating of good, moderate or bad
	Respondents could indicate who could be best responsible for maintenance	Options from: government, private institution, etc.
Maintenance view from managers	Description of maintenance model and constraints in this	Feedback from the managers from interviews
Contribution for maintenance	Willingness to contribute and in which form	Contributions could be in the form of: fee, tax, physical labor etc.

Appendix 4: The chi-square table

Chi-square Distribution Table

d.f.	.995	.99	.975	.95	.9	.1	.05	.025	.01
1	0.00	0.00	0.00	0.00	0.02	2.71	3.84	5.02	6.63
2	0.01	0.02	0.05	0.10	0.21	4.61	5.99	7.38	9.21
3	0.07	0.11	0.22	0.35	0.58	6.25	7.81	9.35	11.34
4	0.21	0.30	0.48	0.71	1.06	7.78	9.49	11.14	13.28
5	0.41	0.55	0.83	1.15	1.61	9.24	11.07	12.83	15.09
6	0.68	0.87	1.24	1.64	2.20	10.64	12.59	14.45	16.81
7	0.99	1.24	1.69	2.17	2.83	12.02	14.07	16.01	18.48
8	1.34	1.65	2.18	2.73	3.49	13.36	15.51	17.53	20.09
9	1.73	2.09	2.70	3.33	4.17	14.68	16.92	19.02	21.67
10	2.16	2.56	3.25	3.94	4.87	15.99	18.31	20.48	23.21
11	2.60	3.05	3.82	4.57	5.58	17.28	19.68	21.92	24.72
12	3.07	3.57	4.40	5.23	6.30	18.55	21.03	23.34	26.22
13	3.57	4.11	5.01	5.89	7.04	19.81	22.36	24.74	27.69
14	4.07	4.66	5.63	6.57	7.79	21.06	23.68	26.12	29.14
15	4.60	5.23	6.26	7.26	8.55	22.31	25.00	27.49	30.58
16	5.14	5.81	6.91	7.96	9.31	23.54	26.30	28.85	32.00
17	5.70	6.41	7.56	8.67	10.09	24.77	27.59	30.19	33.41
18	6.26	7.01	8.23	9.39	10.86	25.99	28.87	31.53	34.81
19	6.84	7.63	8.91	10.12	11.65	27.20	30.14	32.85	36.19
20	7.43	8.26	9.59	10.85	12.44	28.41	31.41	34.17	37.57
22	8.64	9.54	10.98	12.34	14.04	30.81	33.92	36.78	40.29
24	9.89	10.86	12.40	13.85	15.66	33.20	36.42	39.36	42.98
26	11.16	12.20	13.84	15.38	17.29	35.56	38.89	41.92	45.64
28	12.46	13.56	15.31	16.93	18.94	37.92	41.34	44.46	48.28
30	13.79	14.95	16.79	18.49	20.60	40.26	43.77	46.98	50.89
32	15.13	16.36	18.29	20.07	22.27	42.58	46.19	49.48	53.49
34	16.50	17.79	19.81	21.66	23.95	44.90	48.60	51.97	56.06
38	19.29	20.69	22.88	24.88	27.34	49.51	53.38	56.90	61.16
42	22.14	23.65	26.00	28.14	30.77	54.09	58.12	61.78	66.21
46	25.04	26.66	29.16	31.44	34.22	58.64	62.83	66.62	71.20
50	27.99	29.71	32.36	34.76	37.69	63.17	67.50	71.42	76.15
55	31.73	33.57	36.40	38.96	42.06	68.80	73.31	77.38	82.29
60	35.53	37.48	40.48	43.19	46.46	74.40	79.08	83.30	88.38
65	39.38	41.44	44.60	47.45	50.88	79.97	84.82	89.18	94.42
70	43.28	45.44	48.76	51.74	55.33	85.53	90.53	95.02	100.43
75	47.21	49.48	52.94	56.05	59.79	91.06	96.22	100.84	106.39
80	51.17	53.54	57.15	60.39	64.28	96.58	101.88	106.63	112.33
85	55.17	57.63	61.39	64.75	68.78	102.08	107.52	112.39	118.24
90	59.20	61.75	65.65	69.13	73.29	107.57	113.15	118.14	124.12
95	63.25	65.90	69.92	73.52	77.82	113.04	118.75	123.86	129.97
100	67.33	70.06	74.22	77.93	82.36	118.50	124.34	129.56	135.81

Appendix 5: Socio-economic data of the respondents

|		Total respon-dents	% of total	Prof. Coen Ooftplein	Cultuur-tuin	Palmen-tuin	Par'bo residents
Totals		212		47 (22%)	54 (25%)	44 (21%)	67 (32%)
Gender	Female	142	67%	66%	74%	73%	58%
	Male	69	33%	34%	26%	27%	40%
Age	Younger than 20 years	6	3%	0%	2%	11%	0%
	20 to 29 years	53	25%	21%	17%	32%	30%
	30 to 39 years	66	31%	47%	24%	25%	30%
	40 to 49 years	48	23%	19%	31%	16%	22%
	50 to 60 years	28	13%	6%	20%	11%	13%
	Older than 60 years	11	5%	6%	6%	5%	4%
Education	Primary school	2	1%	2%	0%	2%	0%
	Secondary school	20	9%	19%	11%	5%	4%
	High school	51	24%	26%	33%	36%	7%
	Higher professional education (HBO)	48	23%	26%	13%	25%	27%
	Post HBO	1	0%	0%	2%	0%	0%
	University	88	42%	28%	37%	32%	61%
	Other	1	0%	0%	2%	0%	0%
	No answer	1	0%	0%	2%	0%	0%
Monthly income	1000 - 3000 SRD	42	20%	28%	19%	14%	19%
	3000 - 6000 SRD	79	37%	49%	35%	39%	30%
	6000 - 9000 SRD	28	13%	9%	11%	9%	21%
	More than 9000 SRD	23	11%	4%	9%	5%	21%
	No income	40	19%	11%	26%	34%	9%

Appendix 6: Comparison insufficiency of urban green with urban green classification map

Residential area	# of respondents	Comparison with urban green classification map
Abrabroki	1	
Aquarius project/Kwatta	1	
Benie's Park	1	
Blauwgrond/ Twee kinderen	2	only buildings, infrastructure and more grass is present
Centrum	3	only buildings, infrastructure and very minimal grass is present
Combe	2	only buildings, infrastructure is present, hardly any grass surfaces
Elisabeth's hof/Flamingo Park	2	many grass surfaces, buildings and infrastructure present
Ephraimszegen	1	
Flora/Balona Park/Van Kessel Park	1	
Geyersvlijt	1	
Kwatta (Paramaribo)	2	In the southern part, urban and infrastructure and some grass fragments are present;
		Northern part of Kwatta consists more grass and also many forest fragments
Maretraite 4	1	only buildings, infrastructure and minimal grass is present
Maretraite 5	1	only buildings, infrastructure and more grass than Maretraite 4 is present
Maretraite 6	2	also has a lot of buildings and infrastructure and relatively more grass surfaces than the other 2 Maretraite districts
Menkendam/Latour/Ramgolam	1	
Morgenstond	1	
Munder	2	uitsluiten bebouwing en infrastructure ..heel minimaal gras
Rainville	2	only buildings, infrastructure and very minimal grass is present
Saron Noord	1	
Tourtonne 3	1	
Tourtonne 4	3	only buildings, infrastructure and some grass surfaces is present
Uitvlucht	5	not very dense urban area and infrastructure, more grass surfaces, small fragment of forest present
Weg naar Zee	1	
Welgelegen (Kwatta)	2	many buildings and infrastructures, also some grass surfaces and 1 piece of forest fragment
Zorg en Hoop 2	1	

Appendix 7: Desires of respondents regarding green spaces

Desired activities of respondents in the UGS

Other desired activities	Coen Ooftplein	Cultuurtuin	Palmentuin	Total
Food stands	4	3	2	9
Attractions for children	7	0	2	9
Pond	1	0	0	1
Waterpark/Pool	3	3	4	10
Educational tours	2	3	0	5
Jogging track around the square	1	0	0	1
Fundraising	1	0	0	1
Sport and Fitness	3	3	1	7
Horse riding	1	0	0	1
Animals in cages	1	0	1	2
Activities voor adults	1	0	0	1
Fietsen	0	1	1	2
Educational center	0	0	2	2
Park with playground	0	3	0	3
Picknicken	0	1	0	1
Cultural shows	0	2	0	2
Flower garden/more trees	0	1	0	1
Forest walk (also evening)	0	4	1	5
Bird watching	0	1	0	1
Free wifi	0	0	2	2
None	22	32	24	78
:				
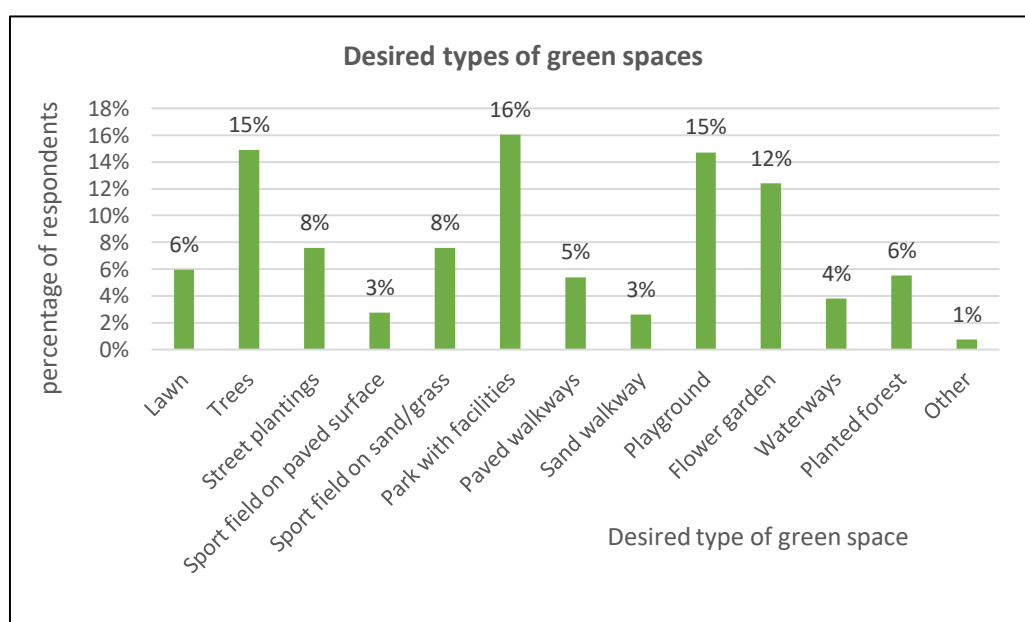
Suggestions for improvement of the UGS

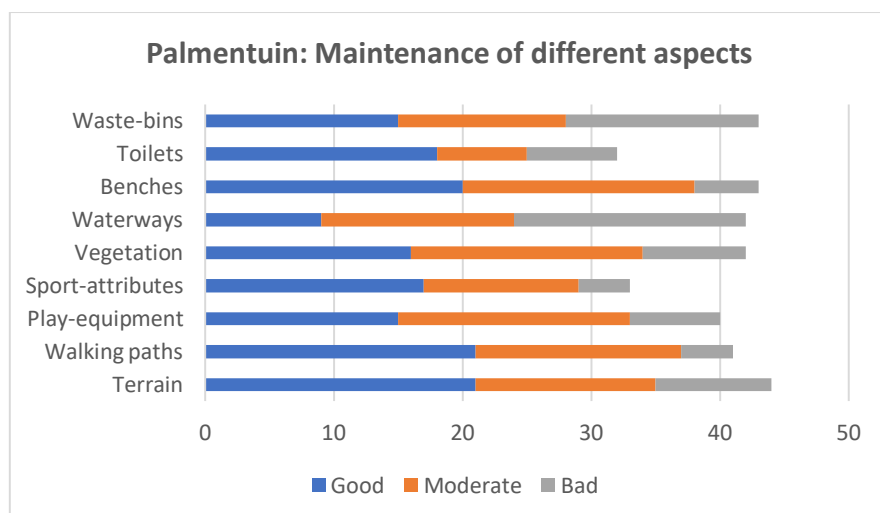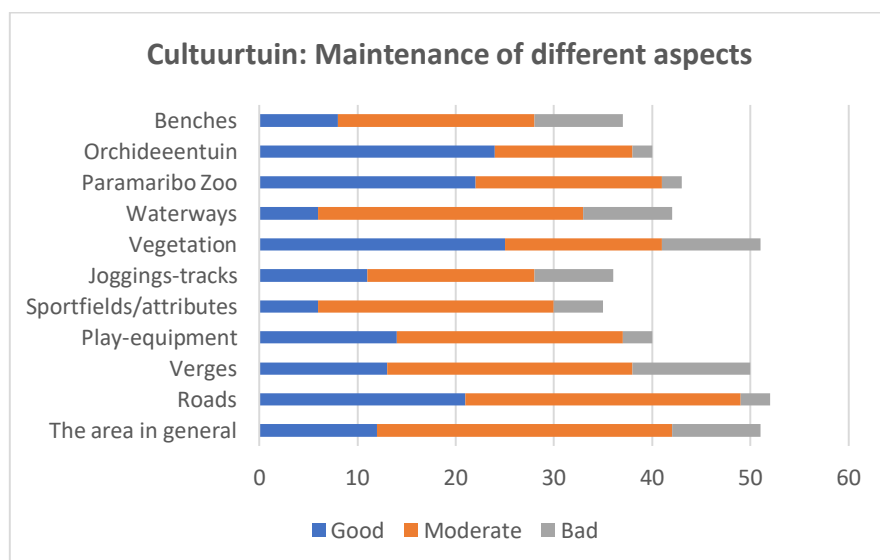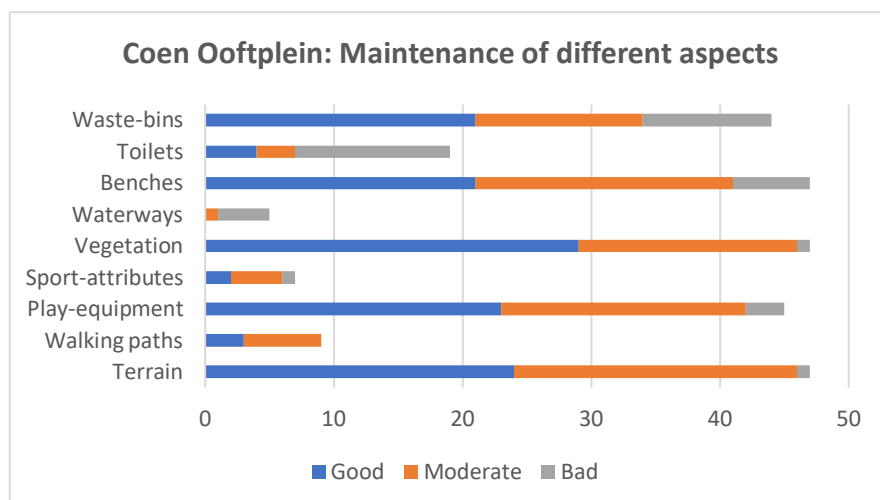| Coen Ooftplein	Cultuurtuin	Palmentuin/Wakapasi	Paramaribo households
Toilets must be open for visitors	Improvement of maintenance of the roads, ditches, verges, trees and the botanical garden.	Improvement of maintenance of the terrain, trees, ditches; cleaning litter.	Improving maintenance of the roads, surroundings, verges, vacant plots, greenery and waterways
A security or manager for the square	The area can be cleaned by employees of the Directorate of Public Green and Waste Management.	Finding a solution for the homeless people here.	More street plantings, grass on the verges and trees including fruit trees.
More play-equipment	Increasing the security of the area by deploying surveillance and lighting	Upgrading and expansion of the playground.	More green parks, playgrounds and sport fields.
Improvement of maintenance	Nature education including placing nameplates on the trees.	Placing more cabins	Promote green awareness
Installing outside tap	Create more activities in the area including tours		More control over waste dumping and incineration
More flower plants			
Toilets must be open for visitors	Improvement of maintenance of the roads, ditches, verges, trees and the botanical garden.	Improvement of maintenance of the terrain, trees, ditches; cleaning litter.	Improving maintenance of the roads, surroundings, verges, vacant plots, greenery and waterways
A security or manager for the square	The area can be cleaned by employees of the Directorate of Public Green and Waste Management.	Finding a solution for the homeless people here.	More street plantings, grass on the verges and trees including fruit trees.
More play-equipment	Increasing the security of the area by deploying surveillance and lighting	Upgrading and expansion of the playground.	More green parks, playgrounds and sport fields.
Improvement of maintenance	Nature education including placing nameplates on the trees.	Placing more cabins	Promote green awareness
Installing outside tap	Create more activities in the area including tours		More control over waste dumping and incineration
More flower plants			

Appendix 8: Type of greenery in respondents' gardens

Category: number of larger trees	Number	Percentage of total respondents (%)
I have more than 2 (larger) trees in my yard	36	53.7
I have 1 or no (larger) trees in my yard	16	23.9
Total	*52*	
Category: type of plantings		
There are mainly ornamental plants (flowers)	37	55.2
There are mainly fruit trees	33	49.3
There are few plants in the garden	9	13.4
There is a vegetable garden	21	31.3
Medicinal plants	1	1.5
Total	*101*	
Category: type of groundcover		
The ground is mostly covered with grass	20	29.9
The ground is mostly covered with gravel	0	0
The ground is mostly covered with tiles or brick	7	10.4
The ground is mostly covered with shell sand or earth	25	37.3
Total	*52*	
Category: other		
There is a hedge (of green shrubs)	5	7.5
There is a pond in the garden	5	7.5

Appendix 9: Percentages of respondents on the perceived ecosystem services

	Percentage of respondents				
	Coen Ooftplein (%)	Cultuurtuin (%)	Palmentuin (%)	Par'bo house-holds (%)	Total (%)
Source of fresh water	0	0	1	2	3
Source of food / ntfp	0	2	1	4	7
Supply of wood	1	0	0	0	1
Source of medicinal plants	0	6	1	2	9
Preventing soil erosion	1	2	1	7	11
Air quality regulation	10	6	6	15	37
Combating heat stress	20	14	17	14	65
Ensuring fertile soils	0	2	1	3	6
Preventing flooding	0	0	0	2	2
Natural mechanism to suppress diseases	1	0	0	1	2
Pollination	2	1	0	2	5
Storage of carbondioxide	12	7	9	4	32
Reduction noise, wind, visual effects	1	0	3	3	7
Cultural-historical value	2	11	17	3	33
Beautifying the environment	13	5	9	12	39
Inspiring value	1	1	3	2	7
Research & Education	2	10	4	2	18
Recreation & Ecotourism	13	12	17	2	44
Peaceful environment	19	11	11	11	52
Habitat for fauna	0	4	1	6	11
Source of biodiversity	0	3	1	4	8
Supply of oxygen	2	0	0	0	2
Capturing exhaust gases	1	0	0	0	1

Appendix 10: Opinion on maintenance of specific aspects in the green spaces

Coen Ooftplein: Maintenance of different aspects

Cultuurtuin: Maintenance of different aspects

Palmentuin: Maintenance of different aspects

Par'bo households: Maintenance of different aspects
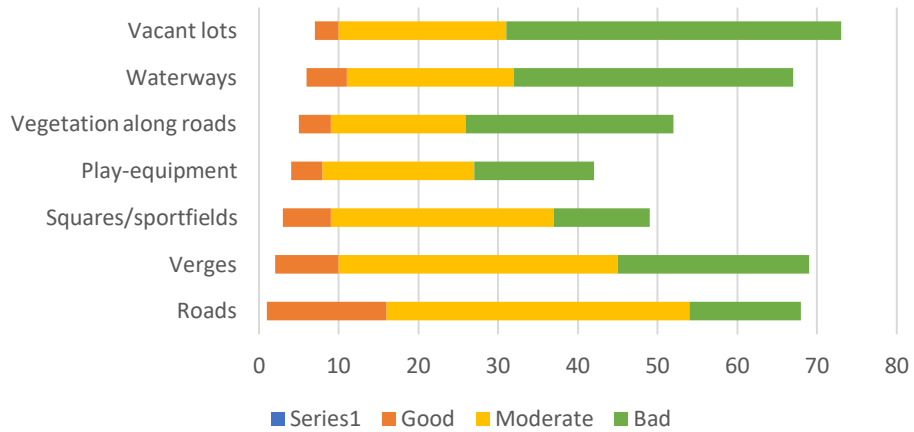
Appendix 11: Opinion on own responsibility and contribution for maintenance of UGS
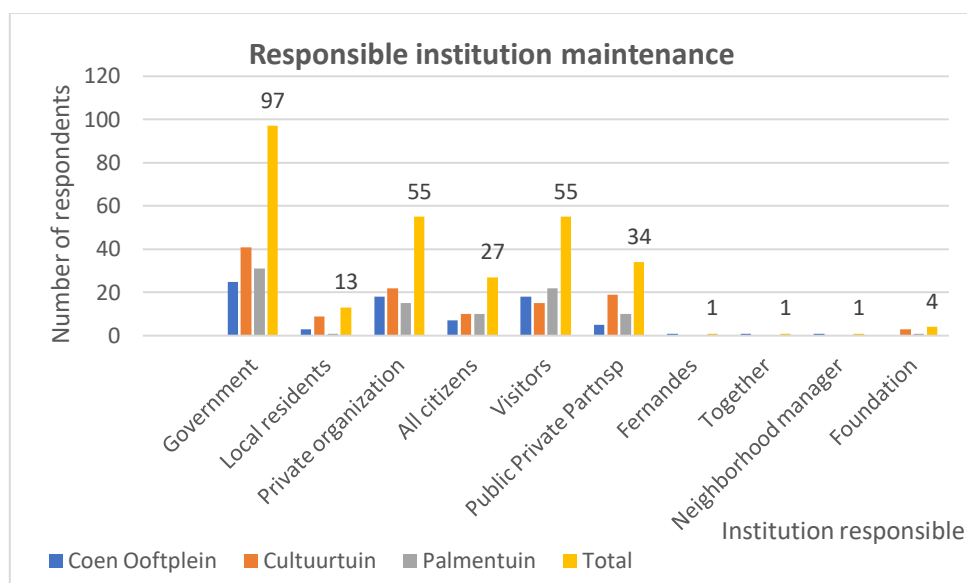

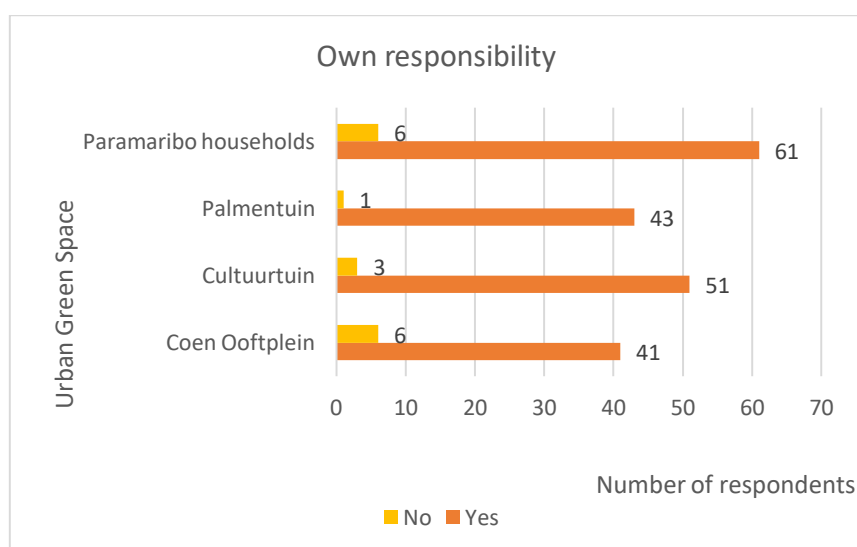Figure 11.1: Institution who should be responsible for maintenance

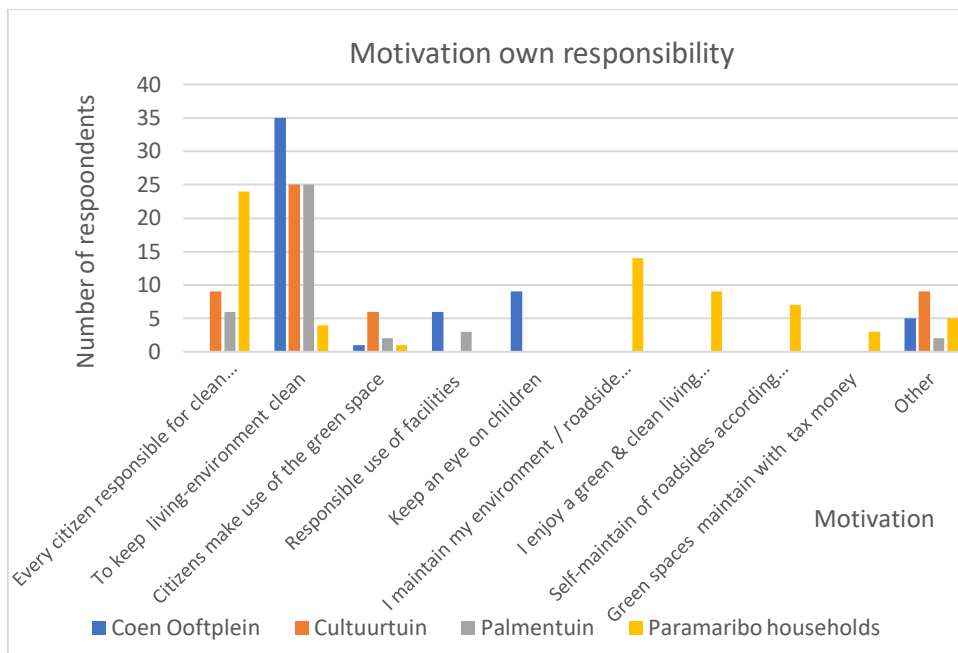Figure 11.2: Willingness of visitors to take responsibility themselves

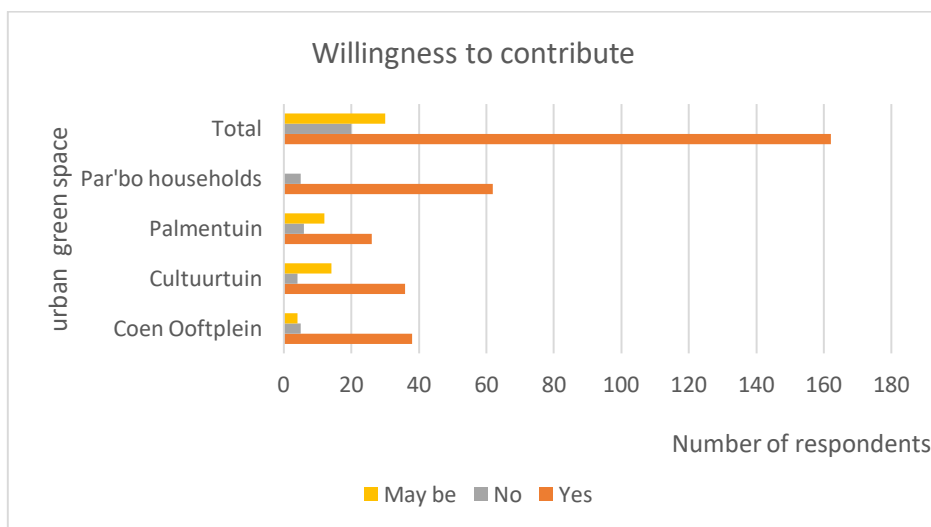Figure 11.3: Reasons for respondents taking own responsibility

Figure 11.4: Willingness to contribute to maintenance

Table 11.1: The form in which respondents are willing to contribute

Form of contribution	Coen Ooft plein	Cultuur tuin	Palmen tuin	Par'bo households	Total
Entrance fee (ticket)	24	12	14	0	50
Pay through "green" taxes	2	10	5	32	49
Help maintain physical (effort/labor	7	12	6	33	58
Voluntary contribution	8	3	2	0	13
Toilet use / renting out for parties/cabins	2	0	1	0	3
Set up fund / organization	0	2	0	0	2
Project-based through a reliable organization	0	1	0	0	1
Already monthly contribution (Orchideentuin)	0	6	0	0	6
Making plants available for the Cultuurtuin	0	1	0	0	1
Addressing polluters	0	0	1	0	1
Fundraising activities	0	0	1	0	1
Contributing by buying food	0	0	1	0	1
Giving advise & plants to neighbours	0	0	0	1	1

Appendix 12: Expected measures from the government regarding UGS

Measure	# of respondents
Maintain existing green spaces more optimally	144
Creating more green spaces for people to use	107
With every new allotment project, claim a certain percentage of greenery	89
Clear policy/legislation with regard to green development	72
Plant more trees in residential areas	40
Encouraging citizens to maintain their verges themselves	39
More education to society about preserving greenery	37
Encouraging citizens to plant more trees	27
Trees in the streets of downtown Paramaribo just like in history	3
Other	6