

WALKABILITY CONCEPT

Batumi (Old Town)

Analysis Report

28th of February 2022



Imprint

Title **Walkability Concept**
Batumi (Old Town)

Title Image **6 May Park Batumi**

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Old Town of Batumi

INTRODUCTION

The German Federal Ministry for Economic Co-operation and Development (BMZ) has tasked the GIZ with implementing the regional program “Sustainable Urban Mobility in the South Caucasus” (Mobility4Cities), with a particular focus on Georgia. Its mission is to assist local governments in designing, implementing, and improving their urban transportation networks.

In 2017, a Sustainable Urban Mobility Plan (SUMP) for Batumi (Georgia, at the Black Sea) was created, which includes measures to improve walking infrastructure and assure pedestrian safety. Additionally, GOPA GmbH (Germany) did a pre-feasibility study on sustainable transportation. Both documents serve as a foundation for Batumi’s plan to transform its transportation system in a more sustainable manner. Car-free zones and a city-wide Intelligent Traffic Control System (ITCS) are among the solutions being considered.

Members of the Mobility4Cities team visited Batumi in 2020 and discussed the development of mobility solutions as well as current challenges with local stakeholders. Together, they identified needs and opportunities for collaboration in designing a walkability concept for the Old Town of Batumi.

To overcome the barriers and support the City with improving walkability in the old town, the GIZ contracted Buro Happold as an international consultancy service provider. The local partner, STS, supports with activities being performed on site. Both companies work closely together. Both parties, together with GIZ, will support the municipality with developing the walkability concept. This includes:

- Research on walkability
- Assessment of current situation
- Development of the concept
- Workshops
- Implementation and communication strategy
- Reporting

The three pillars of sustainability should be addressed while developing a durable and future-proof solution for the walkability concept. In addition to ecological considerations, social and economic factors should be considered. A solid and accepted concept is ensured when all three pillars are in balance.



Introduction

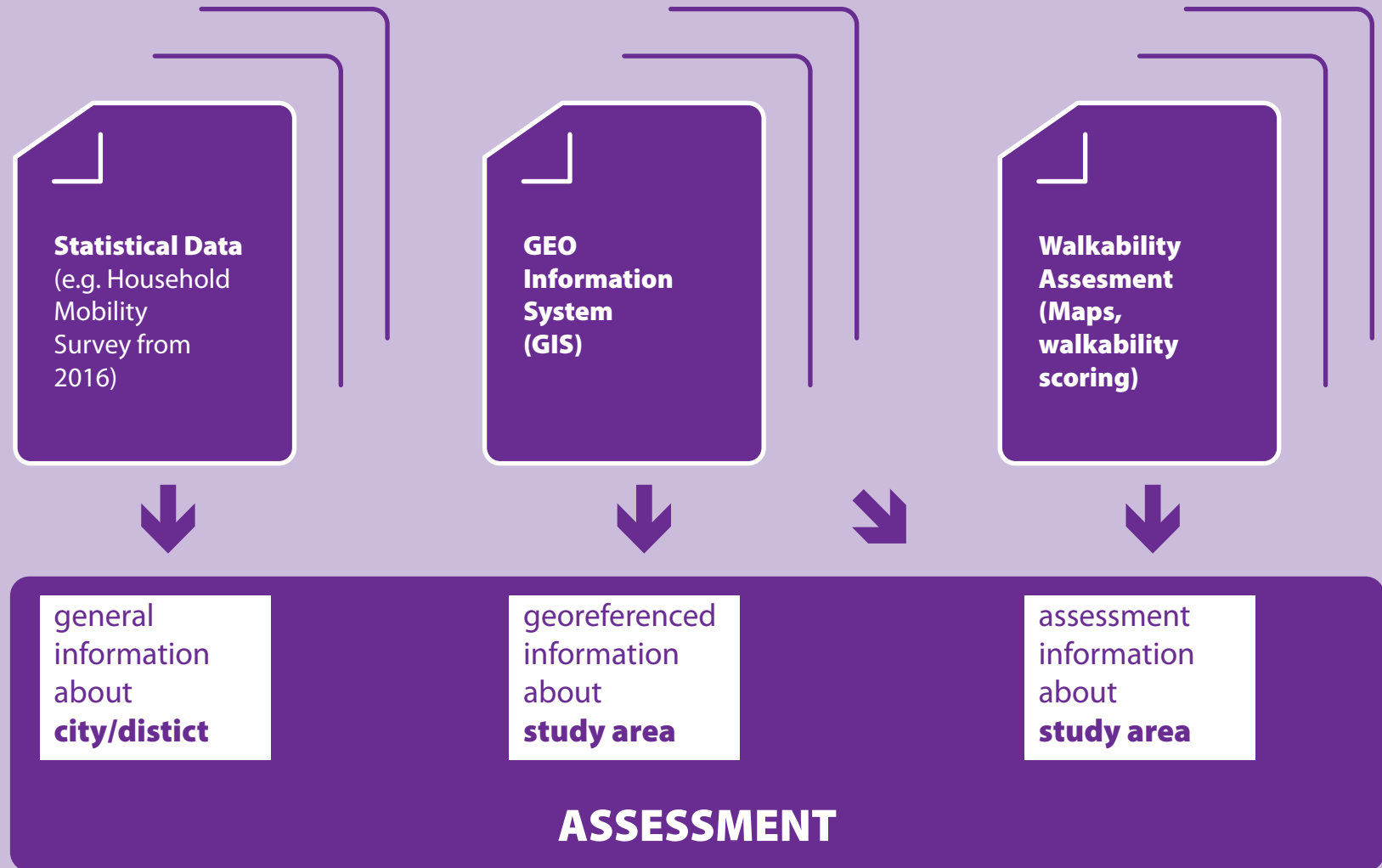
Before starting the process of developing the walkability concept itself, it is essential to perform a proper analysis and assessment of the area. For this the following levels were analysed:

- city / district
- study area

For the **city and district level** the information derive from the Transportation Household Survey (THS). This was carried out in 2016. It contains information about different transport relevant topics like the modal split, mobility rates, and car ownership.

On the **level of the study area**, it is on the one side the GIS data base that was used to analyse different aspects. This includes e. g. the land use, road network, and points of interest (POI).

On the other hand, a bunch of data was collected by STS for the **study area**. This builds the basis for the walkability scoring which is the result of the walkability assessment.



WALKABILITY

What is walkability?

Walkability can be defined as the degree to which a built environment facilitates walking and motivates the people to walk in the first place.

Walking was the primary mode of transportation before automobiles and bicycles were mass-produced. For long of human history, it was the only method to move from A to B. Economic prosperity in the 1930s led to a rise in automotive production. Cars became more inexpensive, resulting in the rise of the automobile during the postwar economic expansion. The negative impacts of car traffic quickly sparked public awareness about pollution, noise and separation. Planners and regulators now are paying more attention to alternatives, such as improved public transportation and walking infrastructure.

Another definition of walkability, states: ***"The extent to which the built environment is friendly to the presence of people living, shopping, visiting, enjoying or spending time in an area"***.



La Rambla, Barcelona

What makes a city walkable?

A city's walkability is the degree to which it has safe, designated areas for people to walk to their destination. Walkable communities are often touted as being easier to get around and fostering a greater sense of community. A one-mile walk through a compact, walkable neighborhood takes residents past numerous businesses and shops. Seven distinct elements make a city walkable:

Center

Walkable neighborhoods have a center, whether it's a main street or a public space. Traditionally, for instance, this is why so many cities are laid out main squares or plazas.

People

There needs to be enough people for businesses to flourish and for public transit to run frequently. Hence the focus on mixed-use commercial and residential development trending in contemporary urban planning.

Mixed-income, mixed-use

Walkable neighborhoods must have affordable housing located near businesses, to thrive over the long haul.

Parks and public space

People need plenty of public places to gather and play nearby.



WALKABLE CITY

Pedestrian design

A design needs to focus on buildings that are close to the street, parking lots that are relegated to the back. Walkable neighborhoods should also plan for the various modes people use for walking.

Schools and workplaces

These should be located close enough that most residents can walk from their homes" whenever possible.

Complete streets

Streets must be designed holistically for bicyclists, pedestrians, and transit, in addition to people with disabilities.

Some of these elements, such as people, may be self-evident. However, when considering walkability, people rarely consider factors such as mixed-income groups or the presence of schools.

"A city is successful not when it's rich, but when it's people are happy. Creating bikeability and walkability, shows respect for human dignity. We're telling people: "You are important - not because you're rich, but because you're human.""

Meik Wiking (Author)

A city, in order to be **walkable** should be **characterized by**:

Connectivity

The path network should be passable, well connected without major gaps or barriers, both locally and in the larger urban setting.

Linkage

Pedestrian paths should be linked convenient and seamlessly, without interruptions and hazards, with other modes such as bus, street-car, subway, or train, minimizing automobile dependence.

Safety

The pedestrian network needs to be safe for people of varied ages and degrees of mobility, both from traffic hazards and crime.

Dubrovnik, Croatia

Quality of the path

Pedestrian paths need to be well comfortable and well designed in terms of width, paving, landscaping, signing, and lighting.

Variety of land uses

Land use patterns need to be fine grained and varied, especially for local serving uses, so that pedestrians can actually walk to useful destinations.

Path context

The path context, including street design, architecture and landscape, needs to offer visual interest and overall explorability.



What are the benefits of walkability?



SAFETY

Walkable areas have not only better safety rates, but also a higher sense of community. Walkable communities encourage pedestrian activity, expand transportation options, and have safe and inviting streets that serve people with different ranges of mobility. Additionally, strong walkability correlates with lower pedestrian fatality rates. According to studies from the USA, pedestrians in cities considered unwalkable were two to three times more likely to die than those in cities with favorable walking conditions. The sense of community, increase in a walkable area, people use to be out more, there are more eyes keeping watch on neighborhood safety, which makes these areas lower risk targets for criminals of all types. People living in walkable neighborhoods, trust neighbors more, participate in community projects and volunteer more than in non-walkable areas. Walkability brings people together who might otherwise never cross paths.



ACCESSIBILITY

Done correctly, walkability concepts bolster the ability for movement of people with all types of different mobilities. In the Journal of Urbanism, Ria Gutabarar Lo argues that ***"in order to understand walkability, it is important to consider how pedestrians are defined and the discourses that shape the development of pedestrian space."***

Walkability should prioritize access to jobs, education, health care, goods and services, and recreation activities without driving. Nancy S. Chu, in her doctoral thesis on walkability and accessibility, states that: ***"The importance of accessibility continues to focus on people with disabilities and refers to the design of products, devices, services, or environments. Accessibility in architecture refers to the ease in physical locomotion through and use of a given environment."*** (Geboy, et al., 2001)

"On an urban scale, it is the ability to satisfy one's ordinary needs with the minimum amount of travel and cost." (Duany, 2010) When everyone has access to traversing an area for daily life, the other benefits of walkability - economic, health, safety, and community - all increase exponentially.

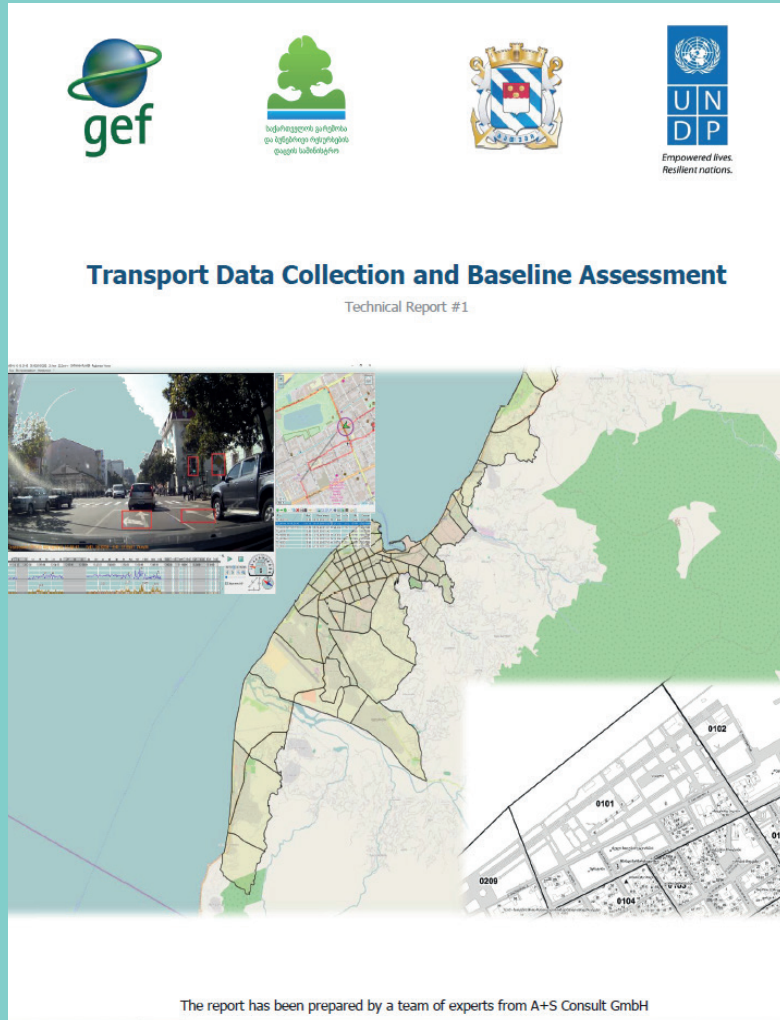


MOBILITY CHARACTERISTICS

Transport Data Collection and Baseline Assessment

In 2016, the Global Environmental Facility (GEF) funded the project “Green Cities: Integrated Sustainable Transport for the city of Batumi and the Adjara Region”, and it was implemented by the United Nations Development Programme (UNDP), with support from Batumi City Hall and the Ministry of Environment and Natural Resources Protection of Georgia. A+S Consult GmbH was commissioned to conduct and assess a Household Mobility Survey. This survey contains a lot of helpful information regarding the mobility of the people in Batumi. These information represent the whole city and depict the situation in average.

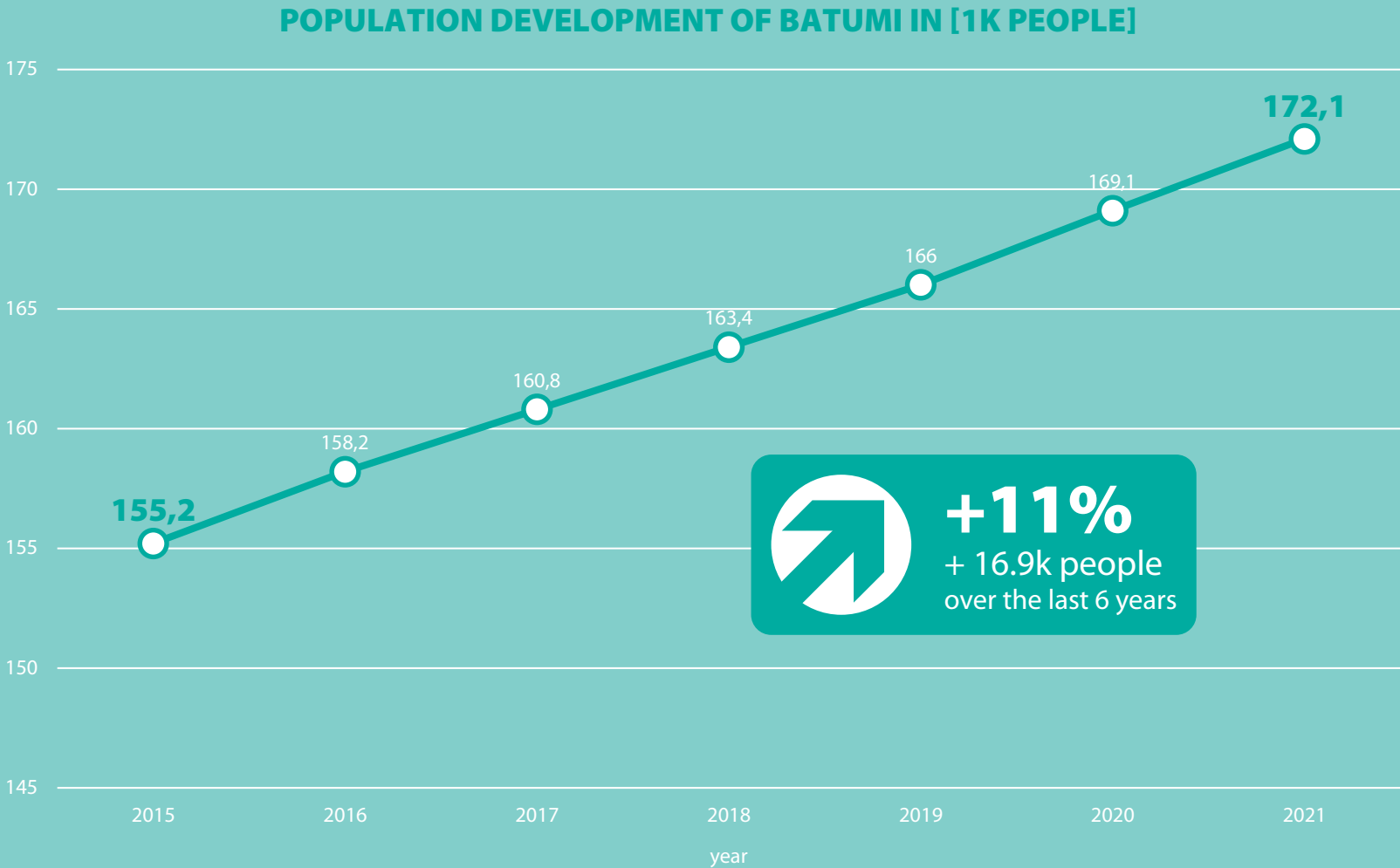
On the following pages there will be an analysis of a couple of relevant data from the survey regarding the mobility in Batumi. One of the most important factors is the modal split. It gives an impression of the share of the different modes of transport. The report of the household survey contains way more information. Here only the most relevant once will be analysed. For further information on the mobility of the people in Batumi it is recommended to take a closer look into the report of the survey.



Population

The autonomous republic of Adjara (ARA - which Batumi is the capital of) in 2021 had a population of 354.9k inhabitants - 203.5k of them live in an urban environment. Batumi has a population of 172,1k people. It's facing a gradual increase since 2010.

The population of Batumi accounts for 4.6% of the total population of Georgia, and 7.8% of the urban population of Georgia. As of 2020, in the municipality of Batumi, 3,045 live births were recorded, a number that has doubled since 2010. The ARA has a population density of 122.4 habitants per sqkm. This number has seen a gradual increase from 114 since 2014.



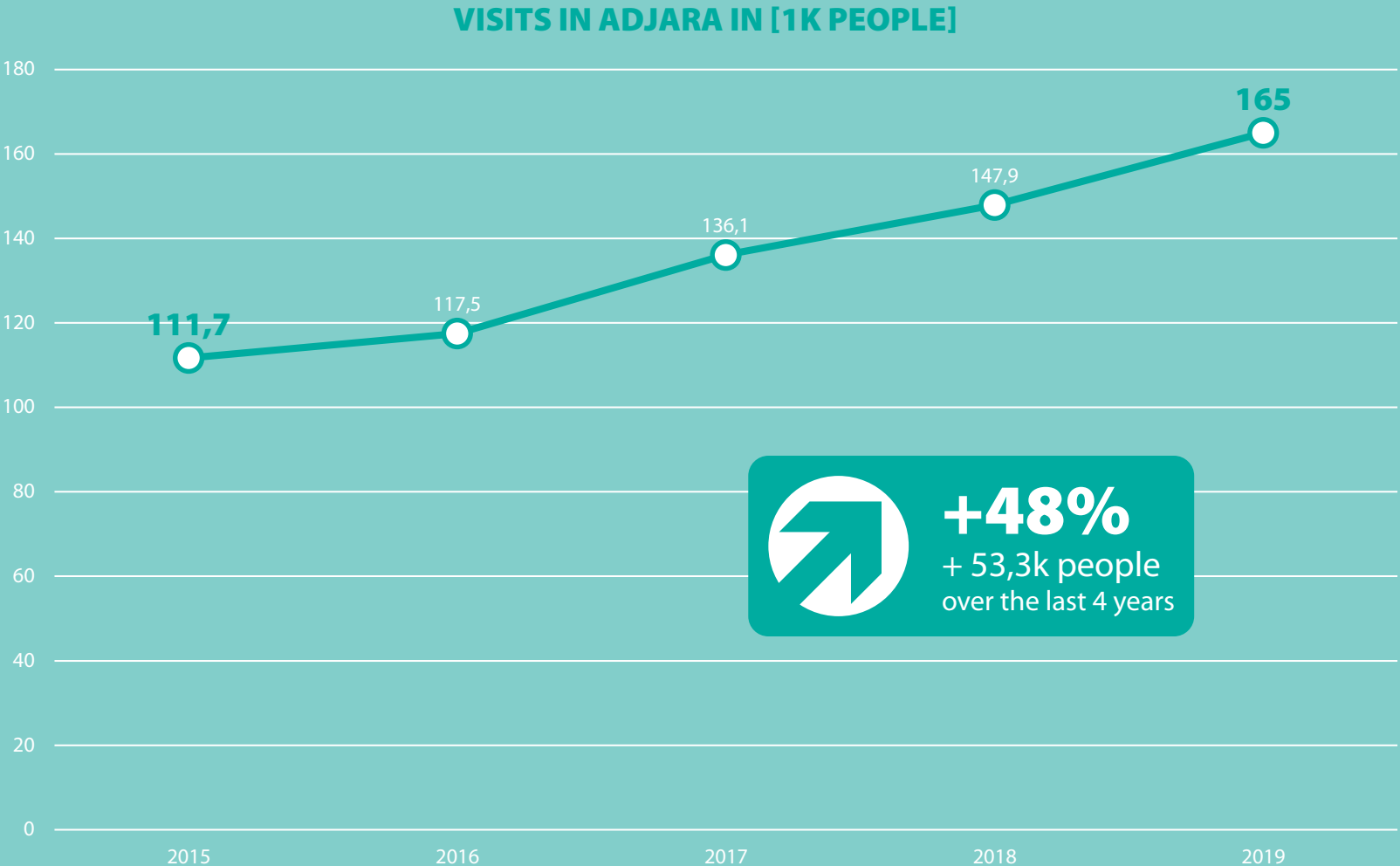
Population

The Adjara region, mostly because of its location right next to the Black Sea, but also due to the infrastructure of Batumi (novelty sights), which is developing quite sharply, is quite popular among tourists, especially in the summer season.

Batumi has been described as the touristic center of west Georgia. More specifically, the visitors in Adjara region increase every year, as it can be seen in the neighbouring diagram.

Between 2015 an 2019, there was an increase in the yearly visitors of about 50k, reaching 165k visitors in 2019 alone.

This number is bigger than the whole population of Batumi, and shows the increase of people that visit Batumi. This happens especially in the summer seasons.

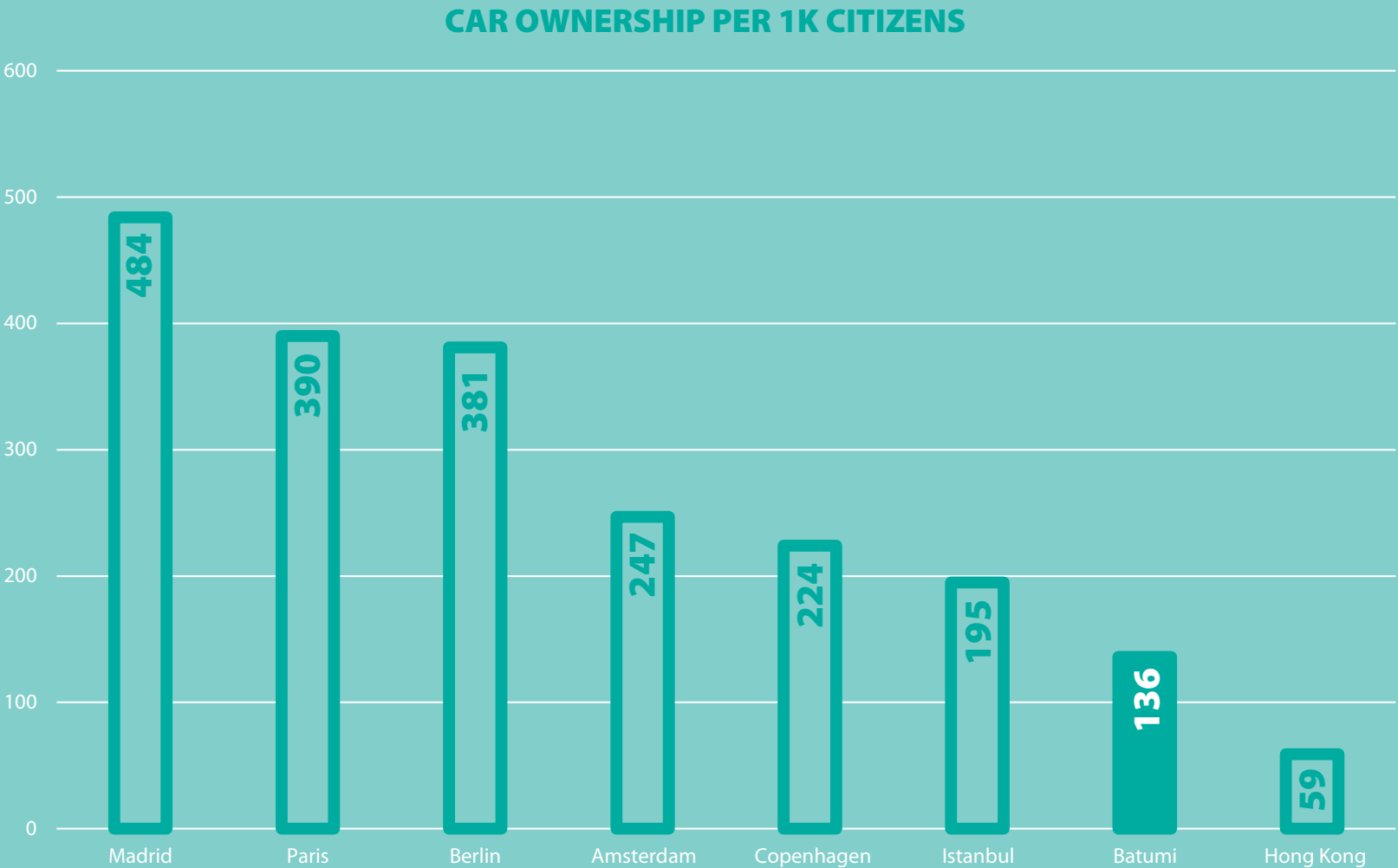


Car ownership

In the diagram on the right, can be observed the car ownership ratio. This indicator depicts the number of cars owned per 1k residents. Low car ownership is common in cities with low welfare, high population and job densities, as also in cities that prioritize public transport. Cities with wealthier citizens, large suburbia and low quality transportation, as well as uncontrolled parking in the downtown area tend to have higher car ownership rates.

By the end of 2020, in the ARA, a total of 114.4k motor vehicles could be counted. 95.8k of them where passenger cars, which makes them the dominant share of motor vehicles. Buses and minibuses accounted only for 5.9k of them.

In the city of Batumi, the car ownership climbs up to 136 cars per 1k people, a number that surpasses the one of Hong Kong, and is very close to the one in Istanbul. Compared to European cities, this a relatively low number. Madrid for example, reaches a car ownership of almost 500 cars per 1k citizens.

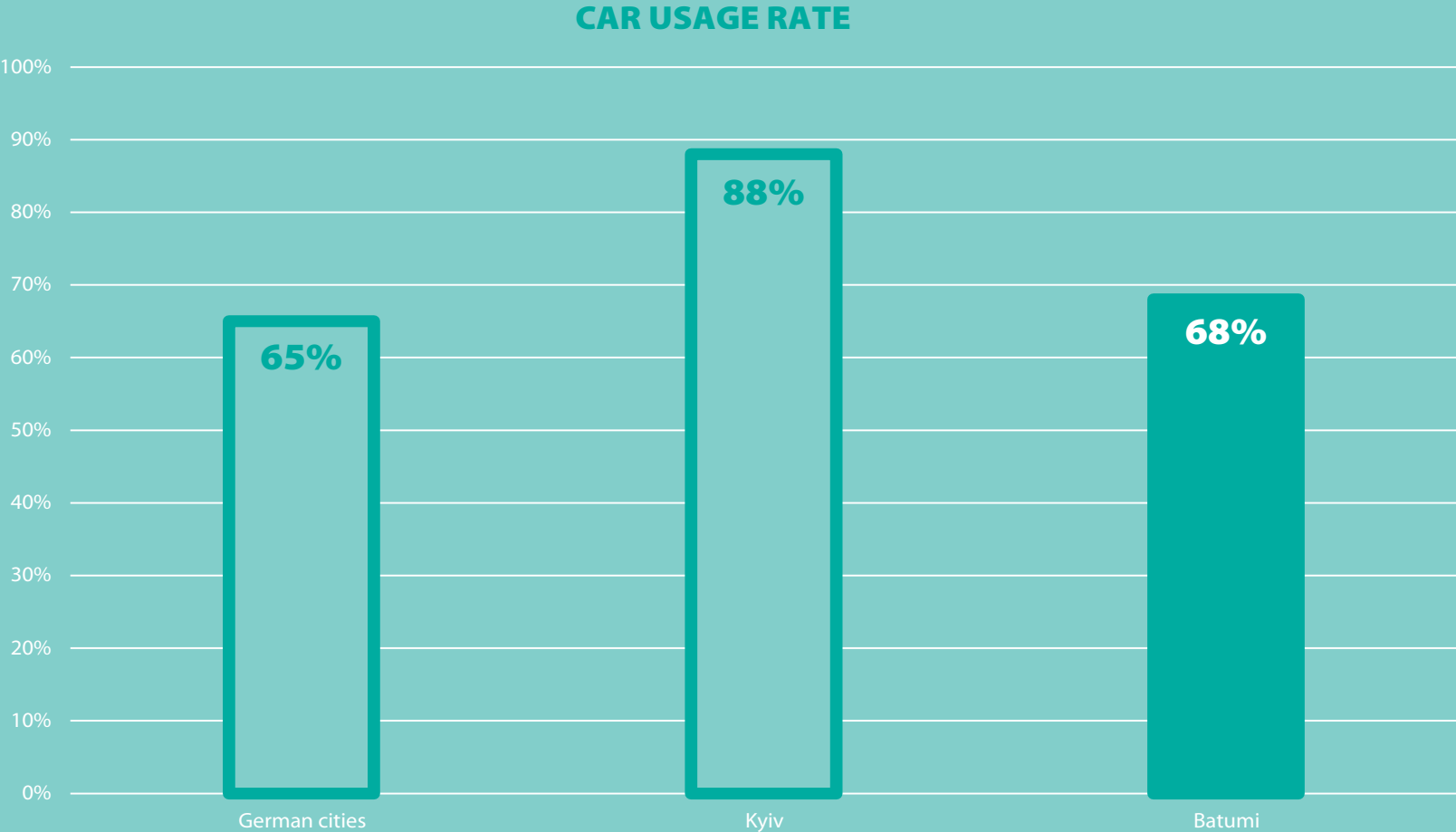


Car usage rate

The car ownership rate alone does not provide enough information about how people move. The city’s transportation strategy has a significant impact on the car utilization rate.

Even if city residents can afford one or more cars, if city policy is oriented toward car usage cost internalization, i.e., the city makes car owners pay for all the consequences of their car use, such as traffic jams and land use for parking; if the city provides efficient public transportation, people do not drive to the downtown.

This rate rises to 68 percent in Batumi, a figure that is very close to that of German cities. Lower car usage is beneficial for a city to become more livable and pleasant.



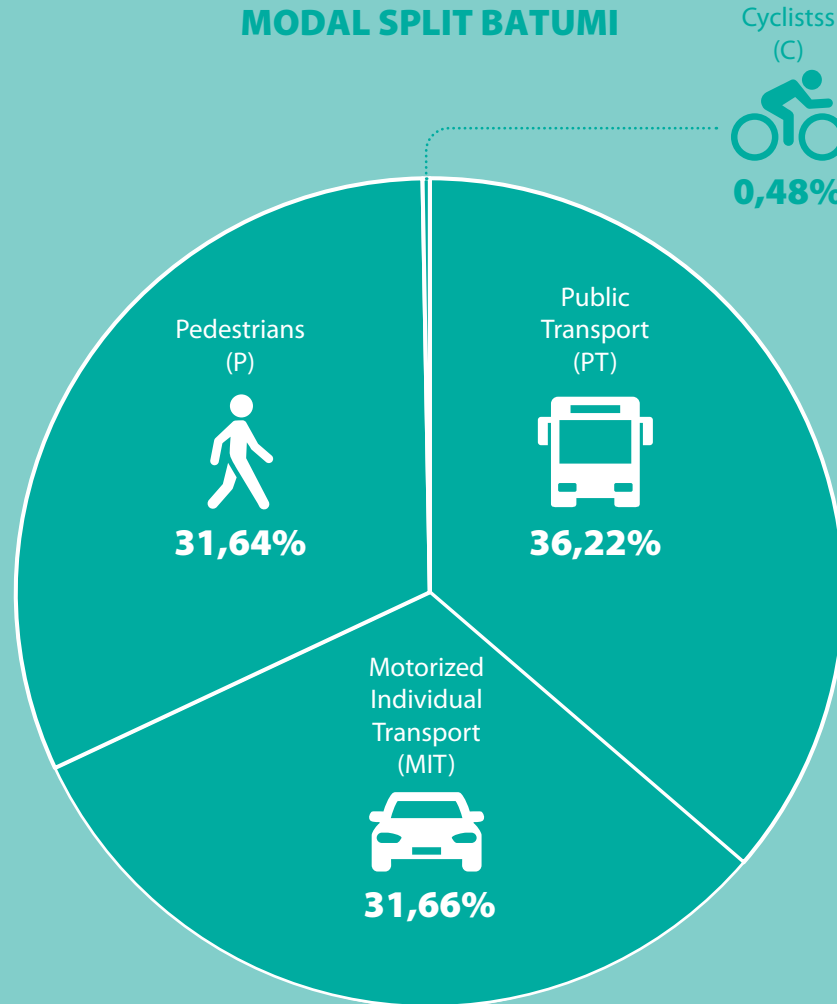
Modal Split

As a consequence of city transportation policy, quality of infrastructure, people tend to choose the mode they use to perform trips. This is called modal split. The diagram on the right shows the modal split for the different modes of transport. The numbers in the diagram represent the average for the whole city.

Overall, there is the potential to substitute the car traffic with a higher share of the other more sustainable modes of transport. Especially cycling plays an important role here. The modal split for Batumi is very close to best practise, although Batumi features very low share of bicycle. Low bicycle modal shares are usually explained by the lack of infrastructure, but it is not the case. This phenomenon of low bicycle usage in the city with flat terrain and extensive infrastructure needs further study. For the further development of the Walkability Concept for Batumi, this gives the opportunity to improve the situation and support cycling by including the cyclists and their needs in the design of the street.

The 36% of the public transport trips, is usually done with the 2 of Batumi's public transportation systems - Marshrutkas (mini-buses) and buses. 61% of those trips are done with Marshrutka's and only 38% with buses.

MODAL SPLIT BATUMI



* Unfortunately there are no more differentiated information regarding the different districts. The situation in the Old Town of Batumi and its surrounding neighbourhoods might differ from the numbers shown here.

Mobility rate

The diagram on the right shows the mobility rate for the city of Batumi. The mobility rate metric represents the average number of trips made by each citizen in the respective area per day. It's critical to comprehend how people move around the area. In addition, this indicator indirectly refers to city welfare and transportation system convenience: in the case of low mobility, people try to avoid extra trips, only taking the ones that are required (to work or school and back home) and refusing to engage in extracurricular or leisure activities.

As can be seen in the graph, in developed economies the mobility rate is usually higher. The average number of trips per person per day in Batumi is at 1.24. This is a relatively low value, especially compared to other cities.

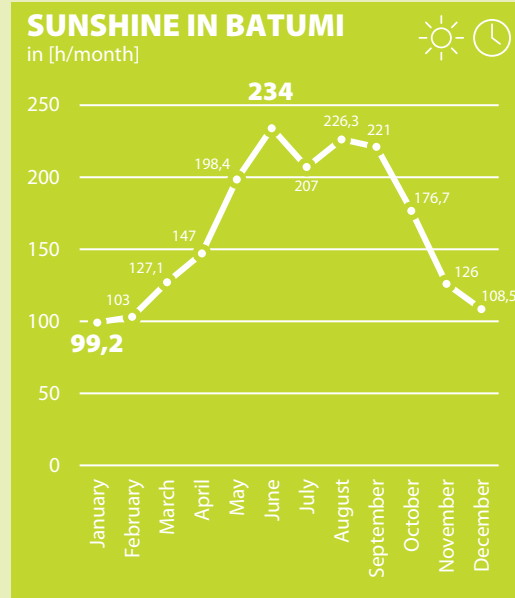


CLIMATE CONDITIONS



Temperature

Because of its proximity to the Black Sea, Batumi has relatively warm temperatures. This implies that the weather is pleasant throughout the year, making it a year-round resort. Summers can be warm/hot, but not too harsh. Batumi has an average yearly temperature of 14 degrees Celsius. The maximum reaches approx. 24 degree Celsius. The lowest numbers are measured in the winter time. There the temperature falls to ca. 7 degree Celsius.



Sunshine

The length of the day in Batumi varies significantly over the course of the year. The shortest day is in December, with 9 hours of daylight. The longest day is in June, with 15 hours of daylight. On average, June is the sunniest month with 234 hours of sunshine. January has on average the lowest amount of sunshine with 99 hours. The average annual amount of sun hours is almost 2k hours.



Precipitation

Batumi receives a lot of rain (compared, for example to Berlin) and rain falls throughout the year. The month with the most rain in Batumi is November, with an average rainfall of 310 mm. The month with the least rain in Batumi is May, with an average rainfall of 105 mm. Due to the average temperatures above 0 degree Celsius all over the year, the potential for snow is very low.



STAKEHOLDER MAPING

Stakeholder Mapping

The involvement of the different stakeholders plays an important role for the creation of the walkability concept. Their input is essential for the successful definition and

To get an overview of all the relevant stakeholder a stakeholder map was developed. The current draft is depicted in the diagram to the right. It is structured in four levels:

- Municipality level
- Local government level
- National government level and
- CSO, NGO & IO level

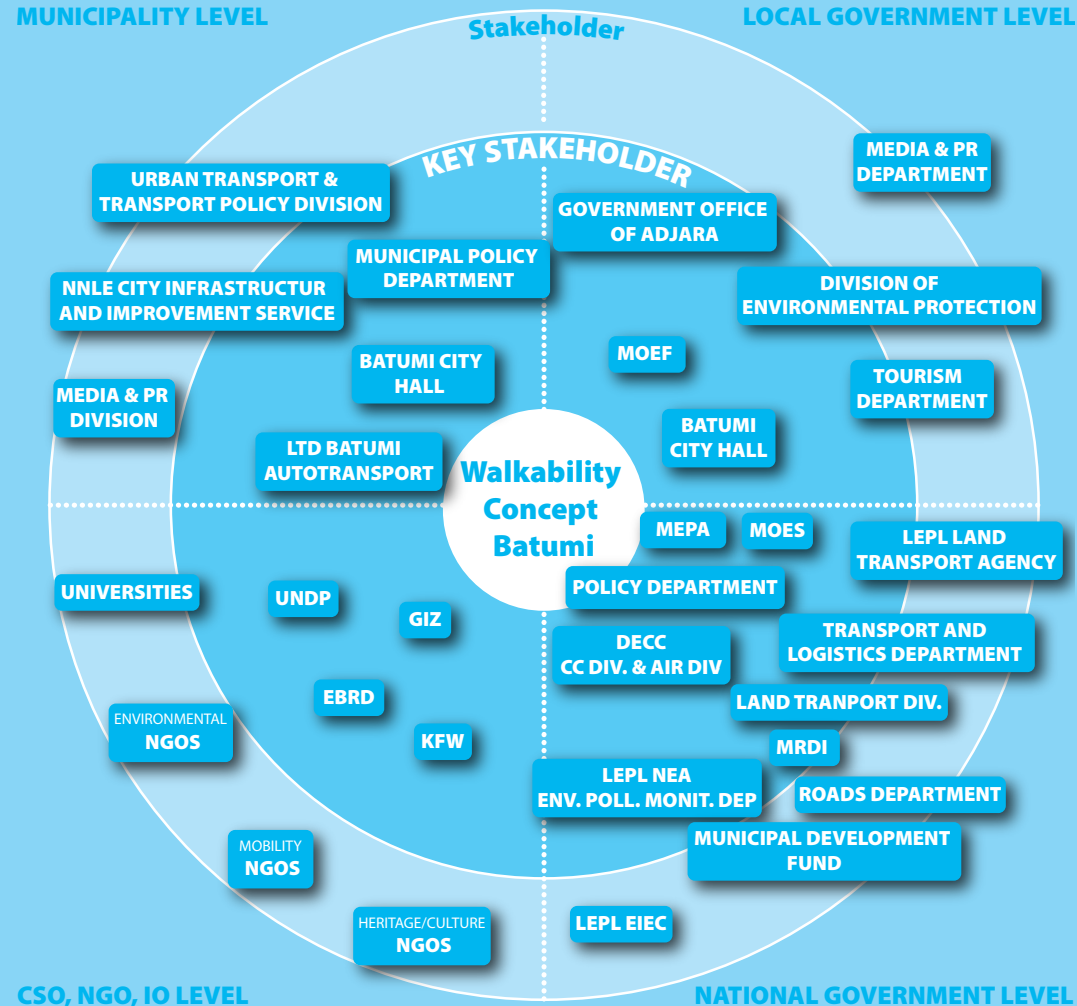
For each sector the different stakeholders are ranked in three groups:

- Key stakeholder
- Stakeholder

This gives a proper feeling for the importance of the different stakeholder and their influence/contribution.

The stakeholder map was developed in cooperation with by GIZ and STS. It will be discussed within the project and be updated if needed.

The figure on the right shows that the majority of stakeholders come from the public sector. This is something to be expected since the project is about to design public space. From the



public sector especially the local business will play an important role since they are one of the main user groups / actors in the Old Town of Batumi. Within the civil society there are different interest groups, residents, employees and tourists/visitors that will play an important role. Here the representatives of certain interest groups (e. g. disabled people, cyclists, pedestrians, ...) will deliver valuable input.

STUDY AREA

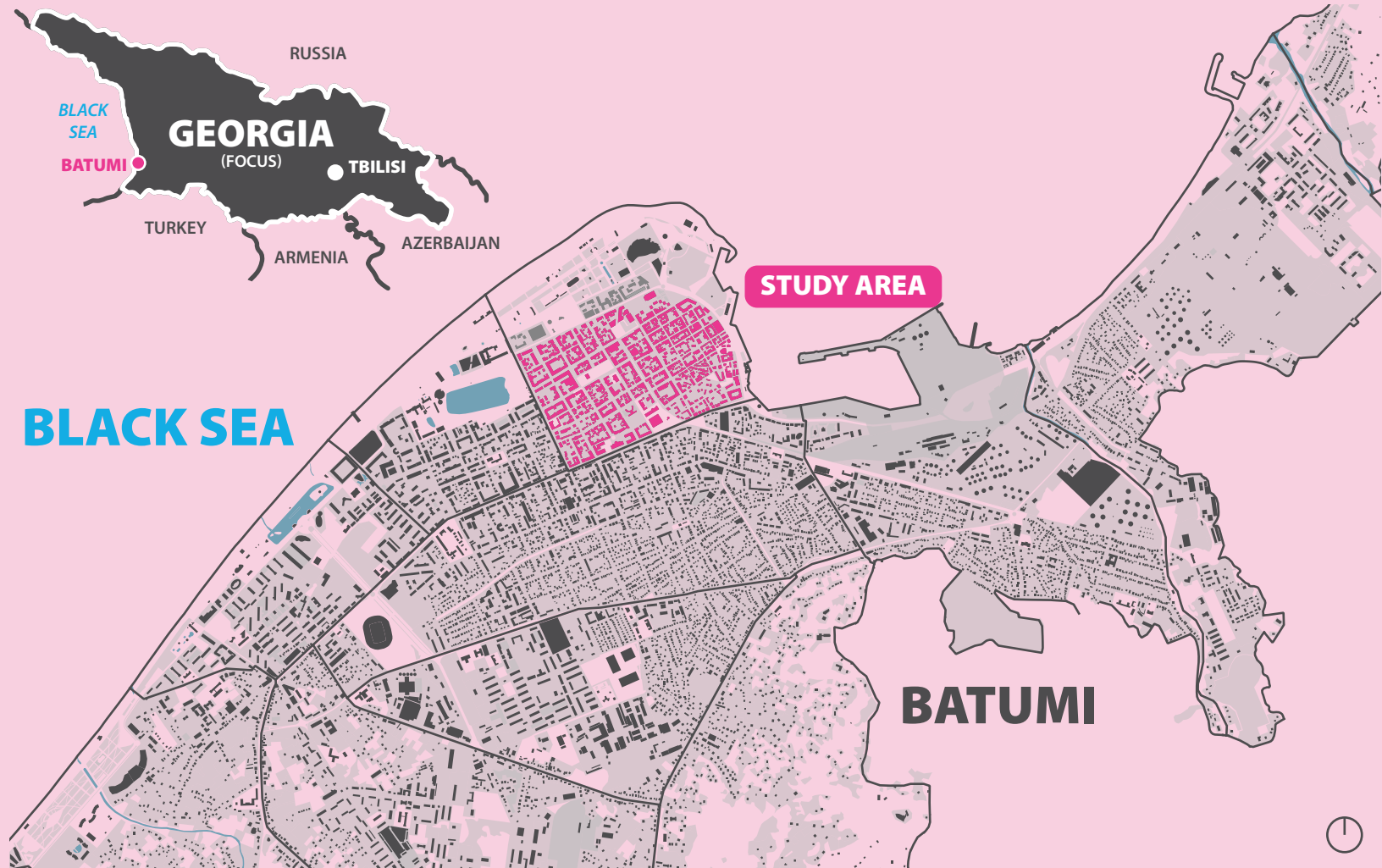
Location

Batumi is the second largest city in Georgia and one of the major summer tourism destinations in the Black Sea region. It is located in the south west of Georgia.

Historically, the city was developed with a grid of perpendicular and narrow streets suitable for walking and short urban trips. But the area of Batumi has expanded from 18 square kilometres in 1990 to 65 square kilometres in 2012 and the population has grown from 123k people in 1990 to 154k people in 2015.

This rapid and spontaneous growth in population (natural growth as well as expansion of city boundaries), in territory and ever-increasing number of visitors has led to growing rates of motorisation, resulted in congested major streets since last 5-6 years and placed pressure on performance level of urban infrastructure and urban services, among them urban transport system.

The study area is located directly next to the Black Sea. A more detailed view on the study area itself follows on the next page.

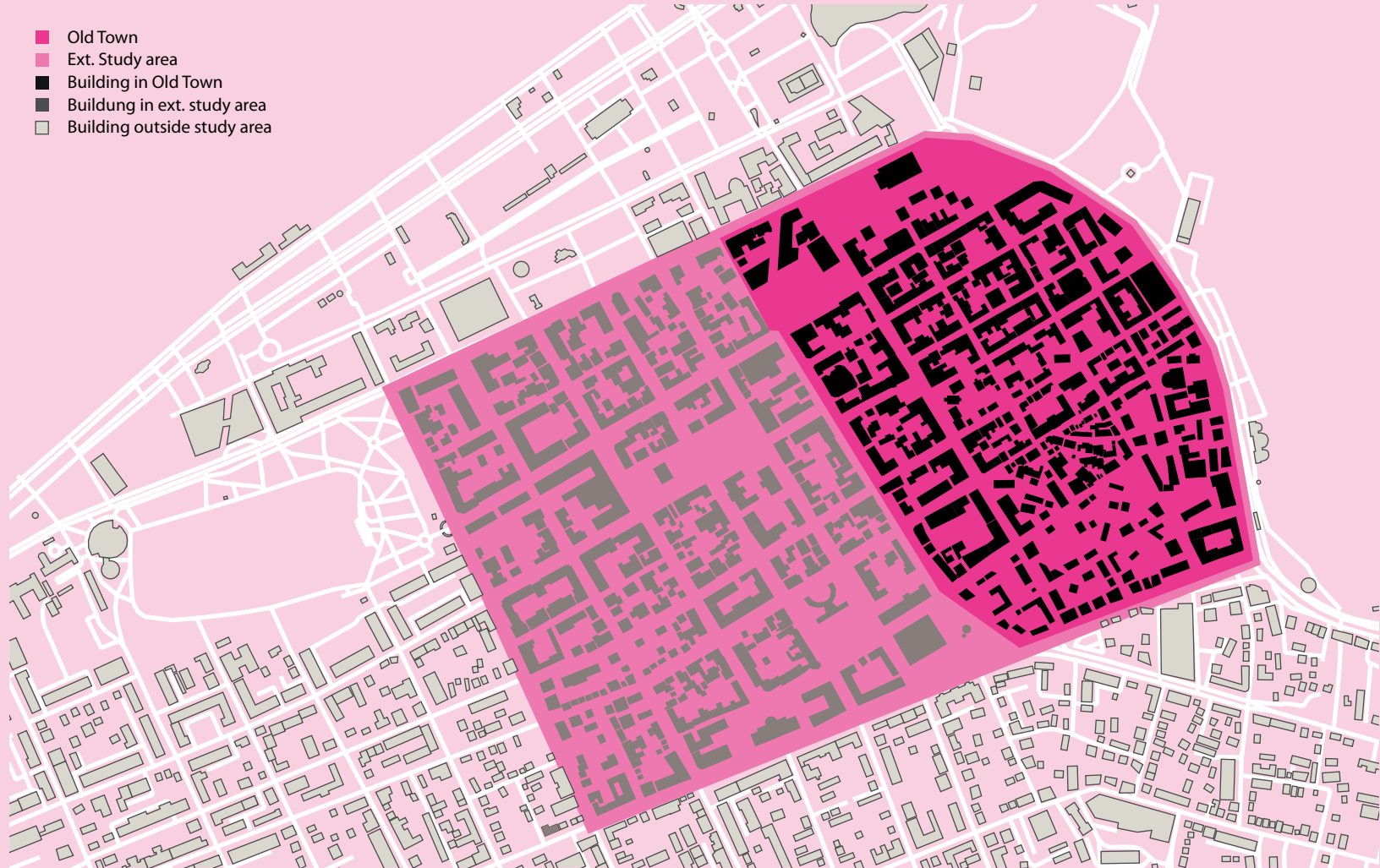


Location

The more detailed analysis focuses on the study area in the map shown to the right. It includes the old city centre of Batumi and the immediate neighbourhood southwest towards the 6th May Park. More specifically, the study area is enclosed by:

- Rustaveli Avenue (NW),
- Gogebashvili St. (NE),
- Chavchavadze St. (SE), and
- Melikishvili St. (SW).

The boundaries of the study area were defined on the basis of proximity to the city centre. The covered area describes the space that can be accessed by pedestrians within a 5 min. walk or a of around 500 m, from the Roses square.



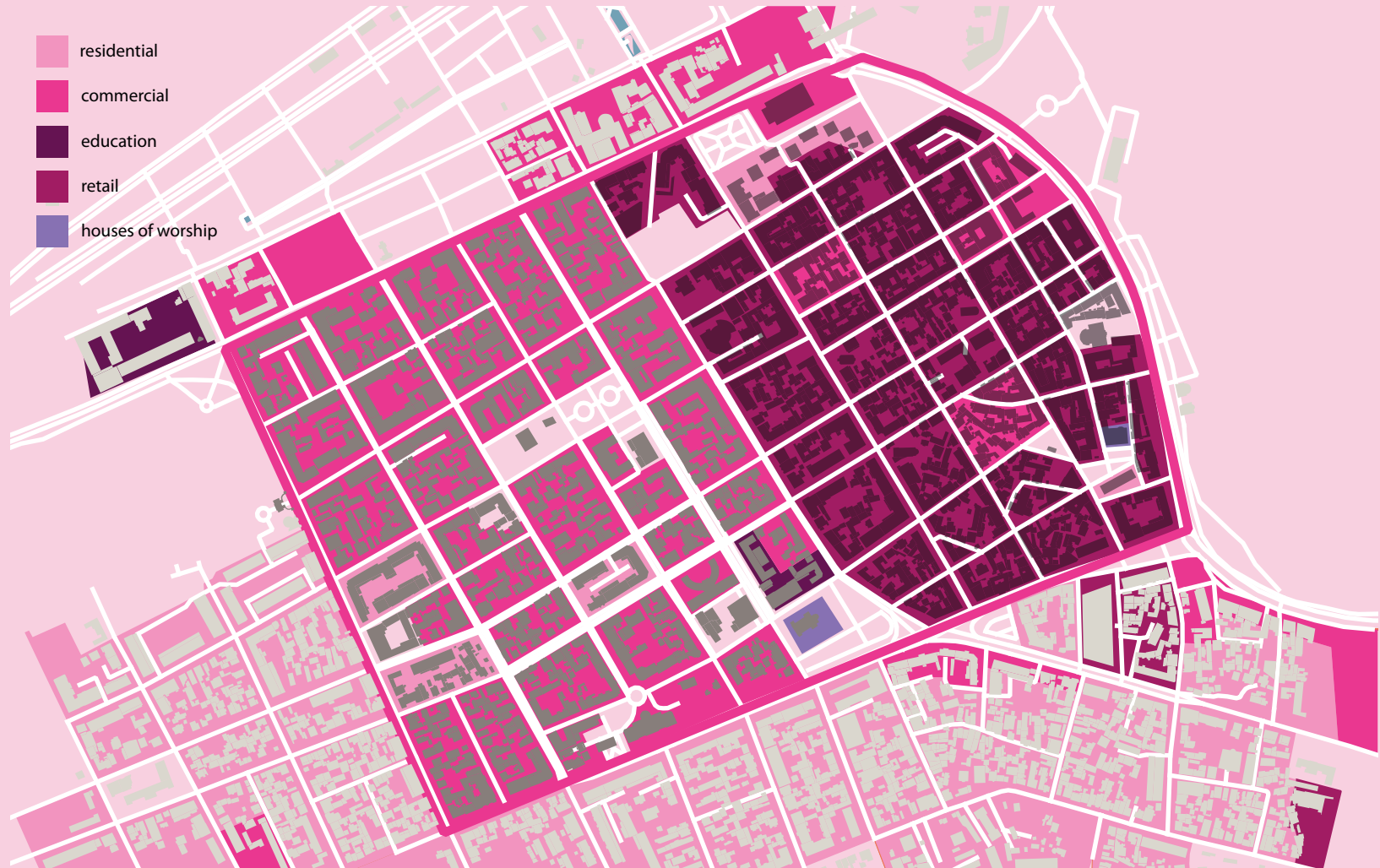
Landuse

The landuse of the area surrounding the project area is marked by a high share of retail use. The area is predominantly characterised by shops and restaurants and other shops that sell goods.

In the southwest part of the study area, most parts are of commercial use, i.e. offices or businesses that sell services.

Very little residential occupancy can be observed in the study area, mainly in the south-west part. It significantly increases southern of that area, which is outside of the current project's study area.

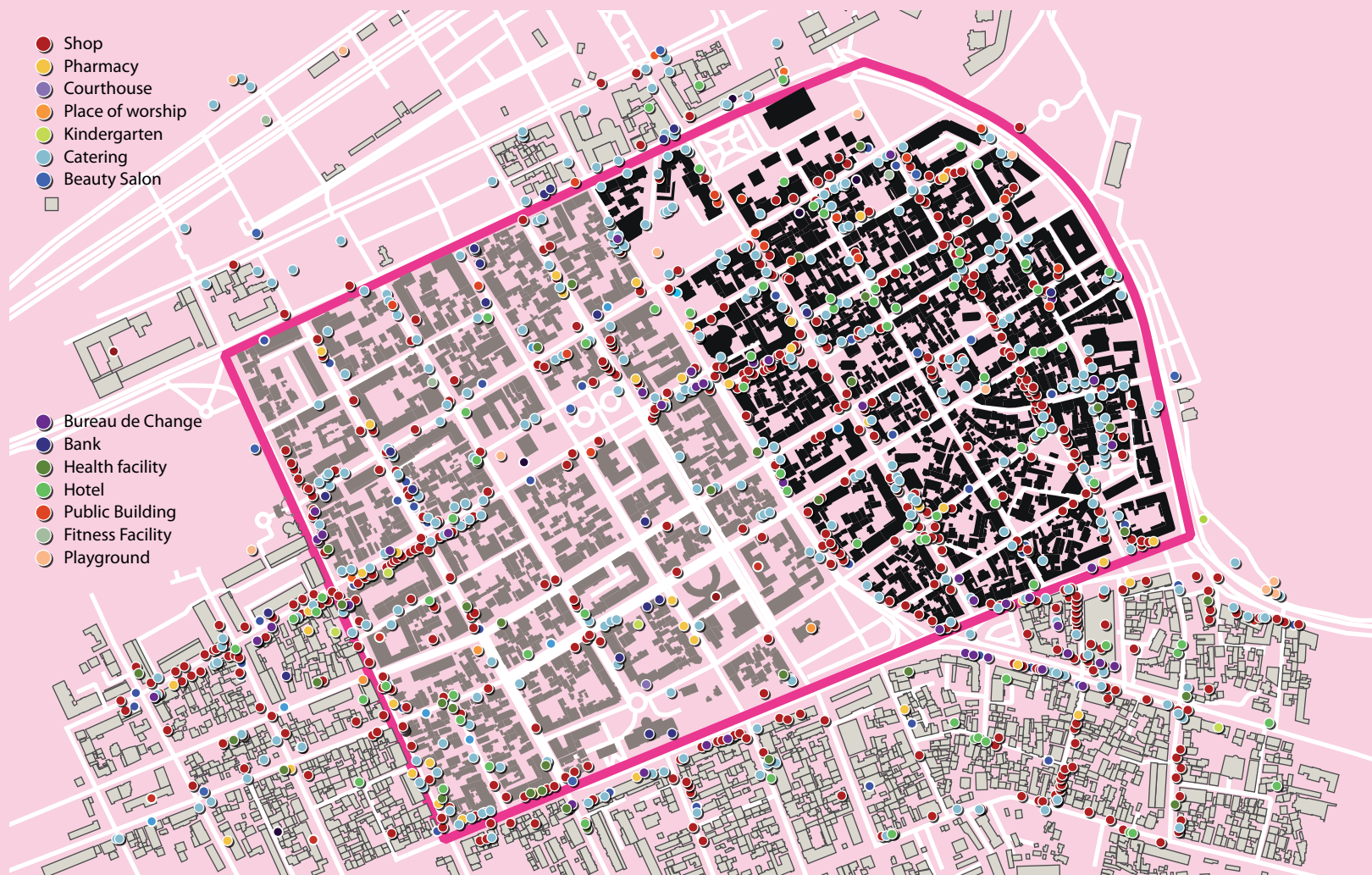
A few recreational and public spaces can also be observed in the city centre of Batumi. In the analysis area there is also landuse with educational and worship purposes.



Points of interest (POI)

The traffic flow is generated by the different types of uses and the way they are connected with each other. To get a more detailed understanding of the use of the buildings/area an analysis of the different points of interest (POI) within the study area was performed in addition to the analysis of the landuse. The image on the right depicts the current situation by categorizing the POIs by type of use.

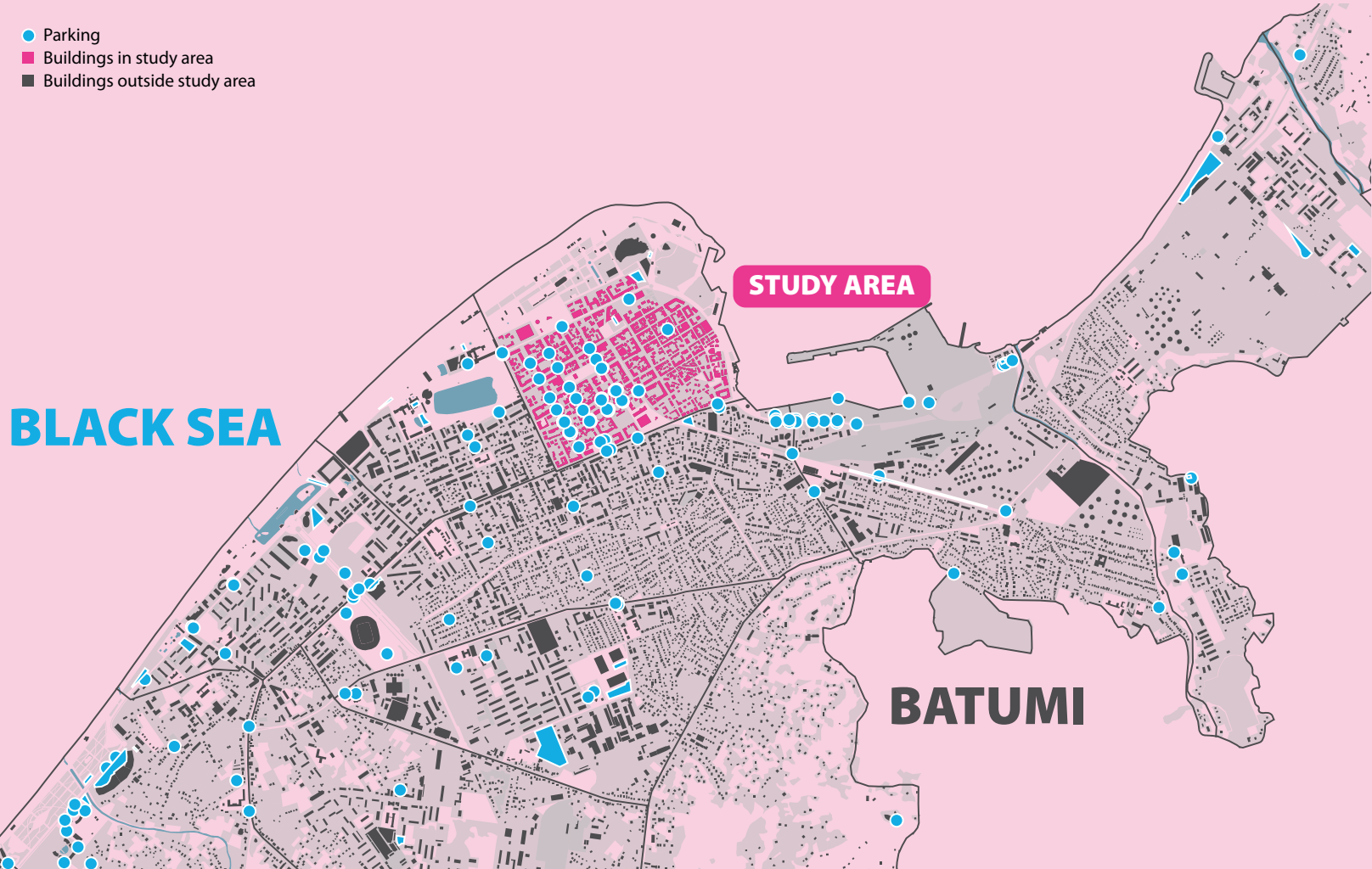
In the project area, one can see a higher density of POIs than outside the area. Especially in Zviad Gamsakhurdia Street the density of shops and businesses is high. Outside the project area, the high number of shops is noticeable in the Zurab Gorgiladze Street, especially close the Melikishvili Street. Also noticeable is the cluster of catering/restaurants in the Kutaisi street, probably due to the high number of tourists who stay in the nearby hotels



Parking

The management of Parking spaces inside of the city Batumi is responsibility of “Transport Infrastructure Management Agency”. There 180 Parking areas rented by the hotels (for guests and for public) and one multi story building with 120 parking lots. Price in multi-store parking is 5 GEL per day and per month 100 GEL. The official numbers from the municipality refer to 1246 parking lots on 6 main streets (Zubalashvili, E. Ninoshvili, V. Fshavela, L. Asatiani, K. Gamsaxurdia) among them 421 are 45 degree parking and 825 parallel parking lots. Other sources are talking about 3000-4000 places or even 8000 parking places.

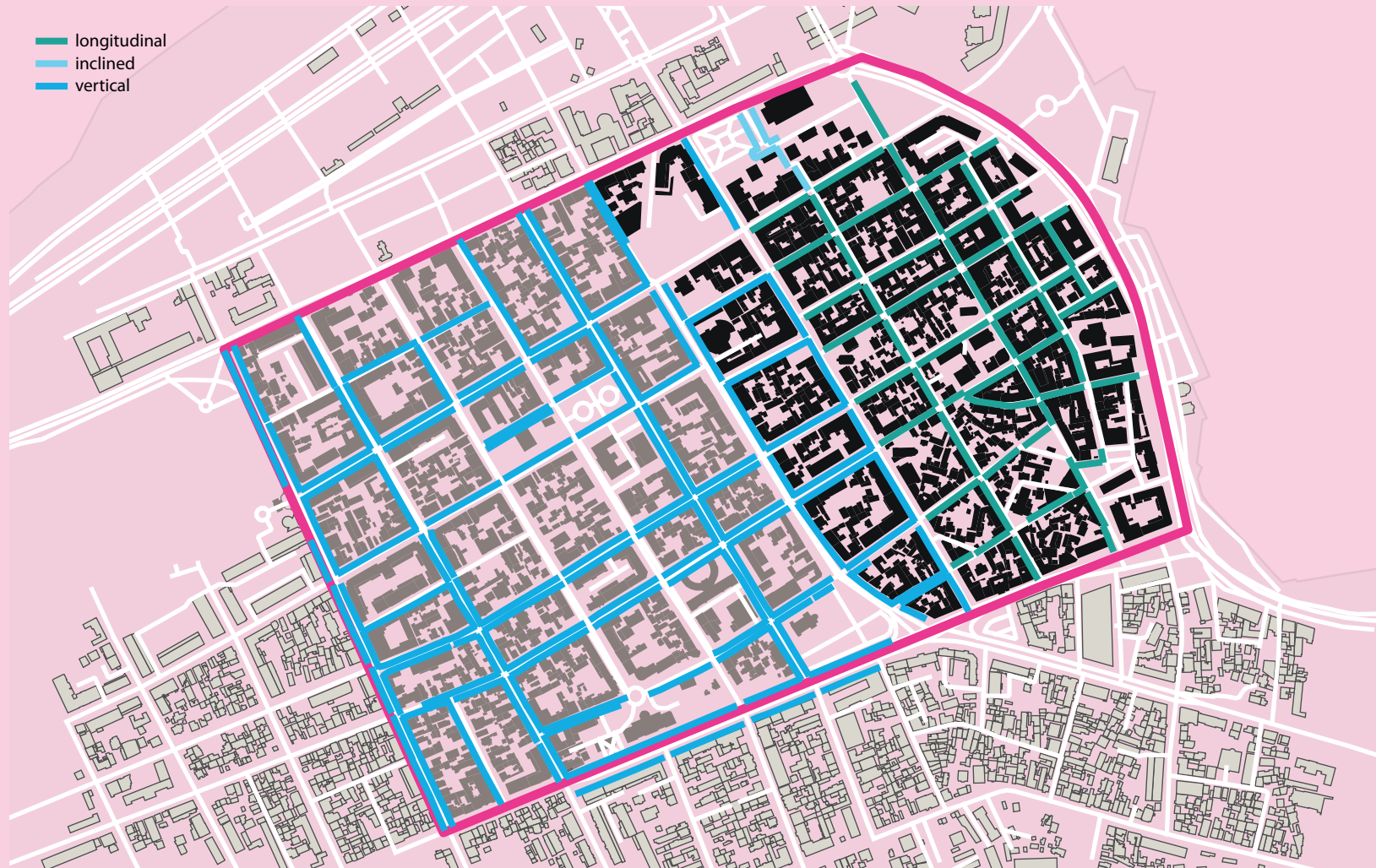
As seen on the map on the right, the density of parking possibilities in the city centre is higher than the rest of the city. This is probably because the city centre has a higher density of commercial uses (e.g. hotels) who need parking for visitors.



Parking

The study area is characterized by a range of municipal parking spaces on-street. Parking can be observed in the majority of the streets of the study area.

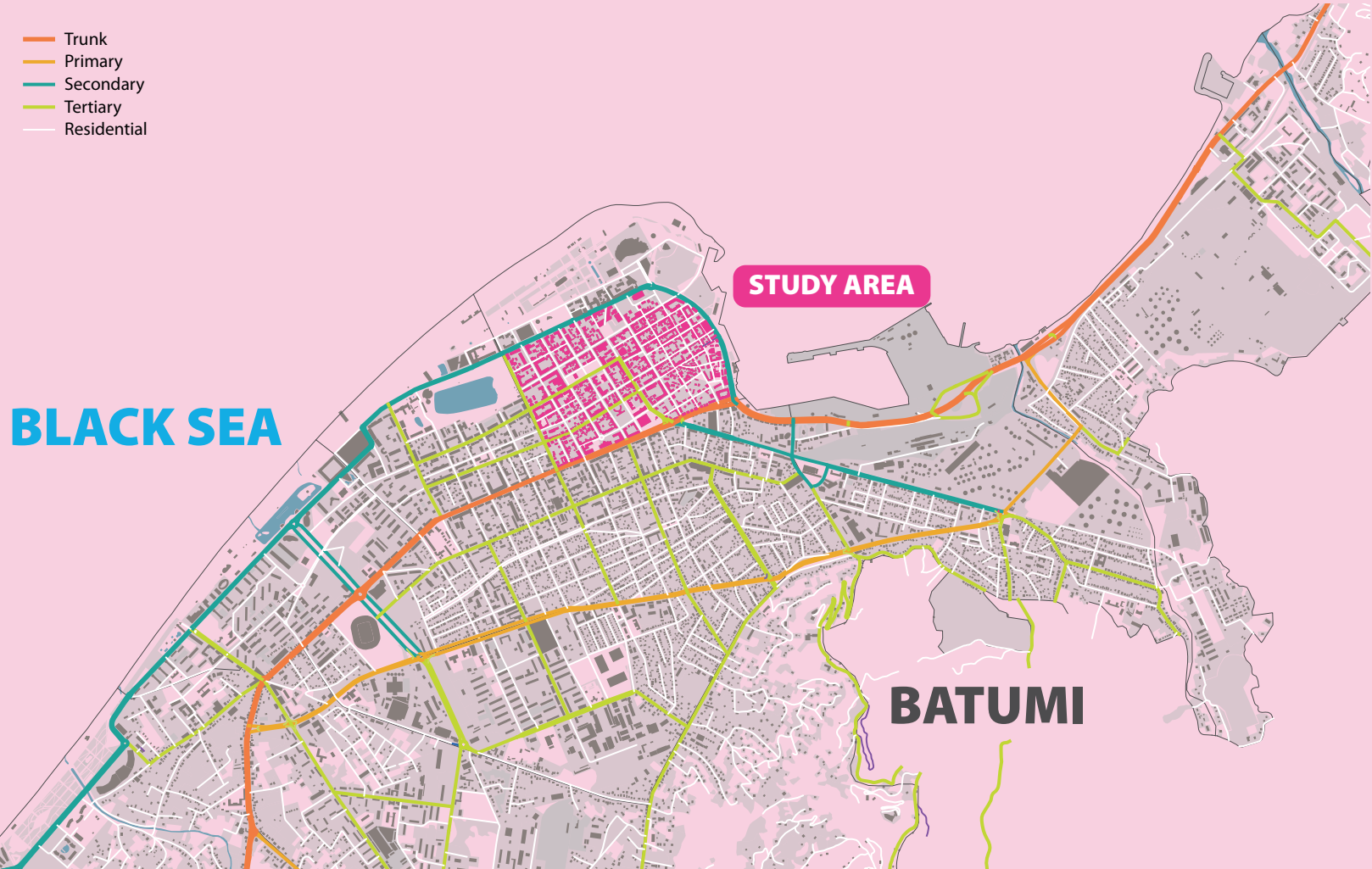
The southwestern part of the project area, and the rest of the study area towards the south-west, area have a vertical parking system. While most of the project area is organized in parallel parking, there is a small area in the north where there is mostly inclined parking.



Road network

The road network of Batumi is not very advanced, even though there is a trunk road crossing the street, and also being the South-east border of the study area. A primary street also can be seen further southeast, with the majority of the street network to be tertiary roads, and mostly residential streets.

The street that runs along the coast, starting as a northeast border of the project area and northwest border of the study area, is a secondary street, as it also runs along the Batumi promenade, a place with major touristic importance.



Road network

The study area is surrounded by high traffic roads in the southeast, with a trunk road, and in the northeast and northwest with secondary streets. Also, three tertiary streets can be found in the study area.

The rest of the streets of the study and project area are all residential streets, which should make it easier to facilitate a walking culture.



Cycling network

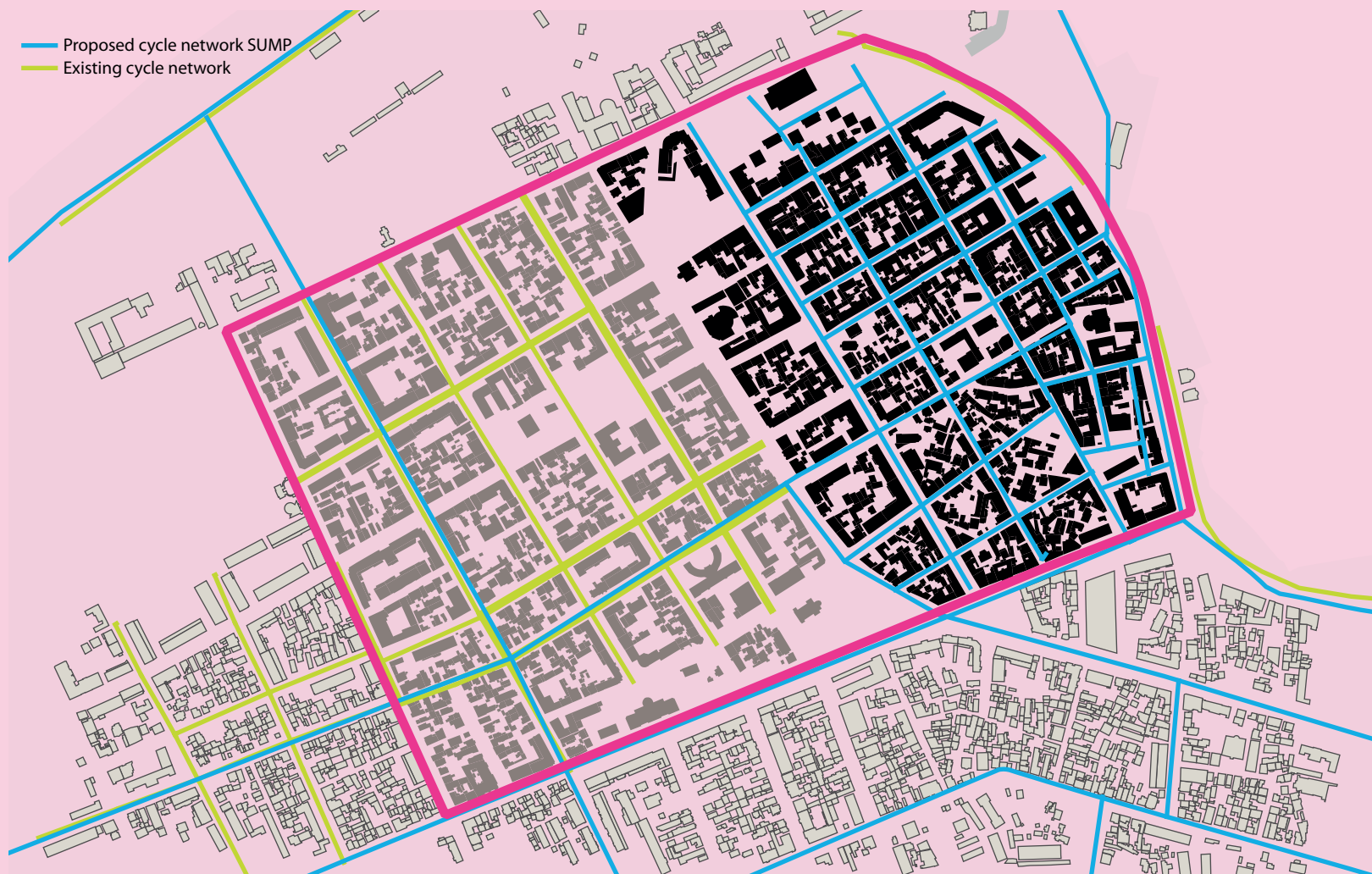
The main part of the city is located on the flat territory that promotes the use of bicycles for traveling. Today Batumi has already got a bicycle track network with a total length of over 26 km.

The existing bicycle infrastructure characterizes the city, as the one that could encourage the use of bicycles, both for the purpose of tourism and daily transport. The existing network has its advantages and disadvantages.

Though, the bike network is not characterised from safety, cohesion, attractiveness and convenience, which make the quality of the infrastructure poor.

Only the cycle paths along the waterfront are popular among both tourists and locals due to the good quality of infrastructure, lack of conflicts and scenic environment,

In general, Batumi bike infrastructure does not look attractive for daily travel, but is well suited for tourist trips.

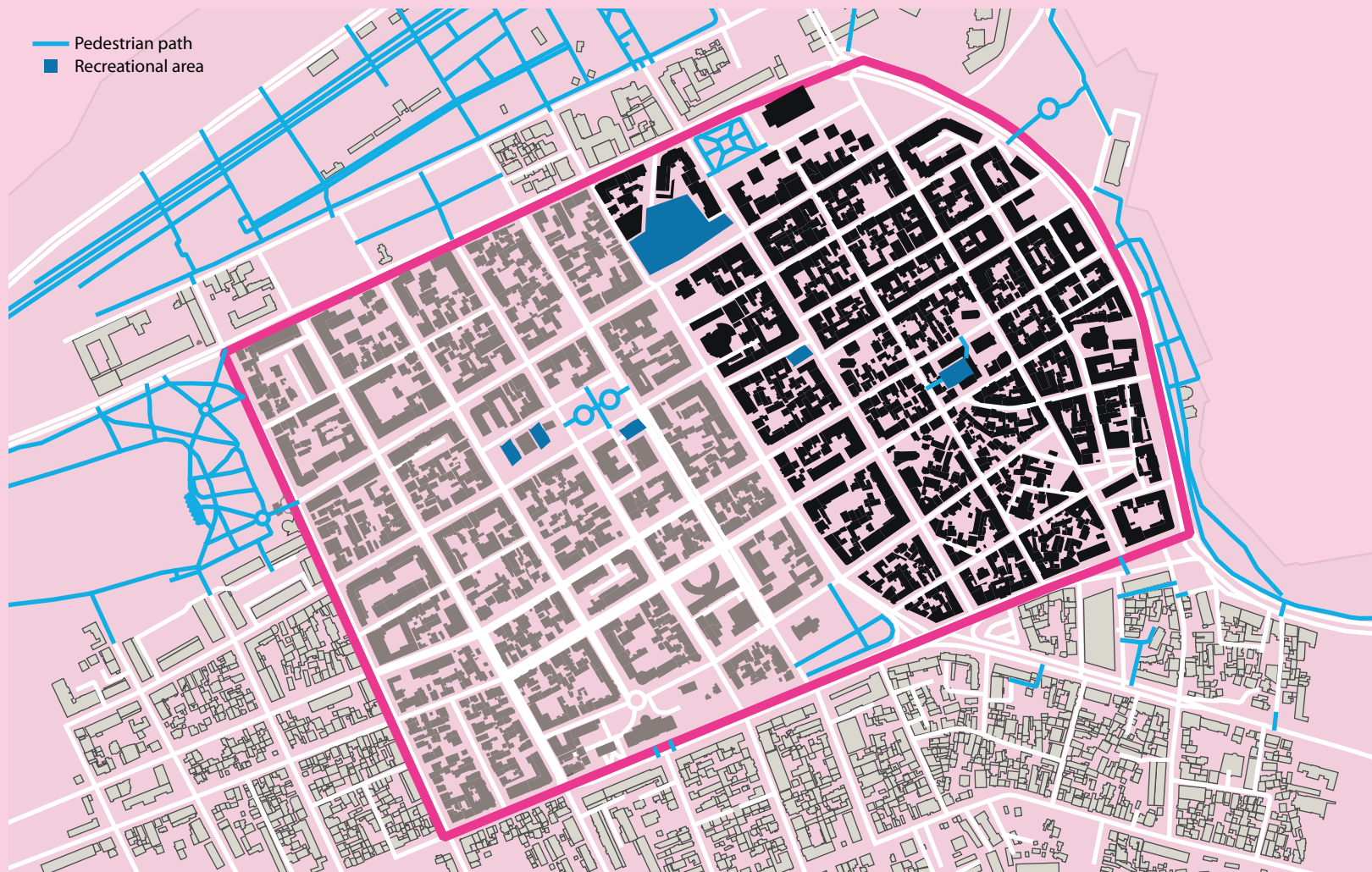


Pedestrian Path Network

The study area, the city centre of Batumi, lacks in pedestrian paths. While sidewalks exist in the city center, the exclusively pedestrian paths are almost non-existent.

Pedestrian paths can very easily be found in the areas along the coast outside of the study area, mostly in parks and along the coast. This can be easily explained, as Batumi attracts a lot of tourists and the paths along the coast are idealic.

Some recreational areas also can be found in the project area, like the Piazza of Batumi, but there seem to be no recreational public space in the study area. Recreational areas are absolutely necessary to bring people together in public spaces.



ASSESSMENT METHODOLOGY

Decision on the methodology

In order to encourage more people to walk, especially in developing countries, it is critical to develop a simple methodology in order to assess and improve sidewalk and corridor conditions. For this reason, the national partner, STS, decided to use an already existing methodology in this field, based on a scientific research, published in the scientific paper of Shaaban¹. The goal of that study was to develop and test a method for assessing sidewalk and corridor walkability in developing countries, that relied on direct observation of street measurements and drivers behavior. The proposed method measures the walkability of sidewalks and corridors using different quantitative and qualitative indicators. The proposed method uses various walkability indicators such as sidewalk features, crossing facilities and sidewalk facilities, to generate one score for a sidewalk and another for a corridor.

Why this methodology?

Walking and its relationship with the built environment have been studied widely by various studies using specific geospatial tools.

Some studies have been done exclusively with geospatial data softwares. Collecting relevant and comprehensive spatial data for GIS is dif-

ficult because it must be updated on a regular basis to be useful. Although the cost of its hardware and software has decreased over the years, the cost of finding and hiring qualified trained staff, and the availability of geo-information infrastructure are still major obstacles to setting up a GIS system, which is especially true for developing countries due to their financial weakness.

Questionnaires have been used in a number of studies to assess walkability. Inviting pedestrians to engage in a questionnaire on the street usually necessitates a lengthy process and specific training and this method necessitates a large number of data collectors. Furthermore, the number of pedestrians who choose to participate in these type of surveys is low, as many pedestrians usually refuse to participate.

As a result, the goal of this research was to develop and test a simple assessment approach that relied on direct observations of street measurements to assess the characteristics of sidewalk and corridor walkability at the micro level. This method may be used to create a score and rank for the sidewalks and corridors that accurately represents their state. Future improvements for those sites can be predicted based on this rating.

What is different?

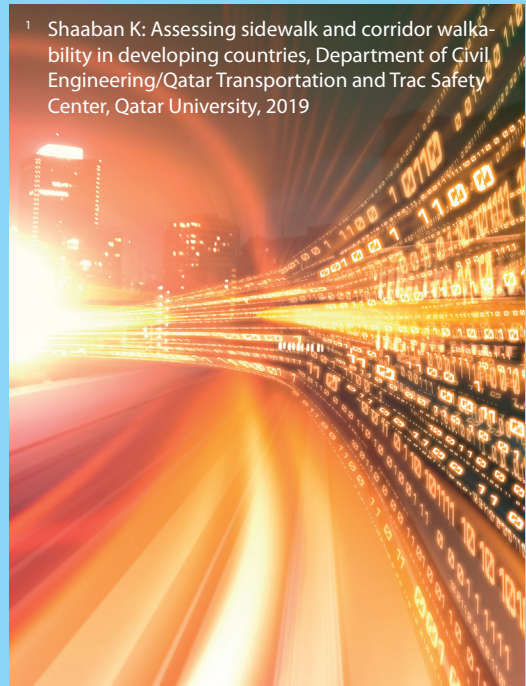
In the initial study, for the sidewalk level assessment, nine sidewalk indicators were used. In the current sidewalk assessment, the following indicators were excluded:

- **Cleanliness** – In the Old City Center, streets are neat. Besides that, it is a complicated and time-consuming indicator based on subjective analysis. Therefore, it would cause an irrelevant grade deduction in the final assessment of the area.
- **Slope** – Batumi is laid out on flat terrain; thus, this factor loses its importance.
- **Buffer zone** – In general, in Old City Centre, buffer zones might be identified only in a few cases, covering very short distances. Thus, it was more rational to exclude it from the list.

In the initial study, for the corridor level assessment, 16 indicators were used. In the current corridor assessment, the following indicators were excluded:

- **Crossing sight distance** – In the Old City Centre, crossings on the streets are planned in a way that pedestrians will not notice any threat. So that this indicator became unnecessary.

- **Driver's behavior** – During the off-season period, the touristic activities are too low, and consequently, their impact on walkability cannot be observed. Whereas, visitors' adverse effects on walkability are the most prevalent throughout the tourist season. Therefore, considering this indicator during a non-peak study time would lead to inaccurate data, especially in scoring driver behavior.



¹ Shaaban K: Assessing sidewalk and corridor walkability in developing countries, Department of Civil Engineering/Qatar Transportation and Traffic Safety Center, Qatar University, 2019

Goal

The main goal of the walkability assessment in Batumi, is to assess the streets' overall walkable capacities, quality, and comfort within the study and the project areas.

By assessing the walkability, strengths and weaknesses of the city center of Batumi will be identified. The findings of this assessment can later on be used, in order to create a plan and an effective strategy, in order to increase the walkability of the area.

The area for gathering data are sidewalks and corridors in an old city center and the extended city center, and encompass territories between the public and private realm, public objects, and properties.

The perimeter of the survey

For the basis, the road network of Batumi was taken. All the streets of the road network were divided into two parts: project area and study area. Project area streets include the streets in the Old Town, while study area streets are the streets that pass through the extended city center.

It was important for the study to include both sidewalks and corridors in the walkability assessment because they independently play a significant role in the city's walkability and are evaluated by examining different indicators.

After the desk survey and the general overview of the streets, it became obvious that dividing the main streets into comparably small parts was necessary. The street sidewalks were split into segments, mainly at the junctions, to ensure the mapping accuracy and the survey efficiency. Each segment was assigned with a segmentID and a side number (the right and left side of the street). As a result, 176 unique segments have been revealed.

As for corridors, a different approach was utilized. Each street was identified as an independent corridor in the research area, and consequently, 30 such corridors were studied.

Field work

After the initial desk and mapping preparations for data collection, the survey team started the fieldwork. The data collection was performed using a mobile GPS data collector app, with photography support for better and deeper analysis of the gathered data. The obtained data is processed and elaborated/coded by following a desk survey.

The team checked and recorded all the segments given in the Old Town and extended study area for assessing the walkability of the sidewalks and the corridors.

The indicators for **sidewalk** assessment is divided into three main parts:

1. Capacity

- width
- obstructions
- encroachments

2. Quality

- continuity
- physical conditions

3. Comfort

- shade trees

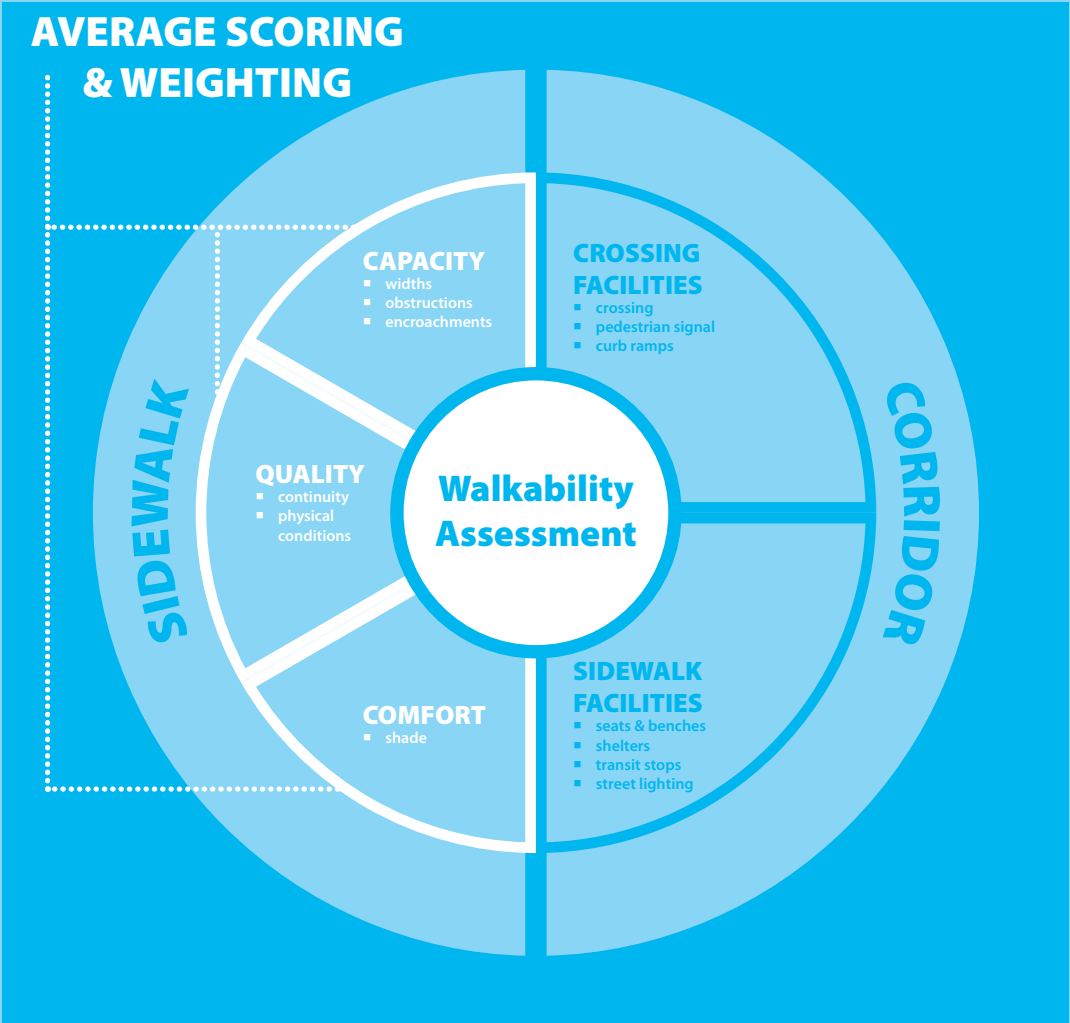
The indicators for the **corridor** assessment is divided into two main parts:

1. Crossing Facilities

- crossing availability (zebra availability)
- pedestrian signal availability (traffic lights)
- curb ramp availability (ramp availability)

2. Sidewalk Facilities

- seats and benches
- shelters from rain and / or sun
- Transit Stops (in this case bus stops)
- street lighting



Assessment Methodology

SIDEWALKS INDICATORS

Sidewalk and Walkability-related Detailed Inventory

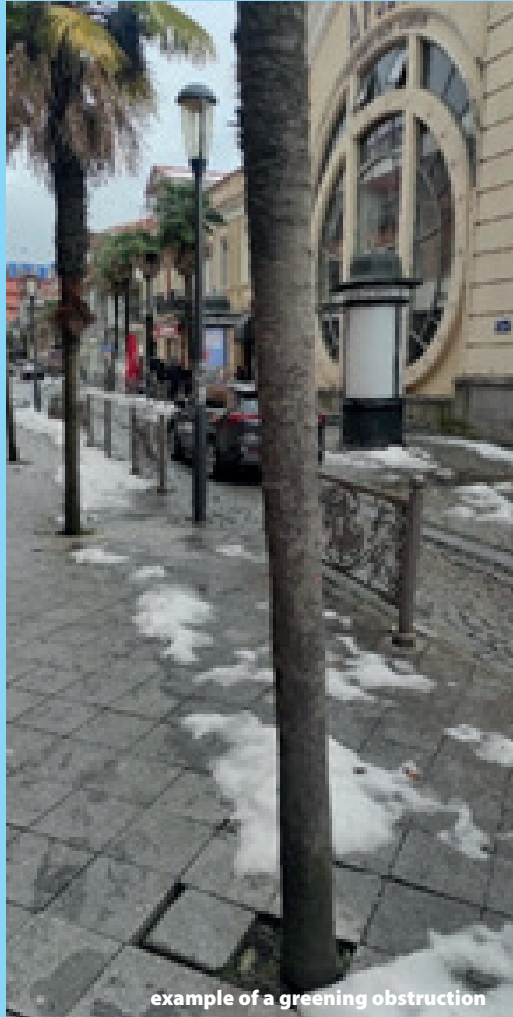
One of the main goals for research is to determine walkability assessment at the sidewalk level; however, the works accomplished during fieldwork register additional attributes with informative purposes about the surveyed objects.

Obstructions

Obstructions are publicly owned objects occupying the public space inside the sidewalk boundaries. Examples of the Obstructions are (if they are not “framing” objects of a street and the sidewalk):

- street lamps and signage poles
- bus stops
- traffic light controllers’ poles and panels
- public kiosks
- garbage cans and recycling containers
- greening areas/trees/pots
- etc.

All the listed elements above are used to evaluate and determine the obstruction level on each segment – as a part of the sidewalk assessment.



example of a greening obstruction

Encroachments

Encroachments are privately owned objects invading the public space inside the sidewalk boundaries (ones that are not street framing objects).

The examples of encroachments:

- shops, stalls
- private kiosks
- illegal parking
- street vendors
- street café furniture
- advertising boards
- private e-mobility and bike parking
- etc.

All the listed elements above were studied to evaluate and determine the encroachment level on each segment – as a part of the sidewalk assessment.

Width

Width is defined as the width of the main walking path only.



example of an encroachment

Assessment Methodology

Sidewalks Indicators

Continuity

The continuity of the sidewalk is important for pedestrians, especially disabled or elderly pedestrians. Continuous sidewalks are those sidewalks that do not have any considerable breakouts, damages, ups and downs. The continuous change in level make the sidewalk uncomfortable to use by pedestrians.

The following items listed below are considered as continuity points:

- urbanization materials (the obvious difference and change in sidewalk material – concrete/stone to sand/soil)
- stairs/steps
- interruption of the sidewalk curb
- the point where pedestrians must walk on the carriageway or has not dedicated path for walking
- deep drainage pipes or canals

All the listed elements above were studied to evaluate and determine the continuity level on each segment – as a part of the sidewalk assessment.



Physical Condition

The sidewalk's physical condition affects the walking environment of pedestrians. This condition determines how difficult an area is to negotiate. A sidewalk surface should be firm, stable, slip-resistant, and free from cracks, bumps, and vertical faults for comfortable walking. This indicator is assessed by evaluating the following:

- urbanization material (Concrete/stone – high quality, soil – low quality)
- number of obstacles and discontinuities,
- drainage pipes or canals
- manholes
- deep holes
- bumps



Shading trees

The presence of trees along the sidewalk increases the comfort level of pedestrians, especially during hot weather. Shade trees can keep pedestrians cool, protect them from the sun, and add a nicest aesthetic element.



Assessment Methodology

CORRIDORS INDICATORS

Corridor and Walkability-related Detailed Inventory

Another important goal of the research is to evaluate the walkability of corridors. This aim was accomplished by assessing the subsequent indicators in detail.

Crossing Availability

During the fieldwork, the team also collected the data of pedestrian crossing on the roadway. Pedestrian crossing facilities are needed to protect the pedestrians from the danger of conflicting with vehicles. The pedestrian crossing level is determined by the following:

- Zebra Crossings
Each zebra crossing is evaluated by elements listed below:
 - Marking, signage and traffic lights (where needed)
 - ATM (the traffic light-adapted for pedestrians with hearing problem)
- Elevated Pedestrian Crossings



Pedestrian Signal Availability

Pedestrian signals provide safe conditions for pedestrians to cross during pedestrian crossing phases. Pedestrian signals and the associated pedestrian push buttons were checked for availability and functionality. The indicator was only studied and assessed at streets/segments with two or more lanes.



Curb ramp availability

Curb ramps are necessary for pedestrians who use mobility devices and for blind and low-vision users to have a convenient transition between the sidewalk and the street. To be compliant, a curb ramp must have a proper running slope and a detectable warning surface. All the curb ramp points, with respective photos have been logged into the GIS database, and are coded with the Ramp, Segment & Side ID numbers.



Assessment Methodology

Corridors Indicators

Transit Stops

The presence of transit stops is one of the key elements that attract pedestrian activities. However, it must be mentioned that the project area with its characteristics doesn't allow for transit stops to be present as such (for scoring considerations). The transit stops were mapped from existing Batumi PT Stop GIS Database for further analysis of the corridors.



example of a transit stop

Street Lighting

Providing adequate lighting is essential for the comfort and safety of pedestrians and the general environment, hence the study was also taking place during evening hours to assess each corridors lighting level, later described in Corridor – Scoring.



example of street lighting

Assessment Methodology

SCORING AND WEIGHTING

Desk Survey

After collecting the data from the fieldwork, a lot of effort was taken to elaborate all the given information segment by segment.

A unique plan was elaborated for calculating an average level score for each indicator that would be adjusted and be precise for each street in the study & project area. The team greatly benefited from the fact that the field survey was done by the same individuals who analyzed the data afterwards. The data input and calibration process took place after every site visit, so that the fresh human memory of each segment was fully utilized.

Sidewalk Scoring

At the first stage, to estimate the average scoring for the following sidewalk indicators:

- obstructions,
- encroachments, and
- continuity

each indicator was divided into four ranges based on the relationship between the length of the segment and the quantity of the indicator. Then they were graded from 1 to 4, respectively.

Initially, the standard deviation for each indi-

cator was used to eliminate the ranges in the gathered data. However, it became apparent that readjusting of the ranges was necessary. The ranges were changed accordingly by the experience acquired in the fieldwork. The team also elaborated and checked the scoring model for several randomly chosen segments for calibration purposes.

A different approach was employed for scoring: physical conditions, width, and shade trees. A detailed explanation for each tactic is given below:

Physical conditions

Scoring of physical conditions was conducted during the fieldwork based on the 1 - 4 scaling range. The initial evaluation was not changed throughout the desk survey and was employed directly in the average scoring.

Width

For analysing this indicator, the width of only the main walking path was considered during the study. Later, corresponding values in meters were scored based on the range 1 – 4.

Shade trees

scoring of shade trees was directly performed during the fieldwork in the 1 – 3 grading scale, and the preliminary values were also utilized in the final calculations.



Corridor Scoring

Scoring of corridors' indicators was conducted uniquely for each value and are the following:

Crossing availability, seats and benches, transit stops

This was initially calculated as the number - of pedestrian crossings, seats/benches, and bus stops per X meter, respectively. Then each corridor was graded on the 0 – 4 (1 - 4 in the case of transit stops) scale.

Shelters from rain or sun & street lighting

While evaluation of the indicators mentioned above was conducted throughout the whole corridor, for these indicators' corridors were divided into segments and graded separately. Then the average value for the entire corridor was calculated. The range for both characteristics was 1 – 3.

Curb ramp availability, pedestrian signal availability

for each zebra crossing, the quality of ramps, and pedestrian signals were evaluated. The final score was based on the average of the whole values across the corridor. The range for scoring curb ramp availability was 1 – 3, while for pedestrian signal availability, 1 – 4.

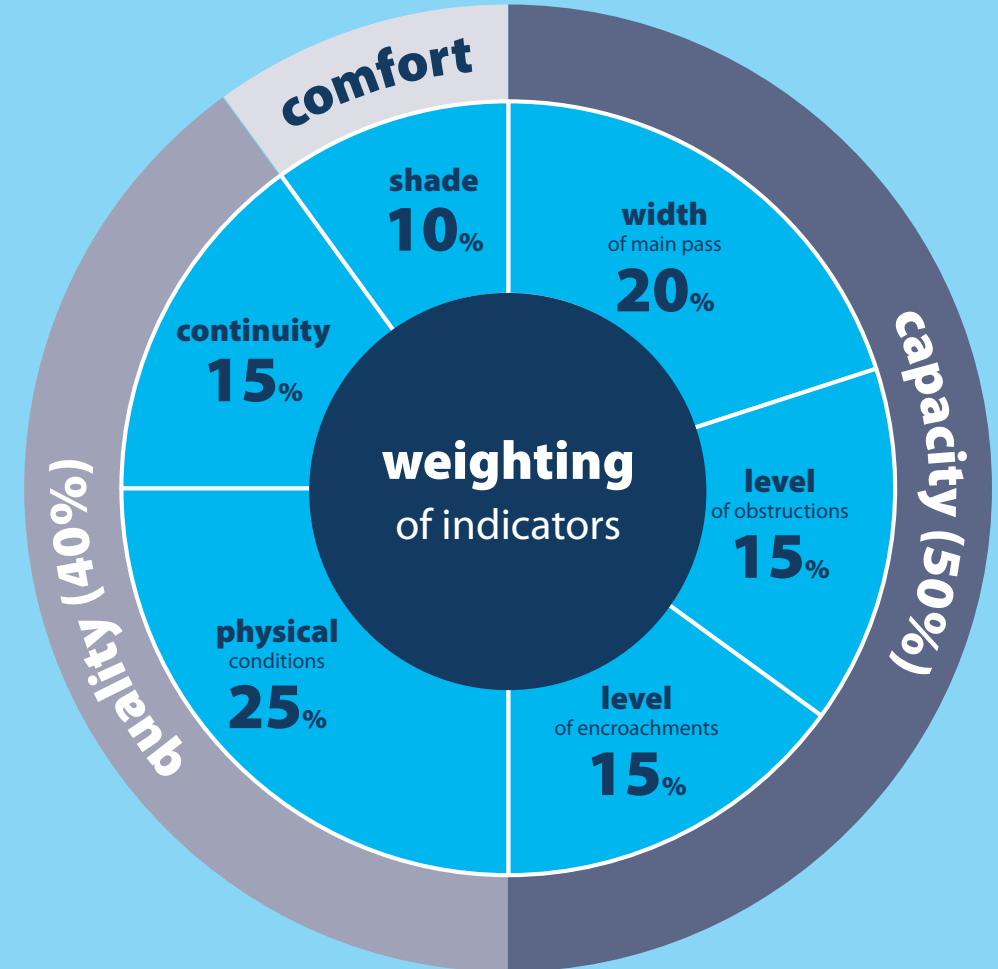
** The limits for sidewalk and corridor scoring ranges were derived from the pilot fieldwork experience.*

Weighting

Since each indicator has a different effect on the walkability assessment, the team proposed weights for each indicator.

The indicator weights and the ranges for scoring each indicator are defined in an editable format and can be modified from one's perspective in the future.

The weight distribution of the example model for sidewalk walkability assessment is shown in the diagram to the right.



ASSESSMENT RESULTS

Assessment Results

The assessment of the walkability in the study area follows an established methodology. The data/information collection was carried out by STS in the end of January 2022.

As described in the methodology, the assessment takes two different aspects into consideration:

- sidewalk scoring
- corridor scoring

For both, the results will be presented in maps, indicating the individual scoring for each road section with different colour codes. In the end, there is also an overview of the different scorings of the individual streets regarding the considered criteria of the sidewalks. Derived from that an overview of the average scoring for the sidewalk assessment will also be presented. Here the weighting of the five relevant aspects came into play.

The whole assessment includes the redesign area in the Old Town of Batumi as well as the extended stud area to the south west.



Europe Square in Batumi

Assessment Results

SIDEWALKS

Continuity

As it can be seen, the continuity in the sidewalks for the study area, can be characterized as mostly fairly good (3) and good (4). The average continuity of the sidewalks score a total of 3.55.

In the project area, while there seems to be a big number of sidewalks with good continuity and only a few parts with continuity characterized as poor, there is a significant amount of sections of the sidewalks that have average (2) continuity.



Assessment Results

Sidewalks

Enroachments

With the encroachments, the scoring looks not as good as to the continuity. There are a number of sections of the assessed streets that show a poor ranking and are marked in red. An even bigger number of road sections reach only an average scoring. Nevertheless, the majority of the assessed roads show a fairly good ranking.

- 1 - Poor
- 2 - Average
- 3 - Fairly good
- 4 - Good



Obstructions

As it can be seen, the state of the sidewalks from the existence of obstructions, for the study area, can be characterized as mostly average (2) and fairly good (3). The average obstructions of sidewalks score a total of 2.77.

In the project area, while there seems to be a big number of sidewalks with good clearance of obstructions, it cannot be overseen that there is a significant amount of sidewalks with poor (1) and average (2) scoring, in terms of obstructions existence. This means that a significant number of obstructions can be observed along these sidewalks.



Assessment Results

Sidewalks

Physical conditions

As it can be seen, the physical condition, for the study area, can be characterized between fairly good (3) and good (4). With a maximum score of 4 (good), the average level of physical conditions of the sidewalks score a total of 3.35.

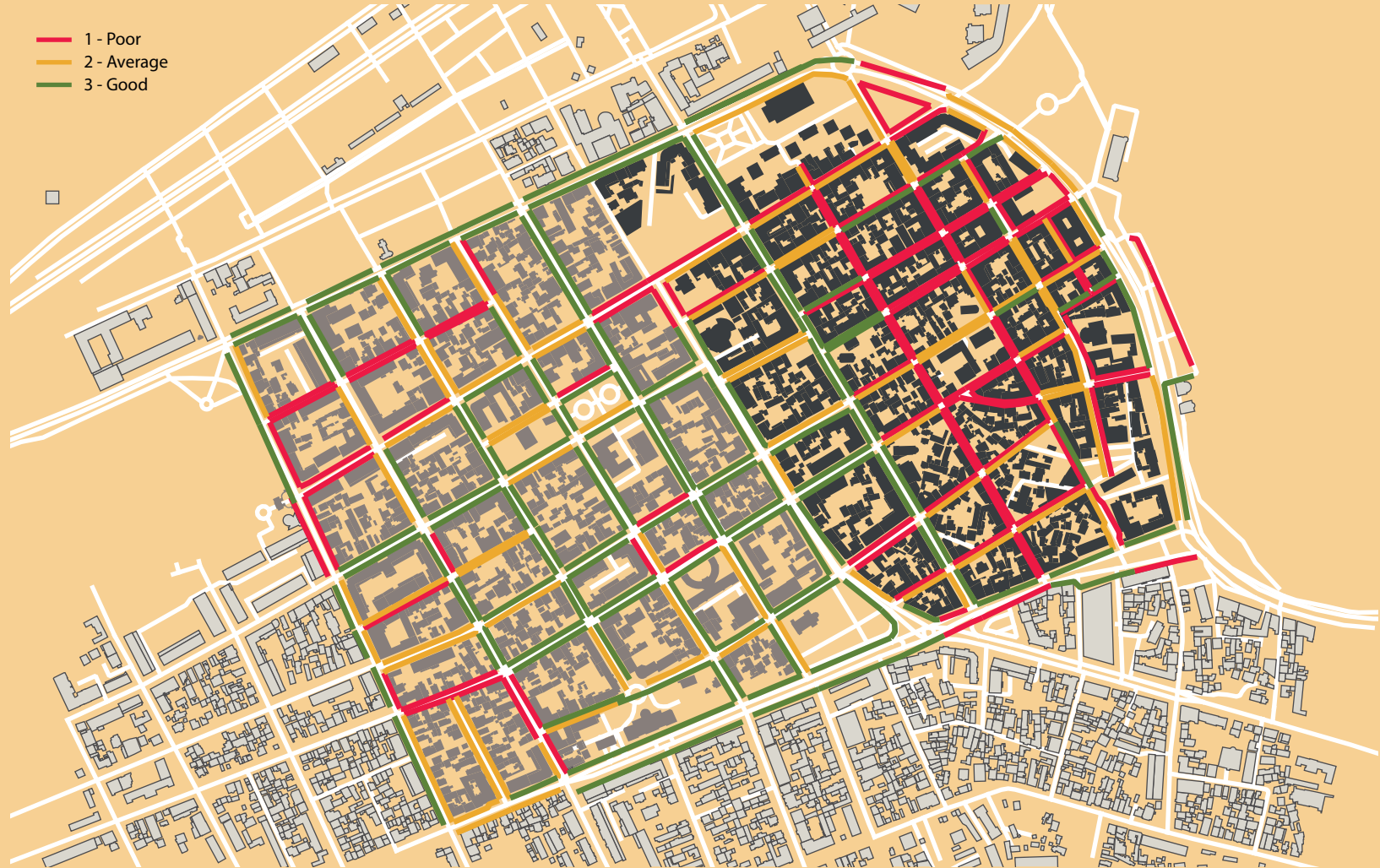
In the project area, while there seems to be a small number of sidewalks with average physical conditions, most of the sidewalks with having good physical conditions. Only a few sidewalks have poor physical conditions, thus the overall situations is that the sidewalks in the study area are easy to negotiate.



Shade trees

As it can be seen, the existence of the shade trees alongside the sidewalks in the study area, can be characterized as mostly poor (1) and average (3). With a maximum score of 3 (good), the average level of shade trees on the sidewalks score a total of 1.98.

In the project area, while there seems to be a big number of sidewalks with almost no trees along them, or with an average number of trees, mostly in the northern part, close to Gogebashvili St. The situation changes slightly in the SW part of the project area, as Konstantine Gamsakhurdia St. seems to have a very good rating.



Sidewalk width

As it can be seen, the width of the sidewalks in the study area, can be characterized as fairly good (3) and good (4). With a maximum score of 4 (good), the average level of sidewalks width, score a total of 3.38.

In the project area, there seems to be a big number of sidewalks with fairly good width score, and a satisfying amount with good width (mostly in the SW part). Although, there are still sidewalks which their width is characterized as average, and very few with poor width.



Assessment Results

AVERAGE SCORING OF SIDEWALKS

Assessment Results

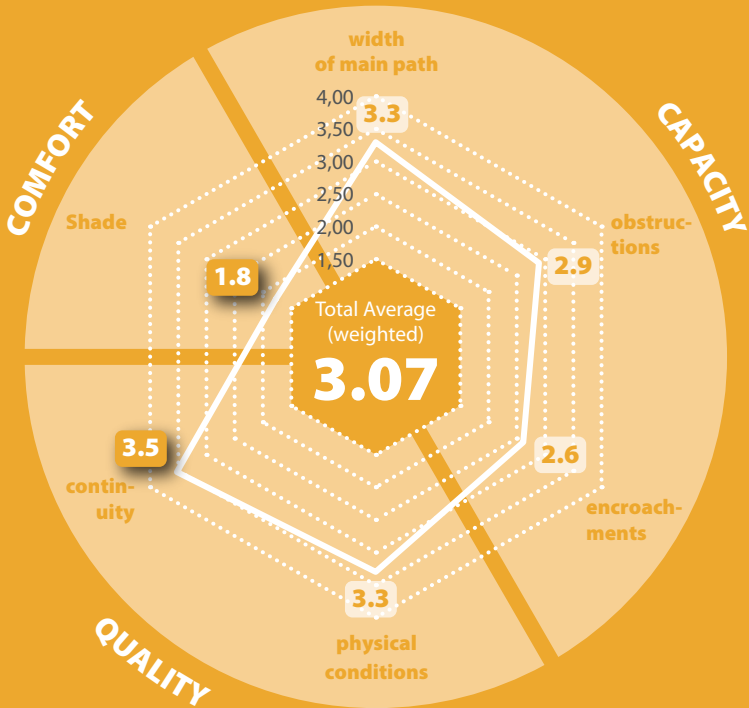
Average Scoring of Sidewalks

In the diagram below, it can be observed the average score of all streets sidewalks, according to the study that was conducted by STS. In general, the sidewalks have gotten satisfying results, though still there is room for improvement. The most important observation, is the

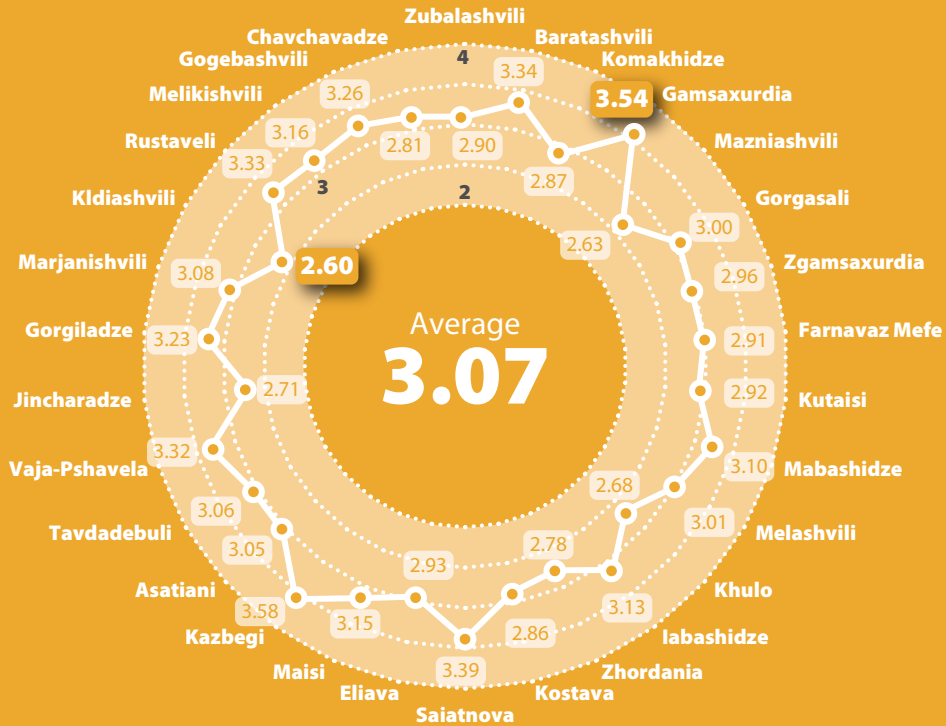
lack of shade trees along the sidewalks. The city attracts a lot of tourists in the summer, and shade trees are essential for staying out - especially in the hot month of the summer.

As it can be seen in the diagram below a total of 30 street's sidewalks were assessed. With a maximum score of 3.54, Gamsaxurdia St. reaches the highest score of all streets. The lowest score reaches 2.60 for the Kldiashvili St. The average is at 3.07. A total of 15 streets exceed this number. Analysing the numbers shown below, it is understandable that despite the fact that the sidewalks are in good conditions, there is still place for improvement.

AVERAGE SCORE OF PROJECT AREA (NON-WEIGHTED)



AVERAGE SCORE OF ALL STREETS (WEIGHTED)



Assessment Results

CORRIDORS

Transit stops

Regarding the public transport there is a variety of bus lines running through the study area.

The public transport (only buses and marthuskas) covers most of the old town of Batumi. There is no bus running through the project area, although there are bus stops all around it, so the coverage can be described as very good.

It can be seen that there are buses running through the study area, and specifically bus stops exist in the Zurab Gorgiladze St. Also, bus stops exist on all the streets surrounding the study area (Rustaveli Avenue (NW), Gogebashvili St. (NE), Chavchavadze St. (SE) and Melikishvili St. (SW)).



Zebra crossing

The whole study area is observed to have a fairly good (3) to good (4) availability of zebra crossings.

Particularly, in the project area, most of the corridors seem to have good availability of zebra crossings, with a smaller number to have a fairly good availability of them.

It is remarkable, that only one corridor seems to have poor availability (Zubalashvilit St.), which runs through almost the whole study and project area. This corridor is located right after the Chavchavadze Str.

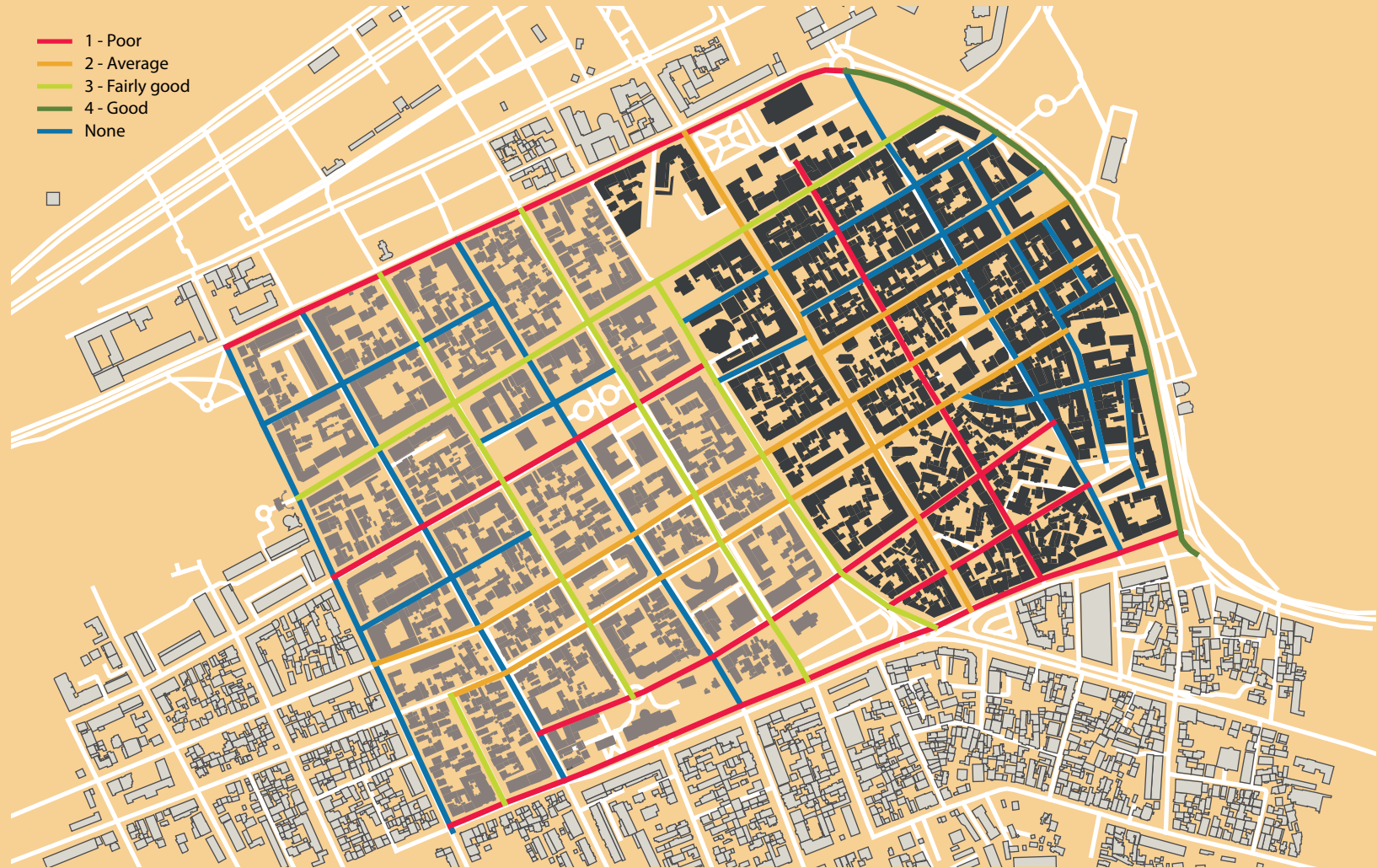


Seats and Benches

The study area seems to be to not be very well equipped with street furniture, especially for people to rest.

Only one corridor (I. Gogebashvili St.) seems to be very well equipped with seats and benches, most probably because of its location in front of the sea.

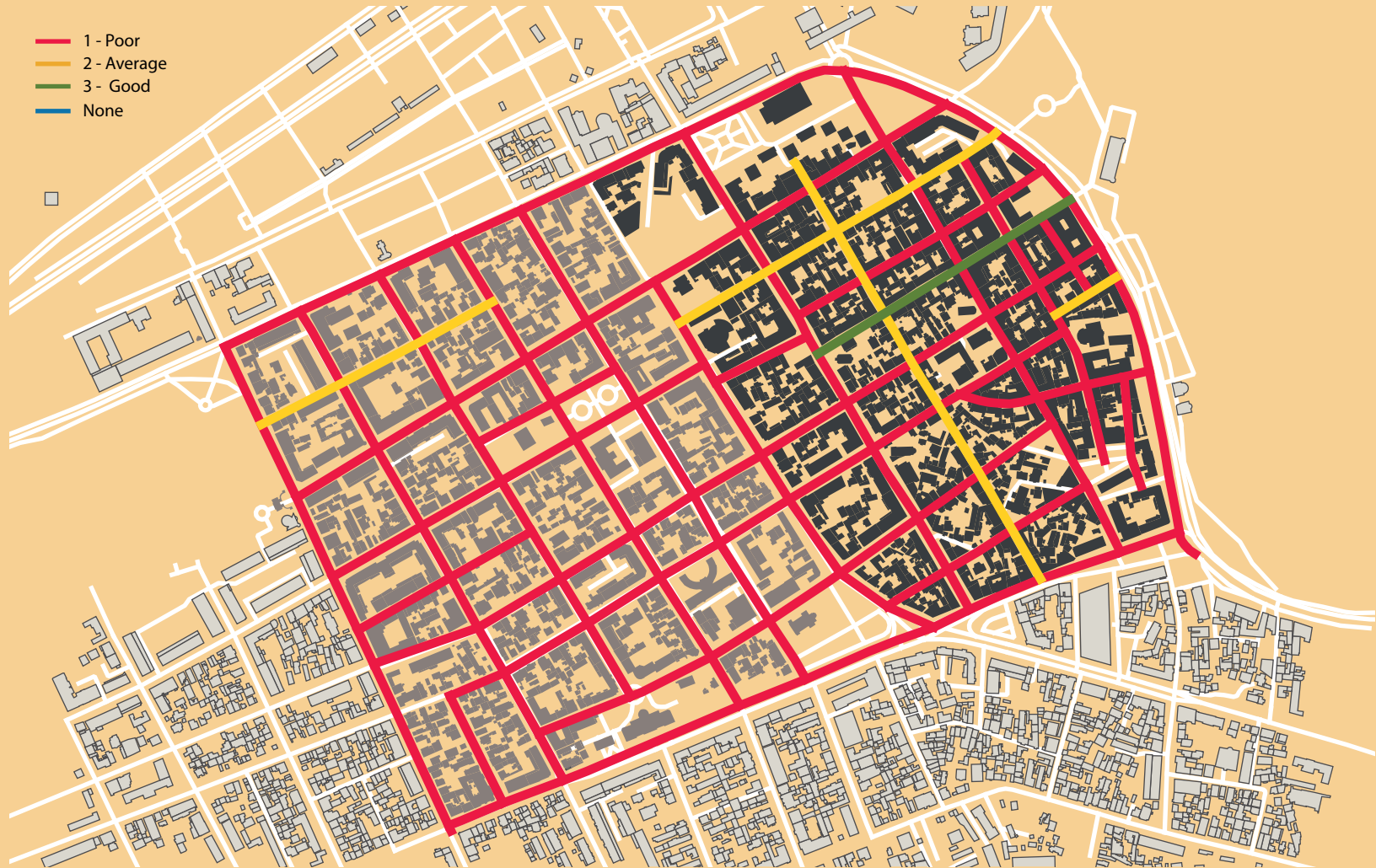
While 5 corridors seem to have fairly good availability of seats and benches, and 4 corridors average availability, it is notable that most of the corridors have poor to no availability of corridors. This is notable, as batumi is a turistic destination that attracts a lot of visitors in the city centre.



Shelters

Shelter availability in corridors in the study area is very limited.

The shelter availability is good (3), only in the corridors of the project area (Noe Zhordania St.), with average availability (2) in only 4 other corridors. It is interesting to note that, not only the study but also the rest of the project area, have poor availability of shelters, especially in a city that gets plenty of sun and rain throughout the year.



Street Lighting

The availability of street lighting in the study area could be characterized as average (2), as most of the corridors seem to have limited availability of street lights.

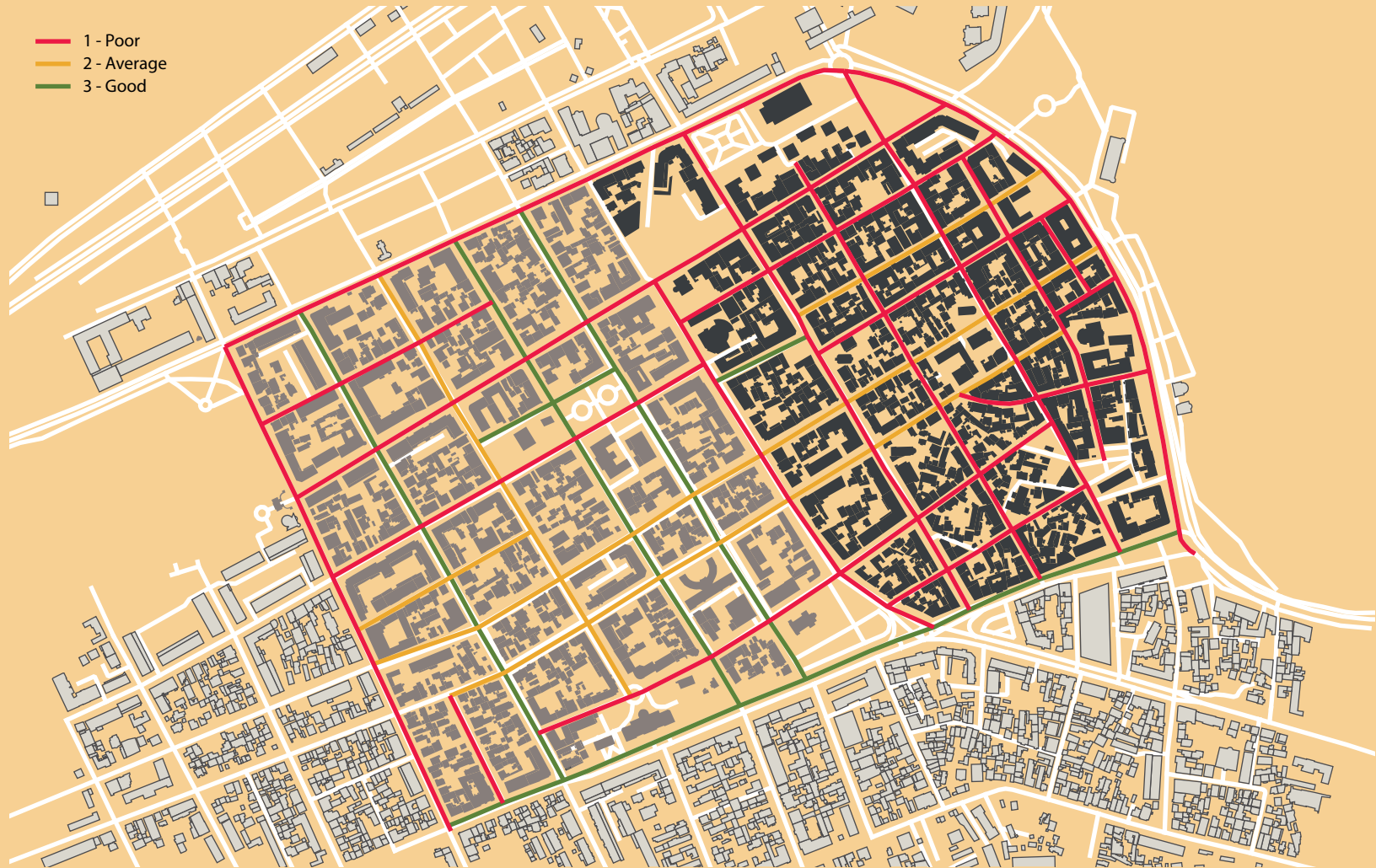
There is an equal amount of corridors that appear to have poor (1) and good (3) street lighting, with the majority of the corridors that offer good availability of street lighting to be in the study area.

It is important to note, that the majority of the bigger corridors have good street lighting availability, unlike the smaller streets of the project area, which have an average score (2).



Ramps

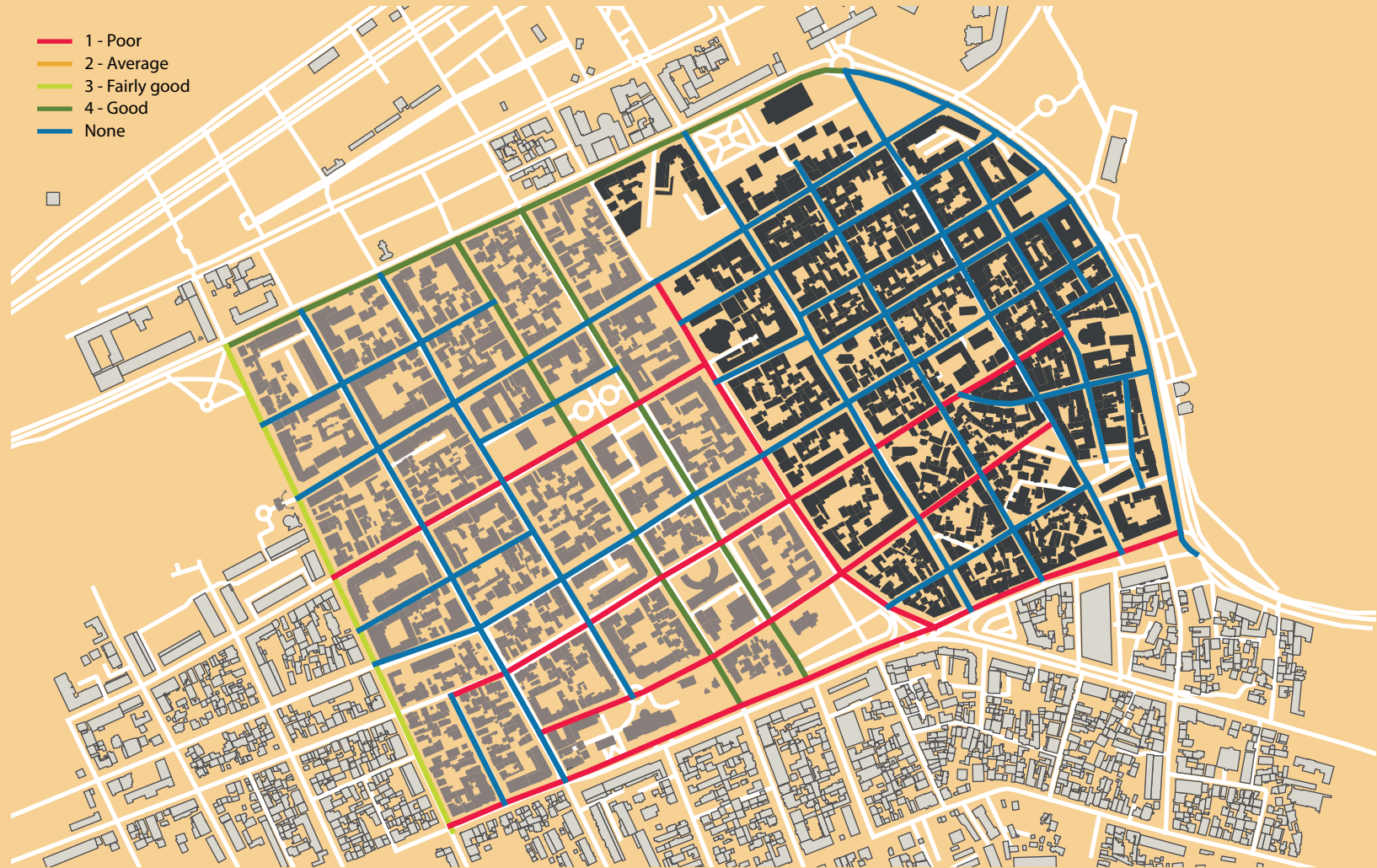
The results of the survey, regarding ramp availability, are rather disappointing. While there are 4 corridors, which run the study area from NW to SE and have good availability of ramps, and few corridors with average availability, the majority of the corridors seem to have poor availability of ramps. In a city that does not have big elevations, the mobility of people with disabilities can be significantly be easier when ramps are available.



Traffic Light

The traffic light availability in the corridors of traffic area, was found to be fairly good (3) to good (4) in the 3 main corridors that run through the study area from NW to SE.

While some corridors that run through both the study and the project area, from SW to NE seem to have poor traffic light availability, the majority of the corridors of both areas were found to have no traffic lights. This can be partially explained, because of the width of the corridors and the inability of cars and other vehicles to run fast.



SUMMARY

In 2017, a Sustainable Urban Mobility Plan (SUMP) for Batumi was created - including measures to improve walking infrastructure and assure pedestrian safety. Additionally, GOPA GmbH (Germany) did a pre-feasibility study on sustainable transportation. Both documents serve as a foundation for Batumi's to transform its transportation system in a more sustainable manner. Car-free zones and a city-wide Intelligent Traffic Control System (ITCS) are among the solutions being considered.

The German Federal Ministry for Economic Cooperation and Development (BMZ) has tasked the GIZ with implementing the regional program "Sustainable Urban Mobility in the South Caucasus" (Mobility4Cities) with a strong focus on Georgia. Its mission is to assist local governments in designing, implementing, and improving their urban transportation networks.

Members of the Mobility4Cities team visited Batumi in 2020 and discussed the development of mobility solutions as well as current challenges with local stakeholders. Together, they identified needs and opportunities for collaboration in designing a walkability concept for the Old Town of Batumi.

GIZ corporates with Buro Happold (international consultant) and the local partner STS on supporting the municipality with developing the walkability concept.

The goal/result of this first initial phase of work was to:

- do research on and define the term walkability
- define the study and project/redesign area
- identify the stakeholder
- analyse and assess the current situation

This analysis and assessment builds the foundation for a first workshop in Batumi to discuss the results, raise the awareness for the importance of walkability, and opportunities/necessities of improvement of the current situation.

Walkability in general is an essential need of all human beings. There are a number of aspects that influence the degree of walkability of an area. A lot are infrastructure related. But there also the climate conditions have an influence/impact on the walkability. They can be categorized in three groups:

- capacity,
- quality, and
- comfort.

Good walkability conditions come with diverse benefits that will have a positive impact on the area and the people that move in it. These benefits are mainly related to:

- economy,
- health,
- safety, and
- accessibility.

Batumi experiences a constant growth of its population. The same applies for the visitors. The car ownership is very low (compared to other regions in the world). The car usage rate as well as the modal share of the motorized individual transport (MIT) is comparable to German cities for example. Surprisingly, the mobility rate is very low with less than 1.5 trips per person and day. This is less than half of the rate of European cities.

There are a broad range of stakeholders that should be included in the process of developing the walkability concept. The focus here is on governmental entities since this is a redesign process of public spaces.

Together with Batumi City Hall and GIZ there was a definition of:

- redesign / project area
- study area

The redesign area is defined by the Old Town of Batumi. This is extended to the south west for the study area. The goal of this extension is to also have an understanding of the adjacent

area and its conditions with regards to the walkability. The development of the walkability concept will focus on the Old Town of Batumi (project area).

The whole study area is characterized by a lot of parking opportunities in the public space. There are some separate cycle and pedestrian infrastructures. Especially the Old Town has a lot of POIs. A lot of the land of the Old Town is characterized by retail uses. The extended study area is mainly used for commercial purposes, too. To the south there are residential areas bordering the study area.

The assessment process of the walkability within the study area is based on existing methodologies. It was adapted to the local conditions slightly. The assessment is mainly divided into three parts:

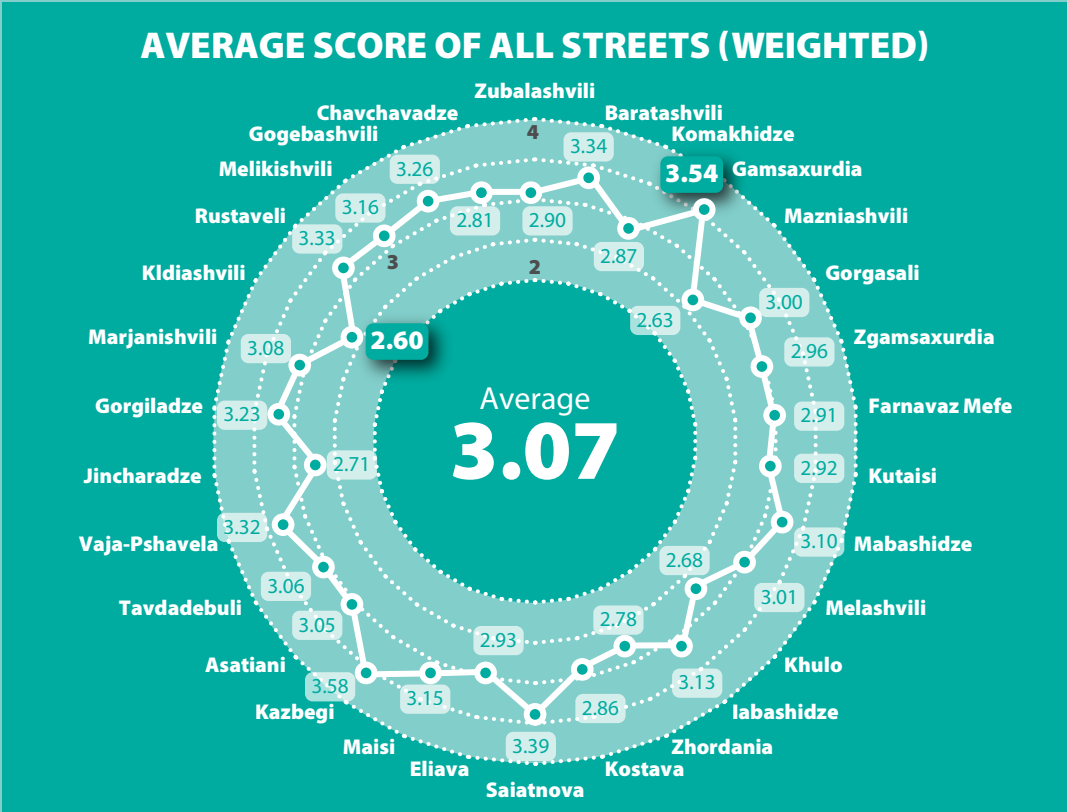
- sidewalk assessment
- corridor assessment
- average scorings

There were a number of indicators flowing into the assessment. For the average score five main factors were weighted.

There was a comprehensive data collection carried out by STS on site. These data were analysed for each section in the study area. Derived from that, maps for each indicator were

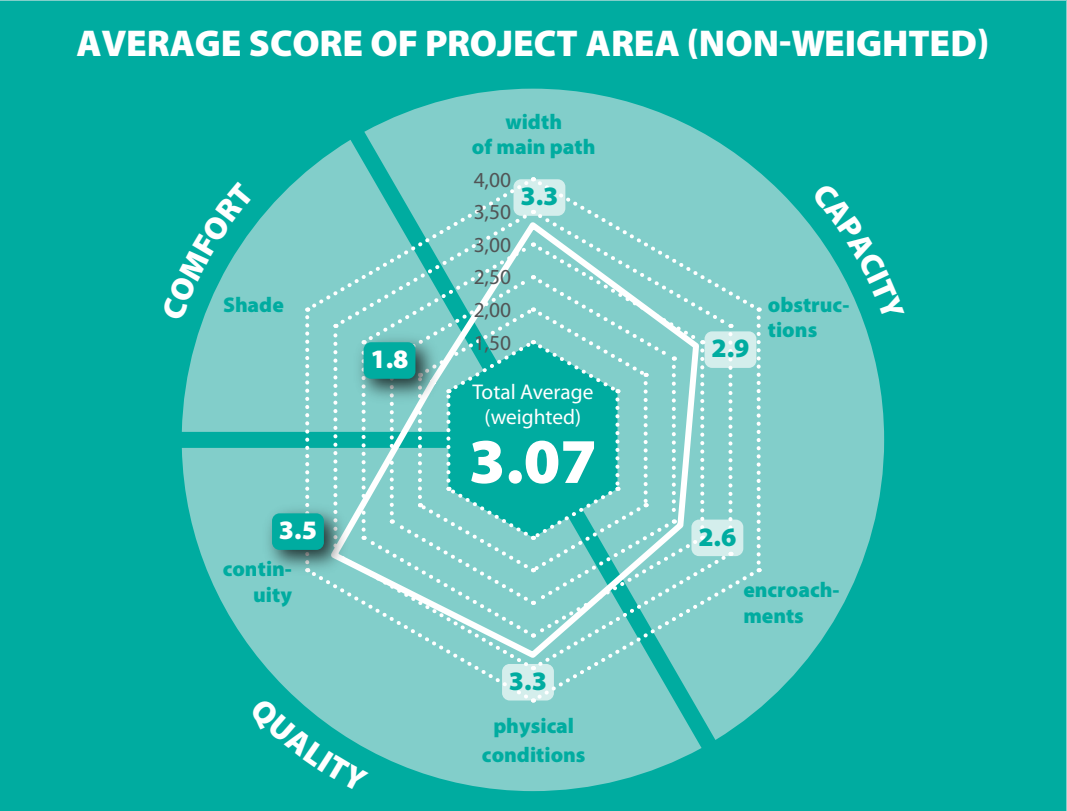
developed. In addition the average scoring for each street was developed based on the individual factors for each section. For the five main factors, there was also a calculation of the average of the whole network. The weighted mean results in a scoring of 3.07, which is

a good result. But it implies also that there is still potential for improvement. This applies in particular for the factor shade. The best results were measured for the continuity. But also the width and physical conditions result in good average scoring.



The individual assessment of each street shows that there is broad range of the weighted scoring. This reaches from 2.6 (Kldiashvili St.) to 3.54 (Gamsaxurdia St.). Half of the streets (15) exceed the average scoring of 3.07.

So in total, there is a solid foundation for the further development of the walkability concept.



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„God made us walking animals—pedestrians. As a fish needs to swim, a bird to fly, a deer to run, we need to walk, not in order to survive, but to be happy.“

Jeff Speck

city planner
Walkable City: How Downtown Can Save America, One Step at a Time

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