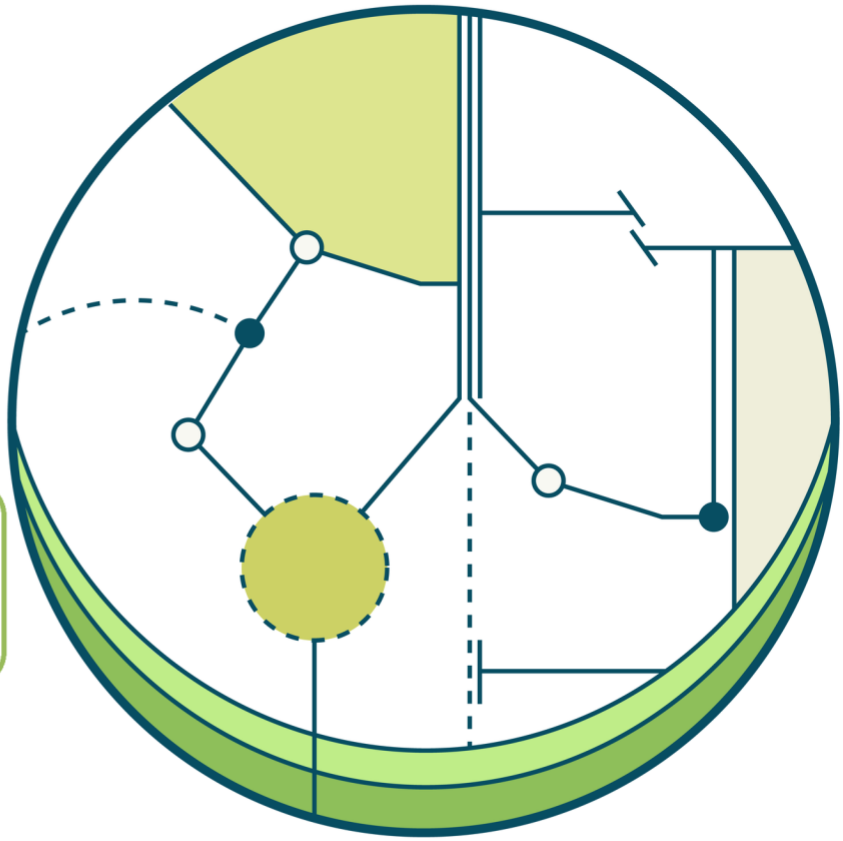
WHEELS OF CHANGE
INCLUSIVE MOBILITY

Accessibility study of Shkodër

GIS · Space syntax · SUMP

How close are everyday services for residents who walk, cycle, wait for the bus or drive? Where does the compact city lose its advantage, and what should the SUMP add?



October 2026

Shkodër, Albania

Technical report · Wheels of Change

CoPlan Institute for Habitat Development

GREEN HOME act green

TRANSPORT COMMUNITY

OPEN SOCIETY FOUNDATIONS

Contents

Summary 4

1. Introduction and project description 5
1.1 Mobility challenges in Shkodër 5
1.2 Purpose and research questions 6
1.3 Study area 6
1.4 Data and method 6

2. Street network, land use and accessibility 9
2.1 Street network 9
2.2 Land use 10
2.3 Residents and density 11
2.4 Open and green spaces 12
2.5 Everyday services 13
2.6 Walking access to services 14
2.7 The 15-minute proximity index 17
2.8 Cycling 18
2.9 Public transport 20
2.10 Cars and parking 21
2.11 Comparing modes 22

3. Integrating the analysis with space syntax 24
3.1 How space syntax measures are read 24
3.2 The WOC maps on the street network 25
3.3 Connectivity and the street hierarchy 26
3.4 Global integration, public institutions and locational value 28
3.5 Choice: through-movement, pedestrians and commerce 31
3.6 Integration and land use 34
3.7 Synthesis: a typology of areas 36

4. The 2025 SUMP and new urban developments 39
4.1 The 2025 SUMP 39
4.2 How the SUMP responds to the findings of this study 39
4.3 Future urban developments outside the plan 40
4.4 Previous plans 41

5. Findings from the survey, the student experiment and co-design 42
5.1 Resident survey 42
5.2 The student experiment: the city through a user's role 47
5.3 The co-design roundtable 48

6. Proposals for improving the SUMP 49
6.1 Measure accessibility, not only infrastructure 49
6.2 Start neighbourhood measures where both links and services are missing 49
6.3 Extend "School Streets" according to access, not only traffic 49
6.4 A dedicated programme for lighting pedestrian routes 49

6.5 Close cycling gaps on through-movement corridors 49
6.6 Public transport: a service standard and measured coverage 50
6.7 Safe and usable stops 50
6.8 Small public spaces and play near home 50
6.9 Space syntax as a planning tool 50
6.10 Governance, data and participation 51
6.11 Large developments should undergo a mobility impact assessment 51
6.12 Next steps 52

7. Conclusions: the study's contribution to the SUMP 53

Annex. Survey findings and interpretation 54
A.1 Scope and limitations 54
A.2 Respondent profile 54
A.3 Daily travel 55
A.4 Walking, cycling and public transport 55
A.5 Safety, gender and age 56
A.6 Accessibility and priorities 57
A.7 Open comments 58
A.8 The SUMP and participation 59

References and data sources 60

Summary

Shkodër offers substantial potential for reaching everyday services on foot or by bicycle. This study quantifies that advantage and identifies where it diminishes. For 93% of residents represented in the Shkodër administrative unit model, at least six of eight basic services are within a 15-minute walk: a kindergarten, a school, health care, a pharmacy, a food shop, an open space, a stop served by an operating bus line, and a public office or cultural facility. In Rrethinat, with approximately 21,500 residents in the source database, the corresponding share is only 5%; around a third cannot reach any of these services within 15 minutes.

Within the city, short distances create favourable conditions for active travel. Under the model assumptions, cycling to the centre is as fast as driving, or faster, from every neighbourhood once parking time is included. Nevertheless, 56% of survey respondents identify unsafe traffic as a barrier to cycling, and 75% have changed their route, travel time or mode for safety reasons; among women, the figure reaches 83%. Only 31% of city residents represented in the model live within a 5-minute walk of a stop served by an operating bus line, while only two approved lines operate. In Rrethinat, this coverage is close to zero.

The Wheels of Change space syntax maps were georeferenced against the street network without changing their classes. They identify an integrated core around Bulevardi Zogu I and Skënderbeu and a set of potential through-movement corridors extending approximately 31 km. Additional interpretation links the WOC classes with PPV and OSM data. Connectivity is associated with street width and hierarchy. Of the matched public institutions, 77% lie near lines in integration classes 3 and above, which account for 38% of the network. Higher integration also characterises the historic centre, providing a basis for discussing locational value. Class 3 records an average of 13.9 shops, cafés, food shops or pharmacies per 100 m, compared with 2.6 in class 2. Higher choice is associated with wider corridors, while the pedestrian streets combine a stronger destination role with lower modelled through-movement. The distribution of green spaces and playgrounds differs from these patterns, highlighting gaps in residential areas.

Combining service access and integration produces a six-part area typology. Approximately 7,800 residents are assigned to areas with both lower integration and insufficient service proximity: Dobraç, Skënderbeg, Qafë, Tepe and parts of Kiras and Guerrile. Around 29,700 have services nearby but live in areas whose streets fall predominantly within the lower integration classes: Naim Gjylbegu, Kiras, Ahmet Haxhia, Garuc, Mark Lula and Luguçezme. A further 17,200 residents in the villages of Rrethinat require a different response, combining safe connections to the city with regular public transport.

The 2025 SUMP addresses most of these issues through measures for local streets, school streets, crossings, cycling infrastructure and public transport reform. It includes cost estimates and links to local street regulation. Four aspects require further development: network-based accessibility indicators, a territorial prioritisation of neighbourhood measures, a dedicated lighting programme, and data disaggregated by gender and age. These would make progress for women, young people and Rrethinat more measurable. The plan also needs to address developments not anticipated in the PPV, including the 35-storey tower on Sheshi Demokracia, in a highly integrated part of the network, and the widening of the southern city entrance. Chapter 6 sets out eleven improvements, each linked to an existing SUMP measure and a monitoring indicator. Chapter 7 summarises the study's contribution to the SUMP.

1. Introduction and project description

Wheels of Change is a cross-border project implemented by CoPlan and GreenHOME, with support from the Open Society Foundations – Western Balkans and the Transport Community. It examines mobility in Shkodër and Ulcinj, focusing on differences in people's ability to move independently and access urban opportunities. Particular attention is given to women, young people and groups that rely on walking, cycling and public transport.

The project brings together four complementary sources of evidence. GIS analysis examines the street network, services and network distances. Space syntax assesses the relative position of streets within the wider network. The resident survey documents everyday travel experiences, while a student role-play exercise and a co-design roundtable examine barriers along specific routes. This study combines these sources for Shkodër and considers their implications for the Sustainable Urban Mobility Plan (SUMP, or PLQU in Albanian), prepared in 2025.

1.1 Mobility challenges in Shkodër

Shkodër's reputation as "the city of bicycles" reflects its long-established active travel culture. Its flat, compact urban core, approximately 2–3 km across, has supported walking and cycling for decades. The Mobalb survey (2011) recorded 43% of trips on foot, 29% by bicycle, 22% by car and around 3% by bus. The 2024 SUMP survey reported that 68% of respondents travelled to work or school on foot or by bicycle, and only 3% by public transport. Although differences in method limit direct comparison, the surveys indicate the importance of active travel and the limited role of public transport.

Maintaining this active travel profile requires attention to five principal challenges.

- Cycling infrastructure is limited and fragmented. According to the SUMP, the network extends approximately 26.5 km: 4.3 km of protected lanes in the centre, 10.7 km along the bypass, 8.5 km of unprotected lanes on the inner ring and 3 km along the lake. Much cycling therefore takes place in mixed traffic.
- The pedestrian zone follows a 1.3 km linear itinerary along 13 Dhjetori, 28 Nëntori, Kolë Idromeno and Gjuhadol. It has yet to develop into a connected network of pedestrian streets and squares.
- According to the SUMP situation analysis, public transport has operated without subsidy since the 2017 tender. Two of the five approved urban lines operate. Line 1, Bahçallëk–Fermentim, covers 7 km and 28 stops, with authorised operating hours of 06:30–20:00. Reported afternoon intervals often increase to 30–60 minutes. Line 2, serving Shirokë and Zogaj, provides three departures per day.
- Vehicle movement and parking place competing demands on public space. On pavements, pedestrians encounter conflicts with parked bicycles and vehicles. The SUMP situation analysis reports that pedestrians and cyclists are involved in approximately 40% of urban road accidents.
- Mobility responsibilities are distributed across planning, public services, environment and the municipal police, without a dedicated mobility unit. Awareness of mobility planning is also limited within the WOC sample: 55% of respondents have not heard of the SUMP.

These challenges affect groups differently. Women account for 51.1% of Shkodër's registered population and, according to the SUMP, use public transport more than men. Within the WOC sample, 68% of women report walking, cycling or the bus as their main mode, compared with 42% of men. Respondents under 25 report daily cycling almost three times as often as others, at 31% compared with 12%. These patterns underline the importance of safe streets, adequate lighting and reliable public transport for groups that depend on sustainable travel modes.

1.2 Purpose and research questions

The study addresses four questions. First, how close are everyday services for residents travelling on foot, by bicycle, by bus or by car? Second, how does street network configuration, assessed through space syntax, relate to land use, open spaces and activities? Third, how does the 2025 SUMP address these findings and emerging urban developments? Fourth, which additions or improvements would help extend the benefits of a compact city to all residents?

1.3 Study area

The study covers two administrative units. Shkodër (31.5 km^2) includes the historic city, the centre and the lakeside extension towards Shirokë and Zogaj. Rrethinat (43.6 km^2) extends around the city to the north and east, including growing villages such as Shtoj, Golem, Guci, Grudë, Bleran and Myselim. The General Local Plan (PPV) database represents approximately 99,700 residents across the two units: 78,200 in Shkodër and 21,500 in Rrethinat. This is also the territory on which the urban measures of the 2025 SUMP focus (Map 1).

1.4 Data and method

The principal source is the GIS package prepared for the Municipality of Shkodër's PPV. It provides administrative boundaries, buildings, land use (Lu_14), planning zones, public facilities, green spaces, road classifications, bus routes and stops, and car parks. OpenStreetMap data from October 2026 supplement gaps in the package, including the pedestrian network, cycle lanes, shops, pharmacies and playgrounds. Table 1 summarises the sources.

Table 1. Data sources

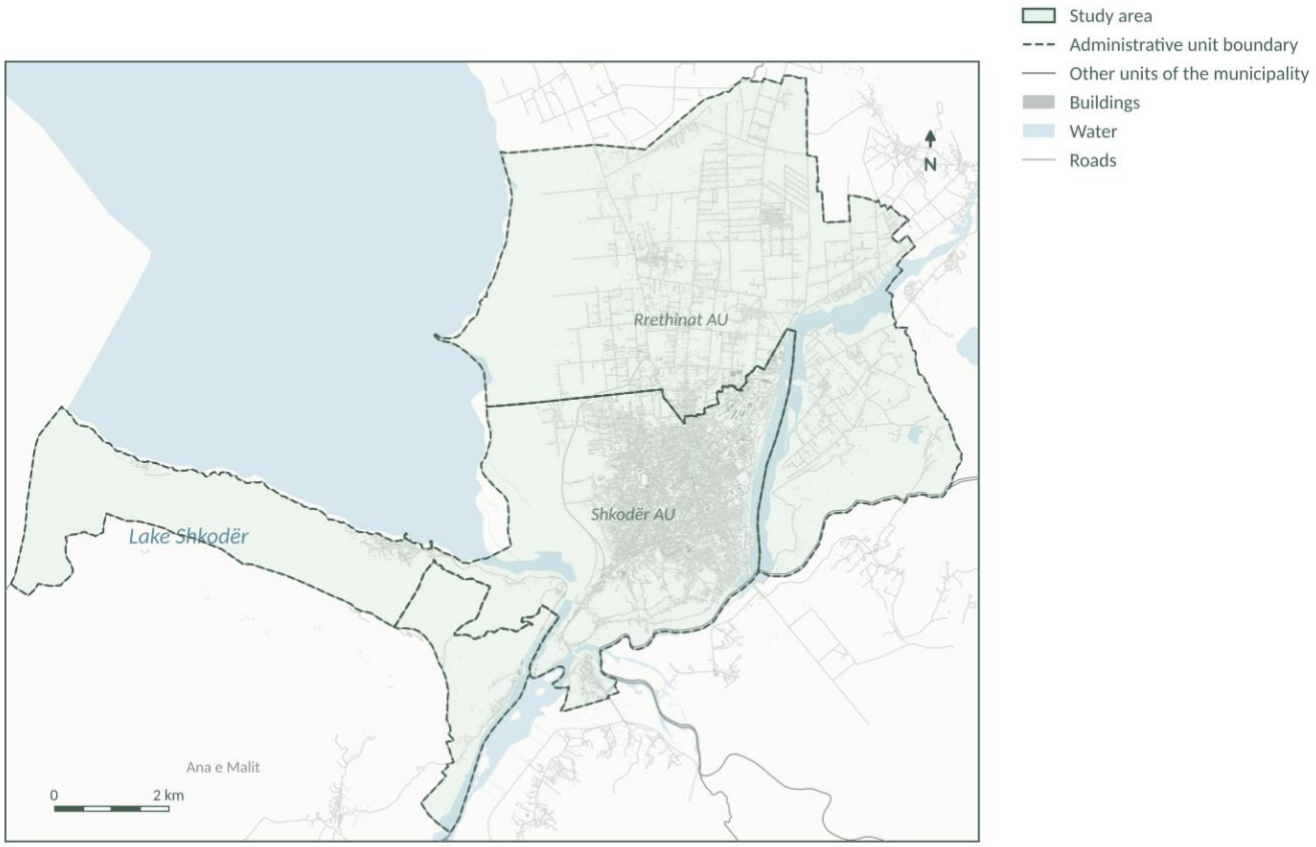
Source	Content	Use in the study
GIS package of the Municipality of Shkodër (PPV)	Administrative units, buildings (about 29,600 in the study area), Lu_14 land use, PPV zones, public facilities, greenery, roads by Road Code class and width, bus lines and stops, car parks	Official map base, residents' origins, destinations, area typology
OpenStreetMap, October 2026	Street and pedestrian network, cycle lanes, shops, cafés, pharmacies, clinics, playgrounds	Shortest-path calculation; completing services
WOC space syntax analysis	Four depthmapX exports for Shkodër: connectivity, integration, mean depth, choice	Georeferencing; original maps; interpretation with additional data
WOC survey, July–October 2026	105 responses, 98 from residents of the municipality	Travel experience, barriers, priorities; Chapter 5 and Annex
Shkodër SUMP 2025 (ERI-ITA / EIB)	Situation analysis, proposed plan and annexes	Current conditions and measures; Chapter 4
INSTAT, KKT and media, 2023–2026	Building permit statistics, KKT agendas and news on large projects in Shkodër	New urban developments; Chapter 4
Student experiment, 7 and 27 October 2026	Role-play in the field: routes on foot, by bicycle and by bus; posters, maps and collages	User experience in the field; Chapter 5
Co-design roundtable, October 2026	Shared map of obstacles, solutions and good examples	Participants' priorities; Chapter 5

Accessibility is calculated along the modelled street network rather than as straight-line distance. Residential buildings serve as origins. The population recorded for each administrative unit in the PPV 2015 database is allocated to buildings according to footprint and number of floors. Walking is modelled at 4.5 km/h, equivalent to 75 m per minute, with a 3 km/h sensitivity scenario for slower walking. The latter informs consideration of children, older people and parents with prams without fully representing their individual needs. Cycling is modelled at 15 km/h. Driving speeds vary by road class, with an additional 5 minutes for parking and walking to the destination. The analysis uses thresholds of 5, 10 and 15 minutes.

The 15-minute proximity index counts how many of eight service categories can be reached within 15 minutes on foot: a kindergarten or nursery, a school, health care, a pharmacy, a food shop or market, an open space larger than 0.1 ha, a stop served by an operating bus line, and a public office or cultural facility.

The original WOC space syntax maps were georeferenced against the street network without altering their classes. Each line was then associated with additional information on street width, public institutions, land use, activities and residents within 30–80 metres. Chapter 3 explains this supplementary analysis and distinguishes it from the original WOC results.

Map 1. Study area: the Shkodër and Rrethinat administrative units



Source: GIS base of the Municipality of Shkodër (PPV): administrative units, buildings, land use; OpenStreetMap (streets).

2. Street network, land use and accessibility

This chapter establishes the spatial basis of the study by examining the street network, land use and population distribution. It then assesses proximity to services and open spaces from each residential building and compares four modes of travel: walking, cycling, public transport and driving.

2.1 Street network

Under the PPV classification based on the Road Code, the study area contains approximately 530 km of roads. Local roads in category F account for the largest share, at 354 km, followed by secondary urban roads (107 km), primary urban roads (44 km), secondary interurban roads (18 km) and motorway or bypass infrastructure (9 km). The OpenStreetMap network extends to 733 km because it also includes paths, service roads and pedestrian connections.

Map 2 shows the principal structure of the network. Two long axes meet in the centre: the south–north axis from Bahçallëk to Fermentim and an east–west axis, also described in the SUMP. The inner rings and western bypass distribute traffic. Between them lies a dense network of local streets, often narrow, bounded by courtyard walls and interrupted by canals. This fine-grained fabric supports walking but also contains dead ends, incomplete connections and difficult crossings of canals and ring roads.

The PPV road layer records carriageway width for most segments, while the pavement and lighting fields remain unfilled. OpenStreetMap records lighting along approximately 160 km of streets and pavements along approximately 65 km, covering only part of the network. This documentation gap is relevant because survey respondents identify lighting and pavements among their principal priorities (Chapter 5).

Map 2. Street network by functional class



Source: Municipality of Shkodër, PPV: Infrastructure by Road Code.

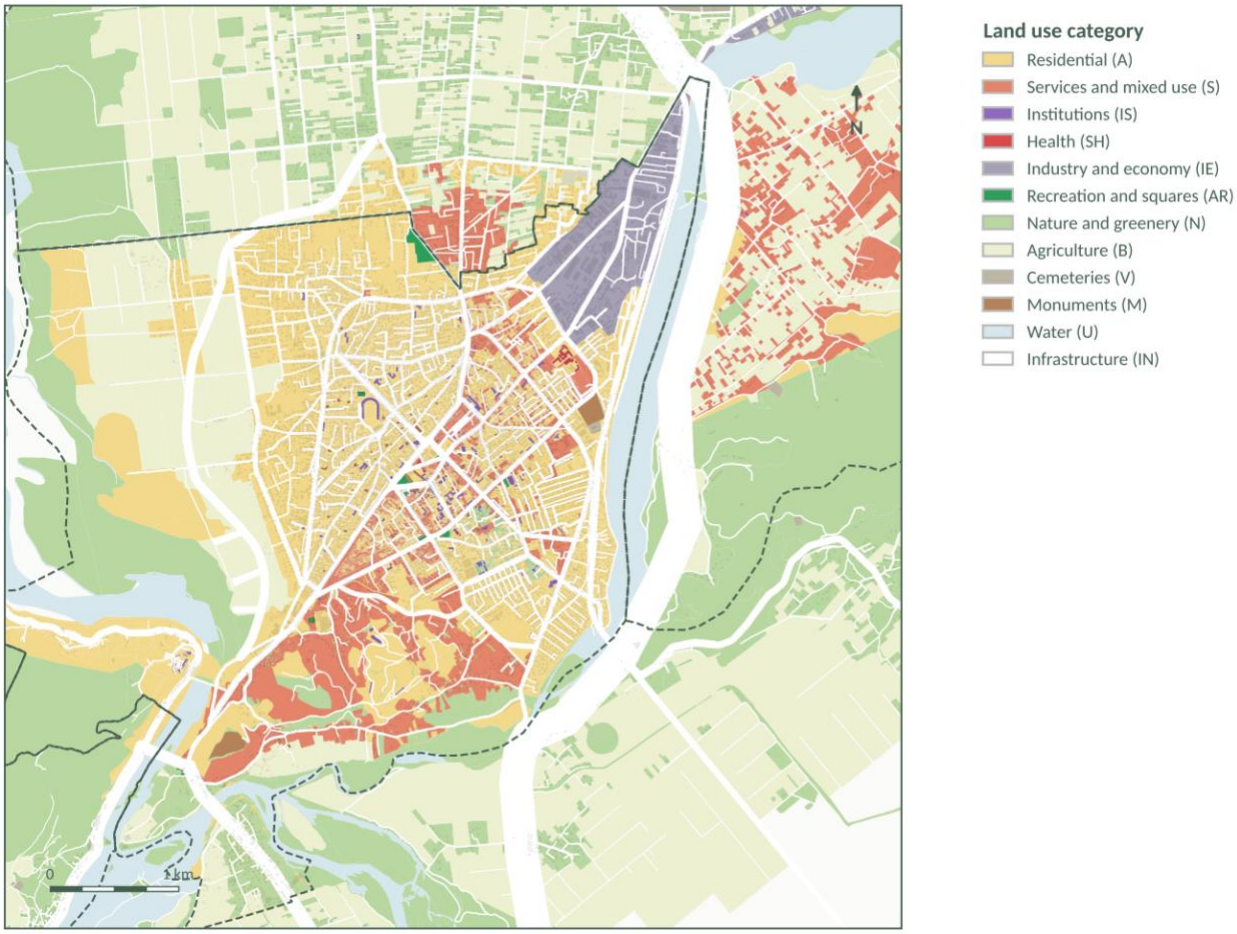
2.2 Land use

In the Shkodër administrative unit, residential land covers 1,203 ha, or 38% of the territory. Services and mixed uses occupy 342 ha, while institutional and health uses cover approximately 14 ha. Nature and greenery account for 1,093 ha, largely comprising hills and the shores of the lake and rivers. Recreation and urban squares occupy only 6 ha. Industrial and economic uses, totalling 105 ha, are concentrated in the north-east around Fermentim and at the city entrances.

Rrethinat has a different land-use structure. Agriculture occupies 1,994 ha (46%) and natural areas 1,761 ha. Residential land covers only 159 ha, dispersed across villages and along roads. Services and mixed uses occupy 190 ha, mainly along the access corridors to the city. This distribution of housing and services helps explain the more limited accessibility in Rrethinat (Section 2.6).

Map 3 shows housing as the principal component of the urban fabric. Services and mixed uses concentrate in the historic centre, along Bulevardi Skënderbeu and Bulevardi Zogu I, and along radial streets. Chapter 3 examines the association between this distribution and the integration classes of the WOC space syntax analysis.

Map 3. Land use according to the PPV



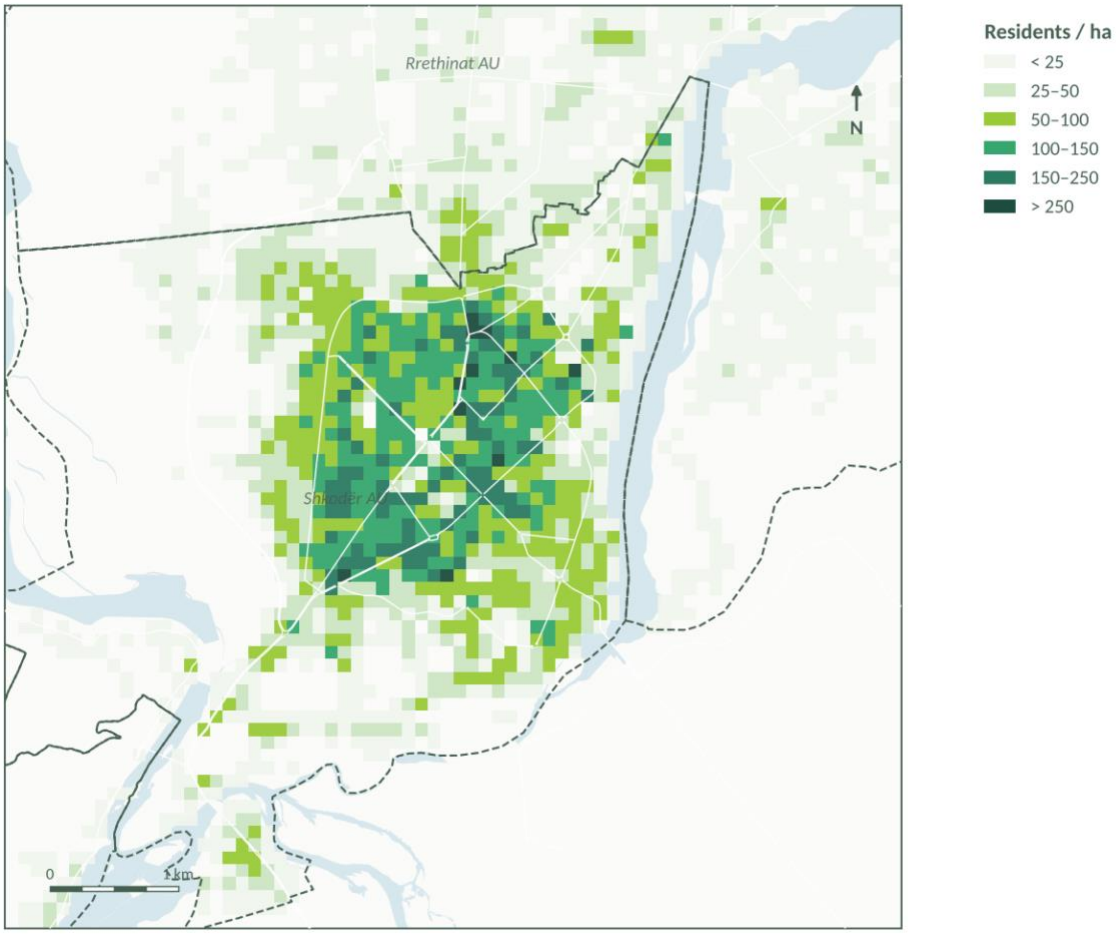
Source: Municipality of Shkodër, PPV: Lu_14 layer (14 basic land use categories).

2.3 Residents and density

Shkodër is characterised by medium and high residential densities. Half of the population represented in the Shkodër administrative unit model lives in cells with more than 104 residents per hectare, and approximately 52% in cells with more than 100. The highest densities occur in the centre and neighbourhoods of collective housing, surrounded by areas of one- and two-storey houses. In Rrethinat, median density is 17 residents per hectare (Map 4).

These differences matter for planning. Urban density supports the concentration of services within walking distance and the provision of regular public transport. In Rrethinat, lower density can increase the per-resident cost of fixed-route services. Relevant responses include demand-responsive transport, proposed under SUMP measure M31, and safe cycling connections to the city under M23.

Map 4. Residential density in 100 m cells



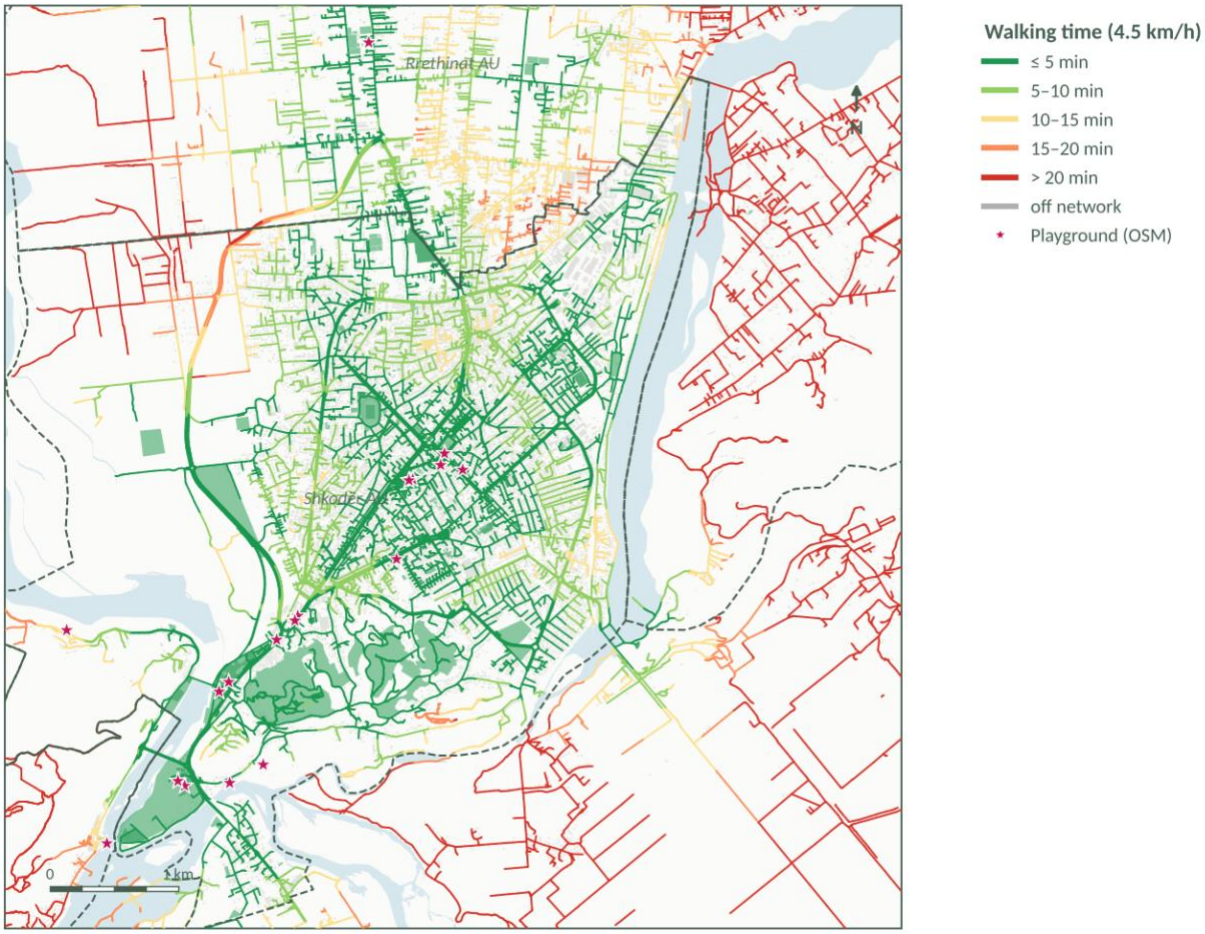
Source: Municipality of Shkodër, PPV: buildings and population by unit (2015); project calculation.

2.4 Open and green spaces

The public open-space inventory combines PPV greenery, sports facilities, parks, squares and recreation areas with parks, gardens, sports pitches and playgrounds recorded in OSM. Approximately 132 ha are identified in the Shkodër administrative unit, equivalent to about 17 m^2 per resident, compared with 5 ha or 2.5 m^2 per resident in Rrethinat. The model indicates that 92% of the city population can reach an open space larger than 0.1 ha within 10 minutes on foot, and approximately half within 5 minutes. The cited WHO Europe recommendation of a public green space within approximately 300 m of home provides a reference point, but is not directly equivalent to the time thresholds and open-space categories used here.

The averages conceal two important differences. First, the largest spaces lie at the city's edges, around the castle, along the Buna and in the southern park, while inner residential neighbourhoods rely mainly on small gardens. Second, playground coverage is more limited: only 36% of the city population has a playground within 10 minutes and 11% within 5 minutes. These distances are particularly relevant to the daily journeys of parents with young children (Map 5).

Map 5. Open spaces and walking time to the nearest one



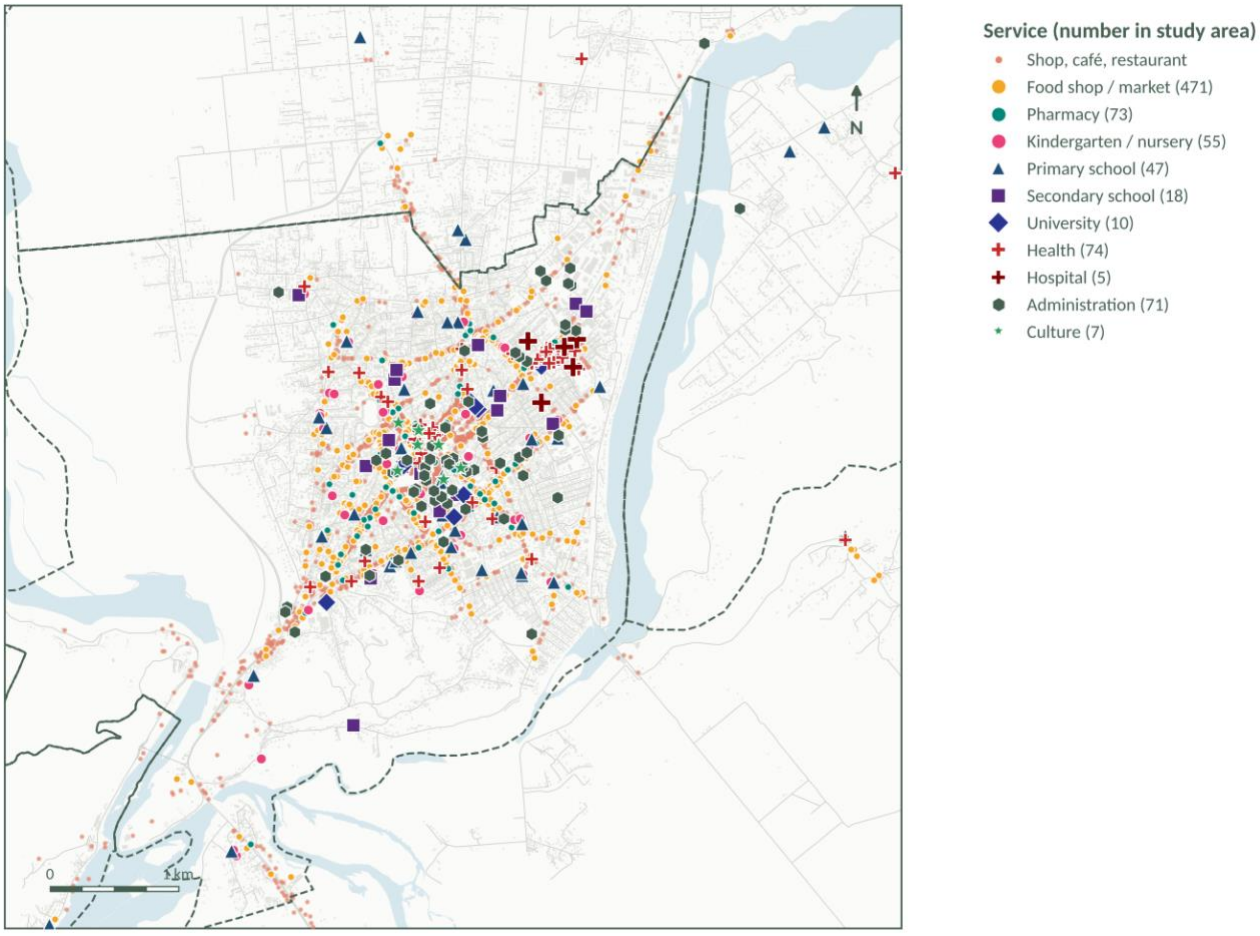
Source: PPV (greenery, parks, squares); OpenStreetMap (parks, playgrounds, pedestrian network).

2.5 Everyday services

Map 6 presents the services included in the proximity analysis. The PPV and OSM inventories identify 55 kindergartens and nurseries, 42 primary schools, 18 secondary schools, 76 health facilities, including 5 hospitals, 73 pharmacies, 453 food shops and markets, 70 public offices, and approximately 2,700 shops, cafés and restaurants. Most are located in the Shkodër administrative unit. Schools and kindergartens are relatively widely distributed across neighbourhoods, whereas health care and administration concentrate in the centre and hospital area. Commercial activities follow the boulevards and radial streets.

The Rrethinat inventory is less complete. Some village clinics, kindergartens or shops may be absent from both sources, potentially understating modelled accessibility. The available inventory indicates a substantial difference from the city; its magnitude should be reassessed after the service data have been completed.

Map 6. Everyday services and commercial activities



Source: PPV (public facilities); OpenStreetMap (shops, cafés, pharmacies, markets), October 2026.

2.6 Walking access to services

Table 2 presents the share of the population able to reach each service within 5, 10 and 15 minutes on foot. In the city, the nearest food shop is an average of 2.3 minutes away, greenery 4.7 minutes, a kindergarten 5.1 minutes and a school 6.2 minutes. More than 80% of the population can reach a kindergarten, school, pharmacy, food shop and open space within 10 minutes. Health care is accessible within this threshold to 78%.

Table 2. Residents reaching services on foot (% of residents, 4.5 km/h)

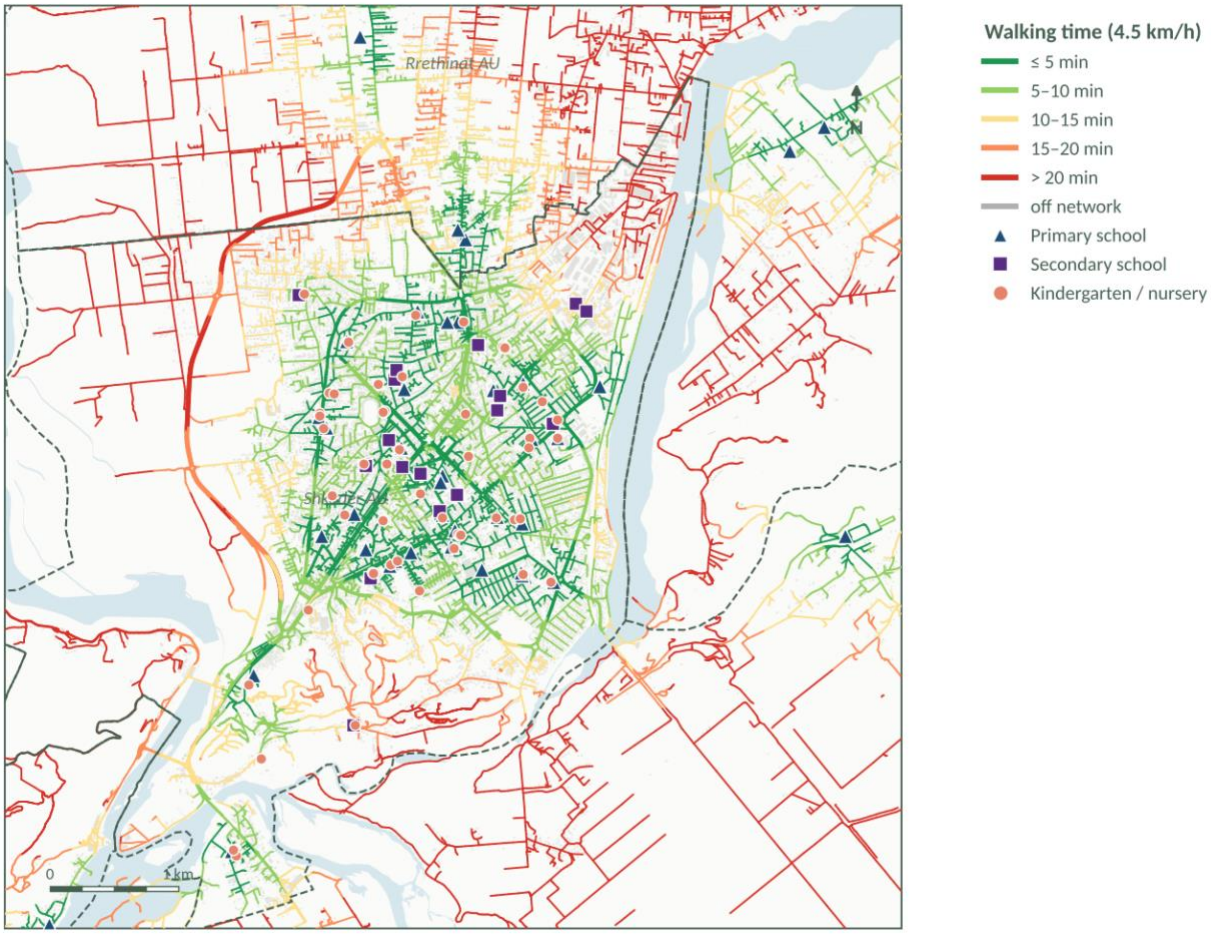
Service	Shkodër 5 min	Shkodër 10 min	Shkodër 15 min	Rrethinat 10 min	Rrethinat 15 min
Kindergarten or nursery	48.7	87.5	94.7	1.9	5.9
Primary school	34.8	82.7	93.1	19.6	34.2
Secondary school	22.2	67.1	83.4	2.5	8.5
Health care	39.5	78.4	90.7	6.8	15.3
Pharmacy	59.3	85.5	92.4	5.3	14.7
Food shop or market	83.6	95.7	98.1	22.2	35.7
Open space > 0.1 ha	53.2	91.6	98.7	20.7	36.5
Playground	10.5	35.6	56.1	3.1	8.1
Stop of an operating line	31.3	61.8	78.4	1.8	6.8
Public office or culture	42.9	76.8	92.1	9.6	25.0

Source: project calculation on the OSM network; origins are PPV residential buildings weighted by population.

At 4.5 km/h, the 10-minute threshold represents approximately 750 m along the network. This pace does not suit every user, including young children, some older people and parents with prams. Under the 3 km/h scenario, the share reaching a school within 10 minutes falls from 83% to 56%, health care from 78% to 57%, and an operating bus stop from 62% to 43%. The benefits of compact urban form therefore diminish for people who walk more slowly. The survey also identifies children, older people and parents with young children as groups requiring attention.

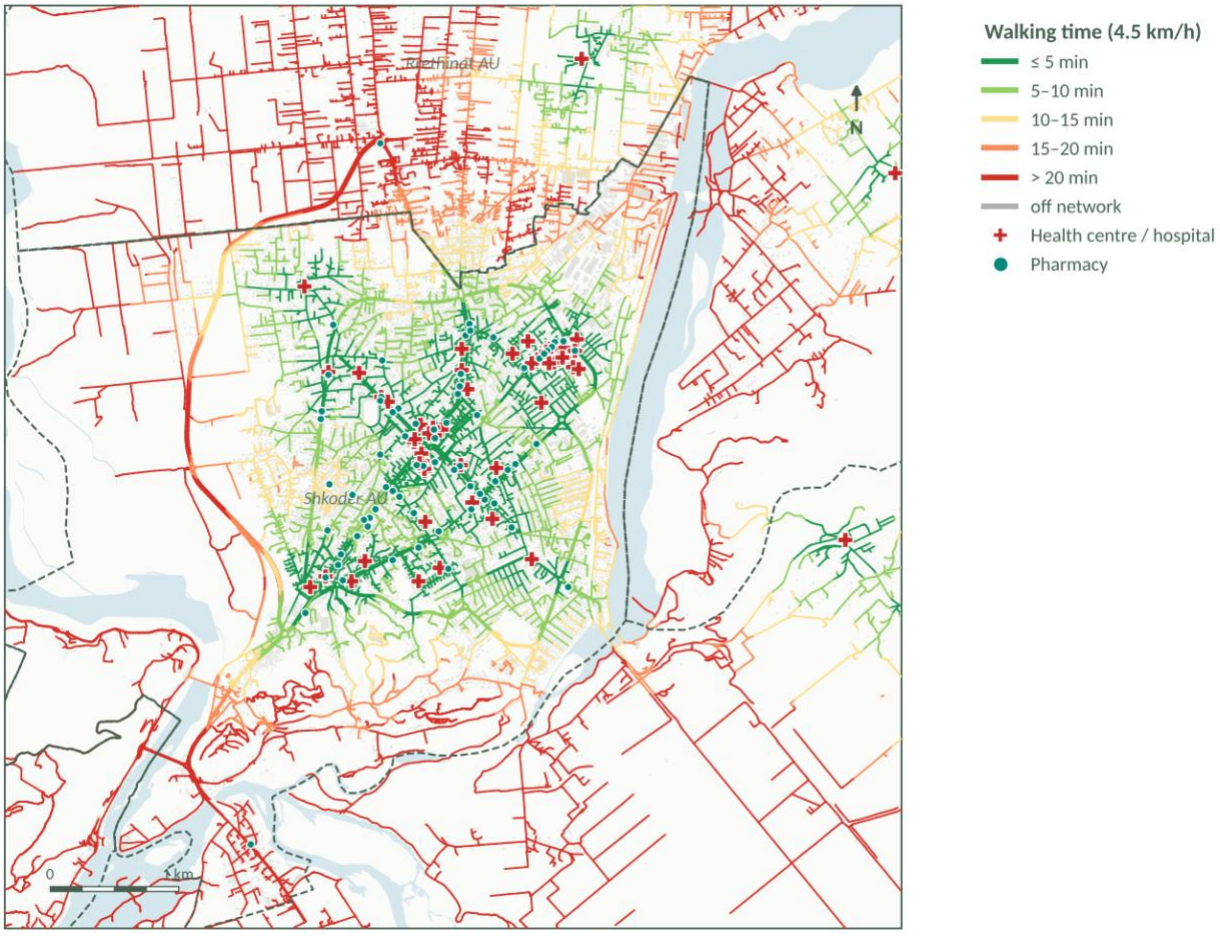
Maps 7 and 8 show the distribution of access to schools and health care. Within the city, gaps concentrate at the network edges. A primary school is more than 10 minutes away for most residents in Kiras, Tepe, Ajasëm, Luguçezme and much of Skënderbeg. The health-care threshold is exceeded in Bahçallëk, Tepe, Qafë, Partizani and half of Mark Lula. In Rrethinat, access decreases with distance from the city: median walking time is 20 minutes to a school, 29 minutes to health care and 52 minutes to a kindergarten. For families in Shtoj, Guci e Re, Grudë e Re or Bleran, these distances may require accompaniment or another mode of transport, including cycling where a safe route is available.

Map 7. Walking time to the nearest primary school



Source: PPV (education facilities); OpenStreetMap (schools, kindergartens, pedestrian network).

Map 8. Walking time to the nearest health facility



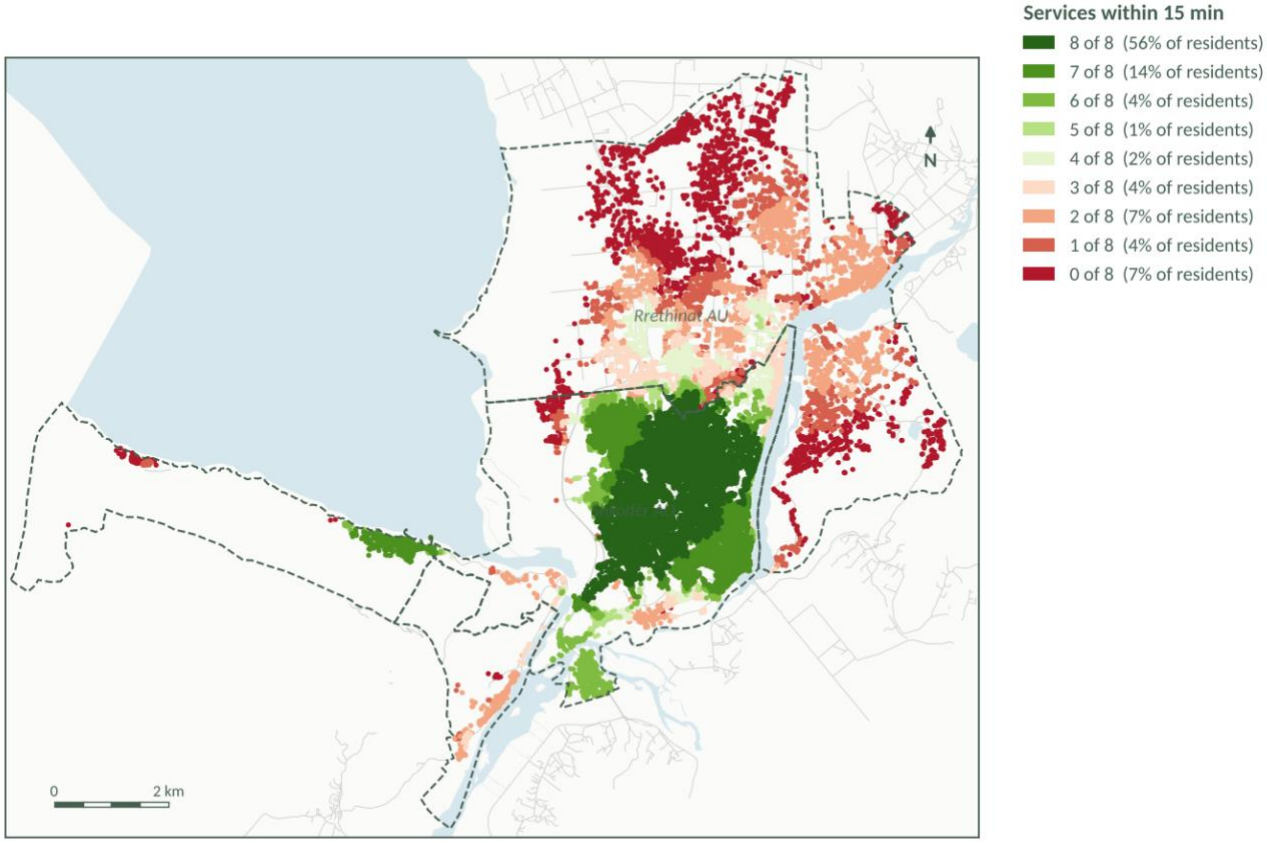
Source: PPV (health centres, hospitals); OpenStreetMap (clinics, pharmacies, pedestrian network).

2.7 The 15-minute proximity index

The 15-minute index combines the eight service categories into one indicator (Map 9). In the Shkodër administrative unit, 70% of the population can reach all eight within 15 minutes on foot, and 93% at least six. An operating bus stop is the most frequently missing category, followed by health care and administration or culture. In Rrethinat, only 3% can reach all eight and 31% cannot reach any. Across the study area, 74% of the population has at least six categories within 15 minutes.

The result indicates two directions for intervention. Across much of the city, service proximity provides favourable conditions for the objectives of the 15-minute city; the SUMP should make that proximity safer and more usable. In the expansion towards Rrethinat, where services are more dispersed, coordination with the PPV is needed to address their location and with public transport to provide connections. The index measures proximity and does not replace an assessment of service quality or capacity.

Map 9. 15-minute proximity index: number of basic services within 15 minutes on foot



Source: Project calculation on the pedestrian network (OSM), PPV and OSM facilities, stops of operating lines.

2.8 Cycling

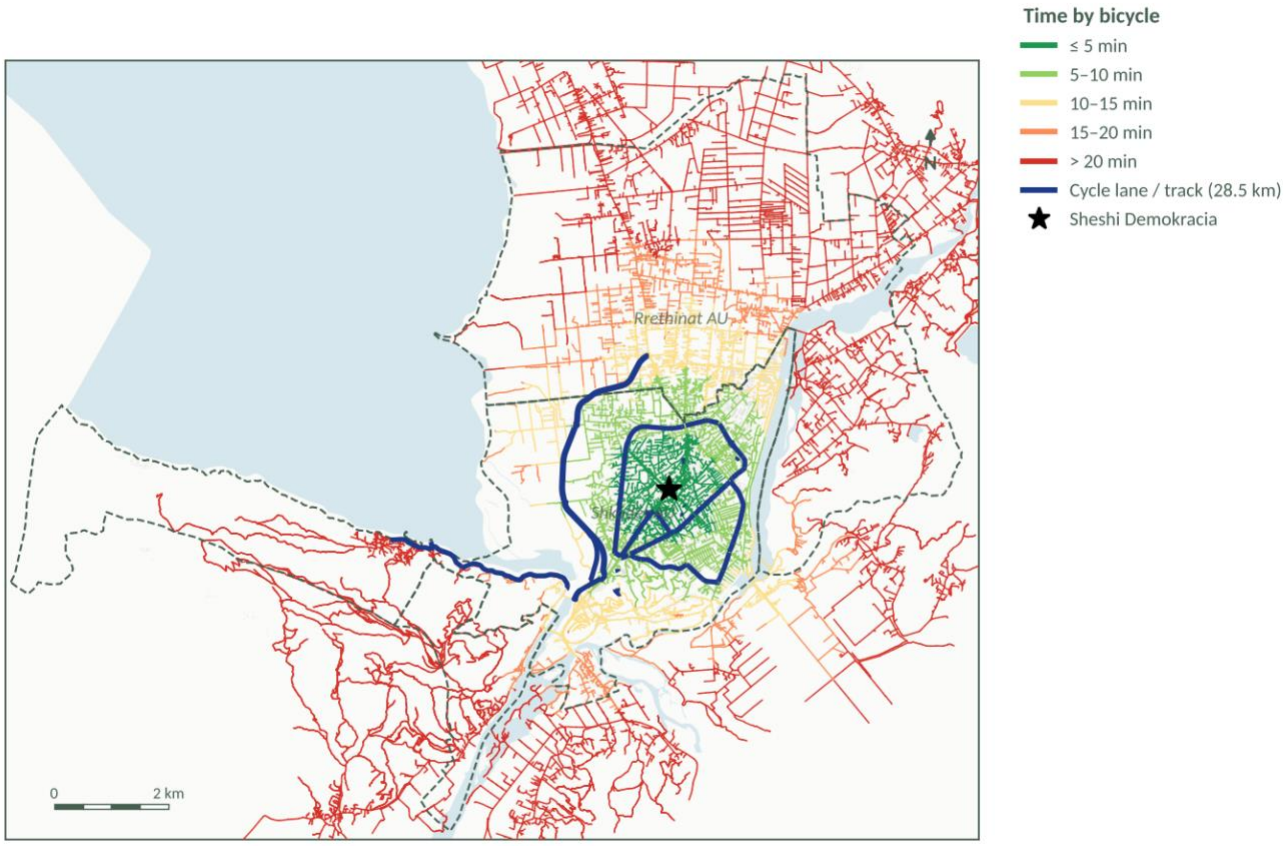
At 15 km/h, the model indicates substantial potential for cycling connections to Sheshi Demokracia (Map 10). Within 10 minutes of the centre lies 89% of the Shkodër administrative unit population, rising to 97% within 15 minutes. Similarly, 98% of the city population has a secondary school within 10 minutes by bicycle. In Rrethinat, only 8% lies within 10 minutes of the centre and 25% within 15 minutes. Nevertheless, 39% has a secondary school within 10 minutes by bicycle, indicating the potential importance of cycling for young people in surrounding settlements.

The comparison with driving reinforces this potential (Map 11). When 5 minutes are added for parking and walking to the destination, the model identifies cycling as at least as fast from every residential building in the city. For 31% of the population, the advantage exceeds 5 minutes. Excluding parking, 88% can reach the centre within 10 minutes by car, a coverage level similar to cycling. In Rrethinat, driving is faster for approximately two thirds of the population, primarily in the northern and eastern villages.

Modelled distances and times are therefore favourable to cycling in Shkodër, while safety remains a significant barrier. The SUMP records approximately 26.5 km of cycling infrastructure, compared with 28.5 km in OSM, but only 4.3 km are protected lanes in the centre. The remaining infrastructure follows the bypass and lakeshore or consists of unprotected lanes. According to the SUMP, many residents of peripheral and neighbouring areas reach the city by cycling on national roads in unsafe conditions. The student assessment of 8 segments provides similar examples: the 3 with dedicated lanes

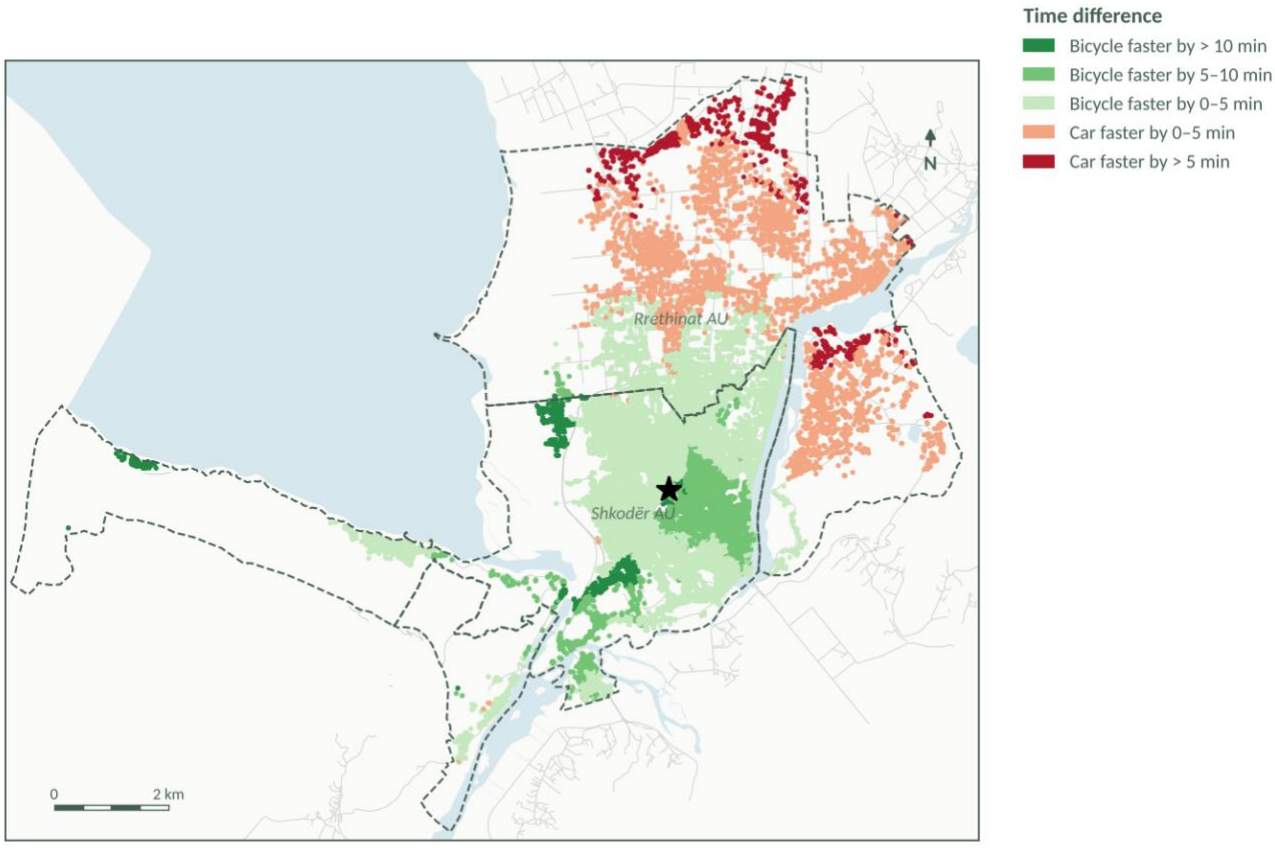
were rated safe or relatively good, despite their narrowness, while the 5 without lanes and with moderate or heavy traffic were rated unsafe.

Map 10. Cycling time to the centre and existing cycling infrastructure



Source: OpenStreetMap (street network, cycleway, cycleway=lane), October 2026; project calculation.

Map 11. Bicycle versus car for trips to the centre



Source: Project calculation on OpenStreetMap; assumed speeds: 15 km/h by bicycle, 15–50 km/h by car depending on road class.

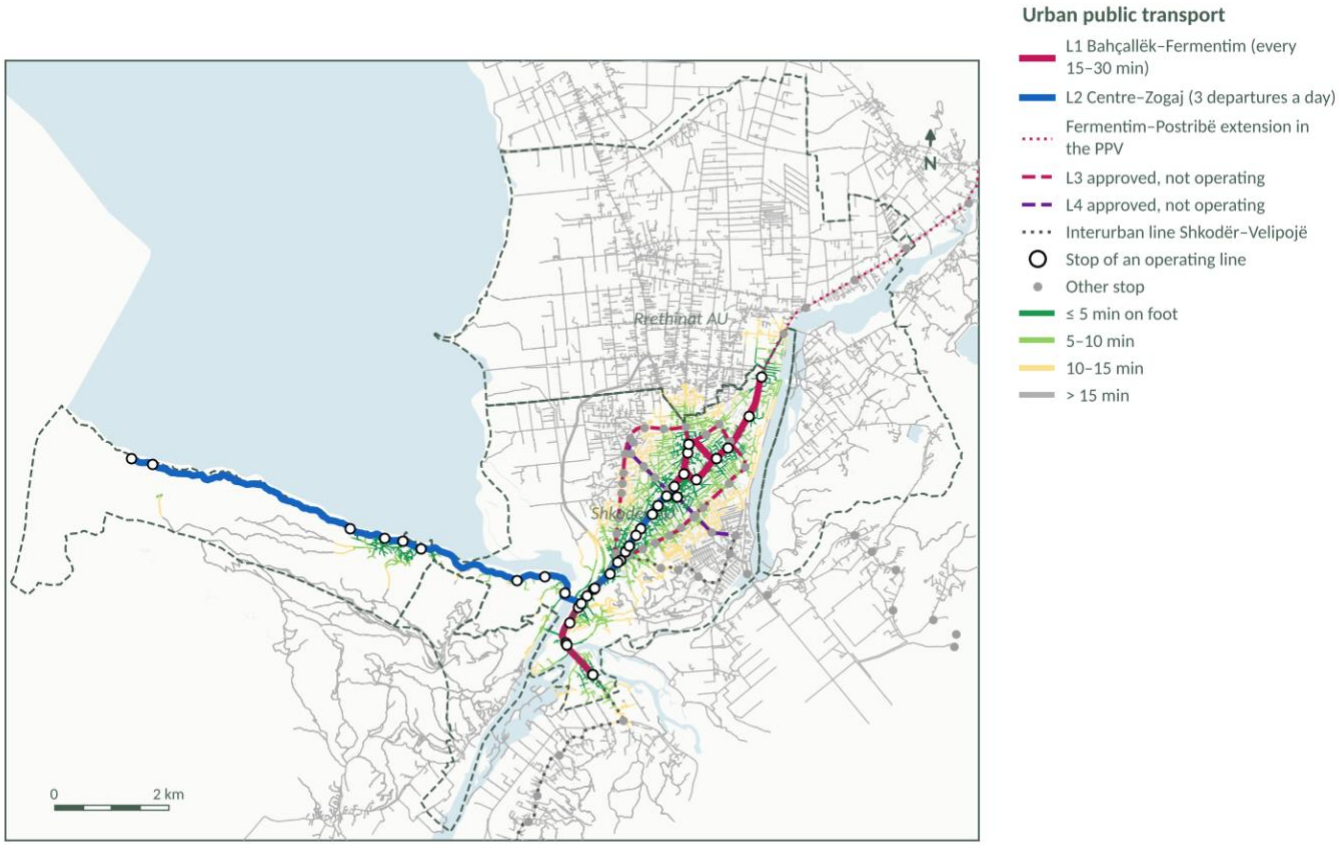
2.9 Public transport

The PPV database contains 7 routes and 108 bus stops. The operating-service analysis includes two urban lines, L1 Bahçallëk–Fermentim and L2 Centre–Shirokë–Zogaj, serving 40 stops. Lines L3 and L4 are approved but do not operate according to the information used. Map 12 presents walking time to the nearest stop served by an operating line.

In the city, 31% of the population lies within a 5-minute walk of an operating stop and 62% within 10 minutes. A scenario serving all PPV stops increases 5-minute coverage to 66%. This difference highlights the need to distinguish the recorded network from operating services. In Rrethinat, coverage is 0.2% within 5 minutes and approximately 2% within 10 minutes. Interurban minibuses provide an alternative for village residents, but information on urban stops and timetables remains limited.

Spatial coverage must be considered alongside frequency and operating hours. Line 1 is authorised to operate from 06:30 to 20:00, at 15-minute intervals until 14:30 and 20–30-minute intervals thereafter. Reported afternoon intervals increase to 30–60 minutes. Line 2 provides three departures per day. These limitations reduce the usefulness of bus travel during 15:00–19:00, when 72% of respondents report travelling, and in the evening, when women more frequently report avoiding walking alone. According to the SUMP, public transport accounts for approximately 3% of work and school trips.

Map 12. Public transport: lines, stops and walking coverage



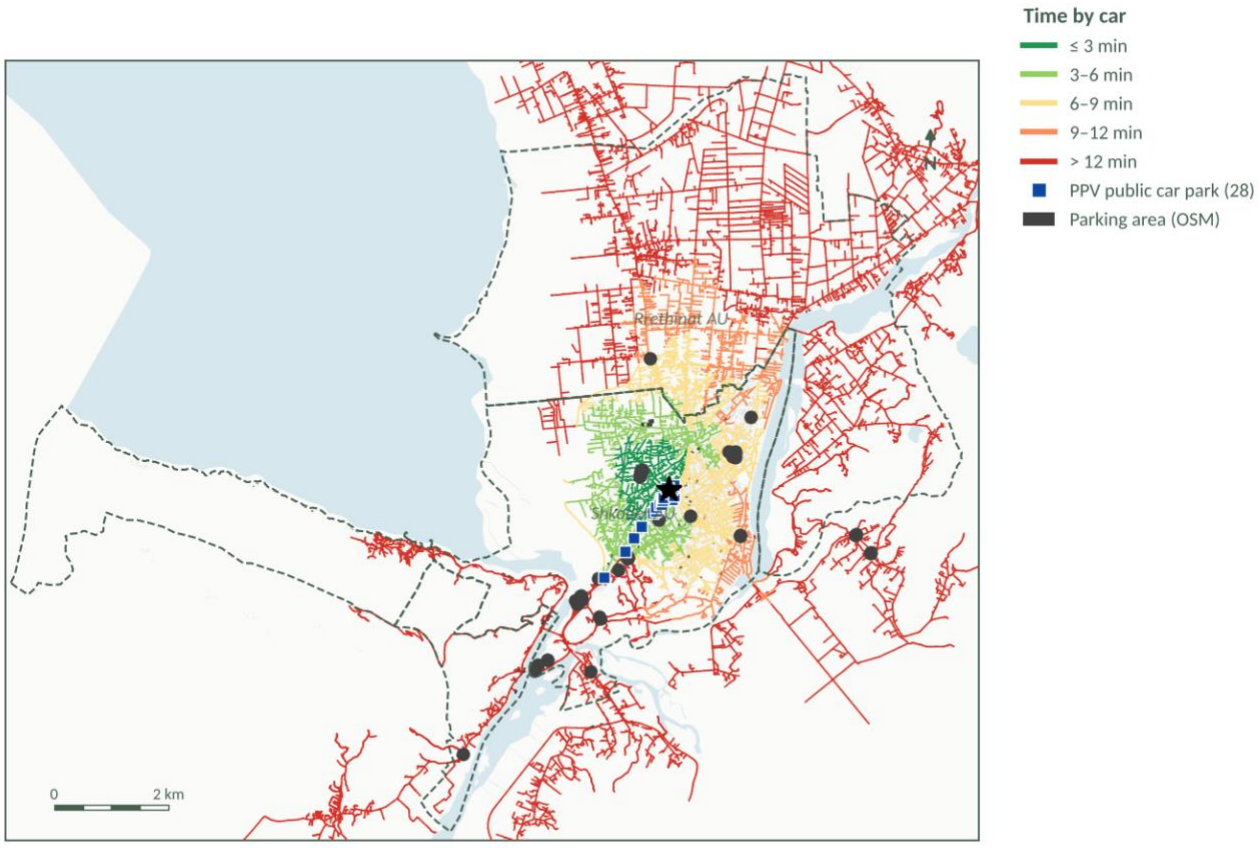
Source: PPV (bus lines and stops); Shkodër SUMP 2025, Vol. I, ch. 3.5; project calculation.

2.10 Cars and parking

The model indicates that 88% of the city population can reach the centre within 10 minutes by car, excluding parking (Map 13). Parking is an important constraint on this journey. The PPV database identifies 28 public car parks, while OSM records approximately 10 ha of parking space. Much parking takes place on streets and pavements, reducing usable space for pedestrians and cyclists, especially on local streets without pavements. The 2025 SUMP proposes ending the reserved-space scheme, introducing paid parking and providing car parks at city entrances (M40–M44).

Accessibility assessment must also consider the public space occupied by cars. In a city where 89% of the population lies within a 10-minute cycle ride of the centre, pavement parking can obstruct users with prams, mobility aids or children. Parking management is therefore directly relevant to walking conditions.

Map 13. Driving time to the centre and public car parks



Source: OpenStreetMap; PPV (public car parks); project calculation.

2.11 Comparing modes

Table 3 summarises differences between the four travel modes in the two administrative units. Within the city, proximity creates potential to meet many daily needs on foot or by bicycle, while route quality and safety affect whether that potential can be used. In Rrethinat, longer distances, more dispersed services and limited public transport coverage create different conditions. Cycling and public transport can offer alternatives to the car, but require suitable infrastructure and services.

Table 3. Comparison of modes (% of residents)

Indicator	Shkodër AU	Rrethinat AU
On foot: at least 6 of 8 services within 15 min	93.0	5.1
On foot, 3 km/h: school within 10 min	55.5	12.9
Bicycle: centre within 10 min	89.2	8.3
Bicycle: secondary school within 10 min	97.8	38.8
Bicycle as fast as car (with parking) to the centre	100.0	32.5
Bus: operating stop within 5 min on foot	31.3	0.2
Bus: any PPV stop within 5 min	65.5	3.5
Car: centre within 10 min (without parking)	87.5	17.4

3. Integrating the analysis with space syntax

Chapter 2 assesses proximity in terms of distance and time, while space syntax examines the position of each line within the network structure. The theory of natural movement associates configuration—the way streets connect—with the distribution of urban movement (Hillier et al., 1993). The movement economy framework further explains how activities dependent on passing trade tend to concentrate in locations with greater movement potential and reinforce it (Hillier, 1996). This framework supports interpretation of the relationship between the network, urban activity and locational value.

How to read this chapter

The maps in this chapter reproduce the original Wheels of Change depthmapX exports, retaining their classes and colours and placing them in geographic reference against the street network. The measures have not been recalculated or reclassified. Supplementary analysis examines connectivity in relation to street width; integration in relation to public institutions, the historic centre and land use; and choice in relation to pedestrian streets and commerce. It uses additional data, principally from the PPV and OpenStreetMap, and is identified as "interpretation" in the text, tables and maps.

3.1 How space syntax measures are read

An axial map represents the network through straight lines covering accessible space. Each line describes a continuity of visibility and movement and does not necessarily correspond to one named street. Topological distance is measured in steps between connected lines rather than metres. This approach examines structural relationships relevant to orientation: a long, straight route is represented differently from one involving several changes of direction. Table 4 summarises the four WOC measures, their interpretation in the literature and the associations examined in this study.

Table 4. Space syntax measures and their interpretation

WOC measure	What it measures	What the literature shows	Interpretation in this study (additional data)
Connectivity	The number of lines each line crosses. A local, one-step measure.	The longest lines are also the most connected and form the skeleton of the city (Hillier, 1999). Usable road width and network position together explain vehicle flows (Croxford, 1999).	Carriageway width and functional road class (PPV)
Mean depth	The average number of steps from a line to all others.	The inverse of integration: "deep" lines are hidden and reached only by their own residents (Hillier and Hanson, 1984).	Read through integration
Global integration (Rn)	How close each line is to all others. A measure of "to-movement", or destination.	Predicts pedestrian and vehicle movement (Hillier et al., 1993) and the location of urban centres (van Nes and Yamu, 2021). Associated with house prices and land values (Law et al., 2017; Marcus et al., 2019).	Public institutions, the historic centre, land use and activities (PPV, OSM)
Choice	How often a line lies on the shortest route between two other lines. A measure of "through-movement".	Shows the routes of through-movement (Hillier et al., 2012). Associated with retail location (Sevtsuk, 2014) and traffic corridors (Serra and Hillier, 2017).	Pedestrian streets, commercial frontages and street width (OSM, PPV, SUMP)

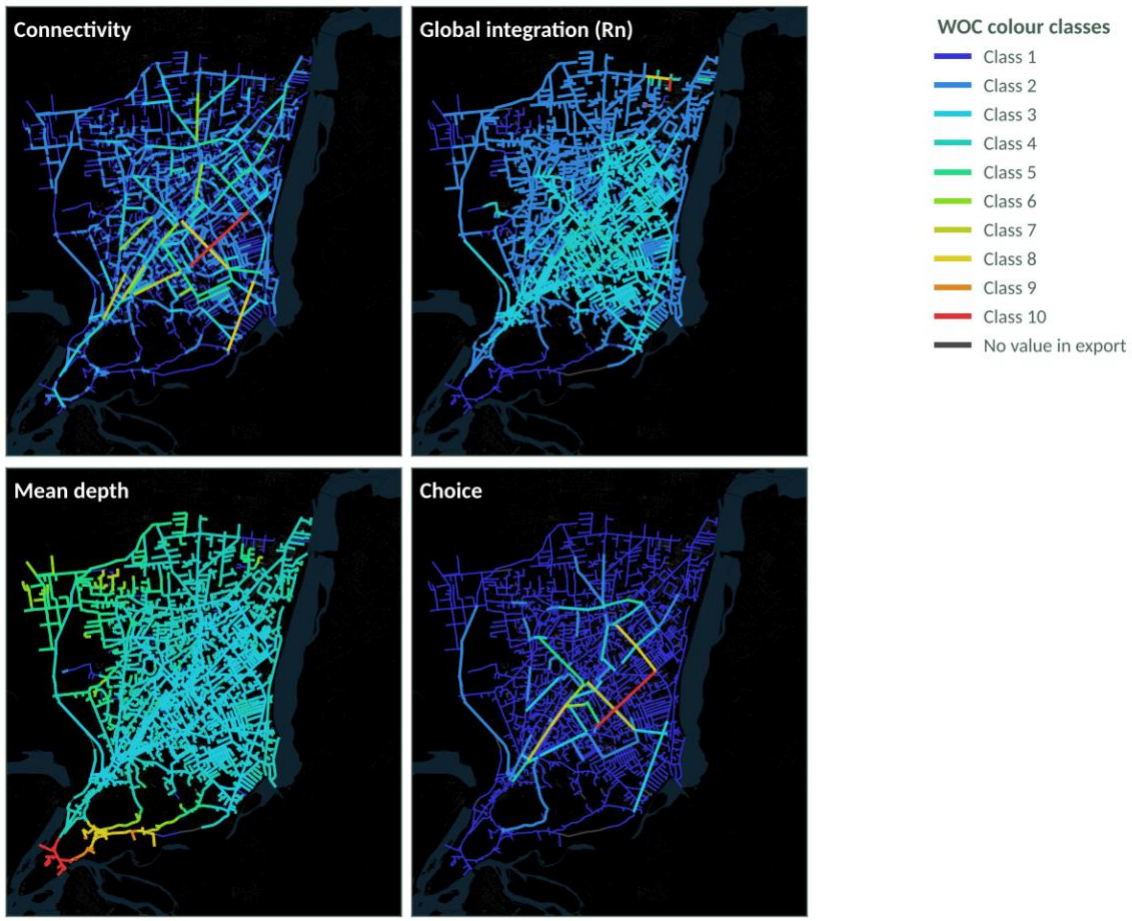
Two distinctions are important when reading the maps. The first concerns to-movement and through-movement: integration describes a line's centrality, while choice describes its intermediary role on the model's shortest paths (Hillier et al., 2012). The second concerns the colour scale. The exports divide values into equal intervals from blue to red. Extreme values on a small number of lines can compress the remaining network into a few colour bands. Each map must therefore be read in relation to its measure and legend.

3.2 The WOC maps on the street network

The project team produced four depthmapX maps for Shkodër: connectivity, integration, mean depth and choice. The exports were vector drawings without geographic reference, retaining each line's class colour. To associate them with urban data, 3,576 lines and their respective classes were read. In the export, each colour applies to the preceding group of lines, following the PostScript drawing order; the classification used here follows that sequence. A transformation of scale, rotation and position was then fitted against OSM streets. The reported mean error is approximately 3 m, with 93% of lines within 10 m of the corresponding street. The result retains the WOC network and classes while adding geographic reference (Map 14).

Class distributions in the exports are uneven. For integration, 8% of lines fall in class 1, 52% in class 2 and 36% in class 3; only 43 lines fall in classes 4 and above, while 68 have no value. For choice, 94% fall in class 1 and 142 lines in higher classes. For connectivity, most lines with one or two intersections fall in class 1. This distribution distinguishes principal structures but limits differentiation within each band. The interpretation therefore compares class groups rather than treating colours as individual numerical values.

Map 14. The WOC space syntax analysis, georeferenced on the street network



Source: Wheels of Change, space syntax analysis in depthmapX 0.27 (Shkodra connectivity, integration, mean depth, choice); georeferencing by the project on OSM.

3.3 Connectivity and the street hierarchy

Connectivity counts the lines directly connected to an axial line. Longer lines tend to intersect more lines and therefore have higher connectivity (Hillier, 1999). Traffic research has examined usable street width together with network position to explain variation in vehicle flows (Croxford, 1999). On the WOC map, higher classes include Marin Biçikemi, Shtatë Shaljanët, Bulevardi Skënderbeu, Bulevardi Zogu I, Ethem Osmani, Isa Jakupi, Isuf Sokoli, Martin Camaj and Daut Boriçi.

Interpretation by this study. PPV carriageway-width data were associated with 2,855 axial lines, approximately 80% of the total. Table 5 and Map 15 indicate an association between connectivity classes and the physical street hierarchy. Class 1 lines have a median width of 4.5 m, and 11% are associated with main roads. For classes 5 and above, median width is 9.1 m and the share associated with main roads is 55%.

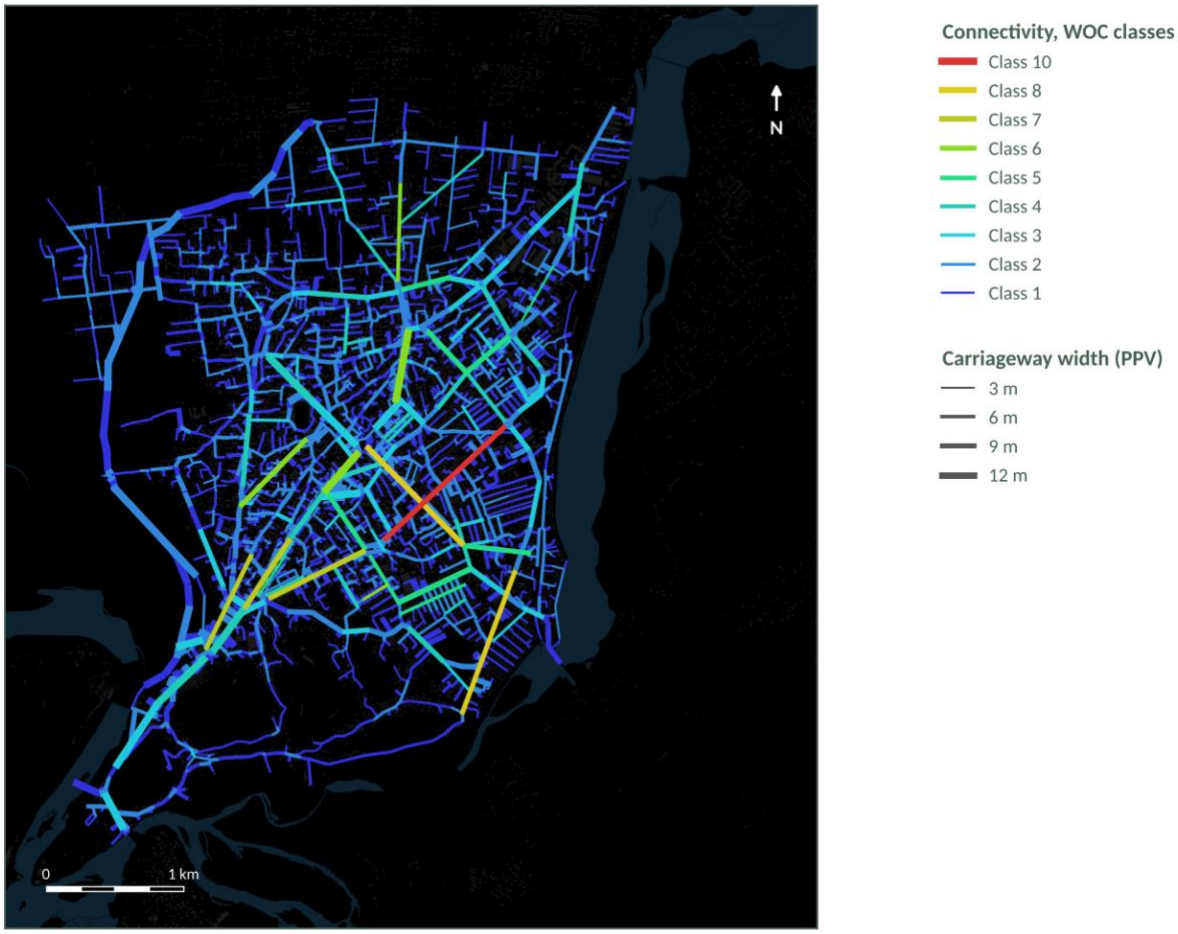
Table 5. Interpretation: WOC connectivity classes, street width and functional class

Connectivity class (WOC)	Lines	Km	Median width, m	Mean width, m	Main roads (A–D), %
Class 1	1,777	105.9	4.5	5.5	11
Class 2	975	83.3	5.6	6.4	17
Class 3	60	13.6	8.1	8.8	45
Class 4	23	9.1	8.0	8.5	52
Classes 5–10	20	12.3	9.1	9.0	55

Interpretation by this study. Classes: WOC analysis (depthmapX), georeferenced. Width and road class: PPV, "Infrastructure by Road Code" (additional data). 2,855 lines with known width are included.

The comparison associates connectivity with physical street characteristics without turning it into a measure of traffic flow. The study has no traffic counts with which to calibrate this relationship in Shkodër. Highly connected streets identify locations where many network connections converge and where pedestrian crossings, cycling junctions and opportunities for protection warrant examination. Intervention priorities also require assessment of traffic and local conditions.

Map 15. Interpretation: WOC connectivity and street width



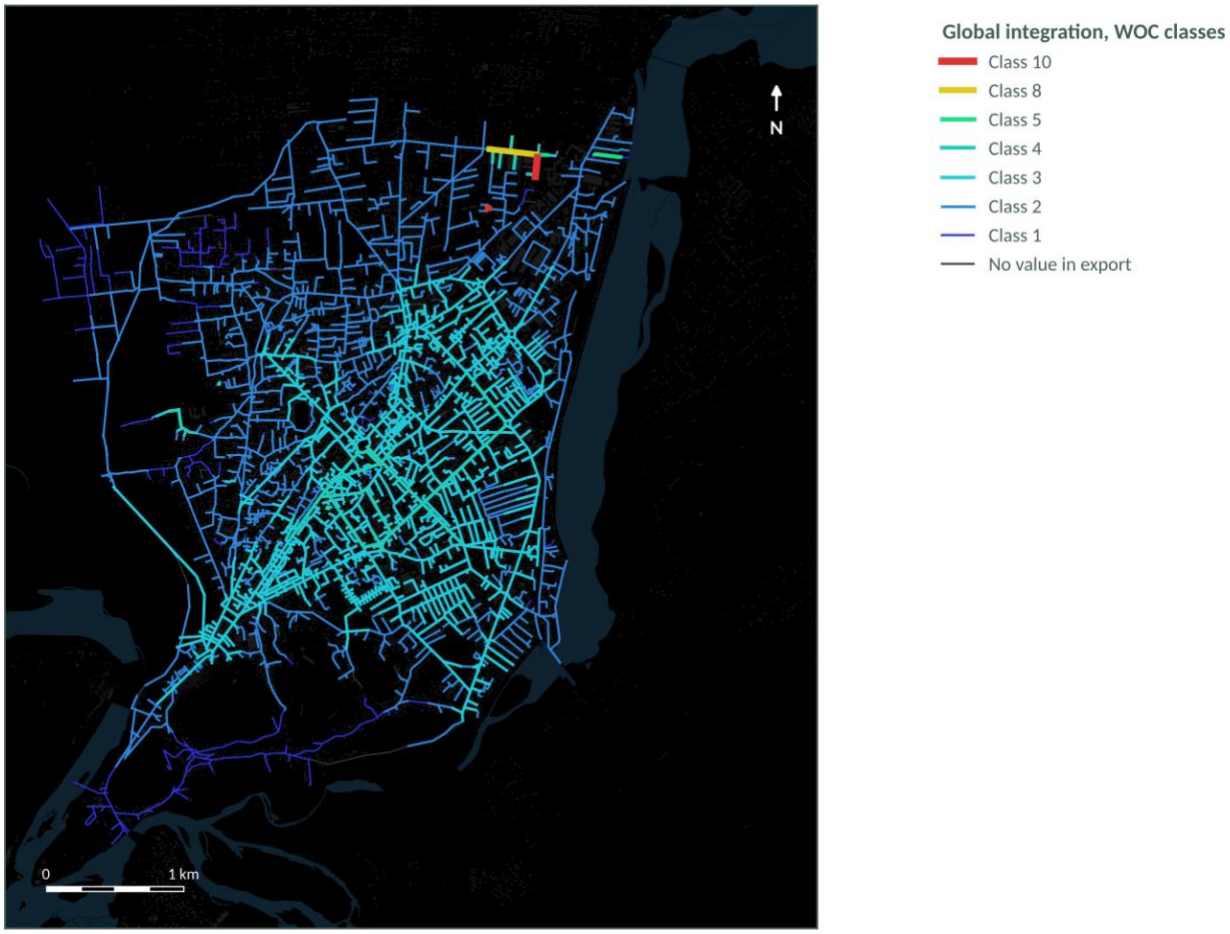
Source: Wheels of Change, space syntax analysis (depthmapX), original colour classes, georeferenced. Width: PPV, Infrastructure by Road Code.

3.4 Global integration, public institutions and locational value

Global integration measures a line's topological proximity to other lines in its connected network. The literature uses it to examine urban centrality and relationships with activities and property values (van Nes and Yamu, 2021). Across 23 English cities, Law et al. (2017) identify a significant association between network accessibility and house prices after controlling for property characteristics. Marcus et al. (2019) examine its association with land values for taxation in Gothenburg. For Hanoi, Le Phuong Thuy et al. (2019) report a stronger correlation between land prices and integration (r = 0.44) than connectivity (r = 0.25). These studies provide a comparative framework rather than evidence of the same relationship in Shkodër.

Map 16 presents the original WOC global integration map. Class 3 includes Bulevardi Zogu I, Bulevardi Mehmet Pashë Plaku, Shtatë Shaljanët, Rruga Tepe, Pal Engjëlli, Lëvizja e Postribës, Pogej, Martin Camaj, Bulevardi Bujar Bishanaku and Ethem Osmani. Classes 4 and above contain 43 lines, mainly associated with Marin Biçikemi, Bulevardi Skënderbeu, Daut Boriçi, Rruga Studenti, 13 Dhjetori and Kolë Idromeno. Class 1 lines occur mainly at the network edges, including Rruga e Ajasmës, Bexhene, Rruga e Sinoreve, 9 Nuset, Selim Çoba and Selim Bushati.

Map 16. Global integration (Rn), original WOC map



Source: Wheels of Change, space syntax analysis (depthmapX), original colour classes, georeferenced; global integration (Rn).

Interpretation by this study. PPV public facilities were matched to the nearest axial line within 80 m (Map 17, Table 6). Of 263 facilities, 156 were matched to the modelled network. Within this matched group, 77% lie near lines in classes 3 and above, which account for 38% of the network. The shares are 90% for culture, 89% for administration, 75–77% for public order, religion and health, and 72% for education. This concentration indicates an association between institutional location and network centrality; spatial proximity alone does not establish functional access from the corresponding line.

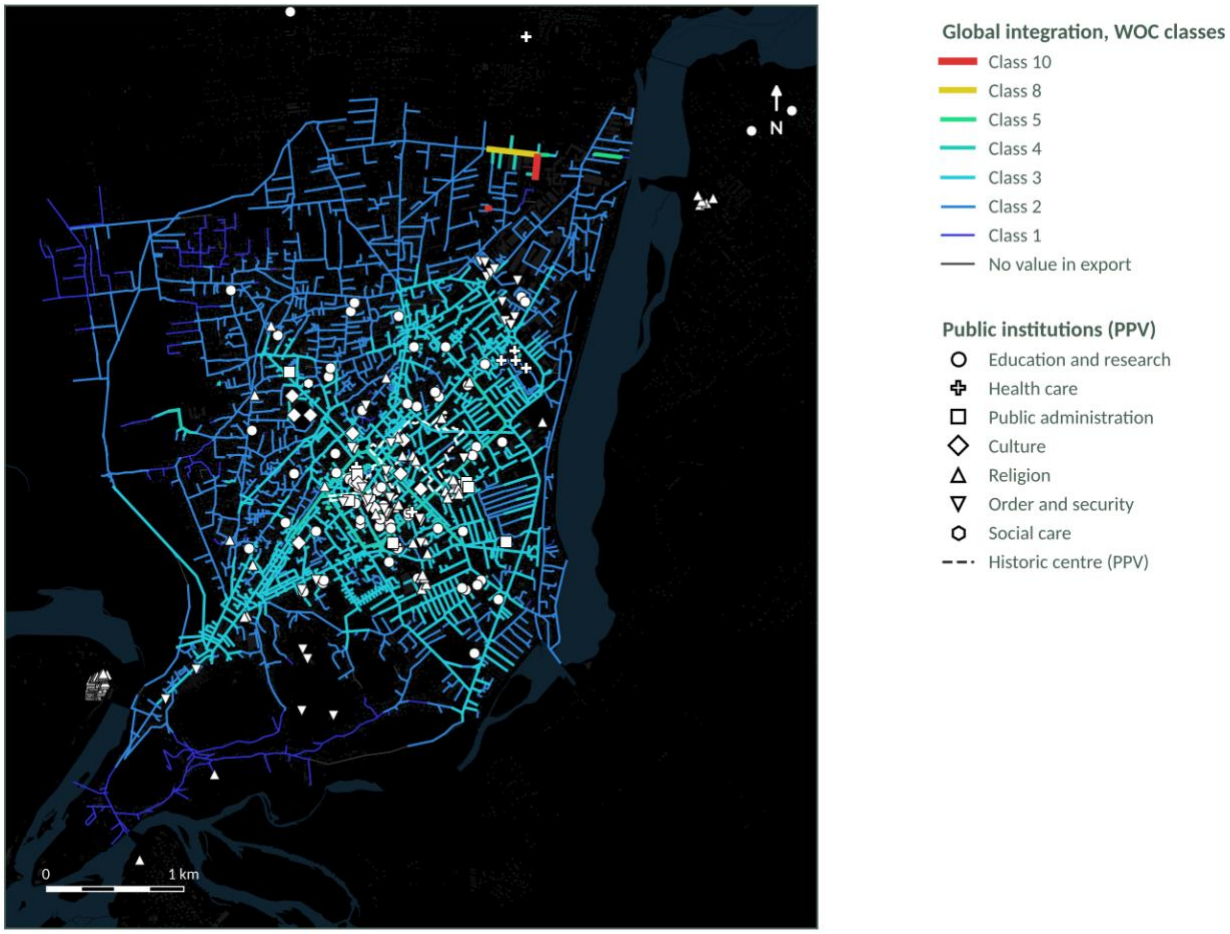
Table 6. Interpretation: public institutions by WOC integration class

Function	Facilities	In WOC integration class 3 and above, %
Culture	10	90
Public administration	9	89
Order and security	35	77
Religion	34	76
Health care	8	75
Education and research	57	72
Social care	3	100
All	156	77
Share of these lines in the network		38

Interpretation by this study. Classes: WOC analysis (depthmapX). Public facilities: PPV (LU_PublicFacility), linked to the nearest axial line within 80 m (additional data).

Interpretation by this study. Integration also provides a basis for discussing locational value. The available material does not provide street-level land or house prices for Shkodër; the 2026 fiscal package uses a single city reference price. It nevertheless distinguishes the historic centre, its protection zone and certain tourism areas through an infrastructure impact tax of 8%, compared with 6% elsewhere. Under the WOC classification, 90% of historic-centre lines fall in classes 3 and above, compared with 36% outside it. The share is 66% in linear-block areas and 8–28% in villa areas. These differences support a hypothesis about land values that would require transaction or cadastral data to test.

Map 17. Interpretation: WOC integration and public institutions



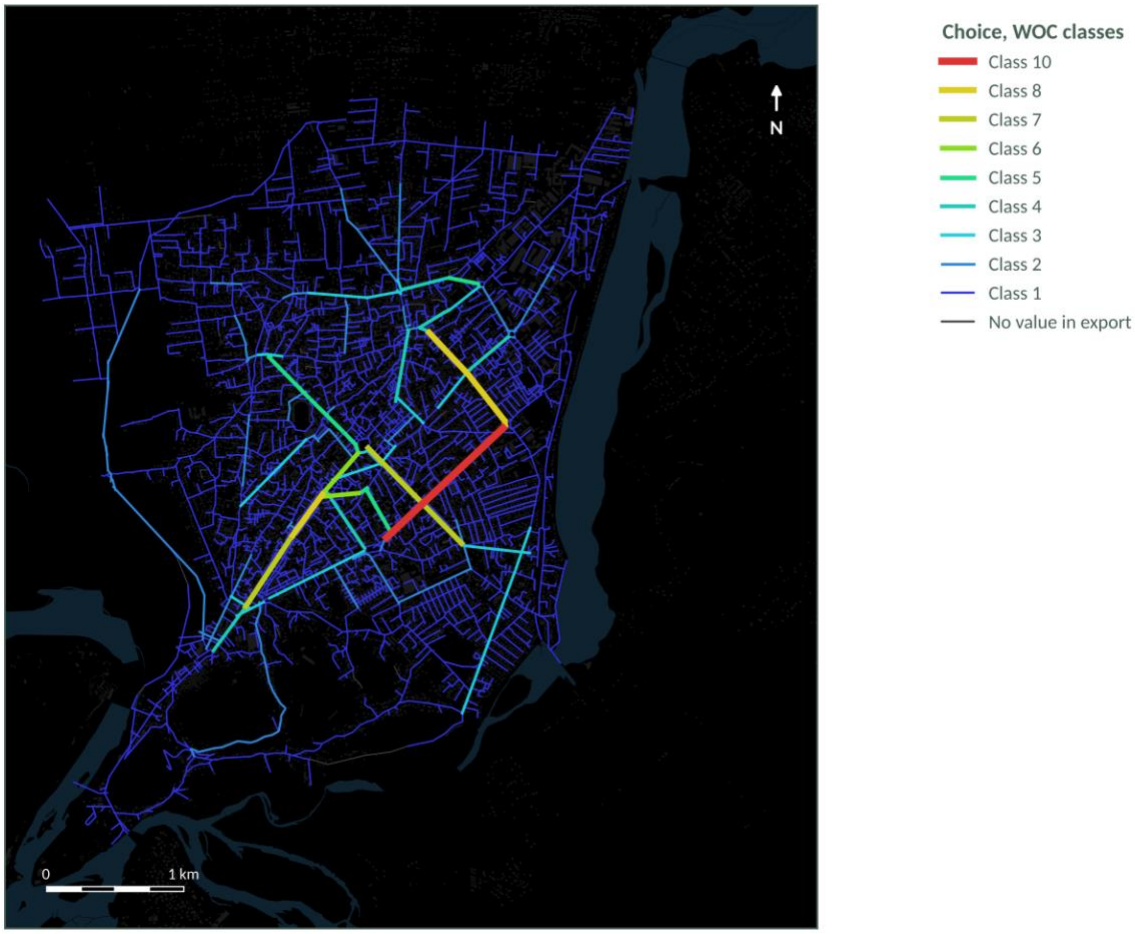
Source: Wheels of Change, space syntax analysis (depthmapX), original colour classes, georeferenced; global integration. Public facilities: PPV (LU_PublicFacility); historic centre: PPV (spatial typology).

3.5 Choice: through-movement, pedestrians and commerce

Choice measures how frequently a line appears as an intermediary on shortest paths between other model lines. It describes potential through-movement rather than observed user choices. The literature examines its association with traffic corridors (Serra and Hillier, 2017) and the relevance of exposure to passing movement for retail location (Sevtsuk, 2014).

In Map 18, only 142 lines, extending approximately 31 km, fall above the lowest choice class; 3,371 are in class 1, shown in dark blue, and 61 have no value. The higher-value group includes the western bypass, Marin Biçikemi, Shtatë Shaljanët, Bulevardi Zogu I, Bulevardi Skënderbeu, Dasho Shkreli, Bulevardi Bujar Bishanaku, Ethem Osmani, Rruga e Tuzit, Isa Jakupi, Isuf Sokoli and Lëvizja e Postribës. The highest classes concentrate on Marin Biçikemi, Zogu I, Skënderbeu and Bujar Bishanaku, indicating a prominent intermediary role in the model.

Map 18. Choice, original WOC map



Source: Wheels of Change, space syntax analysis (depthmapX), original colour classes, georeferenced; choice.

Interpretation by this study. Higher-choice corridors were compared with PPV street widths, OSM pedestrian streets and activities, and the SUMP pedestrian itinerary (Table 7, Map 19). Lines in classes 2 and above have a mean street width of 9.8 m, compared with 5.7 m in class 1. Of the group's 30.5 km, 11.5 km coincide with cycle lanes or tracks recorded in OSM: the bypass, Marin Biçikemi, Shtatë Shaljanët, Bulevardi Zogu I, Dasho Shkreli and Daut Boriçi. Corridors without recorded lanes include Bujar Bishanaku, Ethem Osmani, Rruga e Tuzit, Isa Jakupi, Isuf Sokoli, Lëvizja e Postribës and Rruga e Terzive.

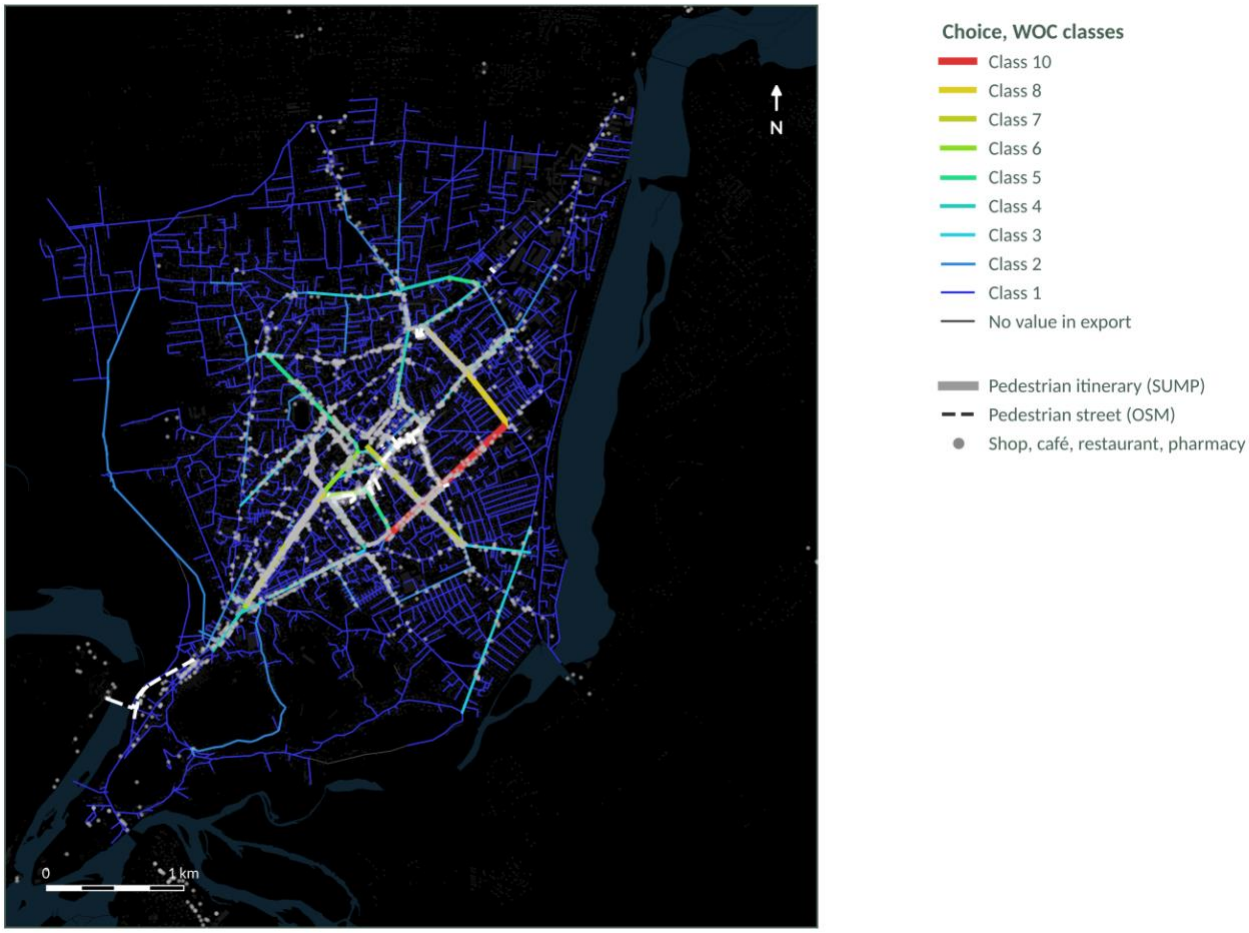
Table 7. Interpretation: WOC choice, width, commerce and pedestrian streets

Indicator	Classes 2 and above	Class 1	No value
Lines	142	3,371	61
Km	30.5	217.9	3.5
Mean street width, m	9.8	5.7	4.7
Commercial activities per 100 m	11.0	6.5	5.2
Services and mixed use (S), %	33.5	20.3	21.1
Lines of the pedestrian itinerary (SUMP)	3	25	0
Lines of pedestrian streets (OSM)	1	16	2

Interpretation by this study. Classes: WOC analysis (depthmapX). Width: PPV; activities and pedestrian streets: OSM; itinerary: SUMP 2025 (additional data).

Pedestrian streets have different profiles under the two measures. Only 3 of the 28 lines in the SUMP itinerary along 13 Dhjetori, 28 Nëntori, Kolë Idromeno and Gjuhadol, and 1 of the 19 OSM pedestrian streets, lie above choice class 1. By contrast, 26 of the 28 itinerary lines fall in integration classes 3 and above. This suggests a stronger destination role than intermediary role within the model, without excluding through-use. Commercial activity is dense both along higher-choice corridors, at 11.0 activities per 100 m, and in integration class 3, at 13.9 (Section 3.6). The interaction between local activity and potential through-movement is relevant to the multimodal axes proposed under S2.

Map 19. Interpretation: WOC choice, pedestrian streets and commerce



Source: Wheels of Change, space syntax analysis (depthmapX), original colour classes, georeferenced; choice. Pedestrian streets and activities: OSM; itinerary: SUMP 2025.

3.6 Integration and land use

Interpretation by this study. Each line was associated with PPV land use within 40 m, OSM commercial activities within 30 m, public services within 60 m and residents within 50 m. Commercial activities include shops, cafés, restaurants, food shops and pharmacies. Lines were then grouped by WOC integration class (Table 8, Map 20).

Table 8. Interpretation: land use and activities by WOC integration class

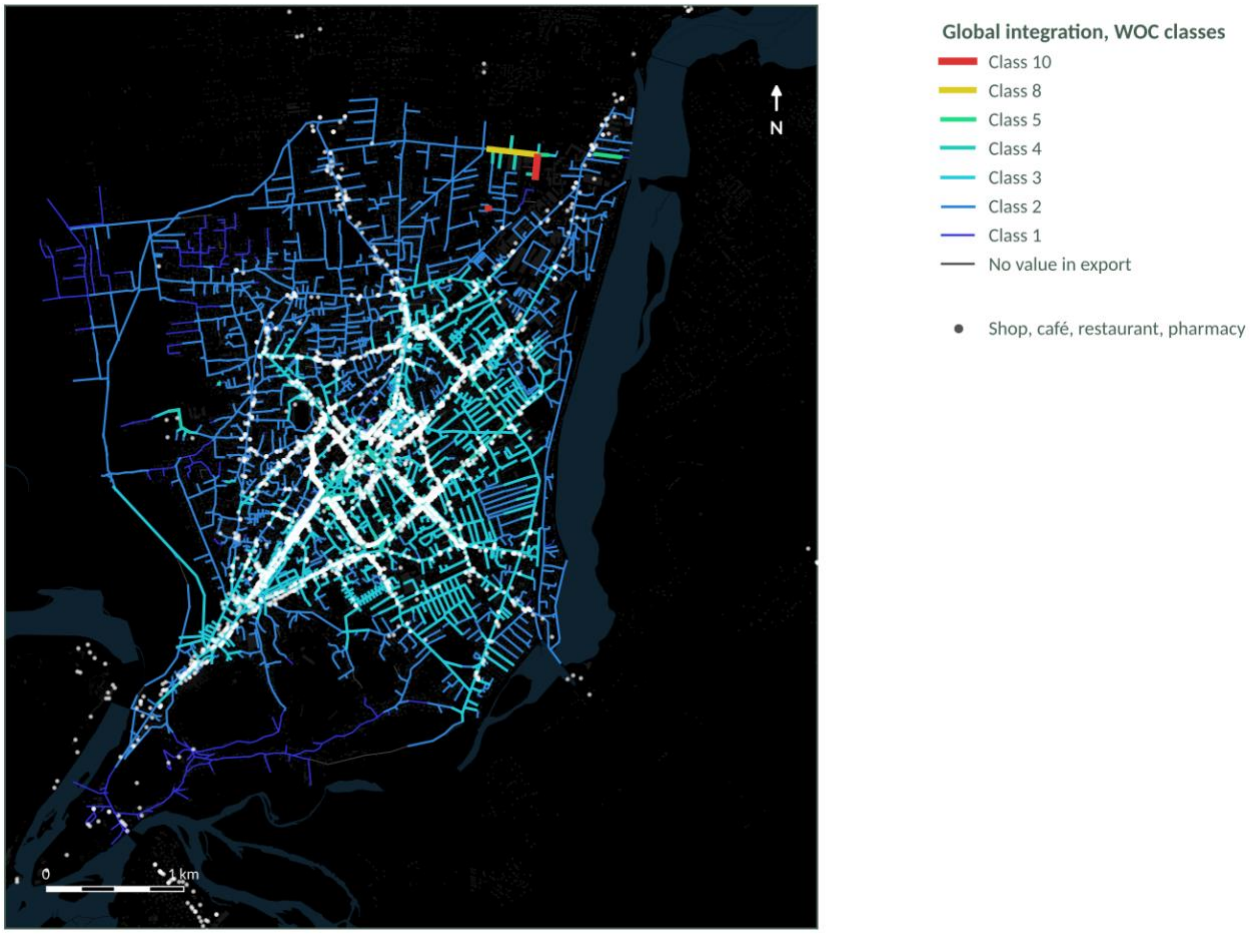
Indicator	No value	Class 1	Class 2	Class 3	Classes 4 and above
Lines	68	299	1,861	1,303	43
Km	3.8	19.5	124.3	96.1	8.3
Commercial activities per 100 m	5.3	0.9	2.6	13.9	8.2
Public services within 60 m	0.32	0.05	0.27	1.18	2.47
Residents within 50 m	87	47	97	173	213
Housing (A), % of adjacent area	70.0	58.8	71.2	56.4	40.0
Services and mixed use (S), %	19.0	22.7	13.4	31.1	20.3
Social infrastructure and institutions (IS), %	0.5	0.0	0.8	2.7	3.1
Industry and economy (IE), %	3.2	0.6	8.1	1.3	2.4
Agriculture (B), %	2.6	10.1	3.4	2.2	15.8
Recreation and squares (AR), %	0.0	0.1	0.2	1.5	7.6
Lines next to open space, %	24	16	8	14	33

Interpretation by this study. Classes: WOC analysis (depthmapX), 3,574 lines, 252 km. Land use: PPV, Lu_14; activities: OSM (additional data).

The principal difference is between classes 2 and 3, which together account for approximately 89% of the network. Class 3 records an average of 13.9 commercial activities per 100 m, compared with 2.6 in class 2 and 0.9 in class 1. Public services are approximately four times denser, nearby population is almost twice as high, and the share of services and mixed use is more than double. Around 78% of streets identified as most active lie in classes 3 and above, which represent 38% of the network. Industry is more strongly represented in class 2. Classes 4 and above contain only 43 lines and combine central streets with peripheral lines, requiring cautious interpretation.

Interpretation by this study. Higher integration does not coincide with commerce in every case. Approximately one third of lines in classes 3 and above have no recorded commercial activity within 30 m. Many are residential streets, including Kupe Danja, Koplikej, Mehmet Shpendi and Pal Engjëlli. Ground-floor uses or play spaces could be examined in these locations, subject to assessment of demand and suitability.

Map 20. Interpretation: WOC integration and commercial activity



Source: Wheels of Change, space syntax analysis (depthmapX), original colour classes, georeferenced; global integration. Land use: PPV; activities: OSM (October 2026).

Open spaces follow a different distribution. In class 2, which contains a substantial share of the residential network, only 8% of lines adjoin an open space, compared with 14% in class 3. Considered alongside playground access in Section 2.4, this indicator highlights the need for small public spaces close to homes. Measure M14, "streets as play spaces for children", could contribute to addressing that need.

3.7 Synthesis: a typology of areas

Interpretation by this study. Service access and integration were combined into a typology of PPV planning zones (Map 21, Table 9). Each zone with more than 50 residents was assessed against two criteria: access to at least 6 of the 8 basic services within 15 minutes on foot, and the share of streets in integration classes 3 and above relative to the city average of 41% of network length. Zones outside the WOC model were classified by service access only. Lower integration describes relative network position rather than necessarily indicating physical disconnection.

Table 9. Interpretation: typology of PPV zones by access and WOC integration

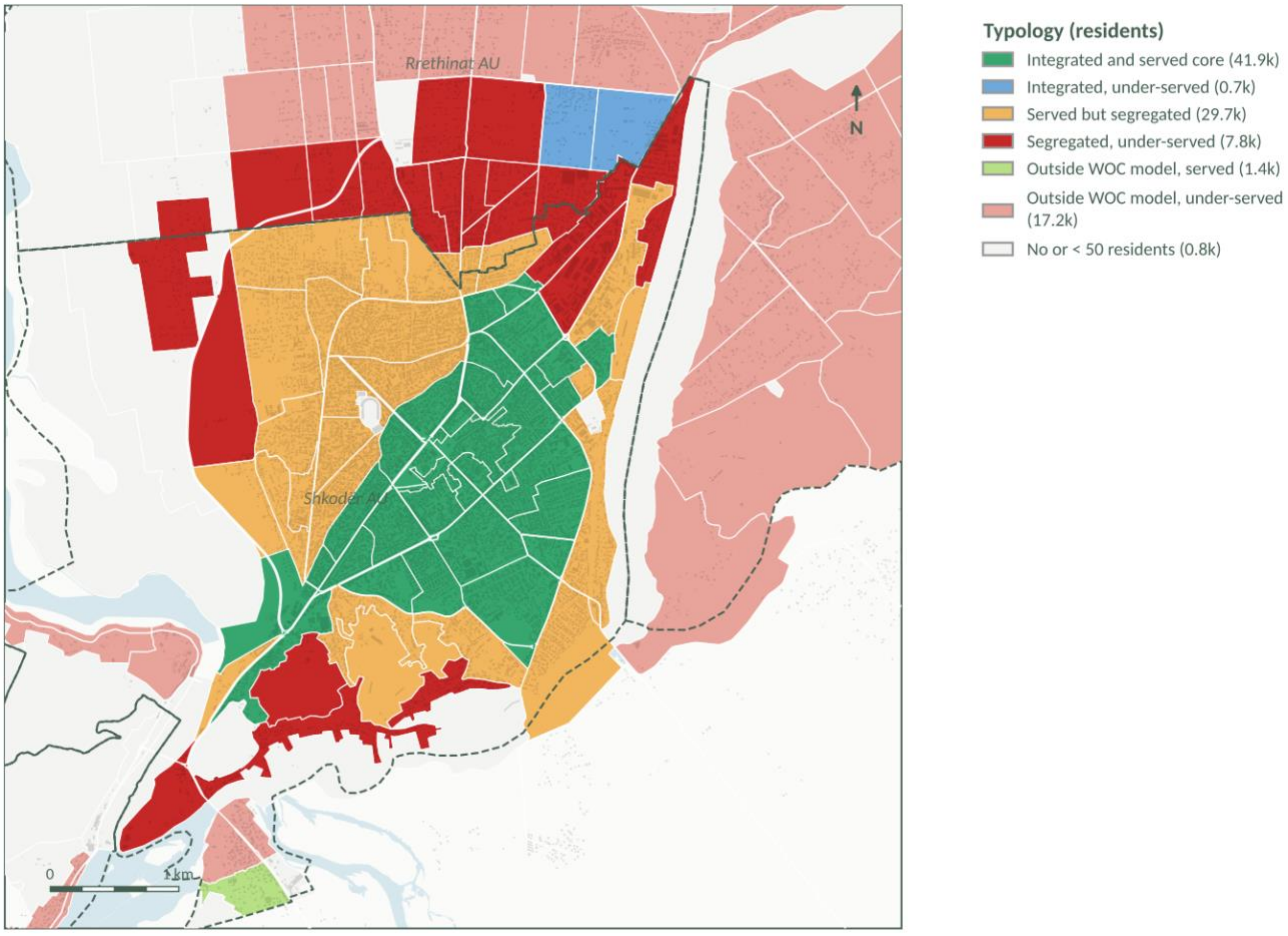
Type	Zones	Residents	Where	What they need
Integrated and served core	31	41,900	Centre, boulevards, Vasil Shanto, Perash, 3 Heronjtë, Ndoc Mazi, parts of Skënderbeg	Safety and quality of street space; protection of pedestrians from traffic; strategies S2, S3, S5

Type	Zones	Residents	Where	What they need
Served but cut off from the network	25	29,700	Naim Gjylbegu, Kiras, Ahmet Haxhia, Garuc, Mark Lula, Luguçezme, parts of Tepe and Guerrile	New links and safe crossings to main streets; lighting; shared local streets (S4)
Cut off and under-served	17	7,800	Dobraç, Skënderbeg, Qafë, Tepe, parts of Kiras, Guerrile and Golem	Double priority: street links and local services (kindergarten, playground, bus stop)
Integrated but under-served	2	650	Part of Golem	Local services on the integrated streets
Outside the WOC model, served	9	1,400	Shirokë, parts of Bahçallëk	Monitoring
Outside the WOC model, under-served	61	17,200	Shtoj i Ri, Grudë e Re, Golem, Guci e Re, Bleran, Myselim, Bardhaj, Hot i Ri, Bahçallëk, Shtoj i Vjetër	Safe cycling links (M23), demand-responsive transport (M31), village school streets

Interpretation by this study. Access: project calculation (Chapter 2). Integration: original WOC classes. Zones: PPV.

The typology distinguishes different territorial needs. In the core, with approximately 42,000 residents and a combination of service proximity and higher integration, priorities concern safety and the quality of street space. In the orange areas, with around 30,000 residents, services are nearby but integration is lower; crossings, continuity of connections and lighting warrant examination. The red areas combine lower integration with insufficient service proximity, indicating a need to coordinate S4 and S5 with service provision. In the villages of Rrethinat, attention should focus on safe cycling connections and regular public transport to the city.

Map 21. Interpretation: typology of areas by access and WOC integration



Source: PPV (planning zones); project calculation (walking access); Wheels of Change (global integration, original classes).

4. The 2025 SUMP and new urban developments

Shkodër's SUMP was prepared in 2024–2025 by ERI-ITA under the "Porta e Alpeve" project, financed by the European Investment Bank. This chapter summarises the plan and its relationship with the findings of Chapters 2 and 3. It also examines major developments not anticipated in the PPV that may affect future travel demand.

4.1 The 2025 SUMP

The plan is organised into three volumes: the situation analysis, the proposed plan and annexes. It covers the city within its pre-2014 boundary, Rrethinat and Velipojë. Its vision was developed through a participatory session, drawing on the PPV vision. The document contains 11 strategies, 54 measures for the city and 27 for Velipojë, with implementation horizons of 2026, 2029 and 2034. It includes a ten-year action plan, cost estimates and monitoring indicators reviewed every two years.

The strategies address the principal dimensions of mobility. S1 covers governance and capacity; S2 proposes converting the two main axes into multimodal corridors and linear gardens; and S3 aims to extend and protect the historic centre. S4 concerns a complete, walkable and shared local network, while S5 addresses safety and accessibility for users with particular needs. S6 supports cycling through an approach informed by Dutch experience. S7 proposes public transport reform, starting with governance and subsidy arrangements. S8 and S9 address traffic and parking, S10 logistics and S11 regional connections. The plan also includes neighbourhood streets as shared spaces, streets as play spaces for children (M14), the "School Streets" programme with priority schools (M18), cycling links to surrounding units (M23), and demand-responsive transport (M31).

The plan's analysis also identifies persistent limitations. Public transport is described as operating without subsidy under the licence awarded through the 2017 tender. Two of the five approved urban lines operate; the SUMP proposes improving these rather than restoring all approved lines. Cycling infrastructure extends approximately 26.5 km, but only 4.3 km consists of protected lanes in the centre.

4.2 How the SUMP responds to the findings of this study

Most identified problems relate to existing SUMP measures. Areas with weaker connections can benefit from S4 and S5; the shortage of play spaces is addressed through M14, and school-route safety through M18. M20 and M23 are relevant to the cycling network, while M26, M27 and M31 address public transport. The plan also identifies locations with shortcomings in this analysis. M17 includes Bahçallëk, Dobraç, Shtoj i Ri and Hot i Ri among priorities for pedestrian crossings. M23 gives high priority to the Shtoj–Ura e Maxharrit and Bahçallëk–Bërdicë cycling links.

The relationship between measures and locations requires further specification. Apart from M17 and M18, which identify some priority villages and schools, S4 and S5 measures are largely presented as city-wide programmes without a territorial sequence for implementation. Lighting appears in M12, M17 and M23 but lacks a dedicated programme of priorities. The finding that women account for 51.1% of the population and use public transport more should be reflected in objectives and indicators disaggregated by gender and age. Another issue is the establishment of a mechanism for assessing the mobility impact of large developments, discussed in the following section.

4.3 Future urban developments outside the plan

The 2017 PPV and the SUMP provide a framework for organising development and mobility. However, some recent major projects arising from central decisions or private investment were not anticipated in the PPV. This section summarises them using the cited public and media sources without assessing their legality. It focuses on potential mobility effects and their relationship with SUMP measures (Table 10).

The 35-storey tower on Sheshi Demokracia

"Rozafa Tower" is a 35-storey proposal on the Hotel Rozafa site in Sheshi Demokracia, facing the historic area and pedestrian itinerary. The winning international competition design was presented in July 2024. The cited sources describe

approximately 39,000 m² of floor area, with retail on the lower floors, apartments in the middle and a hotel above; they also report apartments being offered for sale. In the public debate, planners and residents have argued that the PPV permits around 7 storeys on the site and have challenged the project's conformity with it. By October 2025, sources reported the establishment of the construction site and a dispute over land ownership involving religious communities.

In network terms, the site lies within one of the city's most integrated areas. Under the WOC classification, axial lines within 50 m fall in integration classes 3 and 4; Bulevardi Skënderbeu also has high choice and connectivity. The interpretation in Chapter 3 identifies a concentration of institutions and commerce in this area. A mixed-use development of this scale requires assessment of access movements, deliveries and parking in relation to the pedestrian-zone extension and limited traffic zone proposed under M8 and M9.

The southern city entrance and the lakeshore

The government project for Shkodër's entrance and western lakeshore is associated with implementation by the Albanian Development Fund. The cited sources describe widening the road from the Bërdicë arch to the Bahçallëk bridge, including a four-lane bridge, an approximately 18 ha park along the Buna, a tourist port near the Buna bridge, a museum and a pedestrian and cycling path. Reports describe building demolitions to clear the site and connect the removal of approximately 50 Roma dwellings with arrangements for residents' rehousing. Project phases appear on KKT permit agendas in 2024 and 2025, including the Bërdicë–Bahçallëk entrance road, with the Albanian Road Authority as developer, in May 2025.

The Bahçallëk–Bërdicë corridor is a high cycling priority under M23, while Bahçallëk is the terminus of Line 1. Widening to four lanes increases road capacity at the entrance. Its effects should be assessed together with entrance parking, bus priority and the continuity of the cycle route to the centre. These elements are relevant to the S2 objective of creating a multimodal south–north corridor.

A new centre around the stadium, Zdrale and hotels

In December 2023, the Prime Minister announced a "new centre" along the axis linking the area below the stadium with the city centre, including removal of the market behind the stadium. Intervention in the historic Zdrale neighbourhood has been presented as part of this transformation. These projects could extend the walkable centre if connected to existing pedestrian routes. Meanwhile, sources report an increase in municipal overnight stays from approximately 264,000 in 2022 to more than 500,000 by the end of October 2025. The 2025 KKT agenda also includes "Nalt Hotel", with 9 and 10 storeys.

Table 10. Main announced developments and their link with mobility

Project	What it involves	Status according to sources	What it requires from the SUMP
Rozafa Tower, Sheshi Demokracia	35 storeys, about 39,000 m²; retail, homes and hotel	Competition in 2024; site set up by October 2025; ownership contested	Mobility impact assessment; maximum parking; off-peak deliveries; link with M8–M9
City entrance and western lakeshore	Bërdicë arch–Bahçallëk bridge widened to four lanes; 18 ha park; port; museum; pedestrian and cycle path	On KKT agendas in 2024 and 2025; demolitions in 2024	Continuous cycle track to the centre (M23); bus priority; parking at the entrance (M40–M44)
New centre around the stadium and Zdrale	Stadium–centre axis; market removed; Zdrale regenerated	Announced in 2023; works under way	Link to the pedestrian itinerary (M8); access for deliveries and traders
New hotels	E.g. Nalt Hotel, 9 and 10 storeys	On the KKT agenda, 2025	Coach parking outside the centre; visitor information

Sources: Citizens.al (2024); WorldArchitecture.org (2024); Shqiptarja.com (2023, 2024, 2025); KKT agendas (2024, 2025); ATA (2025); AMI (n.d.). Projects are described as reported in public sources in October 2026.

Comparison with conventional construction statistics requires care. INSTAT's building permit data are based on municipal reporting. In Shkodër County, municipal permits for new buildings covered approximately 21,000 m^2 in 2023, while the reported floor area of the Sheshi Demokracia tower is almost twice that amount. Because the projects and statistics may refer to different periods and procedures, the comparison illustrates the need for a coordinated inventory of developments affecting services and mobility.

For the SUMP, the principal issue is the relationship between development and the transport demand it generates. Parking measures, including maximum standards under M44, should be complemented by a clear impact-assessment procedure. Proposal 6.11 considers applying this assessment to developments above a defined threshold. Revision of the local plan, mentioned in the municipality's medium-term budget programme, offers an opportunity to address the issue.

4.4 Previous plans

The 2025 SUMP follows earlier mobility initiatives, including the plan prepared in 2016–2018 (Bashkia Shkodër and GO2, 2018). This study does not undertake a systematic comparison between them. Their inclusion highlights the need for continuity in data, measures and lessons from implementation. The report to the Municipal Council presents the 2025 document as the first plan of its kind, a description that requires clarification in relation to earlier initiatives. Monitoring responsibilities, published data and indicators comparable over time are important to this continuity (proposals 6.1 and 6.10).

5. Findings from the survey, the student experiment and co-design

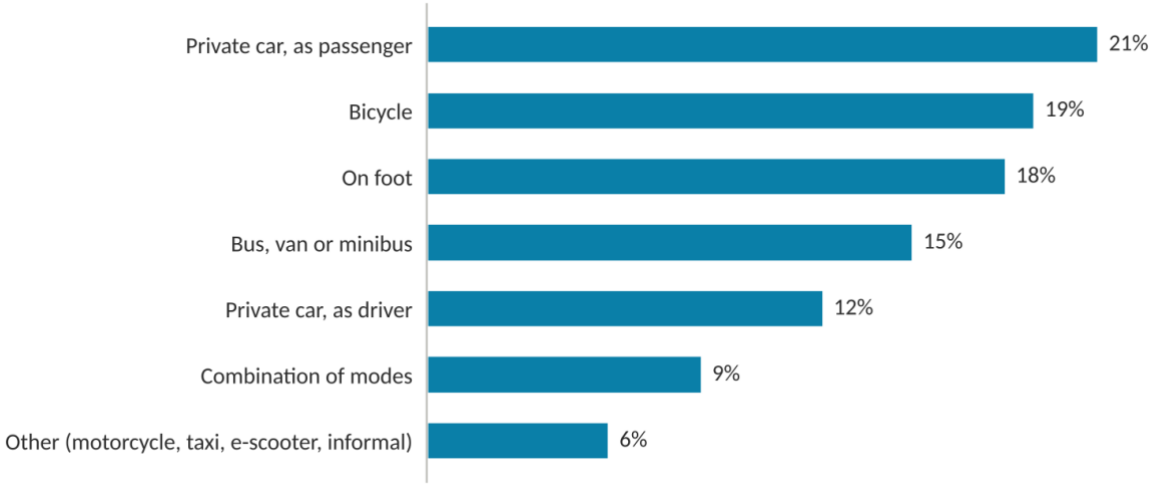
5.1 Resident survey

The WOC survey was completed by 105 people between 6 July and 8 October 2026. Of these, 98 live in the municipality of Shkodër: 65 in the city, 22 in Rrethinat and 11 in Velipojë. Respondents aged 15–24 account for 37% of the sample and those over 60 for 12%. Women and girls account for 38%, men and boys for 43%, while approximately 18% preferred not to state their gender. The sample is not statistically representative of the population. The findings document participants' experiences and priorities rather than population-wide percentages. The annex presents the results and methodological limitations.

Modes of travel

Participants report several main travel modes (Figure 1): 21% travel as car passengers, 19% cycle, 18% walk, 15% use a bus or minibus, and 12% drive. During the week, half walk, 39% use a bus or minibus and 32% cycle. The most frequently reported travel periods are 08:00–10:00, selected by 63%, and 15:00–19:00, selected by 72%. The latter coincides with the reported reduction in Line 1 frequency.

Figure 1. Main daily mode of travel (% of respondents)

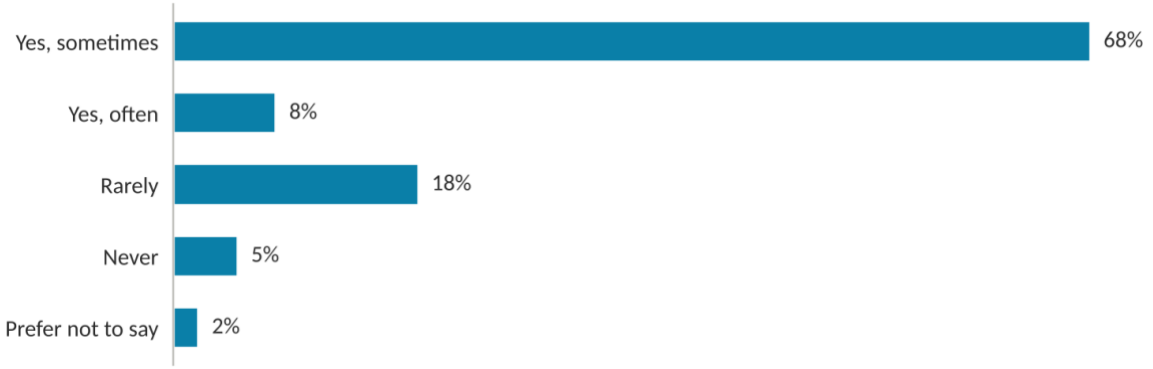


Source: WOC survey, July–October 2026 (n = 105).

Safety as a factor that changes behaviour

Approximately 75% of respondents have sometimes or often changed their route, travel time or mode for safety reasons (Figure 2). Specific streets or areas are avoided by 53%, while 52% plan travel times more carefully. Around one third avoid evening or night travel. At the location identified as problematic, 27% report worse conditions at night, 17% in rain and 13% in the evening. The most frequently identified problems there are poor lighting (19%), high vehicle speeds (16%), unsafe school routes (15%), damaged pavements (14%) and unsafe crossings (14%).

Figure 2. Have you changed your route, time or mode of travel for safety reasons?

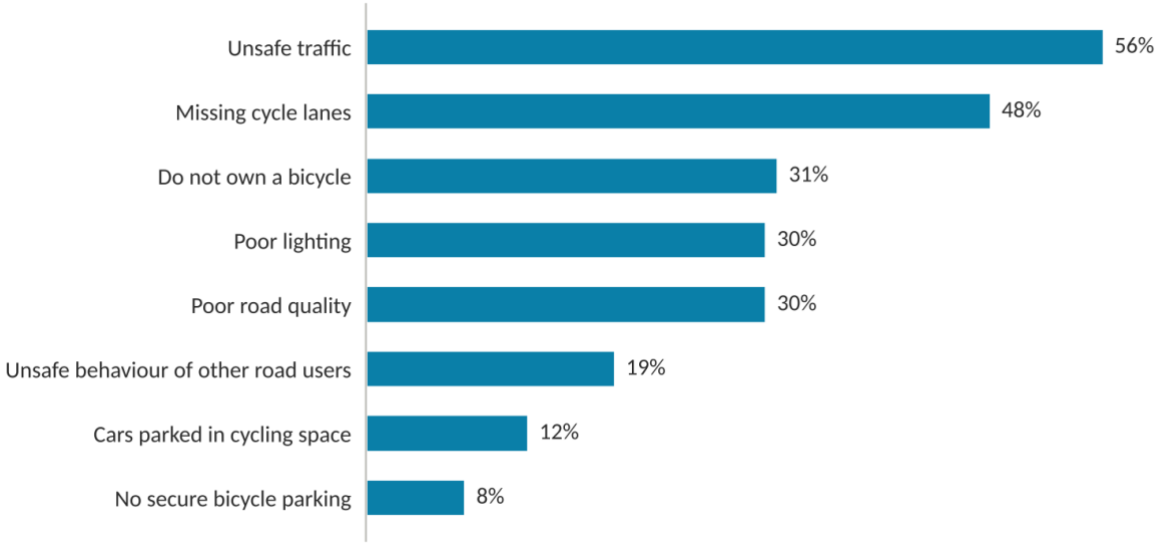


Source: WOC survey, July–October 2026 (n = 105).

Cycling and the bus

For cycling, the most frequently reported barrier is unsafe traffic (56%), followed by missing lanes (48%), not owning a bicycle (31%), poor lighting (31%) and road quality (31%) (Figure 3). Approximately 13% do not cycle but would like to, indicating potential demand that warrants attention. For public transport, 54% report rare use and 7% daily use. In comments on missing connections, links to peripheral neighbourhoods and villages are the most frequent theme, appearing in 42 of 62 comments, followed by service provision and timetable information.

Figure 3. Barriers to cycling (% of respondents, multiple choice)

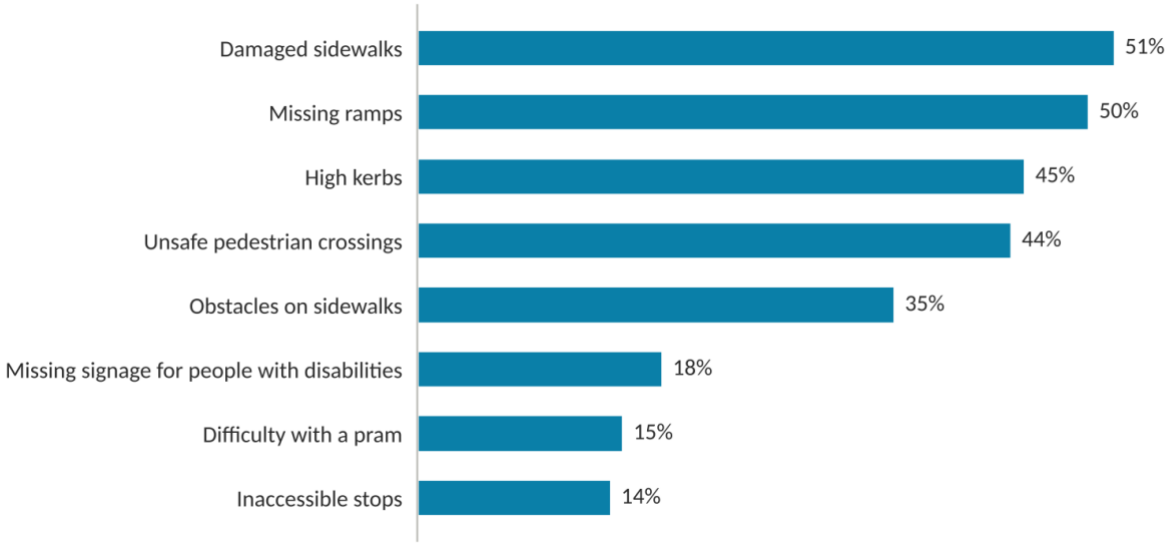


Source: WOC survey, July–October 2026 (n = 105).

Accessibility and groups in need

The most frequently identified accessibility barriers are damaged pavements (51%), missing ramps (50%), high kerbs (45%), unsafe crossings (44%) and pavement obstructions (35%) (Figure 4). Participants identify children (70%), older people (54%), village and peripheral residents (36%), people with disabilities (32%), and girls and young women (27%) as groups requiring greater attention. All 13 respondents over 60 report having changed their travel for safety reasons.

Figure 4. Most visible accessibility barriers (% of respondents, multiple choice)

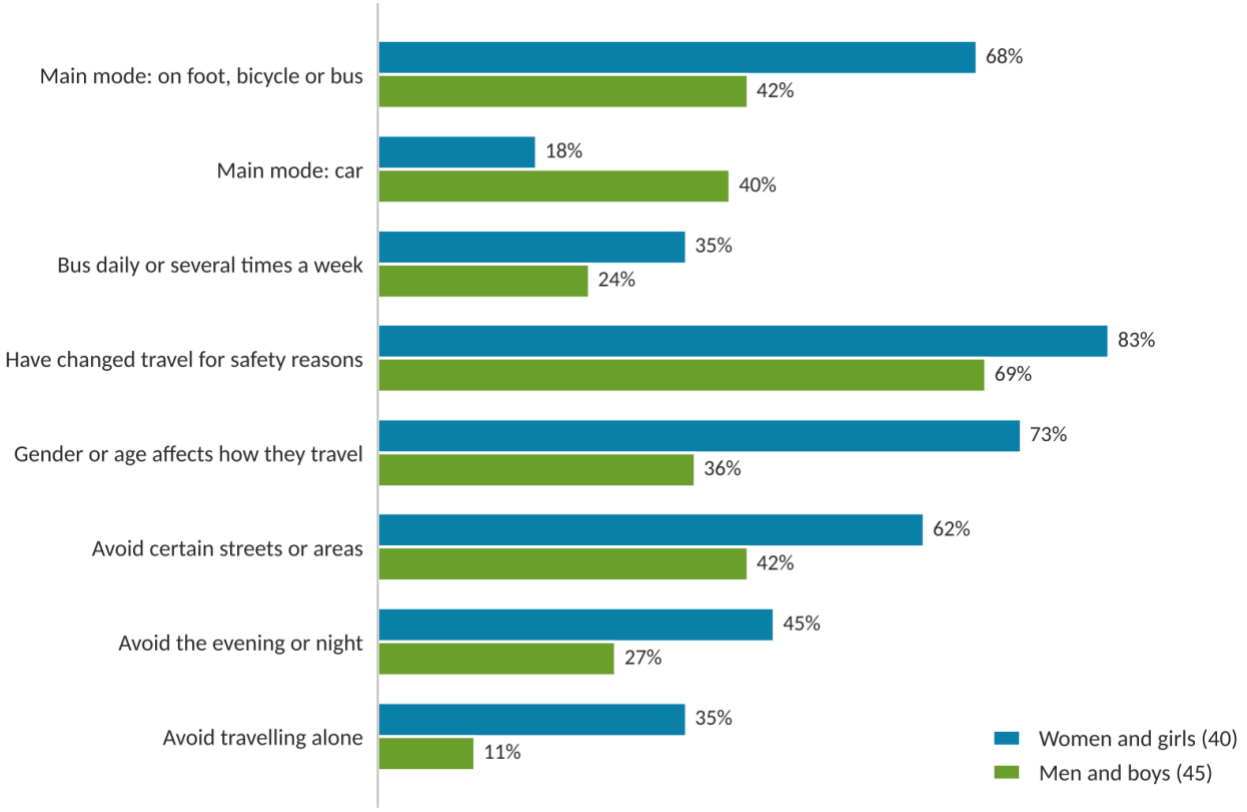


Source: WOC survey, July–October 2026 (n = 105).

Women, men and young people

The gender comparison identifies descriptive differences within the sample (Figure 5). Walking, cycling or the bus is the main mode for 68% of women, compared with 42% of men; the corresponding shares for the car are 18% and 40%. Public transport is used daily or several times a week by 35% of women and 24% of men. Changes to travel for safety reasons are reported by 83% of women and 69% of men. Women more frequently avoid particular routes (62% versus 42%), the evening (45% versus 27%) and travelling alone (35% versus 11%). Among young women, 82% say gender or age affects their travel and 41% avoid travelling alone. Respondents under 25 report daily cycling more than twice as often as others, at 31% versus 12%.

Figure 5. Comparison by gender (% within each group)



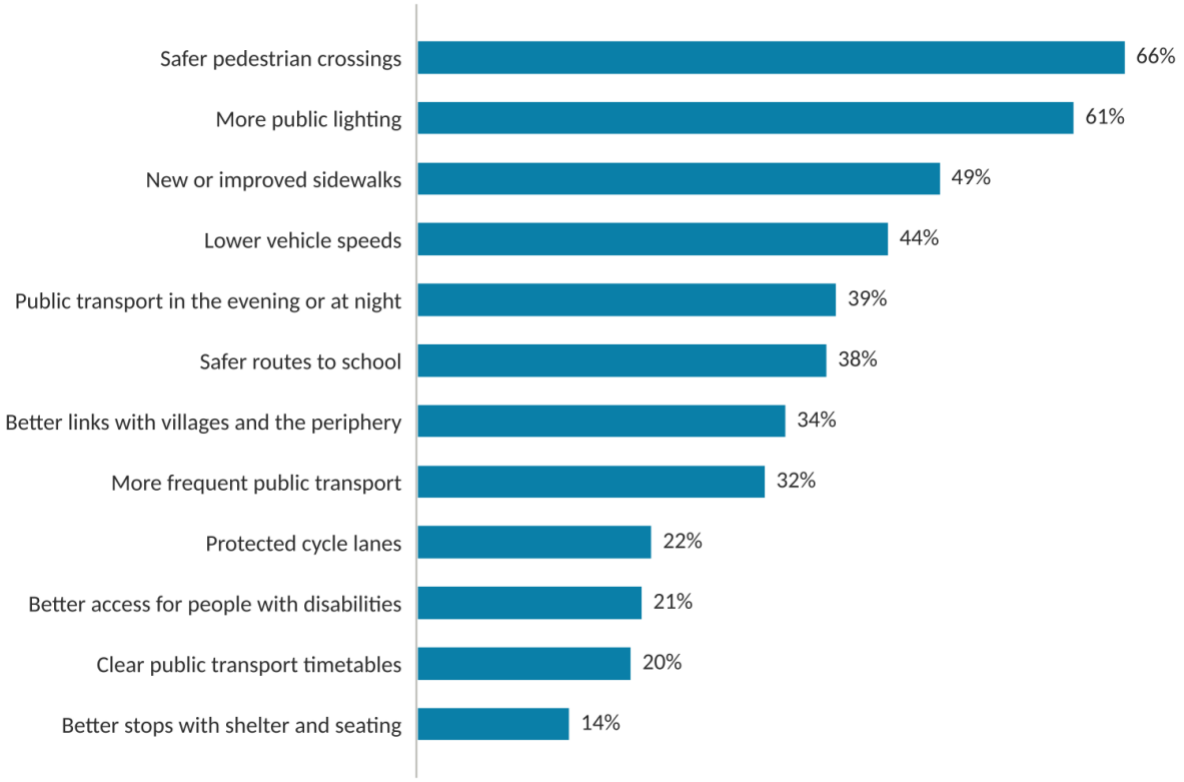
Source: WOC survey, July–October 2026; 40 women and girls, 45 men and boys. Differences are descriptive and have not been tested statistically.

Within the sample, women and young people play an important role in sustainable travel, while safety constrains some of their choices. Better lighting, crossings and evening services could help sustain this use and support the SUMP's modal-share objectives.

Priorities and participation

The most frequently selected interventions are safer crossings (66%), public lighting (61%), new or improved pavements (49%), lower speeds (44%), evening public transport (39%), safe school routes (38%), village connections (34%) and more frequent public transport (32%) (Figure 6). Protected cycle lanes are selected by 22%. When asked to choose a single priority, public transport and road safety each receive 22%, while school routes receive 18%.

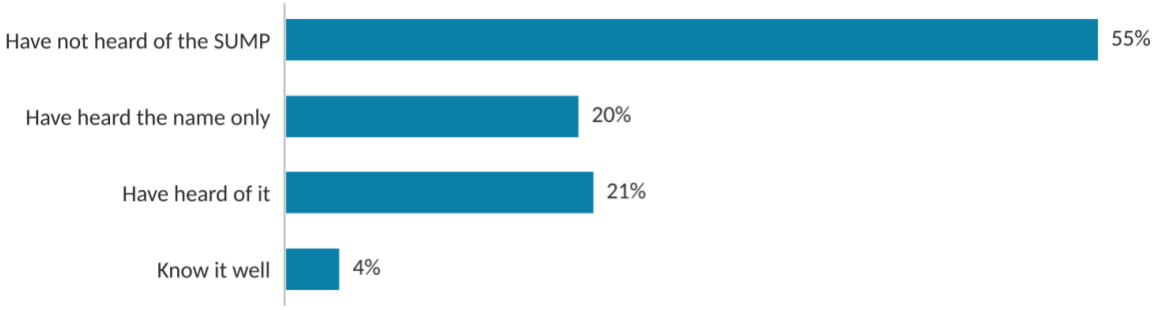
Figure 6. Priority interventions according to respondents (% of respondents, multiple choice)



Source: WOC survey, July–October 2026 (n = 105).

Approximately 55% of participants have not heard of the SUMP and only 4% know it well (Figure 7). On the 1–5 scale, the importance of public involvement averages 4.43, while perceived involvement in transport decisions averages 2.29. This difference indicates a need to connect the demand for participation more closely with decision-making processes.

Figure 7. Awareness of the SUMP (% of respondents)



Source: WOC survey, July–October 2026 (n = 105).

How the survey relates to the GIS analysis

The spatial analysis and survey provide complementary evidence. GIS identifies high proximity within the city, while responses highlight crossings, lighting, pavements and vehicle speeds as barriers to using it. For Rrethinat, more limited access is accompanied by frequent references to village and peripheral connections across all travel modes. The 31% five-minute coverage and service hours ending at 20:00 should be considered alongside the difficulties reported for evening or night travel by respondents who rated that item.

The comparison also identifies a data need. Lighting and pavements feature prominently among participants' priorities, yet their GIS documentation is incomplete. Completing these attributes is necessary for monitoring relevant SUMP measures.

5.2 The student experiment: the city through a user's role

The POLIS University urban planning students undertook a role-based experiment rather than a technical street audit. During "Bike & Walk", five students travelled on foot, five by bicycle and four by bus. Each randomly selected a role, such as a parent with a pram, an older person or a beginner cyclist, and used it as a perspective throughout the route. The guiding question was whether that user could complete the journey safely, understandably and as independently as possible. In the subsequent classroom session, students translated their observations into maps, diagrams and proposals from a planning perspective.

The roles served as a reflective tool, without simulating physical impairments or replacing evidence from actual users. Students distinguished direct observations, role-based interpretations and issues that remained unverified. The findings describe the conditions encountered on one day and along the selected routes. Their thematic overlap with the survey makes them useful for identifying issues requiring further investigation.

- Walking. The group followed two routes near the centre and identified four recurring barriers: missing signs and road markings, pavements occupied by commercial activities, uneven surfaces and insufficient pavement width. These observations relate to damaged pavements and obstructions reported by 51% and 35% of survey respondents. They complement integration maps, which describe network position without showing whether a pavement is usable.
- Cycling. The route was divided into eight segments. Three segments with dedicated lanes were rated safe, including one rated very good, although two lanes were narrow. Five segments without lanes and with moderate or heavy traffic were rated unsafe, even where the road was wider. The observation highlights the importance of street-space organisation for beginner cyclists and relates to unsafe traffic and missing lanes, identified by 56% and 48% of survey respondents.
- Bus travel. The group used Line 1 from Sheshi Demokracia towards Sheshi i Spitaleve, passing the University Library, Music School, Sheshi Rus i Madh and Prek Cali. Photographs document a pram being lifted manually over the entrance steps. This example shows that accessibility includes boarding as well as distance to the stop. In the survey, difficulties for older people, children and users with prams or wheelchairs were rated a major problem by 42% of those who scored that item.
- Positive example. The collage of the central pedestrian area documents active frontages, cafés, parked bicycles and people using the space. These elements illustrate the street's role as a place for staying and activity. Chapter 3 examines the distribution of activities in relation to higher integration classes.

The exercise also highlighted a methodological limitation: observing a lighting column during the day does not establish whether lighting functions adequately at night. As participants' second-ranked priority, lighting requires evening audits, particularly along routes to stops and schools, with the involvement of women and young people.

5.3 Co-creation – summary of the community roundtable

The closing roundtable of the *Wheels of Change* project, held on 29 October 2026 at ARKA Youth Center in Shkodër, provided an opportunity to discuss the accessibility analysis with people who use the city. The attendance register recorded 32 participants, including the organising team, representatives of local organisations, university staff and students, young people and pensioners. The presentation covered the GIS and space syntax analyses, questionnaire results, student fieldwork and an overview of Shkodër's Sustainable Urban Mobility Plan.

The discussion focused on the relationship between the connections shown in network maps and the actual conditions experienced along those routes. Participants noted that a street may be connected to the wider city but remain difficult or unsafe to use because of interrupted pavements, vehicles parked on cycle lanes, inadequate crossings or obstacles near bus stops. Their contributions therefore complement the spatial analysis with evidence from everyday experience.

A shared interactive map was used to record barriers, solutions and positive examples as points or street segments. At the time the data were reviewed for this study, the map contained 30 entries: 20 classified as barriers, 8 as solutions and 2 as positive examples. Some entries describe the same issue across different segments, while others contain limited detail. They should therefore not be treated as 30 distinct problems or 30 individual participants. No votes for solutions were recorded in the data reviewed, so no ranking by level of support has been presented.

One of the principal themes was the continuity and safety of the cycling network. Participants described vehicles parked in cycle lanes, car doors opening into cyclists' paths and incomplete links between neighbourhood streets and the main network. Several segments were marked on the map where cycle lanes were reported to be obstructed by vehicles or commercial activities. Another entry concerned the transition from a cycle lane into a roundabout, where cyclists encounter mixed traffic and heavy vehicles. The discussion identified the need to keep lanes clear, complete missing connections, improve signage and raise awareness among road users.

The connection to the sports complex in Dobraç and the approach to the tennis centre near the Shtoj junction were discussed as examples where missing or interrupted infrastructure makes cycling access more difficult. These proposals point to the need to assess complete routes from residential neighbourhoods to sports destinations, including junctions and locations where dedicated lanes end.

Participants also discussed pavement and crossing accessibility for older people, people with disabilities, parents with prams and others who face mobility difficulties. Reported barriers included high kerbs, unsuitable paving and uneven surfaces, narrow or interrupted pavements, signs and poles located in the pedestrian path, and space occupied by commercial activities or double-parked vehicles. In some cases, participants described how distant crossings and interrupted pavements require users to change their route or enter the carriageway. They called for the needs of people with disabilities, including people with visual impairments, to be incorporated into the design of the whole street profile.

The city entrance and the Bahçallëk–Bërdicë corridor were discussed in relation to cyclists' manoeuvres, cycle-lane continuity and access to bus stops. Participants emphasised that improvements to one section should connect with the rest of the journey, so that users are not left without a safe route when entering or leaving the city. They proposed examining cycling space, crossings and public transport connections together along the corridor.

Along the Shirokë–Zogaj road, participants reported damaged surfaces, narrow pavements near bends and insufficient signage. The route was also recorded on the interactive map. The discussion addressed the continuity of pedestrian space, surface improvements and better organisation of bus access and parking. The lack of secure bicycle parking was raised as a concern for both visitors and residents, particularly near recreational destinations and areas of concentrated activity.

The connection towards Muriqan was considered from the perspective of cross-border mobility and cycle tourism. Participants stressed the need for a safe and legible route for cyclists arriving from Montenegro and travelling onwards to Shkodër. This proposal links local network planning with the way visitors enter the city and with the opportunity to develop a tourism offer based on active mobility.

Regarding public transport, participants welcomed the new electric fleet and discussed the need to accompany improvements in vehicles with usable stops, appropriate service frequency and safe connections to the city entrance. Bus organisation in the Radio Shkodra area was raised as an issue affecting circulation and the experience of arriving in the city. Both the discussion and the map included proposals for alternative locations near the former railway station or the stadium. These suggestions require further assessment of pedestrian access, connections to services and traffic organisation.

Bicycle parking was another recurring theme. Several proposals for additional parking were recorded on the map, while participants mentioned the stadium, schools, the cinema and health services as possible destinations. They called for secure parking close to destinations, positioned so that it does not create obstructions on pavements. The management of car parking, enforcement against the occupation of public space and the use of parking charges were also discussed.

A further group of comments concerned **traffic organisation and the effects of new development**. Participants cited examples from Zdrala, Dervish Beg Street and the university area, describing repeated changes in traffic direction and difficulties created by the relationship between one-way and two-way streets. Concerns were raised about spaces intended for pedestrians being used for parking, as well as the suitability of some street surfaces for cycling. In relation to large developments and underground car parks, participants called for assessment of the traffic that could be generated and its implications for pedestrian and cycling space.

The map also contains positive examples. One segment of the pedestrian area and one cycle-lane segment were identified by contributors as functioning well. These locations could be examined further to understand which aspects of their design or use might inform improvements elsewhere. The descriptions on the map are brief and do not constitute technical audits of the sites.

In terms of governance, the discussion highlighted the need for more direct involvement of local experts, institutions and users in preparing and reviewing plans. Participants called for decisions on traffic directions, parking and infrastructure to be considered in relation to the whole network and the community's everyday needs. This supports the case for accompanying SUMP measures with field verification and clear opportunities for participation.

Overall, the co-creation process added a territorial and experiential dimension to the GIS, space syntax and questionnaire findings. The issues raised suggest priorities for further verification: continuity of routes, keeping pedestrian and cycling space clear, improving crossings, and connecting neighbourhoods with services and public transport. The locations recorded on the map and the roundtable proposals can guide subsequent audits and the development of action-plan measures. They reflect participants' experiences and suggestions; final solutions, responsibilities and timeframes require review by the relevant institutions.

6. Proposals for improving the SUMP

The proposals complement the 2025 SUMP by linking existing measures to defined locations, priorities and indicators. Each relates to one or more plan measures and to a monitoring approach based on the data and methods used in this study.

6.1 Measure accessibility, not only infrastructure

The SUMP provides for monitoring every two years. A small set of network-based accessibility indicators is proposed, reported separately for Shkodër and Rrethinat. Alongside completed infrastructure lengths, these indicators would help assess benefits to users. Results from the 2026 analysis can provide a reference, with the dates of source data clearly retained (Table 11). The survey could be repeated every two years using comparable questions and methods, with results disaggregated by gender and age.

6.2 Start neighbourhood measures where both links and services are missing

Measures M11–M17 under S4 and S5 should have defined territorial priorities. The Chapter 3 typology provides an initial basis. The first group comprises lower-integration areas with insufficient service proximity in Dobraç, Skënderbeg, Qafë, Tepe and parts of Kiras and Guerrile, with approximately 7,800 residents. The second comprises areas with nearby services but lower integration in Naim Gjylbegu, Kiras, Ahmet Haxhia, Garuc, Mark Lula and Luguçezme, with approximately 29,700 residents. Interventions to examine include pedestrian and cycling links across canals or between dead ends, crossings to principal streets and lighting. Even a short connection may reduce distance to a school or stop where this is verified in the network and on site.

6.3 Extend "School Streets" according to access, not only traffic

M18 starts with ten schools exposed to traffic. The list should also consider schools serving areas more than 10 minutes away on foot, including Kiras, Tepe, Ajasëm, Luguçezme, Skënderbeg and the villages of Rrethinat. The programme should cover routes to school as well as entrances. An initial threshold of 10 minutes at 3 km/h, approximately 500 m, can inform audits at a slower walking pace. Audits involving pupils and students can draw on the "Bike & Walk" experience.

6.4 A dedicated programme for lighting pedestrian routes

Lighting is the second most frequently selected intervention (61%) and the most frequently identified problem at difficult locations (19%); 27% report worse conditions at night. Women report avoiding evening travel more often than men, at 45% compared with 27%. Lighting is currently addressed through M12, M17 and M23. A coordinated programme within S5 is proposed, prioritising routes to stops, schools and areas with weak connections. It should begin with night audits and a GIS layer, since current documentation is incomplete.

6.5 Close cycling gaps on through-movement corridors

The model indicates that cycling is competitive with driving for journeys to the centre, while safety limits its use. Central network design under M20 should examine higher-choice corridors without recorded lanes: Bujar Bishanaku, Ethem Osmani, Rruga e Tuzit, Isa Jakupi, Isuf Sokoli, Lëvizja e Postribës and Rruga e Terzive. Their widths suggest opportunities for reallocation that require verification of the actual cross-section. M23 priorities, Shtoj–Ura e Maxharrit and Bahçallëk–Bërdicë, could be complemented by connections to Golem and Guci e Re. Approximately 39% of the Rrethinat population has a secondary school within 10 minutes by bicycle; realising this potential requires safe routes. The principal indicator should distinguish protected, continuous network length from total infrastructure length.

6.6 Public transport: a service standard and measured coverage

M26 provides for a minimum service level. Service until 22:00, as reported for 2016, and 15-minute daytime intervals on Line 1 are proposed for consideration. Route-review options under M27 should also be compared against five-minute

coverage, which is 31% in the analysis. Neighbourhoods with the largest numbers outside this coverage are Naim Gjylbegu, Mark Lula, Ahmet Haxhia, Guerrile, Kiras and Sarreq. The proposed east–west connecting line should be assessed for its service to these areas. For Rrethinat, M31 should define guaranteed provision at school times and in the evening.

6.7 Safe and usable stops

Among respondents who rated the public transport items, evening travel was considered a major problem by 46%, difficulties for older people, children, users with prams and people with disabilities by 42%, and missing online information by 35%. M29 should start with stops near schools and hospitals and those examined by students. The minimum standard should include lighting, shelter, seating, visible timetables, safe crossings and accessible boarding through coordination between stops and vehicles.

6.8 Small public spaces and play near home

Only 36% of the city population has a playground within 10 minutes on foot. In residential neighbourhoods with limited public space, M14 could examine relatively integrated but quiet streets, such as Kupe Danja, Koplikej or Mehmet Shpendi, alongside housing-block courtyards and school grounds after teaching hours. The aim is to provide play spaces within 5 minutes of home. Selection should involve children, as the measure envisages, and assess safety, access and management.

6.9 Space syntax as a planning tool

The descriptive relationship between integration and activities in Chapter 3 can support three planning uses. First, the maps can inform the location of new kindergartens, clinics and playgrounds by combining integration with territorial service gaps. Second, active ground-floor uses and extensions to the pedestrian itinerary can be examined along integrated streets; the analysis places 78% of the most active streets in classes 3 and above. Third, proposed connections can be tested in depthmapX against the WOC baseline model before detailed design.

6.10 Governance, data and participation

Implementation requires clear institutional responsibility. The review of functions under M2 should identify a mobility unit or designated officer responsible for SUMP monitoring. The GIS database should be completed with pavement width and condition, lighting and crossings, with data published through M39. Since 55% of respondents have not heard of the plan, sustained communication and participation should show how comments inform decisions. Preserving data and lessons from earlier plans should form part of this process.

6.11 Large developments should undergo a mobility impact assessment

A documented mobility impact assessment procedure is proposed for the major developments discussed in Section 4.3. Indicative thresholds for consideration are more than 50 homes, more than 5,000 m² of floor area or hotels with more than 50 rooms. Assessment should cover generated trips, walking, cycling and bus access, parking and deliveries. Subject to the applicable framework, development conditions could relate to maximum parking standards under M44, improvements to surrounding infrastructure and off-peak deliveries. At locations such as Sheshi Demokracia, effects on the pedestrian and limited traffic zones require particular attention (M8, M9). Revision of the local plan and development regulation offers an opportunity to define the procedure.

Table 11. Summary of proposals, links to the SUMP and monitoring indicators

Proposal	SUMP measures	Indicator	Baseline 2026 (Shkodër / Rrethinat)
6.1 Accessibility indicators	Ch. 7, monitoring	Residents with ≥ 6 of 8 services within 15 min on foot	93% / 5%

Proposal	SUMP measures	Indicator	Baseline 2026 (Shkodër / Rrethinat)
6.2 Territorial ranking of neighbourhood measures	M11–M17	Residents in cut-off and under-served areas	7,800 residents in 17 zones
6.3 School Streets by access	M18	Residents with a school within 10 min at 3 km/h	56% / 13%
6.4 Lighting programme	M12, M17, M23, M29	Routes to schools and stops with lighting verified at night	No data; new GIS layer
6.5 Cycling network gaps	M20, M23	Km of protected and continuous lanes	4.3 km in the centre (26.5 km in total)
6.6 Service standard and coverage	M26, M27, M31	Residents with an operating stop within 5 min; last service time	31% / 0.2%; 20:00
6.7 Safe stops	M29	Operating stops with lighting, shelter, seating and step-free boarding	To be measured in an audit
6.8 Play near home	M14	Residents with a playground within 10 min	36% / 3%
6.9 Space syntax in planning	S2, S4, PPV	Active streets and institutions in WOC integration classes 3 and above	78%; 77%
6.10 Governance and participation	M2, M3, M39	Residents who have heard of the SUMP; sense of involvement (1–5)	45%; 2.29
6.11 Impact of large developments	M8, M9, M44, PPV	Developments above the threshold with a mobility impact assessment	No procedure today

The last indicator comes from the WOC survey and should be measured with the same method in each monitoring cycle.

6.12 Next steps

The results should be used with their limitations in mind. The service inventory is less complete in Rrethinat than in the city. The walking model excludes pavement quality, gradients, lighting and obstacles. The space syntax exports cover the city and retain colour classes rather than numerical values, so class groups are compared. Without street-level land prices, locational value is discussed through institutions, the historic centre and the literature. The survey is not statistically representative, and the student experiment describes cases from one day. Next steps include verification of priority areas through daytime and night-time audits with residents, and completion of Chapter 5 using the co-design export.

7. Conclusions: the study's contribution to the SUMP

The study supports implementation of the existing SUMP by providing information on locations, users and the potential sequence of interventions. Its contribution can be summarised in six areas.

- A measurement reference. Network accessibility is calculated from residential buildings, providing reference results from the 2026 analysis for Shkodër and Rrethinat (Table 11). These can support two-yearly monitoring using comparable methods and documented source dates.
- Territorial guidance for measures. The Map 21 typology supports area selection under S4 and S5, first highlighting the combination of lower integration and service gaps, affecting approximately 7,800 residents, and then areas with nearby services but lower integration.
- Interpretation of urban structure. The WOC maps, combined with additional sources, identify associations between integration, institutions, commerce and the historic centre. Choice indicates potential through-movement, while pedestrian streets show a more destination-oriented profile. These results can inform examination of new services, active frontages, pedestrian-zone extensions and cycling corridors.
- Inclusion of women and young people. Within the sample, these groups make substantial use of sustainable modes and report safety-related constraints. Indicators disaggregated by gender and age, lighting improvements and evening services can make the SUMP more responsive to these needs.
- Field experience. The student experiment and co-design connect network analysis with elements such as kerbs, crossings and bus entrances. Participatory methods can regularly complement technical SUMP monitoring.
- Coordination with urban development. Projects on Sheshi Demokracia and at the city entrance interact with the SUMP's pedestrian area, multimodal corridor and cycling connections. Mobility impact assessment is needed to identify conflicts and define appropriate improvements.

Short distances, cycling culture and an active centre give Shkodër favourable conditions for sustainable mobility. The 2025 SUMP includes measures to preserve and improve them. This study contributes to directing implementation by territory and user needs and to defining how results can be measured.

Annex. Survey findings and interpretation

This annex presents the principal results of the WOC survey for Shkodër. The analysis includes all 105 responses unless otherwise stated. Percentages are calculated from valid responses to each question. Where multiple selections are allowed, participants may choose more than one option and totals can exceed 100%.

A.1 Scope and limitations

- Responses were collected from 6 July to 8 October 2026. The sample is non-probability-based and unweighted. The results therefore do not represent the population's modal split or population-wide percentages.
- For the grids addressing specific walking, public transport and safety problems, the 1–5 scale is defined as follows: 1 indicates no problem and 5 a very major problem. For each item, 73–78 participants selected "don't know", leaving 26–31 valid ratings.
- For the separate 1–5 questions on cycling safety, daytime and night-time safety, school routes and public transport satisfaction, the exports do not contain the endpoint labels. Scores are therefore presented numerically without classifying them as confirmed levels of safety or insecurity.
- Open comments were coded by theme, allowing a comment to fall into more than one category. Participants' names and contact details are not reproduced.

A.2 Respondent profile

Table A1. Respondent profile (n = 105)

Characteristic	Category	Number	%
Residence	City of Shkodër	65	61.9
	Surroundings of Shkodër	22	21.0
	Velipojë	11	10.5
	Other municipalities	7	6.7
Age	15–18	22	21.0
	19–24	17	16.2
	25–30	12	11.4
	31–45	26	24.8
	46–60	15	14.3
	Over 60	13	12.4
Gender	Women and girls	40	38.1
	Men and boys	45	42.9
	Prefer not to say / other	20	19.0

The most frequently mentioned origins are Xhabiej, Bulevardi Zogu I, Bahçallëk, Qafa and Skënderbeg, with 4–5 mentions each, followed by Rus, Perash, Gjuhadol and 13 Dhjetori. Dergut, Ajasma, Guerrila, Tophana, Dobraç, Golem, Shtoj, Guci e Re, Grudë e Re, Bleran and Myselim also appear. The sample therefore includes experiences from the centre, peripheral neighbourhoods and villages of Rrethinat.

A.3 Daily travel

Table A2. Main daily mode (n = 105)

Mode	Number	%
Private car as passenger	22	21.0
Bicycle	20	19.0
On foot	19	18.1
Bus, van or minibus	16	15.2
Private car as driver	13	12.4
Combination of modes	9	8.6
Other (motorcycle, taxi, e-scooter, informal)	6	5.7

The principal reported destinations are markets and shops (74%), work (55%), and school or university (41%). A one-way journey takes 21–30 minutes for 37% of participants and 10–20 minutes for 28%. These times are not directly comparable with modelled distance to the nearest service, because they may describe different destinations and include respondents from Rrethinat and Velipojë.

A.4 Walking, cycling and public transport

Table A3. Barriers to cycling (n = 105, multiple choice)

Barrier	Number	%
Unsafe traffic	59	56.2
Missing cycle lanes	50	47.6
Do not own a bicycle	33	31.4
Poor lighting	32	30.5
Poor road quality	32	30.5
Unsafe behaviour of other road users	20	19.0
Cars parked in cycling space	13	12.4
No secure bicycle parking	8	7.6

Bicycles are used daily by 19%, several times a week by 13% and occasionally by 4%; a further 13% do not cycle but would like to. Public transport is used daily by 7%, several times a week by 19%, occasionally by 10%, rarely by 54% and never by 11%. The numerical score for satisfaction with routes and timetables averages 2.54 out of 5, with most responses at 2 and 3.

Table A4. Problems rated as major (score 4 or 5) by those who gave a score

Problem	Valid answers	Score 4–5, %
Public transport: travelling in the evening or at night	28	46.4
Walking: difficulty for prams, wheelchairs and reduced mobility	31	45.2
Public transport: difficulty for older people, children and people with disabilities	26	42.3
Safety: unsafe crossings	29	41.4
Walking: lack of benches and rest points	30	40.0
Safety: stray dogs	31	38.7
Public transport: lack of online information	29	34.5
Safety: few people in public space	29	34.5
Walking: lack of shade or weather protection	30	33.3
Safety: high vehicle speeds	31	32.3
Safety: unlit or isolated stops	29	31.0
Walking: unsafe routes to school	30	30.0

Scale: 1 not a problem, 5 a very large problem. 73–78 respondents answered "don't know" for each item; the ranking is sensitive to individual answers.

Interpretation. Higher ratings in the problem grids concern users with prams or wheelchairs, older people, children and evening travel. These themes also appear in questions with more responses. Given the small rating base, however, the ranking should guide audits rather than establish a definitive hierarchy of problems.

A.5 Safety, gender and age

Table A5. Changing travel for safety reasons (n = 105)

Answer	Number	%
Yes, sometimes	71	67.6
Yes, often	8	7.6
Rarely	19	18.1
Never	5	4.8
Prefer not to say	2	1.9

Table A6. Comparison by gender

Indicator	Women and girls	Men and boys
Main mode: on foot, bicycle or bus	68%	42%
Main mode: car	18%	40%
Public transport daily or several times a week	35%	24%
Have changed travel for safety reasons	83%	69%
Gender or age affects how they travel	73%	36%
Avoid certain streets or areas	62%	42%
Avoid the evening or night	45%	27%
Avoid travelling alone	35%	11%

Comparison base: 40 women and girls and 45 men and boys. Respondents who did not state their gender remain included in the overall findings. Differences are descriptive and have not been statistically tested.

Interpretation. Within the sample, women report greater reliance on walking, cycling and public transport and more frequent safety-related adjustments to travel. Avoiding evening travel or travelling alone may restrict travel opportunities, but the survey does not directly measure foregone journeys or additional travel time. Respondents aged 15–24 have the highest bicycle use, with 51% cycling at least occasionally. All 13 participants over 60 report changing their travel for safety reasons.

A.6 Accessibility and priorities

Table A7. Most visible accessibility barriers (n = 105, multiple choice)

Barrier	Number	%
Damaged sidewalks	54	51.4
Missing ramps	52	49.5
High kerbs	47	44.8
Unsafe pedestrian crossings	46	43.8
Obstacles on sidewalks	37	35.2
Missing signage for people with disabilities	19	18.1
Difficulty with a pram	16	15.2
Inaccessible stops	15	14.3

Table A8. Priority interventions (n = 105, multiple choice)

Intervention	Number	%
Safer pedestrian crossings	69	65.7
More public lighting	64	61.0
New or improved sidewalks	51	48.6
Lower vehicle speeds	46	43.8
Public transport in the evening or at night	41	39.0
Safer routes to school	40	38.1
Better links with villages and the periphery	36	34.3
More frequent public transport	34	32.4
Protected cycle lanes	23	21.9
Better access for people with disabilities	22	21.0
Clear public transport timetables	21	20.0
Better stops with shelter and seating	15	14.3

Interpretation. Participants prioritise crossings, lighting, pavements and lower speeds. These themes relate to M12, M16 and M17 and may include phased interventions or tactical urbanism trials ahead of larger S2 and S3 investments. Cost and timing require assessment at each location. Evening public transport is selected by 39%, compared with 22% for cycle lanes, highlighting the importance of service availability at different times.

A.7 Open comments

The open questions received 64–92 comments each. Connections to peripheral neighbourhoods and villages are the most frequent theme: 43 of 81 comments on walking difficulties, 49 of 90 on cycling routes, 42 of 62 on public transport connections, and 54 of 80 on difficult places. Lighting appears in 45 comments on difficult places and in 23 of 75

responses concerning an intervention to undertake this year, where it is the leading theme. Pavements and school routes are also frequently mentioned.

Most comments describe unnamed neighbourhood streets, approaches to schools and peripheral connections without precise locations. Named places include Bulevardi Bujar Bishanaku or Rruga e Gjanë, Velipojë, Shirokë, the bypass, Rruga Luigj Gurakuqi, Dobraç, Perash, Sheshi 2 Prilli and the girls' madrasa area. Pilot selection should combine these contributions with the Chapter 3 typology and field audits rather than rely solely on mention counts.

A.8 The SUMP and participation

Table A9. Awareness of the SUMP and participation

Indicator	Value
Have not heard of the SUMP	55.2%
Have heard the name only	20.0%
Have heard of it	21.0%
Know it well	3.8%
Importance of citizen involvement (mean 1–5)	4.43
Perceived involvement in transport decisions (mean 1–5)	2.29

Interpretation. Participants value involvement, but awareness of the plan and perceived participation remain low. This indicates an opportunity for more structured communication and engagement. Involvement of young people, who make up more than a third of the sample, can build on the participatory methods used by the project.

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