



C ONNECTIVE IT I E S



Action for Cool Cities: Pathways for carbon reduction in buildings and improvement of outdoor thermal comfort

Partners of Connective Cities

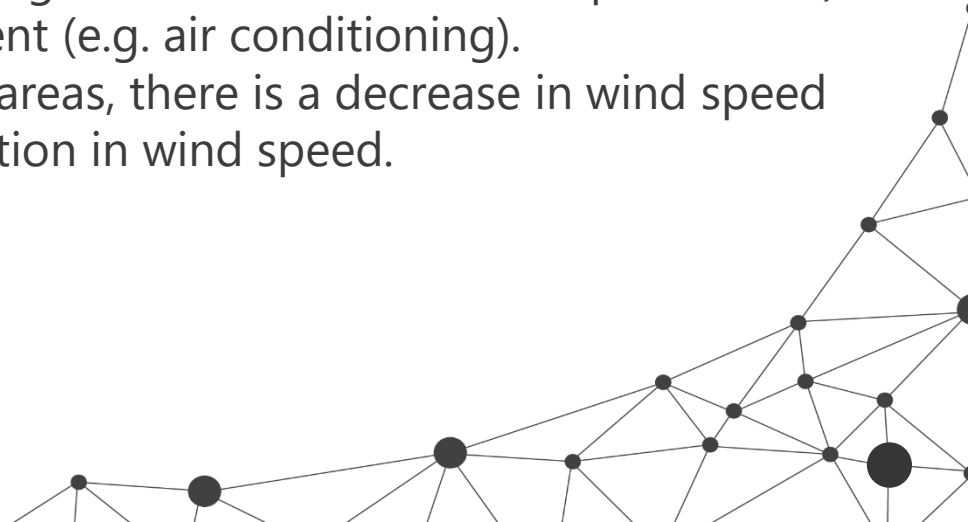


Commissioned by

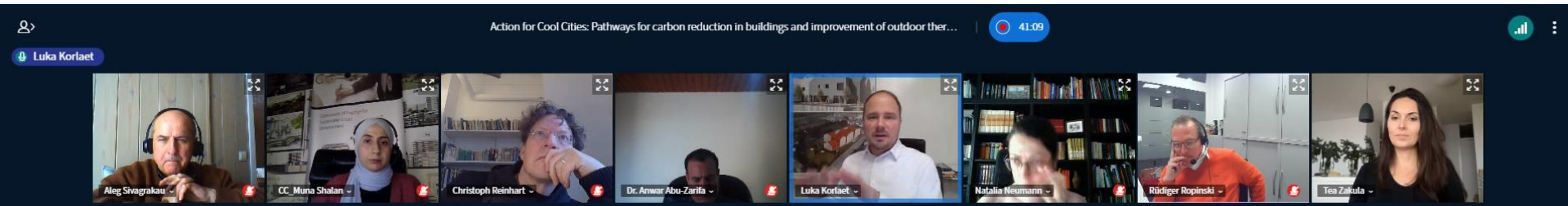


Cool Cities: why & how?

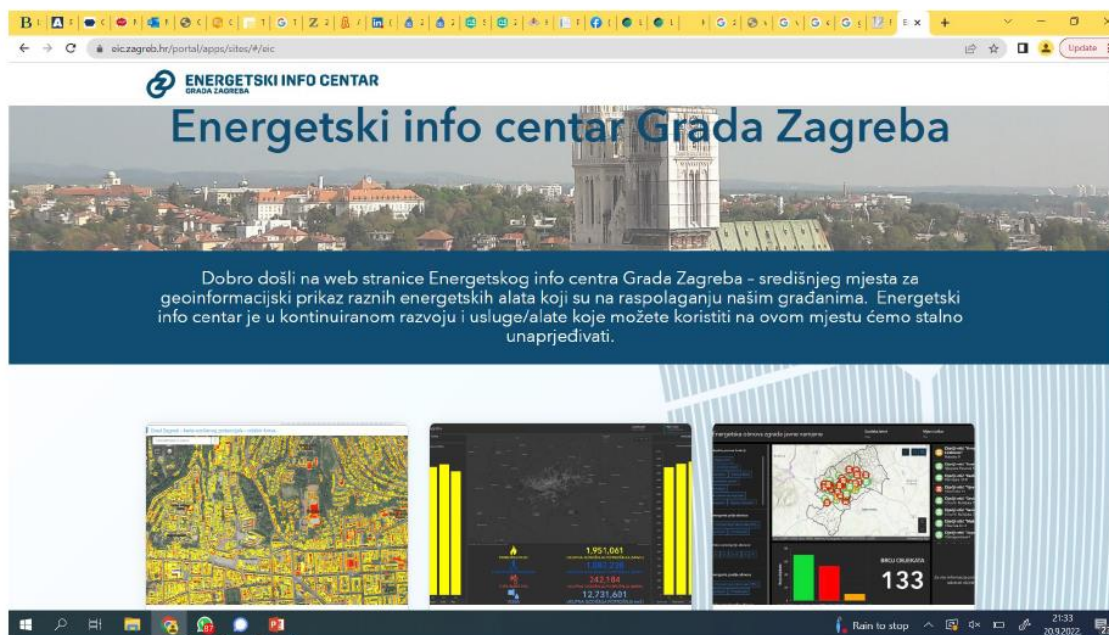
- climate in cities is not only getting warmer, but also more people will be affected by this warming **particularly the most vulnerable**.
- While urban heat islands are observed throughout the year, **the effect is particularly pronounced and critical in the summer months**.
- **Causes**
 - Significant reduction of permeable surfaces and vegetation → less evaporative cooling
 - Compared to rural areas, urban areas witness increased heat generation through combustion processes (e.g. engine waste heat, industrial production) or waste heat from electrical equipment (e.g. air conditioning).
Change in wind conditions: In urban areas, there is a decrease in wind speed due to building development a reduction in wind speed.

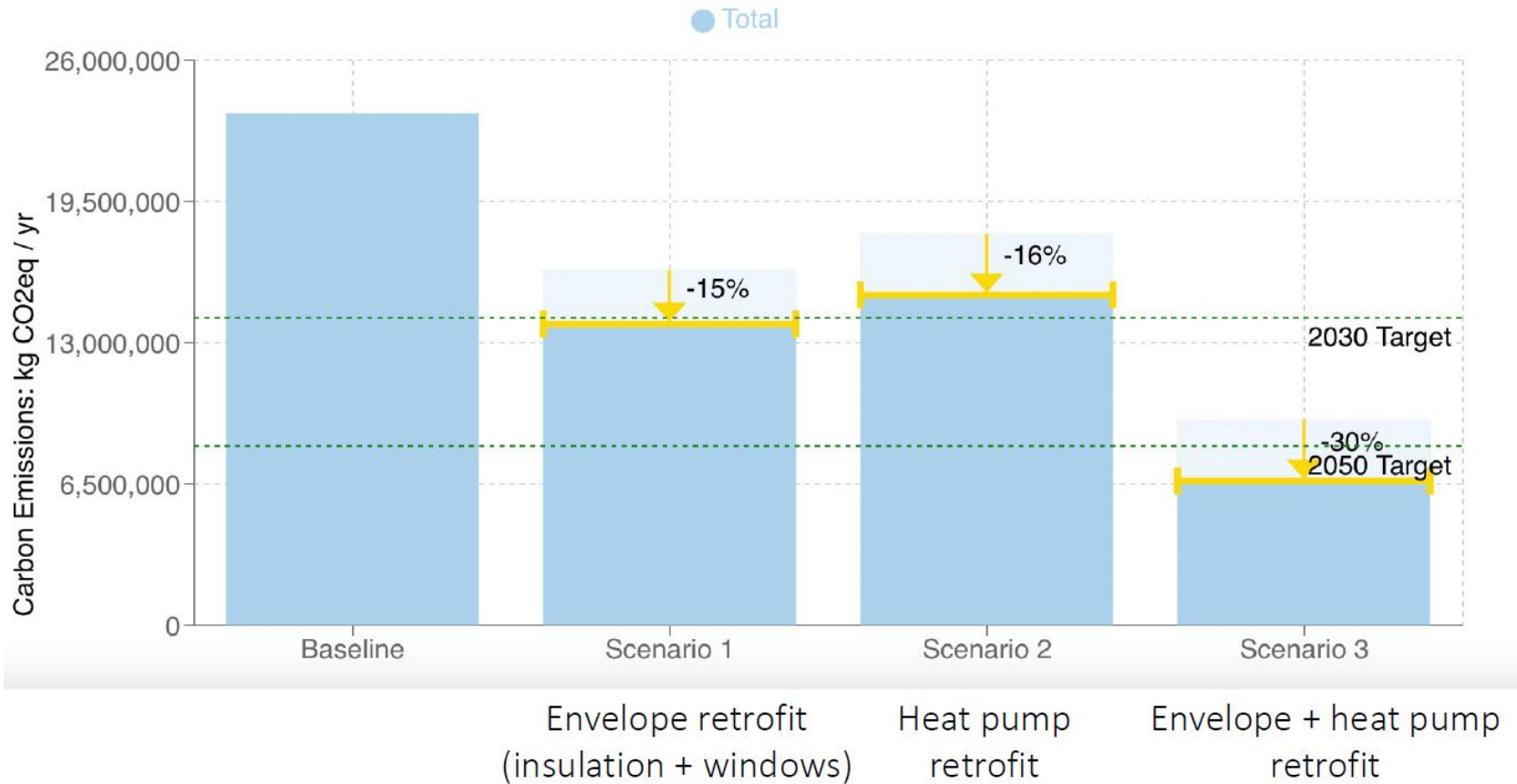


Inspirational good practices



Monitoring & energy transition strategies





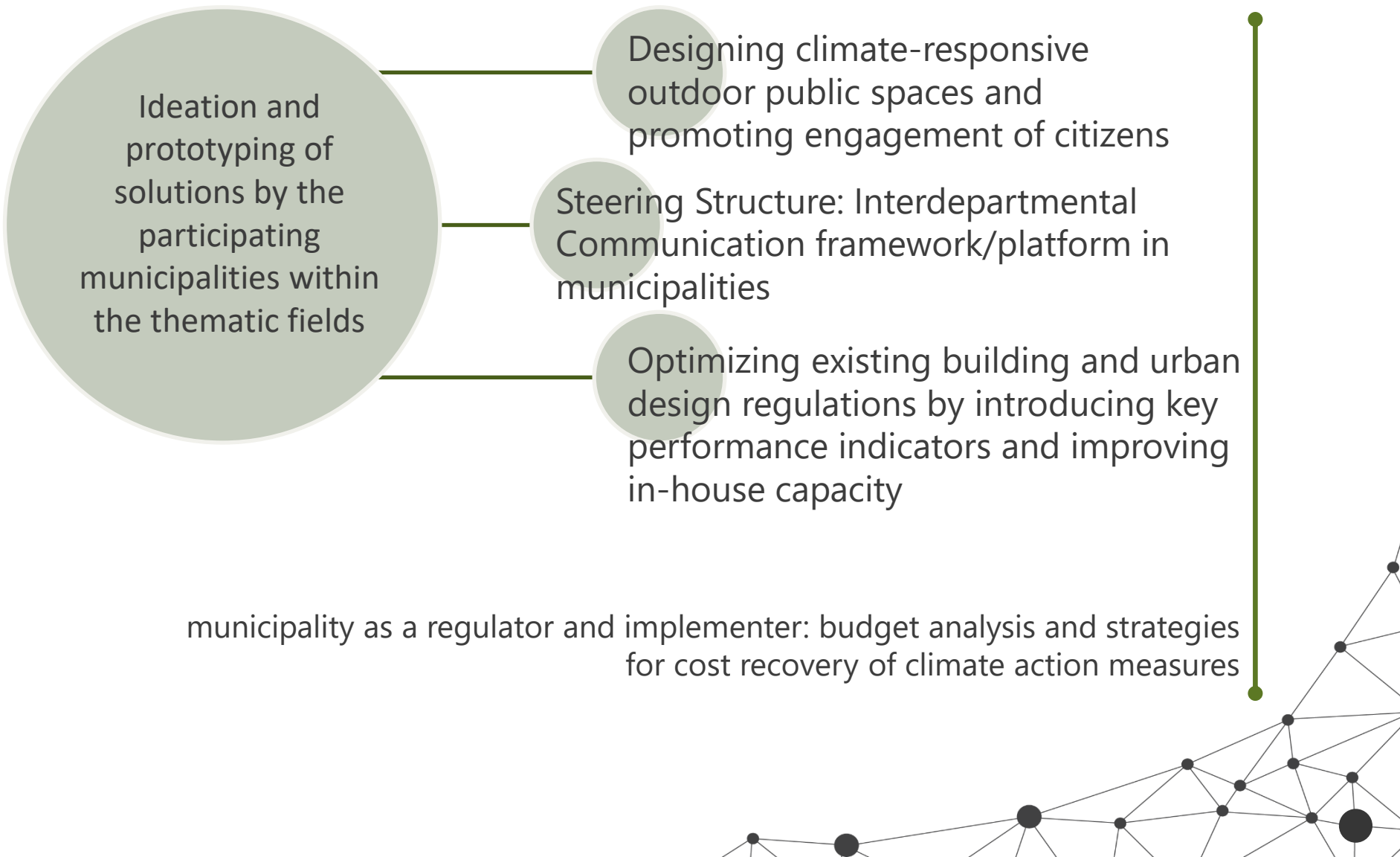
Understanding & Observation

**Strategies & Institutional
framework**

Planning/design Processes & climate data

**Steering structure & cooperation for
common understanding**

**Technical capacities &
awareness**



Ideation and prototyping of solutions by the participating municipalities within the thematic fields

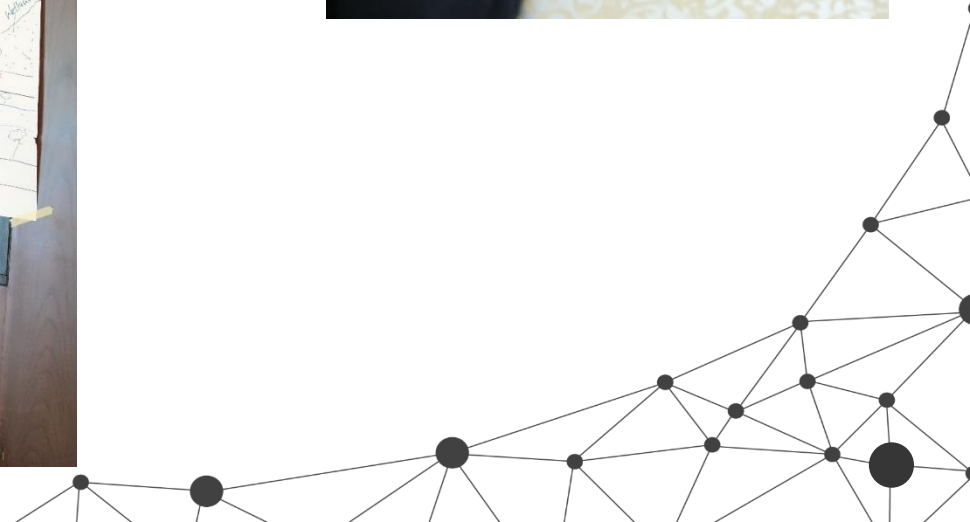
Designing climate-responsive outdoor public spaces and promoting engagement of citizens

Steering Structure: Interdepartmental Communication framework/platform in municipalities

Optimizing existing building and urban design regulations by introducing key performance indicators and improving in-house capacity

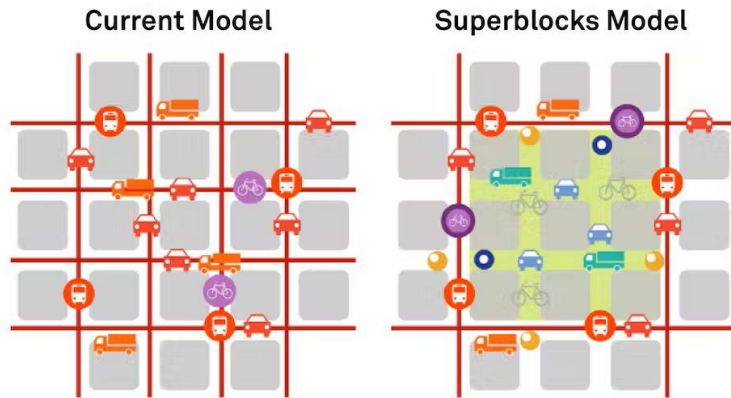
municipality as a regulator and implementer: budget analysis and strategies for cost recovery of climate action measures

- Biodiversity park/ forest reserve in the municipalities of **El-Kef in Tunisia and Bab Amman in Jordan**
- Piloting the green infrastructure master plan of **Irbid municipality in Jordan** and introducing KPIs for improving outdoor thermal comfort in urban design
- Establishing a specialised unit for climate change in Hebron municipality- Palestine
- A regional urban park for **Khan Younis in Gaza-Palestine**
- Urban upgrading of the riverside of the Auji creek in **Kisumu, Kenya**



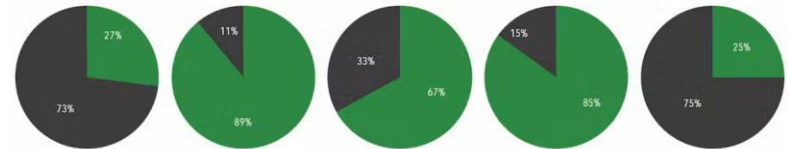
Superblocks program in Tbilisi- georgia

SUPERBLOCKS MODEL

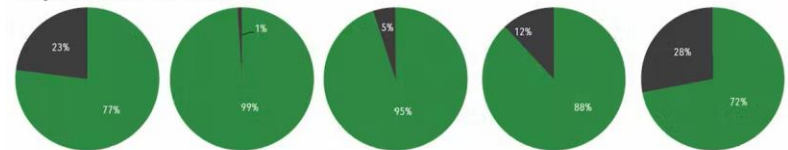


-  PUBLIC TRANSPORT NETWORK
-  PRIVATE VEHICLE PASSING
-  DUM PROXIMITY AREA
-  BICYCLES MAIN NETWORK (BIKE LANE)
-  RESIDENTS VEHICLES
-  ACCESS CONTROL
-  BICYCLES SIGNPOSTS (REVERSE DIRECTION)
-  URBAN SERVICES AND EMERGENCY
-  BASIC TRAFFIC NETWORK
-  FREE PASSAGE OF BICYCLES
-  DUM CARRIERS
-  SINGLE PLATFORM (PEDESTRIANS PRIORITY)

Current situation



Superblocks model



- Space for pedestrians (versus road)

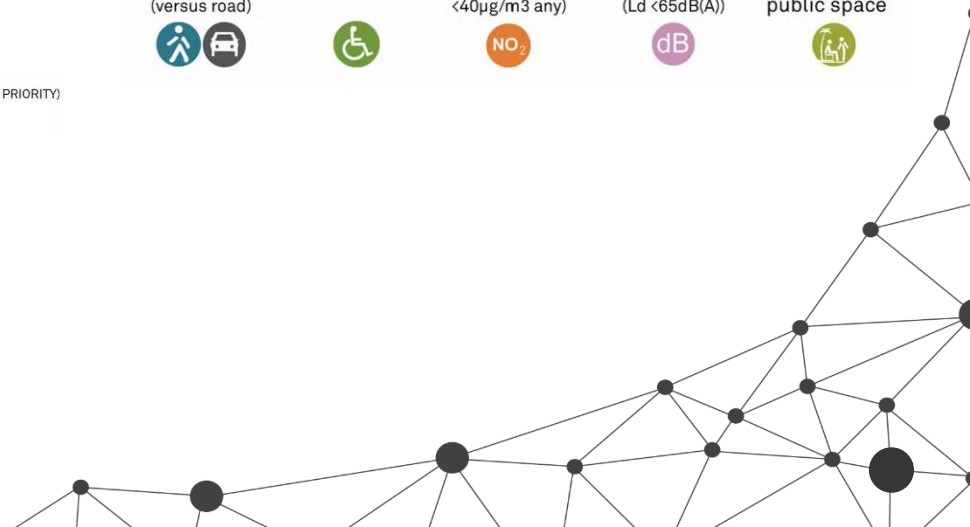

- Accessibility (sidewalks >2,5m)


- Air quality (immission <40µg/m3 any)


- Acoustic comfort (Ld <65dB(A))

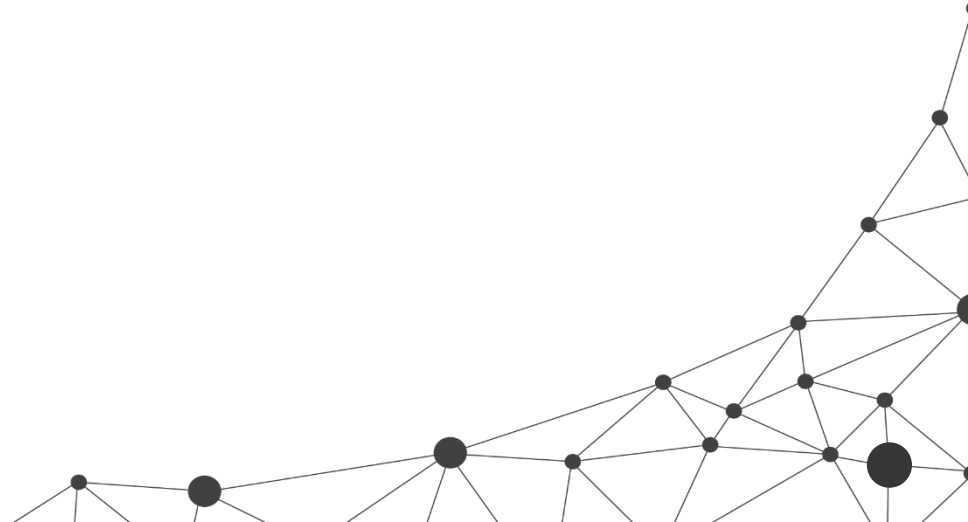

- Liveability index in public space





***James Nyagol**- Senior Climate Change officer- Kisumu county government, Kenya*

Urban upgrading of the riverside of the Auji creek in **Kisumu, Kenya**



AUJI CREEK CONCEPT (KISUMU CITY)



Urban Renewal & Regeneration

Auji Creek

Auji Creek is the main one of several wetland areas in the city. Auji Creek Park is envisioned as a People's Park is that created, owned and managed by the community for the environmental and social benefits of all people for present and future generations. The overall goal is to conserve and secure the Park as a key asset for Kisumu Metropolis and its peoples.

The wetland faces several challenges including;

- Clearing of wetlands and Swamps for settlement and Agriculture. This results in increased and more devastating flooding
- Cultivation up to river banks leading to bank and soil erosion
- Pollution from farms and industries as well as dumped solid waste
- Lack of clear tenure leading to encroachment

Several objectives and strategies are employed to create the envisioned People's Park;

- Creating a Park that conserves biodiversity, benefits local people and is a centre for culture and recreation
- Ensure biodiversity conservation and managed for the benefit of residents and visitors
- Develop and enhance key environmental services – especially with respect to mitigating flood waters
- Auji Creek Park as a key part of a network of open spaces linking the city with the Lake
- Adoption of a community-based approach to conservation which begins from education and training on the practices and importance to agreed to rights and responsibilities of use as in a management plan



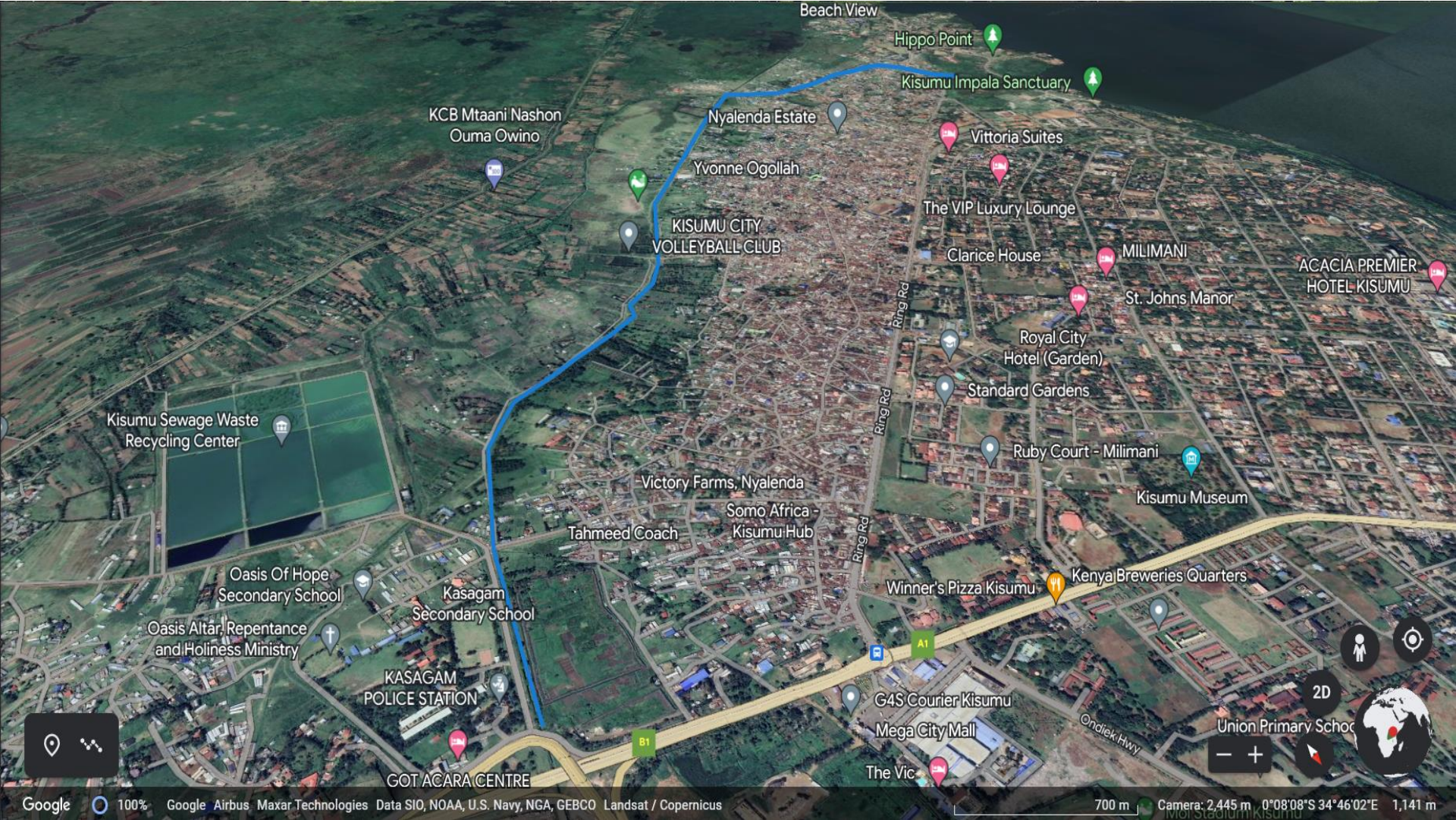
Low and Raised Boardwalks with nodes and contemplation stations.
Tianjin Qiaoyuan Wetland Park



Nature Trails through linear protection areas.
Sugarlands Valley Nature Trail, Great Smoky Mountains National Park



Network of bridges, pedestrian and cyclist paths.
Breda Municipality Netherlands Mountains National Park



Beach View

Hippo Point

Kisumu Impala Sanctuary

KCB Mtaani Nashon
Ouma Owino

Nyalenda Estate

Vittoria Suites

Yvonne Ogollah

The VIP Luxury Lounge

KISUMU CITY
VOLLEYBALL CLUB

Clarice House

MILIMANI

ACACIA PREMIER
HOTEL KISUMU

St. Johns Manor

Kisumu Sewage Waste
Recycling Center

Royal City
Hotel (Garden)

Standard Gardens

Ruby Court - Milimani

Kisumu Museum

Victory Farms, Nyalenda

Somo Africa -
Kisumu Hub

Tahmeed Coach

Winner's Pizza Kisumu

Kenya Breweries Quarters

Oasis Of Hope
Secondary School

Kasagam
Secondary School

Oasis Altar, Repentance
and Holiness Ministry

KASAGAM
POLICE STATION

G4S Courier Kisumu

Mega City Mall

Union Primary School

GOT ACARA CENTRE

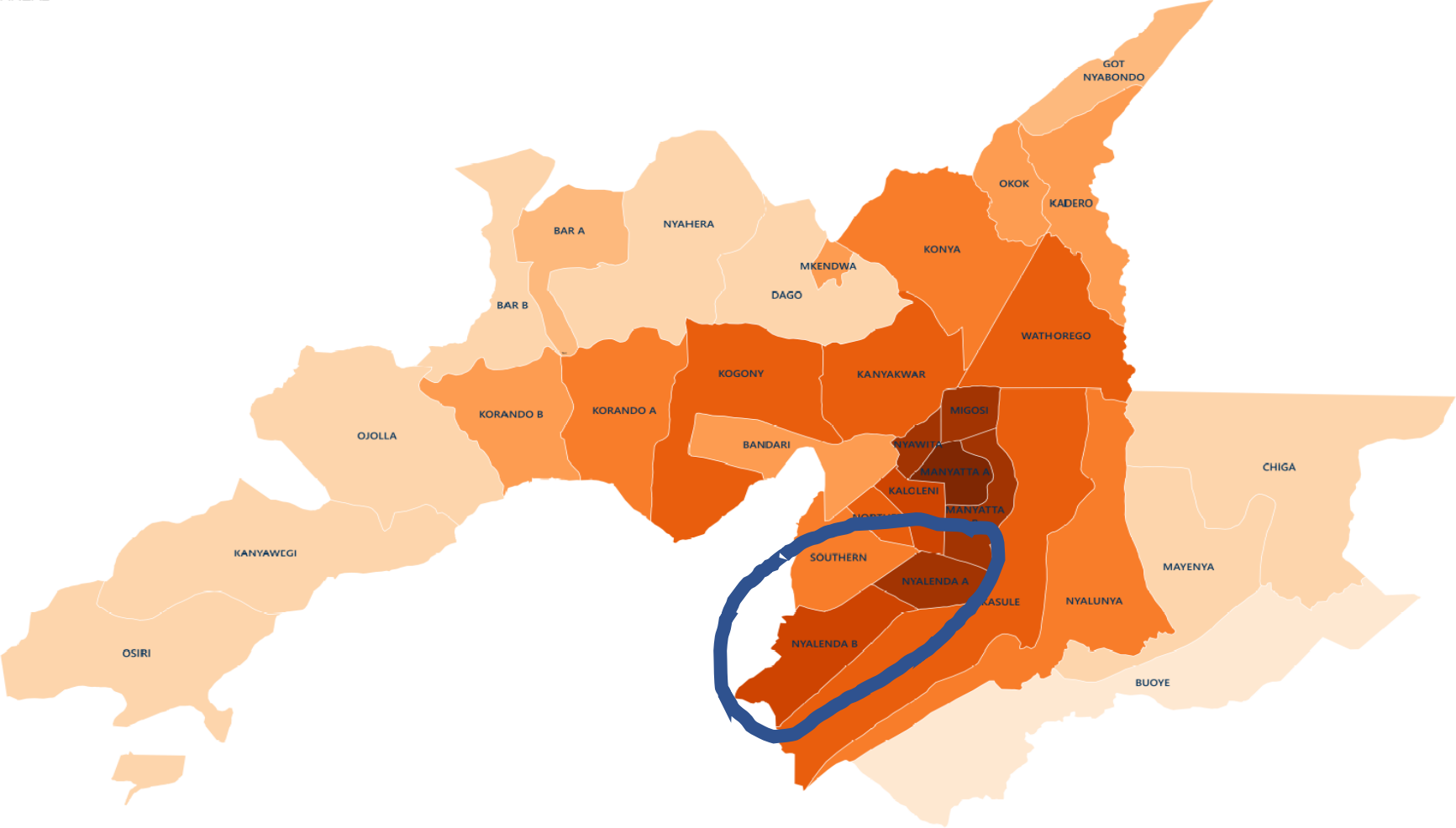
The Vic

Demography - Population Density 2019

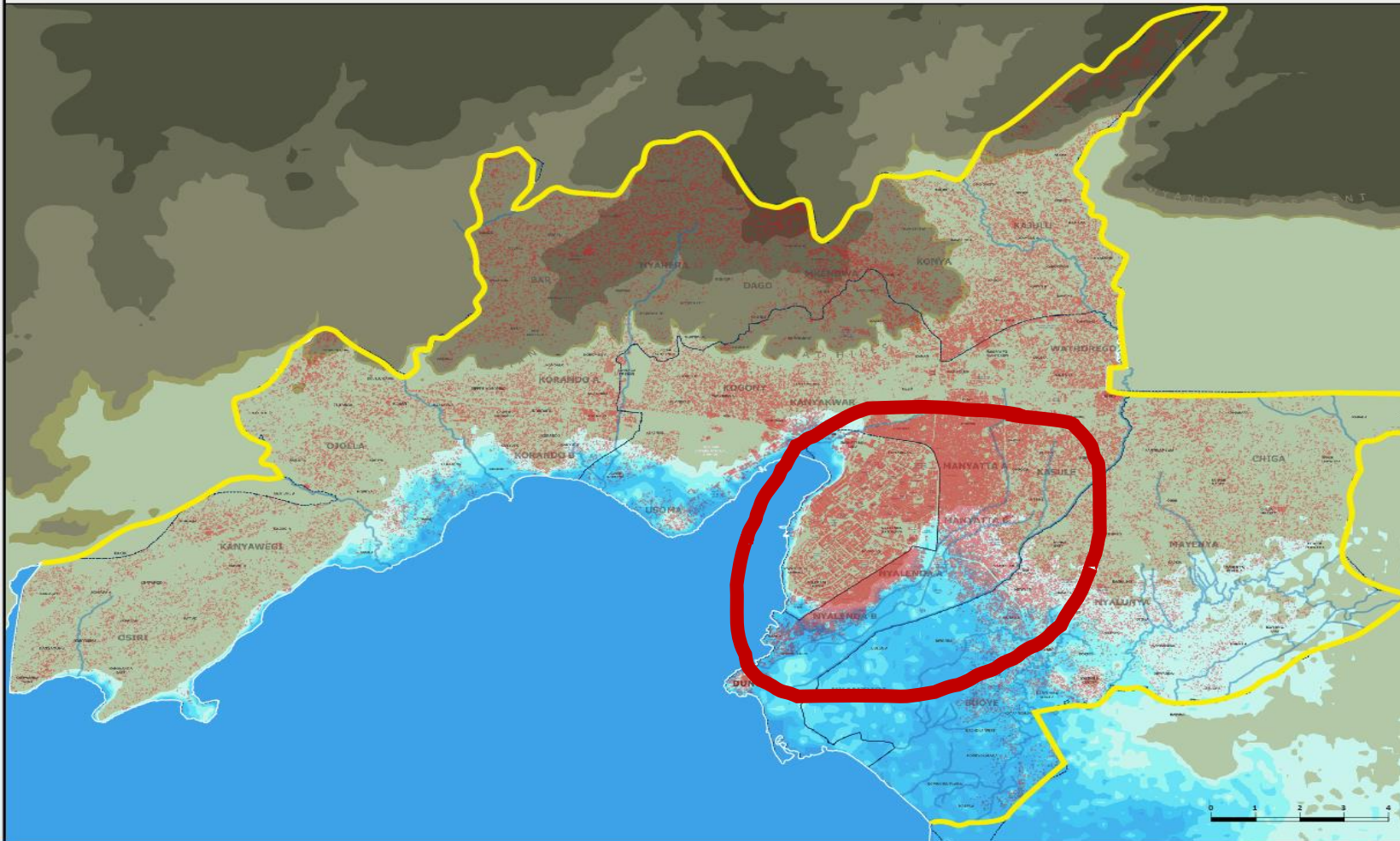
Kisumu Sublocations 2019

TOTAL_19 / AREA2




- ≤250.0
- <500.0
- ≤750.0
- ≤1000
- ≤1500
- ≤2000
- ≤5000
- ≤10000
- ≤20000
- >20000

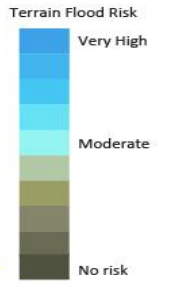


Terrain Flood risk



LEGEND

- Building 
- Lake 
- River 



CITY OF KISUMU

PREPARATION OF
LOCAL PHYSICAL
AND LAND USE
DEVELOPMENT PLANS

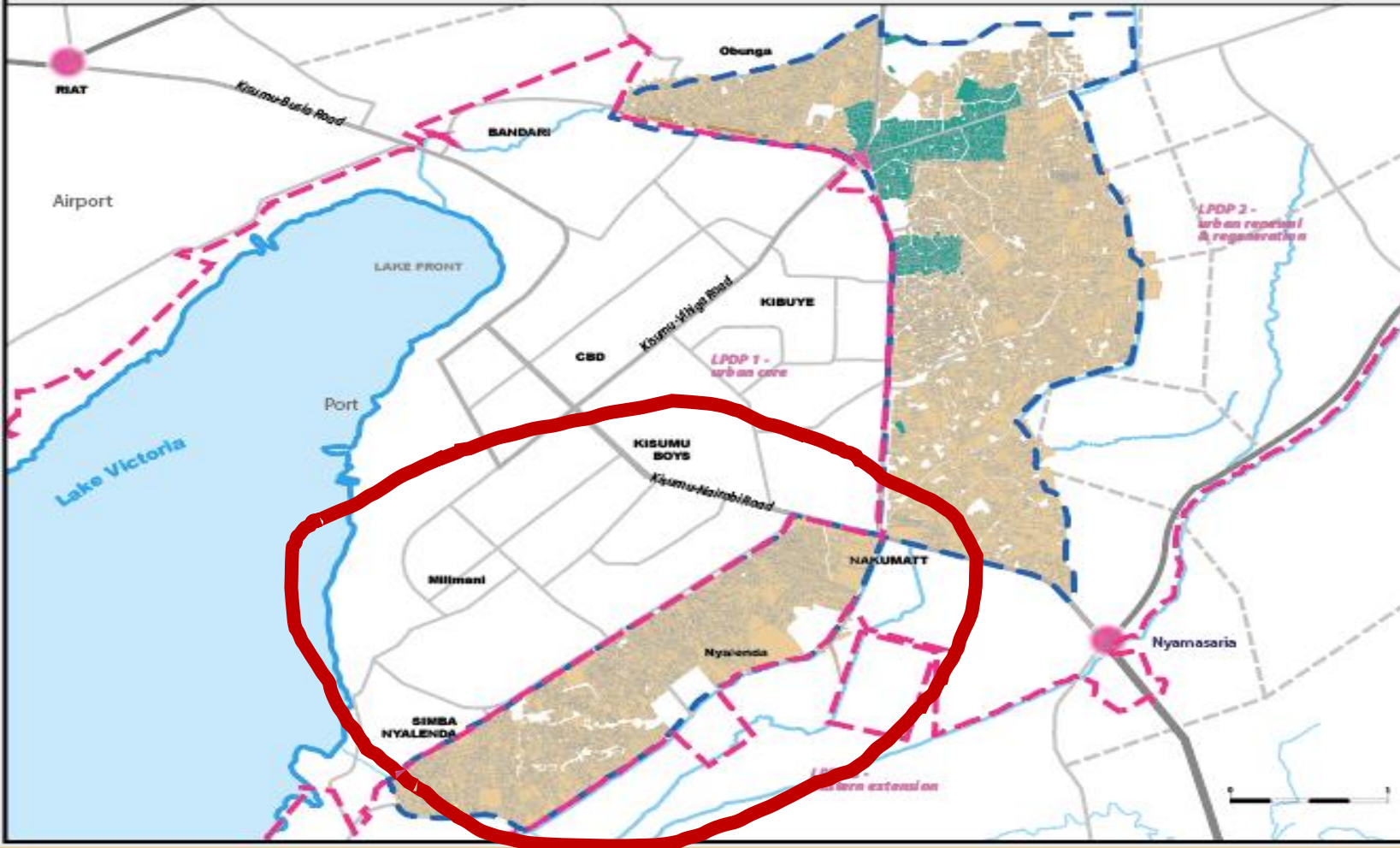
June 2020



AFD
CONSULTANTS

groupe huit
PLANNING

Informal settlement - Existing land tenure survey



LEGEND

- Freehold
- Leasehold
- Not known
- LPDP boundary
- Stumbelt boundary
- Growth nodes



CITY OF KISUMU

PREPARATION OF
LOCAL PHYSICAL
AND LAND USE
DEVELOPMENT PLANS

JUNE 2020



CONSORTIUM

new contract

PLANNING



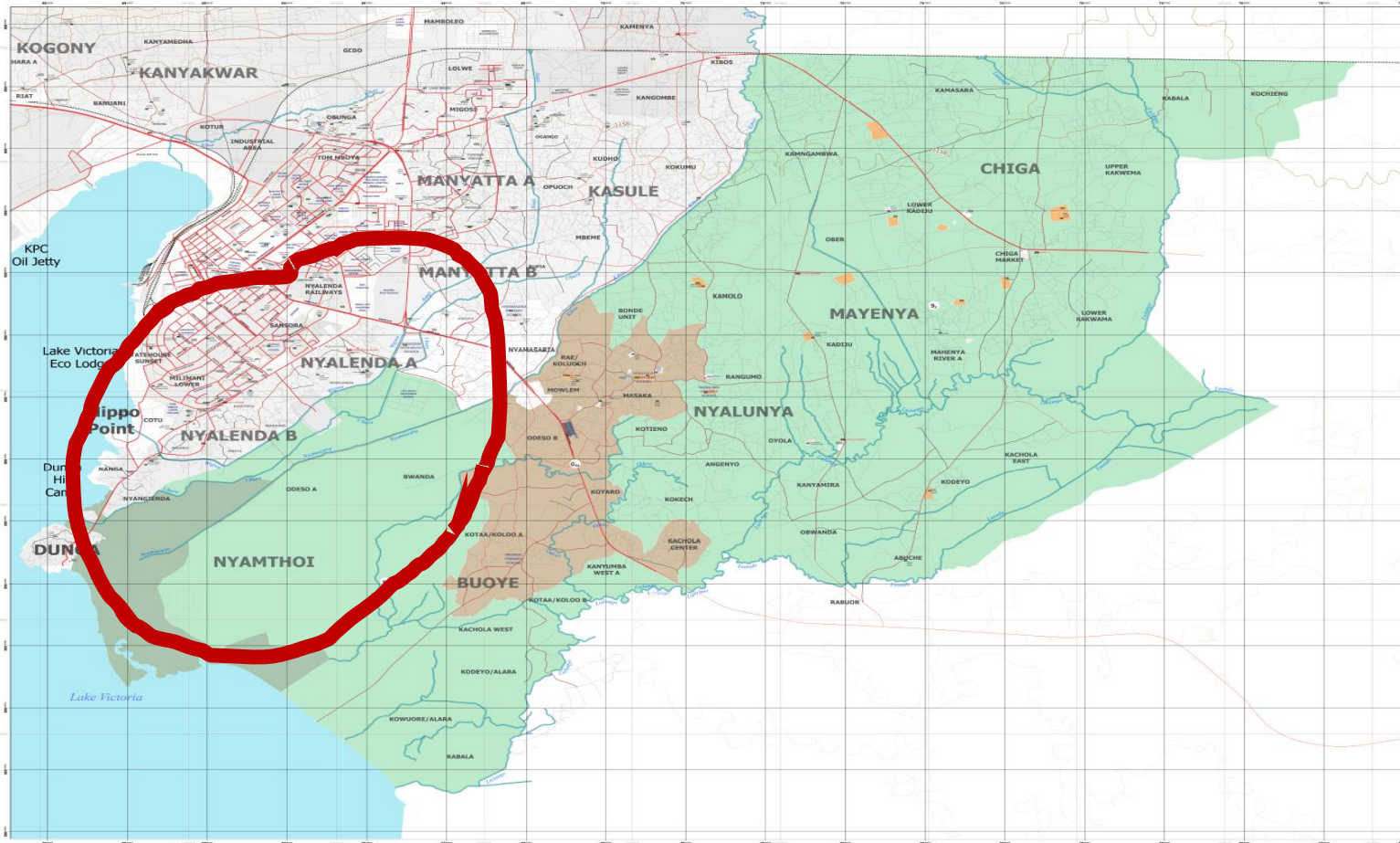
CITY OF KISUMU

LOCAL PHYSICAL DEVELOPMENT PLAN (LPDP)

LAND USE & ZONING PLAN

SCALE: 1:20,000
JUNE 2020

EASTERN EXTENSION LPDP 3



- LAND USE CLASSIFICATION LEGEND**
- AGRICULTURAL
 - COMMERCIAL
 - EDUCATIONAL
 - PUBLIC PURPOSE
 - INDUSTRIAL
 - HIGH DENSITY RESIDENTIAL
 - LOW DENSITY RESIDENTIAL
 - MEDIUM DENSITY RESIDENTIAL
 - MIXED USE DEVELOPMENT
 - PUBLIC UTILITY
 - RECREATIONAL
 - RESIDENTIAL
 - TRANSPORTATION
- Legend**
- SOCIAL FACILITIES**
- Markets & Market Centers
 - Health_Facility_21st
 - Primary & ECDE School
 - Secondary School
 - Social Halls
- TERRAIN**
- Contours 5m Interval
 - Intermediate Contour
 - Index Contour
 - River
- ROADS CLASSIFICATION**
- Carriage Way Surface Type
 - Earth
 - Gravel
 - Paved



Approvals

XXXXXXXX

XXXXXXXXXX


XXXXXXXXXX

Clients




County Government of Kisumu City of Kisumu

Financed By



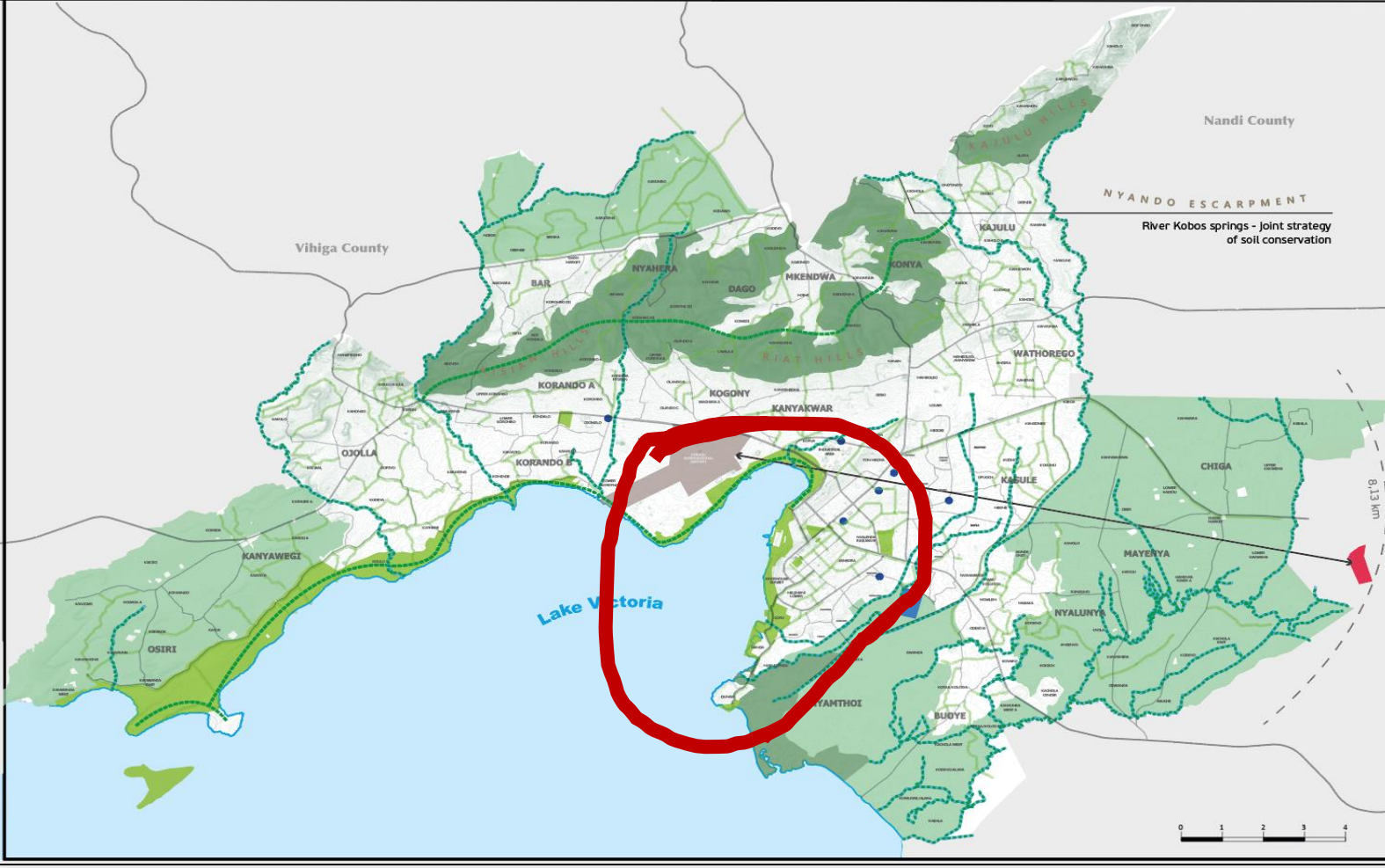
French Development Agency

Consultants

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Environment Strategy



LEGEND

LAND USE CLASSIFICATION

- Agricultural
- Conservational
- Recreational
- Public Utility
- Public Purpose

ENVIRONMENT

- Proposed Land Fill
- Waste recovery sites

GREEN & BLUE NETWORK

- Hiking path
- Pedestrian river path
- New roads equipped with trees, cycle lanes and sidewalk
- Airport

NORTH



CITY OF KISUMU

PREPARATION OF
LOCAL PHYSICAL
AND LAND USE
DEVELOPMENT PLANS

JUNE 2020

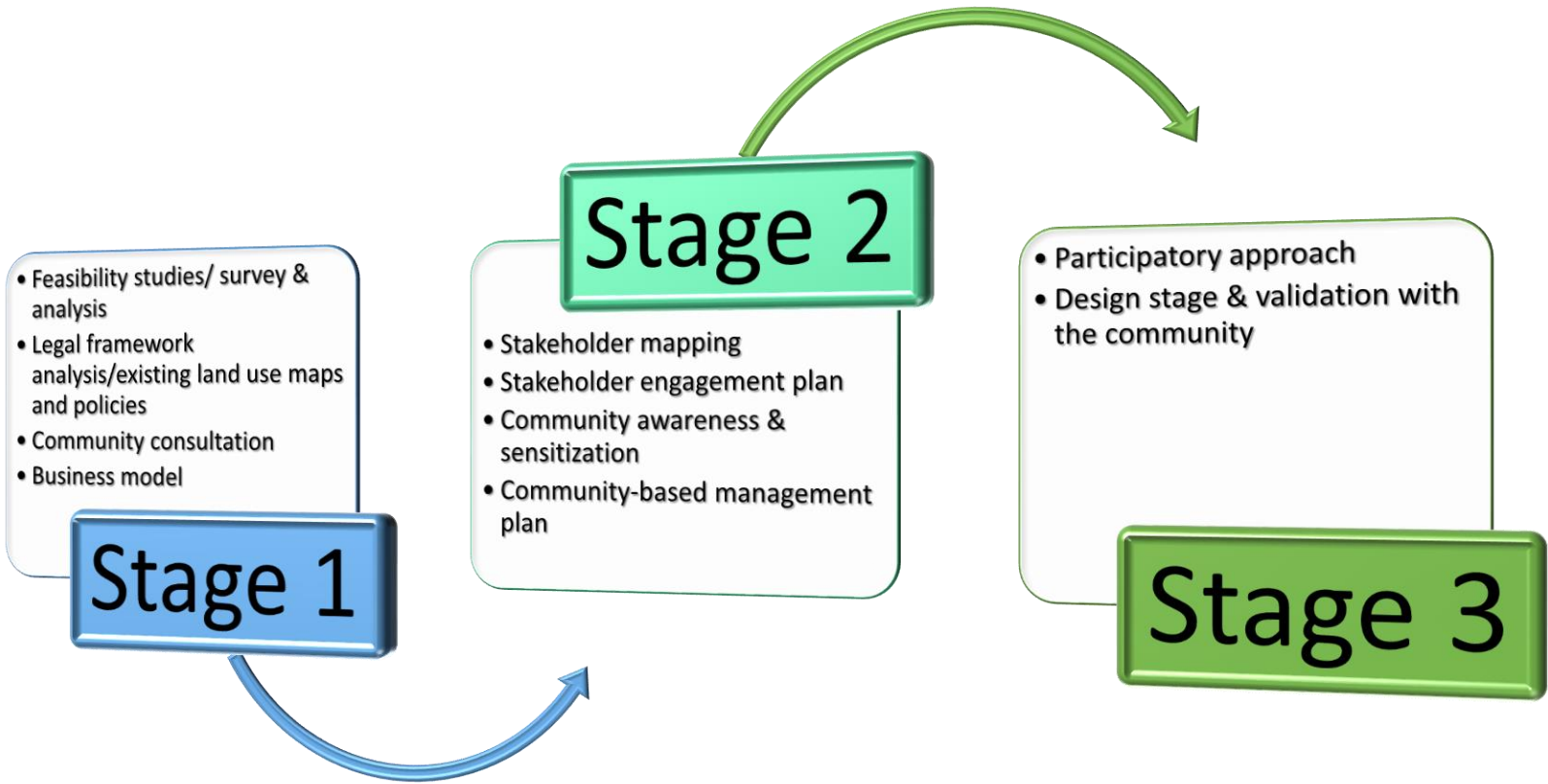


CONSULTANTS **groupehult**

PLANNING



Auji Creek Process Flow Diagram



Feedback from stakeholders (United Destiny Shapers-UDS)

- Need for demarcation of the Auji river to limit encroachment
- Need for stakeholder engagement/multi-stakeholder engagement
- Need for community awareness
- Need to incorporate farming livelihood with the conservation efforts
- The CBO has already adopted a section of the river for the conservation efforts (now used for recreational & fishing area)



Part of the pilot project in Kisumu Kenya.



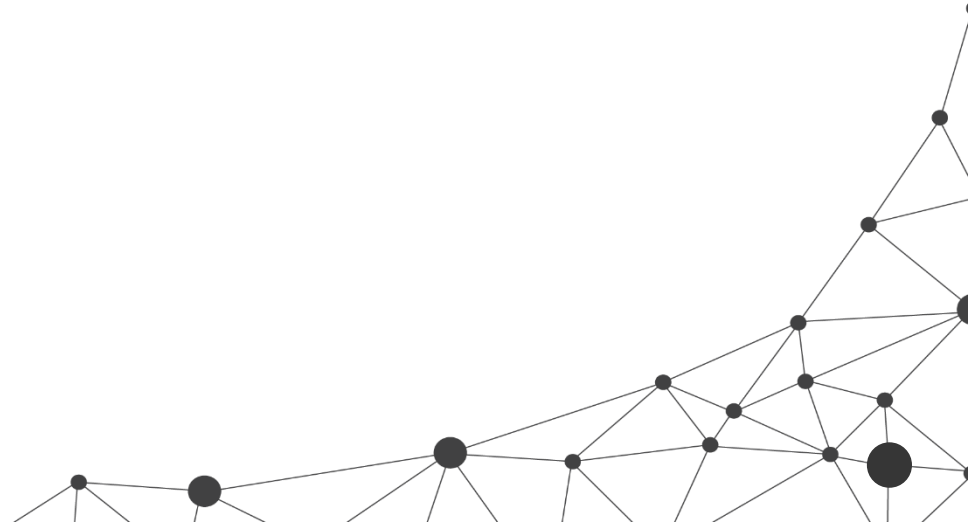
Current state of Auji River



Thank you for listening

Giorgi Maisuradze - *Head of the International relations and projects department, Tbilisi City Hall- Georgia*

Superblocks program in Tbilisi- Georgia





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MINDIA GABADZE



თბილისის მერიის
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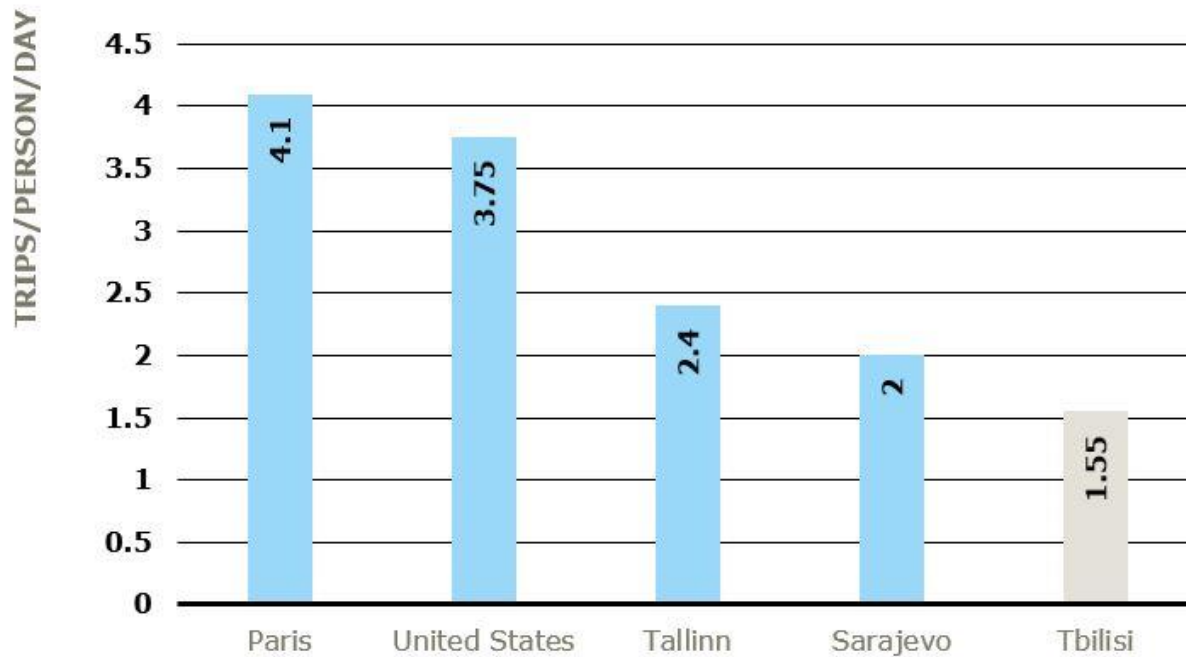
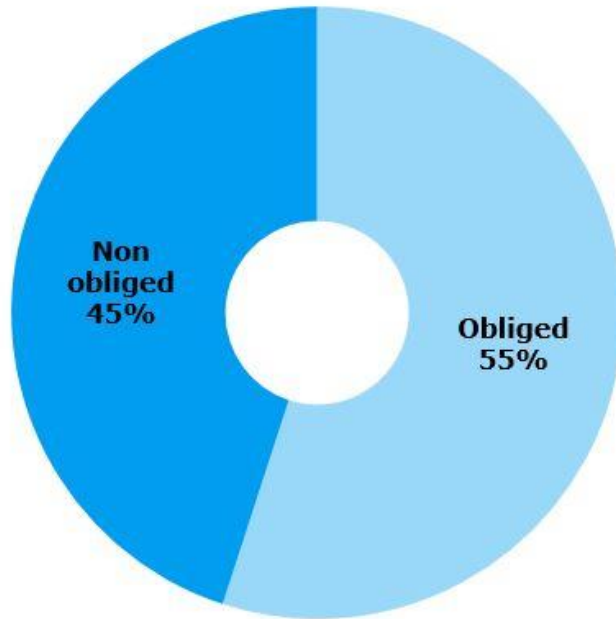


Figure 1 - Mobility rate in different cities

Source: Systra, 2016



TBILISI



PARIS

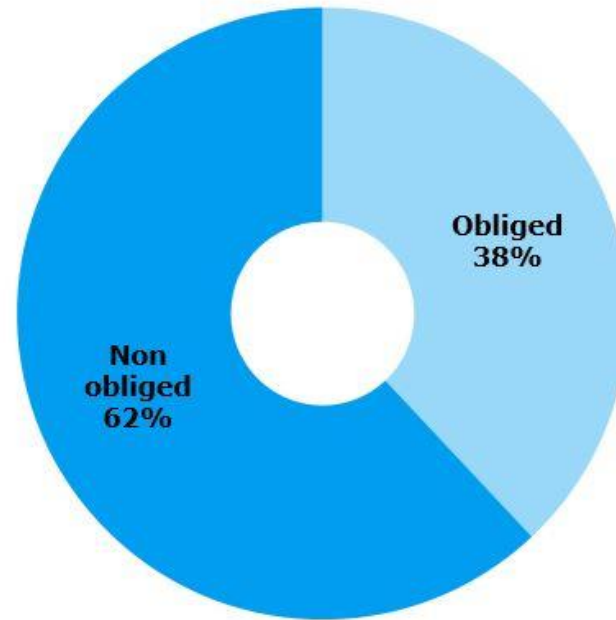


Figure 4 - Share of non-obliged trips, comparison between Paris and Tbilisi

Source: Systra



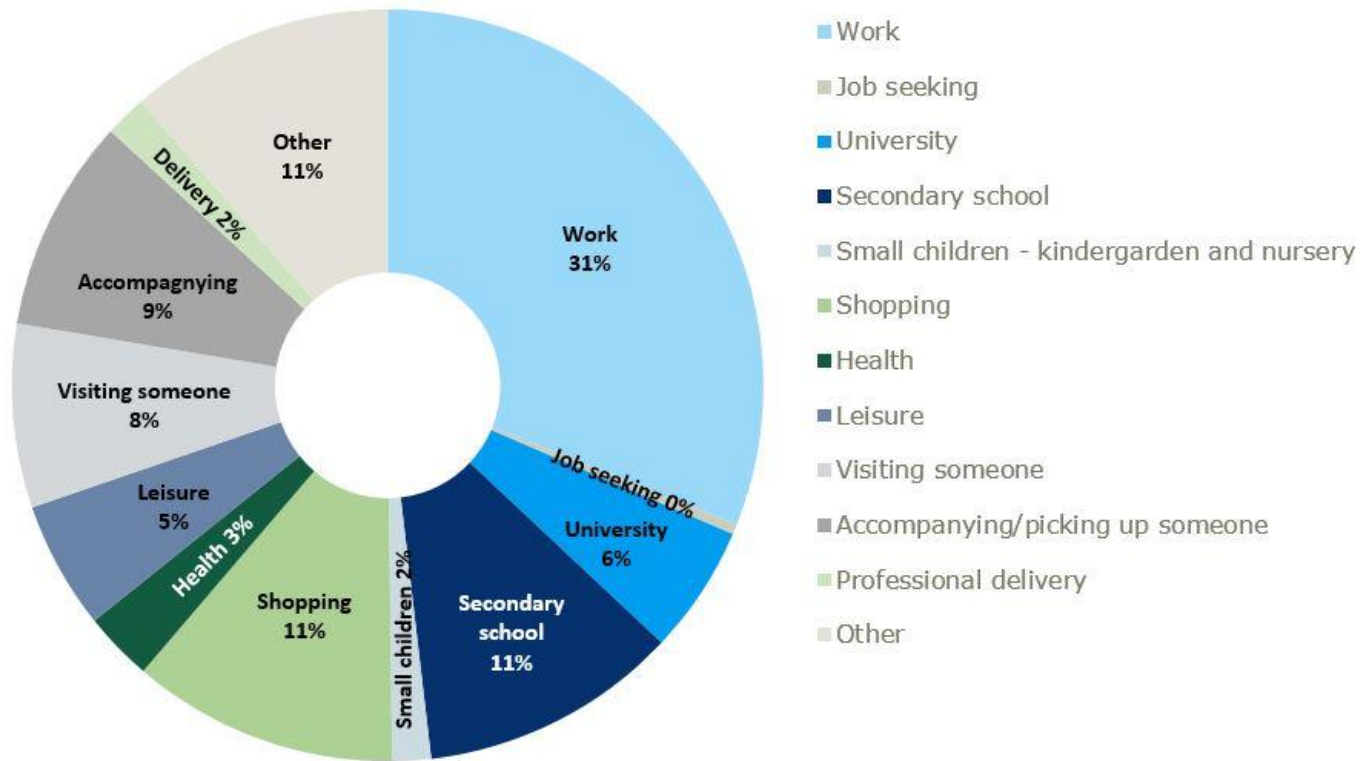


Figure 5 - Detailed trip motives, 2016 HHS

Source: Systra



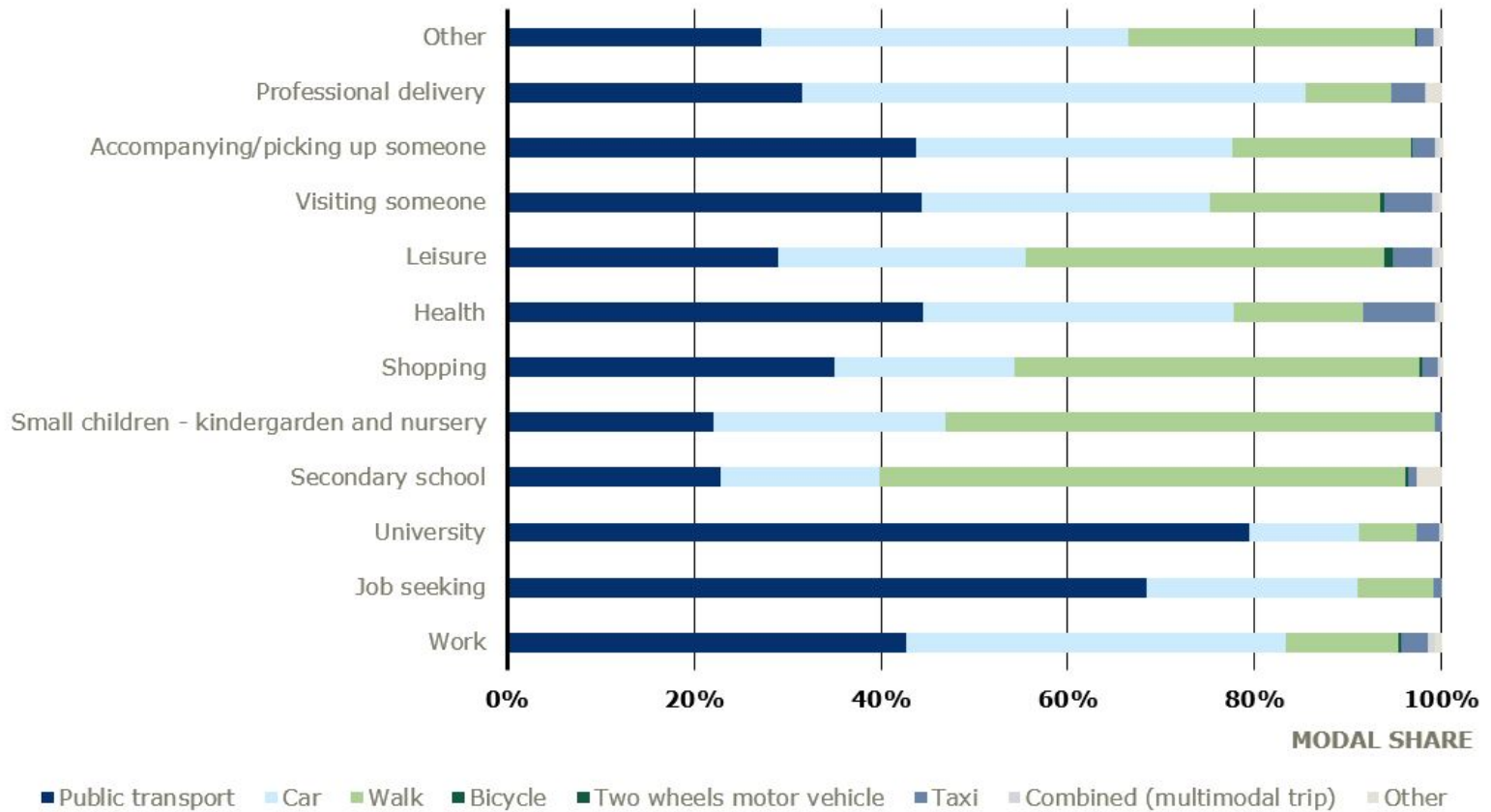


Figure 6 - Mode used for different trip purposes

Source: Systra



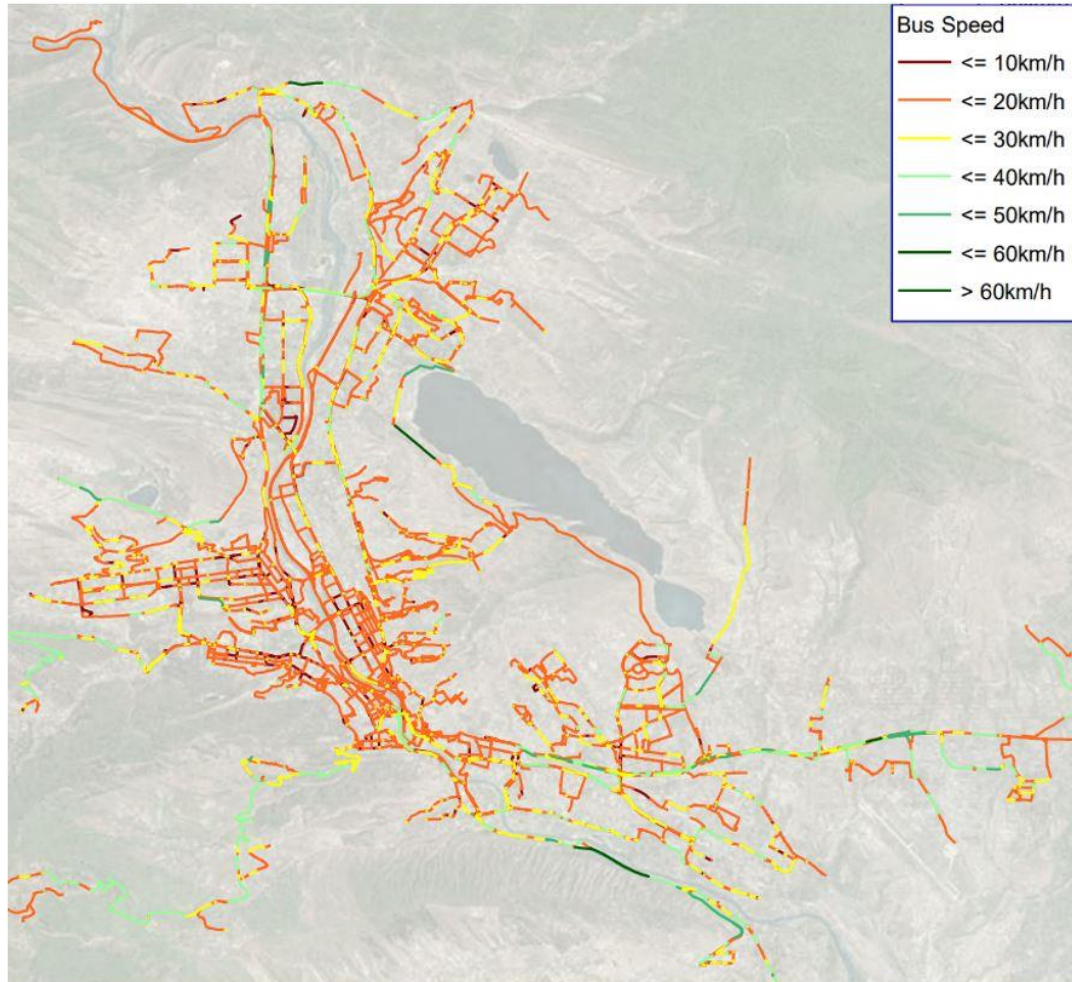


Figure 47 - Bus network, existing peak hour bus speeds (morning peak – 8h30-9h30), Model Base year 2022



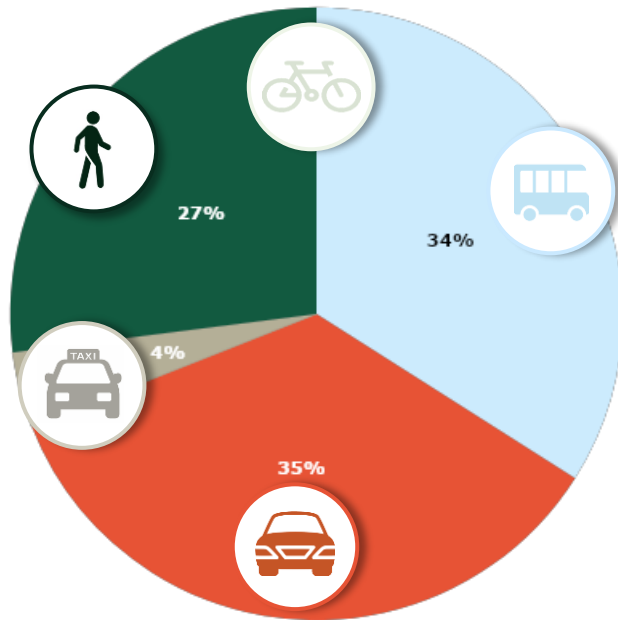
Tbilisi Strategies and Targets



FROM A CAR-ORIENTED PARADIGM TO A SUSTAINABLE MOBILITY PARADIGM

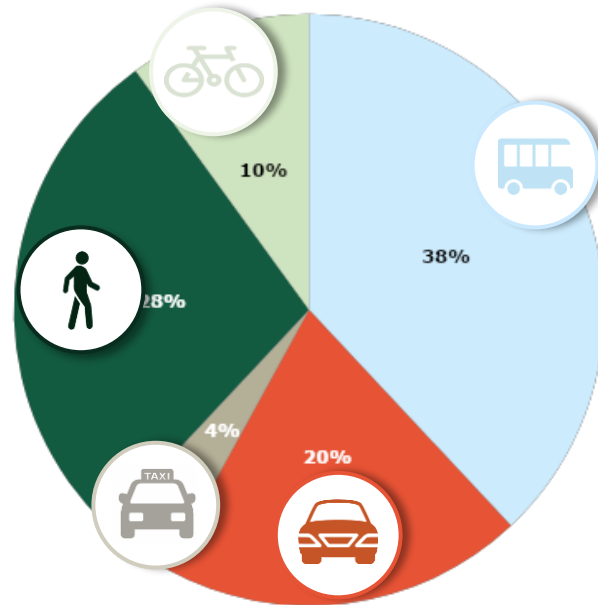
2022 (existing situation)

Public Transport Private Transport Taxi Walk Bike



2042 (targets)

Public Transport Private Transport Taxi Walk Bike



Progressive modal shift in time



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It is expected that 1,5% off all trips will be done by bicycle in 2027 and 0,5% of all trips will be done by a combination of cycling and public transport.

Mode share target over time

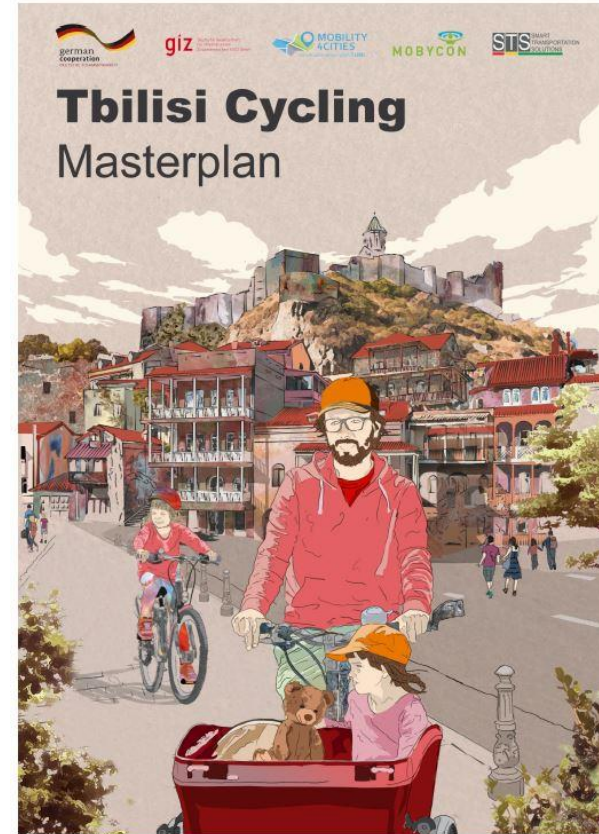
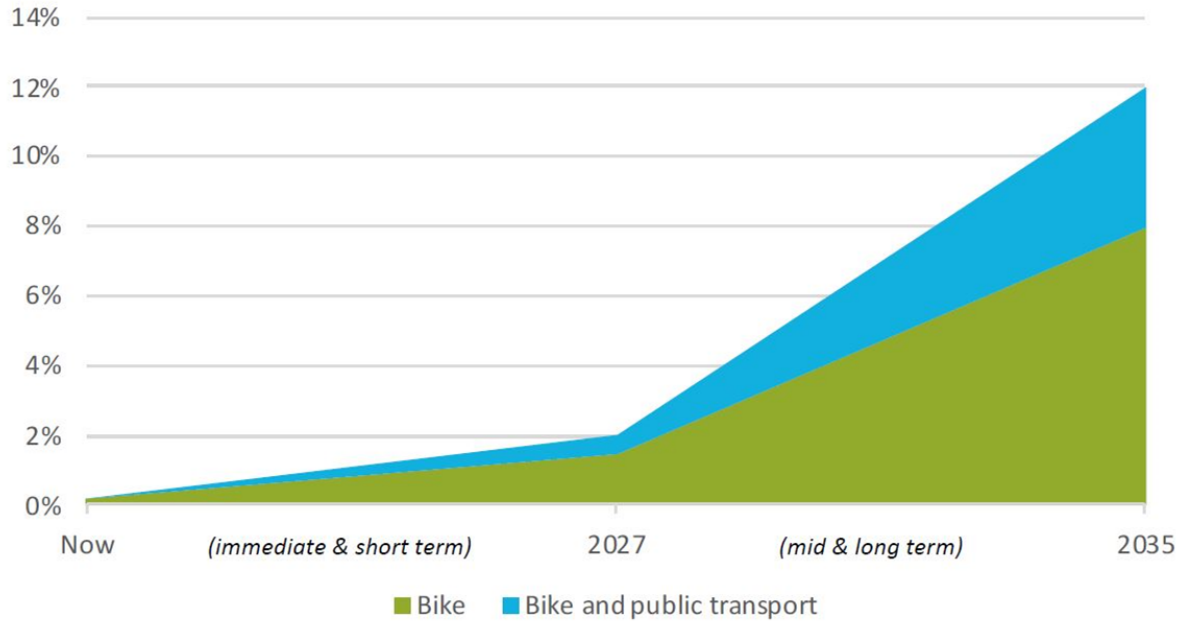


Illustration by Ana Dolidze (for illustrative purposes only)



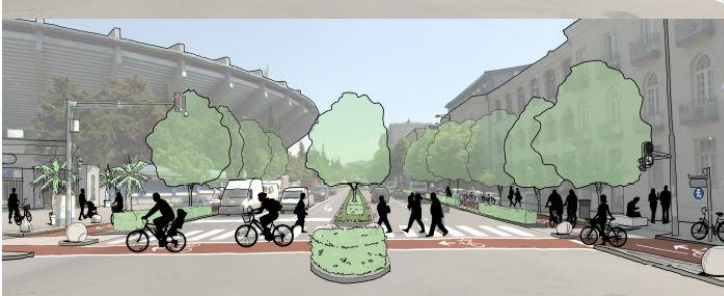
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<i>City or Region</i>	<i>Country</i>	<i>Current Modal Share</i>	<i>Target Modal Share</i>	<i>Cycling Increase</i>
<i>Baden-Württemberg</i>	Germany	10% in 2015	20% by 2025	x 2
<i>Batumi</i> ¹⁶	Georgia	0,5% in 2015	8% by 2030	x 16
<i>Berlin</i>	Germany	13% in 2014	20% by 2025	x 1,5
<i>Bratislava</i>	Slovakia	2% in 2012	10% by 2020	x 5
<i>Budapest</i>	Hungary	2% in 2010	10% in 2020	x 5
<i>Calgary</i>	Canada	0,8% in 2001	2% in 2020	x 2,5
<i>Córdoba</i>	Argentina	1,6% in 2011	15% by 2020	x 9,2
<i>Dublin</i> ¹⁷	Ireland	6% in 2011	13% by 2028	x 2
<i>Edinburgh</i>	United Kingdom	2% in 2010	10% by 2020	x 5
<i>Granada</i>	Spain	0,4% in 2011	15% by 2020	x 37,5
<i>Groningen</i>	Netherlands	47% in 2003	65% by 2020	x 1,3
<i>Lima</i>	Peru	0,03% in 2015	2% by 2018	x 66,7
<i>Ljubljana</i>	Slovenia	10% in 2010	15% by 2020	x 1,5
<i>Madrid</i>	Spain	1% in 2012	3% by 2016	x 3
<i>Medellín</i>	Colombia	0,5% in 2015	10% by 2030	x 20
<i>Paris</i>	France	5% in 2015	15% by 2020	x 3
<i>Prague</i>	Czech Republic	1% in 2009	7% by 2020	x 7
<i>Rio De Janeiro</i>	Brazil	3% in 2015	6% by 2025	x 2
<i>Rome</i>	Italy	0,6% by 2012	4% by 2019	x 6,7
<i>Tbilisi</i>	Georgia	0,15% in 2016 ¹⁸	8% by 2035	x 53.3
<i>Vancouver</i>	Canada	3,8% in 2013	12% by 2040	x 3,2
<i>Vienna</i>	Austria	7% in 2014	12% by 2020	x 1,7
<i>Zurich</i>	Switzerland	7% in 2011	14% by 2025	x 2

This Chart demonstrates how the long-term ambition weighs against targets of other cities across the globe. The chart offers a snapshot of the timelines that each city set as a goal and demonstrates that those who are in the early stages of introducing cycling as a transport option must often set high ambitions to realize change.



Giorgi Tsabadze St and Davit Agmashenebeli St.



Kote Marjanishvili St and Giorgi Chubinashvili St.



Evolution of cycling infrastructure over time looking east at the intersection of Giorgi Tsabadze St and Davit Agmashenebeli St. (top) Present conditions, (middle) temporary cycle infrastructure, and (bottom) future permanent cycling infrastructure.

Evolution of cycling infrastructure over time looking east at the intersection of Kote Marjanishvili St and Giorgi Chubinashvili St. (top) Present conditions, (middle) temporary cycle infrastructure, and (bottom) future permanent cycling infrastructure.



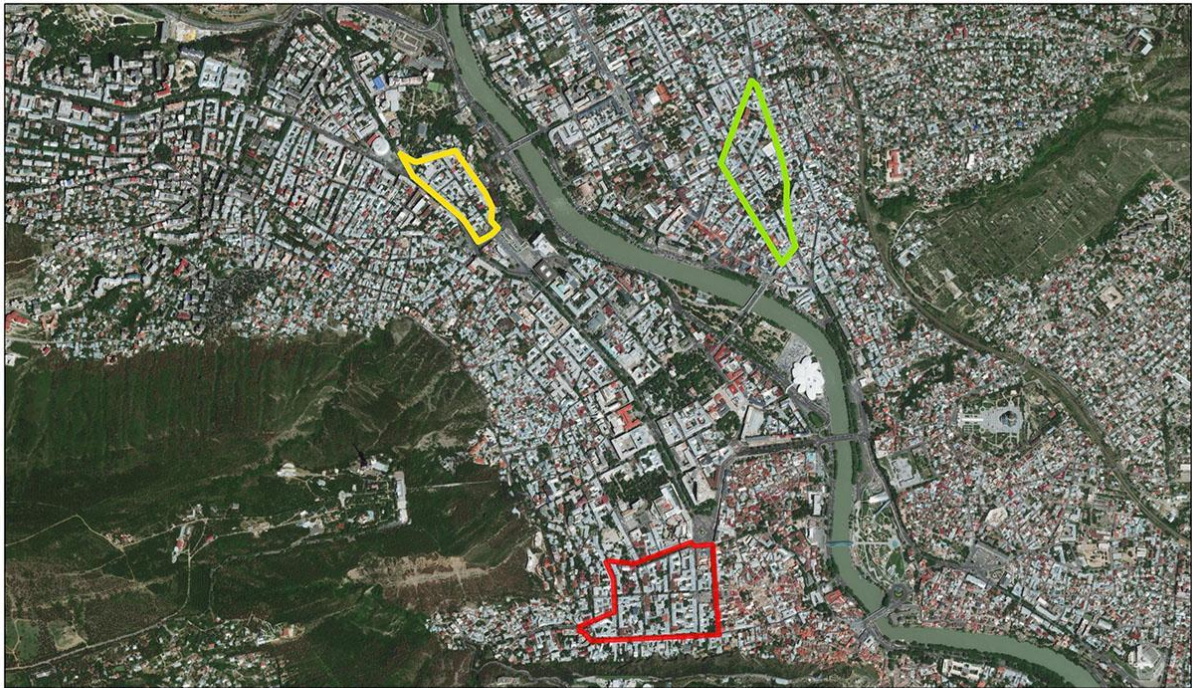


ევროპის მობილობის კვირეული

16-22 სექტემბერი 2022



თბილისის მერია
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Tbilisi City Hall | Transport and Urban Development Agency

- ▭ Sololaki area
- ▭ Giorgi Akhvlediani and Leo Kiacheli streets area
- ▭ London Park area

Scale: 1:12,000

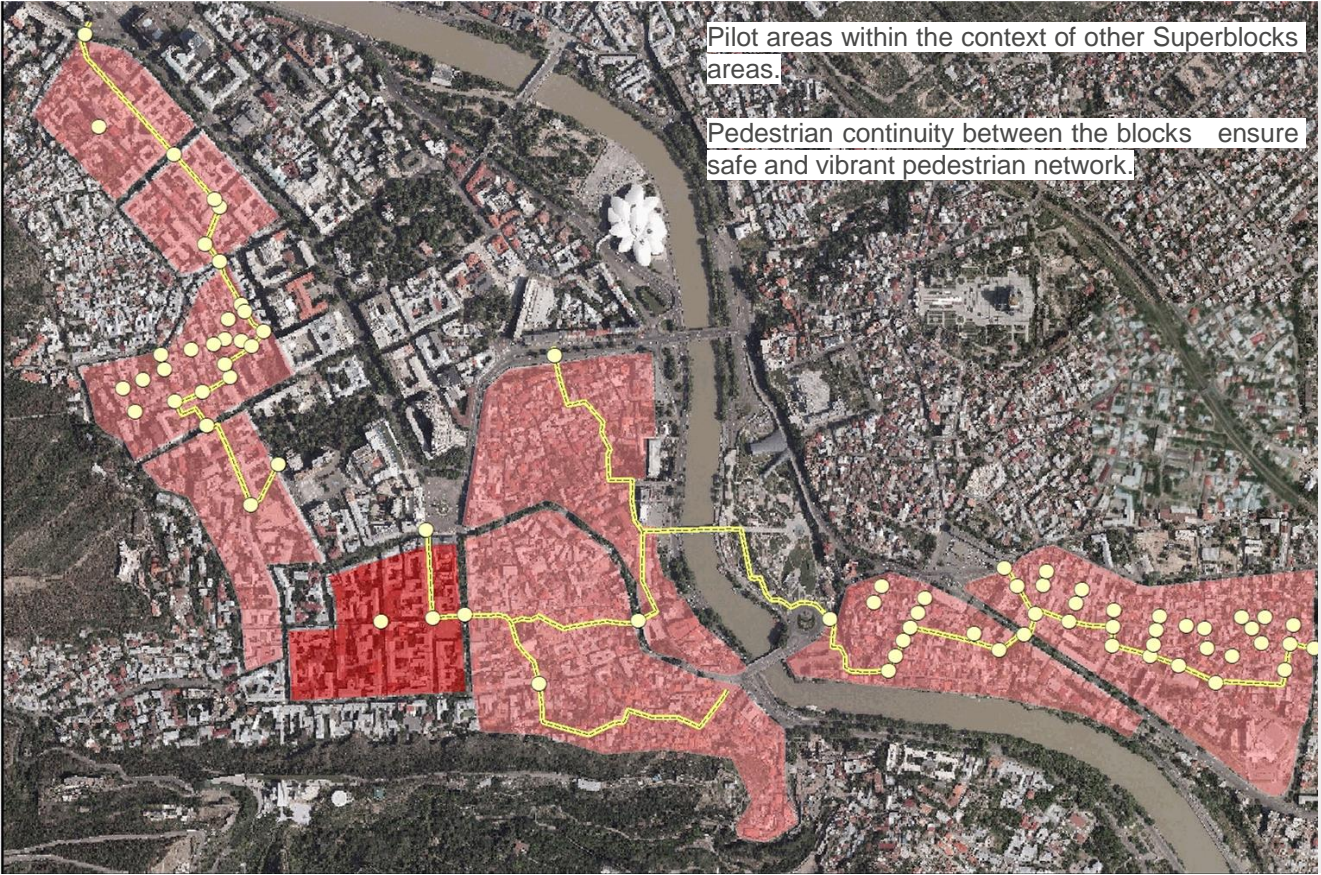
Coordinate System: WGS 1984 UTM Zone 38N
EPSG: 32638

ADB Supports the Feasibility and Concept design of the pilot 3 area within the City.

Consultant is expected to start works in Summer 2022



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Pilot areas within the context of other Superblocks areas.

Pedestrian continuity between the blocks ensure safe and vibrant pedestrian network.



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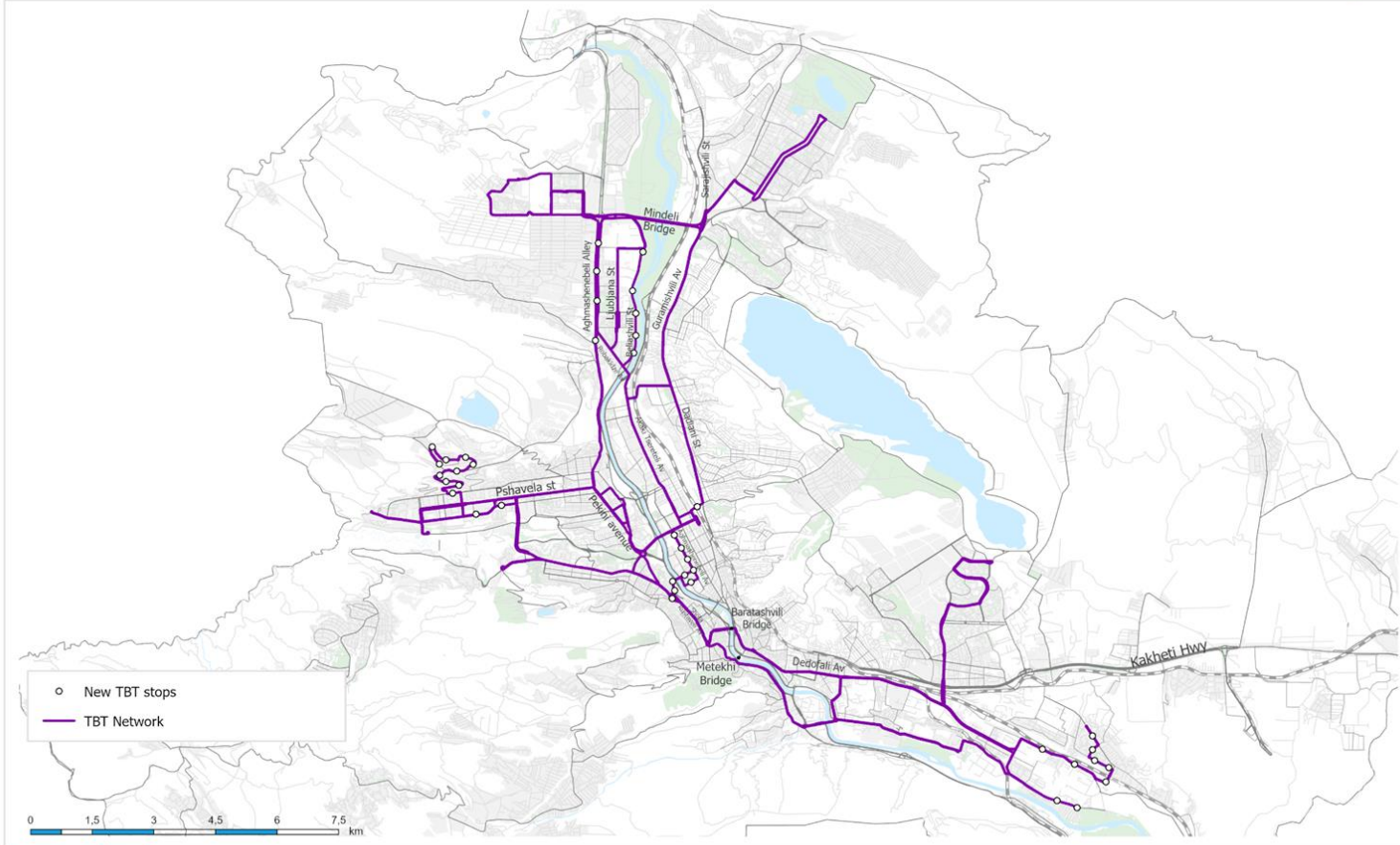


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Actions



TBT network - Using Kote Afkhazi street as a TBT corridor



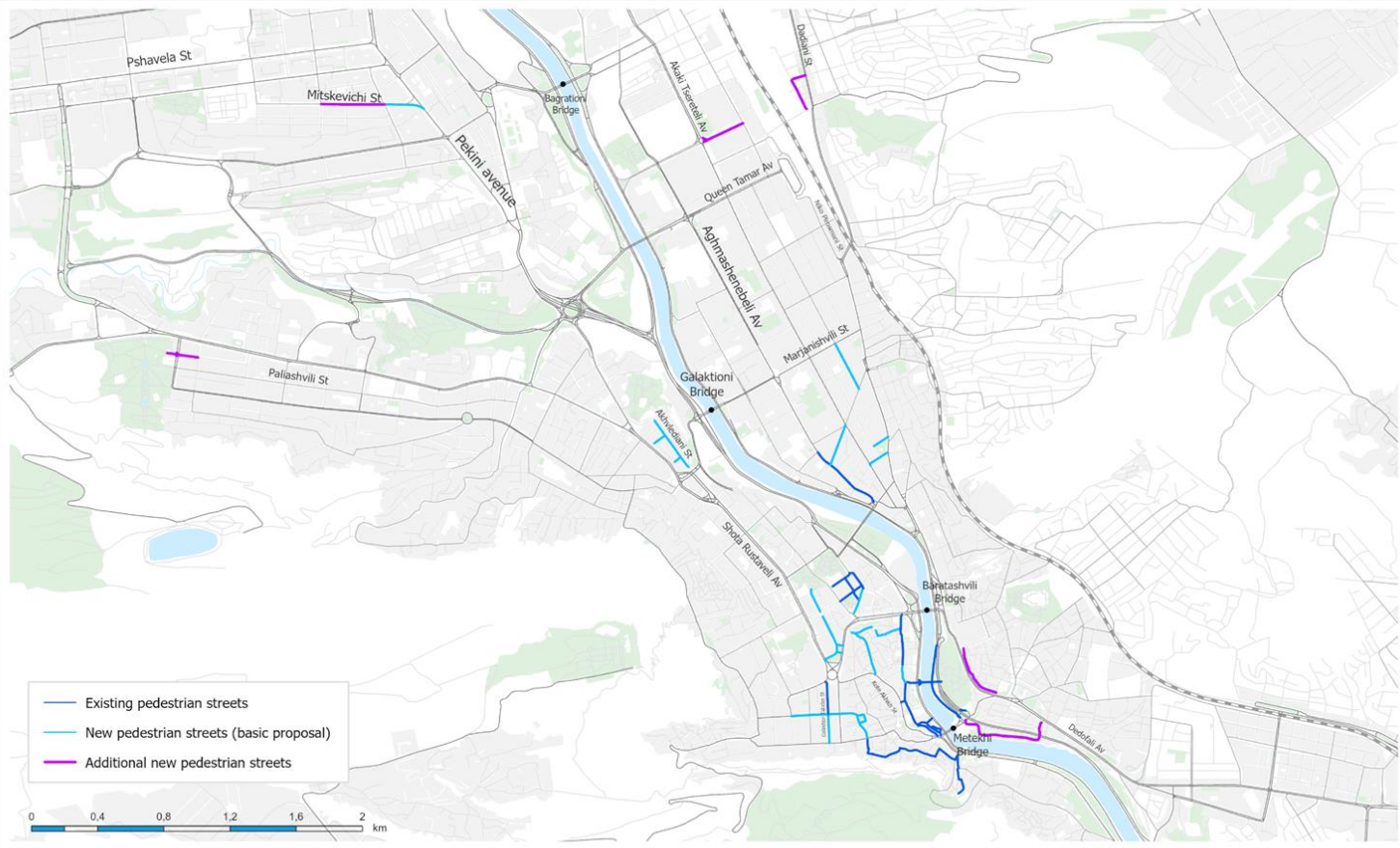


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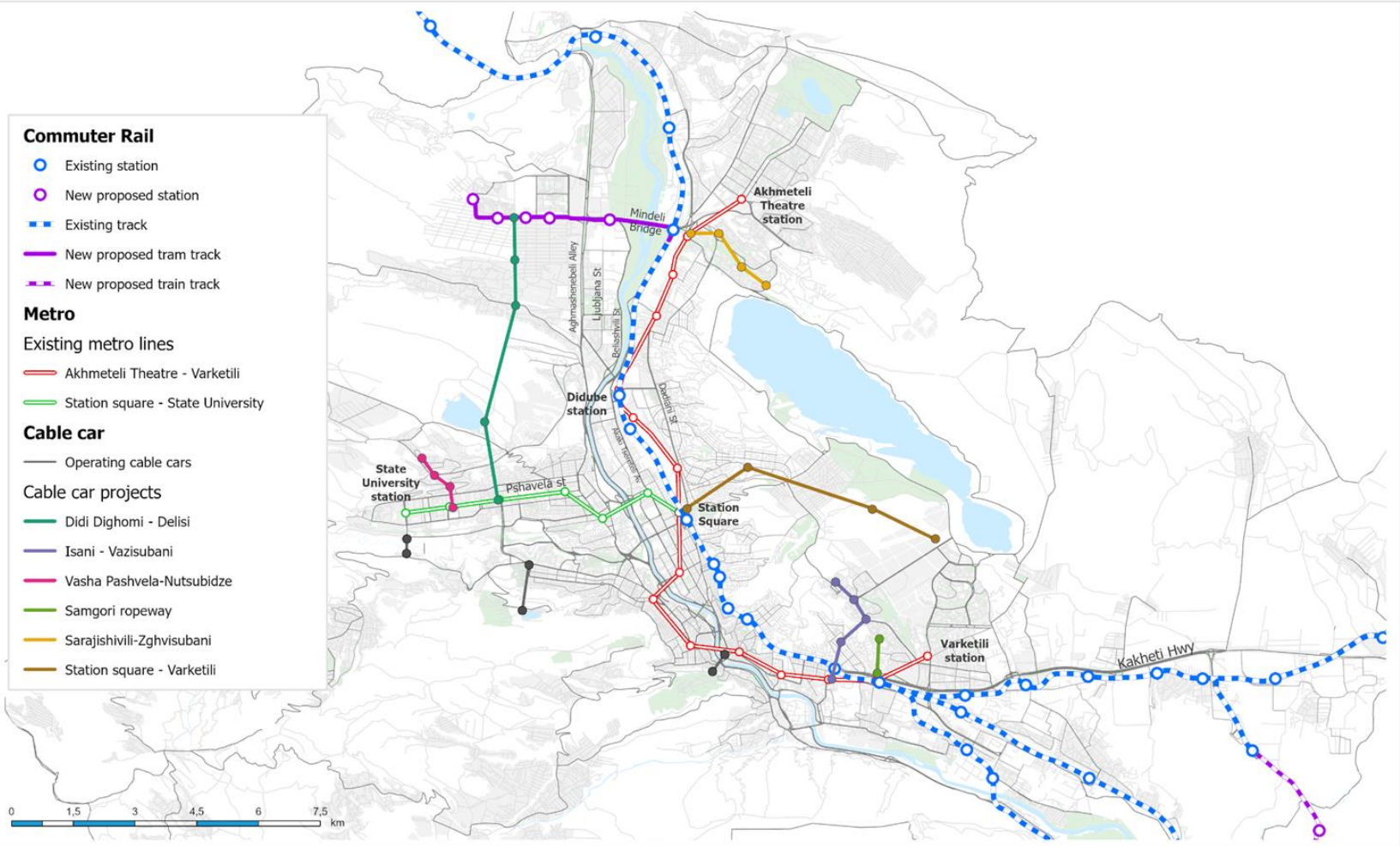


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Pedestrian streets - Retained scenario



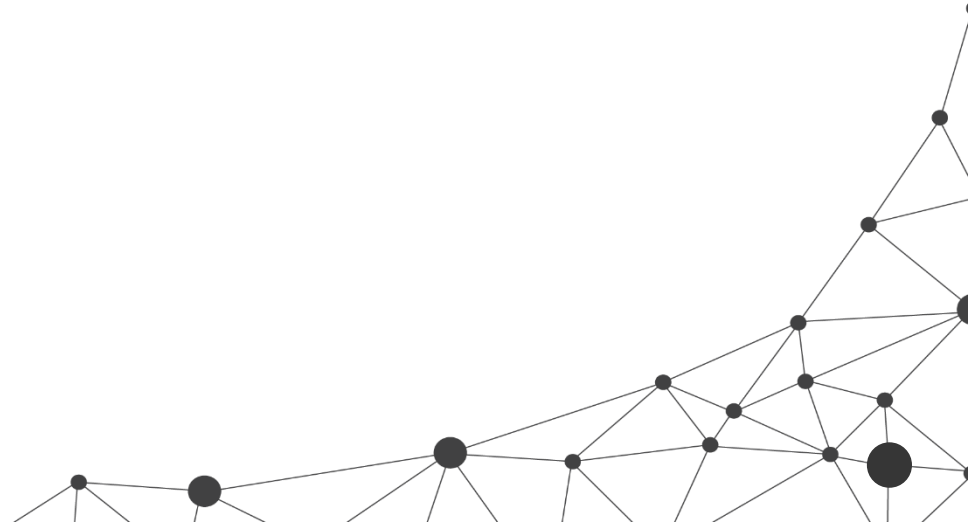
- Commuter Rail**
- Existing station
 - New proposed station
 - - - Existing track
 - - - New proposed tram track
 - - - New proposed train track
- Metro**
- Existing metro lines
- - - Akhmeteli Theatre - Varketili
 - - - Station square - State University
- Cable car**
- Operating cable cars
- - -
- Cable car projects
- - - Didi Dighomi - Delisi
 - - - Isani - Vazisubani
 - - - Vasha Pashvela-Nutsubidze
 - - - Samgori ropeway
 - - - Sarajshivili-Zghvisubani
 - - - Station square - Varketili



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Haya Al-Agha- director of investment and economic unit, Khan
Younis municipality, Palestine

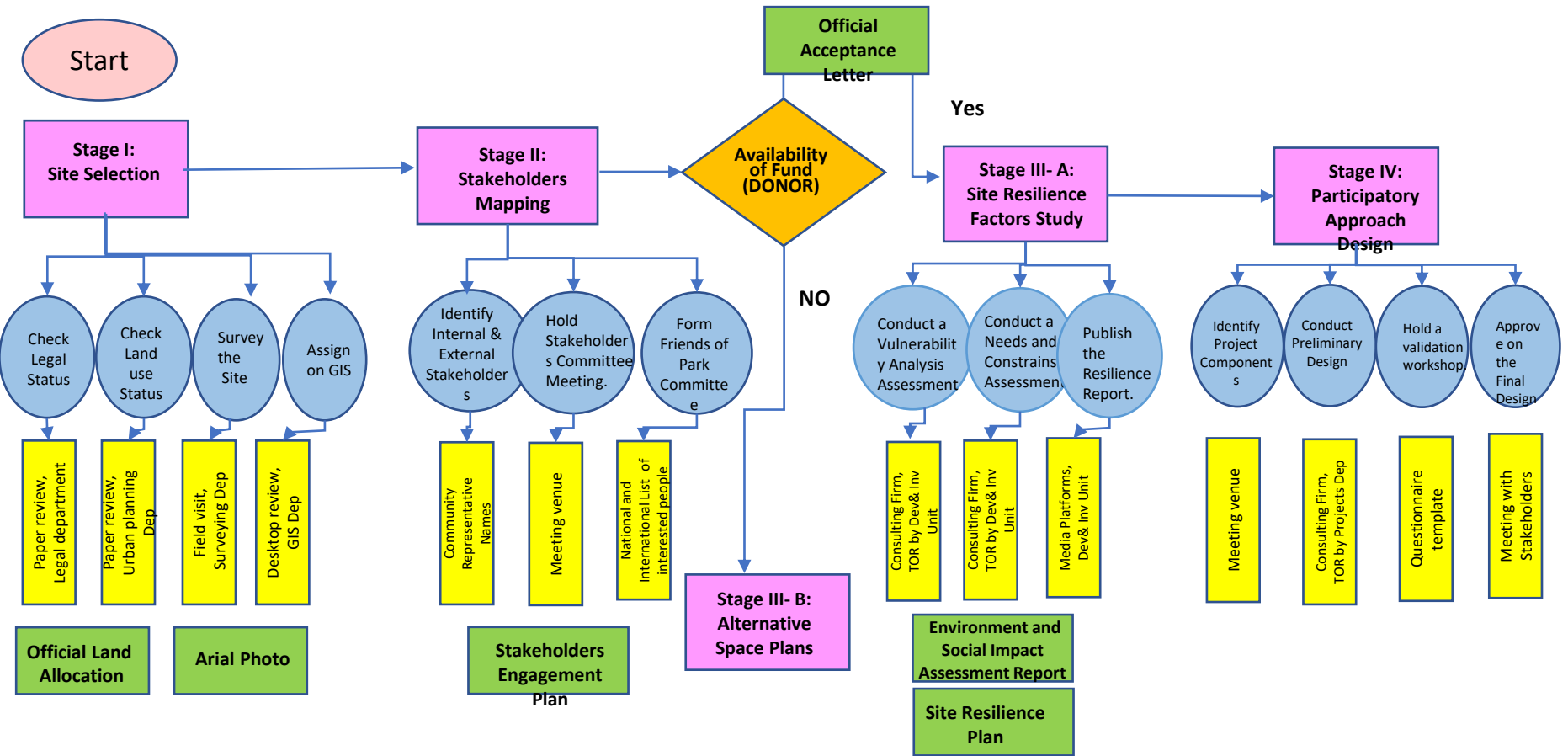
Regional park in Khan Younis-Palestine



Process Flow Diagram

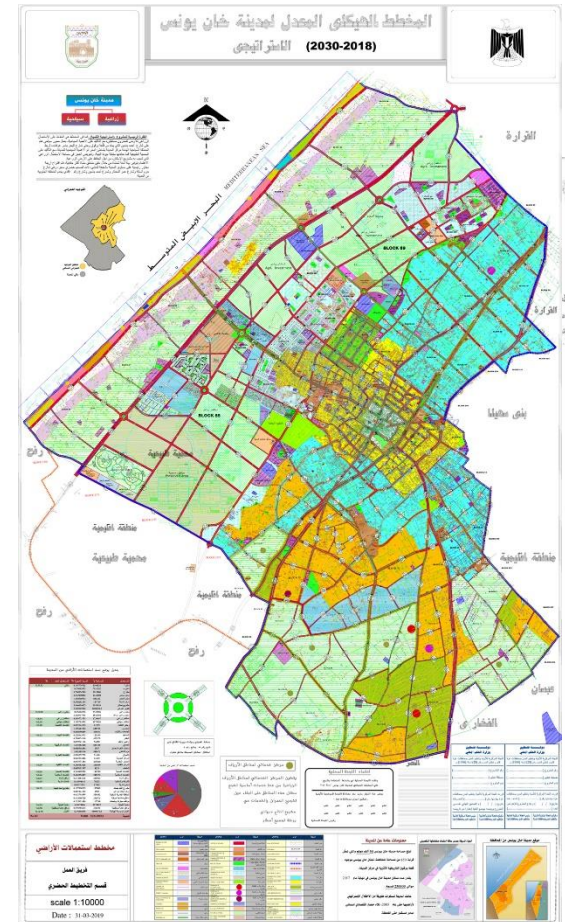
Intervention Idea:

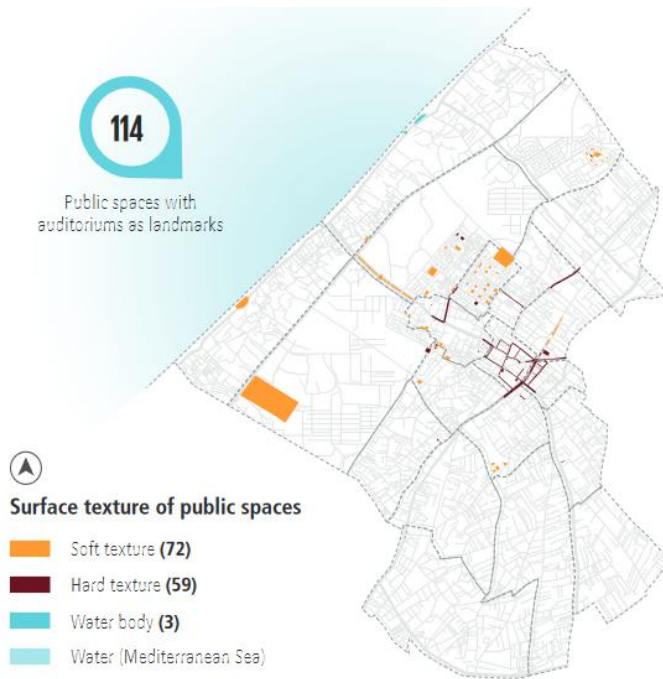
A Transition to Climate-resilient Green Public Space



Stage I: Site Selection

- An official correspondence of Land Authority for allocation of (400,000 m²).
- It is in line with the general orientation of the Gaza Strip as a natural protected area.
- Located on a regional street between Rafah and Khan Younis Governorates.

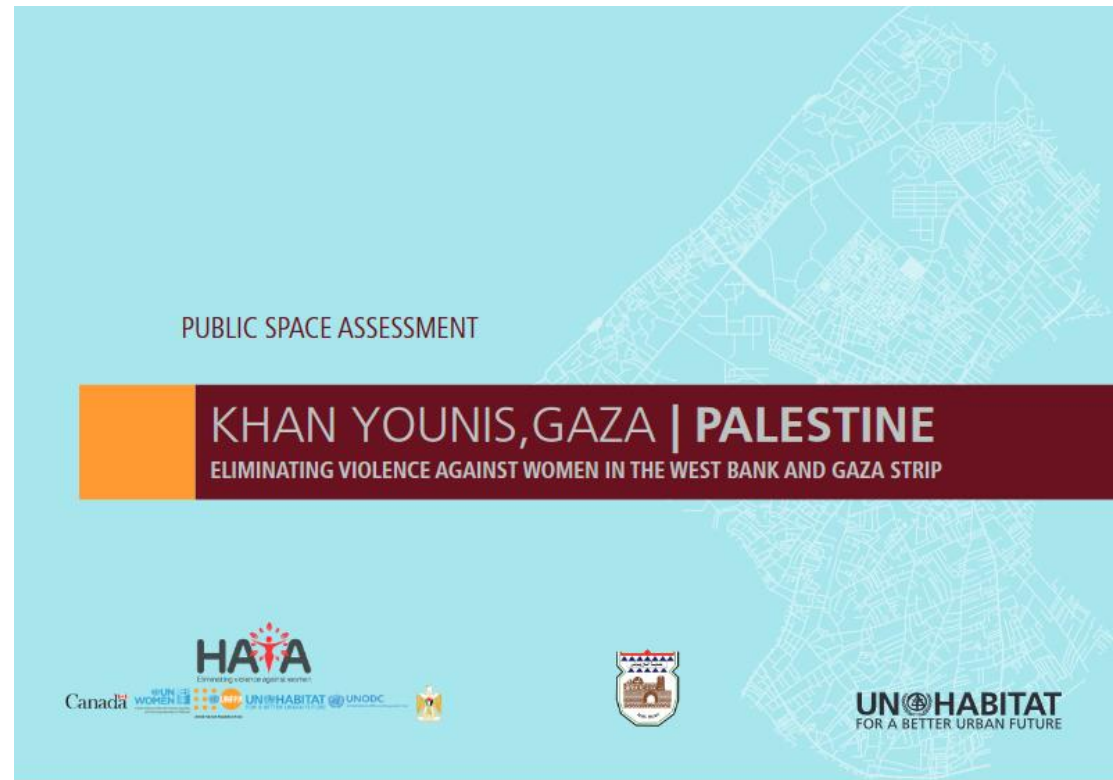




- It has **soft texture**; better infiltration for underground reservoir so it can recharge the reservoir and reduce the sea water intrusion.
- **Climate Considerations:** A general municipal orientation of not using water-wasting landscape like the grass and use durable trees instead.

Stage II: Stakeholders mapping

- Assessment of Khan Younis Public Space using participatory planning approach in analyzing the current situation and using the indicators of safety, comfort, accessibility and use.



Needs based assessment

Using the following steps

- Pre field work preparation “Developing assessment tools; preparation of GIS base maps, mobilizing the assessment team, training sessions”.
- Data collection quality check and data cleaning “Data collection, challenges and mitigation measures, Data cleaning, Updating the GIS maps”

DEVELOPING SAFE AND INCLUSIVE PUBLIC SPACES FOR ALL THROUGH

Safety audits assessing women's safety in Khan Younis, Jericho, Nablus, Jenin, and the Bethlehem cluster including Beit Jala, Beit Sa'hour, and Al Doha and Bethlehem



Awareness and advocacy campaigns to promote women's safety in public spaces



Capacity building for municipalities on how to design safe and inclusive public spaces



Development and regeneration of five safe and inclusive public spaces in targeted Palestinian communities



Development of gender responsive public space policy and design methodology for safe and inclusive public spaces

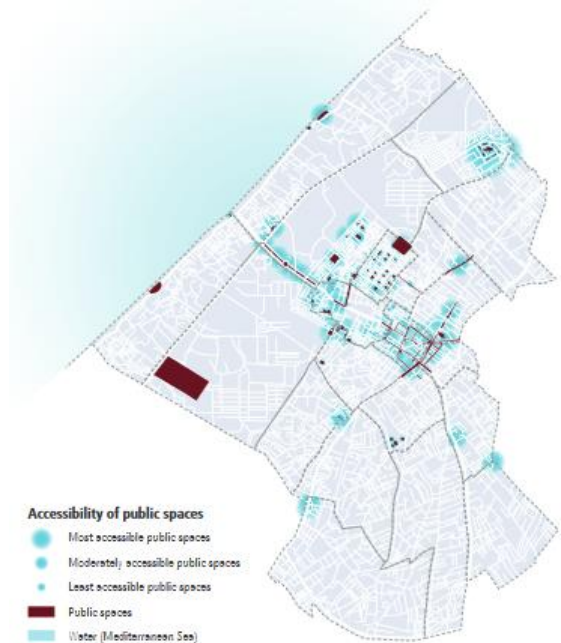


Joint curriculum development with local universities on designing safe and inclusive public spaces



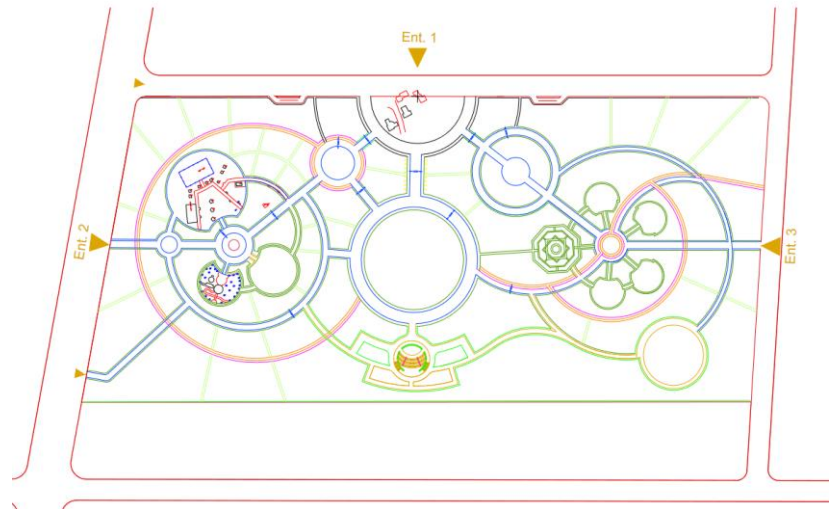
Stage III: Site Resilience Factors

- To ensure the impact of the project and its effect on the community the following aspects should be assessed very well:
 - **Vulnerability groups** and their accessibility to the green space.
 - **Target groups** and beneficiaries of the green space.
 - **Environment and social impact** assessment



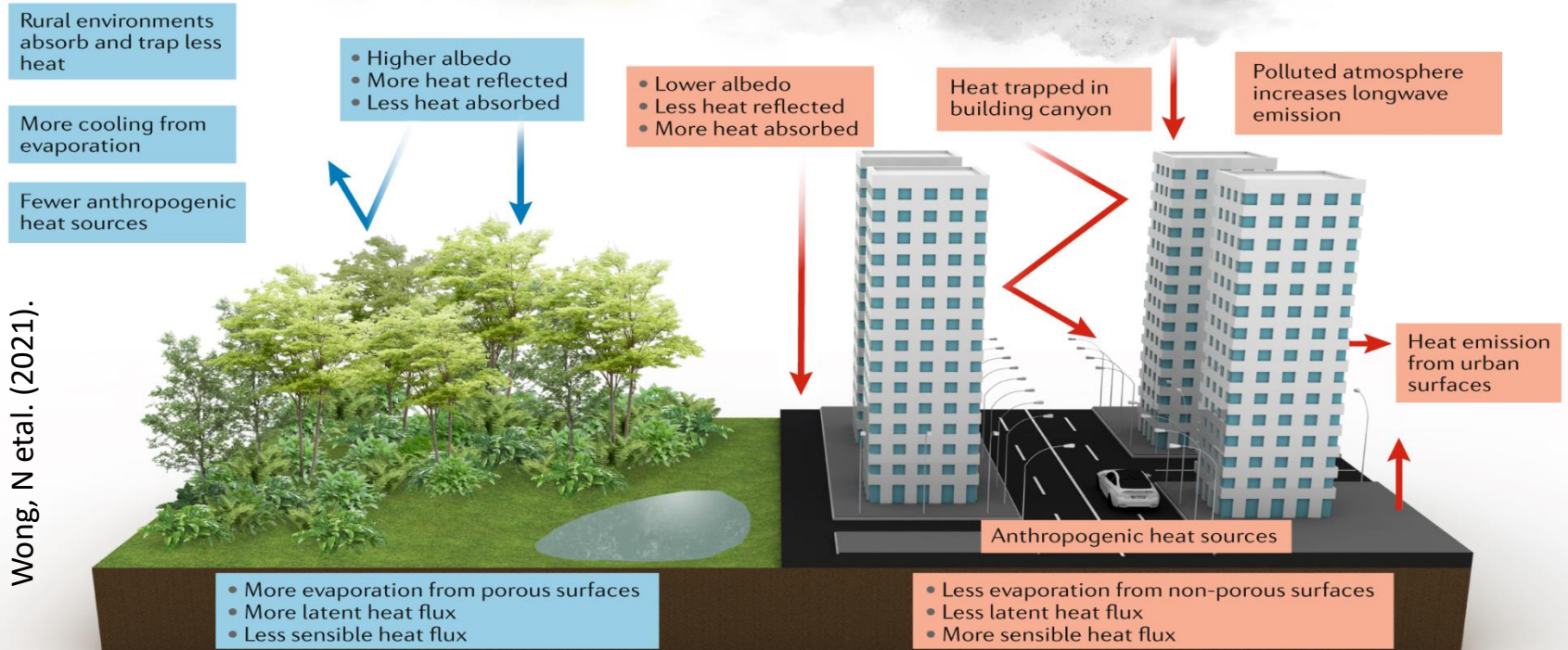
Stage IV: Participatory Approach Design

- **Project components**
- **Validation workshop**
- **Exit Strategy:** ensure the flow of funds for repaying the investment as well as restoration and regeneration, public-private partnership.







Cool Cities: Carbon reduction in buildings and improvement of outdoor thermal comfort



Wong, N et al. (2021).

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Zero Emission Buildings & Transport

Urban Green Infrastructure

Beach

Pathways and Implementation Strategy





Vision and Strategy

- 1. Integrated overarching city strategy**
 - 2. Participation strategy for all relevant actors**
 - 3. Prioritize nature and biodiversity over competing land use**
- 1. Key Performance Indicators**
 - 2. Links to existing and potential funding options**
 - 3. Potential of co-benefits and revenue generation**



Temperature variation between night and day



Project Charter as a Basis

Paul-Henri Spaak building, Brussels

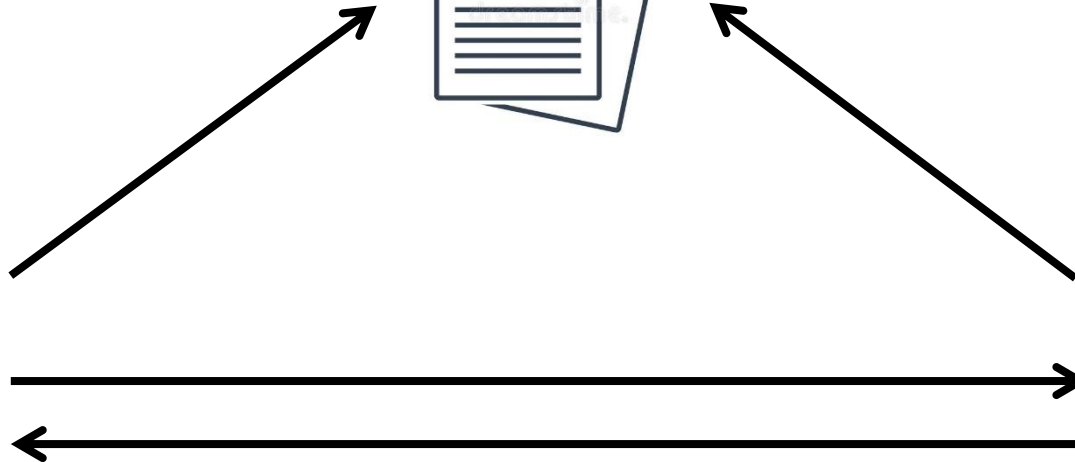
**Objectives
Principles
KPI**



Charter



Vademecum



Temperature variation between night and day

Generate a Tailored Portfolio of Key Performance Indicators



Objective: Cooling the Climate and City Center

1. **Climate Neutrality & Resilience**
2. **Low Emission Buildings and Mobility**
3. **Water Management**
4. **Natural and Climate Hazards**
5. **Green Infrastructure & Spaces**
6. **Biodiversity Enhancement**
7. **Air Quality**
8. **Capacity Building for Sustainable Urban Transformation**
9. **Participatory Planning and Governance**
10. **Social Justice and Social Cohesion**
11. **Health and Wellbeing**
12. **New Economic Opportunities and Green Jobs**

Key Performance Indicators

	Indicator	Units	Applicability
1	Total carbon reduced or stored in buildings	kgCO ₂ e/m ² /y	Gas and Electric Meters, Smart Meters, Energy Performance Certificate, Audit, EPD
2	Avoided greenhouse gas emissions from sustainable modes of transport	kgCO ₂ e./y	Transport Fleet Inventories and modal transport
3	Tree canopy cover	%	GIS Maps or Google Maps
4	Monthly mean value of daily minimum temperature	°C	City meteorological station or weather station
5	Heat wave incidence Days with temperature above 32 C	°C	City meteorological station or weather station
6	Urban Heat Waves Incidence	#	City meteorological station or weather station
7	Green Space Accessibility	%	Number of park visitors Green Surface per citizen
8	Availability and equitable green space	map	GIS Maps, Green Network



Map GHG emissions reduction

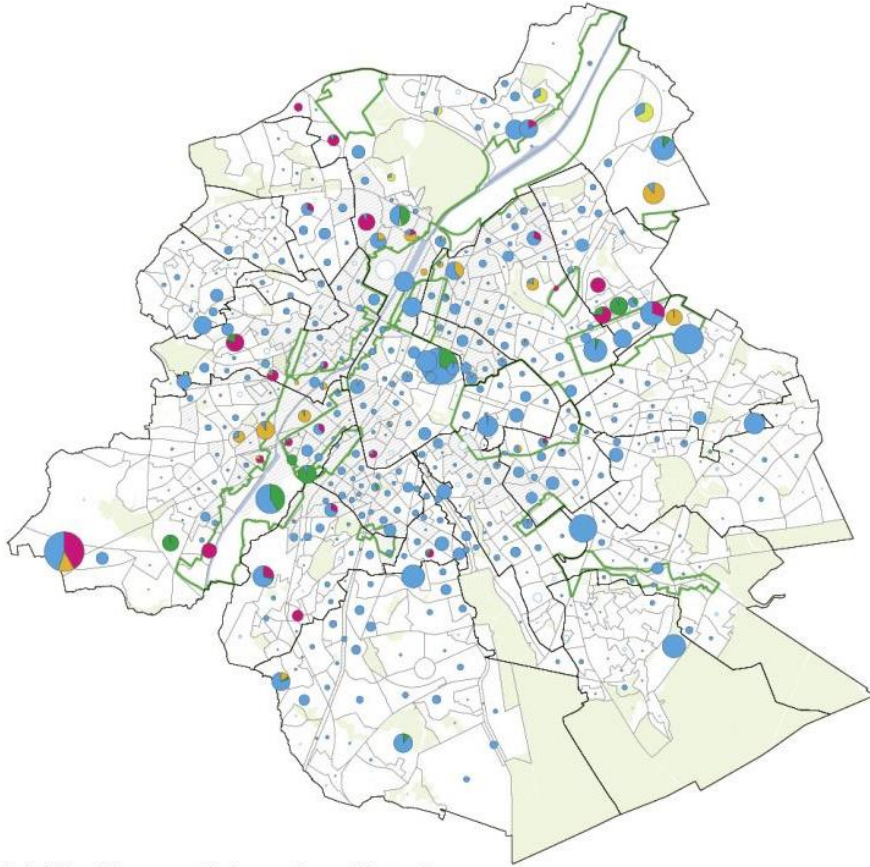


Problem:
Unable to measure
GHG emission
reduction

Solution:
Smart Meter
Dashboards



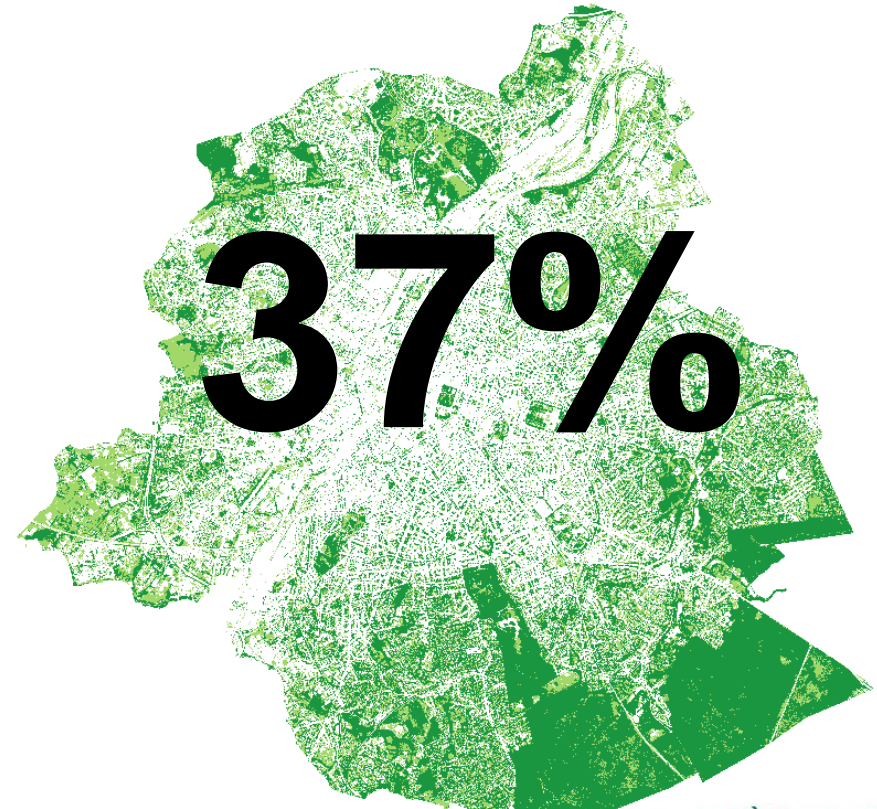
Housing against Trees vs 40% Target



de régulation publique
financiële regulering

Nombre annuel moyen de logements
autorisés par secteur statistique
Gemiddeld iaarliks aantal verzunde

0 1 2 3 4 km



Bruxelles Environment

64/20

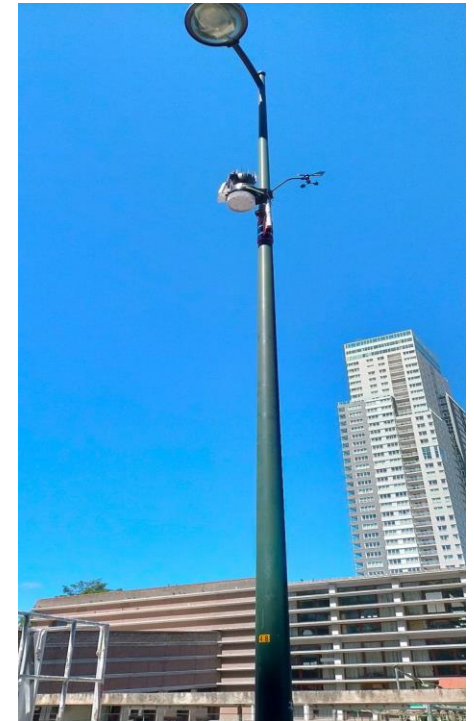
Weather Stations In-situ



WS_01_Reference



Installation with Loxam



WS_02_Héliport



Planting Trees



Problem:

**Expensive to plant
Trees
200l/week for 2
years**

Solution:











**Private sector
adopting 60% of
new trees in the city**

Insights

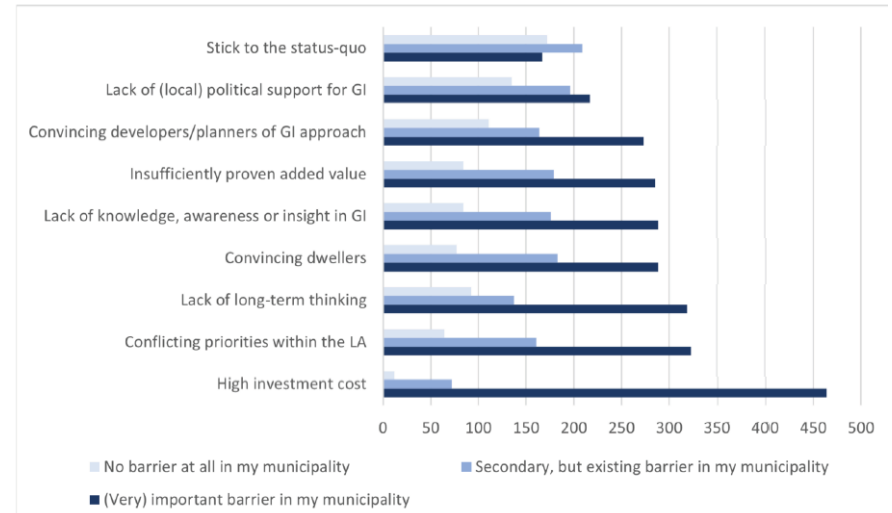


Insights

The politics of cool cities and local decision-makers

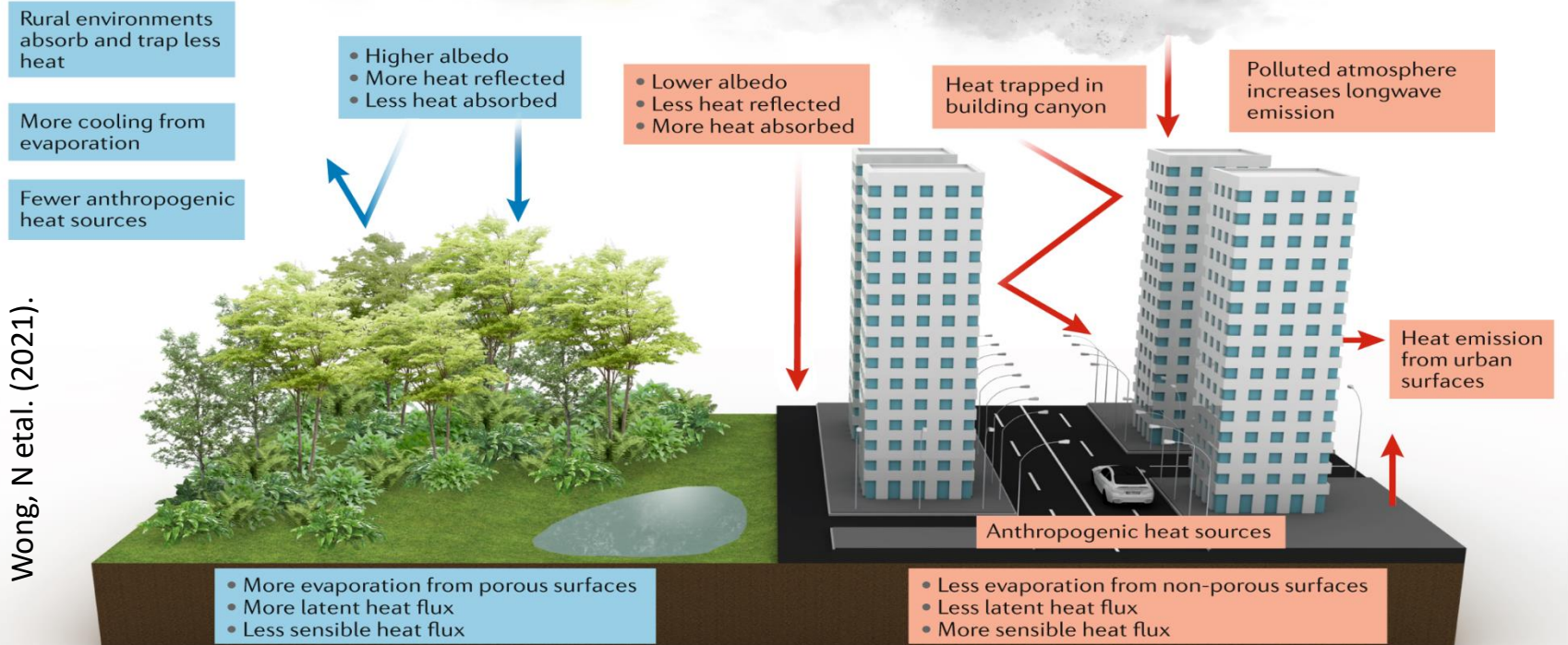
Attribute	Option 1	Option 2	Option 3
Investment cost	€ 500.000 	€ 350.000 	
Maintenance cost	€ 20.000 yearly 	€ 20.000 yearly 	
Deferred cost of sewage construction	€ 1,5 millions postponed with 20 years 	€ 1,5 millions postponed with 10 years 	<i>Everything remains as is</i>
Recreational value	25.000 yearly visits 	10.000 yearly visits 	
Climate impact	Yearly equivalent of CO ₂ emissions of 15 families sequestered 	Yearly equivalent of CO ₂ emissions of 15 families sequestered 	

Comparison of different design alternatives



The barriers to green infrastructure implementation at the local level.

Cool Cities: Carbon reduction in buildings and improvement of outdoor thermal comfort



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Panel discussion with the participants



Join CC platform!



The screenshot shows the Connective Cities platform interface. At the top, there is a dark blue navigation bar with a home icon, a calendar icon showing '19', and menu items for 'Networks & Programmes', 'Knowledge Hub & Events', and 'Topics'. On the right side of the navigation bar, there is a search icon, a language dropdown set to 'English', and several utility icons including a plus sign, an envelope, a group of people, a notification bell with '47', and a profile picture.

The main content area features a large banner with the title 'Action for Cool Cities: Pathways for carbon reduction in buildings and improvement of outdoor thermal comfort'. Below the banner, there is a breadcrumb trail: 'Home > Global Network'. A secondary navigation bar contains tabs for 'Stream', 'Sessions', 'Working groups', 'Library', 'Members', and 'Overview' with a dropdown arrow.

On the left side, a white card displays statistics: '7 members', '2 events', and '0 topics'. Below these statistics is a yellow button labeled 'Joined' with a dropdown arrow, and a link that says 'See group information'.

The main content area also features a 'SESSION' card. It includes a calendar icon, a photo of a person walking in a park, and the following text: 'SESSION', 'Day 1 - Action for Cool Cities: Pathways for carbon reduction in buildings and improvement of outdoor', '30 Nov '22 13:00 - 15:30 (CET)', and 'Action for Cool Cities: Pathways for carbon reduction in build...'. At the bottom of the session card, it shows 'Community' with a person icon and the number '7', and a button that says 'You have enrolled'. A 'Read more' link with an upward arrow is also present.

On the far left, there is a vertical sidebar with various icons: a water drop, a document, a group of people, a speech bubble, a gear, a person, and a right-pointing arrow.

