INCORPORATING CLIMATE CHANGE MITIGATION ACTIONS IN A SUMP – VARNA CASE

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City of Varna - Overview
MAIN CHARACTERISTICS

The biggest Bulgarian city on the Black Sea coast
• The biggest Bulgarian port
• 237 km² total area
• 32 km coastal line
• 15 km² Varna lake
• Population - 356,713 people
• Density – 1,634 people per km²
World Bank - Varna is the best city in Bulgaria for making business - 2017

- Four Seasons tourist destination
  - Economic Development
  - City of knowledge
  - Integrated transport and urbanization
PRIORITY PROJECTS

Transport and Urban development

- Construction of intermodal terminal
- New Expo center and Marina entertainment area
- New modern fishing harbour
- New public library
- New building for the High School of Mathematics
- “Hemus” highway connecting Sofia and Varna
- Varna Balkan Gas hub
- Wastewater treatment plant “Golden Sands”
- Integrated Urban Transport project - Stage 2
- New town center bypass
- Energy efficiency measures
- Regeneration of free spaces and regional parks in the residential areas
The Climate Change Issues

The main problems in Varna are related to:

- **Air pollution** - Excessive concentrations of carbon monoxide (CO), nitrogen oxides (NOx including NO and NO2) and fine particulate matter (PM10) in atmospheric air in the city of Varna are a consequence of transport, bad airspace of the central city area and town-specific breeze circulation.

- **Traffic congestion**

- **Land erosion** - Most affected by erosion are the lands in the north-eastern part of the municipality. 60% of the soils on the territory of the Municipality are subject to erosion and the process is intensified and the anthropogenic factor.

- **Extensive high temperatures** during the summer months (40C)

- **Heavy rains and winds** provoking floods and deteriorating roads during the spring and the autumn

Varna LG recognized the problems related to transport and climate change and included mitigation actions in the City Development Strategy 2014-2020:

- **Decrease the car use and increase the share of PT**

- **Free the city center from traffic by developing a pedestrian zone and cycling paths**

- **Greening the city**

- **Raising the citizens’ awareness** about the climate change and the necessary actions for mitigation of the negative effects.
Cooperation for Climate Change Mitigation

The Varna decision-makers successfully use the EU-funding and projects for achieving their goals related to climate change mitigation.

Varna is a project partner and/or a demonstration site in a series of projects related to transport and mobility planning.

**CSDCS is the official Mobility consultant of the Varna Regional Government** and works closely with the Municipal transport company “Parking and Blue zone”.
We have the full commitment from the part of the Varna Governor, Varna Regional Administration, the Mayor, the Municipality and the City Council.

The Varna Governor Mr. Passev is a SUMP Ambassador for Bulgaria.

Varna is paired with Santa Monica, California in the EU IUC Programme and exchanges experience in the mobility area with this American city.
Varna measures for climate change mitigation

Decision for implementing a SUMP including:

• New parking policy
• New transport scheme
• E-ticketing system
• New pedestrian zone
• New green areas
• New cycling strategy
• E-vehicles and infrastructure
• Large public awareness campaign
The city of Varna decided to implement a SUMP and received a loan of €300,000 from the EBRD for SUMP development.

The SUMP preparatory work started with the assistance of the SUMP Focal point for Bulgaria CSDCS. Some preliminary measures are already implemented.

**Vision for sustainable urban mobility in Varna:** The vision is to achieve sustainable urban mobility based on achieving more efficient management of urban transport and mobility, higher energy efficiency of vehicles, offering more options for "green" transport links, improving connectivity between different types of transport networks, introducing integrated mobile solutions and services for business and citizens. As a slogan it sounds like this:

*Sustainable urban mobility in the city of Varna - a guarantee for attractive business, high standard of living, clean and safe environment*

The main goals are:

- Improving the environment in the city and region and mitigating the climate change;
- Increasing the economic and investment activity in the municipality of Varna;
- Improving the quality of life in the municipality.
Implementation of “Varna Integrated Urban Transport” project Financed under the OP “Regional development”

„Varna Integrated Urban Transport” – background, goals and results

- Main problems – the public transport in Varna has old bus and trolleybus fleet, low operational speed, expensive fare system, especially for trips involving transfer/s, poor service quality, lack of adequate information for passengers, high operational cost and minimal length of dedicated public urban transport (PUT) lanes.

- In compliance with EU policy adopted in the OP RD for development of sustainable urban transport systems, Varna Municipality has adopted a vision oriented to effective, attractive and sustainable urban transport development as a prerequisite to its SUMP.

- Varna Integrated Urban Transport Project incorporates implementation of 10 main components complying with the specific objectives of OP RD for development of sustainable urban transport system. The main among them are:
Purchasing of new trolleybuses and buses with low emissions (hybrid or e-version)
New e-ticketing system and ticket machines
Emerging Bus Network Concept

Approach to Network Development:

The first principle we have adopted in developing a concept for the new bus network is to plan a network of bus and trolleybus services that will complement a BRT route connecting the north-west and east districts of the city via the city centre corridor.

Having reviewed the BRT corridor options considered previously and recommended (Section 2.4) that the “Varnenchik” option should be proposed for approval as the final BRT route, we have planned the network on the assumption that a high frequency BRT service is implemented on the “Varnenchik” route.

The initial concept for the emerging bus network was a route hierarchy with 3 levels:
1 BRT route (level 1)
Up to 10 core bus routes (level 2)
Secondary bus routes (level 3)
Emerging Bus Network Concept

BRT Route
Intermodality

Interchanges

Four important interchange points in the network, offering connections to a variety of destinations and an overall high frequency of services. Their potential role is for better interconnection of the network and to play a supporting role to the BRT service within the city’s public transport system. These interchange points still keep the form of standard bus stops, with no requirements for large service areas, parking places etc. It should also be noted that some of the locations require minor intervention in terms of construction of bus stands, pedestrian access improvements or traffic organization to reach their full functionality. Two of these interchange points (Chayka and Elprom) provide good opportunities for the implementation of Park & Ride facilities.

Park & Ride

Park & Ride is one of a range of transport planning tools that can be used to encourage car users to switch to public transport. In conjunction with other traffic management measures, such as a reduction in central area parking and the adoption of bus priority techniques, a well-designed and well-located facility can assist in reducing traffic levels in the city centre. This provides more sustainable access, improves attractiveness, and can enhance the economic viability of the city centre.
Varna Blue Zone
Account-based on-street parking payment system

System Architecture

Car Registration No
User Phone No
Registered User (mobile app/wallet user)
User Account
SMS parking payment
Virtual Parking Meter
Public Virtual Parking Meter

Cloud-based system

Helpdesk
Subscriptions
Controllers
Towing
Accounting
Management

Outsourced system support, backup, DR, security

Outsourced GDPR compliance management
Account-based on-street parking payment system

Why Account-Based

Better Data
- Non-personalized user behavior data helps in planning
- Individual parking suggestions help streamline traffic flows

Better Future
- Servicing other city mobility needs – transport, shared bikes, electric cars
- Servicing other city payments – tourist sites, city services

Better service
Self Service Portal

• User registration
• Account information
• Subscriptions management
• Electronic document management
• Payments
• 100% electronic user servicing
Mobile App

- User registration
- Account management
- Mobile wallet
- Parking payment
- Where is my car?
- Reminders and communication with the user
Virtual Parking Meter

• Electronic wallet charged with credit card or at cash kiosks
• Managed by a certified institution
• Superior user experience
• Over 30% lower transaction costs compared to SMS parking
• Trying to encourage VPM usage – 30 minutes payment, possible introduction of actual time (check-in/check-out payment)
Public Virtual Parking Meter

Covers the regulatory obligation to provide service for cash users
Reseller based – commission contracts
Resellers use a mobile application to register parking payments
Resellers pre-pay – 100% collection
No parking tickets printing
Cash purchases generate entries in the account based system
Future Development – Data Usage

- Partial parking availability info based on the location of VPM payments
- User profiling and behavior analysis
- Data generated to be merged with other city mobility data sources
- Tariff change effect simulations
- User behavior stimuli development
Future Development - MaaS

• Future integration with other city mobility services:
  • Public Transport
  • Bike sharing services
  • Taxi

• Single account, integrated payment options

• Data collections enriched

• Personalization and User Experience enhancement
Varna Pedestrian Zone

Strategic and specific tasks:

Task 1: Development of the pedestrian zone in the city centre
1.1. Expanding the pedestrian zone in the city centre by prohibiting or restricting car access
1.2. Landscaping and greening the pedestrian zone
1.3. Encouraging the development of the service centre

Task 2: Improvement of the walkability conditions in pedestrian zones along major urban boulevards and streets
2.1. Improving the existing pedestrian zones and routes along major urban boulevards and streets
2.2. Construction of new pedestrian zones along major urban boulevards and streets
2.3. Measures for securing the pedestrian routes in the conflict points along the major urban boulevards and streets

Task 3: Step-by-step development of traffic zones with priority of pedestrians and limited car access in all urban areas
3.1. Improvement of the pedestrian environment through laying pavement and landscaping, replacement of asphalt pavements with reinforced pedestrian pavements (tiles) and better/improved landscaping
3.2. Limiting car access by imposing alternative restraint modes
3.3. Protecting pedestrians at the points of intersection with car traffic
The main goals are:

• Increasing the share of pedestrian mobility in the modal split of Varna from 28.6% to 36%
• Achieve average pedestrian mobility of 4 km per day
• Increasing the share of cycling mobility in the Modal Split of Varna from 0.7% to 2.5%
• Reduce the rate of accidents with pedestrians and cyclists by half

Modal split

- Pedestrian 29
- Cycling 1
- PT 22
- Cars 48
Varna Green Zones
Varna Cycling Strategy
Public awareness campaign
Cooperation with Santa Monica, California (EU IUC Programme)
THANK YOU FOR YOUR ATTENTION!

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