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OVERVIEW OF ACTIVITIES IMPLEMENTED IN THE PROCESS OF ADAPTING THE CITIES OF GDAŃSK AND GDYNIA TO CONTEMPORARY URBAN MOBILITY TRENDS

Abstract

Since 2011, several dozen EU cities have implemented solutions to meet the requirements of the White Paper on Transport. However, the White Paper does not provide for the rapid technological progress. This progress has popularized smartphones with continuous access to the Internet, which in turn has allowed to create applications that make people's lives in the city easier. A city with the possibility of interactive use of aggregated data to meet the needs related to living and functioning in the city, is called a smart city. The European Commission has created an additional mechanism to encourage local authorities to take a more comprehensive approach to urban mobility – the Urban Mobility Package – where the focus is on people, not on traffic, as is the case with traditional transport policy-making methods. The article reviews the projects implemented in Gdańsk and Gdynia that are consistent with the idea of sustainable development and are aimed at adapting both cities to the requirements of the European Commission and the changing reality.

Keywords: city logistics, smart city, smart mobility, urban mobility, mobility as a service, Gdańsk, Gdynia, Gdynia a smart city, Gdańsk a smart city, white paper on transport, sump, sustainable transport, sustainable urban mobility plan

Introduction

Cities are home to over 70% of the EU population and account for some 85% of the Union's GDP (European Commission, 2013). Most journeys begin and end in cities. In many urban areas, however, increasing demand for urban mobility

has created a situation that is not sustainable: severe congestion, poor air quality, noise emission and high levels of CO₂ emission. Urban congestion jeopardises EU goals for a competitive and resource-efficient transport system. The fact that the era of digitisation was not included in the White Paper, however, did not challenge its assumptions, all the more as they are supplemented by the Urban Mobility Package and the Sustainable Urban Mobility Plans (SUMP), which enable Smart Cities to function – cities whose actors use technology on a daily basis. The European Commission is mobilising cities to adapt their policies to the Urban Mobility Package and to write down SUMP, through Horizon 2020 programme and Interreg Europe, where topics are written so that applicant consortia are forced to implement innovations in the urban space and make the space smarter.

The aim of the article is to analyze the tools which the European Commission has at its disposal to mobilize cities of member states to implement innovations that facilitate functioning in urban space, improve its safety and air quality, as well as prepare Gdańsk and Gdynia for them. The article mainly is based on documents published by the European Commission, information provided by the Cities of Gdańsk and Gdynia on information platforms and information obtained from the administrations of both cities.

1. Waiting for the new White Paper

In 2020, the European Commission is likely to present a new White Paper on Transport. The last one, from 2011, presented 10 targets described below for achieving the 60% of GHG emission reduction target. These objectives are threefold (European Commission, 2011):

- I. Developing and deploying new and sustainable fuels and propulsion systems
 - 1) Halve the use of “conventionally fuelled” cars in urban transport by 2030; phase them out in cities by 2050; achieve essentially CO₂-free city logistics in major urban centres by 2030.
 - 2) Low-carbon sustainable fuels in aviation to reach 40% by 2050; also by 2050 to reduce EU CO₂ emissions from maritime bunker fuels by 40% (if feasible 50%).
- II. Optimising the performance of multimodal logistic chains, among others by making greater use of more energy-efficient modes
 - 3) 30% of road freight over 300 km should shift to other modes such as rail or waterborne transport by 2030, and more than 50% by 2050, facilitated by efficient and green freight corridors. Meeting this goal will also require appropriate infrastructure to be developed.
 - 4) By 2050, completion of a European high-speed rail network. Triple the length of the existing high-speed rail network by 2030 and maintain a dense railway network in all Member States. By 2050 the majority of medium-distance passenger transport should go by rail.

- 5) A fully functional and EU-wide multimodal TEN-T “core network” by 2030, with a high-quality and capacity network by 2050 and a corresponding set of information services.
- 6) By 2050, connecting all core network airports to the rail network, preferably high-speed; ensuring that all core seaports are sufficiently connected to the rail freight and, where possible, provide inland waterway system.

III. Increasing the efficiency of transport and of infrastructure use with information systems and market-based incentives

- 7) Deployment of the modernised air traffic management infrastructure (SESAR) in Europe by 2020 and completion of the European common aviation area. Deployment of equivalent land and waterborne transport management systems (ERTMS), (ITS), (SSN and LRIT), (RIS). Deployment of the European global navigation satellite system (Galileo).
- 8) By 2020, establishing the framework for a European multimodal transport information, management and payment system.
- 9) By 2050, moving close to zero fatalities in road transport. In line with this goal, the EU aims at halving road casualties by 2020. Making sure that the EU is a world leader in safety and security of transport in all modes of transport.
- 10) Moving towards full application of “user pays” and “polluter pays” principles and private sector engagement to eliminate distortions, including harmful subsidies, generate revenues and ensure financing for future transport investments.

Since 2011, several dozen EU cities have implemented solutions to meet the requirements of the White Paper. These included, among others: urban consolidation centres, creation of low/zero emission zones (reducing/closing access to city centres for conventional vehicles), promotion of electric cars, promotion of bike and pedestrian traffic through dissemination of knowledge and creation of favourable infrastructure.

However, the White Paper does not envisage such rapid technological progress popularizing smartphones with continuous Internet access, which has made it possible to create applications that make it easier for people to live in the city. A city with the possibility of interactive use of aggregated data to meet the needs related to living and functioning in the city, is called a smart city. The opportunities of urban mobility, e-mobility, created on the basis of the data collected from the entire data area, serve to improve the flow of passengers and goods in the city and create additional needs, and therefore additional services. Cities were being created on the basis of public transport, not mobility on demand, so it should be assumed that the next White Paper will concern smart cities and will take into account the digital transformation that we are currently experiencing. What is more, it is already known that electric vehicles are not as green as they seemed a decade ago, and their main advantage is not the reduction of emissions but independence from oil from politically unstable regions. The e-mobility concept includes the development of energy storage technologies and the large-scale deployment of electric vehicles, hybrid vehicles and hydrogen fuel cells. In the future, the management and control of vehicle traffic will be carried out with the increasing use of digital technologies – connected mobility, as well as with the increasing degree of traffic

automation, including fully automatic autonomous mobility. New solutions will be implemented in addition to the means of rail transport already used since the end of the 19th century: railways, trams, underground and trolleybuses, all using electric traction. E-mobility is of key importance in the ongoing public discussion on the future development of social and economic systems, both globally and in Europe, as well as in Poland (Gajewski, Paprocki, Pieriegud, 2017, p. 5). Contemporary transport projects and the development of transport systems use information technology to create new forms of transport that are *smart* – increasingly efficient, safer, more effective and more integrated. Such a transformation of transport systems is mainly driven by the private sector, as modern solutions are too expensive for urban budgets.

2. Sustainable Urban Mobility Plans

There is limited potential for reducing the negative effects resulting from the transport congestion from the European Commission level. The strongest instrument for limiting and counteracting it is within the responsibilities of local authorities, which, however, for political reasons are not willing to take comprehensive and long-term actions in this area. The European Commission has therefore created an additional mechanism to encourage local authorities to take more comprehensive action in shaping urban mobility. The Urban Mobility Package (European Commission, 2013) has been subordinated to this objective. With the Urban Mobility Package, the Commission reinforces its supporting measures in the area of urban transport by:

- sharing experiences, show-casing best practices, and fostering cooperation;
- providing targeted financial support;
- focusing research and innovation on delivering solutions for urban mobility challenges;
- involving the Member States and enhancing international cooperation.

The Commission identifies Sustainable Urban Mobility Plans (SUMP) as a horizontal priority integrating these issues. They should be interdisciplinary and therefore cover transport, land-use and environmental issues, economic and social development, health and road safety. One of the basic features that distinguishes SUMP from other urban transport policy documents is the wide range of public participation (Table 1). This means identifying the main stakeholders on the supply and demand side of the transport market and involving them in the planning process from the outset. Cities in countries with a developed and well-established culture of social dialogue, such as the Netherlands, Denmark, Sweden or Germany, have particularly positive experiences in this respect (Wołek, 2014).

Gdynia published its SUMP in November 2016 (Wołek, 2016). It was prepared as part of the Dyn@mo project. Work is underway on the SUMP project in Gdańsk, which will be developed as part of the CityMobilNet activities of the URBACT project. The main objective of SUMP is to improve the accessibility of urban areas and to ensure high quality, sustainable mobility and transport to, through and within urban areas.

Table 1. Comparison of traditional transport planning and sustainable urban mobility plans (SUMP)

Traditional Transport Planning	Sustainable Urban Mobility Planning
Focus on traffic	Focus on people
Primary objectives: traffic flow, capacity and speed	Primary objectives: accessibility and quality of life, as well as sustainability, economic viability, social equity, health and environmental quality
Modal-focused	Balanced development of all relevant transport modes and shift towards cleaner and more sustainable modes
Infrastructure focus	Integrated set of actions to achieve cost-effective solutions
Sectoral planning document	Sectoral planning document consistent and complementary to related policy areas (such as land use and spatial planning, social services, health, enforcement and policing; etc.)
Short and medium-term delivery plan	Short and medium-term delivery plan embedded in a long-term vision and strategy
Related to an administrative area	Related to a functioning area based on travel to work patterns
Domain of traffic engineers	Interdisciplinary planning teams
Planning by experts	Planning with the involvement of stakeholders using a transparent and participatory approach
Limited impact assessment	Regular monitoring and evaluation of impact to inform a structured learning and improvement process

Source: (Debyser, 2014)

The plan takes into consideration the needs of the “functioning city” and its facilities, not the administrative region. The SUMP contains a new or existing long-term strategy for the future development of the urban area, and therefore for the future development of transport infrastructure and services and mobility. It also contains a short-term plan for the implementation of the strategy with a timetable, a clear division of responsibilities and information on the resources and financial means required. The plan should be based on a thorough assessment of the current and future efficiency of the urban transport system. To this end, it is necessary to analyse the current situation, to establish a benchmark against which to measure future progress, and to define SMART objectives and connected targets that will enable the implementation of the plan. SUMP supports the balanced development of all relevant modes of transport, at the same time encouraging a shift towards more sustainable alternatives. The plan contains an integrated set of technical, infrastructural, policy-based and “soft” measures to improve efficiency and cost-effectiveness in relation to the stated objective and specific tasks. Typical issues covered by the plan are: public transport, pedestrian and bike traffic, parking policy, safety, road transport, mobility management, ITS, spatial planning, etc. The SUMP design and implementation follows an integrated approach with enhanced cooperation, coordination and consultation between the different levels of government and the relevant authorities. To this end, appropriate structures and procedures need to be put in place. The SUMP plan is based on a transparent, participatory approach. The local authority for planning

should involve stakeholders – residents, civil society representatives and economic actors – in the development and implementation of the plan from start to finish, in order to ensure a high level of acceptance and support. The implementation of SUMP should be closely monitored. Progress towards the objective and towards the achievement of the specific objectives and targets should be regularly evaluated on the basis of the selected indicators. Appropriate measures should be taken to ensure timely access to relevant data and statistics. The evaluation of implementation should be based on the audit report. The local authority for planning should hold appropriate quality assurance mechanisms and should verify the compliance of the plan with the requirements of the SUMP concept. The European Commission has developed guidelines offering concrete suggestions for the implementation of the SUMP concept and for the preparation of an urban mobility strategy based on a clear vision of sustainable urban development. The process consists of 11 main steps, as shown in Figure 1. In addition to the European Sustainable Urban Mobility Planning Platform, the European Commission also offers support to European cities wishing to tackle urban mobility problems. This support includes: supporting exchange and capacity building based on sustainable urban development through, among others, the European programme; improving the quality and availability of data and statistics on the functioning of urban transport systems and on decision-making at local, regional, national and EU level; supporting local cooperation in the implementation and testing of new approaches to real urban mobility as part of the CIVITAS initiative; providing financial support for urban mobility projects through the European Structural and Investment Funds, Horizon 2020 programme, the “Connecting Europe” Tool and other financial instruments. The European Commission cooperates with Member States to ensure that SUMP concepts are adapted to the specific requirements and existing planning methods in each country and that they are actively promoted at national level to reach hundreds of cities across Europe.

While other cities will be preparing their policies for the new reality, Gdańsk is yet to announce its SUMP. This means that we are a decade backwards when it comes to urban mobility. However, the projects in which Gdańsk participates should be appreciated.

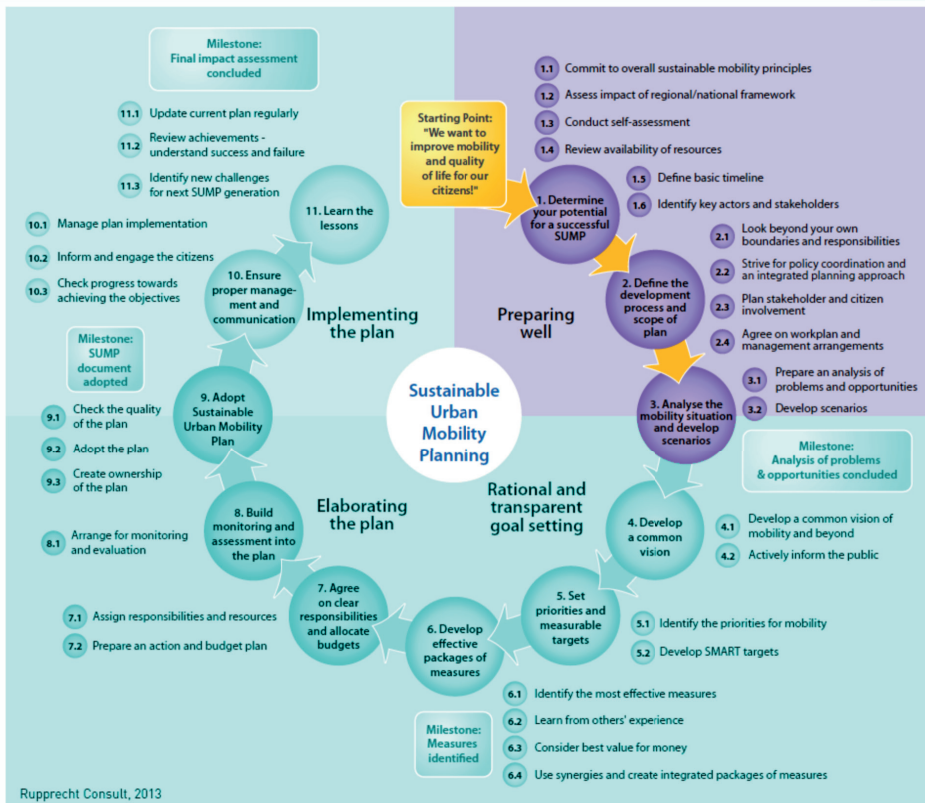


Figure 1. SUMP Guidelines
Source: (Eltis, 2015)

3. Preparations of Gdańsk and Gdynia for Urban Mobility – Examples of Urban Mobility projects in Gdańsk and Gdynia

In order to adapt to the changing reality, numerous Urban Mobility projects are being carried out in Gdańsk and Gdynia. This subsection presents some of them.

With the SOHJOA project, Gdańsk will be the first city in Poland to test a micro-bus moving without a driver (Figure 2). As part of the projects, electric bicycles will also be promoted and smart mobility solutions will be developed.

The main objective of the project is to develop plans for the service and promotion of intelligent, autonomous transport of the last mile for the Baltic Sea Region. The project partners intend to demonstrate that the shift from individual cars to automated public transport will reduce CO₂ emissions, lower operating costs and increase the efficiency of public transport.

The consortium will develop guidelines to be met in order for self-propelled vehicles to travel on public roads as part of public transport. Under the leadership

of the German Institute for Climate Protection, Energy and Mobility (IKEM), the legal framework and the necessary amendments to the existing legislation will be examined.



Figure 2. Metropolia Automated Bus
Source: (Sohjoa, 2017)

Other aspects to be analysed include technical requirements, the need to reorganise traffic, areas for testing and safety requirements. The leader of the SOHJOA Baltic project is the Metropolia University of Applied Sciences in Helsinki. Finland has the ambition to become a leader in autonomous mobility. The EZ10 self-propelled electric buses were put into service as early as 2015 in the city of Vantaa and a year later in Helsinki, Espoo and Tampere. Testing on public roads will be carried out in Helsinki, Tallinn and the Norwegian city of Kongsberg. In all these cities, residents have already had the opportunity to use self-propelled buses.

The BSR Electric project will also focus on electric vehicles. While electric bikes will be promoted in Gdańsk, the project partners will focus on electric buses, electric scooters and E-logistics. The aim of the BSR electric project is to investigate the potential and increase the share of e-mobility (electromobility) in the transport systems of the cities of the Baltic Sea Region through the promotion of vehicles powered by electric engines, including: vans, buses, ferries, bicycles and scooters supported by electric power. In Gdańsk, we will focus primarily on the promotion of electrically-powered bicycles as forms of daily mobility and mobility being part

of business activities. Gdańsk's tasks will include promotion, analysis of opportunities and spreading knowledge.

RUGGEDISED is a smart city project funded under the European Union's Horizon 2020 research and innovation programme. It brings together three lighthouse cities: Rotterdam, Glasgow and Umeå and three follower cities: Brno, Gdańsk and Parma to test, implement and accelerate the smart city model across Europe. Working in partnership with businesses and research centres, these six cities will demonstrate how to combine ICT, e-mobility and energy solutions to design smart, resilient cities for all. In the RUGGEDISED project, Gdańsk, as a follower city, will study the smart solutions installed in the lighthouse cities in view of its own future implementation.

The authorities and residents of Gdynia seem to be more aware of the importance of city logistics for the functioning of the city. As regards the supply of goods, Gdynia participates in the TENTacle (referring to the Baltic-Adriatic Corridor, i.e. the movement of goods and persons) and Freight TAILS projects, under which a document entitled "Integrated Action Plan for a Sustainable Cargo Distribution System in the City Centre of Gdynia – the area of Starowiejska, Świętojańska and Abrahama Streets" has been prepared. The aim of the plan is to designate dedicated delivery points to achieve the following:

- increasing the effectiveness of services provided to local customers;
- increase in traffic flow;
- reduction of the obstacles, e.g. for emergency vehicles;
- reduction of improper use of infrastructure and interference in the city space used by other users.

Designation of dedicated delivery sites is to be modelled on the experience of European cities, where such solutions have been in place for years. Delivery locations in Gdynia are to be defined in the following steps:

- classification of recipients;
- evaluation of the accessibility of the surveyed area for road transport;
- analysis of the delivery profile;
- analysis of the generic structure of vehicles;
- identification of places with a high concentration of deliveries;
- calculation of the number of places of delivery needed;
- selection of the appropriate design for the delivery sites.

The works started in 2016 and are based on interviews with entrepreneurs and field measurements.

In 2016, the EU project TENTacle – using TEN-T Network Corridors for Prosperity, Growth and Cohesion from the Baltic Sea Region Programme 2014–2020 was launched. The corridors comprising nine trans-European rail, road, water and air routes run from Gdynia, Gdańsk, Szczecin and Świnoujście to Slovenian and Italian ports. The aim of the project, which also involves the Port of Gdynia Authority, is to prepare a coherent urban and port transport system that will serve both the development of the city and the comfort of its inhabitants. This solution must not discriminate against anyone or harm the environment, but it must serve everyone. At the beginning of 2018, the City Council decided to announce tender

results for the “Study of the last mile for the core TEN-T Gdynia network node, corresponding to the investments consistent with the Baltic-Adriatic Corridor Work Plan”, required by the EU TENTacle project.

Additionally, the City of Gdynia is a partner of EU projects concerning cargo bikes – COBIUM and City Changer Cargo Bike. Their main objective is to reduce car traffic and noise in urban areas by improving sustainable transport services – a better understanding of the potential and needs of modal shift to cargo bikes. The most important activities of the project are to create an offer of innovative and sustainable solutions, encouraging municipalities in the South Baltic area to include cargo bikes in urban mobility concepts, to study needs and evaluate pilotage solutions in order to adapt them to cities at different stages of urban cycling policy implementation, as well as to carry out pilot investments focused on the use of cargo bikes in three areas (private, municipal and business) and to develop a guide containing strategies and advice for the implementation of cargo bikes policy.

Conclusions

The city of the future is a combination of intelligent use of modern technologies and innovative systems with the potential of institutions and companies, and the creativity and enthusiasm of citizens. Smart City is a territory with high learning and innovation capacity, creative, with research and development institutions, higher education, digital infrastructure and communication technologies, as well as high level of management efficiency (Komninos, 2012, p. 1). The European Commission tries to force cities to adapt to changing realities, however its tools are limited. Projects developed by consortia of cities must correspond to the documents published by the EC, which clearly define the objectives pursued by the EU to be a single, efficient, resource-efficient transport system. However, Gdańsk’s participation in several EU projects focuses mainly on promotional and soft actions, mostly related to cycling, possibly public transport, with almost no urban distribution of supplies. Gdynia, unlike Gdańsk, published its SUMP in 2016, i.e. three years after the guidelines for their writing were presented by the EC. It also recognises the importance of managing the distribution of goods in the city.

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