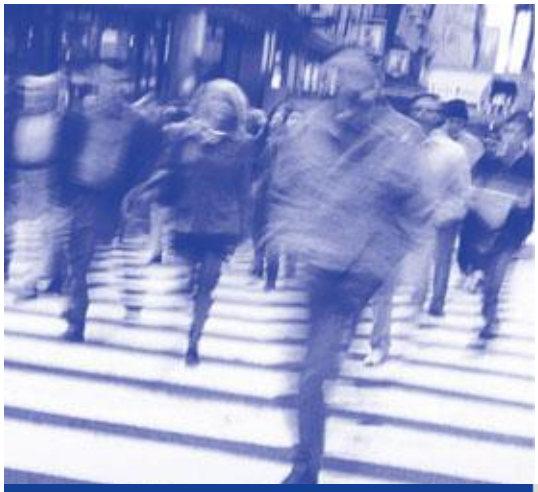

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Gdynia's Sustainable Urban Mobility Plan (SUMP) and its development

Implementation Status Report G1.1

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THE CIVITAS INITIATIVE
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Abstract

This Deliverable includes an English version of Gdynia's Sustainable Urban Mobility Plan (SUMP) has been prepared within the EU project entitled CIVITAS DYN@MO, co-financed under the 7th Framework Programme of the European Union, implemented in Gdynia in 2012-2016. It covers the urban and suburban areas (the functional area), defines passenger public transport, non-motorised transport, intermodality, road transport, mobility management, use of Intelligent Transportation Systems (ITS), urban freight, city road traffic safety, implementation of new use patterns or promotion of clean and energy-saving vehicles (clean fuels and vehicles), considering the related needs identified in the given area.

The SUMP for Gdynia has been developed for the years 2016-2025. It includes an action plan which will be verified every 2-4 years. The first action plan covers the years 2016-2018. During the entire validity period of the document, the City of Gdynia will be monitoring the implementation of activities on a regular basis, which will allow an effective completion thereof.

The vision of Gdynia' SUMP – as ratified by the City Council on 26 October 2016 – is:

"Jointly work towards the development of a sustainable mobility system that will provide the inhabitants of Gdynia with a high living standard and the ability to move within a safe, clean and friendly environment, as well as contribute to the social, spatial and economic development of the City"

The SUMP defines four strategic areas: Quality of life, economy, environment and energy, Based on these four strategic objectives were set for Gdynia, which were extended into the following specific objectives:

Attractive and safe urban space	**Safe and effective transport system**	**Rational transport choices**	**Effective freight transport in the city**
☐ Improved pedestrian traffic conditions	☐ Integrated transport system and mobility planning at the metropolitan level	☐ Education and raising awareness of sustainable mobility and safety	☐ Better transport accessibility of the seaport
☐ Better accessibility for people with reduced mobility	☐ Traffic management system development using the ITS	☐ Optimisation of transport needs	☐ Establishment of an effective and sustainable urban distribution system
☐ Improved bicycle traffic conditions	☐ Development of a competitive public mass transport	☐ Sustainable mobility in districts	☐ Support for modern technologies and organisation solutions for goods transport
☐ Improved quality of public space	☐ Increased share of low emission vehicles	☐ Development of new mobility services	

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About this study

This document has been prepared within the EU project entitled CIVITAS DYN@MO, co-financed under the 7th Framework Programme of the European Union, implemented in Gdynia in 2012-2016. The purposes of this project are: the implementation of modern mobility solutions and the exchange of knowledge and experience between the participant cities. For Gdynia, one of the most important activities under CIVITAS DYN@MO was the development of the Sustainable Urban Mobility Plan (measure *G1.1 Advancing towards a dynamic SUMP*) that will be instrumental to the implementation of sustainable transport development policies in Gdynia.

The document has been prepared in co-operation with Zarząd Dróg i Zieleni [Roads and Green Areas Management] (the unit in charge of the implementation of the DYN@MO project in Gdynia) together with a SUMP working group, stakeholders, inhabitants and research units – the University of Gdańsk and Gdańsk University of Technology.

The preparation of this document included numerous meetings and consultations, which were attended by (at different work stages):

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Romanika Okraszewska	Gdańsk University of Technology		Different representatives	SKM

1. Introduction

Dynamic urban development and changes in inhabitants' lifestyles result in a continuous increase of their transport needs. Currently, the number of vehicles on Gdynia's streets is increasing which results in congestion, an increased number of accidents, exhaust and noise emissions and, consequently, a lower quality of life. Thus, the City of Gdynia decided to pursue its sustainable approach to urban mobility and transport planning by developing a Sustainable Urban Mobility Plan (SUMP).

Such activities are supported by the European Commission, who announced a plan of action for urban mobility in 2009 and is continuously encouraging European Union national authorities to work towards sustainable transport in cities. The most current sign of those activities is the official communication of the Commission to the European Parliament, Council, European Economic and Social Committee and Committee of the Regions of 17 December 2013. Its purpose was to provide European cities with even more support in implementing projects related to sustainable transport and to enable them to follow the EU policy of competitive and resource-efficient mobility even more successfully. An appendix to this communication focused in particular on Sustainable Urban Mobility Plans, which are actively promoted by the European Commission, by giving guidelines to follow in preparing them.

In connection with them and with the guidelines from the European Commission included in the document entitled "Developing and Implementing a Sustainable Urban Mobility Plan", the City of Gdynia and the SUMP working group has prepared a Sustainable Urban Mobility Plan for Gdynia. It has been developed within the project entitled CIVITAS DYN@MO (DYNamic citizens @ctive for sustainable MObility). DYN@MO is a European project implemented under the CIVITAS Plus II initiative (funded within the 7th Framework Programme of the European Commission).

The objectives of this project are the implementation of modern mobility solutions and the exchange of knowledge and experience between the participant cities, including:

- the development of "web 2.0" systems and services;
- the introduction of city- and inhabitant-friendly electrical vehicles;
- the involvement of inhabitants in the process of mobility planning and service quality improvement.

The project is being implemented in four dynamically developing European cities, i.e. Aachen (Germany), Koprivnica (Croatia), Palma de Mallorca (Spain) and Gdynia (Poland). To implement the project, each participant city was to establish a local consortium, which in the case of Gdynia included the City of Gdynia (represented by Zarząd Dróg i Zieleni), Gdańsk University of Technology, the University of Gdańsk (the Department of Transport Market) and Przedsiębiorstwo Komunikacji Trolejbusowej w Gdyni sp. z o.o (PKT), the cities trolley bus operator.

1.1. What is a Sustainable Urban Mobility Plan?

A Sustainable Urban Mobility Plan (SUMP) is a document that covers the urban and suburban areas (the functional area), defines passenger public transport, non-motorised transport, intermodality, road transport, mobility management, use of Intelligent Transportation Systems (ITS), urban freight, city road traffic safety, implementation of new use patterns or promotion of clean and energy-saving vehicles (clean fuels and vehicles), always considering the related needs identified in the given area.

Gdynia's SUMP has been prepared considering the guidelines from the European Commission included in the document entitled "Wytyczne. Opracowywanie i wdrażanie Planu Zrównoważonej Mobilności Miejskiej" (Guidelines. Developing and Implementing a Sustainable Urban Mobility Plan).

The "Guidelines..." indicate certain stages of preparation of a SUMP, namely:

1. Definition of own potential, i.e. verification to what extent sustainable development principles are in accordance with current political priorities and to what extent they are already part of the city development policy.
2. Definition of the scope of the plan, i.e. the definition of the territory, for which it is developed, and on the other hand, cooperation with the appropriate authorities and institutions to make decisions, also financial, and approve activities.
3. Situation analysis and scenario development to support a transparent and rational establishment of the objectives to pursue.
4. Definition of a common vision, which constitutes a qualitative description of the desired future of the city and must place transport and mobility in the wider context of economic and social development.
5. Definition of priorities and measurable objectives (as the vision is an important qualitative description of the desired future, so the nature of the expected changes must be described through specific, measurable objectives to be defined in detail before the activities begin – as methods of achieving the objectives).
6. Preparation of effective sets of actions is fundamental to sustainable mobility planning, because only if properly selected and efficiently implemented, they can ensure the fulfilment of the assumed objectives (the selection of activities must be consulted with main stakeholders, cost effective and aligned with the good practices of other cities).
7. Definition of the scope of responsibilities and budget allocation – strictly connected with the selection of activities.
8. Monitoring and assessment, both during the planning process and activity implementation, are essential to the implementation of the activities included in the Plan.
9. Adoption of the Sustainable Urban Mobility Plan – as another stage, confirming the political will to complete the objectives included therein.
10. The implementation phase – begins upon the Plan acceptance (at this stage the working plan performance should be enforced, e.g. through various agreed and unified reporting forms).
11. Monitoring and conclusions from assessment – allowing regular plan updates[1].

The main idea behind SUMP is to work towards the creation of a sustainable urban transport system through the achievement of objectives like: transport safety improvement, transport environmental impact reduction, passenger and goods transport efficiency and effectiveness improvement, urban area attractiveness and quality improvement and improvement of transport services and their accessibility for inhabitants. The scope of mobility planning covers all types and forms of transport in the city, including

[1] F. Wefering, S. Rupprecht, S. Bührmann, S. Böhler-Baedeker (Rupprecht Consult — Forschung und Beratung GmbH): Guidelines. Developing and Implementing a Sustainable Urban Mobility Plan. Prepared on behalf of the European Commission, 2013. Polish version of March 2013 and http://edroga.pl/mobilnosc/planowanie-zrownowazonej-mobilnosci-miejskiej-191110981, accessed: 30/04/2016

public and private transport, passenger and goods transport, as well as motorised and non-motorised transport.

The Plan preparation and implementation process involves various groups of entities, characterised by e.g. a participative approach, a long-term vision and a clear action plan, aimed at a sustainable and integrated development of all forms of transport, as well as a regular monitoring of Plan implementation. The SUMP preparation and implementation process flow chart is shown in Fig. 1.

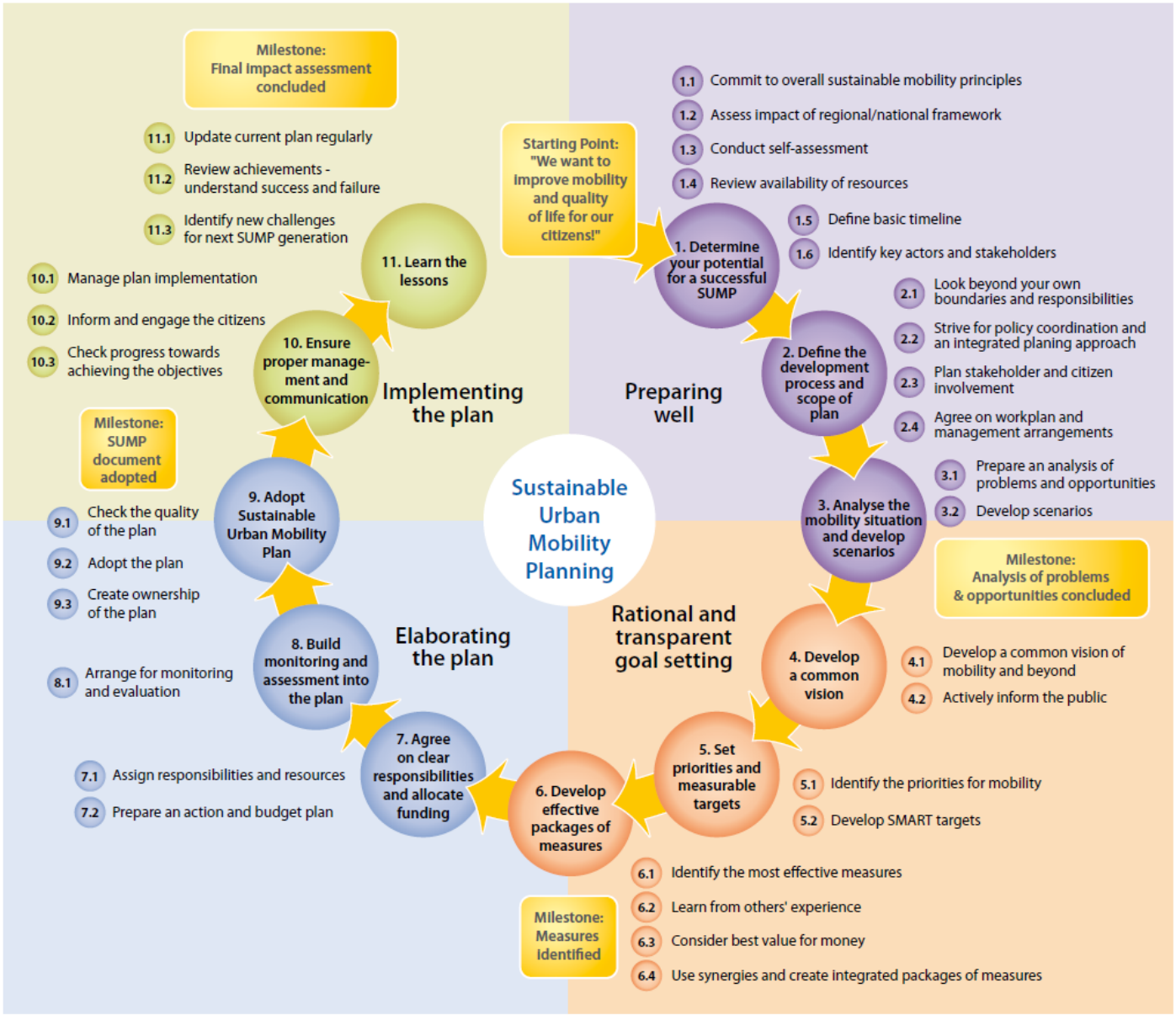


Figure 1. The SUMP preparation and implementation process

Source: "Wytyczne. Opracowanie i Wdrożenie Planu Zrównoważonej Mobilności Miejskiej" (Guidelines. Developing and Implementing a Sustainable Urban Mobility Plan), Rupprecht Consult 2014

1.2. Sustainable Urban Mobility Plan for Gdynia – the temporal and spatial scope

This Sustainable Urban Mobility Plan has been prepared for Gdynia, a city with a population of almost 250,000 and the area of 135 km^2 in the Pomorskie Voivodeship. The city is divided into 22 districts, very diverse in terms of the area and population[2].

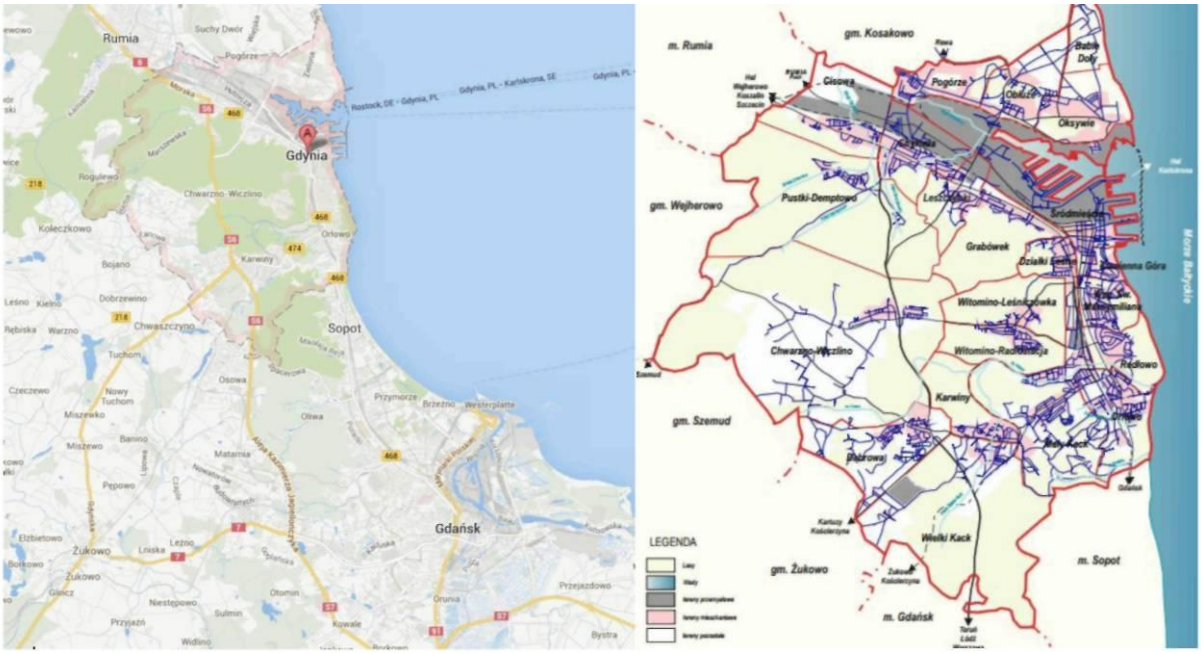


Figure 2. Gdynia – location in the Tricity and administrative division
source: Statistical Yearbook of Gdynia 2011, maps.google.pl

Some objectives of sustainable transport development cannot be achieved without clearly setting Gdynia in the metropolitan area and in the Pomorskie Voivodeship. This is related to the numerous metropolitan functions and the role of the port and the shipbuilding industry located in the city. Many important activities, which impact sustainable urban mobility in Gdynia, are also undertaken at the level of the Gdańsk-Gdynia-Sopot Metropolitan Area. Thus, this document, in some activities, exceeds the borderlines of Gdynia, in particular regarding the activities that are or will be completed in co-operation with the cities of the Metropolitan Area (e.g. TRISTAR – the Tricity's integrated traffic management system, the Pomeranian Metropolitan Railway, PKP Szybka Kolej Miejska w Trójmieście sp. z o.o., tariff and ticket integration) or impact other communes of the voivodeship (e.g. the activities of ZKM in Gdynia, which manages public transport also in the communes adjacent to Gdynia).

The SUMP for Gdynia has been developed for the years 2016-2025. It includes an action plan which will be verified every 2-4 years. The first action plan covers the years 2016-2018. During the entire validity period of the document, the City of Gdynia will be monitoring the implementation of activities on a regular basis, which will allow an effective completion thereof.

[2] In terms of the area, the largest district of Gdynia is Chwarzno-Wiczlino (27.93 km²) and the smallest is Kamienna Góra (0.63 km²). In terms of the population, the largest district is Chylonia (25,331 inhabitants) and the smallest is Babie Doły (2,261 inhabitants).

1.3. The SUMP preparation process

The BUSTRIP Sustainable Urban Transport Plan

The Sustainable Urban Mobility Plan for Gdynia for 2016-2025 is an expansion and update to the sustainable transport plan prepared for 2008-2015 within the EU co-funded project BUSTRIP. This document, although not officially adopted by the City Council, is an important working document that defines the activities necessary for achieving a sustainable transport system in Gdynia. To adjust to the reality and the SUMP guidelines of the European Commission, the document was used as basis for the preparation of Gdynia's SUMP, i.e. updated, extended and supplemented with missing items. The main objectives of the previous transport plan were: to prioritise public transport and to improve its efficiency and safety, to implement an intelligent traffic control system, and to improve the road traffic safety.

Co-operation with stakeholders[3]

Practically from the beginning, the SUMP preparation process included stakeholders – the institutions, units, companies and education sector (schools and universities) of Gdańsk. The main working group included representatives from: Zarząd Dróg i Zieleni [Road and Green Areas Management] in Gdynia, the University of Gdańsk, Gdańsk University of Technology and Gdynia's Public Transport Authority. The remaining stakeholders were included through direct meetings, email correspondence, workshops, marketing surveys, direct interviews, electronic surveys and consultations, related both to the SUMP and to the individual potential measures (e.g. pedestrian zones, the vision of the plan, transport behaviour and preferences of Gdynia's inhabitants).

Meetings and consultations

During the development of the Plan a series of meetings with inhabitants and stakeholders was held. First, separate information meetings regarding the SUMP were organised for inhabitants and stakeholder groups – representatives from the transport industry, schools and businesses. Subsequent meetings were already related to particular areas of transport and specific activities, e.g. a working group meeting regarding the improvement of the Gdynia Główna transport node, workshops regarding sustainable mobility or the debate on changes in the Gdynia city centre.

Surveys

Within the CIVITAS DYN@MO project, the www.mobilnagdynia.pl platform was created for communication between the City and inhabitants. The website has been active since February 2014. It features articles on planned and implemented activities, information on public consultations, transport solutions in other cities and surveys regarding the particular activity areas and the evaluation of communication with the city. MobilnaGdynia has allowed much cheaper and quicker surveys of preferences and collection of feedback from inhabitants, but due to the unrepresentativeness of this contact form, the research was supplemented using other methods.

In the SUMP preparation process, other forms of contact with stakeholders were widely used (Tab. 1), including the Road and Green Areas Management's (Zarząd Dróg i Zieleni's (ZDiZ)) internet-based tools for contact with inhabitants. In recent years, ZDiZ Gdynia implemented various tools based on web 2.0 internet technologies, which not only enable broadcasting content to recipients, but also allows the users to co-author content. Those tools are diverse in nature and they are used for different purposes.

One of them is SeeClickFix, a publicly available website that allows cyclists to report infrastructural problems. In February 2011 ZDiZ started cooperating with Stowarzyszenie Rowerowa Gdynia to use the

[3] The list of stakeholders is included in Appendix No. 4 to the Sustainable Urban Mobility Plan for Gdynia.

SeeClickFix website to improve the bicycle infrastructure in the city. Since then, city inhabitants have been able to use this publicly available tool to report problems, mark them on the map, submit a photo with a detailed description and suggestions for resolution. These reports are transferred directly to the ZDiZ employees responsible for undertaking corrective activities. Stowarzyszenie Rowerowa Gdynia has undertaken to monitor all reports and progress in corrective works.

In September 2012 ZDiZ, in co-operation with Centrum Współpracy Młodzieży, launched a local version of the NaprawmyTo.pl website. Under the programme entitled "Gdynia dla Wszystkich" (Gdynia for Everyone) and funded from the city budget, Centrum Współpracy Młodzieży (Centre of Youth Cooperation) organised walks with disabled people to indicate the barriers that impeded them while moving around the city. Each walk resulted in the preparation, using the above-mentioned website, of a report including the specific location, photos of the barriers encountered and suggestion for their removal. The reports were received and reviewed by ZDiZ Gdynia employees, after which corrective activities were undertaken. In the following years, the project was continued and other urban institutions have begun to organise walks as well.

In March 2013, the established Facebook profile on cycling was extended to all mobility matters (see: https://www.facebook.com/MobilnaGdynia). This formed a channel for sharing information in an easy and inhabitant-friendly manner, which also allowed an immediate expression of opinions or clarification of doubts.

At the end of September 2016, the profile had 4,280 likes. Some of the posts would reach the audience of tens of thousands of recipients (invitation to the preference survey regarding traffic organisation in Kościuszki Square and al. Jana Pawła II – the organic range was almost 33,000 recipients).

Articles posted on the website were promoted using the Facebook profile. As a result, both the Facebook profile and the website's popularity grew. At the end of September 2016, the website had been visited by 55,000 users, generating more than 180,000 reactions in total.

Table 1. Forms of stakeholder consultations in the SUMP preparation process in Gdynia

Consultation form	Entity in charge	Survey completion period	Sample size	Tool	Form of contact with the respondent	Sample size/number of participants	Respondent
Survey of the transport preference and behaviour of the inhabitants of Gdynia	ZKM Gdynia and the University of Gdańsk	01.2013 – 12.2013	random	interview questionnaire	personal interview	2000	Gdynia inhabitants aged 16-75
Pilot study of changes in the traffic organisation in Skwer Kościuszki	University of Gdańsk and ZKM	22/09/2013	non-random	interview questionnaire	personal interview	211	traffic participants in the Gdynia city centre
Meeting with stakeholders — the transport sector	ZDiZ and the University of Gdańsk	17/10/2013	N/A	N/A	N/A	15	
Meeting with stakeholders — the education sector	ZDiZ and the University of Gdańsk	18/10/2013	N/A	N/A	N/A	13	representatives of schools and preschools in Gdynia
Meeting with stakeholders — city inhabitants	ZDiZ and the University of Gdańsk	27/10/2013	N/A	N/A	N/A	7	
Survey of the transport preference and behaviour of post-primary students	University of Gdańsk and ZKM	2014	non-random	survey questionnaire	random survey	1234	students aged 16-20
Surveys on expected changes in traffic organisation in ul. Świętojańska	ZDiZ Gdynia and the University of Gdańsk	03.2014	non-random	survey questionnaire	electronic survey, personal	2727	traffic participants in ul. Świętojańska
Surveys on expected changes in traffic organisation in ul. Starowiejska	ZDiZ Gdynia	03.2014	non-random	survey questionnaire	electronic (681), personal (114)	795	users of the www.mobilnagdynia.pl website, entrepreneurs, inhabitants
Surveys on expected changes in traffic organisation in al. Jana Pawła II and Skwer Kościuszki	ZDiZ Gdynia	03.2014	non-random	interview questionnaire	electronic (800), personal (46)	846	users of the www.mobilnagdynia.pl website, entrepreneurs
Participation of inhabitants in transport planning	ZDiZ	04.2014		survey questionnaire	electronic survey	251	
Priorities of Gdynia in mobility	ZDiZ	02.2015	discretionary			30	
Meeting regarding prioritisation of objectives and activities	ZDiZ and the University of Gdańsk	19/02/2015	N/A	N/A	N/A	20	
Meeting regarding objectives	ZDiZ and the University of Gdańsk	19/03/2015	N/A	N/A	N/A	25	
Discussion on SUMP objectives	ZDiZ and the University of Gdańsk	04.2015	N/A	N/A	N/A	16	representatives of ZDiZ, ZKM, PKT, District Councils, the City Guard, the University of Gdańsk, the Gdańsk Technological University and the Maritime University.

Consultation form	Entity in charge	Survey completion period	Sample size	Tool	Form of contact with the respondent	Sample size/number of participants	Respondent
Debate entitled "Sustainable Mobility in Gdynia — Pedestrian Zones"	ZDiZ + the Maritime University	24/11/2014	N/A	N/A	N/A	100	general population
Survey of line 21 passengers	ZKM and the University of Gdańsk	10.2015	full sample	interview questionnaire	personal interview	641	passengers of the trolley line no. 21
Consultations regarding the vision of mobility development in Gdynia	ZDiZ	2015		electronic survey		103	
Survey of transport preference and behaviour of the inhabitants of Gdynia	ZKM Gdynia and the University of Gdańsk	January 2015 – December 2015	random	interview questionnaire	personal interview	2000	Gdynia inhabitants aged 15-75
Meeting regarding the mobility plan — student feedback	the University of Gdańsk and the Maritime University	01.2016	N/A	N/A	N/A	18	students
Survey of the Gdynia education sector regarding mobility	the University of Gdańsk	05.2016	full	survey questionnaire		67	school principals
Meetings with students	the Maritime University	06/07/2016	N/A	N/A	N/A	AP — how many?	students and academics

source: own study

1.4. Strategic framework and related documents

The work on the SUMP included a review of the existing strategic, planning and other documents, which partly or fully relate to transport and mobility. Since sustainable urban mobility planning requires a co-ordinated approach in view of the transport policy and other regulations, the SUMP must be coherent and integrated with other suitable development strategies. It should relate to and base itself on the strategies and policies that influence transport and mobility in Gdynia, not only locally, but also at the levels of the metropolis, voivodeship, country and even Europe. The documents were analysed to ensure the conformity of SUMP objectives with the objectives higher documents[4].

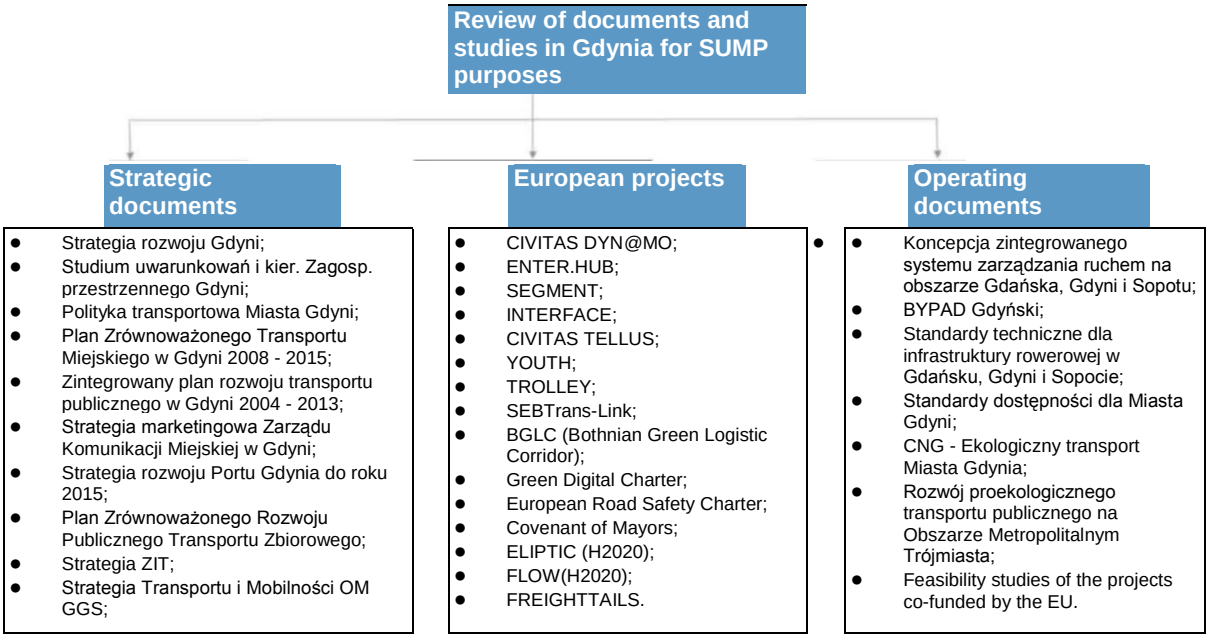


Figure 3 Studies used in the SUMP for Gdynia preparation process
source: own study

The full list of analysed documents is included in Appendix No. 2 to the Sustainable Urban Mobility Plan for Gdynia.

[4] The first detailed review of documents was included in the document entitled "Raport z weryfikacji dokumentów odnoszących się do kwestii transportu i mobilności w Gdyni" (Verification report of the documents related to transport and mobility in Gdynia), which is available for download at www.mobilnagdynia.pl , under the "Do pobrania" (Download) tab.

Table 2. List of European-level strategic documents

Document	Comment
Wpływ transportu na środowisko. Strategia Wspólnoty dla zrównoważonej mobilności (1992)	Opportunity to reduce exhaust and noise emissions and gain independence from oil supplies.
European Transport Policy for 2010: Time to Decide (2000)	Failed to achieve the objectives regarding the reduction of CO_2 emissions and the role of passenger cars in urbanised areas
Utrzymać Europę w Ruchu (2006)	Review of the current results of the European transport policy.
W kierunku nowej kultury mobilności w mieście (2007)	Definition of transport challenges faced by the cities of Europe.
Plan Działań dla Mobilności Miejskiej (2009)	Activity programme supporting mobility in cities in accordance with sustainable development principles.
Zrównoważona Przyszłość Transportu (2009)	Need to define the general mobility strategy.
Strategia „Europa 2020"	One of the objectives is "climate change and sustainable energy consumption".
Plan utworzenia jednolitego europejskiego obszaru transportu... (2011)	Includes the necessity to integrate e.g. transport and spatial planning in urban mobility plans.
Pakiet mobilności miejskiej (2013)	Support for cities in taking challenges related to urban mobility.
Wspólne dążenie do osiągnięcia konkurencyjnej i zasobooszczędnej mobilności w miastach (2013)	Definition of the essential scope and structure of the sustainable urban mobility plan.

Source: own study based on Appendix No. 1

Table 3. List of national-level strategic documents

Document	Comment
Polityka Transportowa Państwa na lata 2006-2025 (2005)	The basic objective is a significant quality improvement and expansion of the transport system – in accordance with sustainable development principles.
Krajowa Strategia Rozwoju Regionalnego 2010-2020: Regiony, Miasta, Obszary wiejskie (2010)	Including the restructuring of rural areas, development and complementation of metropolitan functions.
Koncepcja Przestrzennego Zagospodarowania Kraju 2030 (2011)	Specification of urban mobility balancing activities by spatial policy undertakings.
Długookresowa Strategia Rozwoju Kraju, Polska 2030. Trzecia fala nowoczesności (2013)	Objective No. 9: "Increased territorial accessibility by creating a sustainable, coherent and user-friendly transport system".
Strategia Rozwoju Transportu do 2020 r. (z perspektywą do 2030) (2013)	Increased transport accessibility and improved safety of traffic participants and transport sector efficiency.
Narodowy Program Bezpieczeństwa Ruchu Drogowego 2013-2020 (2013)	To shape safe behaviours of road traffic participants and their protection.
Umowa Partnerstwa (2014)	"Aiming at sustainable urban mobility, in particular preference for environmental transport (public transport, bicycle, pedestrian traffic)".

Source: own study based on Appendix No. 1

Table 4. List of regional-level strategic documents

Document	Comment
Strategia Rozwoju Województwa Pomorskiego 2020 (2012)	Includes a well-developed public transport with a strong competitive standing in relation to individual car transport, especially in the Metropolitan Area of Tricity.
Regionalny Program Operacyjny Województwa Pomorskiego na lata 2014-2020 (2015)	"To achieve internal transport coherence in the region, to strengthen public transport and to effectively connect the regional transport system – road and railway – with the national and European transport system".
Regionalny Program Strategiczny w zakresie transport - Mobilne Pomorze (2013)	Includes specific activities regarding public transport, accessibility of region peripheral areas and key multi-mode nodes, as well as the list of strategic undertakings arising from the voivodeship strategy provisions.
Plan zrównoważonego rozwoju publicznego transportu zbiorowego dla Województwa Pomorskiego (2014)	Plan of public utility transports organisation in the Pomorskie Voivodeship until 2025
Koncepcja Rozwoju Systemu Rowerowego Województwa Pomorskiego „Zielona Księga" (2009)	Impact of the bicycle traffic on regional development and creation of an integrated bicycle policy framework for Pomerania.

Source: own study based on Appendix No. 1

Table 5. List of metropolitan-level strategic documents

Document	Comment
Strategia Zintegrowanych Inwestycji Terytorialnych Obszaru Metropolitalnego Gdańsk-Gdynia-Sopot do roku 2020 (2016)	Undertakings aimed at increased ZIT (Integrated Metropolitan Area Investments) accessibility and a better integration of its particular areas by an increased use of public transport means.
Strategia Zrównoważonego Rozwoju obszaru funkcjonalnego. Nadmorski Obszar Usługowy NORDA 2020 z perspektywą 2050 (2016)	"Creation of a coherent transport system".
Strategia Zrównoważonego Rozwoju obszaru funkcjonalnego Dolina Logistyczna 2020 z perspektywą 2050 (2016)	The priorities and key activities include e.g. a well-developed transport system, constituting a competitive advantage.
Strategia Obszaru Metropolitalnego Gdańsk-Gdynia-Sopot do roku 2030 (2015)	Includes the improvement of the internal transport accessibility and the improvement of the public transport system.
Strategia Transportu i Mobilności Obszaru Metropolitalnego Gdańsk-Gdynia-Sopot do roku 2030 (2015)	Includes increasing the attractiveness of public transport, integrating public transport systems, developing active mobility and alternative means of transport, replacing the fleet with low- and zero-emissions vehicles, developing rail transport, creating restricted traffic areas.
Plan zagospodarowania przestrzennego województwa Pomorskiego (2009)	The transport system was considered one of the most important problem areas of the Tricity agglomeration.
Plan zagospodarowania przestrzennego Obszaru Metropolitalnego Gdańsk-Gdynia-Sopot 2030(2016)	Public transport as the basis of the transport service in urban areas.
Program Ochrony Środowiska Województwa Pomorskiego na lata 2013-2016 z perspektywą do roku 2020(2012)	Promotion and support of the solutions that allow reducing transport pollution emissions and traffic noise, rehabilitation and development of railway transport infrastructure.

Source: own study based on Appendix No. 1

Table 6. List of metropolitan-level strategic documents

Document	Comment
Strategia rozwoju Gdyni (2003)	Includes the integration of different forms of public transport in Gdynia and Tricity, the reduction of movement onerousness and the improvement of transport connections between the particular parts of the city.
Plan zrównoważonego rozwoju publicznego transportu zbiorowego dla komunikacji miejskiej w Gdyni oraz w miastach i gminach objętych porozumieniami komunalnymi na lata 2016-2025 (2016)	"Functioning and development of a modern and pro-environmental public transport, meeting passenger expectations and constituting a real alternative to passenger car trips".
Plan gospodarki niskoemisyjnej dla Gminy Miasta Gdyni na lata 2015-2020(2016)	Support for the strategy of developing public need fulfilling transport, developing bicycle and pedestrian traffic, and improving the road infrastructure, including technical and organisational activities.
Studium Uwarunkowań i Kierunków Zagospodarowania Przestrzennego Gdyni (2014)	Creation of conditions for agile and safe movement of people and goods, while ensuring priority for pedestrian, bicycle and public transport, and limiting the environmental impact of transport.
Program ochrony środowiska przed hałasem dla miasta Gdyni (2013)	Includes road, railway and air traffic noise.
Plan działań na rzecz zrównoważonej energii dla Gdyni dla roku 2020(2012)	Activities aiming at reducing the increase of vehicular traffic, while optimising the use of public transport and reducing the environmental impact of that sector.
Raport certyfikacji polityki rowerowej BYPAD w Gdyni (2013)	Bicycle policy quality survey, eight activity areas identified based on the diagnosis.
Standardy dostępności dla Miasta Gdyni (2012)	Requirements for designing and developing public areas in the city of Gdynia to implement friendly solutions for all area users.

Source: own study based on Appendix No. 1

2. Vision of sustainable mobility for Gdynia

Vision

Based on the strategic framework for the development of Gdynia, this document states the vision of the transport system and mobility improvement in Gdynia in 2016-2025.

"Jointly work towards the development of a sustainable mobility system that will provide the inhabitants of Gdynia with a high living standard and the ability to move within a safe, clean and friendly environment, as well as contribute to the social, spatial and economic development of the City".

To implement the Vision in 2016-2025, four strategic areas were defined that enable implementing this vision, while inscribing into the local, regional, national and European strategic framework (Tab. 7).

Table 7. Strategic areas relevant to the SUMP vision

1	**Quality of life:** Working towards the improvement of the quality of life in the city, as well as the conditions of living, working, travelling and using services in Gdynia: • improved accessibility of services, means of transport and workplaces; • ensuring a comfortable, reliable and profitable public transport.
2	**Economy:** Ensuring the economic development of Gdynia, while reversing the growth trend of the importance of car traffic and transport demand: • reducing congestion and time losses in the transport network; • improving accessibility (connections), in particular of the public transport; • considering the impact of planned housing developments and employment growth on mobility issues; • supporting and promoting pedestrian, bicycle and public transport, providing a suitable infrastructure.
3	**Environment:** Working towards the improvement of the local natural environment quality through activities towards sustainable transport, increasing the share of low-emission means of transport and implementing modern technologies in transport: • reducing the environmental impact of transport; • developing low-emission transport systems.
4	**Energy:** Working towards reduced energy consumption through investing in renewable energy sources, energy-saving urban transport, mobility management and shaping spatial development ("the city of small distances").

Source: own study based on meetings and consultations with stakeholders

The Sustainable Urban Mobility Plan for the City of Gdynia defines the connection between strategic areas and strategic objectives. The document presents the strategy for mobility in Gdynia for 2016-2025 with an indication of optimum activities that could be implemented to follow that strategy.

Coherence of the SUMP vision and objectives

The SUMP for Gdynia focuses on mobility at the city-level. Nonetheless, the document is set in a wider

strategic and planning framework of urban mobility, which includes e.g. the strategy at the European level, national regulations or transport plans at the regional and local levels. Therefore, the strategic areas of the SUMP were analysed for coherence with the objectives of the documents it inscribes into.

Table 8. List of strategic areas of the SUMP and European strategies regarding transport

	The SUMP for Gdynia	Strategia Zrównoważonego Rozwoju Unii Europejskiej (Sustainable Development Strategy of the European Union)	Biała Księga: Plan utworzenia jednolitego europejskiego obszaru transportu (White Book: The plan of creating a unified European transport area)	Zielona Księga: W kierunku nowej kultury mobilności w mieście (Green Book: Towards a new culture of urban mobility)
1. Quality of life	working towards the improvement of the quality of life in the city, as well as the conditions of living, working, travelling and using services in Gdynia	improving accessibility through supporting the missing transport connections.	reducing car traffic, especially in city centres, creating better conditions for pedestrian and bicycle traffic.	ensuring mobility, an appropriate living standard.
2. Economy	ensuring the economical development of Gdynia, while braking the growth of car traffic and transport demand	disconnecting transport growth and GDP growth to reduce the negative impact of transport	ensuring high quality, accessible and reliable transport services	optimisation of use of various means of transport, managing demand for transport and parking in the city.
3. Environment	working towards the improvement of the local natural environment quality through activities towards sustainable transport — increasing the share of low-emission means of transport and implementing modern technologies in transport	increasing the share of means of transport other than cars in transport work	reducing the greenhouse gas emissions, using intelligent technologies in urban transport, environmental, sustainable and safe urban transport	environmental protection, development of environmental, safe and intelligent transport systems.
4. Energy	working towards improved energy efficiency, e.g. through investing in renewable energy sources, energy-saving urban transport and mobility management	promoting of bio-fuels and increasing their share in car fuels consumption.	developing and introducing new fuels and drive systems, in accordance with the sustainable development principle, increasing the use of power-saving means of transport.	developing innovative urban transport technologies.

Source: own study

The SUMP objectives also inscribe into the objectives of regional (Strategia rozwoju województwa pomorskiego 2020, Plan zagospodarowania przestrzennego województwa), local (Strategia Rozwoju Gdyni, Studium Uwarunkowań i Kierunków Zagospodarowania Przestrzennego miasta) and metropolitan-level documents (Strategia rozwoju Obszaru Metropolitalnego Gdańsk-Gdynia-Sopot, Strategia Transportu i Mobilności Gdańsk-Gdynia-Sopot). Additionally, the SUMP provisions are integrated with the plans and concepts for the particular means of transport in Gdynia, e.g. bicycle traffic or public transport (Plan zrównoważonego rozwoju publicznego transportu zbiorowego w Gdyni na lata 2014-2025, Plan działań w zakresie ruchu rowerowego BYPAD w Gdyni).

3. Current situation analysis[5]

Gdynia is an important European transport node with maritime connections to ports in Europe and worldwide. It is an important component of the Gdańsk-Gdynia-Sopot Metropolitan Area (GGS MA), which is the most important metropolitan area in North Poland and simultaneously in the South Baltic Sea, with a regional yet international influence. The GGS MA is the economic centre of Pomerania. A characteristic feature of the GGS MA is its central location in Pomorskie Voivodeship and North Poland, which is also peripheral to the main development centres of Europe.

Gdynia has unique natural values, due to its seaside location (in particular, a long, diverse and attractive foreshore zone). In the urban area, complex relations are formed at the interface of environment, society and economy. A close connection with neighbouring communes is visible in daily traffic of inhabitants, related primarily with work and education. Including university students, the number of people working and studying in Gdynia is almost 110,000. Gdynia is characterised by a large number of people commuting to work from other communes. In 2011 they were 28,500, while a smaller number of people commuted to work outside the city (approx. 16,300)[6]. A dynamic development of seaports (in particular container terminals) has become an important factor stimulating the economic development. It leads, however, to increased demand for road, railway and intermodal infrastructure, in particular in Gdynia and in the northern part of the GGS MA. The dynamic development of Gdynia and the accompanying changes in spatial development, connected with the intensification of suburbanisation processes create transport problems that have an impact on public space, inhabitants' quality of life and environment. The most important problems include increasing congestion, resulting in a reduced travel speed, domination of passenger cars in trips, negative transport patterns and behaviours among the inhabitants, strengthened by uncontrolled suburbanisation processes and settlement development in neighbouring communes. The analysis of the current situation is meant to help identify the most important challenges in the particular aspects of mobility in Gdynia.

3.1. Social and economic conditions

The total area of Gdynia, according to the Central Statistical Office (GUS) data of 31 December 2015, was 135 km^2. The population density was 1,831 per km^2.

According to the Central Statistical Office data, the population of Gdynia at the end of 2015 was 247,478 (Fig. 4). This means that Gdynia has the 12th largest population in the country.

[5] The extended analysis of the current situation is included in Appendix No. 3 to the Sustainable Urban Mobility Plan for Gdynia.
[6] Dojazdy do pracy. Narodowy Spis Powszechny. GUS, Warsaw 2012, p. 39 and 41.

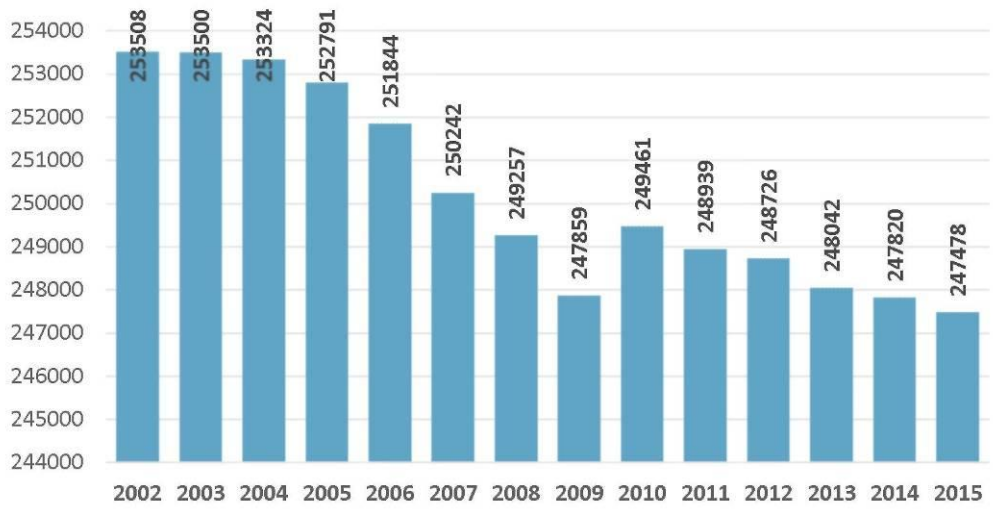
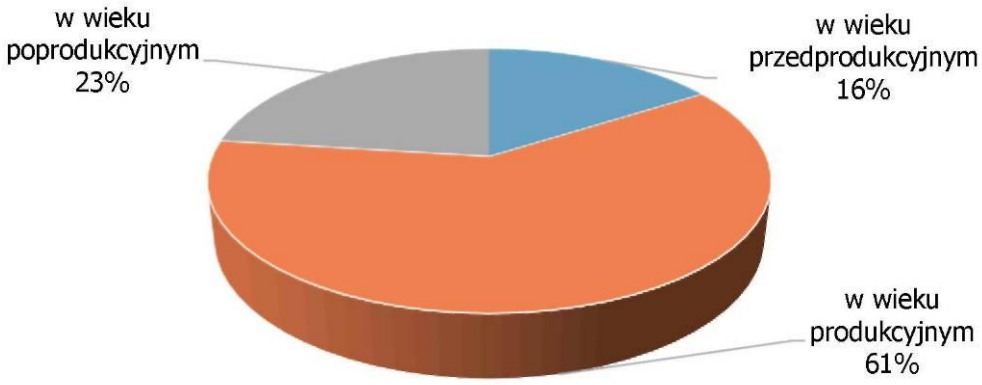


Figure 4. Population of Gdynia in 2002-2015

Source: own study based on GUS data.

The actual changes in the population are difficult to be captured precisely due to the fact that some inhabitants of Gdynia are not registered for permanent residence and, similarly, some people of Gdynia living abroad do not un-register from their former residence. It is a relatively common practice to register the child (sometimes with one of the parents) for permanent residence in Gdynia to enable attending an education facility in the city, despite actually living in a neighbouring commune. Thus, to determine settlement changes in the remainder of this study, the number of commissioned apartments was used as a more dependable indicator of the demographic and spatial processes.

As can be seen in 2015 (Fig. 5) the largest group of Gdynia's inhabitants were working age people (61%). 23% of inhabitants were in the post-working age, while the smallest group were pre-working age people, constituting 16% of inhabitants.



Term	Translation
w wieku poprodukcyjnym. 23%	post-working age 23%
w wieku przedprodukcyjnym 16%	pre-working age 16%
w wieku produkcyjnym 61%	working age 61%

Figure 5. Population structure of Gdynia by economical age group in 2015

Source: own study based on GUS data.

The number of Gdynia inhabitants in the post-working age has been continuously increasing for years both in relation to working and pre-working age people. In 2015 those indicators were 39.3 and 147.6, respectively (Fig. 6). Since 2006 Gdynia has been inhabited by more post-working age people than pre-working age people.

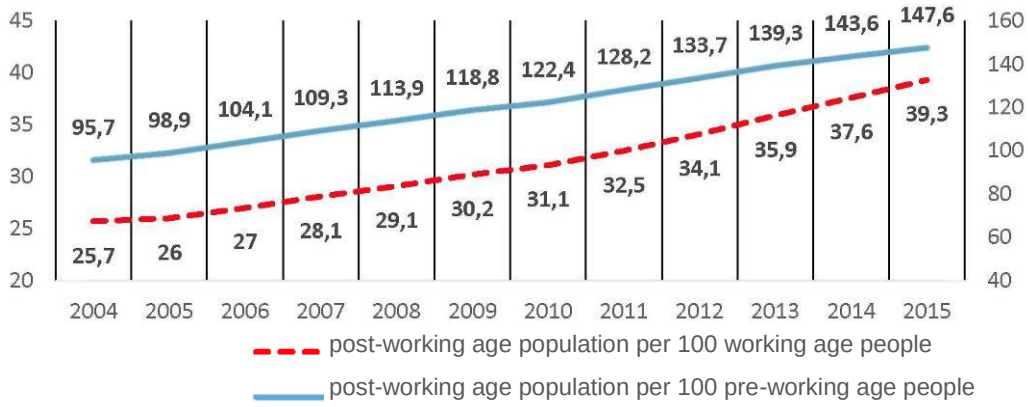


Figure 6. Demographic burden indicator in Gdynia in 2004-2015

Source: own study based on GUS data.

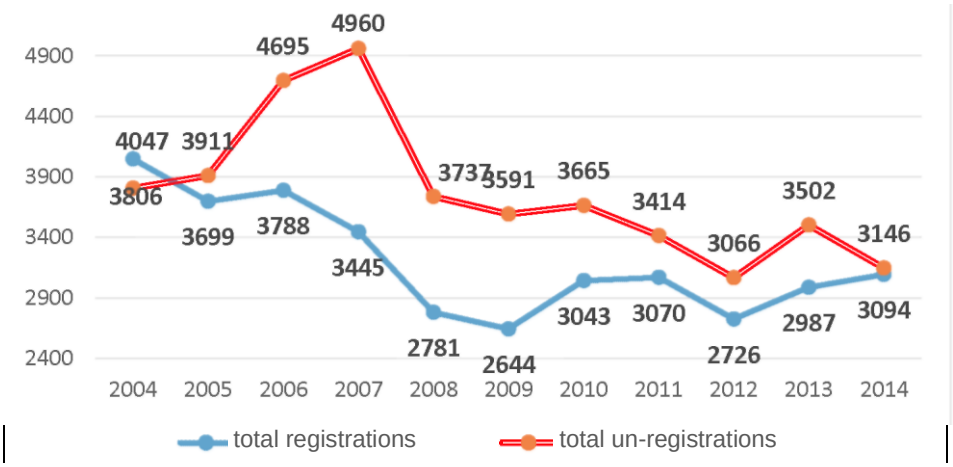


Figure 7. Total registrations and un-registrations in Gdynia in 2004-2014

Source: own study based on GUS data.

Aside from the negative population growth, the decreasing tendency in the population of Gdynia is caused by a negative migration balance (Fig. 7).

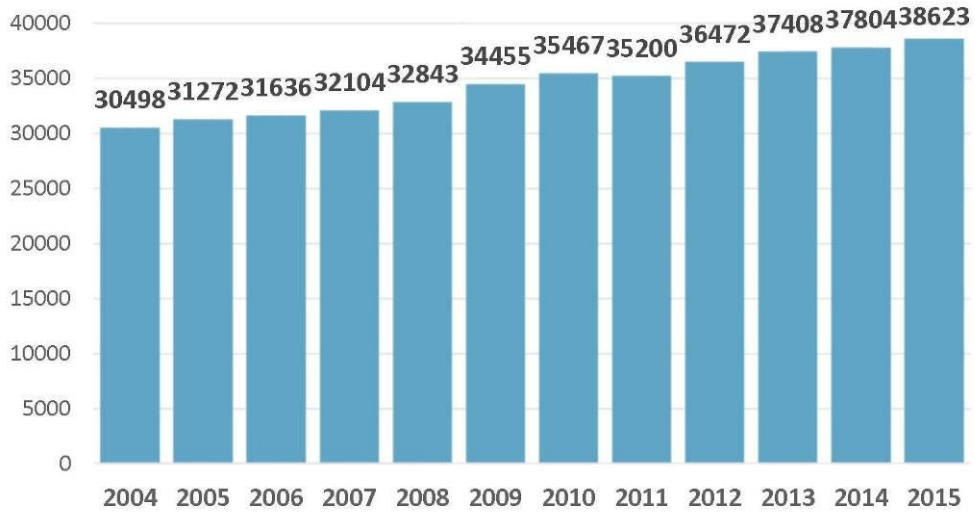


Figure 8. Number of business entities registered in REGON in Gdynia in 2004-2015

Source: own study based on GUS data.

In 2004-2015, there was a nearly continuous increase in the number of business entities in REGON (business identification number). In 2004-2015 the number of business entities increased by approx. 27% (Fig. 8).

In 2004, the unemployment rate in Gdynia was 9.4%. In 2008-2012 the number of the unemployed in the working age increased from 2.3% to 6.5% and decreased to 5% in 2015 (Fig. 9). In 2015, the analogical indicator was 9.0% for the Pomorskie Voivodeship and 9.8% for Poland.

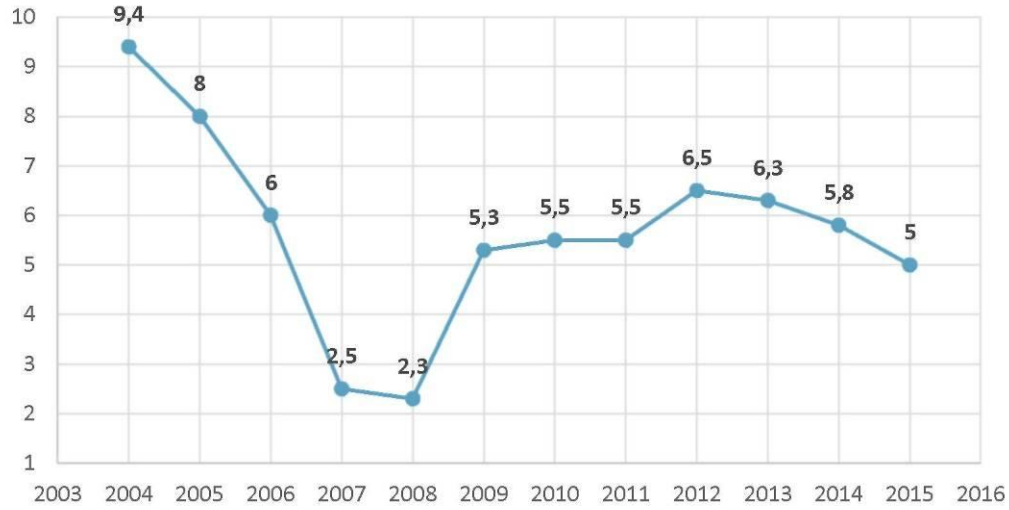


Figure 9. Recorded unemployment rate in Gdynia in 2004-2015

Source: own study based on GUS data.

In 2015, the budget revenue of Gdynia was PLN 1,236,000,000 (increase by 10% compared to 2013). In 2015, per capita spending was PLN 5032, while per capita revenue was PLN 4,990. In 2013-2015, the transport and communication spending in Gdynia was reduced from PLN 296,326,000 in 2013 to PLN 228,497,000, in connection with the end of the EU financial perspective for 2007-2013. In 2004-2015,

both the revenue and spending per capita in Gdynia were increasing (Fig. 10).

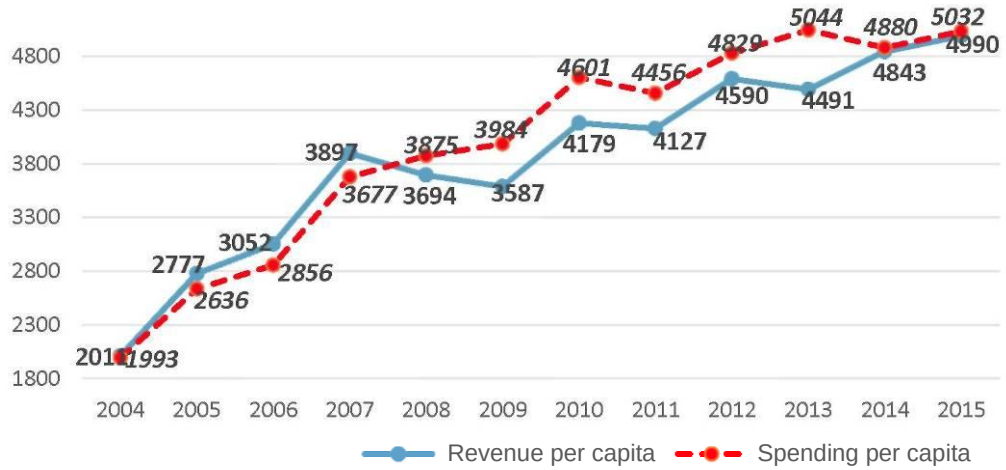


Figure 10. Budget revenue and spending per capita in Gdynia in 2004-2015 [PLN]

Source: own study based on GUS data.

Over the years the number of post-secondary and upper secondary schools decreased. The number of middle schools also decreased slightly. The number of primary schools remained unchanged. However, the number of preschool education facilities increased (Table 9).

Table 9. Selected education statistics for Gdynia in 2012-2015

Indicator	2012/13	2013/14	2014/15
Preschool education facilities	104	115	125
Children in preschool education facilities	7,379	7,989	7,474
Primary schools	40	40	40
Primary school pupils	12,698	12,612	13,574
Middle schools	34	34	33
Middle school students	6,627	6,483	6,243
Upper secondary schools	68	59	51
Upper secondary school students	11,147	10,803	10,489
Post-secondary schools	37	31	28
Post-secondary school students	5,844	3,887	3,667

Source: own study based on GUS data.

Challenges

A progressing decline in the population of Gdynia and population ageing brings new challenges for transport and urban mobility. If the above-described trends continue, one should expect an increase in the number of people entitled to both free and reduced urban transport trips. The increase in the number of the elderly also brings the demand for the improvement of the widely-understood accessibility of urban transport, both in terms of public transport stop placement and the removal of architectural barriers in their vicinity. The safety of the elderly of Gdynia will be an important challenge if individual motorisation continues to develop.

3.2. Urban spatial development

According to the administrative division, the city is divided into 22 districts, very diverse in terms of the area and population. In terms of area, the largest district is Chwarzno-Wiczlino (27.93 km²), which is also a dynamically developing housing area in Gdynia.

The city development is directed primarily towards Chwarzno-Wiczlino, Chwaszczyno and Kosakowo.

The processes of depopulation and "shrinking" of large urban centres are linked with migration of the younger and usually better-off inhabitants from the city centre to peripheral areas, e.g. to suburban communes, which results in the ageing of the centres and the drainage of the city tax base. Another phenomenon with similar consequences is economic migration abroad. A measurable aspect of this process is the increase of the non-working age people per 100 working age people. "The depopulation of Gdynia and the metropolis core is essentially relative, i.e. it is due to suburbanisation processes, which benefit the neighbouring rural communes"[7].

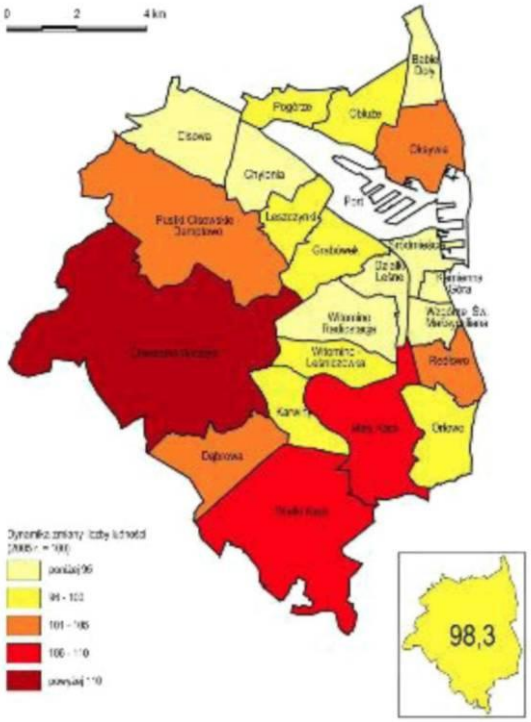


Figure 11. Trends in population change in the districts of Gdynia in 2005-2011

Source: Studium Uwarunkowań i Kierunków Zagospodarowania Przestrzennego Miasta Gdyni

The local government's development system functioning until now and the practices established over the years cause the communes to adopt a series of local strategic documents without an in-depth co-ordination with the neighbouring local government units. This is reflected by a dramatic increase in urban sprawl – the so-called demographic absorption in the communal planning documents accepted by the rural communes surrounding large and medium cities.

[7] Strategia Zrównoważonego Rozwoju obszaru funkcjonalnego Nadmorski Obszar Usługowy NORDA 2020 z perspektywą 2050.

Table 10. Apartment number growth dynamics in Gdynia and neighbouring communes in 2000-2014

Itemisation	Total apartments 2000	Total apartments 2014	Change
Gdynia	88,875	109,855	24%
Sopot	16,689	19,065	14%
Gdańsk	156,043	206,902	33%
Commune of Kosakowo	1,255	3,850	207%
Rural commune of Wejherowo	2,935	6,168	110%
Rumia	11,902	16,994	43%
Commune of Szemud	2,073	4,051	95%
Commune of Żukowo	4,356	9,597	120%

Source: own study based on Bank Danych Lokalnych, GUS

The scale of excess in areas for housing developments is up to 10% of the commune area in the studies of conditions and directions of spatial development and up to 4% in local plans[8]. For example, the demographic absorption is estimated at 79,600 for the commune of Żukowo, at 88,500 for Kosakowo (with the housing areas re-estimation rate at 9.34!) and at 61,200 for Wejherowo[9]

The suburbanisation processes occurring at the interface of Gdynia and the neighbouring communes is the increase in the number of apartments (Tab. 10). In the analysed period, the growth in the number of apartments in communes outside the core of the Metropolitan Area, neighbouring with Gdynia (Rumia, Żukowo, Wejherowo, Kosakowo, Szemud) increased by 18,000 (and almost 21,000 in Gdynia itself).

Table 11. Number of apartments growth dynamics by district of Gdynia (2002-2014)

District	Number of apartments growth in 2002-2014	Share in the total number of apartments in Gdynia in 2014
Chwarzno-Wiczlino	166.6%	3.7%
Mały Kack	59.1%	3.8%
Wielki Kack	49.3%	4.5%
Oksywie	41.9%	5.3%
Redłowo District Council	30.8%	3.8%
Dąbrowa	27.1%	5.2%
Pustki Cisowskie-Demptowo	26.6%	3.2%

[8] Śleszyński P., Andrzejewska M., Cerić D., Deręgowska A., Komornicki T., Rusztecka M., Solon J., Sudra P., Zielińska B., 2015, Analiza stanu i uwarunkowań prac planistycznych w gminach w 2014 roku. Institute of Geography and Spatial Organisation, Polish Academy of Science, on behalf of the Ministry of Infrastructure and Construction, Warsaw 2016, p. 157

[9] P. Śleszyński, R. Wiśniewski: Opracowanie Strategii Rozwoju Gdańskiego Obszaru Metropolitalnego do roku 2030. Diagnoza sektorowa: demograficzno-osadnicze uwarunkowania rozwoju OM i migracje. Warsaw – Gdańsk 2014

District	Number of apartments growth in 2002-2014	Share in the total number of apartments in Gdynia in 2014
Witomino Leśniczówka	26.6%	3.5%
Orłowo	24.7%	3.1%
Leszczynki	18.0%	3.5%
Obłuże	13.6%	7.3%
Grabówek	12.2%	3.9%
Wzgórze Świetego Maksymiliana	8.1%	6.2%
Karwiny	7.3%	4.3%
Witomino Radiostacja	7.0%	4.4%
Śródmieście	6.3%	8.2%
Cisowa	4.8%	4.5%
Pogórze	4.3%	4.3%
Babie Doły	3.6%	0.7%
Kamienna Góra	3.3%	1.9%
Działki Leśne	2.9%	4.2%
Chylonia	2.3%	10.4%

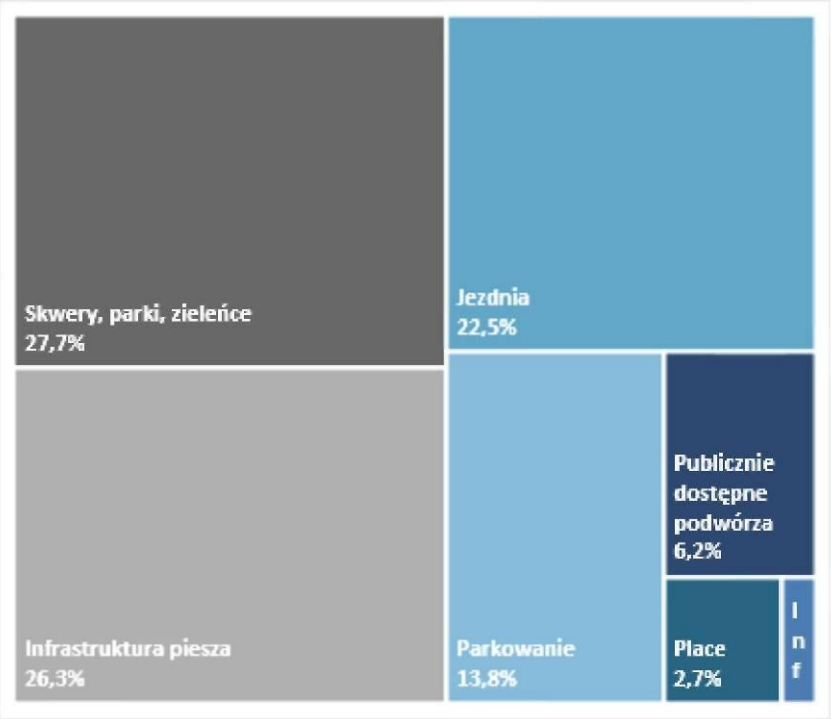
Source: own study based on the data of the Statistics Section of the Gdynia City Hall

In Gdynia, the growth dynamic of the number of apartments was very diverse (Table 11). In 2002-2014 the highest recorded growth of number of apartments was in the districts of Chwarzno-Wiczlino, Mały Kack and Wielki Kack, which accounted for 12% of the total number of apartments in 2014. A large growth of the number of apartments was also recorded in Oksywie and to a smaller extent in Redłowo, Dąbrowa and Pustki Cisowskie-Demptowo.

Urban space functionality in Gdynia city centre – a pedestrian's perspective

The overall evaluation of the pedestrian space in the centre of Gdynia is positive. The notion of functionality represents the evaluation of general access areas in terms of trip comfort for the non-motorised.

In Gdynia the largest part of the general access areas (in the analysed range, shown in Fig. 13) is covered by city green areas (27.7%). A little less (26.3%) is covered by generally-understood pedestrian infrastructure. In total, 62.9% of the general access areas is indirectly or directly dedicated to pedestrian traffic (Fig. 12).



Term	Translation
Skwery, parki, zieleńce 27.7%	Squares, parks, green squares 27.7%
Jezdnia 22.5%	Roadway 22.5%
Infrastruktura piesza 26.3%	Pedestrian infrastructure 26.3%
Parkowanie 13.8%	Parking space 13.8%
Publicznie dostępne podwórza 6.2%	General access courtyards 6.2%
Place 2.7%	Squares 2.7%
Inf	Inf

Figure 12. General access area usage in the centre of Gdynia in 2015

Source: Ł. Franek, Politechnika Krakowska, Kraków-Gdynia 2015, own study

General access areas are covered 22.5% by roads (total area: 942,500 m^2) and 13.8% by parking spaces, which in total is 36.3% of space for passenger cars. The percentage is 2.7% for urban squares and 0.8% for bicycle infrastructure. Pedestrian infrastructure with obstacles was identified on the area of 2,907 m^2 (outside parks). In terms of footpaths, 17% of the area dedicated for pedestrian traffic is in parks.

Term	Translation
Legenda	Key
jezdnia	roadway
infrastruktura dla pieszych	pedestrian infrastructure
infrastruktura dla rowerów	bicycle infrastructure

Term	Translation
zieleń miejska	city green areas
parkowanie	parking space
ścieżki w parkach	paths in parks
infrastruktura dla pieszych z niedogodnościami	pedestrian infrastructure with obstacles
place	squares
ogólnodostępne podwórza	general access courtyards

Figure 13. Evaluation of the pedestrian space in the centre of Gdynia

Source: http://www.mobilnagdynia.pl, [access: 02/09/16], based on: Source: Ł. Franek, Politechnika Krakowska, own study.

The analysis of local spatial management plans in Gdynia shows a large extent of pedestrian traffic, bicycle and public transport inclusion.

Challenges

The spatial processes discussed result in extending the average time of commuting to the places of work and education. In the neighbouring communes with a lower population density, cars are becoming the primary means of transport, which results in increasing traffic on the roads between them and Gdynia.

The decrease in the population of Gdynia with the increase in the population of the neighbouring urbanising communes results in a drain of the city tax base and may cause unreasonable, in terms of sustainable mobility, investment decisions.

3.3. Transport behaviours

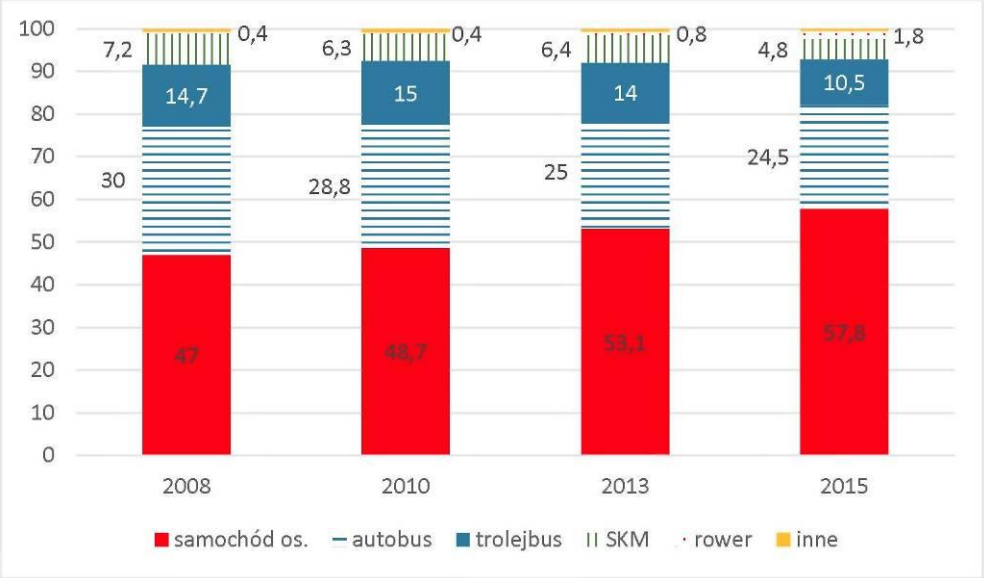
Successes:
- Systematic monitoring of the inhabitants transport behaviours
- Numerous activities in the field of mobility management, aimed at the target groups of students and workers
- Continuous development of low-emission public transport

Challenges:
- Increasing share of passenger car trips
- High share of passenger cars in trips to/from work
- Population ageing
- Proximity of the seaport and a high intensity of goods traffic

Inhabitants' transport behaviours

Preference and behaviour monitoring of Gdynia's inhabitants has been conducted regularly for more than 20 years by the Public Transport Authority of Gdynia. Surveys are conducted every 2-3 years by means of individual, standardised interviews, on a representative sample of 1% of the inhabitants. The last marketing survey was conducted in 2015. For the first time it evaluated the share of pedestrian trips in the modal split.

In 2015, the daily average of motorised trips (non-pedestrian) in Gdynia was 1.65 (1.57 in 2013).



Term	Translation
samochód os.	passenger car
autobus	bus
trolejbus	trolleybus
SKM	SKM
rower	bicycle
inne	other

Figure 14. Distribution of non-pedestrian trips in Gdynia in 2008-2015

Source: Preferencje i zachowania komunikacyjne mieszkańców Gdyni. Raport z badań marketingowych 2015. ZKM Gdynia, Gdynia 2016.

Approx. 44% of non-pedestrian trips are trips home, 23% are trips to work and almost 12% are personal trips[10]. Most trips are taken by car (58%, increase by almost 5% in relation to 2013). The share of public transport in trips is systematically decreasing – from 46% in 2013 to 40% in 2015. Only less than 1% of non-pedestrian trips are taken by bicycle (Fig. 14), although among middle school students this percentage is higher: 1.5% in 2014[11].

According to survey results, 41% of Gdynia's inhabitants declare to always or mostly select a passenger car for their urban trips. Selecting a car is usually motivated by factors like: higher comfort, shorter trip time or no need for waiting or transfers.

An additional survey conducted in 2014 among post-primary school students of Gdynia showed that for urban trips middle school students used mainly public transport, which on the surveyed day they used for 79% of trips[12], similarly to secondary school students, for whom that number was higher, 83%[13].

[10] Preferencje i zachowania komunikacyjne mieszkańców Gdyni. Raport z badań marketingowych 2015. ZKM Gdynia, Gdynia 2016.
[11] B. Orzechowski, O. Wyszomirski: Preferencje i zachowania komunikacyjne w podróżach miejskich uczniów gimnazjów w Gdyni. Report prepared under the CIVITAS DYNAMO project, Gdynia 2015, p. 21.
[12] Ibid., p. 21.
[13] M. Konarski, O. Wyszomirski: Preferencje i zachowania komunikacyjne w podróżach miejskich uczniów liceów ogólnokształcących w Gdyni i Sopocie. Report prepared under the CIVITAS DYNAMO project, Gdynia 2015, p. 37.

Trips to workplaces and schools

In the morning and afternoon rush hours, most trips are obligatory: from home to work or to school and the other way round. Workers and students typically have the highest mobility with 2.35 trips/day (2.04 in 2013). According to data for the Central Statistical Office (GUS) for 2013, the number of workers in Gdynia was 69,900, while the number of students was 32,000. Including university students, the number of people working and studying in Gdynia was almost 110,000.

In trips to work and education facilities, Gdynia is pre-dominant and accounts for 67.1% and 63% of all trips. 18.1% of inhabitants commute to work and 30.3% to education facilities in Gdańsk. Among the workers, 55% declare to always or mostly use a passenger car for their trips to work. The average trip time to work by car in 2015 was 20 minutes, almost two minutes less than in 2013. The average trip time to work by public transport was almost two times longer (39.2 minutes). For half of Gdynia's inhabitants, trip time for their commute to work by passenger car did not exceed 15 minutes.

Workers mostly use passenger cars for their trips. Pupils and students of Gdynia mostly use public transport. Commuting always or mostly by public transport is mostly declared by the inhabitants of the districts of Pogórze (60.5%) and Chylonia (56.7%).

Among pupils and students, 54.9% commute to education facilities in Gdynia. A large majority (82.1%) always or mostly commutes to/from education facilities by public transport.

Individual motorisation in Gdynia

The number of passenger cars in Gdynia in 2009-2015 increased by 23%, up to 134,000 vehicles (Fig. 15), while the individual motorisation rate increased from 440 to 542 passenger car per 1,000 inhabitants.

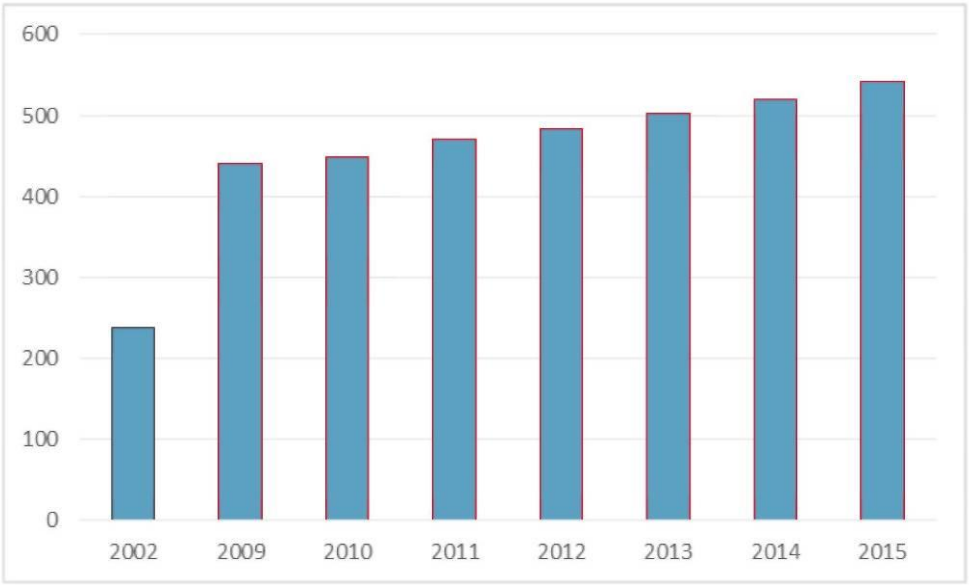
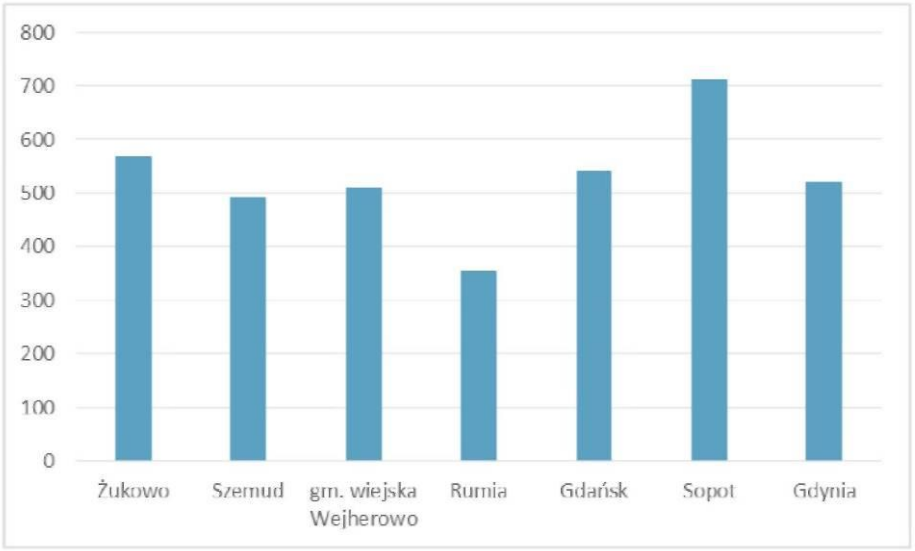


Figure 15. Number of passenger cars registered in Gdynia in 2002 and 2009-2015

Source: own study based on Bank Danych Lokalnych, GUS, 2015

An additional challenge is the dynamic development of individual motorisation in the communes neighbouring with Gdynia (Fig. 16).



Term	Translation
gm. wiejska Wejherowo	rural commune of Wejherowo

Figure 16. Motorisation rate in neighbouring communes in 2015 (Gdańsk, Gdynia and Sopot, data as per 2014)

Source: own study based on Bank Danych Lokalnych, GUS, 2015, and the data acquired from the district offices of Puck, Kartuzy and Wejherowo. No reliable data for the commune of Kosakowo.

For some inhabitants of those communes, Gdynia is the place of work or education, which contributes to a higher road traffic. The number of passenger cars in the neighbouring rural communes (without Kosakowo) and in Rumia is 44% of all cars registered in Gdynia.

Almost ¾ of all households in Gdynia have almost one passenger car, while in 2004 that share was 56%. There is a strong spatial diversity at the city level (Fig. 17). The highest percentage of households with a car is found in such districts as Mały Kack (90%), Wielki Kack and Chwarzno-Wiczlino (88%), Dąbrowa (85%) and Redłowo (83%). In turn, the least motorised districts of Gdynia were Chylonia (61%), Witomino (62%), Grabówek (63%) and Pogórze (64%).

District motorisation level
Gdynia 2015
share of households with a passenger car

Term	Translation
80,01% więcej	80.01% or more

Figure 17. The motorisation level of the districts of Gdynia in 2015 (as percentage of households with a passenger car)

Source: own study based on ZKM Gdynia data.

Challenges

In recent years, there has been a significant increase of passenger car trips in the modal split, at the expense of public transport. Passenger car are predominantly used for trips to work, which contributes to the car traffic on Gdynia's roads during the morning and afternoon rush hours, in which obligatory trips accumulate. This phenomenon is reinforced by the exponential growth of individual motorisation in the neighbouring communes, to which the people of Gdynia move. Reducing the role of the passenger car is a key task for the sustainable transport in the city and the increase of the quality of life.

3.4. Traffic and mobility management

Successes:

- New road projects, facilitating the traffic and the access to the seaport
- Effective use of the existing road system
- Implementation of the TRISTAR intelligent traffic control system
- Improvement of road traffic safety
- Institutional co-operation in the field of road traffic safety
- Numerous road traffic safety activities in schools

Challenges:

- Deteriorating road traffic conditions
- Need to construct road infrastructure to improve the seaport service
- Conflicts between road traffic participants
- High costs of road incidents and related traffic stoppages

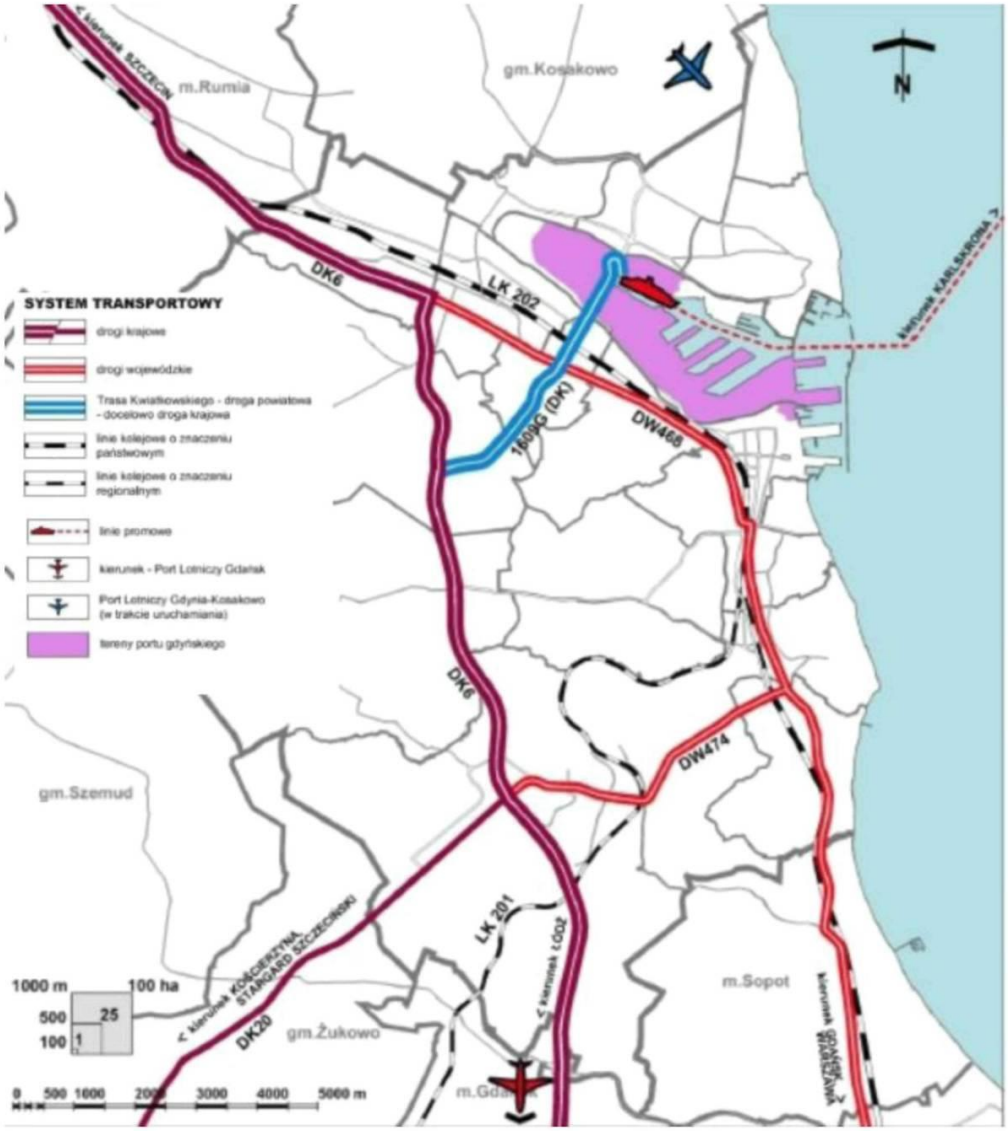
Mobility management is a concept that includes promoting sustainable transport and managing the need for using cars by changing commuter attitudes and behaviours[14]. The basis of mobility management are the so-called "soft" (non-investment) activities, such as information and communication (e.g. promotion and education campaigns to encourage using alternative modes of transport: on foot, on a bicycle and/or by public transport). Since 2012 Gdynia has been actively participating in several initiatives to raise sustainable transport awareness among its inhabitants and to promote alternatives to passenger cars for moving around the city. Notable education and promotion activities operated by the City include Europejski Dzień Bez Samochodu (the European "Day without a Car"), Rowerowy Maj (Cycling May), the European Cycling Challenge, Pieszy Autobus (the Pedestrian Bus), Odprowadzam Sam (I accompany on my own), Do pracy jadę rowerem (I cycle to work) and Parkingowa (r)ewolucja) (Parking (r)evolution), the organisation of services, mobility education and creating mobility plans for institutions, companies, schools etc.

The priority of the City in mobility management for the coming years is to intensify the activities related to education and promotion campaigns dedicated to particular inhabitants groups and to include stakeholders in creating mobility plans for specific institutions (companies, education facilities).

Road infrastructure

The road system of Gdynia is based on the north-south core, which is the voivodeship road no. 468 and the national road no. 6 (as express road S6 along the Chylonia - Gdańsk border segment). On the east-west axis, it is the country road no. 20, which is extended towards the city centre by the voivodeship road no. 474.

[14] www.epomm.eu access: 26/08/2015



Term	Translation
SYSTEM TRANSPORTOWY	THE TRANSPORT SYSTEM
drogi krajowe	national roads
drogi wojewódzkie	voivodeship roads
Trasa Kwia[nieczytelne] - droga powiatowa - docelowo droga krajowa	Trasa Kwiatkowskiego - district road - ultimately: national road
linie kolejowe o znaczeniu państwowym	national significance railways
drogi kolejowe o znaczeniu regionalnym	regional significance railways
linie promowe	ferry lines
kierunek - Port Lotniczy Gdańsk	direction - Gdańsk Airport
Port Lotniczy Gdynia-Kosakowo (w trakcie uruchamiania)	Gdynia-Kosakowo Airport (in commissioning)
tereny protu gdyńskiego	Gdynia port areas

Figure 18. Primary transport system of Gdynia

Source: Studium Uwarunkowań i Kierunków Zagospodarowania Przestrzennego Gdyni, Gdynia 2015, p. 33

The primary flow artery in Gdynia is located along the ul. Zwycięstwa and ul. Morska. In the west the city is traversed by the express road S6, the Tricity Beltway. It is part of the national road DK6, which is part of the international route E28 Berlin-Szczecin-Gdańsk-Elbląg-Kaliningrad-Vinius-Minsk. The Beltway connects Gdynia to the country road no. 7 (route E77 Gdańsk-Warsaw-Kraków-Budapest) and the motorway A1 (international route E75 from Norway through Finland, Poland, Czech Republic, Slovakia, Hungary, Serbia and Macedonia to Greece). Gdynia is also traversed by the national road no. 20 Stargard Szczeciński-Gdynia.

Figure 19. The busiest crossroads in Gdynia

Source: Zarząd Dróg i Zieleni in Gdynia, September 2016

The densest traffic is concentrated on the primary traffic frame of Gdynia (Fig. 19). The busiest crossroads are Al. Zwycięstwa/Wielkopolska (59,900 vehicles/day), exit from the Beltway to ul. Morska (59,800 vehicles/day), ul. Morska/Trasa Kwiatkowskiego (57,500 vehicles/day).

87% of roads are hard roads. In 2015 the annual road infrastructure maintenance and expansion spending was almost PLN 70,000,000.

In recent years, important transport infrastructure projects were completed, which improved traffic conditions in Gdynia, e.g.:

- Trasa Kwiatkowskiego (3rd stage): the road connecting with the Tricity Beltway and motorway A1;
- expansion of ul. Janka Wiśniewskiego, connecting the city centre and Trasa Kwiatkowskiego, which allowed routing heavy traffic outside the city centre,
- reconstruction of the Wzgórze Św. Maksymiliana node, the most important transport node in Gdynia, which included e.g. the construction of a tunnel under Droga Gdyńska and the reconstruction of the SKM station;
- the foot and bike bridge above Droga Gdyńska and railways, connecting both sides of Redłowo at the level of the Pomeranian Science and Technology Park;
- reconstruction of ul. Bosmańska, which improved road traffic conditions in the districts of Oksywa i Obłuże, including: surface and lighting renovation, the construction of a roundabout and bicycle path;
- reconstruction of ul. Chwarznieńskiej, which enabled improved access to the dynamically developing west districts of Gdynia, Chwarzna and Wiczlina, but above all widened the roadway and adjusted it to the current traffic;
- completion of the project entitled "Rozwój Komunikacji Rowerowej w Aglomeracji Trójmiejskiej" (Development of Bicycle Transport in the Tricity Agglomeration).

Traffic management

To improve traffic management in the Tricity area, the TRISTAR system, the Tricity's integrated traffic management system, has been launched, implemented gradually since 2012. With the newest transport technologies, the traffic lights under the control system are smartly adjusted to variable traffic conditions, which ensures a very efficient use of the existing road infrastructure. This system provides commuters with access to full information on a range of traffic conditions through: variable content tables and signs warning of weather conditions, traffic problems and speed limits, parking information signs with the quantity of parking places available, station information tables with electronic displays showing the actual time of public transport vehicle departures. This information is also transferred to users through a website and interactive kiosks installed at important pedestrian traffic points.

Ultimately, the system is to include almost 80 crossroads in Gdynia. The initial system efficiency tests on 16 crossroads in the systems proved that TRISTAR helps shortening trip time by 13-34% and increasing average trip speed by 13-45%, depending on the segment tested.

The TRISTAR system is meant to shorten the overall trip time of all vehicles in the covered area by at least 5.5% and to shorten the overall trip time of public transport passengers in the covered area by at least 6.5%.

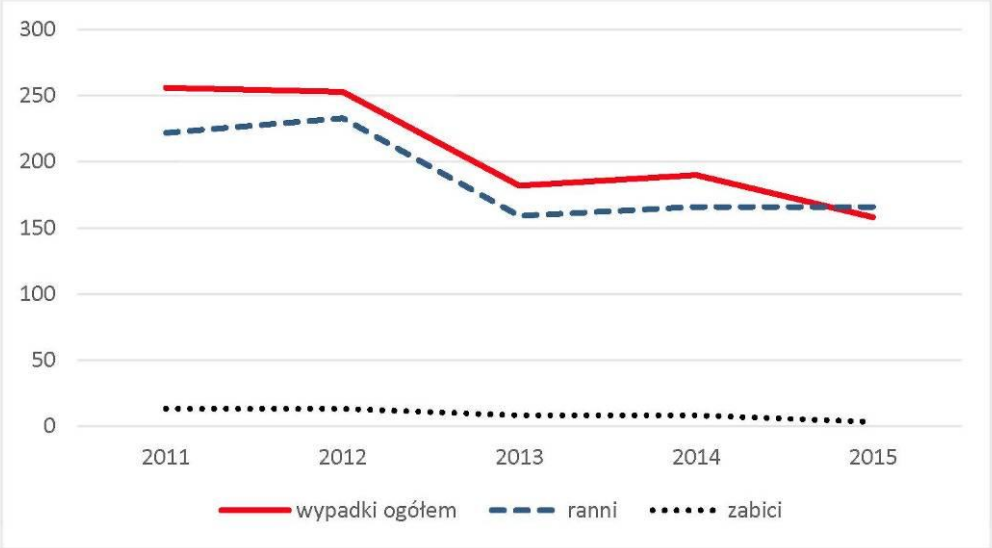
Challenges

Like in other Polish cities, in Gdynia car traffic is increasing continuously. Also, the demand for trips and mobility is increasing among inhabitants, who increasingly opt to take the trip by car. Those trends impact traffic conditions in the city, such as its fluidity, time losses due to reduced trip speed and lower

travelling comfort, especially for public transport passengers. Furthermore, they are not negligible in terms of road traffic safety and its environmental impact.

3.5. Road traffic safety

Year by year the number of road accidents is decreasing and the number of people injured in accidents is lowering as well (Fig. 20).

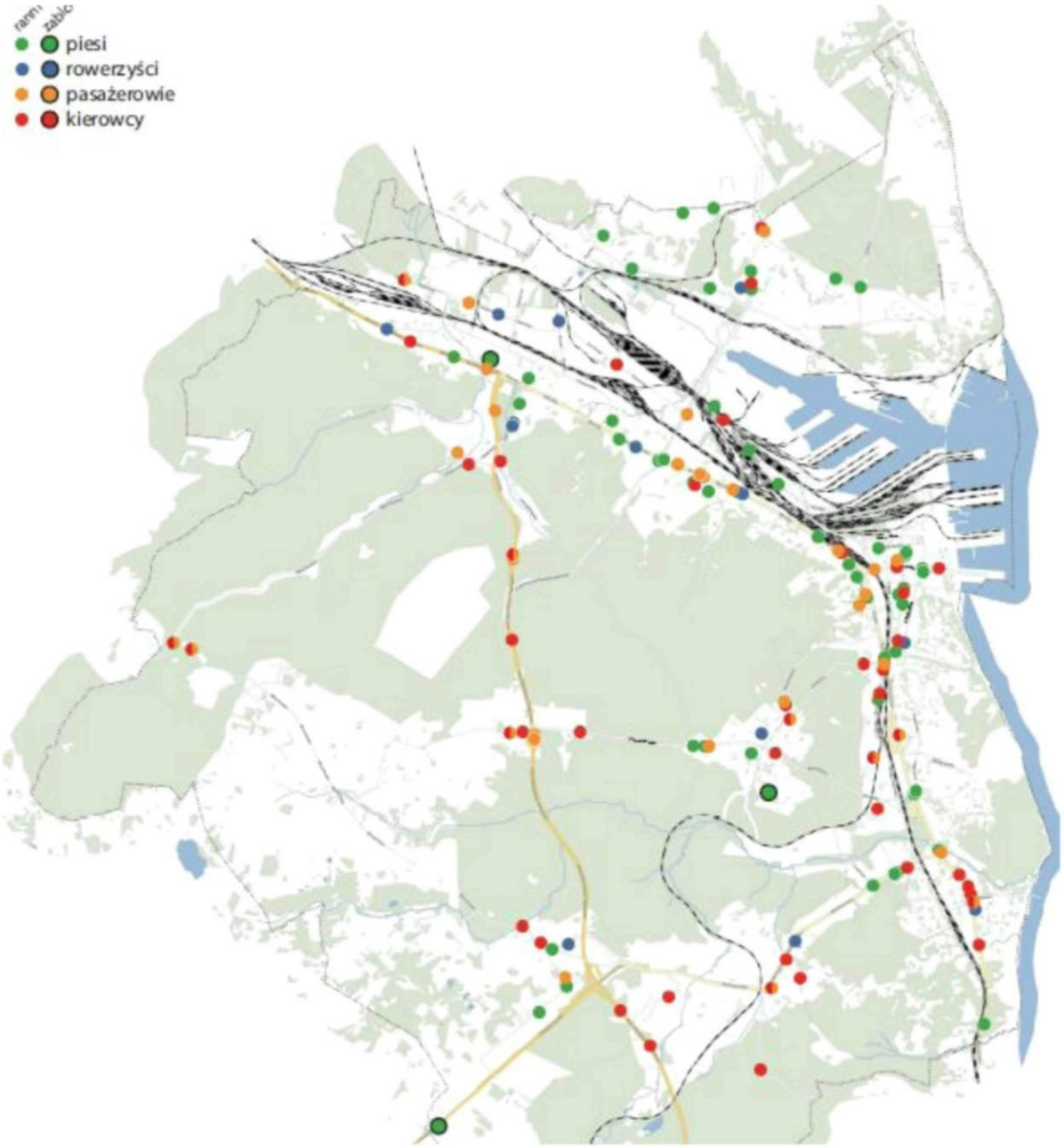


Term	Translation
wypadki ogółem	total accidents
ranni	injured
zabici	killed

Figure 20. Total accidents and road accident victims in Gdynia in 2011-2015

Source: Bank Danych Lokalnych GUS and data of the City Police Headquarters in Gdynia.

In 2015, in Gdynia 158 accidents were recorded, with three people killed (all pedestrians) and 166 people injured. ⅓ of all injured were pedestrians. Although bicycle traffic in Gdynia accounts for only 2% of all trips, cyclists were as many as 8% of all accident victims. The most common causes included failure to give way, failure to adjust the speed to traffic conditions and failure to give way to a pedestrian. In a vast majority of accidents, the persons at fault were vehicle drivers (77%).



Term	Translation
ranni	injured
zabici	killed
piesi	pedestrians
rowerzyści	cyclists
pasażerowie	passengers
kierowcy	drivers

Figure 21. Accidents in Gdynia in 2015

Source: own study based on the data of the City Police Headquarters in Gdynia.

The spatial distribution of accidents indicates the primary traffic system (al. Zwycięstwa in Orłów, Śródmieście) as the places where accidents occurred most frequently in 2015 (Fig. 21).

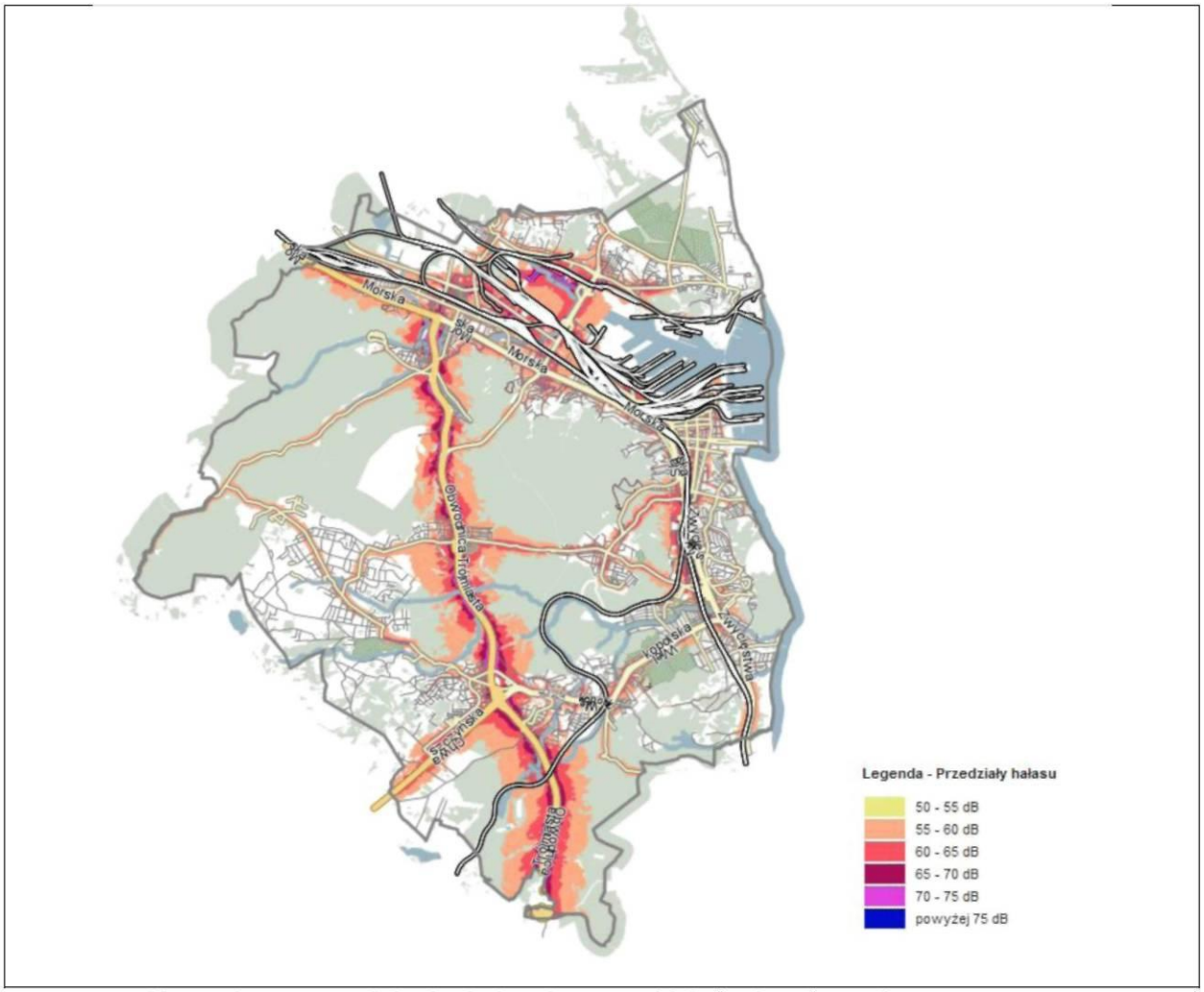
In the future, the introduction of automated vehicles should improve road traffic safety.

3.6. Impact on environment and health

Noise

Traffic noise is one of the most onerous sources of noise. All Gdynia inhabitants living near the main roads are exposed to high noise levels up to 80 dB.

High noise levels are also generated by railway transport (Fig. 22).



Term	Translation
Legenda - Przedziały hałasu	Key — Noise ranges
powyżej 75 dB	above 75 dB

Figure 22. Acoustic map of Gdynia — road noise (day-evening-night)

Source: https://server.miasto.gdynia.pl/geodezja/VisMap/apps/portal/public, [access: 02/09/16].

In Gdynia Śródmieście the acceptable noise level is exceeded e.g. in ul. Władysława IV or ul. 10 Lutego (the noise level is 75-78 dB by day and 60-69 at night, which exceeds the night limit by up to 10 dB). In ul. Świętojańska, narrowing the roadway reduced the noise level by 1.5 dB and it its 73-79 dB by day and 67-72 dB at night. The acceptable noise level is also exceeded in ul. Śląska and ul. Morska (by 2-5 dB in 2008).

Air pollution

The area of Tricity is under continuous air quality monitoring. Based on the adopted Low-Emissions Economy Plan for Gdynia, it is possible to indicate the most significant polluters in the city, considering CO_2 emissions. They are primarily housing, industry, commerce and services.

Challenges

Although the transport sector is not a major polluter, some groups of inhabitants are particularly exposed to exhaust gases, especially the elderly and the children. Therefore, strategic activities are necessary to influence the demand for trips and permanent changes in the division of transport tasks.

3.7. Parking space management

Successes:

- introduction of the Metered Parking Zone in Gdynia Śródmieście
- parking restrictions in Skwer Kościuszki and ul. Świętojańska
- new bicycle parking space
- spatial development of the Metered Parking Zone
- new underground car parks in the centre of Gdynia

Challenges:

- creating an alternative for parking in immediate city centre of Gdynia
- working towards integrating means of transport by creating P&R car parks
- parking demand management in the city centre and changing parking habits
- enforcement of parking regulations, especially preventing parking in walkways, bicycle paths and near pedestrian crossings

In Gdynia a metered parking zone has been established by the City Council resolution of June 2012, bordered to the north by ul. Jana z Kolna and ul. Wendy, to the south by ul. Piłsudskiego, and to the west by the railway between the Wzgórze Św. Maksymiliana and Dworzec Główny PKP stations.

Gradually, steps are taken to restrict parking in the immediate city centre. As part of the rehabilitation of ul. Świętojańska, which was completed 2003, pedestrian traffic conditions were improved by a significant reduction of the available parking space – traffic cones were installed along the street to mark the traffic lane subject to "no parking". In summer 2013, parking restrictions were introduced in al. Jana Pawła II – "no parking" was introduced along the left edge of the roadway.

In November 2014, on behalf of Zarząd Dróg i Zieleni, a survey of parking places was performed in the

city centre, covering almost 180 ha. The places were identified considering their signs, accessibility and parking type.

7,065 parking places were identified in the study area.

Despite a large number of parking places, the parking offer in Śródmieście is insufficient according to inhabitants and visitors. Vehicles block walkways and squares in the city centre, often contrary to the regulations. The parking situation in the centre of Gdynia is also deteriorated by the increasing motorisation and mobility rates among the inhabitants of Gdynia and neighbouring communes.

Challenges

To improve the parking situation in the city centre, it is necessary to take steps aiming at reducing the parking demand in the area. It is possible to obtain significant results by such activities as e.g. building integration nodes or multi-level car parks on the edge of the city centre, while influencing the drivers parking in the city centre by changes in traffic organisation, parking restrictions, parking fee and time adjustments, etc. As important as organisation and investment activities is the efficient and consistent enforcement of parking regulations in the entire city, in particular in the centre of Gdynia.

3.8. Pedestrian traffic

Successes:

- Parking restrictions in the Square
- Implementation of accessibility standard
- Public space by the Infobox and the Gdynia Film School
- Accessibility map and audit for reduced mobility persons
- Road traffic safety improvement near schools
- Further increase of the coastal space attractiveness for pedestrians.

Challenges:

- Complex pedestrian traffic studies
- Space competition between the pedestrians, cyclists and drivers in the strict centre of Gdynia
- Traffic calming in the central part of Gdynia
- Further expansion of high quality pedestrian areas
- Development of safe pedestrian infrastructure in west districts
- Increasing the number of pedestrian crossings in Śródmieście

The highest pedestrian traffic in the city is recorded in the central, coastal district of Gdynia: Śródmieście. Other pedestrian traffic generators in Śródmieście include the Gdynia Główna Train Station, the City Fair Halls, the Navigation Department of the Maritime University, the "Batory" Shopping Centre, the Kwiatkowski Centre, the Gemini Centre, the Roman-Catholic Church of Our Lady of Perpetual Help and St. Peter the Fisherman, the Roman-Catholic Church of the Holiest Heart of Our Lord Jesus, the "Niezapominajka" Day Care, the Local Government Preschool no. 7, 16 and 51, the

Local Government Primary School no. 21, the Middle School no. 1, the General Secondary Schools No. 9 and 10, the General Sport School Complex and public spaces: Skwer Kościuszki, the Molo Południowe (Southern Pier), the Yacht Marina and the Council of Europe Park.

According to the study conducted in October 2013 (Fig. 23), the main footpaths in Śródmieście include: Plac Kaszubski (2,000 pedestrians/hour), ul. Dworcowa from the crossroad with ul. Starowiejska to ul. 10 Lutego (1,800 pedestrians/hour), ul. Dworcowa from the crossroad with ul. Starowiejska to Plac Konstytucji (1,500 pedestrians/hour), ul. Wójta Radtkego from the crossroad with ul. Dworcowa to the crossroad with ul. 3 Maja (1,500 pedestrians/hour), ul. Świętojańska from Plac Kaszubski to the crossroad with ul. Żwirki i Wigury (1,400 pedestrians/hour), Skwer Kościuszki and ul. Starowiejska (1,300 pedestrians/hour), ul. 10 Lutego (1,200 pedestrians/hour) and ul. Armia Krajowa from the crossroad with ul. Władysława IV to the crossroad with ul. Świetojańska (1,100 pedestrians/hour), ul. Żwirki i Wigury between ul. Władysława IV and ul. Świętojańska (1,100 pedestrians/hour) and ul. Świętojańska from the crossroad with ul. Żwirki i Wigury to the crossroad with al. Marszałka Józefa Piłsudzkiego (1,100 pedestrians/hour).

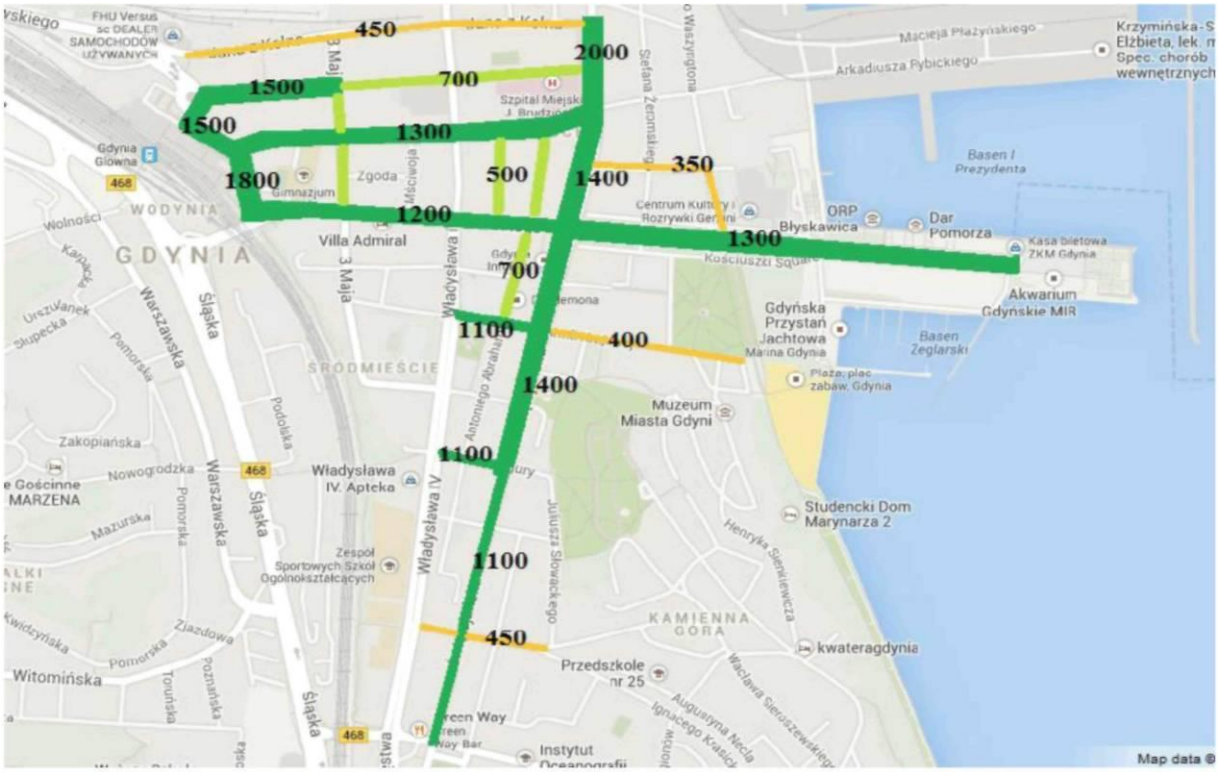


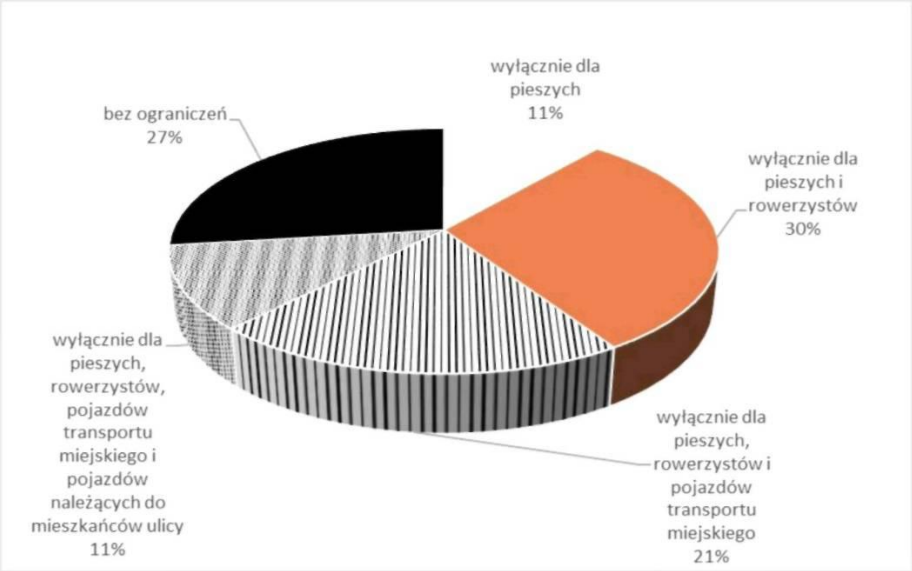
Figure 23. Pedestrian traffic intensity distribution per hour in the city centre of Gdynia in 2013

Source: J. Oskarbski: Koncepcja analiz zmian organizacji ruchu i przebiegi linii transportu zbiorowego. Study under the CIVITAS DYNAMO project, Gdańsk-Gdynia 2014. [after: W. Jobski: Koncepcja wprowadzenia stref ruchu pieszego w Śródmieściu Gdyni. Engineer's graduation project. Department of Road Engineering, the Gdańsk University of Technology, 2013].

Due to the projects planned, it is estimated that pedestrian traffic in Śródmieście will increase, in particular the highest increase is expected in Skwer Kościuszki in connection with the planned development of the Molo Południowe (Southern Pier) and Molo Rybackie (Fishing Piers) (increase by 88% by 2020 due to the increase of the service area by approx. 150%, resulting from the construction of

the Waterfront and the development of the Southern and Fishing Piers), Plac Kaszubski (increase by 44%), along ul. 10 Lutego (by 18%), ul. Świętojańska (by 16%) and ul. Starowiejska (by 12%), along ul. Dworcowa between ul. 10 Lutego and ul. Wójta Radtkego (by 11%)[15].

In 2014-2016, traffic intensity and structure surveys were performed on selected streets in the centre of Gdynia. For ul. Świętojańska the highest share in the trip structure belongs to passenger cars, which account for almost half of recorded trips. However pedestrian traffic is also an important trip component, with the share of between 24% (on business days, at the level of ul. Traugutta) and 37% (on Sundays, at the level of the Infobox) of all recorded trips[16].



Term	Translation
bez ograniczeń 27%	no restrictions 27%
wyłącznie dla pieszych 11%	only for pedestrians 11%
wyłącznie dla pieszych i rowerzystów 30%	only for pedestrians and cyclists 30%
wyłącznie dla pieszych, rowerzystów i pojazdów transportu miejskiego 21%	only for pedestrians, cyclists and public transport vehicles 21%
wyłącznie dla pieszych, rowerzystów, pojazdów transportu miejskiego i pojazdów należących do mieszkańców ulicy 11%	only for pedestrians, cyclists, public transport vehicles and vehicles owned by street inhabitants 11%

Figure 24. Results of the inhabitants preference survey regarding traffic organisation in ul. Świętojańska, conducted in 2014

Source: M. Wołek, Zarząd Dróg i Zieleni w Gdyni, Organizacja ruchu na ul. Świętojańskiej w świetle badań marketingowych. Report on the survey conducted in March 2014, Study under the CIVITAS DYNAMO project, Gdynia 2014.

Within the CIVITAS DYN@MO project, dialogue was initiated on the increase of the accessibility and attractiveness of the city centre for pedestrians by creating pedestrian zones. The locations considered for the pilot project were the following streets: ul. Świętojańska, ul. Starowiejska and al. Jana Pawła II.

[15] Source: J. Oskarbski: Koncepcja analiz zmian organizacji ruchu i przebiegi linii transportu zbiorowego. Study under the CIVITAS DYNAMO project, Gdańsk-Gdynia 2014, p. 12. [after: W. Jobski: Koncepcja wprowadzenia stref ruchu pieszego w Śródmieściu Gdyni. Engineer's graduation project. Department of Road Engineering, the Gdańsk University of Technology, 2013], p. 30.

[16] M. Wołek: Badania natężenia i struktury ruchu na ul. Świętojańskiej w Gdyni w 2015 roku. Study under the CIVITAS DYNAMO project, Gdynia 2015, p. 24.

During marketing surveys, traffic restrictions consisting in allowing only pedestrians in ul. Świętojańska were voted for by 11% respondents. On the other hand, most respondents (73%) accepted restrictions for passenger cars (Fig. 24 and Table 12).

Table 12. Traffic organisation changes postulated by respondents in ul. Świętojańska, ul. Starowiejska and Skwer Kościuszki/al. Jana Pawła II by votes (2014)

ul. Świętojańska (2272 respondents)	ul. Starowiejska (795 respondents)	Skwer Kościuszki/al. Jana Pawła II (846 respondents)
• 30 km/h zone signs; • priority for pedestrians; • physical means of traffic calming; • parking restrictions.	• 30 km/h zone signs; • priority for pedestrians; • parking restrictions; • physical means of traffic calming.	• 30 km/h zone signs; • priority for pedestrians; • parking restrictions; • separated parking places for light goods vehicles.

Source: own study based on the results of the inhabitants preference survey regarding traffic organisation in ul. Świętojańska, ul. Starowiejska and al. Jana Pawła II and Skwer Kościuszki, 2014.

Accessibility for the disabled

An important aspect of mobility is accessibility for the disabled and people with reduced mobility (e.g. the elderly, mothers with prams), in particular in terms of barriers in the transport structures, means of transport or public space.

According to the National Census in 2011 Gdynia had 32,701 disabled inhabitants, 13.2% of the population[17]. An additional reduced mobility group are the elderly, belonging to the 20% group of post-working age inhabitants.

Gdynia has been paying particular attention to issues affecting the disabled. The main direction is to include the disabled in all fields of activity, to provide equal opportunities and to make public services accessible. In 1999, Gdynia created the position of the President's Representative for the Disabled, who co-ordinates the activities in this area. The City Hall also has the Independent Section for the Disabled. In 2013, Accessibility Standards were adopted, of which the implementation is coordinated by the Expert for Accessibility employed at Zarząd Dróg i Zieleni.

One of the projects implemented is entitled "Gdynia dla wszystkich" (Gdynia for Everyone). It is aimed at urban space diagnostics for people with reduced mobility. The project includes walks with the disabled in the districts of Gdynia, aimed at identifying the barriers in traffic routes, means of public transport, public utility buildings and urban space (e.g. the walks in Grabówek resulted in the identification of more than 200 problems). The project resulted in the creation of a map of barriers, used by the local government units of Gdynia during the completion of the statutory tasks.

Another focus area of the city is the accessibility of public transport. All buses and trolleybuses are low floor. ZKM Gdynia also offers mini-buses for the disabled. In 2012, Gdynia was recognised for accessible public transport in the "Access City Award" contest of the European Commission.

In 2013, ZDiZ employees completed training in accessibility standards. The workshops included theoretical classes and practical (field) classes with rehabilitation equipment.

[17] Gdynia in numbers — the National Census 2011

Challenges

The challenge is to make the centre of Gdynia more accessible to pedestrians. It is possible through e.g. using car traffic restrictions, introducing traffic calming measures or creating pedestrian zones. It is also important that the streets are pedestrian-friendly, so that they allow stopping and spending free time in an attractive, aesthetic and friendly environment.

The challenge for the dynamically developing west districts is the construction of pedestrian infrastructure.

The above demands are connected with the need to provide maximum accessibility for reduced mobility persons. This applies not only to the city centre, but to the entire Gdynia.

3.9. Public transport

Successes:

- High appreciation of the public transport fleet among the inhabitants
- Fully low floor fleet
- Dynamic information system in TRISTAR
- Prioritisation of public transport due to bus lanes
- High percentage of low-emission vehicles (trolleybuses and more than ⅓ buses with Euro5-compliant or higher motors)
- Developed services for reduced mobility persons
- Diverse services (regular, fast and special lines)

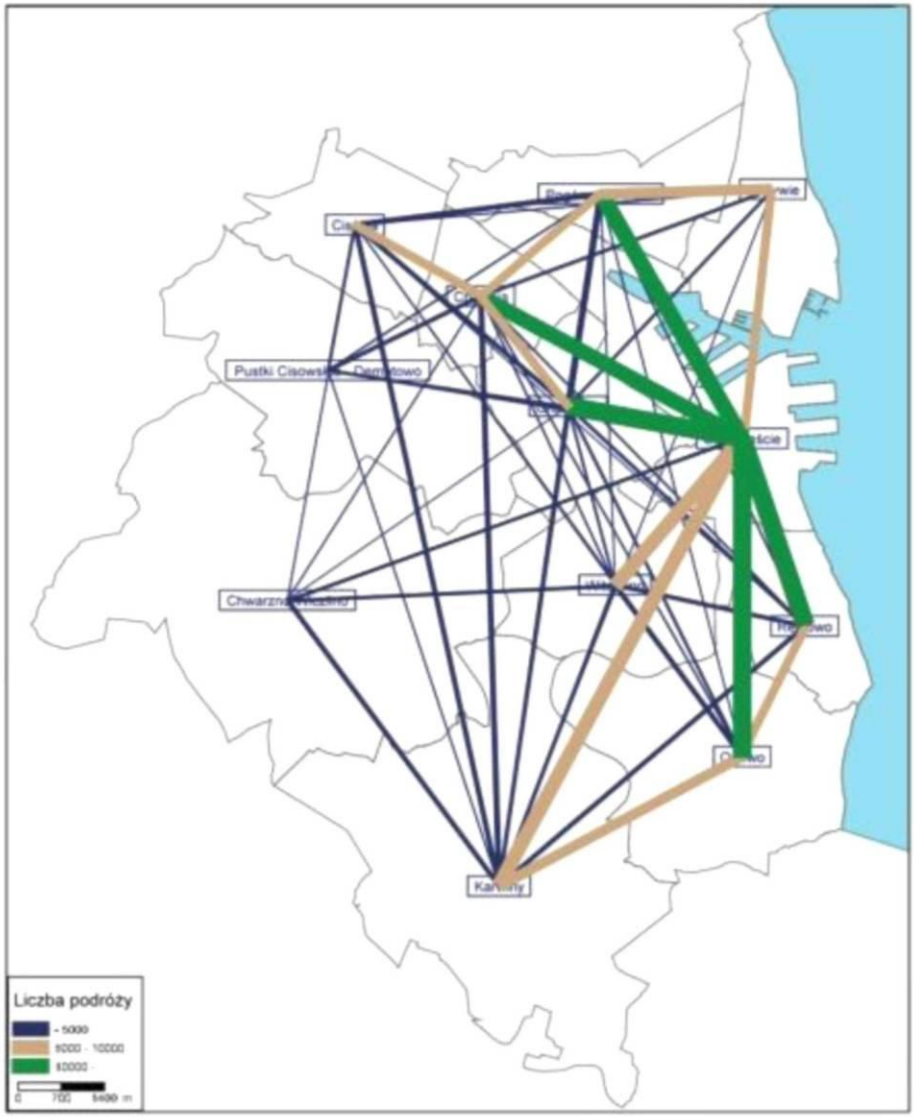
Challenges:

- Decreasing share of public transport in urban trips
- Decreasing transport punctuality and speed due to congestion
- No transport integration between public transport means in the Gdańsk-Gdynia-Sopot Metropolitan Area
- Decreasing repayment rates

Bus and trolleybus public transport in Gdynia are organised by the Public Transport Authority, a budget unit of the city of Gdynia that contracts companies to perform transport services in Gdynia and six neighbouring communes. It was founded in 1992, as a carrier-independent urban public transport organiser, extracted from the City Hall structures. The grounds for the establishment of ZKM in Gdynia were on the one hand difficulties in providing appropriate transport services for the city and on the other hand the city authorities believe that public transport operations should be put on the market according to a concept prepared by a team of experts[18].

On behalf of ZKM in Gdynia, operators manage 85 bus lines and the total length of bus and midi-bus routes is approx. 293.2 km.

[18] O. Wyszomirski: Dwadzieścia lat funkcjonowania Zarządu Komunikacji Miejskiej w Gdyni. "Transport Miejski i Regionalny" 2012, no. 8, pp. 4-12.



Term	Translation
Liczba podróży	Number of trips

Figure 25. Daily trip structure for public transport in 2013

Source: http://www.gdynia.pl, [access: 02/09/16].

In 2015, the number of public transport passengers in Gdynia was approx. 75.9 million (with other serviced cities and communes, approx. 88 million). The ticket sales revenue was PLN 68.5 million, which set the repayment rate (the percentage, in which the ticket sales revenue covered the costs) at 44%[19] (comparable to other cities in Poland).

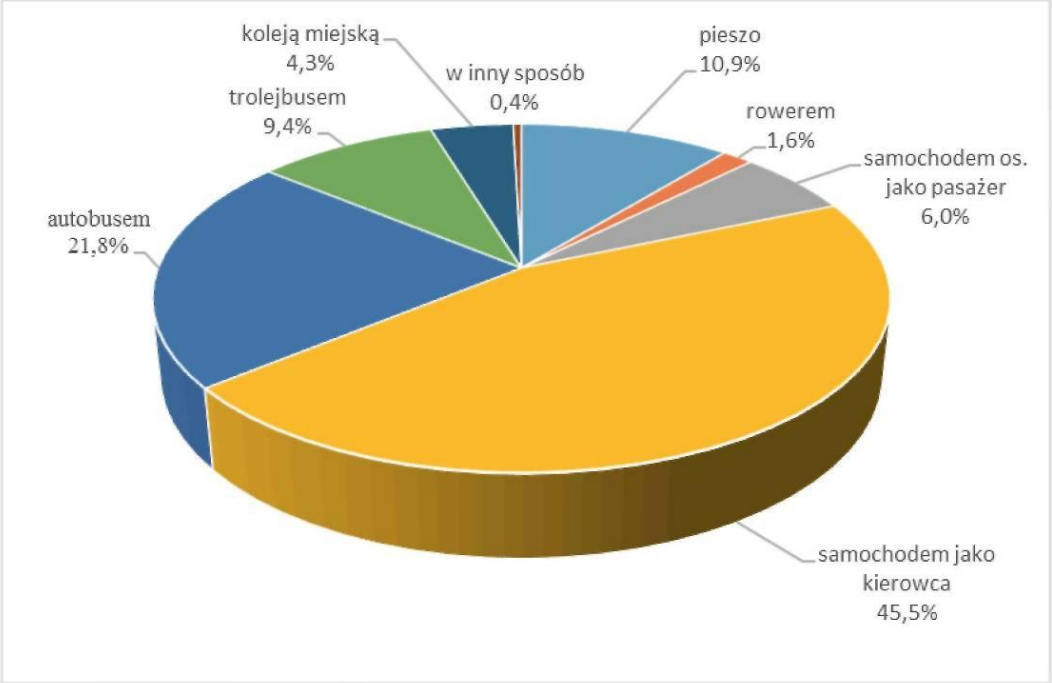
The trip structure is dominated by trips to/from Gdynia (Fig. 25).

In 2013, ZKM in Gdynia used 230 buses (including 98 articulated buses). They were low floor vehicles that met stringent fuel consumption standards. The average fleet age was 11.6 years for buses and 7.6

[19] Compared to 2013 it increased slightly from 43% to 44% and it was comparable to KZK GOP (41%), ZTM Poznań (42%), ZDiTM Szczecin (46%), ZTM Rzeszów (48%) and significantly higher than in ZTM Warszawa (31%).

years for mini-buses. The trolleybuses of Gdynia have a 27% share in the entire public transport fleet that provides services for ZKM Gdynia. In 2016, in Gdynia there were 93 trolleybuses used, running 16 trolleybus lines (on access and exit lines).

The declared trip mode was verified with a question about the respondent's actual trip mode on the day before the survey. Trips on foot were included if the distance was more than 500 m.



Term	Translation
koleją miejską 4,3%	urban railway 4.3%
trolejbusem 9,4%	trolleybus 9.4%
w inny sposób 0,4%	other 0.4%
pieszo 10,9%	on foot 10,9%
rowerem 1,6%	bicycle 1.6%
samochodem os. jako pasażer 6,0%	car, as passenger 6.0%
samochodem jako kierowca 45,5%	car, as driver 45.5%
autobusem 21,8%	bus 21.8%

Figure 26. Division of trips according to the trips taken by the inhabitants of Gdynia on the day before the survey in 2015

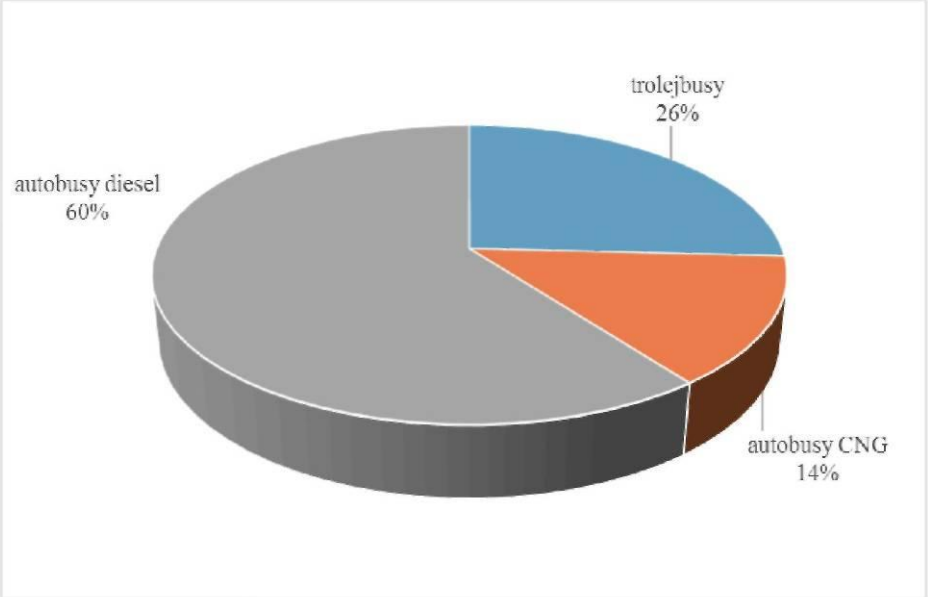
Source: Zachowania i preferencje komunikacyjne mieszkańców Gdyni w 2015 r. Raport z badań marketingowych. ZKM Gdynia, Gdynia 2016.

Most (51.5%) of trips on the day before were taken by the inhabitants of Gdynia by car (Fig. 26). The most used public transport means was the bus (ca. 20% of all trips). The trolleybus was used for approx. ca. 10% of the total number of trips. The share of trips on foot was similar. Bicycle trips in Gdynia were only 1.6% of all trips of the inhabitants. At this point, it should be noted that trolleybuses service primarily the city centre and the two primary arteries of the city (towards Karwiny and Chylonia), similarly limited is the range of SKM (towards Gdańsk and Wejherowo), while the bus connection system is definitely more expanded[20] and accessible.

The activities aiming at diversifying the public transport vehicle power supply types were complemented

[20] K. Hebel, M. Wołek: The Perception of Means of Public Transport Compared to Travel Behaviour of Urban Inhabitants in the Light of the Marketing Research. [in press, as per September 2016].

in 2007, when buses powered with natural gas (CNG) were commissioned. The grounds for this decision were the efforts to reduce exhaust and noise emissions, diversify the power supply and gain partial independence from liquid fuel price fluctuations. The CNG-powered vehicles transport is operated by the PKM Gdynia sp. z o.o. municipal company.



Term	Translation
autobusy diesel 60%	diesel buses 60%
trolejbusy 26%	trolleybuses 26%
autobusy CNG 14%	CNG buses 14%

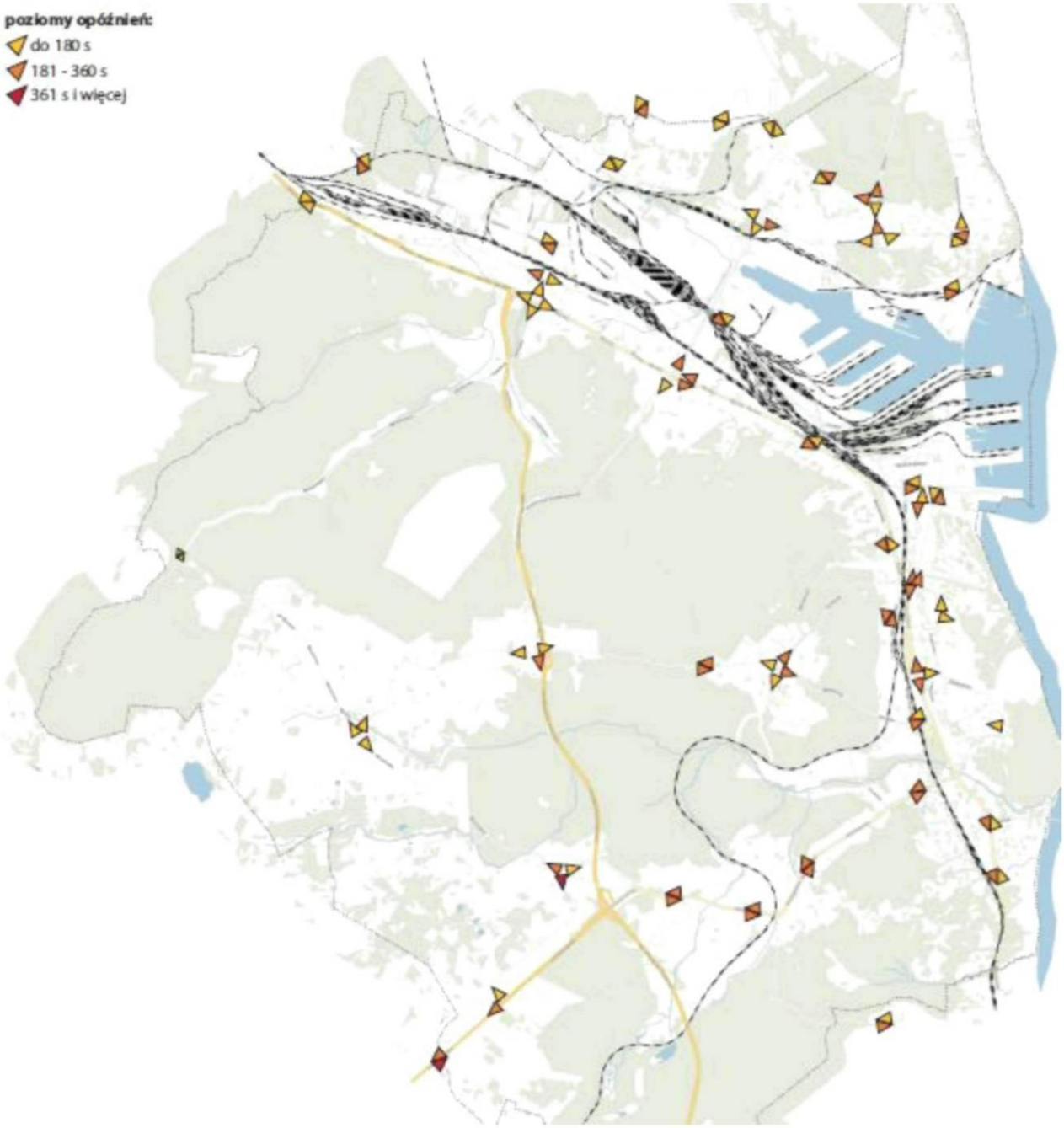
Figure 27. Operation work structure in the ZKM system in Gdynia in 2015 according to fuel type

Source: own study based on "Sprawozdanie z wykonania budżetu Miasta Gdyni za 2015 rok" (Report on implementation of the budget of the City of Gdynia for 2015) and internal information of PKM Gdynia sp. z o.o., April 2016.

At present 31 CNG-powered buses run almost half of the operation work of that operator and 14% of the total operation work organised by ZKM Gdynia (Fig. 27). Consequently, the share of diesel-powered vehicles is reduced, which illustrates the implementation of the low emission strategy in public transport and contributes to the independence from liquid fuel prices on the global market.

High population density areas, including the city centre area, are characterised by good accessibility of public transport. Most problems related to transport accessibility occur in the areas in which the housing is remote from the main streets. This applies primarily to the west part of the Chwarzno-Wiczlino district. It is characterised by a dynamic growth in population, which is not correlated with a sustainable development of road infrastructure. The general transport accessibility of a part of Gdynia is also influenced by the location of urban rail stations.

Transport congestion, with a relatively low level of public transport vehicle prioritisation, significantly reduces its competitiveness. Fig. 28 shows the main congestion points, which cause delays for public transport vehicles in Gdynia in the rush hours.



Term	Translation
poziomy opóźnień:	delay levels:
do 180 s	up to 180 s
181 - 360 s	181-360 s
361 s i więcej	361 s or more

Figure 28. Map of public transport delays in Gdynia in the morning rush hours (7-9 AM).

Source: own study based on ZKM Gdynia data

Gdynia is operated by the urban rail (SKM) in Tricity, with a line length of 16 km, with nine stations: Orłowo, Redłowo, Wzgórze Św. Maksymiliana, Gdynia Główna, Stocznia, Grabówek, Leszczynki, Chylonia and Cisowa. At present PKP SKM sp. z o.o. is a railway operator with a separate funding system from the municipal transport organised by ZKM, of which an essential part is the reimbursement of statutory reductions from the central budget. The key role of PKP SKM for the Gdańsk-Gdynia-Sopot Metropolitan Area (GGS MA) results from the high spatial accessibility to the MA core. However in intra-urban transports the role of SKM is smaller.

PKP SKM in Tricity has been implementing persistent activities aiming at increasing the quality of services for many years (modernisation of a part of its stations, construction of the Gdańsk Śródmieście station, modernisation of a part of its fleet, the purchase of two brand new vehicles and their commissioning in 2016).

The ownership structure of the company is characterised by a minority share of voivodeship local governments and communes (31.28% as per March 2016). This translates to the pursuit of the PKP Group strategic objectives that are not consistent with the objectives of the local government and voivodeship transport policies.

Integration of transport in the Gdańsk-Gdynia-Sopot Metropolitan Area (GGS MA)

Since 2007 in the Metropolitan Public Transport Association of Gdańsk Bay operates in the Metropolitan Area, the unit responsible for integrating public transport in the Tricity metropolis. The objective is that Gdynia, Gdańsk, Sopot, Wejherowo, the commune of Wejherowo, Rumia, Reda, Żukowo, Pruszcz Gdański, the commune of Pruszcz Gdański, Kolbudy, Kosakowo, Szemud and Luzino have common tickets, tariffs and aligned timetables. At present the tariff and ticket system integrated in the agglomeration allows purchasing a joint ticket. It allows using various means of public transport, managed by various operators.

A barrier in increasing the share of public transport in the urban trips of the inhabitants of Gdynia is the lack of integration of various means of transport, in particular individual and public transport, e.g. the lack of a P+R system, in particular near the SKM railway stations. Full tariff and ticket integration of the urban and railway subsystem in the GGS MA is possible, but it would require covering the annual costs of approx PLN 67.2 million for the entire Metropolis[21].

Challenges

According to the inhabitants, public transport in Gdynia functions very well (average rating of 4.27 in a 2 to 5 scale in 2013, increase from 3.88 in 1998), with a particular appreciation of the directness, frequency, accessibility, reliability and information. The speed, which has been continuously decreasing, is less appreciated. The fleet is modern and low floor. On-demand services adapted to the disabled are available.

The most frequently indicated problems regarding public transport in Gdynia are the lack of integration with other means of transport and the decreasing transport speed. A solution to those integration problems could be e.g. the expansion of the metropolitan tickets range, the construction of nodes and transfer stations, and regarding the decreasing transport speed, increasing the public transport priority by increasing the number and length of bus lanes.

[21] H. Kołodziejski et al.: Koncepcja funkcjonowania Szybkiej Kolei Miejskiej w Trójmieście i Pomorskiej Kolei Metropolitalnej w obsłudze transportowej Obszaru Metropolitalnego oraz integracji transportu publicznego w obszarze metropolitalnym i regionie, w tym integracji taryfowo-biletowej na obszarze OMT oraz zasad rozliczeń pomiędzy jej uczestnikami. Ed. Metropolitan Public Transport Association of Gdańsk Bay, Gdańsk 2014, p. 8.

The lack of full tariff and ticket integration lowers the efficiency of the activities aiming at higher competitiveness of the means alternative to the passenger car (e.g. railway-public transport integration nodes).

The trolleybus transport development plans in Gdynia include two variants of the operation work magnitude contracted by the Public Transport Authority of Gdynia, namely the stabilised variant, in which the annual operation work magnitude of this transport be not less than five million vehicle-kilometres (the present level) and the development variant, in which the trolleybus transport will be developed both spatially and in terms of operation work magnitude[22]. All currently operated trolleybus routes will be maintained until 2025. The ability to recharge batteries while working under the overhead line will be an important advantage of trolleybuses in comparison with regular electric buses.

3.10. Bicycle transport

Successes:
- Completion of the bicycle policy audit (the BYPAD certificate)
- Increase in the number of bicycle parking spaces
- Condition improvement and gradual development of the bicycle infrastructure
- Perfect conditions for recreational cycling
- Increasing engagement of the inhabitants, education sector and businesses in the bicycle traffic activities implemented by the city
- Possibility of free bicycle transport by public transport means
- Co-operation between the city and cyclist circles

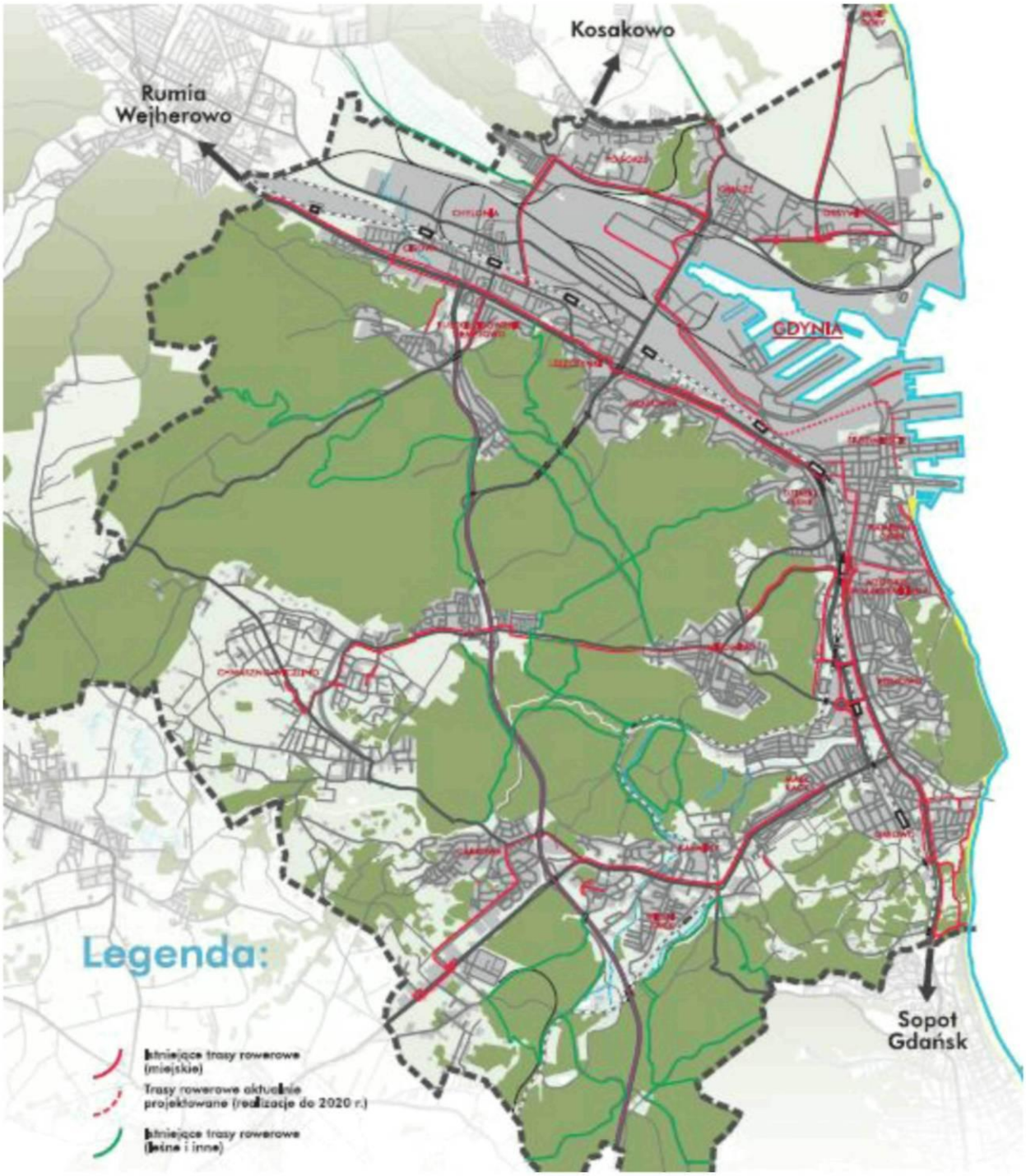
Challenges:
- Ensuring the continuity of the bicycle paths, overcoming the key "barrier effects"
- Prioritising pedestrians, cyclists and public transport passengers
- Increased share of bicycle traffic in obligatory trips
- Co-operation with businesses (especially in the port) in increasing the role of the bicycle in commuting to work
- Comprehensive monitoring of cyclist transport behaviours and preferences

Existing infrastructure

The existing bicycle infrastructure consists of 39 path segments with the total length of more than 56.1 km, of which the essential part are bicycle paths.

The surface of the roads for cyclists is very diverse. Bituminous surfaces are predominant, concrete cubes (primarily bevelled) also have a large share, at some places there are flagstones and stone cubes.

[22] Plan Zrównoważonego Rozwoju Publicznego Transportu Zbiorowego dla Komunikacji Miejskiej w Gdyni oraz w Miastach i Gminach Objętych Porozumieniami Komunalnymi na lata 2016-2025. Gdynia City Council resolution no. XX/451/16 of 20/04/2016.



Term	Translation
Legenda:	Key:
Istniejące trasy rowerowe (miejskie)	Existing bicycle paths (urban)
Trasy rowerowe aktualnie projektowane (realizacje do 2020 r.)	Currently designed bicycle paths (to be completed until 2020)
Istniejące trasy rowerowe (leśne i inne)	Existing bicycle paths (in forests and other)

Figure 29. Map of bicycle paths in Gdynia

Source: ZDiZ Gdynia, July 2016

The bicycle path system consists of numerous segments, but they are not connected at several key points (Fig. 29). The inconsistency of the bicycle path system at the entire city level is the primary challenge, which translates to direct connections between certain housing districts and the city centre. The solutions in use change even several times along the individual segments. The signs of bicycle crossings on the crossroads are very diverse.

On business days, bicycle traffic is concentrated mainly in the primary bicycle path system.

The developed areas also include recreational bicycle paths (e.g. Bulwar Nadmorski (the Seaside Boulevard)). Bicycle traffic is allowed in all parks and forests in the Tricity Landscape Park. It includes no "no cycling" zones. Numerous forest segments with ground surface are an attractive complementation of the transport system.

In the past years, almost 1,000 bicycle stands were placed in the city. Almost half of them were installed near schools and preschools. The rest were placed near different traffic generators, e.g. public institutions, commerce and service points, and recreational facilities. Within the project entitled "Rozwój Komunikacji Rowerowej Aglomeracji Trójmiejskiej w latach 2007-2013" (Development of Bicycle Transport in the Tricity Agglomeration in 2007-2013), Bike&Ride bicycle parking zones were constructed near the SKM station (e.g. Wzgórze św. Maksymiliana, Orłowo).

In the city, there are several access self-service bicycle repair stations and bicycle compressors. Bicycle infrastructure maps are located at major parking areas. Bicycle counters placed along primary bicycle paths contributes to the promotion of this mode of travelling.

Regular monitoring of the bicycle infrastructure condition is conducted in the city, also in co-operation with cyclists (SeeClickFix, see above). In 2013, the BYPAD bicycle policy audit was developed. Zarządz Dróg i Zieleni is responsible for the condition and development of the cycling infrastructure. The Representative for Bicycle Transport is responsible for the implementation of cycling policies on behalf of the President of the City.

Support activities

The city conducts a range of activities to support the cycling system development. They include:

- The Cycling Council (at present it is a form of presentation of the activities of the particular City Hall departments in the ongoing investment projects. It includes the representatives of Gdynia's institutions and organisations, e.g. Zarząd Dróg i Zieleni, the City Hall, the Spatial Planning Office and cycling associations);
- The SeeClickFix profile (a joint project based on the free seeclickfix.com tool. Under the agreement with between Stowarzyszenie Rowerowa Gdynia and the City Hall, volunteers from City Hall upgrade the Polish language layer of the interface and report infrastructure bugs for free);
- Promotion campaigns;
- Cycling events, including the largest events of cycling organisations (e.g. Wielki Przejazd Rowerowy (the Great Bicycle Ride) or Mikołaje na Rowerach (Santas on bikecycles)), which promote the bike as an alternative form of individual transport;
- The BYPAD bicycle policy audit.

The city conducts activities to promote cycling among various age and social groups. "Odprowadzam sam" (I accompany on my own) is a campaign for preschool pupils and their parents, which promotes using active forms of commuting to preschool. "Do pracy jadę rowerem" (I cycle to work) is a campaign targeted at the employees of Gdynia's businesses and institutions, which includes competition between

the entire work facilities and individual workers. Since 2014 Gdynia has participated in the European Cycling Challenge, a competition among European cities organised by Bologna, Italy. The competition rewards those cites whose inhabitants cycle the most kilometres. Additionally, due to the participation at the European Cycling Challenge, Gdynia obtained GPS data on the bicycle trips of the competition participants. The 2016 edition included more than 16,000 trips, which provided more insight into the cycling customs of the people of Gdynia. Like other cities participating at the contest, Gdynia received access to the so-called "heat map", illustrating the bicycle traffic intensity.

The "Rowerowy Maj" (Cycling May) campaign is targeted at students of schools in Gdynia. In 2016, it included 2,602 primary school pupils, which means that almost ⅔ of the pupils of the schools participating at the contest arrived on a bicycle at least once.

The city hosts various cycling events. Some of them are bottom-up initiatives, representing the activity of district councils and non-government organisations. Examples of those events are e.g. "Wielki Przejazd Rowerowy" (The Great Bicycle Ride) or "Mikołaje na Rowerach" (Santas on Bicycles).

In 2013, a bicycle policy audit according to the BYPAD methodology took place, which resulted in the development of the integrated action plan for 2014-2016. One of the main assumptions of Gdynia's SUMP is to reach a 10% bicycle share in trips until 2023 (in 2015 the share was 1.6%[23]).

Challenges

In recent years there was a notable development of the bicycle system in Gdynia. A particular emphasis is on changing the inhabitants' perception of the bicycle and encouraging them to use it as a means of transport.

In recent years the city completed several infrastructure projects, conducted promotion and education activities, expanded the staff in charge of bicycle issues and entered into co-operation with local cyclist circles. The city is aware of the numerous barriers and problems, but it works towards solving them.

The existing bicycle system does not allow safe and comfortable cycling in the entire city yet. Its gaps are in many cases difficult to fill, due to the local spatial conditions and existing development. Nonetheless, the city takes steps to improve the system consistency.

The undertaken promotion activities are increasingly popular among inhabitants. The subsequent campaigns attract new audiences, which proves the sense and necessity of their implementation.

Cycling initiatives are active in the city and they continuously work towards improving cycling conditions. The co-operation between non-government organisations and city authorities is conducted through co-work in the Cycling Council, the SeeClickFix website and cycling campaigns and events.

Thus, another challenge of the city is to conciliate the interests of road traffic participants through coordinated and integrated activities, as well as considering those issues already at the stage of transport system planning.

3.11. Education sector mobility

The education sector in Gdynia is well-developed and characterised by high spatial accessibility. In connection with the high importance of education facilities for sustainable mobility, additional surveys were conducted to determine the mode of student commuting to schools, with a particular emphasis on

[23] Badania marketingowe preferencji i zachowań komunikacyjnych mieszkańców - ZKM Gdynia, 2015

non-motorised transport. The survey also included the evaluation of the particular components of transport safety and quality of schools transport service. The respondents were principals of education facilities. The survey included 70 education facilities in Gdynia (excluding preschools), including 28 primary schools, 20 middle schools and 22 upper secondary schools (general secondary schools, technical secondary schools, vocational schools) with 3,800 employees (teachers and administrative and technical staff). Information was submitted regarding 24,180 students, of which 15% live outside Gdynia.

Table 13 shows the mode of walking/commuting to school by education facility category.

Table 13. Mode of walking/commuting to school by education facility category.

Mode of walking/commuting to school [%]	PRIMARY SCHOOLS	MIDDLE SCHOOLS	UPPER SECONDARY SCHOOLS
on foot (alone or in the company of parents/carers)	51.7	43.5	5.6
bicycle	5	4.9	1.6
public transport	16.3	43.2	89.6
middle school bus	0.2	0.1	0
car (driven by parents/carers)	26.9	8.3	3.3

Source: own study based on surveys, Gdynia, September 2016

The surveys evaluated the demands relevant to student mobility, using the school grade scale from 1 to 6 (Tab. 14).

Table 14. Evaluation of the demands relevant to student mobility (1-6 scale)

Demand	Primary schools	Middle schools	Upper secondary schools
Alignment of the public transport arrival times with the school schedule	5.1	5.0	4.7
Alignment of the public transport departure times to the school schedule	5.2	5.1	4.4
Suitable number of car parking places	2.9	3.4	3.4
Suitable number of bicycle parking places	5.1	4.9	4.4
Pedestrian safety in the direct vicinity of the school	4.3	4.3	4.7
Cyclist safety in the direct vicinity of the school	3.9	4.0	4.3
Location of public transport stops in relation to the school	5.1	5.1	5.0

Source: own study based on surveys, Gdynia, September 2016

The principals of primary schools awarded the highest grades the alignment of public transport arrival/departure times to the schedule, a suitable number of bicycle parking places and the location of public transport stops in relation to the school. The principals of middle schools awarded the highest grades the most the alignment of public transport arrival/departure times to the schedule and the location

of public transport stops in relation to the school. The principals of upper secondary schools awarded the highest grades to the location of public transport stops in relation to the school, the alignment of public transport arrival times with the schedule and pedestrian safety in direct vicinity of the school.

3.12. Freight transport

Road transport

The primary component of the read system in freight transport in Gdynia is the express road S6 and Estakada Kwiatkowskiego. It is the only access road to the sea port from the south, because the voivodeship road no. 468 in Sopot is closed for heavy traffic. The national road no. 6 to the north is also relatively important. The smallest cargo traffic in car transport takes place on the national road no. 20 and other voivodeship and district roads.

An important role in cargo transport belongs to the route of road S6 and motorway A1, which is part of the national road no. 1, connecting the Tricity seaports with the border city of Cieszyn, of which the length is 419.9 km. It is one of the main longitudinal routes in Poland. It is the Polish part of the international transport route E75 Helsinki-Gdańsk-Łódź-Budapest-Athens. It traverses the following voivodeships: Pomorskie, Kujawsko-Pomorskie, Łódzkie and Śląskie.

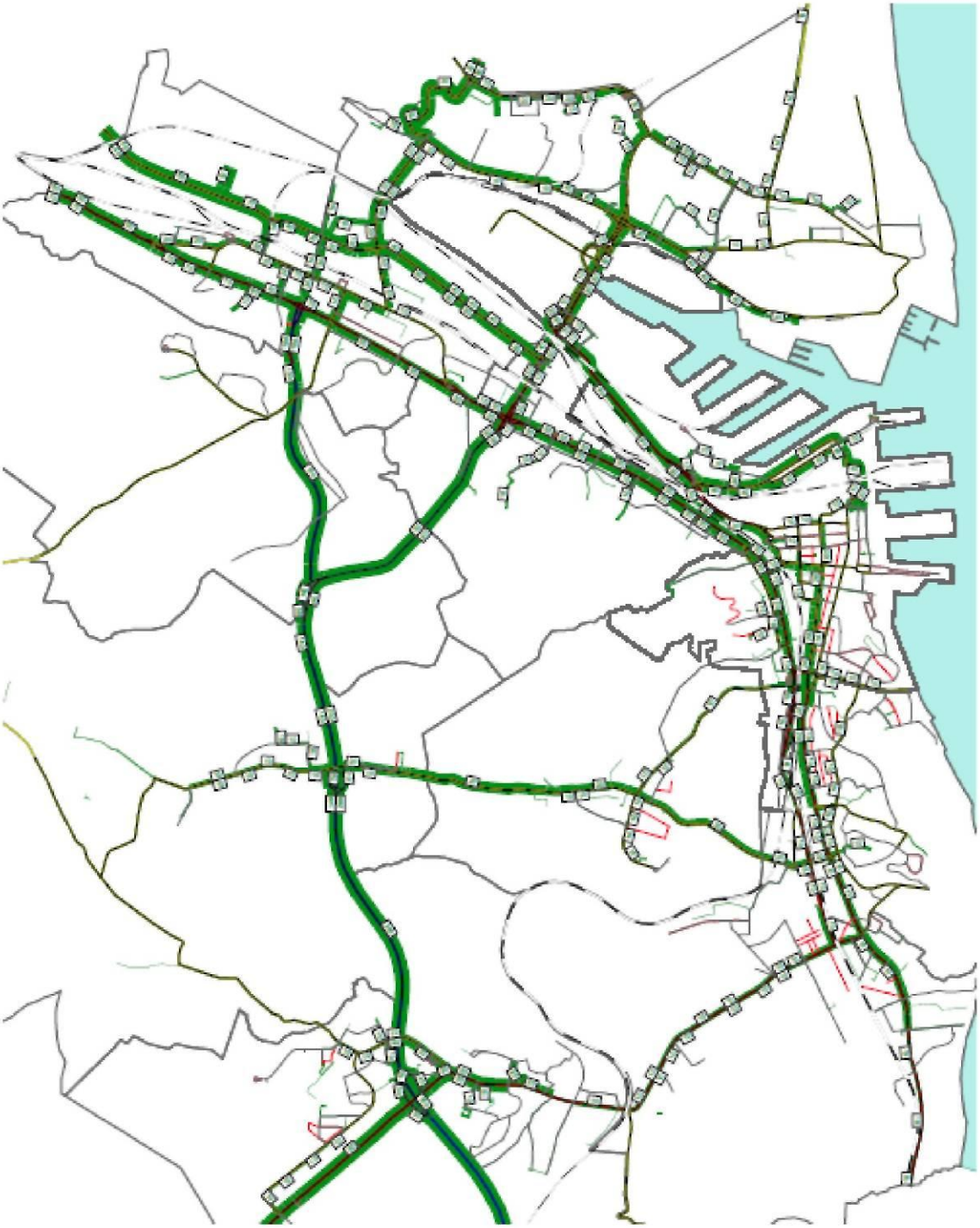
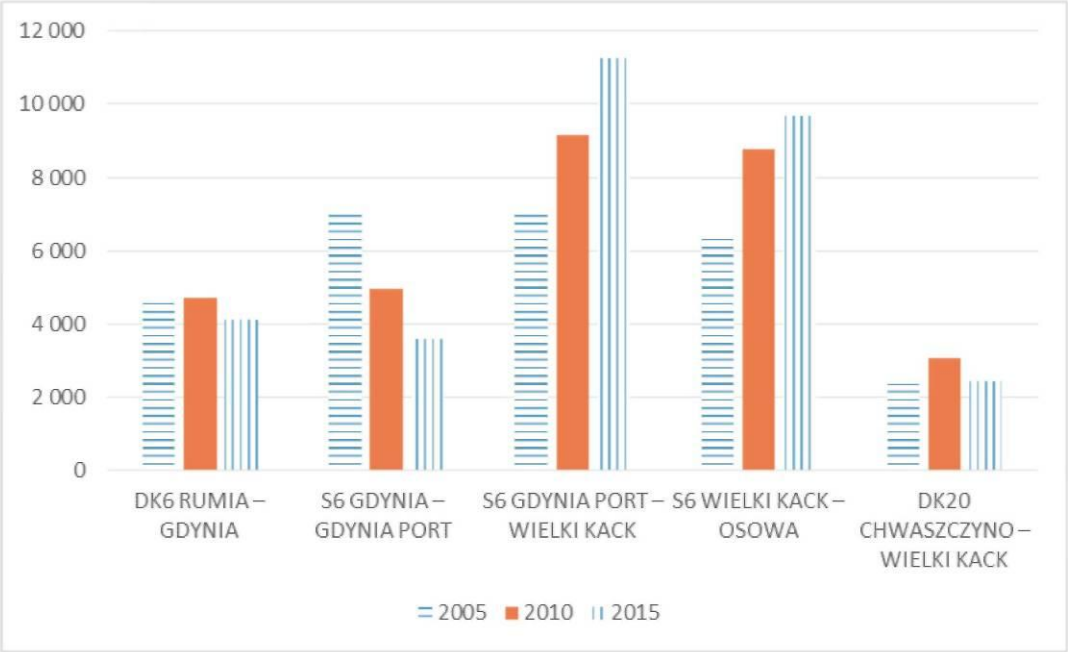


Figure 30. Lorry traffic intensity from 3:00 to 4:00 PM in Gdynia

Source: ZDiZ, Gdynia, April 2016.

The high lorry traffic is related to the service of port terminals and concentrated in the road system operating it. The lorry traffic also moves to ul. Morska, between the city centre and Trasa Kwiatkowskiego (Fig. 30).

The increase of the lorry traffic intensity on national roads is shown in Fig. 31. In relation to 2005, it increased by more than 50% in the two surveyed crossroads.



Term	Translation
DK6 RUMIA-GDYNIA	DK6 RUMIA-GDYNIA
S6 GDYNIA-GDYNIA PORT	S6 GDYNIA-GDYNIA PORT
S6 GDYNIA PORT -WIELKI KACK	S6 GDYNIA PORT-WIELKI KACK
S6WIELKIKACK-OSOWA	S6 WIELKIKACK-OSOWA
DK20 CHWASZCZYNO-WIELKI KACK	DK20 CHWASZCZYNO-WIELKI KACK

Figure 31. Daily average lorry traffic in Gdynia (all vehicles) in 2005, 2010, 2015

Source: own study based on the GDDKiA General Traffic Survey.

The increased traffic intensity on the route neighbouring communes-Gdynia is connected with the settlement processes in rural areas and the dynamic development of the Wejherowo and Puck districts, which generates additional pressure on the city road system. It results in the phenomenon of transport congestion, of which a characteristic feature is the lack of spatial and temporal uniformity. It is characterised by a strong directional variability and concentration in specific rush hours. It causes the deterioration of public transport punctuality and the necessity of using a larger number of vehicles to fulfil the timetable (e.g. by reducing the average transport speed and planning longer compensating stoppages at final stops to accommodate the potential delays). The phenomenon of congestion occurs in the Beltway, al. Zwycięstwa, ul. Wielkopolska, ul. Morska, ul. Chwarznieńska, Estakada Kwiatkowskiego and ul. J. Wiśniewskiego. The linear road system of Gdynia is very sensitive to any interference, which is immediately accompanied by transport congestion. Considering the future development of neighbouring communes, it should be stated that the profits from the expansion of the road infrastructure in Gdynia will be partly consumed by the inhabitants of the neighbouring communes, who work in or pass by Gdynia.

Due to the high lorry traffic intensity and its predicted increase, pilot implementations of modern road surface protection solutions were introduced in the form of weight pre-selection of overloaded lorries in traffic with a weigh-in-motion system and automatic transfer of standard violation notifications to the appropriate law enforcement authorities, the Voivodeship Inspectorate of Road Transport (WITD).

The first pilot scale was installed within the CIVITAS DYN@MO project on ul. J. Wiśniewskiego (towards the Obłuże district) in December 2015 and in January 2016 data acquisition was initiated. In April 2016, when weather conditions allowed it, the system was first calibrated and finally commissioned for use with the B+(7) category.

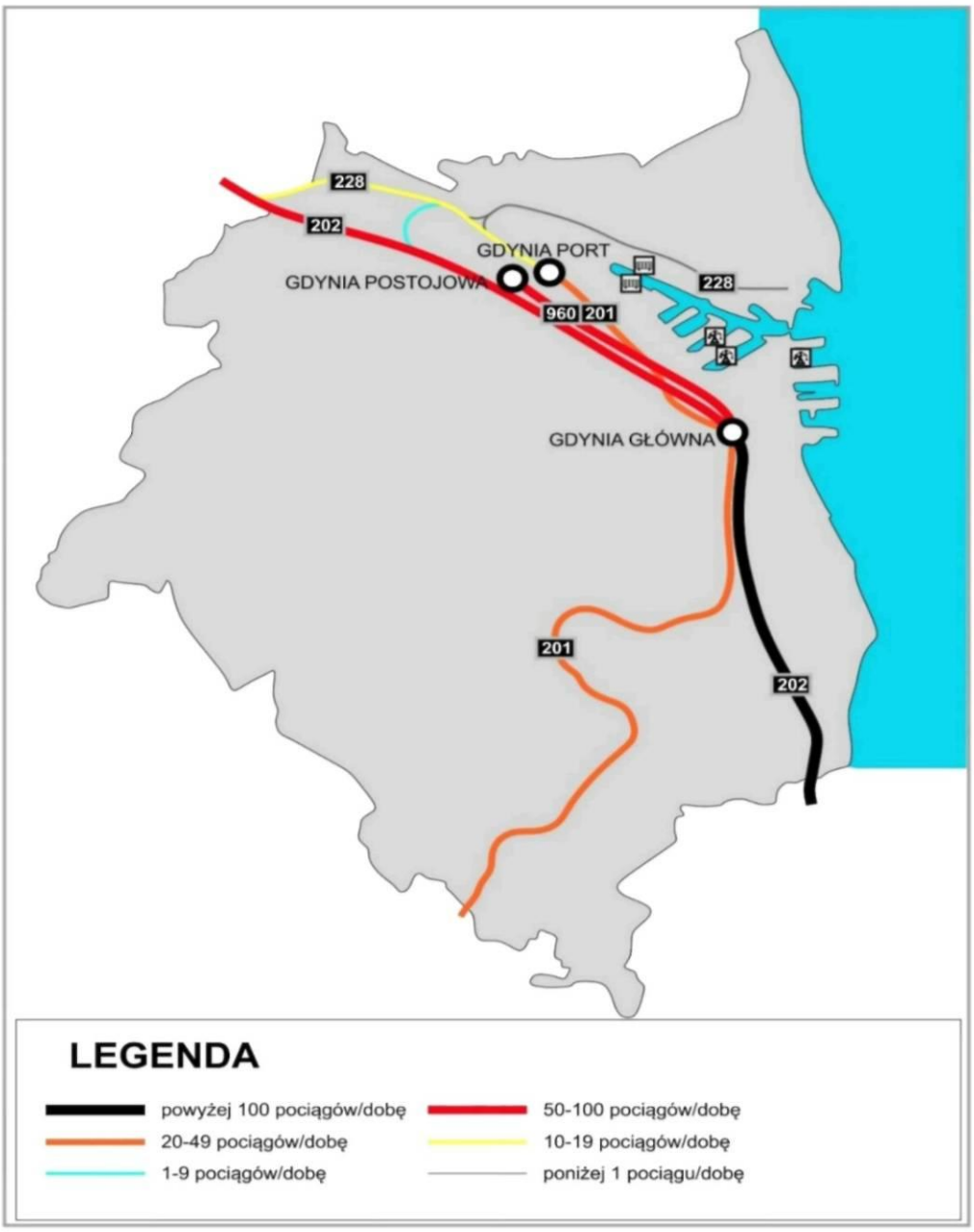
Railway transport

Goods train traffic via Gdynia is related mainly with the service of the seaport and other entities around the port. It goes mainly along the railway line no. 202, then the railway line no. 201 to the Gdynia Port station (Fig. 56) and then a system of railway groups and sidings to the individual terminals and port embankments. The traffic has been increasing for years and the handling forecasts of the Port of Gdynia Authority S.A. indicate its continued, uninterrupted growth. The reduction of traffic in the railway line no. 202 Gdańsk Główny - Gdynia Główna is related with the modernisation of the corridor E65. During this project some trains were routed to the railway line no. 201 and the railway line no. 202 from Słupsk.

Some trains also run along the railway line no. 201. The line is used primarily during difficulties along the main line via Gdańsk and Tczew.

The number of intermodal trains on the railway system sections in Gdynia is increasing dynamically. Generally, the traffic is concentrated on the railway line no. 202 Gdańsk Główny - Gdynia Główna (Fig. 32). In 2015, intermodal trains accounted for as much as 38% of all goods trains on the subject segment of the line 202.

The port location and service of loads generated within creates a potential hazard for inhabitants in the case of dangerous goods transport. To minimise those hazards, it is necessary to move a major part of traffic to the line 201, which requires modernisation for that purpose.



Term	Translation
LEGENDA	KEY
powyżej 100 pociągów/dobę	above 100 trains/day
20-49 pociągów/dobę	20-49 trains/day
1-9 pociągów/dobę	1-9 trains/day
50-100 pociągów/dobę	50-100 trains/day
10-19 pociągów/dobę	10-19 trains/day
poniżej 1 pociągu/dobę	below 1 train/day

Figure 32. (Passenger and goods) train traffic in railway lines in Gdynia

Source: own study based on PKP PLK S.A. systems

Urban logistics

Gdynia, in particular the city centre, is a concentration area of retail, services, restaurants, hotels and other businesses that require regular supplies of various types of goods. With the increasing intensity of business activities and progressing development of new areas in the city centre, the pressure related with the urban distribution transport dominated by road transport will intensify. This translates to increasing noise and exhaust emission levels, conflicts with pedestrians and other traffic participants, as well as an excessive demand for limited infrastructural resources, coupled with their excessive use.

Therefore, it is necessary to take steps to explore the specifics of urban freight transport in Gdynia and a gradual implementation of solutions to increase its efficiency and simultaneously reduce its undesirable impact.

Challenges

Lorry traffic in Gdynia is determined by the service of port terminals and storage and manufacturing zone located near ul. Hutnicza.

There is a gradual increase in the lorry traffic intensity, of which the source is economic development and activity of the entities operation in the port of Gdynia.

The core of the road system for freight transport in Gdynia is the express road S6 and Estakada Kwiatkowskiego, which due to the poor technical condition of the oldest segment requires regular repair works, which reduce the throughput of the main transport system.

The universal nature of the port in Gdynia, reinforced by investment projects and terminal activity, implies a high share of road transport in the service of the primary cargo groups (especially containers, other general cargo and grains).

The planned increase of handling in the port (in the maximum variant: up to 44 million tonnes in 2027) is a challenge especially for the port hinterland infrastructure. This can also generate a significant burden for the City.

Quantitatively and qualitatively, the road infrastructure will be a key factor determining the capacity of the port terminals to acquire and retain the strategic cargo groups defined in the development strategy for the port in Gdynia.

The only logical solution is the construction of the Droga Czerwona road, connecting ul. J. Wiśniewskiego (at the level of ul. Energetyków) with the Beltway. This will be the first and most costly stage of the Tricity Agglomeration North Beltway (OPAT).

4. SWOT analysis of urban mobility in Gdynia

STRENGTHS	WEAKNESSES
• Strong market position of public transport. • The developed spatial layout of the public transport system (including six neighbouring communes except Gdynia), based on the directness of connections. • Diversification of energy sources in public transport (diesel fuel, electric drive, CNG). • A pro-efficiency organisation and management model of public transport in Gdynia. • The public transport service of the neighbouring communes according to uniform principles and requirements for operators. • Operation of the metered parking zone in the centre of Gdynia. • The seaside pedestrian zone in the direct vicinity of the centre of Gdynia. • The agglomeration railway service of the lower terrace. • An attractive system of recreational bicycle paths. • Intensive development of the universal seaport.	• The main road system is heavily burdened by freight and passenger traffic. • The road and railway transport infrastructure is inadequate to the current seaport needs. • A small number of modern transfer nodes. • Incomplete integration of public transport in the metropolitan area. • Low accessibility of railway transport in the west and north of Gdynia. • Limited level of demand marketisation in public transport in Gdynia. • Low share of bicycle trips in the urban trip distribution. • The form of organisation of ZKM Gdynia (budget unit) impedes pro-market activity. • The intra-urban traffic structure is strongly determined by the centre of Gdynia.
OPPORTUNITIES	**THREATS**
• The tariff and ticket integration in the Gdańsk-Gdynia-Sopot Metropolitan Area (GGS MA) or the entire Pomorskie Voivodeship. • Higher traffic priority for public transport, pedestrians and cyclists. • Change towards a healthier lifestyle by some inhabitants. • Urban area rehabilitation processes, resulting in an increased attractiveness of local resources and increased sustainable mobility (improved conditions for pedestrians). • Development of bicycle transport through infrastructural, organisational and promotional activities. • Creation of nodes integrating the individual and public types of transport. • Co-ordination of spatial planning in the GGS MA to reduce the transport needs and increase the Dolina Logistyczna (Logistic Valley) area supply. • Technological changes that could reduce the costs of public transport or reduce transport-generated burdens. • Completion of key railway and road projects, which increase the safety and reduce traffic intensity in the central areas of Gdynia. • Acquisition of the oceanic container service by the port.	• Demographic and spatial changes resulting in reduced self-funding of public transport. • Progressing suburbanisation and lack of co-operation in spatial planning. • Further individual motorisation increase, also in the neighbouring communes. • Public finance instability. • Lack of legal solutions enabling a full tariff and ticket integration of public transport. • Termination of the public transport integration process in the GGS MA; • Lack of strategic decisions regarding the final ownership structure of PKP SKM in Tricity. • Non-fulfilment of key transport projects (PKM to service the north districts of Gdynia, the Droga Czerwona road, replacement of the PKP SKM fleet in Tricity, modernisation of bus and trolleybus fleet, construction of integration nodes), resulting in the deteriorated quality of transport services in Gdynia and the Metropolitan Area. • Weaker economic situation and turnover volume drop in the port. • Reduction of the throughput of railway infrastructure for goods transports due to a dynamic development of railway passenger transport.

5. Urban mobility development scenarios for Gdynia

Scenario methods are increasingly used due to the difficulty of medium- and long-term forecasting.

The summary of the mobility development potential in Gdynia as part of the Metropolitan Area core with the analysis of internal and external development conditions allow determining several alternative development scenarios.

Their construction is based on a matrix structure resultant of two factors, of which each indicates a certain level of phenomenon intensity ("low/high").

The selection of factors is a compromise between working towards a precise capture and description of a specific condition and the possibility of capturing them quantitatively (specific monitoring indicators).

Those scenarios are a resultant of two key aspects: the challenges (dilemmas) of sustainable development of the city and the mobility of its inhabitants, namely:

- the structure of urban trips, reflecting the communication behaviours of the inhabitants of Gdynia. A specific distribution of trips is influenced both by external (e.g. fuel prices, the state's fiscal policy towards passenger car owners, the lifestyle, "overflow" of urban areas) and internal factors (e.g. the transport policy of the City, the spatial and transport layout, public transport competitiveness, facilities for pedestrians and cyclists). A measurable indicator of this aspect is the share of the passenger cars in urban trips.
- the mobility of inhabitants, expressed as the average total number of trips in a given time unit. Finally, aiming at suppressing the mobility was not included in Biała Księga dla Transportu (The White Book for Transport) in 2011. However it is an important part of the desired transport behaviours of inhabitants. In case of Gdynia reducing the inhabitant mobility level will be especially difficult due to the spatial arrangement of the City, the exceptional attractiveness of its central, coastal space and the concentration of work and education facilities.

Each of the above-mentioned aspects should be measurable to enable long-term monitoring based on the same parameters.

In relation to the above aspects, it is possible to define the four conditions (situations) characteristic of the medium- and long-term sustainable mobility development in Gdynia (Fig. 33).

Term	Translation
Wzrost liczby podróży na terenie Gdyni	Increased number of trips in Gdynia
1. Zrównoważona mobilność, w warunkach rosnącej ruchliwości mieszkańców	1. Sustainable mobility with an increasing inhabitant mobility
Spadek udziału samochodu osobowego w podróżach miejskich	Reduced share of the passenger car in urban trips
2. Niezrównoważona mobilność, w warunkach rosnącej ruchliwości mieszkańców	2. Unsustainable mobility with an increasing inhabitant mobility
Wzrost udziału samochodu osobowego w podróżach miejskich	Increased share of the passenger car in urban trips
3. Zrównoważona mobilność, w warunkach malejącej ruchliwości mieszkańców	3. Sustainable mobility with an decreasing inhabitant mobility
4. Niezrównoważona mobilność, w warunkach malejącej ruchliwości mieszkańców	4. Unsustainable mobility with an decreasing inhabitant mobility
Spadek liczby podróży na terenie Gdyni	Decreasing number of trips in Gdynia

Figure 33. Mobility development scenarios for Gdynia

Source: own study.

The basis for creating scenarios is the condition in 2015, when the share of passenger car trips was 51.5% and the public transport (bus, trolleybus, SKM) share was 35.5%. Bicycle trips constituted 1.61% and trips on foot (with the distance of more than 500 m) accounted for 11%. From Monday to Friday, a statistic inhabitant of Gdynia takes on average 1.65 non-pedestrian trips per day[24].

[24] Preferencje i zachowania komunikacyjne mieszkańców Gdyni. Raport z badań marketingowych 2015. ZKM Gdynia, May 2016.

Table 15 Assumptions for the SUMP for Gdynia

Scenario	Share of the passenger car in urban trips	Number of trips taken in Gdynia
1. Sustainable mobility with an increasing inhabitant mobility	Decrease by 10%	Increase by 5%
2. Unsustainable mobility with an increasing inhabitant mobility	Increase by 10%	Increase by 5%
3. Sustainable mobility with an decreasing inhabitant mobility	Decrease by 10%	Decrease by 5%
4. Unsustainable mobility with an decreasing inhabitant mobility	Increase by 10%	Decrease by 5%

Source: own study.

Scenario 1 "Sustainable mobility with an increasing inhabitant mobility" is based on the assumption that the mobility of the people of Gdynia expressed as the average number of trips per day will increase by 5% (from 1.65 trips in 2015 to 1.73 trips), while the passenger car share in the urban trips distribution will decrease by 10% (from 52% at present to 42% including trips on foot). The factors that increase the fulfilment probability of this scenario are:

- change in the behaviours and lifestyle of some city inhabitants;
- increase of fuel prices and other burdens related with owning and using a passenger car;
- construction of cycling infrastructure and promotion of bicycle transport, especially for trips up to 5 km (most trips in the city);
- further increase in public transport attractiveness, in particular full tariff and ticket integration in the Gdańsk-Gdynia-Sopot Metropolitan Area (GGS MA);
- increase in pedestrian space attractiveness;
- traffic organisation changes contributing to improved safety.

The inclusion of the above assumptions in the existing traffic model developed within the CIVITAS DYN@MO project shows that road traffic intensity will decrease for the main road system of the cities (Figure 34 shows road traffic intensity changes in particular road segments during the afternoon rush hour on a business day – presented on two pages). In almost all segments subject to modelling, the traffic intensity is reduced from 5% to 24% in the centre of Gdynia and by 35% in Trasa Kwiatkowskiego towards Obłuże. In the western districts, the reduction of intensity will be lower (e.g. in ul. Wielkopolska: from 6.3% to 9.3%)

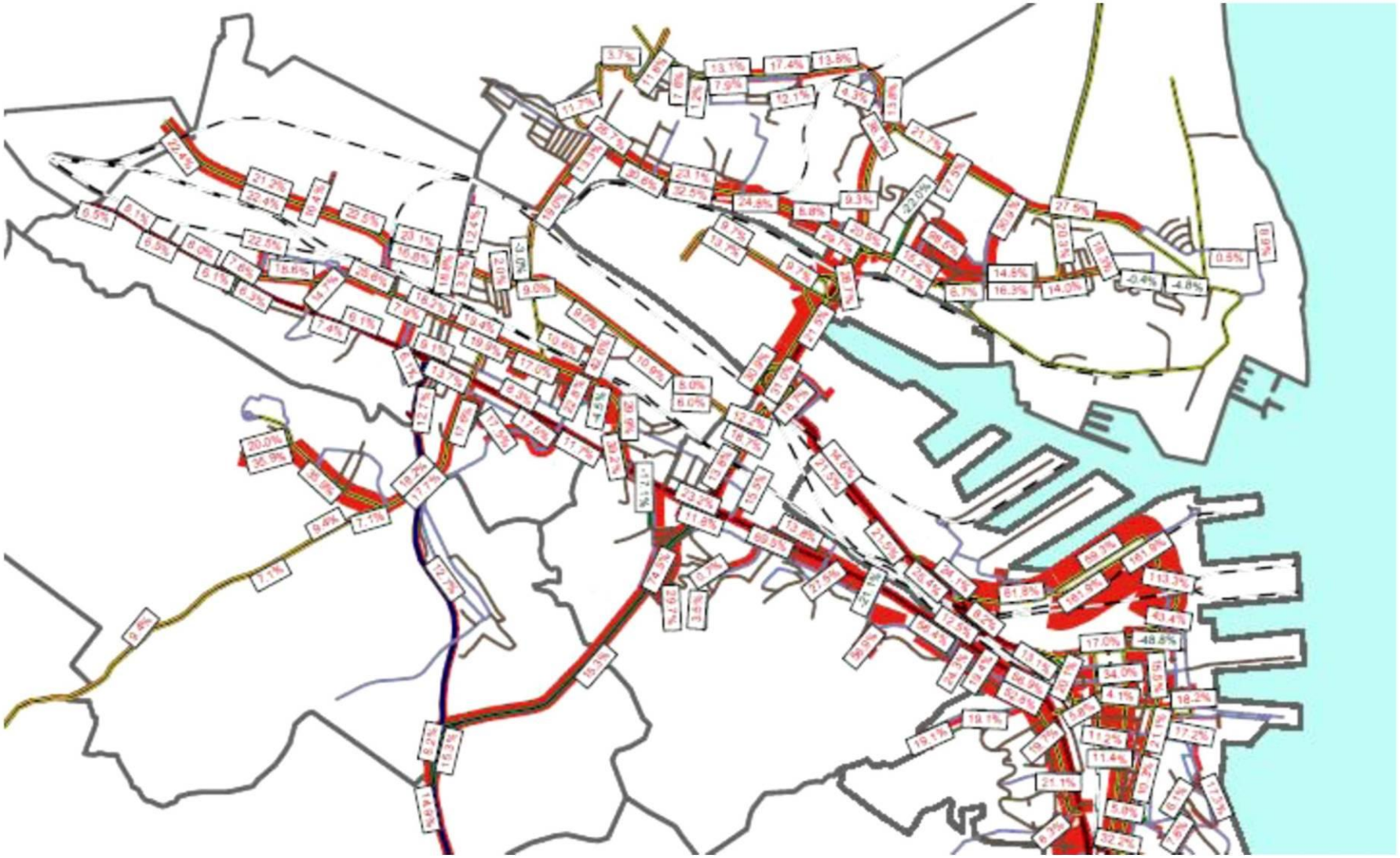
Figure 34 Changes in road traffic intensity for Scenario 1 "Sustainable mobility with an increasing inhabitant mobility" [for the afternoon rush hour]

Source: Zarząd Dróg i Zieleni in Gdyni, September 2016

Scenario 2 "Unsustainable mobility with an increasing inhabitant mobility" is based on the assumption that the mobility of the people of Gdynia expressed as the average number of trips per day will increase by 5% (from 1.65 trips in 2015 to 1.73 trips), while the passenger car share in the urban trips distribution will increase by 10% (from 52% at present to 62% including trips on foot). The factors that increase the fulfilment probability of this scenario are:

- further individual motorisation increase in Gdynia and its high growth dynamics in the neighbouring communes;
- no material changes in the behaviours and lifestyle of some city inhabitants;
- low fuel prices and low levels of other burdens related with owning and using a passenger car;
- no activities regarding bicycle structure development and bicycle transport promotion;
- decrease in public transport attractiveness, in particular no progress in the tariff and ticket integration process in the GGS MA.

The inclusion of the above assumptions in the existing traffic model developed within the CIVITAS DYN@MO project shows that the road traffic intensity will be significantly higher in the main road system of the cities (Figure 35 shows road traffic intensity changes in particular road segments during the afternoon rush hour on a business day – presented on two pages). In all segments subject to modelling, the traffic intensity is increased by from 4% to 161% in the centre of Gdynia and by 31% in Trasa Kwiatkowskiego towards Obłuże. In the western districts, the increase in intensity will be equally significant (e.g. in ul. Wielkopolska: from 14.6% to 22.4%).



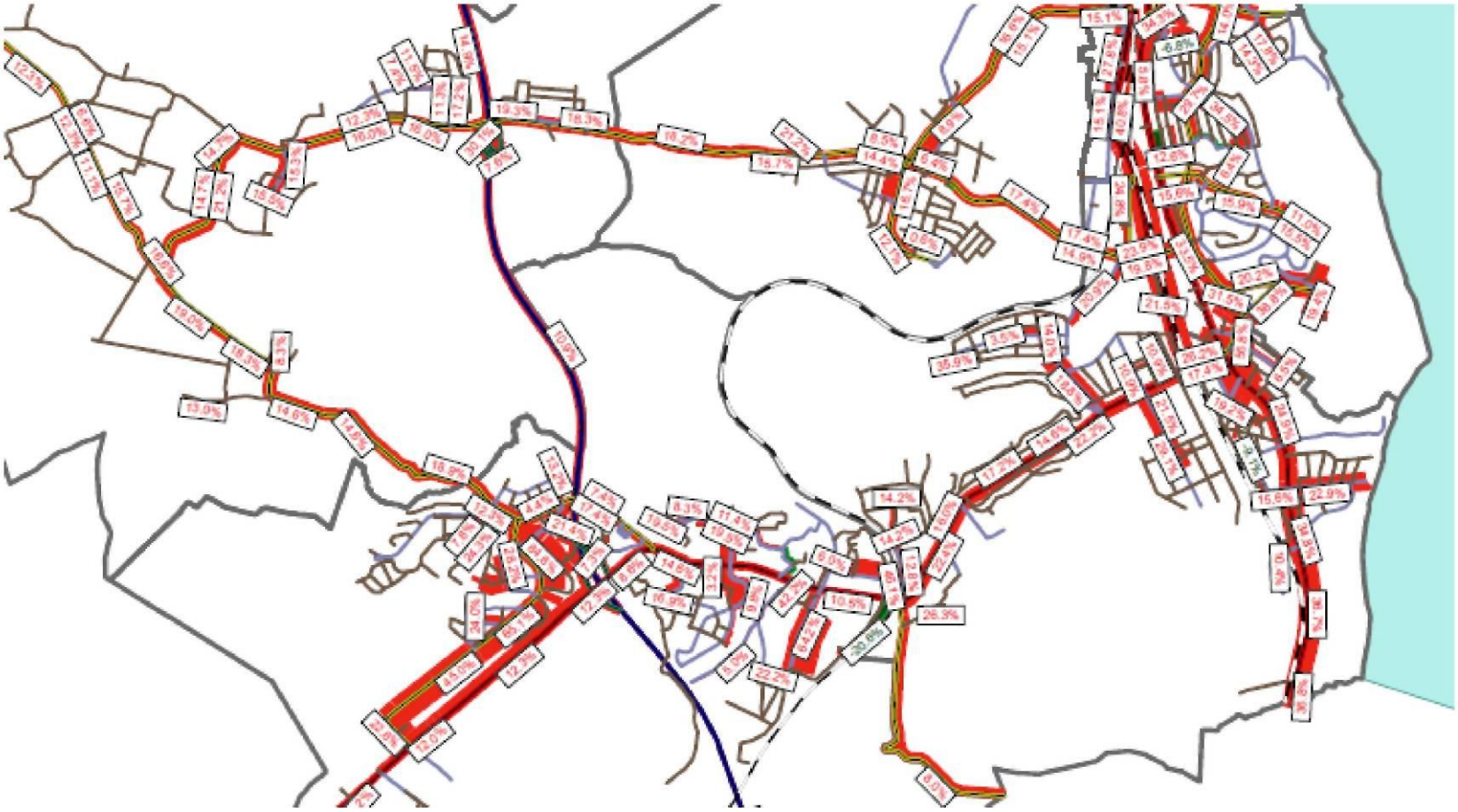


Figure 35 Changes in road traffic intensity for Scenario 2 "Unsustainable mobility with an increasing inhabitant mobility" [for the afternoon rush hour]

Source: Zarząd Dróg i Zieleni in Gdynia, September 2016

Scenario 3 "Sustainable mobility with a decreasing inhabitant mobility" results from assuming the most favourable assumptions for sustainable urban mobility in Gdynia. This scenario assumes reductions both in the inhabitant mobility (from 1.65 to 1.57 trips on a business day) and the share of passenger cars in urban trips (by 10%, from 52% at present to 42% including trips on foot). This is the most favourable scenario, which will be rather difficult to achieve, e.g. due to the central location of the port, the proximity of actively developing PSSE (Pomeranian Special Economic Zone) areas, the large number of commuters to Gdynia from the neighbouring communes and the structure of urban trips, which is strongly determined by the city centre.

In all road segments of the main system, the traffic intensity will decrease by 8% to 25% in the afternoon rush hour. In the city centre the traffic intensity reduction will be even greater. Depending on the direction, significant reductions are also expected in ul. J. Wiśniewskiego, Trasa Kwiatkowskiego and ul. Wielkopolska.


-13.4%
-14.2%
-17.7%
-19.0%
-14.7%
-14.7%
-17.7%
-27.1%
-14.5%
-18.1%
-4.8%
-12.0%
-5.5%
-13.8%
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-12.2%
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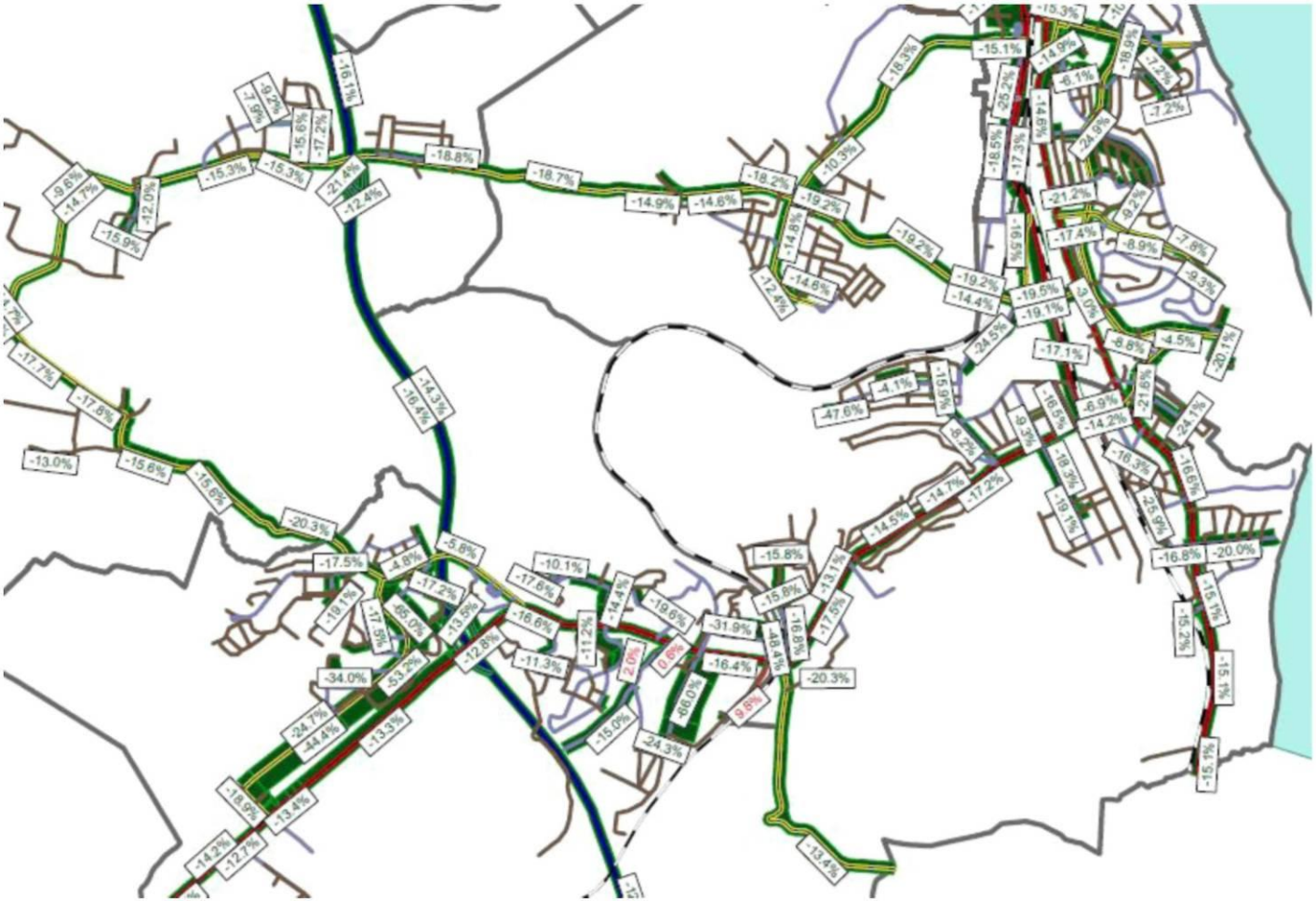


Figure 36 Changes in road traffic intensity for Scenario 3 "Sustainable mobility with an increasing inhabitant mobility" [for the afternoon rush hour]

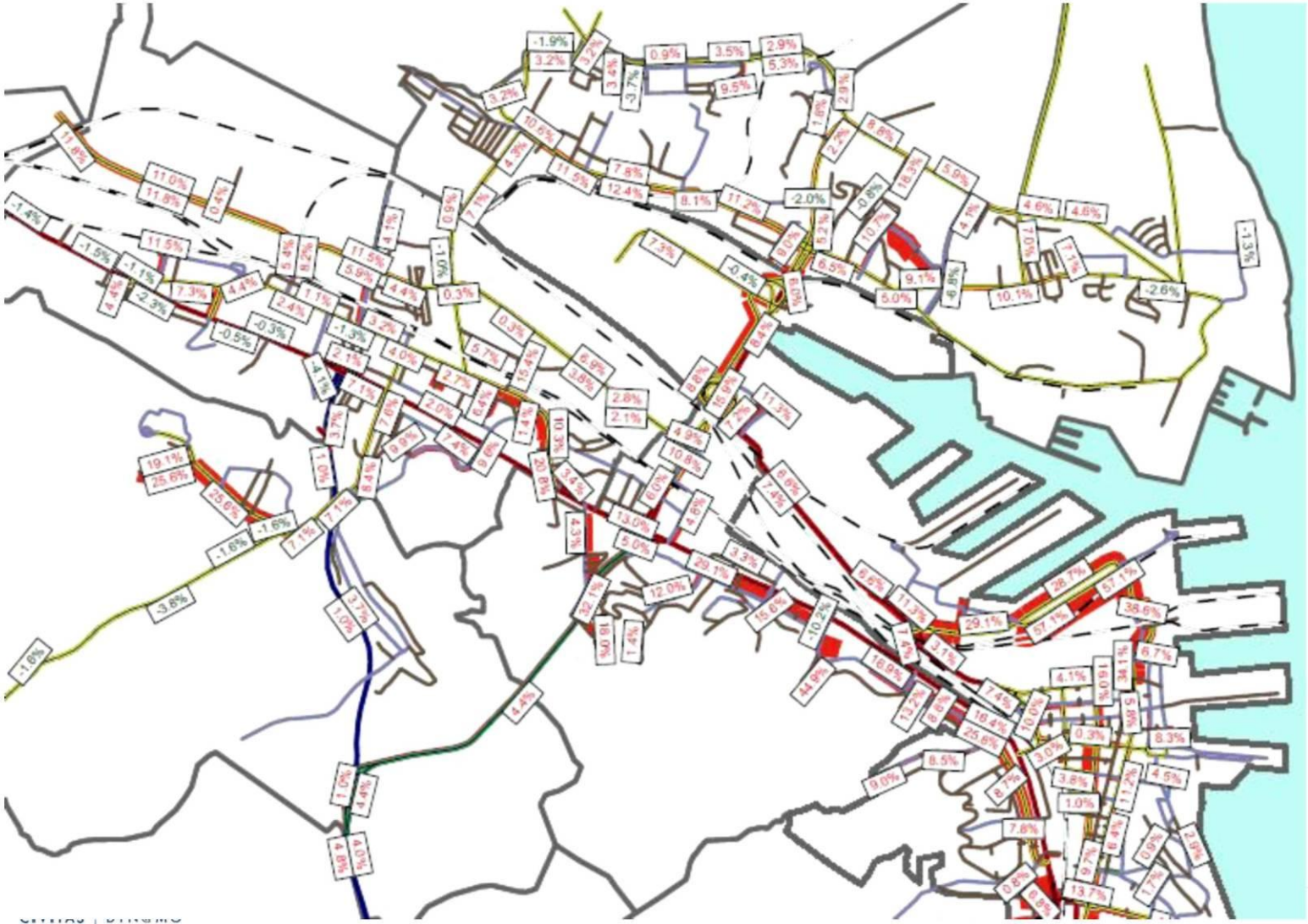
Source: Zarząd Dróg i Zieleni in Gdyni, September 2016

Scenario 4 "Unsustainable mobility with a decreasing inhabitant mobility" results from assuming unfavourable assumptions for sustainable urban mobility in Gdynia. This scenario assumes a reduction in the inhabitant mobility (from 1.65 to 1.57 trips in a business day), however the share of the passenger car in urban trips increases (by 10%, from 52% at present to 62% including trips on foot). As shown by the modelling results, the key factor is the trip distribution, because decreased mobility does not have a material impact on the road traffic intensity, which increases in virtually all major road segments. In all road segments of the main system, the traffic intensity will increase by 8% to 25% in the afternoon rush hour. In the city centre traffic intensity will increase the most (up to 57%). Depending on the direction, significant increases are also expected in ul. J. Wiśniewskiego, Trasa Kwiatkowskiego, the western part of Gdynia and Pustki Cisowskie.

Conclusion from scenarios

The analysis of all scenarios based on the traffic model including the specifics of Gdynia (large share of goods traffic related with the port service, the central location of the port, the development of PSSE areas, vicinity of fast urbanising communes) allows claiming that the primary factor contributing to further traffic intensity increase is the change in trip distribution, towards alternatives to passenger cars (public transport, bicycle, trips on foot). The objective should be to integrate the trip chain, in particular with regard to bicycle transport and public transport.

Mobility changes are of less importance, and considering the high importance of the centre of Gdynia for the obligatory trips related to work and education and to discretionary trips (recreation and leisure), influencing this element of behaviour would bring little effect. Therefore, the activities aiming at reducing the role of the passenger car in the daily lives of Gdynia inhabitants are of key importance and supporting activities must be integrated and comprehensive.



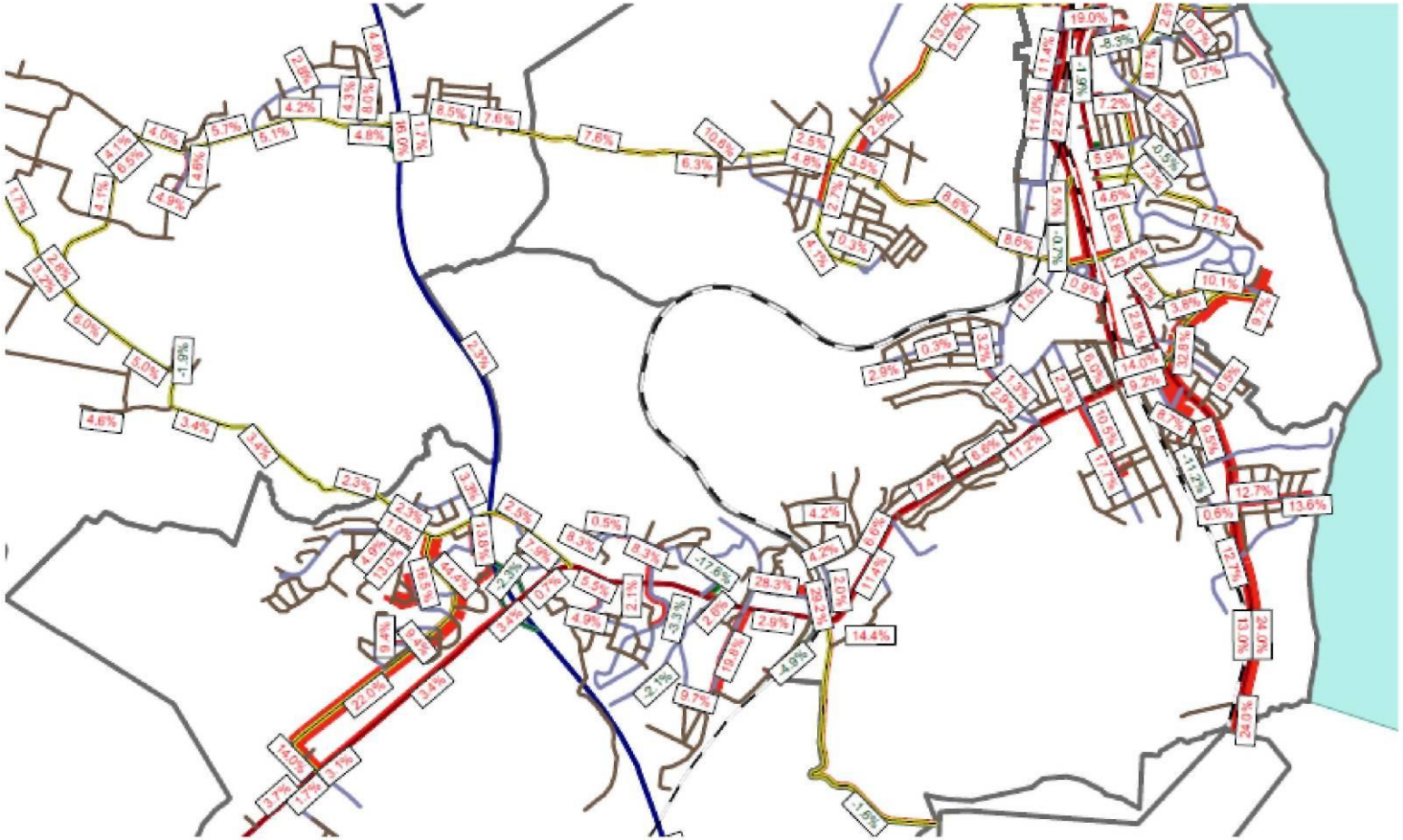


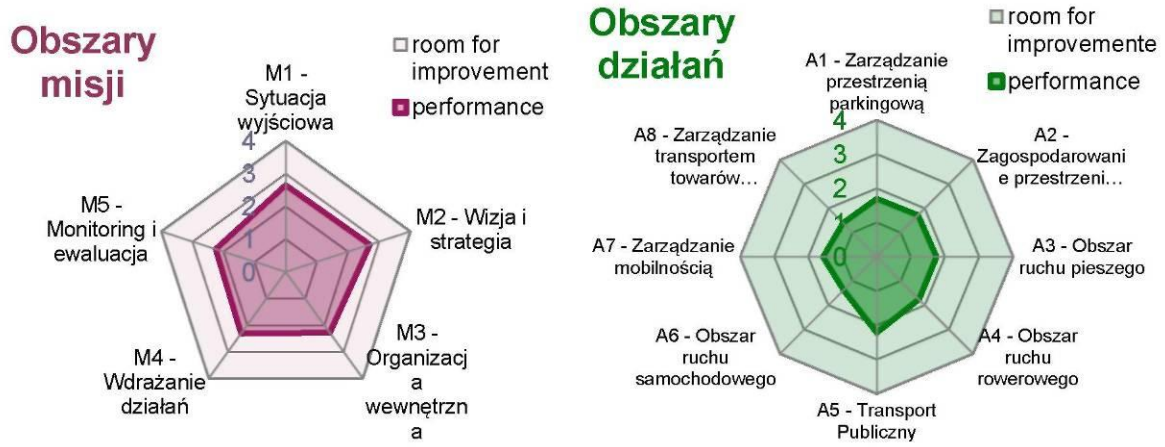
Figure 37 Changes in road traffic intensity for Scenario 4 "Unsustainable mobility with a decreasing inhabitant mobility" [for the afternoon rush hour]

Source: Zarząd Dróg i Zieleni in Gdyni, September 2016

6. Self-assessment and prioritisation

Self-assessment

To assess transport operation and the aspects of transport planning in the city, the assessment form was used, which was developed under the EU co-funded project ADVANCE[25]. The ADVANCE project assessment form contains a set of questions in the area of mission and activity. The mission area relates to the process of planning (e.g. co-operation issues, inhabitants inclusion, use of evaluation), while the activity area concentrates on eight subject areas, such as parking policy, urban spatial development, pedestrian traffic, bicycle traffic, goods transport, car traffic, mobility management and goods transport.



Term	Translation
Obszary misji	Mission areas
Obszary działań	Activity areas
room for improvement	room for improvement
performance	performance
M1 -Sytuacja wyjściowa	M1 - Initial situation
M2 - Wizja i strategia	M2 - Vision and strategy
M3 -Organizacja wewnętrzna	M3 - Internal organisation
M4 - Wdrażanie działań	M4 - Implementation of activities
M5 -Monitoring i ewaluacja	M5 - Monitoring and evaluation
A1 - Zarządzanie przestrzenią parkingową	A1 - Parking space management
A2 -Zagospodarowani e przestrzeni…	A2 - Spatial development
A3 - Obszar ruchu pieszego	A3 - Pedestrian traffic area
A4 - Obszar ruchu rowerowego	A4 - Bicycle traffic area
A5 - Transport Publiczny	A5 - Public transport
A6 - Obszar ruchu samochodowego	A6 - Car traffic area
A7 - Zarządzanie mobilnością	A7 - Mobility management
A8 - Zarządzanie transportem towarów…	A8 - Goods transport management...

Figure 38. Mission and activity self-evaluation according to the ADVANCE scheme

Source: own study based on stakeholders opinions

[25] ADVANCE was a three-year project co-financed from the Intelligent Energy Europe programme and implemented by eleven partners in eight European cities in 2011-2014. The interdisciplinary team consisted of city planners, mobility experts, transport consultants and scientists. The Polish partner of the project was the City of Szczecin. Within the ADVANCE project, the partners developed an auditing tool to evaluate the quality of urban mobility planning, tested it in the participating cities and upgraded thereafter. The result of the project is a tool, a self-assessment evaluation form for cities, which allows improving urban mobility planning. For more information see: http://eu-advance.eu/

The self-assessment process included stakeholders representing primarily the public administration sector and the transport market. The overall result of the city on a 1-4 scale (corresponding to activity levels) was 2.06 (Fig. 38), which means that in a general assessment Gdynia's transport policy implementation is process-oriented, while systemic activities are implemented to a small or medium extent. The detailed self-assessment results are available in the self-assessment report for the purposes of preparing the SUMP for Gdynia[26].

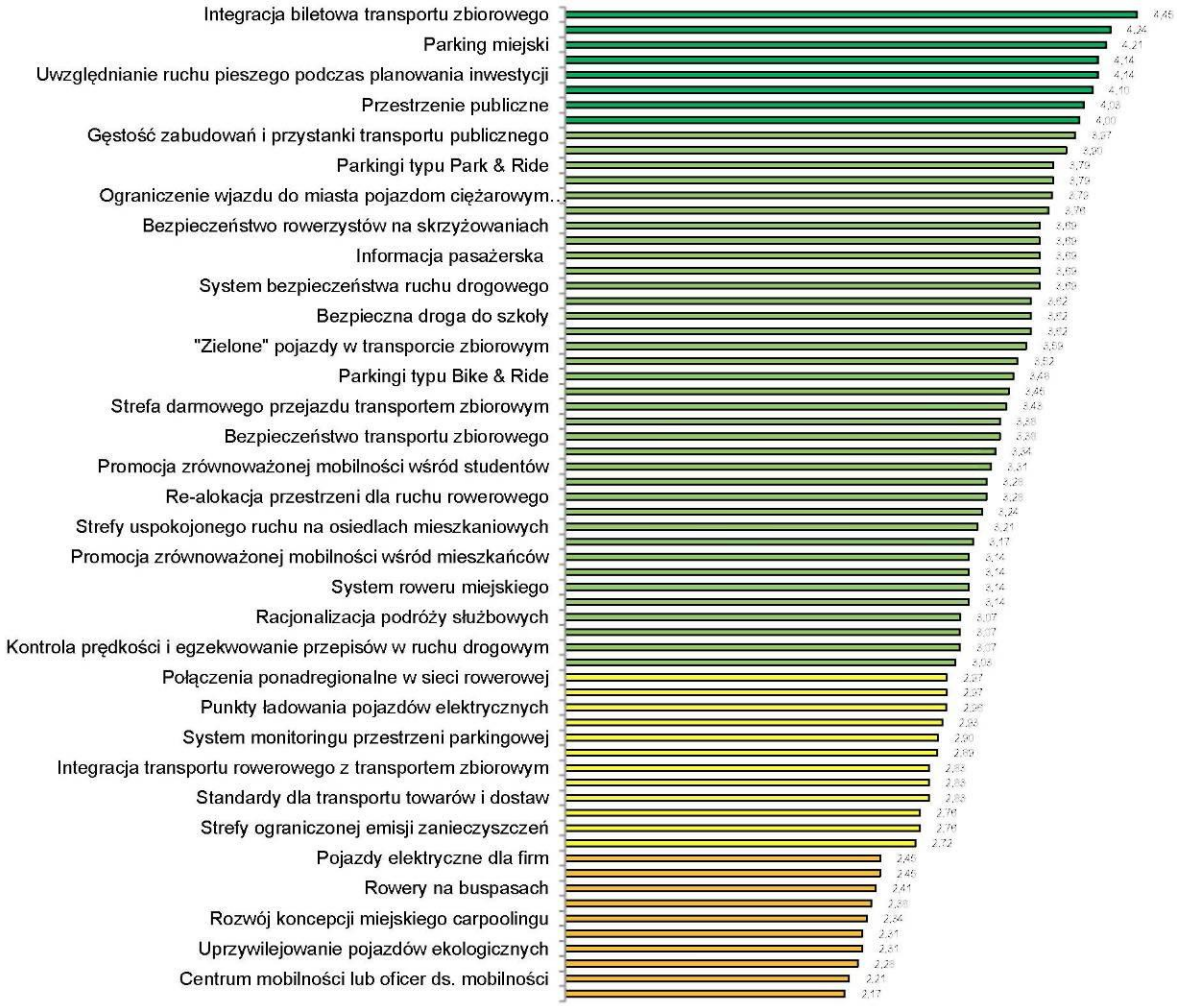
Prioritisation

To determine the most desirable directions of activity in the field of mobility in Gdynia, a questionnaire was prepared for stakeholders to assess particular areas and activities. Key stakeholders of Gdynia, included in the planning process earlier, were invited to the assessment. Every activity was subject to assessment on a C-A++ scale:

- C: these activities should not be in focus – they are unnecessary or already implemented to a sufficient extent in Gdynia;
- B: it is not necessary at the moment, but to be considered for implementation in the future (after 2025);
- A: it is necessary to concentrate on the completion of this activity, however the A, A+ and A++ symbols determine the priority (where A++ is the highest possible extent).

Prioritisation results are shown in Fig. 39. The highest priority was given to the tariff and ticket integration in the Metropolitan Area, parking issues, the inclusion of pedestrian traffic in project planning and public spaces.

[26] The report is available at www.mobilnagdynia.pl , in the "Do pobrania" (Download) tab



Term	Translation
Integracja biletowa transportu zbiorowego	Ticket integration of public transport
Parking miejski	City car park
Uwzględnianie ruchu pieszego podczas planowania inwestycji	Inclusion of the pedestrian traffic in project planning
Przestrzenie publiczne	Public spaces
Gęstość zabudowań i przystanki transportu publicznego	Building density and public transport stops
Parkingi typu Park & Ride	Park & Ride car parks
Ograniczenie wjazdu do miasta pojazdom ciężarowym	Restrictions on lorries entering the city centre
Bezpieczeństwo rowerzystów na skrzyżowaniach	Cyclist safety in crossroads
Informacja pasażerska	Passenger information
System bezpieczeństwa ruchu drogowego	Road traffic safety system
Bezpieczna droga do szkoły	Safe trip to school
"Zielone" pojazdy w transporcie zbiorowym	“Green” vehicles in public transport
Parkingi typu Bike & Ride	Bike & Ride parking areas
Strefa darmowego przejazdu transportem zbiorowym	Free public transport zone
Bezpieczeństwo transportu zbiorowego	Public transport safety
Promocja zrównoważonej mobilności wśród studentów	Sustainable mobility promotion among students
Re-alokacja przestrzeni dla ruchu rowerowego	Re-allocation of space to the bicycle traffic
Strefy uspokojonego ruchu na osiedlach mieszkaniowych	Calmed traffic zones in housing estates
Promocja zrównoważonej mobilności wśród mieszkańców	Sustainable mobility promotion among inhabitants
System roweru miejskiego	City bicycle system
Racjonalizacja podróży służbowych	Rationalisation of business trips
Kontrola prędkości i egzekwowanie przepisów w ruchu drogowym	Speed control and road traffic law enforcement
Połączenia ponadregionalne w sieci rowerowej	Super-regional connections in the bicycle system
Punkty ładowania pojazdów elektrycznych	Electrical vehicle charging points
System monitoringu przestrzeni parkingowej	Parking space monitoring system
Integracja transportu rowerowego z transportem zbiorowym	Integration of bicycle transport with public transport
Standardy dla transportu towarów i dostaw	Standards for goods transport and deliveries

Term	Translation
Strefy ograniczonej emisji zanieczyszczeń	Restricted pollution emissions zones
Pojazdy elektryczne dla firm	Electrical vehicles for businesses
Rowery na buspasach	Bicycles in bus lanes
Rozwój koncepcji miejskiego carpoolingu	City carpooling concept development
Uprzywilejowanie pojazdów ekologicznych	Preference for environmental vehicles
Centrum mobilności lub oficer ds. mobilności	Mobility centre or the Officer for Mobility

Figure 39. ADVANCE method prioritisation results

Source: own study based on stakeholders opinions

The detailed prioritisation results are presented in the report on prioritisation of directions for the purposes of the SUMP for Gdynia[27].

7. Strategic and specific objectives of Gdynia's SUMP, action plan

During the consultation process for the development of Gdynia's SUMP, considering the diagnosis, four basic strategic objectives for sustainable mobility in Gdynia were developed. They are an expression of a comprehensive approach to the issue, which includes the aspects of spatial planning, transport, quality of life and goods traffic.

The definition of strategic objectives and specific objectives in relation to the complex spatial and functional city structures, which are part of the metropolitan area, requires a precise formulation. The SMART methodology recommended in the "Guidelines..."[28], was used, according to which the objectives formulated should be:

- **s**pecific
- **m**easurable
- **a**ttainable
- **r**elevant
- **t**ime-based

Objectives are indispensable for monitoring and evaluation[29]. They also allow a precise matching of specific tasks. Four strategic objectives were set for Gdynia, which are actually strategic activity directions:

- No. 1 – Attractive and safe urban space
- No. 2 – Safe and effective transport system
- No. 3 – Rational transport choices
- No. 4 – Effective freight transport in the city

These strategic directions were extended into the specific objectives presented in Fig. 40. They result from the work towards improving the living standard and quality of life for Gdynia's inhabitants, reducing air pollution through expedited development of clean, safe, consistent, functional and effective forms of public transport and non-motorised individual transport. The specific objectives cover public transport and the promotion of environmentally clean vehicles (Objective 2.1, 2.3 and 2.4), non-motorised transport (Objective 1.1 and 2.3), intermodality (Objective 2.2 and 2.3), road transport and urban

[27] The report is available at www.mobilnagdynia.pl , in the "Do pobrania" (Download) tab
[28] F. Wefering, S. Rupprecht, S. Bührmann, S. Böhler-Baedeker (Rupprecht Consult – Forschung und Beratung GmbH): Guidelines. Developing and Implementing a Sustainable Urban Mobility Plan. Prepared on behalf of the European Commission, 2013. Polish version of March 2014.
[29] Ibid, p. 58.

logistics, considering in particular the role of sea transport (Objective 3.1, 3.2 and 3.3), mobility management and implementation of new use patterns (Objective 1.1, 3.1, 3.2. and 3.3), use of intelligent transport systems (ITS) (Objective 2.2 and 3.4) and road traffic safety (Objective 1.1 and 1.3).

They are an integrated reference to the implementation of one of the objectives of "Strategy Europe 2020", which is to "reduce greenhouse gas emissions by 20% in relation to 1990 (or even by 30%, under favourable conditions)"[30]. The objectives cover a diverse range of subjects related both to investment activities and organisational and educational activities (Fig. 40).

Aiming to integrate all the above aspects, an action plan was proposed, which was the result of co-operation of different stakeholders, involved from the very beginning in the preparation process of the Sustainable Urban Mobility Plan. The selection of activities was preceded by an analysis of opportunities, needs and expectations of various stakeholders and subject to public consultations. It reflects the needs, the metropolis specifics, and it is meant to remove basic barriers and problems. Its role is also to create opportunities for objective completion through widely understood co-operation. Its implementation is to contribute to a better fulfilment of local community needs and to ensure firm grounds for sustainable development. The action plan was developed for 2016-2018. At the end of 2018 it is recommended to assess the progress in action plan implementation and to re-adopt it.

Strategic objectives respond to the political challenges defined in the "Guidelines..."[31]. The list and impact assessment of the particular political challenges is included in Table 16.

Table 16. Strategic objectives of the Sustainable Urban Mobility Plan for Gdynia and political challenges

Political challenges / Strategic objectives	Objective 1. Attractive and safe urban space	Objective 2. Safe and effective transport system	Objective 3. Rational transport choices	Objective 4. Effective freight transport in the city
Health – How to create a health-friendly environment for inhabitants?	XXX	XXX	XXX	X
Congestion – How to create an economically efficient and accessible city?	XXX	XXX	XXX	XX
Safety – How to ensure a safe and reliable urban environment and mobility?	XXX	XXX	XX	XX
Pariticipation – How to engage citizens and other urban mobility stakeholders?	XX	X	XXX	X
Strategic planning – How to attain political objectives, while ensuring that mobility needs of the society are met?	XXX	XXX	X	XXX
Climate change – How to reduce climate change connected with transport emissions in the city and contribute to the fulfilment of local, national and global climate change objectives?	XXX	XX	XX	XXX

Source: Own study based on Guidelines, ed. cit., p. 62.

Explanation:
X – low importance of the strategic objective to the given political challenge
XX – moderate importance of the strategic objective to the given political challenge
XXX – high importance of the strategic objective to the given political challenge

[30] Strategy Europe 2020. Website: http://ec.europa.eu/europe2020/index_pl.htm, [access: 02/09/16].
[31] F. Wefering, S. Rupprecht, S. Bührmann, S. Böhler-Baedeker (Rupprecht Consult – Forschung und Beratung GmbH): Guidelines, op. cit., p. 62.

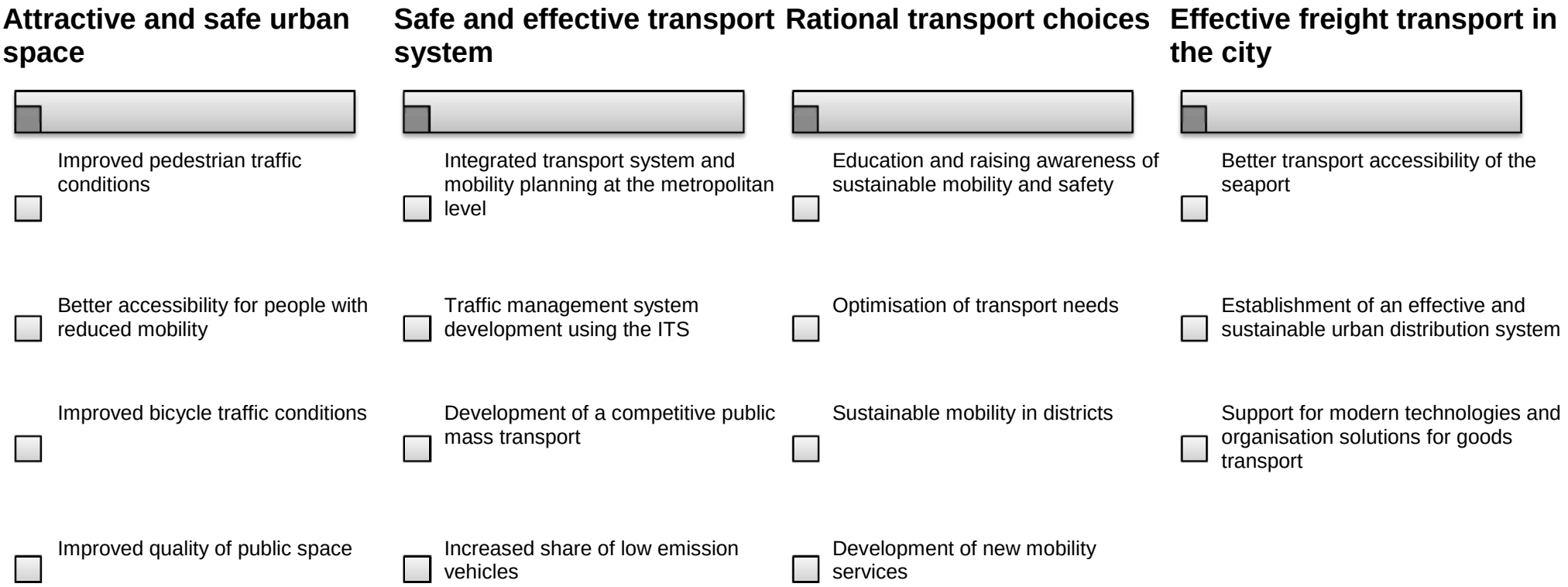


Figure 40. Strategic and specific objectives of sustainable mobility for Gdynia

Source: own study based on consultations with stakeholders.

Strategic objective 1: Attractive and safe urban space

Urban space is a common good, shaped by different stakeholders (e.g. authorities and municipal entities, businesses, infrastructure managers and inhabitants). Its quality translates directly to the quality of life and competitiveness in the national and international setting. The user category most sensitive to space quality are pedestrians. In fact, everyone is a pedestrian, because pedestrian trips accompany all other forms of motorised trips. The activity direction consisting in creating favourable conditions for the increase of pedestrian and bicycle trips has a multi-aspect impact. The transport function of the bicycle should become a priority, complemented by the recreational function. A consistent and safe cycling transport system, consisting of the infrastructure, appropriate traffic organisation and promotion, will be an increasingly important element of sustainable mobility in Gdynia for all age categories of inhabitants and visitors.

The priority assigned to pedestrian and bicycle trips contributes to a more effective space usage (especially in the city centre), improves inhabitants' health and activity, is emission-free and generates no noise. A pedestrian- and cyclist-friendly space is also an important strength in shaping the integrated tourist product of the city. The core of the objective discussed is working towards the 8/80 concept, in which space should be friendly both to a 8-year old child and to a 80-year old inhabitant of Gdynia. Integrated activity packages under objectives 1.1-1.4 are presented in table 17.

Table 17. Integrated activity packages under objectives 1.1-1.4.

1.1. Improved pedestrian traffic conditions	**1.2. Better accessibility for people with reduced mobility**	**1.3. Improved bicycle traffic conditions**	**1.4. Improved quality of public space**
Improved quality and consistency of footpaths	Improved accessibility of public transport vehicles and infrastructure for reduced mobility persons	Improved accessibility, quality and consistency of the bicycle system	Modernisation of the road infrastructure for safety improvement
			Sustainable parking policy
Preference for pedestrians in traffic	Improvement and monitoring of public space accessibility for the disabled	Development of the recreational bicycle system	Rehabilitation of space around station buildings and train stations
Improved pedestrian safety	Removal of architectural barriers in the developed area	Increasing the bicycle system attractiveness by providing parking areas and accompanying infrastructure	
			Space quality improvement in the city centre leading to traffic reduction

Source: own study based on consultations with stakeholders.

Integrated packages correspond to specific activities presented in Table 18.

Table 18. Integrated action plan for strategic objective no. 1.

Activity	Conformity with the objective	Entities responsible and engagement	Budget	Implementation schedule
Temporary introduction of pedestrian zones in selected streets in the centre of Gdynia (selected weekends and days, on which events are held)	1.1.	ZDiZ, District Council	current	from 2017
Traffic lights with priority for pedestrians	1.1.	ZDiZ	current	from 2017
Survey and diagnosis of parking places for the disabled	1.2.	ZDiZ	45,000	2017
Walkway repairs, considering the needs of reduced mobility people	1.2.	ZDiZ	current	from 2016
Public officer training on accessibility standards	1.2.	ZDiZ	current (10,000)	2018
Adaptation of the SKM Gdynia Główna platform for reduced mobility travellers and modernisation of the Dworzec Podmiejski (Suburban Railway Station) building	1.2.	PKP SKM in Tricity, City Hall, ZDiZ, Marshal Office	EU funds, city budget	from 2018
Bicycle path route changes near public transport stops (e.g. in ul. Nałkowskiej, ul. Morska, al. Zwycięstwa)	1.3.	ZDiZ, ZKM	current	from 2016
Construction of the main system bicycle paths (under the projects co-financed by the EU – ul. Nowowiczlińska, ul. Wielkopolska, ul. Sopocka, ul. Kartuska, ul. Morska)	1.3.	ZDiZ, City Hall	20,000,000	from 2016
Construction of the road R-10, repair and improvement of bicycle trail signs in forests, signs of routes to those trails through urban areas to shorten bicycle trips between districts	1.3.	ZDiZ, City Hall	current	2016-2018
Further placement of bicycle racks in places indicated by cyclists	1.3.	ZDiZ	current	2016-2018
Construction and expansion of Bike&Ride parking areas by SKM and PKM	1.3.	ZDiZ, City Hall, PKP SKM	current	2017-2018
Create a traffic model for bicycle transport in Gdynia	1.3.	ZDiZ	current, the FLOW project	2016-2017
Introduction of a 30 km/h zone in the centre of Gdynia and acceptance of bicycle contra-flow in selected streets	1.3. and 1.4.	ZDiZ	current	from 2016
City public space diagnostics for accessibility	1.4.	ZDiZ	100,000	2017-2018
Introduction of limited speed zones near the schools and preschools located along D and L-rated roads with an identification of main routes to schools and improvement of point elements of the infrastructure	1.4.	ZDiZ	current	from 2017

Source: own study based on consultations with stakeholders.

The defined specific objectives and corresponding activity packages respond to the following challenges:

- need to improve urban space quality, especially in the city centre. Pedestrian traffic is especially sensitive to the urban space development quality;
- the increasing numbers of the elderly requires a continuous shaping of urban space to achieve high accessibility;
- it is necessary to ensure the bicycle system consistency, to overcome "barrier effects" in key points for the system consistency;
- established, pro-motorisation transport behaviours of the inhabitants of Gdynia and the neighbouring communes.

Specific objectives form a framework for the integrated activity package, which includes comprehensive rehabilitation activities (that improve the conditions for pedestrians and cyclists), infrastructural and organisational activities, also funded by a participatory budget.

The expected effects of implementing the integrated action plan for Objective 1 are as follows:

- expansion of the area subject to rehabilitation processes;
- increased number of trips on foot;
- increased number of bicycle trips;
- increased mobility of the disabled;
- suppression of the individual motorisation increase rate.

Strategic objective 2: Low-emission and integrated public transport

Public transport still has a strong market position in Gdynia. However, its competitiveness in relation to the passenger car is also decreasing due to the lack of full tariff and ticket integration in the Metropolitan Area, which is difficult to implement due to the applicable regulations.

Thus, the full use of the strengths of railway transport to service Gdynia is impeded. Favourable locations of railway stations and the possibility of using the existing railway infrastructure for passenger railway transport development are the aspects that should be used to develop a competitive public transport system at the metropolitan level. It should be connected with non-motorised means of transport, especially with bicycle transport as an important means of transport to railway stations.

The priority assigned to public transport means contributes to a more effective urban spatial development. It will be possible to increase the transport infrastructure usage efficiency by using the TRISTAR intelligent traffic management system to a larger extent. Public transport vehicles, in particular trolleybuses, already are instrumental to reducing local emissions in Gdynia. The work towards increasing the share of low emission vehicles in urban transport (trolleybuses, CNG buses, EURO 6-rated diesel buses) is a sign of the activities towards improving the environment and increasing the quality of life in the city.

Table 19. Integrated activity packages under objectives 2.1 – 2.4.

2.1. Integrated transport system and mobility planning at the metropolitan level	**2.2. Traffic management system development using the ITS**	**2.3. Development of a competitive public transport**	**2.4. Increased share of low emission vehicles**
Mobility planning and development at the metropolitan level	Traffic management to reduce the environmental impact	Preference for public transport in traffic	Increasing the share of low emission vehicles in the service of the city
A common public transport tariff and ticket system in the Metropolitan Area	Real-time information for all road traffic participants	Optimisation of the public transport system Increasing accessibility for all social groups	Stimulating solutions aimed at reducing the vehicle exhaust emissions
Railway stations as integration nodes for public and individual transport			

Source: own study based on consultations with stakeholders.

The particular objectives include the fulfilment of the integrated activities presented in Table 19. The defined specific objectives and corresponding activity packages respond to the following challenges:

- it is necessary to raise competitiveness of public transport at the metropolitan level;
- the increase of individual motorisation in Gdynia and the neighbouring communes is a real threat to the throughput of the main road system of Gdynia;
- there is a necessity to improve the air quality and reduce noise, especially in the city centre.

Integrated packages correspond to specific activities presented in Table 20.

Table 20. Integrated action plan for strategic objective no. 2.

Activity	Conformity with the objective	Entities responsible and engagement	Budget	Completion schedule
Introduction of metropolitan bicycle service in Gdynia	2.1.	City Hall, ZDiZ, MZKZG, ZTM Gdańsk, ZKM		from 2018
Project of e-ticket system development in the Metropolitan Area of Tricity	2.1.	Gdynia, MZK Wejherowo, ZUK Tczew, Marshal Office		2017-2019
Construction of the Gdynia Karwiny integration node	2.1.	Commune of the City of Gdynia	90,000,000	from 2018
Sustainable public transport development in Gdynia through infrastructural projects, e.g. construction of the Gdynia Chylonia integration node	2.1.	ZDiZ, City Hall	66,000,000	from 2017
Development of transfer parking areas near railway stations and ZKM loops	2.1.	ZKM Gdynia, ZDiZ	current	from 2017
Development of passenger information system at public transport stops	2.2.	ZKM, City Hall		from 2018
Construction of new bus lanes for public transport vehicles in Gdynia (e.g. segments of ul. Morska, ul. Wielkopolska, ul. Chwarznieńska)	2.3.	ZDiZ, ZKM	e.g. under the Chylonia and Karwiny integration node projects, current	from 2018
Construction of Gdynia Wzgórze Św. Maksymiliana, Gdynia Stadion and Gdynia Karwiny stations along railway line no. 201 (so-called "PKM stations")	2.3.	PKM, PKP PLK S.A.., Marshal Office, City Hall	30,000,000 (estimated)	from 2016
Initial feasibility study for the continuation of the Pomeranian Metropolitan Railway project to service the northern districts of Gdynia and Kosakowo	2.3.	Marshal Office, City Hall, PKP PLK S.A.	200,000	2017-2018
Initial feasibility study for the Gdynia Zachód and neighbouring communes railway transport service project	2.3.	City Hall	150,000	from 2018
Modernisation of PKP SKM stations in Gdynia (Gdynia Chylonia, Gdynia Orłowo, Gdynia Redłowo, Gdynia Stocznia, Gdynia Grabówek, Gdynia Leszczynki)	2.3.	PKP SKM in Tricity, City Hall, Marshal Office		from 2017
Reconstruction of station bays along the main traffic routes in Gdynia	2.3.	ZDiZ		from 2017
Increasing the share of low emission EURO VI-rated diesel buses (by 55 vehicles)	2.4.	PKA, PKM, Commune of the City of Gdynia	64,000,000 (estimated)	from 2017
Development of emission-free trolleybus transport through the purchase of 30 trolleybuses and 21 sets of traction batteries	2.4.	PKT, Commune of the City of Gdynia	85,000,000 (estimated)	from 2017
Replacement of diesel vehicles with electrical drive vehicles on one of the bus lines in the ZKM Gdynia system	2.4.	ZKM, city carriers,	studies under the ELIPTIC project	2018

Source: own study based on consultations with stakeholders.

The expected effects of implementing the integrated action plan for Objective 2 are as follows:

- increase in the number of public transport passengers;
- increase in the number of railway stations;
- increase in the number of integration nodes;
- increase in the accessibility of public transport for the disabled;
- suppression of the individual motorisation increase rate.

Strategic objective 3: Rational transport choices

With the individual motorisation rate of more than 540 passenger cars per 1,000 people, investment activities and organisation and management activities are insufficient to change the transport behaviour of the inhabitants. This requires changes in daily behaviour, applicable to all age groups of the people of Gdynia.

The particular objectives include the fulfilment of the integrated activities presented in Table 21.

Table 21. Integrated activity packages under objectives 3.1 – 3.4.

3.1. Education and raising awareness of sustainable urban mobility and safety	3.2. Optimisation of transport needs	3.3. Sustainable urban mobility in districts	3.4. Development of new mobility services
Education in sustainable mobility and safety	Travel demand reducing district planning ("compact districts")	Mobility planning and development using the participatory budget	Technology development for duplex communication with inhabitants
Promotion of active mobility	New services and flexible working conditions to optimise needs related to transport	Quality improvement of local public space	New forms of using passenger vehicles and bicycles
Co-operation with businesses and institutions regarding active mobility development		Active mobility (pedestrian and bicycle) on short distances	Alternative transport in the service of Gdynia districts
European co-operation in the field of sustainable mobility			

Source: own study based on consultations with stakeholders.

The defined specific objectives and corresponding activity packages respond to the following challenges:

- it is necessary to support investment activities and organisation and management activities with educational activities in the field of sustainable mobility;
- a prospective target group for educational activities are children, adolescents and businesses;
- the increase of individual motorisation in Gdynia and the neighbouring communes is a real threat to the throughput of the main road system of Gdynia;
- It is necessary to co-operate with businesses and other entities in shaping sustainable urban mobility in Gdynia.

The specific objectives form a framework for the integrated activity package, which includes comprehensive activities towards permanent transport behaviour changes among inhabitants (Table 22).

Table 22. Integrated action plan for strategic objective no. 3.

Activity	Conformity with the objective	Entities responsible and engagement	Budget	Implementation schedule
The "Odprowadzam sam" (I accompany on my own) campaign in the public preschools of Gdynia	3.1.	ZDiZ, education facilities of Gdynia	current (60,000 per year)	2017-2018
Cycling competition for the businesses of Gdynia: "Do pracy jadę rowerem" (I cycle to work)	3.1.	ZDiZ, businesses	current (130,000 per year)	2017-2018
"Rowerowy Maj" (Cycling May) campaign	3.1.	ZDiZ, education facilities of Gdynia	current (70,000 per year)	2017-2018
European Week of Sustainable Transport	3.1.	ZDiZ, ZKM, businesses	current (35,000 per year)	2017-2018
Next editions of the European Cycling Challenge	3.1.	ZDiZ	current (100,000 per year)	2017-2018
"Wychowanie Komunikacyjne" (Transport Education). The purpose of this project is to shape desirable transport behaviours in children, in accordance with sustainable development principles.	3.1.	MZKZG	current	2017-2018
"Parkingowa rewolucja" (Parking Revolution) campaign	3.1.	ZDiZ	current (20,000 per year)	2017-2018
Mobility survey in the businesses and institutions of Gdynia	3.2.	ZDiZ, University of Gdańsk	current, possibly under European projects	from 2018
Development of the participatory budget in connection with sustainable mobility project	3.3.	ZDiZ, City Hall	current	2017-2018
Co-operation with district councils regarding the location of new bicycle racks	3.3.	ZDiZ, District Councils	current	2016-2018
Creation/modernisation of intra-district footpaths	3.3.	ZDiZ, City Hall, District Councils	current	from 2018
Promotion of good practices in implementing sustainable mobility in districts	3.3.	ZDIZ, District Councils, University of Gdańsk, RG, PUMA	current	from 2017
Calming local traffic in districts with the introduction of bicycle contra-flow	3.3.	ZDiZ, District Councils	current	from 2017
Co-operation with district councils in shaping a sustainable parking policy	3.3.	ZDiZ, District Councils	current	from 2017
Development of requirements for using unified forms and colours of pedestrian and bicycle infrastructure and city furniture	3.3.	ZDiZ, the City Artist	current	2017-2018
Trolleybus transport service of new housing estates in Gdynia Fikakowo	3.3.	ZKM, PKT	current	2017
Trolleybus transport service of new housing estates in Gdynia Demptowo	3.3.	ZKM, PKT	current	from 2018
Development of the concept of using bicycles for local goods transport	3.4.	ZDiZ	current	from 2018

Source: own study based on consultations with stakeholders.

The expected effects of implementing the integrated action plan for Objective 3 are as follows:

- decrease of the number of passenger car trips to the centre of Gdynia;
- increase in the number of public transport passengers;
- increased number of trips on foot;
- increased number of bicycle trips
- suppression of the individual motorisation increase rate.

Strategic objective 4: Effective freight transport in the city

A consequence of the economic development based partly on the transport forwarding logistics sector is the increase in goods transported by road transport (Europe-wide trend). In case of Gdynia the central location of the seaport is a source of additional, constant load on the city road system. Increased turnover in the port (especially container and some bulk cargo, e.g. grain) has an impact on the road and railway infrastructure throughput. Thus, it is necessary to undertake investment and organisation activities in strict co-ordination with road and railway system managers, as well as other stakeholders of the transport market (terminal operators, railway and road operators, port management, the Maritime Office etc.).

The defined specific objectives and corresponding activity packages respond to the following challenges:

- increased turnover in the seaport will cause a further traffic increase in the main city road system;
- railway transport will play an increasing role in the service of container and full-train cargo.

The particular objectives include the fulfilment of the integrated activities presented in Table 23.

Table 23. Integrated activity packages under objectives 4.1-4.3.

4.1. Better transport accessibility of the seaport	**4.2. Establishment of an effective and sustainable urban distribution system**	**4.3. Support for modern technologies and organisation solutions for freight transport**
Development of the road infrastructure servicing the seaport and reducing the pressure on the city road system	Partnership for sustainable city supplies (city logistics)	Use of ITS and ICT in freight transport to optimise goods traffic
	Organisation of the supply system in the city centre	Implementation of low emission transport means in the city goods transport and municipal services
Development of the railway infrastructure serving the seaport	Regulation of heavy goods transport access to selected city areas	
Development of the lorry parking infrastructure integrated with the TRISTAR system		

Source: own study based on consultations with stakeholders.

The integrated packages correspond to the action plan for Objective 4 (Table 24).

The expected effects of implementing the integrated action plan for Objective 4 are as follows:

- reduced goods traffic in the centre of Gdynia;
- increased role of railway transport in the service of container terminals.

Table 24. Integrated action plan for strategic objective no. 4: "Effective freight transport in the city"

Activity	Conformity with the objective	Entities responsible and engagement	Budget	Completion schedule
Construction of the Droga Czerwona road to create the indispensable, collision-free, road system, connecting the port with fast traffic roads	4.1.	City Hall, GDDKiA	project	until 2018
Construction of the Tricity Agglomeration North Beltway (OPAT) to connect the northern part of the Metropolitan Area with the Droga Czerwona road	4.1.	City Hall, GDDKiA	technical design	from 2018
Preparation of a repair and modernisation plan for the main traffic routes relevant to freight transport	4.1.	ZDiZ, City Hall, Gdańsk Employers Association (NORD)	current	2017-2018
Modernisation of the Gdynia Port goods station	4.1.	PKP PLK S.A.	850,000,000	from 2018
Modernisation of line no. 201 (works on the alternative	4.1.	PKP PLK S.A.	1,600,000,000	from 2018
Bydgoszcz-Tricity transport route)			[entire project]	
Development of a supply concept for a selected district of Gdynia in partnership with companies	4.2.	ZDiZ	current	from 2018
Development of the concept of implementing waste collection vehicles with an alternative drive to the diesel engine	4.3.	University of Gdańsk, ZDiZ, City Hall	current or under an European project	2018

Source: own study based on consultations with stakeholders.

8. Monitoring

Monitoring is a key part of every strategic document. Some strategic documents analysed for the purposes of Gdynia's SUMP contain monitoring indicators. Thus, the following set of indicators will be a logical complement of the monitoring system created for the purposes of the discussed documents and it is relevant to the action plan. The indicators were selected so as to enable assessing the extent, to which the particular objectives have been achieved (Table 25).

The indicators are divided into 3 categories, namely:

- Strategic, related to scenarios and general assumption of the strategic objectives (2 indicators);
- Key, which are essential for the assessment of changes in the progress towards specific objectives (12 indicators);
- Auxiliary, which complement the above categories (10 indicators).

Table 25. Monitoring indicators of sustainable mobility in Gdynia

Note: Bold text indicated strategic and key goals. All others are additional goals which are still important.

Indicator	Unit of measurement	Description	Category	Initial value (2015)	Target value (2018)	Measurement method / data source	Relation to a specific objective
Individual motorisation rate in Gdynia	**pas. cars/ 1,000 people**	**Number of passenger cars/ 1,000 inhabitants**	**STRATEGIC**	**542 (2015)**	**550**	**City Hall**	**scenarios, Objective 1, 2 and 3.**
Transport mobility of Gdynia's inhabitants	**number of trips per business day**	**Average number of trips per inhabitant per business day, excluding trips on foot**	**STRATEGIC**	**1.65**	**stable or slightly increased**	**ZKM Gdynia**	**scenarios, Objective 1, 2 and 3.**
Accidents with pedestrians	**case**	**Number of pedestrians injured in accident**	**key**	**53**	**decreased**	**the Police**	**1.1.**
Share of pedestrian traffic in trip distribution	**%**	**Number of pedestrian trips at the distance of more than 500 m/ total non-pedestrian trips on the day before the survey**	**key**	**10.9%**	**increased**	**ZKM Gdynia**	**1.1.**
Share of the bicycle traffic in trip distribution	**%**	**Number of bicycle trips on the day before the survey/ total non-pedestrian trips on the day before the survey**	**key**	**1.8%**	**3%**	**ZKM Gdynia**	**1.3**
Cycling system density	km/ km^2	Length of the cycling system related to the surface of Gdynia	auxiliary	0.42	increased	ZDiZ report	1.3.
Middle school students obesity rate	%	Percentage of overweight or obese middle school students	auxiliary	[data only for middle schools]	decreased	the Health Department	1.1., 1.3.
Traffic calming	**%**	**Length of roads in 30 km/h zones/ total length of roads in Gdynia**	**key**	**15.4%**	**20%**	**ZDiZ report**	**1.3., 1.4.**
Improved road traffic safety near education facilities	**case**	**Number of schools and preschools near D and L-rated roads with limited speed zones**	**key**	**19**	**24**	**ZDiZ report**	**1.4.**
Management of parking in the city centre	case	Number of parking places in Śródmieście and Kamienna Góra	auxiliary	5966	maintained or slightly reduced	ZDiZ report	1.4.
Metropolitan bicycle availability	case	Number of metropolitan bicycle stations in Gdynia	auxiliary	0	increased	ZDiZ	2.1.
Improved access to passenger information	**case**	**Number of stops with the passenger information system**	**key**	**34**	**increased**	**ZKM**	**2.2.**

Indicator	Unit of measurement	Description	Category	Initial value (2015)	Target value (2018)	Measurement method / data source	Relation to a specific objective
Share of public mass transport (PMT) in trip distribution in Gdynia	**%**	**Number of PMT trips on the day before the survey/total non-pedestrian trips on the day before the survey**	**key**	**39.8 (2015)**	**increased**	**ZKM**	**2.3., 2.4.**
Length of bus lanes in Gdynia	**m**	**Total length of separated bus lanes for public transport vehicles**	**key**	**2,120**	**increased**	**ZDiZ, ZKM**	**2.3.**
Improved railway transport accessibility	**case**	**Number of modernised and constructed railway stations in Gdynia**	**key**	**0**	**3**	**PKP PLK, PKP SKM**	**2.3.**
Share of low-emission and emission-free vehicles	**%**	**Share of low-emission (EURO VI, CNG, hybrid) and emission-free (trolleybuses, electric buses) in the total vehicles in the communal companies of the ZKM Gdynia system**	**key**	**52%**	**60%**	**ZKM**	**2.4.**
Emission-free public transport	case	Number of public transport lines operated with emission-free vehicles in the ZKM Gdynia system	auxiliary	13	increased	ZKM	2.4.
Electric mobility infrastructure availability	case	Number of electric vehicle charging stations	auxiliary	0	3	PKT	2.4.
Promotion of mobility among school students	case	Number of school students involved in sustainable mobility promotion campaigns	auxiliary	8,138	increased	ZDiZ	3.1.
Transport education	case	Number of school students included in the transport education programme	auxiliary	1,125	maintained or increased	MZKZG	3.1.
Promotion of mobility among workers	case	Number of workers of business in Gdynia involved in sustainable mobility promotion campaigns	auxiliary	1,315	increased	ZDiZ	1.2.
Mobility survey in businesses and institutions	case	Number of businesses and institutions included in the mobility survey in the given year	auxiliary	2	3	ZDiZ	3.2.
Number of passengers in newly created segments of the trolleybus system	**case**	**Number of passengers in newly created segments of the trolleybus system**	**key**	**0**	**increased**	**ZKM Gdynia**	**3.3.**
Share of railway transport in the service of the seaport	**%**	**Freight transported by railway / total cargo**	**key**	**approx. 30%**	**stable or increased**	**Gdynia Port, PKP PLK**	**4.1.**

Source: own study based on consultations with stakeholders.