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Recommendations for urban freight policy development in Gdynia

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Abstract

The purpose of this paper was to provide practical recommendations on how to develop Gdynia's urban freight policy based on actual planning experience and characteristics of potential measures. Freight policy scheme was developed as a result of three interrelated factors: a) the general procedure of the urban freight planning, b) the city's current planning stage analysis and, c) characteristics of urban freight objectives and related measures which allowed to compare existing planning competence with practical implementation requirements. Three phases of policy development were identified: preparation phase, implementation and follow up. On this basis, urban freight component of the Sustainable Urban Mobility Plan for Gdynia was proposed as a part of CIVITAS Dynamo project implementation. The SUMP's objectives were then described with the set of concrete measures. However final structure of the SUMP depends on the city's authorities approval, presented recommendations are intended to serve as a practical support for local decision makers.

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Keywords: urban freight policy, transport planning, freight measures classification

1. Introduction

Gdansk, Gdynia and Sopot form the core of the Tricity metropolitan area with more than one million inhabitants, two major seaports and highly complementary markets creating the most important economic area in northern Poland. Positive changes in the economic environment increase the demand for transport services, challenging the existing policies and calling for more effective solutions. There is growing awareness of the impacts transport has on

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the urban environment coupled with a constant growth of the car ownership ratio. At the same time downtown businesses seek a full use of the location potential to gain an advantage over large chain retailers expanding their networks. With growing public participation, city authorities are faced with higher expectations of urban populations.

The unexplored potential for urban freight planning may be seen in contrast to more advanced and sustainable measures in the area of commuting and public transport, a recent addition to the city's planning documents. This was the main reason for verifying how the city of Gdynia could proceed with its urban freight planning bearing in mind the existing potential and limitations. Because the city has launched a revision of its strategic documents, planners and decision makers should pay special attention to urban freight and develop a practical tool for aligning freight related activities with the city's strategic goals.

2. General procedure of urban freight planning

To facilitate a comprehensive approach to urban freight planning, a four stage procedure was developed (Kaszubowski, 2014a), presented in Fig. 1 and Fig. 2. The procedure would serve as a basis to formulate recommendations for freight policy options in Gdynia identifying crucial requirements for the planning process and policy development. These requirements will be also a part of the city's freight planning stage assessment. The procedure includes standards phases of planning, preparation, implementation and evaluation, broken down into subsequent steps to cover all factors related to urban freight specificity. The main objective of this procedure is to structure a decision making process and incorporate all required data to prevent inadequate decisions. In most cases the implementation of city distribution measures can be described as the learning by doing approach (Visser et al., 1999). Despite that, the learning process should have an operational structure to generate best results. The procedure may be used as a long-term planning tool supporting strategic decisions, when particular attention is given to the planning phase, its forecasting modules and the identification of feasible measures to support the transport system's long-term objectives. It can also be considered as a support tool for operational decisions for single measures or combined measures oriented at selected problems. The difference is the scope of data used for analysis and in most cases the time horizon for results estimation. To ensure the success of this procedure, we need to have clear evaluation criteria at the early stage of planning to ensure proper monitoring of the implementation. This condition implies a good understanding of the measures and a rational vision of expected results.

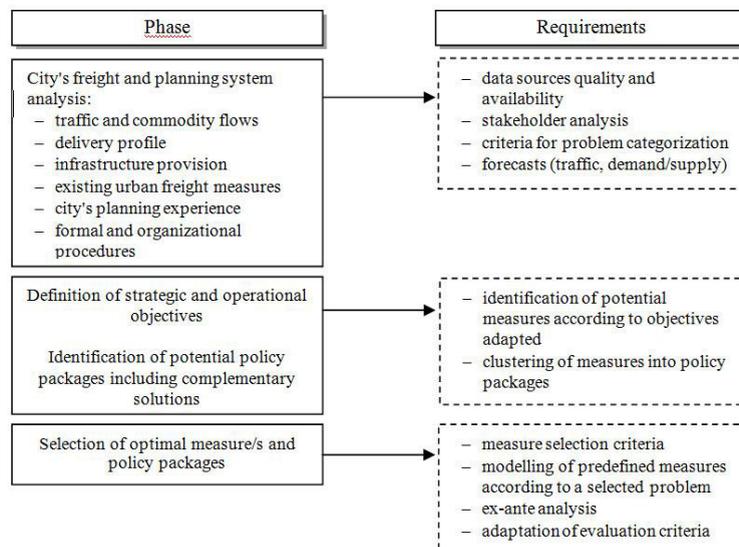


Fig. 1. Planning phase and its requirements

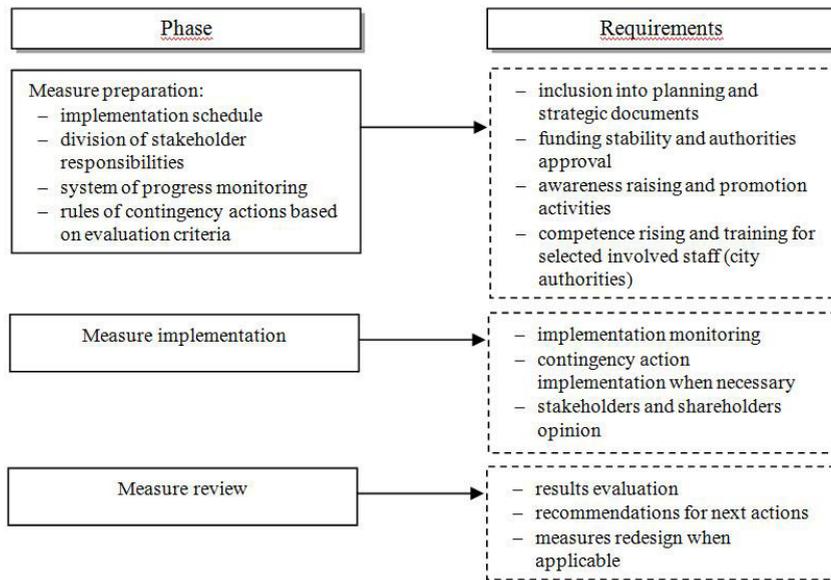


Fig. 2. The preparation, implementation and review phases.

Another reason why urban freight planning needs a structured and consistent approach is the general lack of expertise among local authorities. It is a crucial factor when general principles of sustainable transport planning are considered, such as (Wolfram, 2004): the existence of an urban freight strategy, stakeholder consultation, actor cooperation and policy coordination and capacity building to ensure that key personnel have the necessary skills.

In contrast to these conditions, recent research has revealed a lack of awareness of urban freight problems (Lindholm and Behrends, 2012). A survey among municipalities in Sweden (Lindholm, 2012) shows there is very little focus on freight transport, mostly due to low freight knowledge and consideration of freight as a market driven interest with a very low connection to the municipality. Interestingly, from Gdynia's perspective, the communication within the municipalities (departments such as strategic planning and transport planning) was rated better than expected. This indicates the desired direction of capacity building towards effective urban freight planning.

One of the first steps of the planning phase is to identify traffic and commodity flows within the city. The selection of freight measures during the planning process as presented in Fig. 1 often implies modelling activities with regard to a selected objective. To achieve this, factors behind urban freight transportation have to be identified and understood in terms of reliable data provision. Analysis of recent efforts in urban freight modelling shows that it is possible to identify some general trends (Anand et al., 2012). It was found that the administration and carriers were the most frequently represented stakeholders. Freight transport efficiency in this case is considered as traffic flow, trip generation and commodity flow optimization. All objectives were considered predominantly from the policy making perspective. When the research findings about low urban freight awareness among municipalities are confronted with the identified tendency in freight modelling, an important conclusion emerges for Gdynia authorities. The process of urban freight planning must be preceded with a definition of how data will be collected, an element included in the proposed recommendations.

Freight related data may provide different information. Apart from standard traffic related indicators, they may address logistics parameters of delivery operations in more detail. Such indicators may refer to (Cherrett et al., 2012): average delivery rate across businesses, differences between business types, deliveries by type of day, delivery scheduling and type of vehicle used. Existing research shows that freight activities surveys produce varying results. Although the data gathered for one location may provide a fairly detailed picture, it would be difficult to predict urban freight activities elsewhere (Allen et al., 2008). Freight activities surveys should become a regular

procedure to identify changes in the city's freight or delivery profile (Bertens, 2011). With a well-structured core set of indicators, it would be possible to expand it gradually according to stakeholder requirements.

The latter statement implies that urban freight policy needs to be elaborated in accordance with existing expertise and carefully follow predefined procedure in order to thoroughly evaluate possible objectives. If current experience with urban freight is insufficient, it is rational to identify links with existing transport planning practice and proceed with gradual implementation of urban freight related issues, i.e. new schemes of freight data gathering. This corresponds to the introductory actions within the planning phase (Fig. 1) and would further influence a structure of the proposed policy scheme. Consequently, the urban freight policy implementation could be divided into several subsequent phases taking into account available resources and competence level of responsible authorities. However, the policy structure must be flexible enough to adapt to new challenges.

3. Determination of the city's current planning practice regarding urban freight

3.1. City's freight self-assessment procedure

The first step to formulate recommendations for urban freight policy would be to appraise the current situation, following general procedure described before. The more reliable this action is, the more accurate the recommendations would be. One of the most important issues here is to see evaluation results as guidance not criticism towards city authorities, which would discourage from further involvement. The appraisal would follow the principles set in the planning phase in Fig. 1, including (Williamson et al., 2007):

1. Freight self-assessment - what freight planning efforts were already undertaken, what freight related investments have been made, commodity flow characteristics, data availability, users of the system and their needs, planning culture.
2. Definition of the freight planning stage - on the basis of freight self-assessment, it was established whether freight planning is in the basic or advanced phase. Understanding this, helps with a better definition of freight planning policy objectives, with rational targets and activities reflecting real problems and available resources.

This phase should have a highly informative character providing an objective insight into the existing situation. Any overlooked issues would sooner or later appear in the form of barriers in policy implementation. If identified at the early stage of planning procedure, they could be addressed adequately, for example, by additional consultations with stakeholders or more detailed forecasting.

Gdynia's local authorities have not yet elaborated any policy document related entirely to urban freight. In fact, no such document can be found among other municipalities in Poland, which indicates insufficient experience in this matter. A few general freight related issues are scattered across some other strategic documents and address a variety of issues. For Gdynia to conduct freight self-assessment, it would have to analyze the following strategy papers:

- Strategic Plan for Gdynia 2003 - 2013
- Transport Policy for Gdynia
- Draft of the Sustainable Urban Transport Plan

The Strategic Plan for Gdynia is a major planning document creating a baseline for the city's long-term development and other planning documents tackling specific areas such as transportation etc. In the current form this document has no direct references to urban freight. However, a closer look at the Plan's main strategic priorities reveals that they could be used as a basis for including more detailed urban freight problems. The strategic priorities are urban space, inhabitants and economy. Under the urban space priority, one strategic aim deserves particular attention. It talks about revitalizing Gdynia's central district to create attractive public space with a wide range of services such as business, trade, culture, hotels and restaurants, etc. This priority may serve as the basis for planning and implementing solutions that will optimize traffic distribution as many of the planned activities involve high delivery frequency (i.e. the HoReCa sector). Under the economy priority, transport issues are also addressed.

However, because the city has a port, heavy truck traffic is predominantly considered from an infrastructure and transit traffic perspective. The strategy calls for a regional transportation node highlighting the potential of two trans-European transport corridors. In summary, the Strategic Plan for Gdynia has no direct reference to urban freight problems. However, this type of document sets general objectives to be filled with more detailed and problem oriented documents, such as the city's Transport Policy. From this point of view, the Strategic Plan for Gdynia in its current version is well positioned for supporting urban freight activities.

The Transport Policy for Gdynia is part of the city's Spatial Development Plan. The Policy's main objective is to provide an acceptable level of transport services while reducing the adverse impact of transport on the environment and citizen's health and safety. As a general reference it was agreed that a continuation of the traditional infrastructure-based policy is not a solution to increasing traffic problems. Based on that statement the Policy pursues a sustainable development of modal share, focusing on passenger transport and reduction of demand for transport services. As regards freight transport, here again the priority of heavy truck transit is evident. To rationalize freight transport in connection with production and distribution, the following tasks are set:

- Reduction of HGV's transit within the city center,
- Identification of routes for trucks,
- Implementation of temporary restrictions for trucks and delivery vehicles,
- Implementation of low emission vehicles,
- Provision of parking spaces for HGV's at the city outskirts,
- Zoning and concentration of transport and logistics related activities,
- Enforcement of parking regulations for trucks as well as control of their technical standards in terms of noise and emission levels.

Freight within the city is considered mostly from the traffic management point of view. The requirement for demand management is unlikely to be fulfilled with the aforementioned measures. Despite this, selected objectives may be useful as a framework for more sophisticated solutions if implemented with a concept beyond simple traffic and enforcement regulations.

The next document to be considered is a draft of the Sustainable Urban Transport Plan for Gdynia 2008-2015 (SUTP). It was elaborated under the "BUSTRIP" (Baltic Urban Sustainable Transport Implementation and Planning) project. However, this plan was not adopted by the city's authority, it is now a reference for the Sustainable Urban Mobility Plan (the SUMP) being prepared within CIVITAS "Dynamo" project in Gdynia and serving as a working document. The SUTP includes 35 measures in the following categories: Public Transport (15 measures), Cycling (5 measures), Safety (7 measures), Transport Management and ITS (6 measures), Freight Transport (2 measures). Measures concerning infrastructure investments (i.e. intersection redesign) were included under "Safety"; the objective was to reduce the number of accidents and fatalities. Measures aimed at increasing public transport passenger safety and security were included under "PT". Transport management and ITS covers all measures for vehicle traffic management, parking management and heavy vehicle flow management. For example, this broad category includes: introduction of a paid parking area within the city center, TRISTAR traffic management system implementation, development of a parking information system based on the TRISTAR system infrastructure, heavy goods vehicles traffic analysis and bottlenecks identification. All measures included in this category are aimed at balanced mobility conditions for all users.

The SUTP is the first document to try and address urban freight issues. Although the SUTP was intended as an operational program, the content of the aforementioned measures is not convincing in terms of feasibility and proportion between the planned effort and expected outcomes. Urban freight is again dominated by the heavy vehicles traffic perspective. As a result, planned research must focus on main transit corridors and technical parameters. Urban logistics is neglected or at least not addressed sufficiently, leaving the impression that it only looks at HGVs. At the same time one of the objectives is to create a comprehensive logistic plan for a selected city area. A very broad set of actions was envisaged, ranging from waste removal to varied working hours. All this suggests a lack of a clear concept or vision, not to mention problem and stakeholder analysis.

After a verification of SUTP measures, a general conclusion may be presented. There is an insufficient ability to formulate urban freight objectives to address real problems expressed by stakeholders. It seems that the measures

included in the SUTP do not draw on the experience of other authorities and the objectives are too complex and diversified. They do not consider the existing planning capacity, market structure, data availability and stakeholder opinion. The expected objectives show that their implementation prerequisites were not properly identified and available data sources would not be sufficient.

3.2. Evaluation of the freight planning stage in Gdynia

Freight self-assessment provides information about the planning system performance, impacts of transport and the level of freight competence within the responsible organization. As a result, the current freight planning stage may be described as basic or advanced. A similar approach is advised as part of the Sustainable Urban Mobility Plan (Wefering et al., 2014), stressing that the results do not necessarily have to be made public. Table 1 provides a description of the basic and advanced planning stage (Williamson et al., 2007).

Table 1. Definition of the freight planning stage characteristics

Freight planning stage	Characteristics
Basic	scattered or no urban freight related planning activities
Urban freight issues are handled as part of a general regulatory system relying on standard measures applicable to all users, no targeted or specific problem related actions are undertaken	limited reliable data sources little or no interaction with the private sector limited knowledge of specific freight needs urban freight is neglected as part of larger investments carried out by the city
Advanced	some urban freight related activities have been planned and implemented
Urban freight starts to emerge as a planning issue or problem area, however there is no integration at the planning level with related strategic documents	initial interaction with the private sector as part of a specific project basic understanding of the urban freight relation to the city's economic base urban freight initiatives start to form with local leaders

Gdynia's current urban freight planning may be considered basic. This is a challenging situation for policy development as proper background has to be prepared. There is limited knowledge about supply chains characteristics and actors' needs, too few reliable data sources and hardly any interaction with the private sector. However, urban logistics is not completely neglected as awareness of freight related problems is growing among decision makers and residents. This gives an opportunity to introduce new concepts and embed urban logistics into planning practice, provided that a well-structured approach would be adapted. Also progress in the other planning areas such as public transport contribute to the changes in the perception of planning possibilities among decision makers. An interest may be observed regarding urban distribution issues, however it is still characterized by a cautious acceptance for small scale research activities. With this in mind, the city's authorities would benefit from recommendations based on existing examples from other cities. It would be crucial to identify the feasibility of urban freight measures according to local circumstances, especially that first potential problems may discourage from further involvement.

4. Examination of policy objectives and related measures

4.1. Categorization of potential policy objectives

Objectives and measures of the urban freight policy recommended for Gdynia should be consistent with aims identified in documents analyzed in the previous chapter. The overall approach is designed to provide an opportunity for an adaptive and learning process based on systematically increased urban freight experience. At the same time, integration with other urban policies is crucial as freight influences several aspects of economy and citizens' quality of life. The general principles of integration in urban freight strategies include (May et al., 2006):

- Integration between policy instruments involving different modes.

- Integration of policy instruments involving infrastructure provision, management, information and pricing.
- Integration between transport measures and land use planning measures.
- Integration with other policy areas such as health or environment protection.

The second principle would have the most significant influence on the final recommendations for Gdynia, especially in the first stages of policy development and implementation. In terms of integration between urban planning and transport planning, similar objectives (such as reduction of CO₂) may be adopted for transport and, for example, for compact urban planning, making it possible to include them into urban freight policy (Hickman et al., 2013). Because policy objectives often address problems or opportunities, the impacts of freight activities must be identified and understood. There are different classifications of freight activities impacts in relation to sustainable development objectives. The impacts of transport on sustainability may be identified as follows (Russo and Comi, 2012):

- Economic impacts: traffic congestion, mobility barriers, accidents, transportation facility costs, consumer transportation costs, depletion of non-renewable resources.
- Social impacts: inequity of impacts, mobility impairment, human health impacts, community cohesion, community livability, aesthetics.
- Environmental impacts: air pollution, climate change, habitat loss, water pollution, hydrologic impacts, noise pollution.

These adverse impacts of urban freight operations may be associated with the features of urban freight operations, leading to mitigation measures as shown in Fig. 3 (Browne et al., 2012).

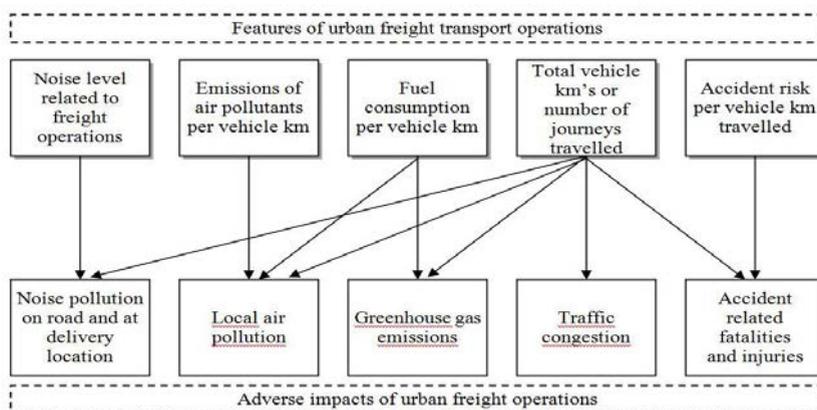


Fig. 3. Relation between negative aspects of urban freight and features of freight operations.

Recommendations for the city's urban freight policy development take into account the existing situation and define a hierarchy of potential objectives. Based on a literature review, three interrelated functional objectives have been defined (Kaszubowski, 2014b):

1. Optimization of freight vehicle flows and demand for infrastructure; it requires traffic management, regulatory framework for different vehicle classes, access restrictions to selected areas, delivery zones, etc. The main objective is to alleviate the negative impacts of freight traffic on the affected communities and induce changes in the characteristics of logistic service providers operations.
2. Reduction of excessive demand for freight movements; problems may have multiple reasons originating in the city's spatial patterns, management of logistics chains, infrastructure provision or local economy characteristics. This requires more sophisticated actions involving a wide array of stakeholders and long-term planning based on business-case feasibility.

3. Transfer - shift of urban freight flows to more sustainable modes where applicable (rail or waterborne) or the introduction of new vehicle types for road transport (electric, LPG).

Table 2 presents three objectives with a suggested area of implementation and measures assigned (Muñuzuri et al., 2005), (Russo and Comi, 2010), (Lindholm, 2010). The presented classification is an attempt to verify and understand the feasibility of the measures for various scenarios of urban freight policy development in the city of Gdynia. Consequently, it would be possible to structure the freight policy scheme as a result of three influencing factors: a) the general procedure of the urban freight planning, b) the city's current planning stage analysis and, c) characteristics of urban freight objectives and related measures.

Table 2. Urban freight measures according to objective and area of implementation

Area	Objective		
	Optimization	Reduction	Transfer
Infrastructure	provision of sufficient quantity of well-designed delivery spaces	city terminals/city consolidation centres	utilization of existing rail or waterborne terminals as a transfer/consolidation hub
	reduction of free parking spaces to improve freight vehicle flow on selected streets	urban delivery schemes for shippers and receivers	
	use of public parking spaces or other restricted areas (taxi stops, bus lanes)	construction consolidation centres	
	mini-warehouses		
	provision of delivery spaces in private or commercial buildings		
	buffer parking for HGV scheduled for a construction site or other delivery place		
Regulation/planning	access according to weight, length or other vehicle parameters	location of freight high-demand facilities next to a transport infrastructure of high capacity	low emission zones/environmental zones
	access to pedestrian zones		
	double parking short time restrictions	zoning of activities	
	closing the centre for private traffic	service and delivery plans	
	paid access to selected areas	relocation of freight generators according to urban renewal	
	adequate rotation in delivery zones	safeguarding of rail-connected & water-connected sites for future use	
	night deliveries		
	harmonization of regulations, also at regional level		
	delivery time windows		
	carrier classification		
	freight zone classification		
	street classification, dedicated roads for HGV traffic		
ITS/ICT	limitation of loading and unloading times		
	signalling of truck routes		
	access control	order processing and delivery/pick-up bundling and scheduling	
	delivery zones monitoring		
	automatic toll systems		
equipment	weight-in-motion for HGV		
	traffic management		
	on line load zone reservation		electric vehicles/hybrid vehicles
	vehicle navigation and fleet management systems		LPG vehicles bikes, etc.

To provide reliable recommendations for urban freight policy for Gdynia, an evaluation of Table 2 measures was conducted. Each has different characteristics regarding the potential impact, level of complexity, prerequisites and implementation barriers. Table 3 describes the general characteristics of measures broken into optimization, reduction and transfer categories.

Table 3. Characteristics of urban freight policy objectives

Optimization	Objectives	
	Reduction	Transfer
significant number of evaluated examples	potential for supply chains redesign, but interaction with market proves challenging	when related to infrastructure: location-specific solutions with limited transferability potential
relatively easy to integrate with existing solutions	proper business case is required for financial feasibility	high expenditures required
relatively cost-effective	few successful examples (UCC's) without external support	limited number of examples
immediate results for regulatory measures	close cooperation of stakeholders is required, both private and public	highly detailed planning and ex-ante evaluation due to high investment costs
high level of public acceptance regarding reduced traffic intensity, noise and other emissions	dedicated private partner with a clear business concept is essential	requires strong regulatory support, also on the national level
lower stakeholder involvement required	public involvement is often required in terms of regulatory framework,	measures should be implemented as part of a complex concept with a well-designed system of supporting actions
limited impact on supply chains structure and freight demand	for UCC's regulations must not be exclusive,	private sector involvement is essential
concerns freight traffic rather than logistics issues	for regulatory measures effects may be deferred, especially for planning, zoning etc.	technology solutions must be proven and based on a sound business case
useful as a basis for more complex measures	planning measures must go beyond the transportation issues only	
potential to initiate competition in logistics industry in terms of new technology and systems introduction	potential for inclusion of innovative technology solutions	
suitable for up-scaling		

5. Proposed urban freight policy development scheme for Gdynia

5.1. Structure of urban freight policy scheme

Characteristics of presented policy objectives should be examined in the context of the city's freight planning stage and planning procedure requirements identified in the previous sections. A scheme of urban freight policy was drafted, divided into three complementary subsequent phases providing comprehensive approach to freight issues.

The optimization objective and related measures have a high potential for implementation, providing that preparatory activities are implemented. The city's planning documents leave a space for infrastructure related and regulatory measures, possibly ITS supported using the traffic management system already under implementation. However, there are several pitfalls in this scenario, especially regarding regulatory measures such as time windows or other restrictions related to delivery vehicle movements. The experience from other countries' regulatory systems (time windows, vehicle size and weight, etc.) is commonly used to show that regulations may reduce logistics providers effectiveness (Quak, 2012) or lead logistics operators to contravene the regulations (Cherrett et al., 2012). Regulatory measures will only succeed if supported by an effective control and enforcement system. The type of system (electronic/ITS or traditional) should depend on the function of the regulatory measure and the size of the area. A thorough planning and consultation process should take place before that (Abel and Karrer, 2006).

The aforementioned preparatory actions related to optimization objectives are inseparably connected the city's basic low experience with urban freight. The main aim is to create a basis for common understanding of urban freight issues among city authorities and stakeholders. It is also necessary to create practical communication

channels between departments involved in different aspects of transport planning, economic and spatial development following the principle of horizontal policy integration (Geerlings and Stead, 2003). This would provide an opportunity to find any planned or implemented actions with the highest potential regarding urban freight. Also, institutional potential may be verified and improved when needed in anticipation of more effort in the future. Last but not least, data availability and quality have to be verified along with the definition of a data gathering scheme. This explains why the first phase of proposed policy package for Gdynia (preparation) is devoted to creation of the solid foundation for future actions, including concrete measures within identified groups of objectives.

The reduction objective is more advanced in terms of implementation prerequisites. Its main focus is optimization of urban supply chains, challenging the maturity of the planning system. Moreover, measures under this category require close cooperation with the private sector to achieve optimal results as part of sustainable urban policy (Banister, 2008). In the case of Gdynia, there was no evidence of such cooperation so far in urban freight, with, for example, retailer organizations and carriers or logistics providers. In general, this could be attributed to overall logistics market maturity and little experience in public-private cooperation. This, however, applies not only to the city in question or Poland in general, but is common in other economies. Little involvement of private companies has been noticed in local transport planning so far, and many efforts are needed to achieve long-term partnerships and mutual understanding (Lindholm and Browne, 2013). The obstacles include the difficulty in finding a dedicated private partner, defining a clear business concept and securing public objectives in terms long-term stability.

Another widely discussed solution to optimize urban logistic chains is consolidation of deliveries. It was discussed in many research papers, projects and reports (*COST 321*, 1998) (Allen et al., 2007), (SUGAR, 2011). Yet, although well described and perfectly fitting into the concept of optimization of urban distribution, this concept remains difficult to plan and introduce. Limited success stories are available, making it complex to evaluate and reproduce under local conditions. It was noticed that some of the UCC projects were based on wishful-thinking rather than a quantified assessment (Browne et al., 2005). Also legal concerns emerge on how far local authorities can carry regulations to support consolidation schemes and provide financial support to its operation (Ville et al., 2010). Although there are other ways of goods consolidation without a dedicated UCC, such as cooperation between retailers or carriers (Verlinde et al., 2012), their requirements exceed existing local experience. A qualitative analysis of the potential for UCC and other policy options was elaborated for the city of Gdańsk, the largest in the Tri-City metropolitan area (Kaszubowski, 2012). It revealed that under existing circumstances the consolidation center is not feasible for implementation.

Having this in mind, measures under the reduction group are considered as the advanced objectives in terms of existing circumstances in Gdynia and are included into the last phase of the policy (follow up and extension). They may be further supplemented by the measures categorized under the transfer objective, but this would require the most sophisticated approach. In most cases it would be a follow-up of existing measures or a solution to increase their environmental benefits. As these measures strongly rely on technology there must be a provision of market proven solutions to reduce the risk of extended testing or adaptation undermining the feasibility of the measure.

The result of the urban freight policy objectives analysis with respect to the current planning stage in Gdynia is summarized in Table 4 where recommendations were structured into three phases: 1) preparation, 2) implementation, 3) Follow-up and expansion. The main objective was to provide clear guidance about objectives and related actions. This is intended as a general reference for detailed studies on selected measures or policy packages in future.

Table 4. Recommendations for urban freight policy development scheme in Gdynia

Phase 1 Preparation	Phase 2 Implementation	Phase 3 Follow-up and expansion
<p>Preparatory activities provide a starting point for future actions.</p> <p>Effort aimed at increasing planning and institutional capacity of the city's authorities.</p> <p>Establishing a communication links with stakeholders</p>	<p>Follows the optimization objective and includes mainly infrastructure and regulatory measures as well as data provision.</p> <p>Requires procedures and capacity developed within the preparation phase.</p>	<p>Follows the reduction objective but requires the provision of a regulatory background from the optimization scenario.</p> <p>Its main area of influence are the urban supply chains. This step refers also to the transfer objective, where feasible.</p>
<p>verification of existing planning documents to identify actions with the highest potential regarding urban freight management</p> <p>assessment of the city's institutional potential to find existing responsibility schemes and competences within urban freight planning area</p> <p>definition of data gathering scheme for the UFT planning</p> <p>introduction of urban freight and logistics terminology into planning practice</p> <p>establishment of communication channels between the city's departments involved in transport and development issues</p>	<p>identification of the city's logistic profile</p> <p>classification of road network for different types of cargo vehicles with unified weight and size restrictions, road marking system, variable signs on selected streets and visual surveillance within existing traffic management system</p> <p>dedicated routes for HGV's including survey of main traffic generators and implementation of weight in motion stations at selected spots if feasible</p> <p>access regulation for selected areas: unified regulations for delivery vehicles stops, regulations for sensitive areas (i.e. pedestrian zones or leisure areas), delivery profile for retail and services concentration areas with guidelines for dedicated areas location, surveillance and enforcement of the measures</p>	<p>identification of the possibility to introduce delivery consolidation schemes: transferability of existing examples, stakeholder participation, area of implementation,</p> <p>system of non-exclusive regulatory support for consolidation scheme operator/s based on previously developed regulatory framework (access regulations etc.)</p> <p>determination of possible use of existing logistic facilities, i.e. port related logistics infrastructure</p> <p>verification of market and technology potential for introduction of alternative mode of transport or low-emission vehicles such as electric vans</p> <p>verification of the potential for low emission zone implementation: formal issues, traffic volumes, emission levels, stakeholders participation and awareness</p>

5.2. Set of measures identified according to developed policy scheme

In Section 3 of this paper the Sustainable Urban Mobility Plan for Gdynia was mentioned as being under elaboration (as for mid 2015) within the CIVITAS Dyn@mo project. A freight component was included in the forthcoming document. Its main objective is to proceed further when compared to existing transport related policy documents evaluated before. This component was structured to reflect all aspects of freight activity within the city, both urban freight and transit movements related to Gdynia's seaport activities. Fig. 4 presents freight component of the SUMP divided into general components and related sub-objectives.

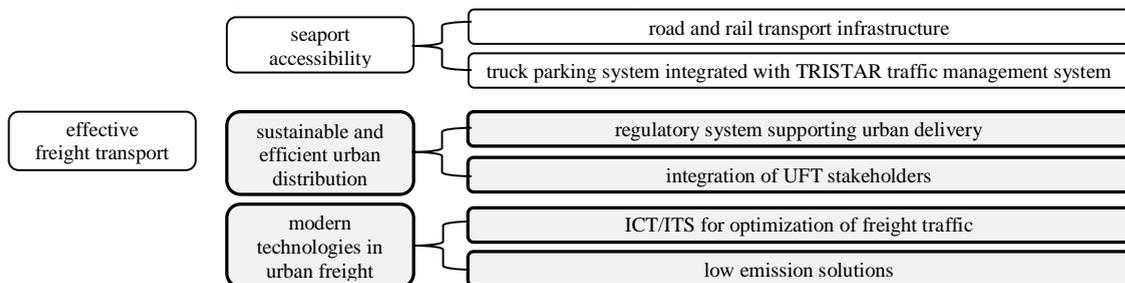


Fig. 4. Proposed freight component of the Sustainable Urban Mobility Plan in Gdynia.

It must be noted that structure presented at Fig. 4 is a working version which would be discussed with stakeholders and may vary from the final document to be presented for acceptance to the city council. However, it reflects main considerations regarding freight in general and urban freight issues as a new domain of transport related policy documents.

Each of the SUMP's sub-objectives is then described with a set of corresponding measures. Their selection is based on the city's freight self-assessment and freight planning stage definition (Section 3.2), categorization of policy objectives and their requirements (Section 4.1) and freight policy development scheme (Section 5.1). Based on the three-phase approach (Table 4), the majority of the measures reflects characteristics of the Phase 2 based on optimization objective. Structure of the proposed measures under each sub-objective is presented in Table 5, with the same restrictions as described for Fig. 4 above.

Table 5. Measures under SUMP urban freight objectives

Regulatory system supporting urban delivery
<ul style="list-style-type: none"> • verification of the city's institutional potential in urban freight planning and creation of communication channels and principles between responsible departments • development of methodology for freight data gathering and processing according to existing and forecasted changes in planning and management capacity of the city, i.e. utilization of transport modelling solutions and traffic management system TRISTAR • road network classification according to main freight generators and traffic characteristic • unification of weight and/size regulations, starting from the city center and main transit road network to the seaport • methodology for planning of dedicated delivery zones
Integration of urban freight stakeholders
<ul style="list-style-type: none"> • identification of the UFT stakeholders, establishing a form of roundtable hosted by the city to identify their concerns and developing common understanding of freight related problems
ICT/ITS for optimization of freight traffic
<ul style="list-style-type: none"> • utilization of potential of traffic management system and related transport modelling solutions to improve planning and forecasting of UFT measures • guidance and enforcement for freight vehicles, especially HGV's (including weight-in-motion) • real time traffic information for better route planning, including congestion and incidents
low emission transport solutions
<ul style="list-style-type: none"> • verification of conditions (requirements and benefits) of low emission zone introduction • identification of potential solutions to support uptake of new technologies, i.e. incentives for operators based on conducive regulations

The implementation horizon for the most of aforementioned measures is 3 to 5 years. Detailed coordination between measures is essential as most of them share similar requirements for data and information. Moreover, ex-post evaluation of implemented measures should be executed to ensure stakeholders and decision makers about appropriate direction of intervention. Lessons learnt during the first attempts with urban freight measures may influence acceptance for future actions, therefore it is crucial to secure provision of reliable information about measure implementation. In these terms, detailed measure evaluation must be considered as an integral part of implementation.

6. Conclusion

The main purpose of this paper was to develop recommendations for Gdynia's urban freight policy development process. The intention was not to draft recommendations for the final policy document itself, but to verify all barriers and drivers related to selected measures that have been tested in urban freight planning. As no clear guidance on national or EU level is available for this matter, most cities struggle to find their own way of managing freight related issues with varying success. The purpose of the recommendations is not to formulate a separate urban

freight policy document, but to expand and refine existing documents such as the Transport Policy. Once adequate experience is gathered, a dedicated and standalone urban freight policy may be developed.

The recommendations were based on the four stage planning procedure with emphasis on its planning stage. While a revision of the city's current urban freight planning practice shows that it is still rather basic, the issue is now accompanied by a more advanced approach adopted in general transportation planning.

Against this background three objectives were identified for the freight policy, including optimization of freight operation and traffic, reduction of excessive demand for freight services and transfer of freight to more sustainable modes of transport, where feasible. The definition of the objectives was based on a cross-examination of sustainable policy guidelines and characteristics of available measures. This was followed by categorization of possible measures under each objective and identification of its general prerequisites based on the available examples. Then, three phases for policy development were drafted taking into account the objective's prerequisites and the city's planning experience.

In general, the most applicable objective is optimization of freight vehicles flows and demand for infrastructure. If well directed, measures under this objective are closely related to actual planning practice. However, the implementation objective must be precisely defined and consider specific requirements of urban freight supply chains. Optimization must include the possibility of adding more advanced measures, related to reduction or transfer objectives. This path has to be defined at the early planning stage so as not to overlook emerging possibilities or system deficiency.

The aim of encapsulating the recommendation into three phases was to give local authorities clear insight into the challenges that may occur during planning and implementation of urban freight measures. Therefore, the presented phases should be considered as a reference material with categorization of measures and their implementation characteristics. In practice it would be difficult to define clear limits of each scenario because a more horizontal approach is possible. Implementation could start with simple regulatory activities expanding later into more complex policies including i.e. demand related measures based on close cooperation with the private sector.

However, there is one group of activities which must not be omitted. It could be described as a preparatory and learning process, included in Phase 1 (organizational coordination) and continued in practice in Phase 2 (data and logistics profile). It should be considered as a regular city planning activity regardless of the measures considered. This conclusion may be a statement indicating the Author's recommendation for local authorities in terms of pointing out the best starting point for urban freight policy development.

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