

POZNAŃ SULP POLICY DOCUMENT

Deliverable D.T3.2.5

Final Version

03 2019





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1. The SULPiTER project

Transport is the second largest energy-consuming sector, with a 32 % of share of final energy consumption. Therefore it is necessary to consider the White Paper (2011) of the European Commission, which sets 10 goals for a competitive and resource-efficient transport, two of which are specific for urban areas: “Halve the use of ‘conventionally-fuelled’ vehicles in urban transport by 2030, phase them out by 2050” and “Achieve essentially CO₂-free city logistics by 2030 - in major urban centres.” Paris climate agreement (2015) - the world’s first comprehensive climate agreement - has an important role also in the logistic sector, if we are looking into the aims of it: “Making finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development.”. Recognising the important role Sustainable Urban Mobility Plans can play, the European Commission proposed in its Action Plan on Urban Mobility of 2009 to accelerate the take-up of Sustainable Urban Mobility Plans in Europe by providing guidance material, promote best practice exchange, and support educational activities for urban mobility professionals.

To fully understand possibilities for mitigating urban freight flows and to solve the problem holistically, we would need to tackle urban freight on the level of entire supply chain (including enterprise’s strategies) and from the perspective of Functional Urban Areas (FUA). By the definition, FUA consists of the city and its commuting zone and is identified as polycentric cores and the hinterlands of FUAs identified based on commuting data, including all settlements from where at least 15% of the workers commute to any of the core settlement(s) (OECD, 2016).

The project SULPiTER (Sustainable Urban Logistics Planning To Enhance Regional freight transport) has been developed to support policy makers in improving their understanding of the FUA freight phenomena in an energy and environmental perspective, enhancing their capacity in urban freight mobility planning in order to develop and adopt Sustainable Urban Logistics Plans - SULPs. The Project focused on several FUAs in Central Europe, namely Bologna, Budapest, Poznan, Brescia, Stuttgart, Maribor and Rijeka, whose authorities were involved in the project as fully-fledged partners.

SULPiTER designed and developed a tool aimed at estimating the freight demand generated by the economic activities in the FUA individuated by the project partners. SULPiTER tackles urban freight in the perspective of FUAs, taking into consideration the functional transport and economic relations between inner urban centres (the usual and limited territorial target of public regulations) and the surrounding urban territories, as well as the functional transport and economic relations within FUAs not affecting downtowns. The SULPiTER tool is intended to be a decision support system for policy makers to facilitate the process of elaboration of alternative city logistics scenarios.

2. The Sulp Policy Document

This document is the basis of the Sulp development for each FUA in the frame of the SULPiTER project. Each partner will follow this template in order to report the main points of each Sustainable Urban Logistics Plan at Functional Urban Area level. Based on the EC ELTIS guidelines, it describes the process as each city uses the SULPiTER procedure to access the Sulp from the data collection through the processing of the data.

In each FUA, Authorities will develop their own Sulp in a more detailed document, including all the necessary information listed in the national guidelines. In order to make them transnational, this template will include only the most important issues and the relevant results from other Work Packages. The Sulp in original language may be attached as appendix to this document.

3. Transport policies - state of the art analysis

Logistics and the issues related to cargo transport have been taken into account at all stages of planning and development of documents covering with their scope the Poznań Functional Urban Area (the Poznań FUA). These issues at local, regional and national levels provide the basis for the definition of guidelines for the development of a Sustainable Urban Logistics Plan.

Selected documents developed at various levels resulting from the territorial scope have been presented below:

European ones:

- The White Paper on Transport

National ones:

- The Transport Development Strategy to 2020 (with a perspective to 2030)
- The National Urban Policy 2023
- The National Strategy for Regional Development 2010-2020: Regions - cities - rural areas
- The National Road Safety Programme 2013-2020



- A strategy for responsible development to 2020 (with a perspective to 2030)

Regional ones:

- The Development Strategy for the Wielkopolskie Province to 2020
- The Sustainable Urban Mobility Plan

Local ones:

- The Coherent Parking Policy for the Functional Area of the Poznań Agglomeration
- The Poznań City Development Strategy 2020+
- The Resolution of the Poznań City Council on the adoption and implementation of the Poznań transport policy
- The Low-Emission Economy Plan for the City of Poznań

The European and national levels are distinguished by a very high degree of generality. The guidelines and records refer to the entire area covered by a given document. The study presents the guidelines for their detailed specification in more precise documents, which must be consistent with the strategic assumptions.

The White Paper "Roadmap to a Single European Transport Area - Towards a competitive and resource efficient transport system" is a planning document prepared by the European Commission. Its main objective is to take measures aimed at increasing the integration and unification of transport in Europe, to significantly reduce CO2 emissions through the development of modern technologies and to increase the activation of greener and more efficient means of transport, i.e. rail and waterways transport. According to the guidelines, the transport sector will be highly competitive and, in addition, will make very economical use of non-renewable raw materials. One of the defined objectives is to halve the number of cars with internal combustion engines in cities to 2030 or to shift 30% of cargo from road transport to other modes of transport, i.e. rail, sea and inland waterway transport over the distances of more than 300 km by 2030. This is a good practice which should be taken into account in the Poznań FUA due to the predominant share of diesel-powered truck transport.

The Transport Development Strategy to 2020 is a long-term strategy with a perspective until 2030. It characterises the general state of transport in Poland and defines its development directions; moreover, it concerns all sectors of transport: road, rail, air, sea and inland waterways, urban and intermodal transport. The objectives and priorities that were set out in the above document are as follows:

- increasing the transport accessibility in Poland (easier movement using different means of transport),
- improving the safety of road users and transported goods,
- increasing the efficiency of the transport sector,
- creating a modern and coherent transport infrastructure network,
- improving the organisation and management of the transport system,
- reducing the negative impact of transport on the environment,
- construction of a rational model of financing infrastructure investments.

The document contains the following provisions: "Polish inland waterway transport requires development and strengthening", "The challenge for railway companies operating in this market segment is to strengthen their competitiveness in relation to car carriers with modern production potential." Indicators which should be the result of implemented measures should include the length of motorways (about 2,000 km) and expressways (2,800 km).

The National Urban Policy 2023 is a document setting the direction for the planning of government actions concerning urban policy. Its aim is to direct individual State processes towards sustainable development of cities and their functional areas and the use of their development potentials in the state development. The document gives recommendations on the directions of development of passenger and freight transport. Particular attention is paid to the need to reduce the burden on road transport for cities, as the infrastructure is congested and other modes of transport are not sufficiently used, due to which transit traffic overlaps with internal traffic. It is therefore necessary to take action to improve the cargo transport.

The National Strategy for Regional Development 2010-2020: *Regions - cities - rural areas* is a document aimed at the implementation of objectives, which are as follows: supporting the growth of competitiveness of regions, building territorial cohesion and counteracting marginalisation processes in problem areas as well as creating conditions for effective, efficient and partnership implementation of development measures aimed at fuel efficiency of freight transport and greater traffic fluidity. Particular attention should be paid to the aspect, under which the investment and economic attractiveness of certain areas is linked to the location of the main freight transport corridors in terms of their operation and access to them.

The National Road Safety Programme 2013-2020 is a document diagnosing the state of safety on Polish roads. It sets out the objectives and directions in which measures to improve safety should be taken. The document refers to transport in its broad sense, as road safety covers not only the transport of passengers, but also cargo transport.



A strategy for responsible development to 2020 (with a perspective to 2030) describes a number of aspects aimed at sustainable development. One of the objectives of the document is "Increasing transport accessibility and improving the conditions for the provision of services related to the carriage of goods and passengers". The document contains guidelines for sustainable cargo transport. One of the assumed projects included in the document in question is the Intermodal freight terminal - the construction of forwarding and warehousing infrastructure operating for the purpose of exporting agricultural and food goods to global markets (with the involvement of companies with State Treasury shareholding). The document draws attention to the objective of developing exports to international markets, which directly translates into an increase in cargo transport. Moreover, an important determinant is also the increase in the share of rail transport and the development of Intermodality in the field of freight transport through the modernization of infrastructure and the potential for growth in this area, as these are the problematic areas in the Polish transport system.

In addition to the general guidelines, the Development Strategy for the Wielkopolskie Province to 2020 includes a SWOT analysis of strengths and weaknesses as well as opportunities and threats for the Wielkopolskie Province in the area where the Poznań Functional Urban Area is located. Among the strengths are the infrastructure of TEN-T corridors in the vicinity, of which many logistics centres, logistics infrastructure and Ławica Airport are located within the area of the Poznań FUA. Among the weaknesses, the underdeveloped multimodal transport infrastructure and disparities in infrastructure deployment must undoubtedly be taken into account. Among the opportunities for freight transport, the demand for transit services, especially in the eastern-western direction was strongly indicated.

The Sustainable Urban Mobility Plan covers broadly understood mobility within the Poznań metropolitan area, i.e. the City of Poznań and 22 communes (Skoki, Pobiedziska, Kostrzyn, Kleszczewo, Kórnik, Śrem, Mosina, Puszczykowo, Luboń, Poznań, Swarzędz, Czerwonak, Murowana Goślina, Oborniki, Suchy Las, Rokietnica, Szamotuły, Tarnowo Podgórne, Dopiewo, Komorniki, Stęszew, Buk) within the county of Poznań. The document diagnoses the condition of transport in the area in question. It also sets the framework in which solutions should be developed. This document takes into account the real conditions in force in the whole area of the Poznań Functional Area. One of the recommendations that have been defined in the document is the development of a Sustainable Urban Logistics Plan at the next stage. This document was prepared by the Poznań Metropolitan Area and was adopted by virtue of a resolution of this institution (resolution 14/2016 of the Poznań Metropolitan Area Council of 16th December 2016).

Coherent Parking Policy for the Functional Area of the Poznań agglomeration (implemented within the framework of the EU Technical Assistance Operational Programme 2007-2013) defines the directions in which the actions taken in the field of parking and ordering of the space of vehicle traffic. The document also draws attention to the need to implement solutions affecting the traffic of vehicles responsible for freight transport, as well as examples of actions taken, for example, in Copenhagen. Among the actions necessary to be taken, the need for a concept of freight delivery service was identified.

The City of Poznań Development Strategy 2020+ is a local document covering the City of Poznań. Its provisions set the framework for actions and their direction. The vision of Poznań contained in the Strategy is as follows: "Poznań in 2030 is a multi-generational community of people living in green, friendly and well-connected housing estates. Its inhabitants- entrepreneurial and socially committed, realizing their dreams and aspirations - are satisfied with the living conditions created by the city and proud that it is recognized at home and abroad thanks to its historical, cultural and academic heritage and contemporary, unique achievements. A favourable business climate and social cohesion policy enable all citizens to fully participate in the life of the city. The strategic objective is as follows: "Improving the quality of life of all inhabitants and the importance of Poznań in the international arena". The implementation of the assumptions of the Strategy is supported by 5 strategic priorities:

- A Strong Metropolitan Area,
- Modern entrepreneurship,
- Green, mobile city,
- Friendly estates,
- Community and public dialogue.

Among the provisions directly related to the carriage of goods, the following may be quoted: "As for the transport of goods and services (urban logistics), delivery concepts based on alternative means of transport shall be supported.

The Transport Policy of the City of Poznań sets out detailed guidelines for transport planning in the City of Poznań. It does not refer directly to freight transport, but defines the tasks that should be performed within a certain period of time.

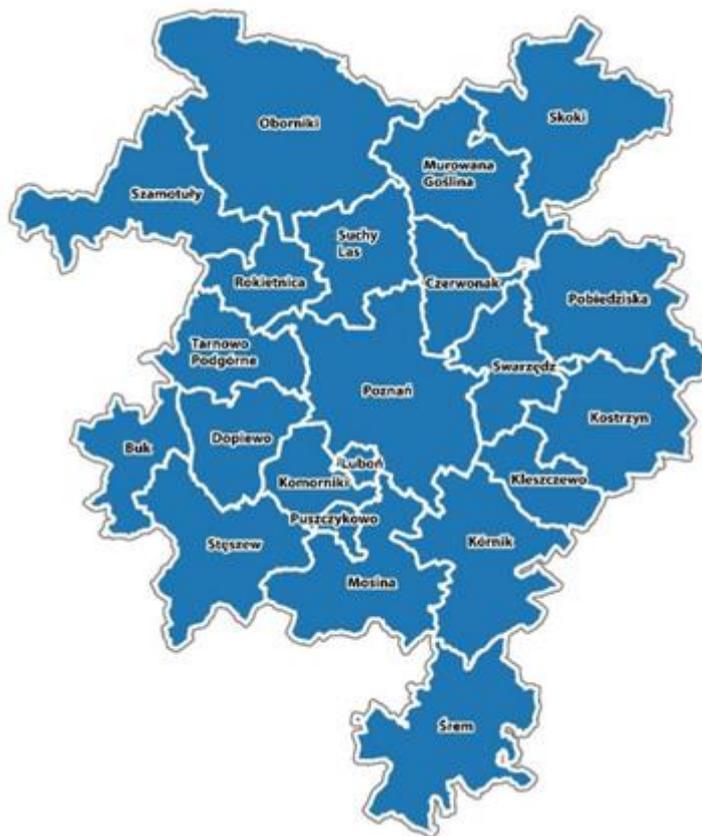
The last mentioned document is the Low-Emission Economy Plan, which proposed to implement the so-called green deliveries, including the promotion of eco-friendly solutions and the opening of loading bays in a selected area of the city. Among the guidelines, attention was drawn to the need to reduce the traffic of large heavy goods vehicles from the city centre by opting for low-emission vehicles.

4. Urban Freight Transport - state of the art analysis

4.1. Urban Freight Transport - state of the art analysis

The Poznań Functional Urban Area is located in central-western Poland, in the central part of the Wielkopolskie Province.

The Poznań FUA region includes 22 functionally related communes, such as:



- Skoki
- Pobiedziska
- Kostrzyn
- Kleszczewo
- Kórnik
- Śrem
- Mosina
- Puszczykowo
- Luboń
- Poznań
- Swarzędz
- Czerwonak
- Murowana Goślina
- Oborniki
- Suchy Las
- Rokietnica
- Szamotuły



- Tarnowo Podgórne
- Dopiewo
- Komorniki
- Stęszew
- Buk

source: SUMP Poznań Metropolitan Area, p.12

Poznań is a city with county rights in western Poland. It is located on the Warta River and is the fifth largest city in Poland in terms of population and eighth in terms of surface area. It covers an area of 3,082 km², but the surveys covered only 5 districts of the City of Poznań with a surface area of 258.66 km². The Poznań FUA has 1,022,844 inhabitants, and in the area covered by the survey the number of inhabitants was 532,246.

The above territorial division was illustrated by the Poznań Metropolitan Area Association, which commissioned the development of the Sustainable Urban Mobility Plan for the Poznań Functional Area.

The road layout of the Poznań Functional Area is formed by roads running through the Poznań County, including the City of Poznań. The main system consists of national roads in the form of a motorway, expressroads and main roads as well as roads administered by local government (provincial, county, commune and other roads).

European/national/local routes which are important for the whole province, running within the Poznań Functional Area, are, among others:

- E30 (in the area of the Poznań FUA the road has the A2 motorway class) - it is one of the most important roads, as it connects, among others, Berlin and Moscow,
- E261 - Gdańsk-Poznań-Wrocław, which is a link route of the European network,
- National Roads No. 92, No. 5 and No. 11,
- numerous provincial roads, i.e. 196, 430, 434, 307, etc.
- Corridors of the TEN-T core network: the Baltic Sea - the Adriatic Sea and the North Sea - the Baltic Sea



Legenda

	autostrady, drogi ekspresowe i obwodnice w użytkowaniu
	autostrady, drogi ekspresowe i obwodnice w realizacji
	autostrady, drogi ekspresowe i obwodnice w przetargu
	autostrady, drogi ekspresowe i obwodnice w przygotowaniu
	numery autostrad i dróg ekspresowych

Source: General Directorate for National Roads and Motorways (GDDKiA)

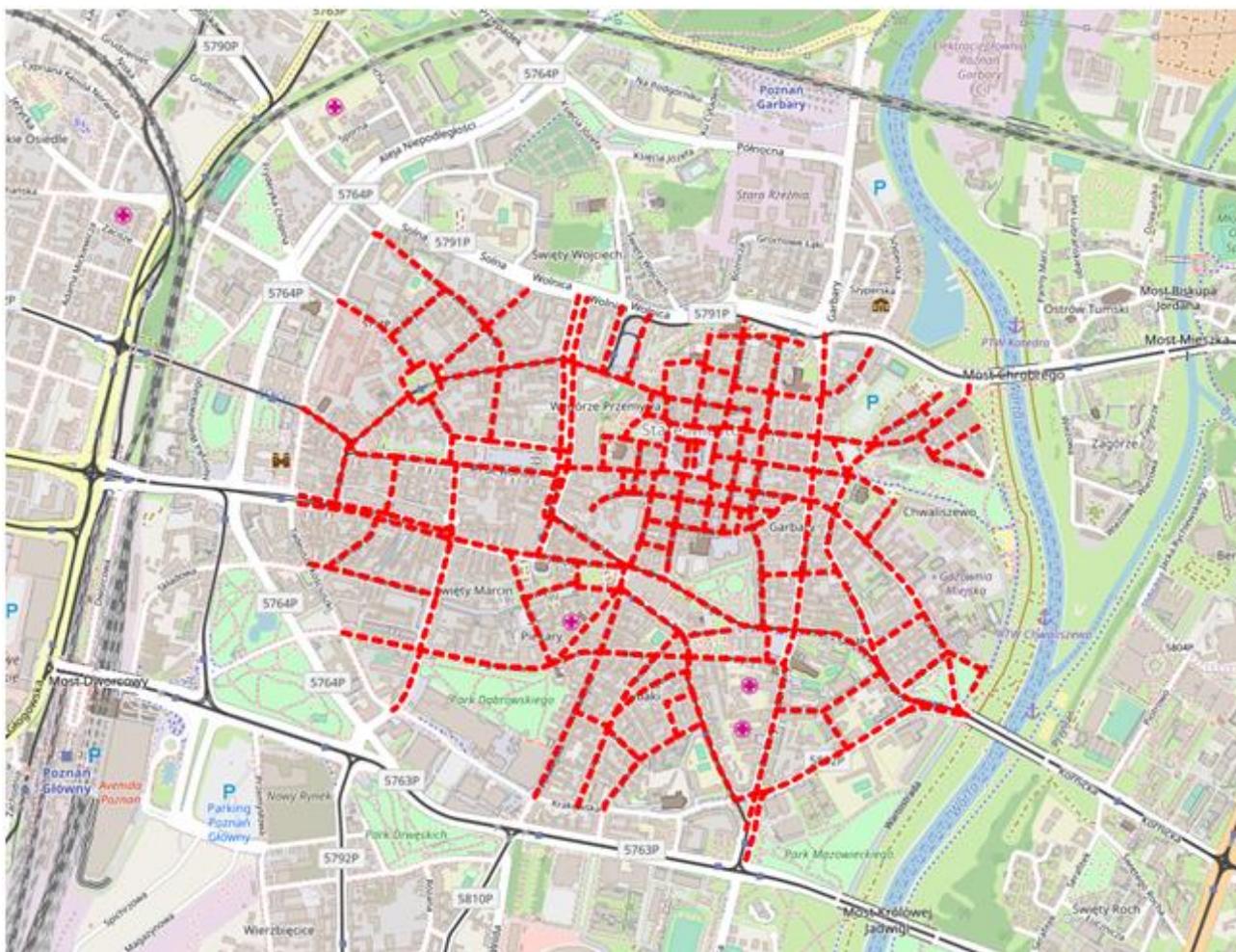
<https://www.gddkia.gov.pl/mapa-stanu-budowy-drog-wielkopolskie>

Autostrady, drogi ekspresowe i obwodnice w użytku	Motorways, expressways and ring roads in use
Autostrady, drogi ekspresowe i obwodnice w realizacji	Motorways, expressways and ring roads under construction
Autostrady, drogi ekspresowe i obwodnice w przetargu	Motorways, expressways and ring roads under tender
Autostrady, drogi ekspresowe i obwodnice w przygotowaniu	Motorways, expressways and ring roads under preparation
Numery autostrad i dróg ekspresowych	Numbers of motorways and expressways

Large enterprises are located in the close vicinity of the A2 Motorway, expressways and national routes due to good transport accessibility. This results in increased heavy goods vehicle traffic.

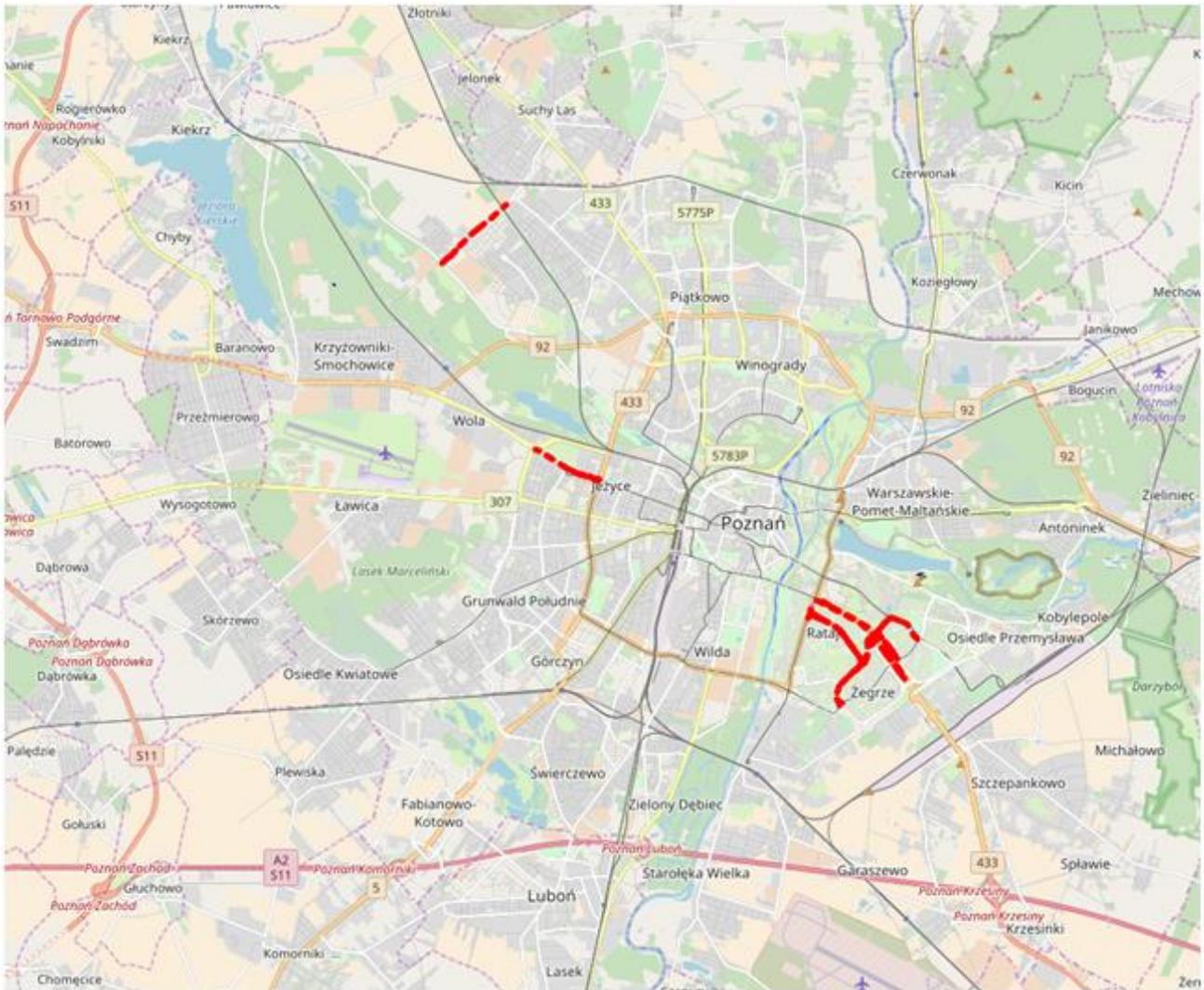
Small businesses and centres operating in the communes are also important generators of traffic. Moreover, in the area of the City of Poznań - a large urban centre, there are numerous small business entities to which goods are delivered several times a week, which is why this territorial area was subject to a survey.

Before the work on the Sustainable Urban Logistics Plan within the SULPiTER project started, the City of Poznań, together with the Institute of Logistics and Warehousing, had carried out the SUGAR (Sustainable Urban Goods Logistics Achieved by Regional and Local Policies) project aimed at exchanging good practices in the field of cargo transport. The good practices that FUA managed to implement in Poznań are bays for deliveries - special envelopes dedicated to commercial vehicles delivering cargoes, especially in the city centre of Poznań, where the possibility of loading and unloading is sometimes problematic. In addition, only vehicles with a maximum permissible weight of 3.5 tonnes can enter the city centre, and vehicles with a maximum permissible weight of 10 or 16 tonnes can enter selected areas.

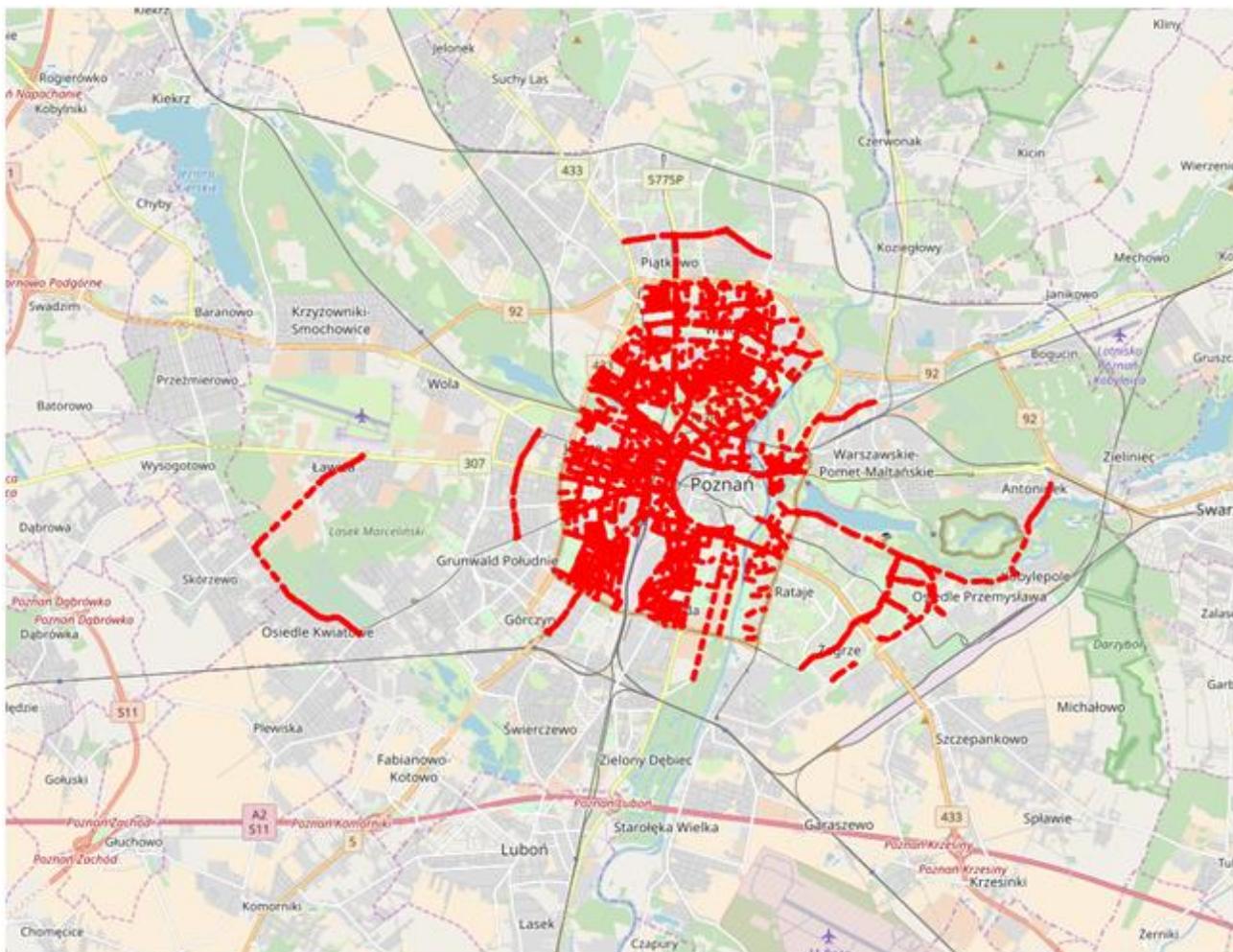


Poznań area with the limitation to 3.5 tonnes

source: <https://www.um.poznan.pl/mim/plan/plan.html>



Poznań area limited to 10 tonnes
source: <https://www.um.poznan.pl/mim/plan/plan.html>



Poznań area limited to 16 tonnes
source: <https://www.um.poznan.pl/mim/plan/plan.html>

The City of Poznań pays special attention to public transport and passenger vehicle traffic. The next step is the implementation of actions aimed at improving the quality of freight cargoes. As can be seen from the documents cited above, which do not contain direct analyses and guidelines for freight transport, the Sustainable Urban Logistics Plan will complement the need for coordination of comprehensive actions in both passenger and freight transport area.

4.2. Questionnaire survey for the City of Poznań

The survey was carried out in the area of 5 districts of Poznań exclusively among business entities operating in the City of Poznań, which was divided into 5 zones resulting from historical conditions of the division of the city: Jeżyce, Old Town, New Town, Wilda, and Grunwald - these were the old districts of Poznań. The applied division according to the Classification of Territorial Units for statistical purposes can be defined as the county of the City of Poznań. The area covered by the survey was the most convenient in terms of logistics within the whole Poznań Functional Area due to a serious supply problem within the city.

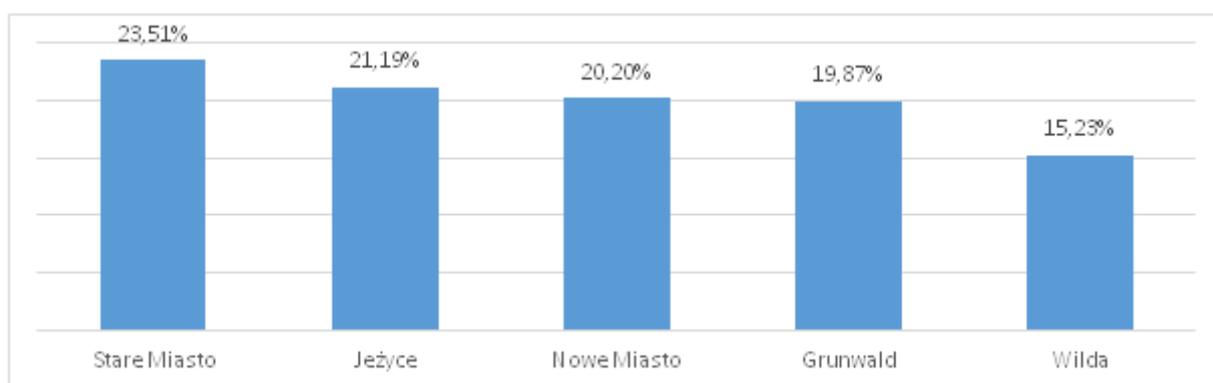
An overview map of the division of Poznań into districts is presented below:



The results of the survey carried out on a group of 302 business entities operating in the Poznań FUA were analysed, and the most important conclusions that were obtained on the basis of the conducted research have been listed below.

The survey can be considered reliable due to the proportional distribution of responses within each district.

Chart 1. The district in which the company operates



Source: Own research, n=302

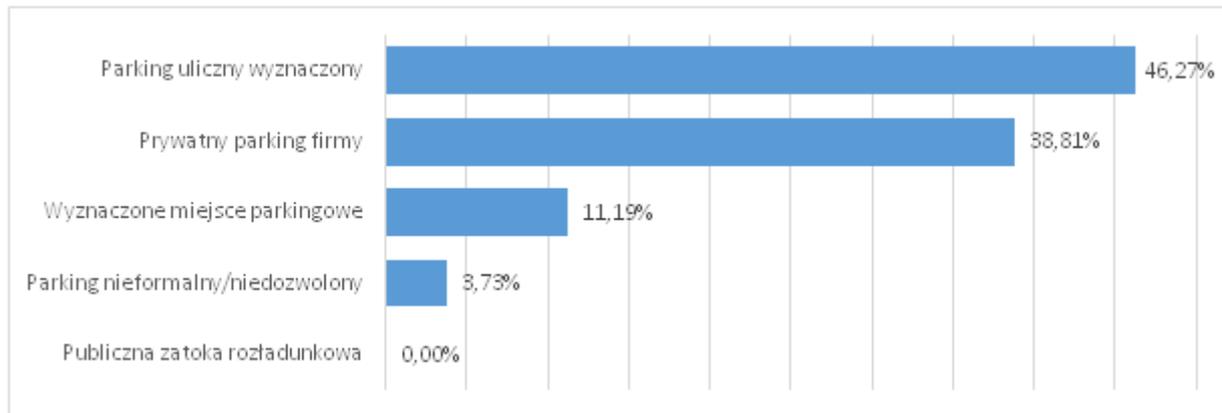
As can be seen in the case of 4 districts, the proportion of respondents was relatively even and ranged from around 20% of the total sample. The relatively fewest entities covered by the survey were located in the Wilda district (slightly more than 15% of the total number of respondents).

As for the results obtained, the most important conclusions have been presented below:

About 45% of the surveyed companies declare that they have their own (company's) car, which is used by the company for delivery purposes. Generally (about 86%) companies own 1 company car and it is a passenger car (74%) or a delivery van (26%). None of the surveyed companies (probably due to the profile and size of their business) declared having a heavy goods vehicle. The declared parking space for delivery vehicles is shown in the diagram below:



Chart 2. Parking spaces for company during working hours



Source: Own research, n=302

Parking publiczny wyznaczony	Designated public car park
Prywatny parking firmy	Private company car park
Wyznaczone miejsca parkingowe	Designated parking space
Parking nieformalny/ niedozwolony	Informal /unauthorised car park
Publiczna zatoka rozładunkowa	Public unloading bay

According to the respondents' declarations, cars owned by companies during operating hours are most often parked in designated street car parks (46%) or private car parks/parking spaces of the company (39%). Occasionally (about 11%) these are other spaces designated for parking or informal car parks (less than 4%).

During delivery, cars are usually parked on parking spaces located along the street (50%). Every fourth of the surveyed companies uses private car parks for this purpose. According to the respondents, suppliers also sometimes occupy two parking spaces at the time of delivery (14%) or park in unauthorised spaces (8%).

Chart 3. Parking position of vehicles at time of delivery



Miejsce parkingowe na ulicy	Parking space on the street
Teren prywatny	Private land
Zajęcie dwóch miejsc parkingowych	Occupancy of two parking spaces
Parking nieformalny/ niedozwolony: zatoka autobusowa, ...	Informal/ unauthorised car park: bus bay,
Punkt przeładunku	Point of transhipment

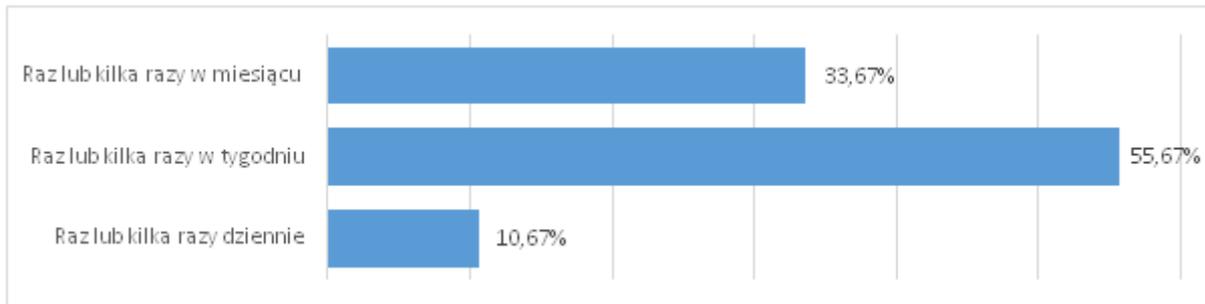
Source: Own research, n=302



The information gathered during the survey shows that the majority of external suppliers of the surveyed companies are retail suppliers (about 78% of the total number of indications). The following ranks are occupied by manufacturers of ordered materials (15%) or wholesalers (about 5%).

More than half of the surveyed companies use deliveries at least once a week. About every third of them do it once or several times a month. Every 10th examined entity replenishes stocks more often - every day, or even several times a day, which may be a result of specific activity or very small storage facilities, which were discussed in the previous chapters.

Chart 4. Frequency of deliveries



Source: Own research, n=302

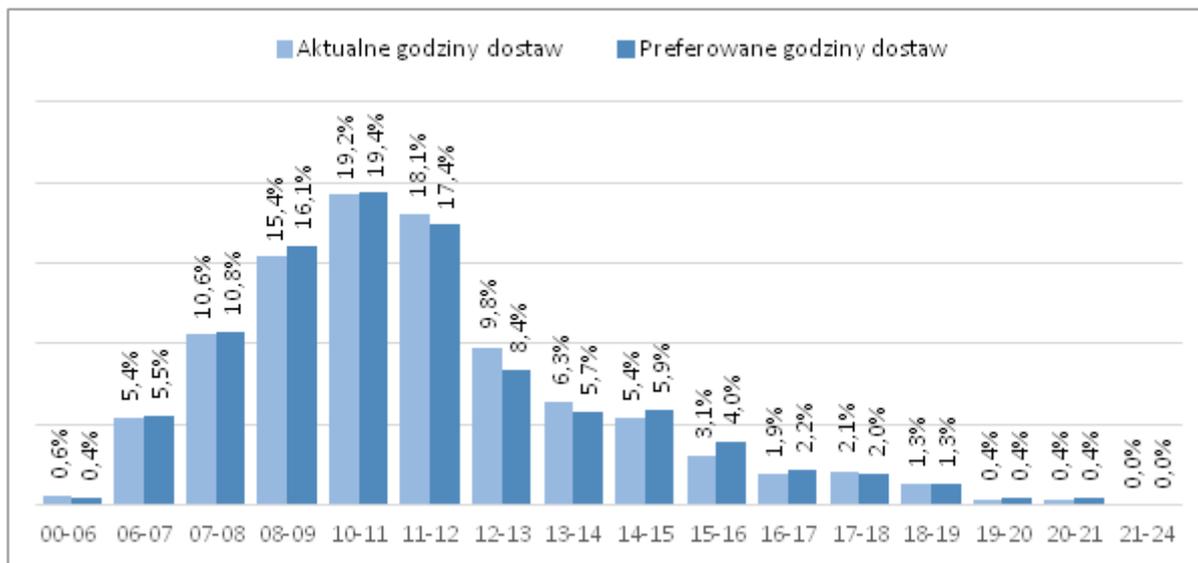
Raz lub kilka razy w miesiącu	Once or several times a month
Raz lub kilka razy w tygodniu	Once or several times a week
Raz lub kilka razy dziennie	Once or several times a day

Only 10% of the surveyed companies declare that during the year they notice the so-called peak delivery periods, i.e. the period in which deliveries exceed the average. The periods in which, according to the declaration, more deliveries occur are:

- Christmas/winter period - 56% of indications,
- Holiday period - 34%,
- Spring/Easter period - 9%.

In the following questions, respondents were asked to indicate their current and preferred delivery times. The received responses are shown below. It is noticeable that the indications of both current and preferred delivery times are very much in line with each other, which may mean that respondents are unlikely to see the need for changes in this area. It can also be pointed out that the peak of deliveries of goods to shops/business premises takes place between 8 and 12 noon. Outside these hours, the frequency of deliveries is much lower. At the same time, more than 80% of the respondents are of the opinion that it is possible to collect deliveries at other times.

Chart 5. Current and preferred delivery times



Source: Own research, n=302

In the opinion of 33% of the respondents, the delivery time is the result of the rules prevailing in the area of conducting business activity. Nearly every 4th respondent indicates that the delivery time depends on the contract with the sender/supplier. Nearly 10% of all respondents claim that time conditions of collection are imposed by themselves, and less than 10% indicate the sender of the shipment as the causative person. Almost the same number of respondents indicate that the delivery time depends on the agreement with the courier or is imposed by the courier.

Chart 6. Who establishes the delivery time?



Source: Own research, n=302

Są zgodne z zasadami dostawy/ o określonych godzinach	Conforms to delivery rules/at specified times
Są uzgodnione z nadawcą	Agreed with the sender
Narzucone przez odbiorcę	Imposed by the recipient
Narzucone przez nabywcę	Imposed by the purchaser
Są uzgodnione z kurierem/ przewoźnikiem	To be agreed with the courier/carrier
Narzucone przez kuriera/spedytora/ dostawcę	Imposed by the courier/forwarder/supplier

Respondents were also asked to indicate problems/difficulties in the loading and unloading of goods, according to the 154 indications obtained, they can be presented in a tabular manner as follows:



Table 1. Problems encountered in loading and unloading of goods

Problem indicated	% indications	Number of responses
Difficult access to loading site	35%	54
Safety of loading	34%	53
Time of delivery	16%	25
Time of loading/unloading	7%	11
Lack of loading stations	3%	5
Difficult transport of goods from the parking to the client's premises	3%	4
Lack of coordination of deliveries	1%	2
total	100%	154

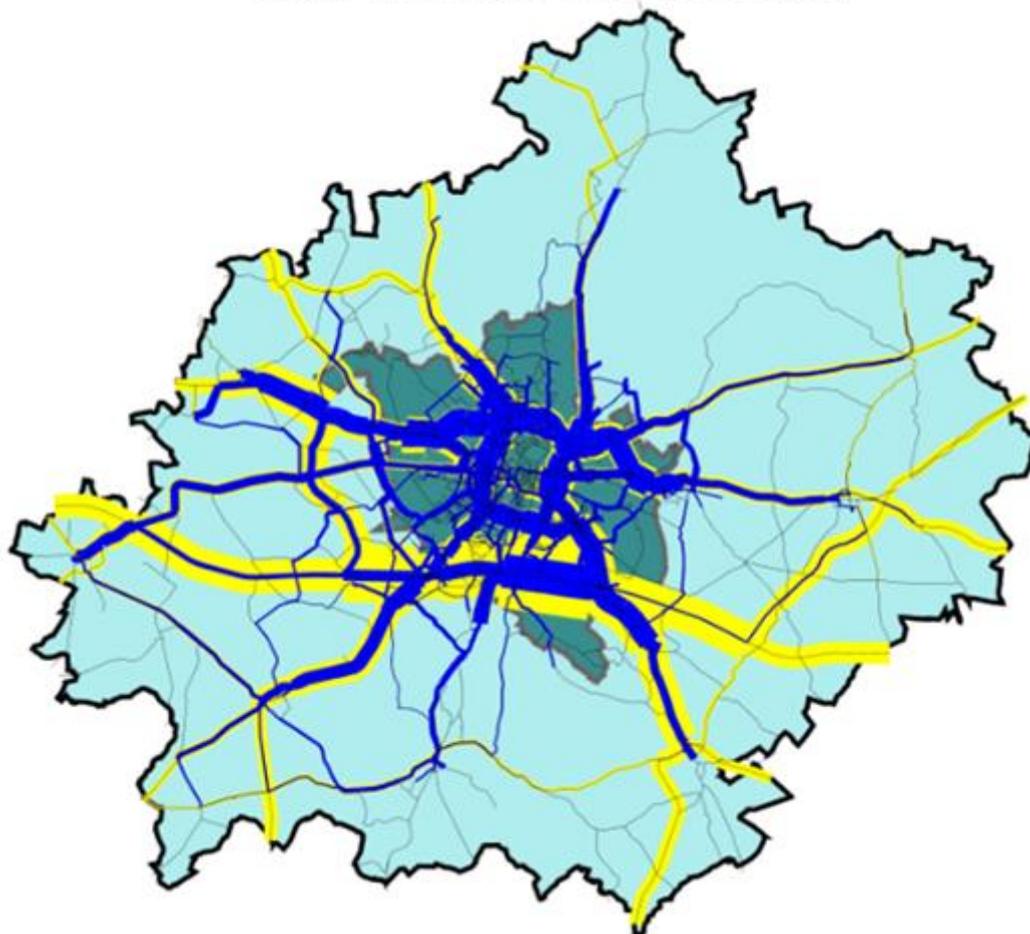
Source: Own research, n=302

Conclusions and observations that can be indicated on the basis of the conducted research:

- An external company, which is a supplier of goods to the store/headquarters of a given company, is most often responsible for the realization of deliveries, their security, payment of customs duties, etc. This implies that most deliveries are made by vehicles belonging to major suppliers or courier companies.
- Most deliveries are made at least several times a month, with 1/3 of the companies using more frequent deliveries, which may result from very limited warehouse space.
- Delivered goods are usually imported in boxes and cardboard boxes. According to the declarations of the surveyed companies, deliveries are generally short (up to 10 -20 minutes), and the goods delivered do not exceed in most cases several dozen kilograms.
- Occasionally, companies notice fluctuations in deliveries. They most often observe them during the holiday season (winter/spring) or summer holidays. In addition, delivery times are relatively constant, with peaks between 8 a.m. and 12 p.m..
- Only a small part of the respondents conducts sales with direct delivery to customers. Most often they use their own vehicles for this purpose, or they use courier services.
- Among the most frequently indicated delivery problems, respondents indicate difficulties in accessing loading and unloading spaces. This also affects the sense of security of the goods and extends the delivery time.

The Poznań County area has been presented below (Poznań FUA, excluding the communes of Skoki, Szamotuły, Oborniki and Śrem), where the flow of heavy goods vehicles that did not start and finish the journey in the Poznań County (transit traffic) is marked in yellow, and the flow of heavy goods vehicles that started and finished the journey in the Poznań County is marked in blue. The data were generated from the traffic model created in VISUM in 2013.

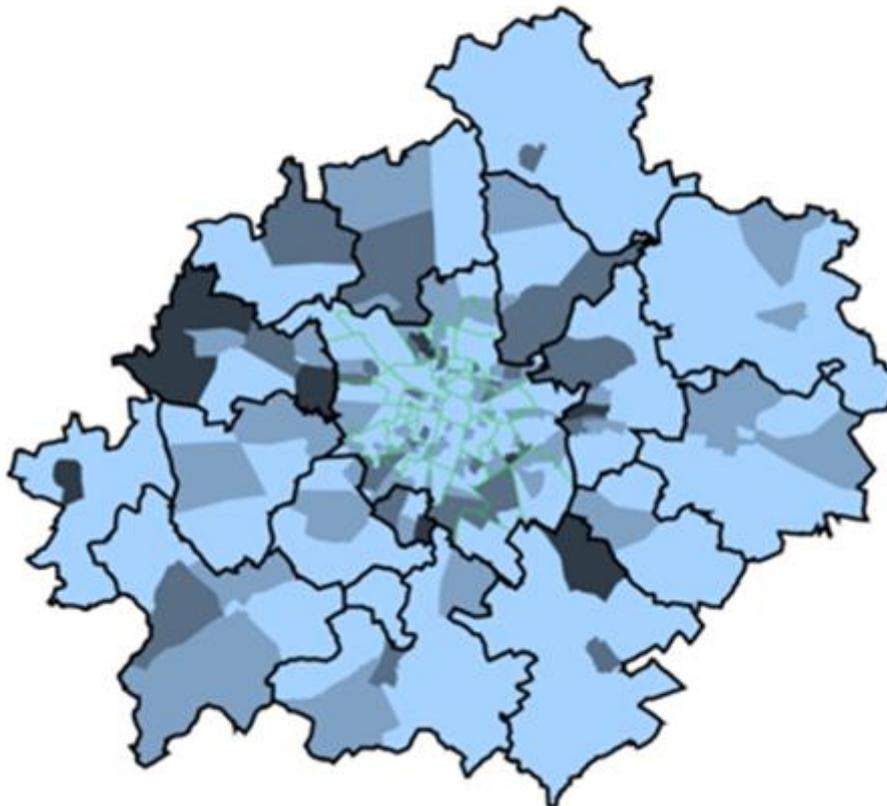
Cargo internal and external



On the basis of the analysis of the above map, it can be concluded that heavy goods vehicles which do not start and end their journeys in Poznań County mainly use the ring roads of the City of Poznań within the A2, S5 and S11 roads, which results in a significant reduction in their number in the centre of the City of Poznań. In the case of heavy goods vehicles, the route of which begins and ends in the area of Poznań County, there is a visible process of traffic between large logistic centres (Tarnowo Podgórne, Buk, Gądko) and destinations in Poznań and in the surrounding localities.

The next picture shows the area of Poznań County (Poznań FUA, excluding the communes of Skoki, Szamotuły, Oborniki and Śrem), where the areas are presented according to the following rule: the darker the colour, the greater the number of deliveries of goods.

Cargo destination



Based on the analysis of the above map, it can be concluded that the largest number of deliveries of goods takes place to the aforementioned logistics centres located in Tarnowo Podgórne, Buk, Gądko, but also to Swarzędz, Luboń and the vicinity of Obornicka Street in Poznań, where companies and industrial factories are located.

5. SULP's specific objectives

In Wielkopolska region the basic strategic document for transport development in this area is „Transport Plan for Wielkopolska Region to 2020”. The transport plan for the Wielkopolska region is an implementation document of Wielkopolska Regional Operational Program for 2014-2020 (WROP 2014+) as a part of Thematic Objective 7. Promoting sustainable transport and removing bandwidth shortages in the operation of the most important network infrastructure (CT 7.). The plan sets goals, priorities and actions in the field of road and rail transport to be implemented in perspective 2014-2020 using the European Regional Development Fund (ERDF). The specific objectives and directions of intervention of this Transport Plan are:

- Increased consistency:
 - Strengthening the connection to the TEN-T network and the national system,
 - Increased intra-regional cohesion,
 - Increased inter-branch relations,
- Increased efficiency:
 - Adaptation to the needs of economic exchange,
 - Strengthening links with the labour market,
 - Better use for access to services,
- Improving security:
 - Limiting accidents,



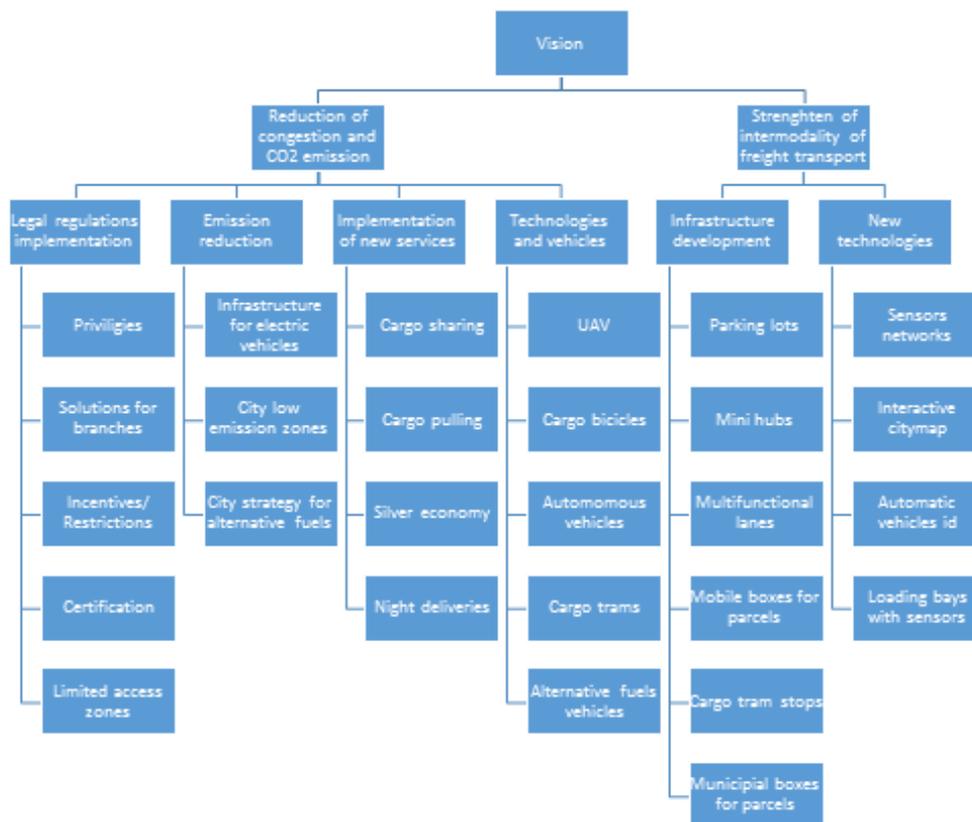
- Reducing the negative impact on the environment,
- Construction of pavements and cycling paths,
- Increase in throughput:
 - Improvement of technical parameters (load capacity, width, number of lanes or roadway)
 - Limiting the number of "bottlenecks" (bridges, city beltways),
 - Overpass viaducts over railway lines, extension of intersections

SULP for Poznań FUA is in line with above mentioned strategy and its objectives as well as is also coherent with „Strategy of Development of City of Poznań 2020+”. Strategy has defined following priorities:

- Limiting the traffic of motor vehicles in the city centre,
- Increased use of ecological means of transport, pedestrian traffic and improving road safety,
- Striving to increase the role of ecological transport in the last mile system (distribution of goods and shipments within the city),
- Striving to introduce intermodality of freight transport.

Objectives specified below reflecting vision of the SULP for Poznań Functional Urban Area discussed and selected in the framework of Poznań FQP discussion and survey:

- Reduction of congestion and CO2 emission,
- Strengthen of intermodality of freight transport.





6. Measures vs. demands

In order to identify and analyse possible solutions having a positive impact on freight traffic in the city of Poznań, research of preferences of transport process participants was carried out. For this purpose, an online survey was prepared using the Google Form. The questions for the survey were based on consultations held in the framework of FQP partner meetings. The gathered participants selected 28 examples of solutions successfully implemented in other European cities, which could be implemented in Poznań. These solutions are grouped in six thematic areas:

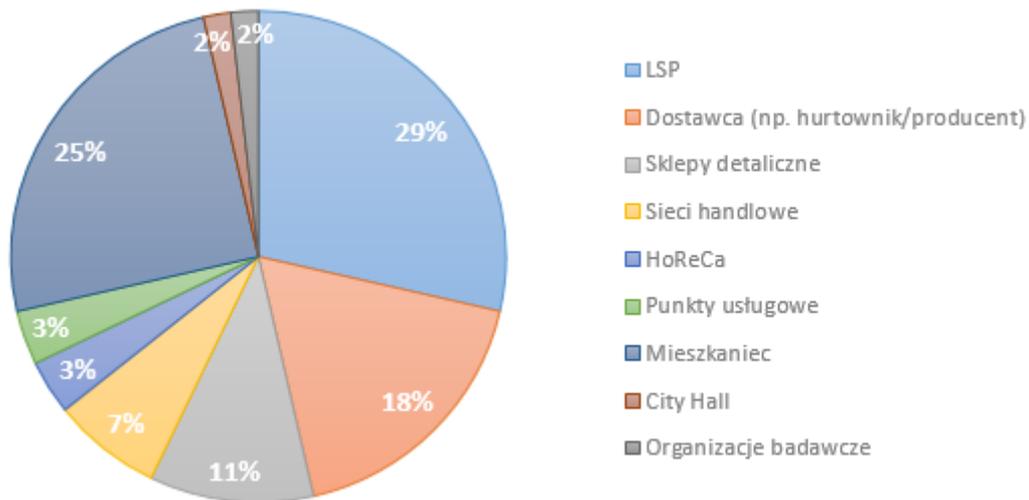
- legal regulations,
- technology and vehicles,
- infrastructure development,
- services,
- new technologies,
- energy.

The solutions were placed in the survey with a short description, then the survey was made available through the available Internet channels (by e-mail, on forums and websites related to logistics, on the FRM2018 website). The respondents indicated which solution from a given thematic area would have the most beneficial impact on the improvement of the situation of freight transport in the city of Poznań. The survey lasted from June to August 2018 a total of 104 respondents participated in it, who also determined the profile of their business by selecting one of the available options:

- Supplier (e.g. wholesaler/manufacturer),
- Logistics service provider (e.g. carrier, courier, logistics operator),
- Recipient - retail store,
- Recipient - retail chain,
- Recipient - HoReCa (hotels, restaurants, catering),
- Recipient - service point (laundry, shoemaker, watchmaker),
- Customer - manufacturer, wholesaler, distributor,
- Inhabitant.

The survey was addressed at the representatives of companies, but the survey form was open, which ultimately influenced the structure of the group. In addition to companies generating freight traffic in the city, inhabitants interested in the topic also provided their opinion; their answers were taken into account when analysing the data. The structure of the researched group is presented in the chart below.

Chart 7. Structure of the researched group



Source: ILaW and City Hall study

LSP	LSP
Dostawca(np. hurtownik/ producent)	Supplier (e.g. wholesaler / manufacturer)
Sklepy detaliczne	Retail stores
Sieci handlowe	Retail networks
HoReCa	HoReCa
Punkty usługowe	Service points
Mieszkaniec	Inhabitant
City Hall	City Hall
Organizacje badawcze	Research organisations

The survey also included two open-ended questions, in which the respondents could identify which problems related to logistical handling of goods should be solved with the help of SULP, and share suggestions concerning the organization of deliveries in the city.

Table 3. Answers to an open-ended question about the problems with the logistical handling of goods to be solved by means of the SULP.

Area	Problems
Transport	excessive number of delivery trucks and their increase in the future
	non-utilisation of the loading space of cars
	a small number of alternative means of transport



	difficult supply conditions for operators providing supply services in the city and their employees
	concentration of deliveries in the centre
	not matching the tonnage of the car to the cargo and delivery address
	blocking of streets by suppliers and couriers
Education	lack of awareness and understanding of the holistic view of the city as a field of urban logistics
	poor knowledge of supply traffic in the very centre of the city
Technology	lack of platforms for business consolidating deliveries
	low level of digitization of processes
Infrastructure	a small number of places designated for unloading
	lack of consolidation centres
Legislation / road traffic regulations	lack of sufficient control of restrictions that are already in force by municipal services but also by the Road Transport Inspectorate, e.g. lack of control of overloaded cars or entry of vehicles with excessive weight into areas or streets not adapted for heavier vehicles than e.g. 3.5 t (12 t, etc.).
	the movement of courier vehicles on bus lanes
	unloading in places not intended for this purpose, where there is a risk of traffic blockage
The environment	delivery by non-green vehicles
	negative impact of freight transport on the environment

Table 4. Answers to an open-ended question concerning the suggestions for the organisation of deliveries in the city.

Area	Suggestions
------	-------------



Transport	use of various means of transport (including waterway and rail transport)
	consolidation of deliveries
	designation of hourly delivery slots for specific industries
	mobile micro hubs
	creation and use of professional bicycle transport for smaller cargoes (bicycle courier deliveries)
	night deliveries
Education	dissemination of information on SULPs (objectives, actions, effects)
	increasing the involvement of businesses
Technology	development of a platform to manage interpretative parcel machines on the example of Singapore, where the government cooperates with the start-up https://www.parcelperform.com/
	increasing the use of electric vehicles in transport
Infrastructure	designation of parking spaces
	introduction of unloading areas suitable for more than one vehicle
	possibility of using bus lanes by courier vehicles
	development of public parcel machines
	creation of a network of small warehouses - hubs - at the entrance to the city, in important logistic chain nodes
Legislation / road traffic regulations	limitation of the time of stay of vehicles in the city
	introduction of green fees for substandard vehicles



	reduction in the use of commercial vehicles during peak hours
Other	greater attention to the safety of users of urban infrastructure

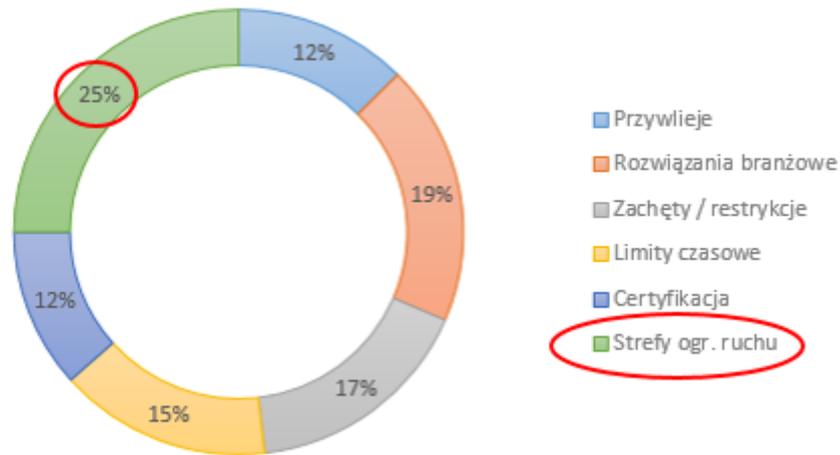
6.1. Regulatory measures

In the category of legal regulations 6 potential solutions were identified, the implementation of which could contribute to the improvement of the flow of goods in the city:

1. **A system of incentives and restrictions for heavy goods vehicle drivers to support proper behaviour in the city centre**
Video surveillance with the use of CCTV system. Closed Circuit TeleVision.
2. **Time limits and fees in city logistics**
Limitation of time spent in the city centre, introduction of fees, inevitability of financial penalties for unauthorized entry.
3. **Low/Zero Emission Zones**
Low emission or zero emission zone is a well-defined area where, in order to improve air quality, access is restricted to vehicles that have a negative impact on the environment, and fees are introduced for vehicles that do not meet the established standards. Vehicles powered by alternative sources of energy shall be exempt from fees.
4. **Privileges for suppliers meeting certain environmental standards in transport concerning fuel emissions**
For example, for suppliers using environmentally friendly vehicles.
5. **Industry solutions, e.g. ban on intraday delivery for a selected type of company**
In Amsterdam, deliveries to the catering industry are only made at certain times of the night.
6. **Distinguishing companies through certification based on the model of the London FORS (FORS). Fleet Operator Recognition Scheme)**
The FORS Certificate is a British document that determines the compliance with standards in the field of road safety, ecology, as well as improvements in the organization of the transport process. It is a voluntary accreditation scheme promoting best practice among users of commercial vehicles.

During the survey respondents indicated one solution, the implementation of which could contribute the most to improving the flow of goods within the city.

Chart 8. Survey result in the legal regulations category



Source: ILaW study

Przywileje	Privileges
Rozwiązania badawcze	Research solutions
Zachętny/ restrykcje	Incentives/restrictions
Limity czasowe	Time limits
Certyfikacja	Certification
Strefy org. ruchu	Low/ Zero Emission Zones

Among the solutions listed above, the most popular among the respondents were the low/zero emission zones; 25% of the respondents indicated such a response, and this solution was used in further works.

6.2. Technology

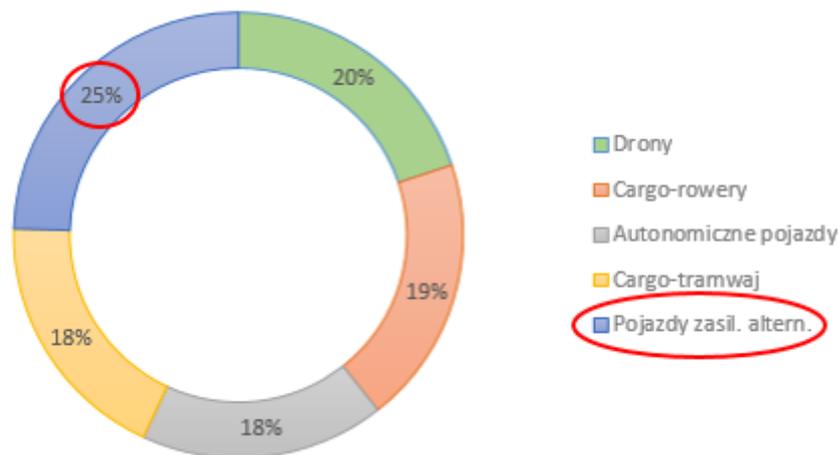
Measures based on information and communication technologies, ITS and vehicle technologies (e.g. freight bicycles) are defined in this category. 5 potential solutions that could be implemented were identified:

- The so-called last mile deliveries using vehicles powered by alternative energy sources**
Electric vehicles, hybrid vehicles, vehicles using CNG - compressed natural gas, LNG - liquefied natural gas.
- The use of bicycles in freight transport - cargo bicycles**
Bicycles suitable for freight transport, classic or electric ones. This solution is currently being tested by DB Schenker in Norway.
- The use of trams in freight transport - a cargo tram**
A cargo tram is a rail vehicle designed for cargo transport. Such solutions are currently used in Dresden and Zurich.
- Deliveries of small shipments on the so-called last mile with the use of drones**
The solution first used by Amazon to deliver a product purchased online (Amazon Prime Air service).
- Autonomous vehicles, preparation of special infrastructure**
Fully autonomous vehicles are still in the prototype phase. Currently, versions with conditional automation are available - i.e. a computer which, under certain driving conditions, controls all driving aspects. The driver is, however, obliged to react appropriately when the system notifies that it is necessary to do so.



During the survey respondents indicated one solution, the implementation of which could contribute the most to improving the flow of goods within the city.

Chart 9. Result of the survey in the category technology and vehicles



Source: ILaW study

Drony	Drones
Cargo-rowery	Cargo bicycles
Autonomiczne pojazdy	Autonomous vehicles
Cargo-tramwaj	Cargo tram
Pojazdy zasil. altern.	Alternatively powered vehicles

Among the solutions listed above, the most popular among the respondents were the vehicles powered with alternative energy sources; 25% of the respondents indicated such a response, and this solution was used in further works.

6.3. Infrastructure development

This category covers measures that involve the use of existing infrastructure or the construction of new solutions, including any changes in the city's structure that improve the physical flow of goods. In this group 6 potential solutions that could be implemented were identified.

1. Determination of the location, number and size of parking spaces for vehicles performing the delivery of goods

Unloading bays, dedicated envelopes for suppliers operating on a defined basis

2. Construction and organisation of work of municipal cargo consolidation centres - so-called mini hubs

Municipal consolidation centres act as places from which trips to a given area of the city take place at the rhythm of a daily cycle at specified times, with consolidated goods to all/selected recipients in a given area. This results in a reduction in the number of entries of commercial vehicles to a given region, thanks to the collection of shipments from various sources and associating similar ones. Most deliveries from these locations are made in the city centre with environmentally friendly vehicles - cargo bikes, electric trucks.

3. Multi-functional lanes

Multifunctional lanes - lanes used by buses, vans and passenger vehicles, depending on the messages appearing on electronic variable message boards (e.g. depending on time of day, traffic volume), e.g. in Barcelona on multi-lane streets, the outer lanes are used for different purposes depending on the time of day: • 8:00 am - 10:00 am road traffic or bus traffic, • 10:00 - 17:00 pm delivery and parking, • 5:00 pm- 8:00 pm road traffic or bus traffic, - 8:00 pm- 8:00 am parking for inhabitants.

4. Unloading zones at Municipal Transport Authority stops



The use of the existing Municipal Transport Authority infrastructure (bus and tram stops) with the view to facilitating the deliveries.

5. Urban parcel machines - financed from the city budget and available for entrepreneurs

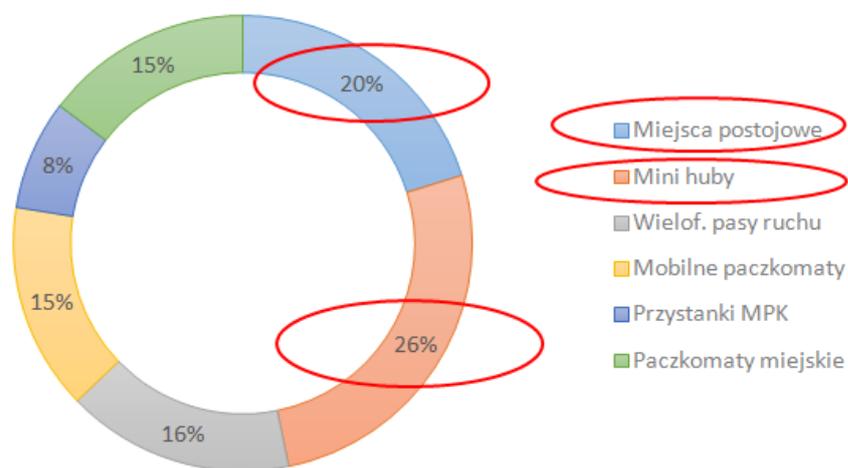
Introduction of devices with access for various operators in properties, in blocks of flats, closed housing estates. They operate on principles similar to InPost parcel machines, however, their owner and manager would be the city.

6. Mobile parcel machines

Urban parcel machines with the possibility of changing their location, depending on the demand.

During the survey respondents indicated one solution, the implementation of which could contribute the most to improving the flow of goods within the city.

Chart 10. Survey result in the category of new technologies



Source: ILaW study

Miejsce postojowe	Parking space
Mini huby	Mini hubs
Wielof. pasy ruchu	Multi-functional lanes
Mobilne paczkomaty	Mobile parcel machines
Przystanki MPK	City Transport Company stops
Paczkomaty miejskie	Urban parcel machines

Among these solutions, two solutions, i.e. mini hubs and parking spaces for commercial vehicles, were the most popular among the respondents. 26% and 20% of the respondents indicated such an answer, respectively, and these solutions were used in further works.

6.4. Services

The category of services includes new models of distribution and logistics and its scope covers the activities initiated by both the private and the public sector. 4 potential solutions that could be implemented were identified.

1. Cargo sharing

A system for the sharing of commercial vehicles made available by external fleet operators.

2. Cargo pooling

A system for the pooling of cars made available by other users/owners of commercial vehicles.

3. Silver economy



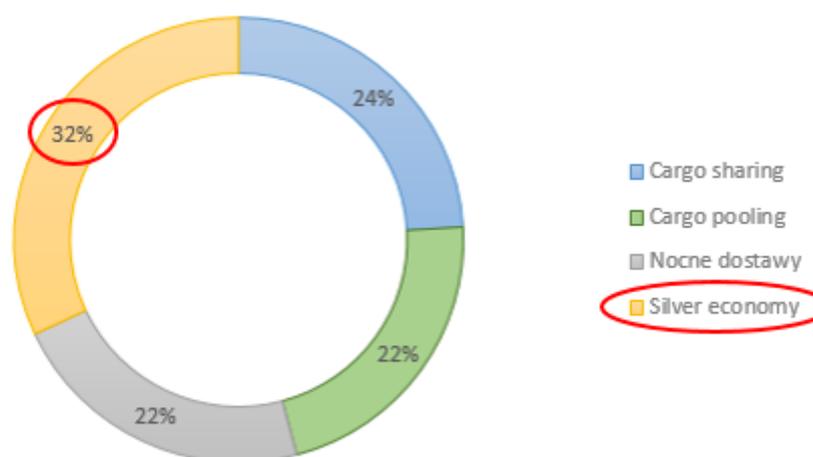
Logistics solutions for the elderly- Adapting deliveries to future trends in logistics services related to the ageing population. New added value for the so-called last mile services, e.g. home delivery of groceries, health surveillance.

4. Night deliveries

Night-time deliveries, the need for delivery vehicles and transshipment infrastructure to meet certain noise emission standards.

During the survey respondents indicated one solution, the implementation of which could contribute the most to improving the flow of goods within the city.

Chart 11. Survey result in the service category



Source: ILaW study

Among the solutions listed above, the most popular among the respondents were the solutions from the silver economy area; 32% of the respondents indicated such a response, and these solutions were used in further works.

6.5. Energy.

In "Energy" category includes the types of activities focusing on energy issues; 3 potential solutions that could be implemented were identified. This category includes solutions for alternative fuel vehicles.

1. Urban clean transport zones

Definition of urban clean transport zone operating conditions

2. Urban policies for the development of alternative fuel infrastructure

Creation of a urban policy framework for the development of alternative fuel infrastructure with a manner of its implementation

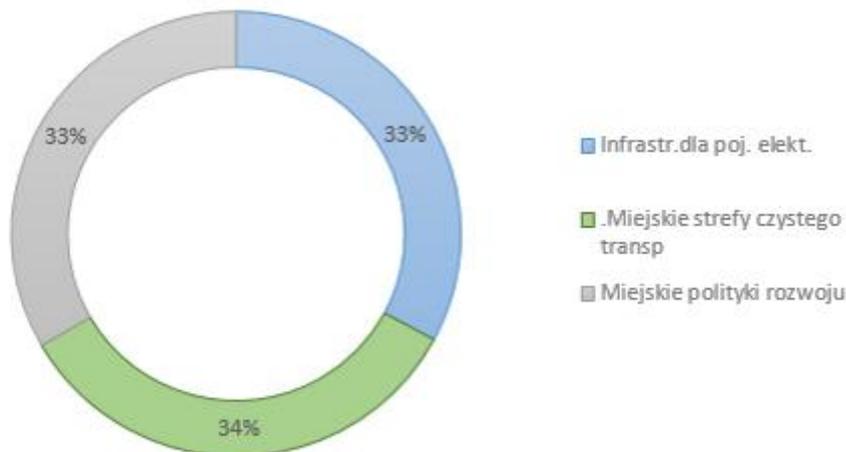
3. Infrastructure for vehicles using alternative fuels

Definition of rules for the development and operation of infrastructure for the use of alternative energy sources in urban transport (e.g. location of charging stations)

During the survey respondents indicated one solution, the implementation of which could contribute the most to improving the flow of goods within the city.



Chart 12. Survey result in the energy category



Source: ILaW study

Infrastr. dla poj. elekt.	Infrastructure for electric vehicles.
Miejskie strefy czystego transp	Urban clean transport zones
Miejskie polityki rozwoju	Urban development policies

All of the solutions listed above enjoyed a similar level of interest, therefore in this category no single solution was selected, which would be used in further works.

6.6. Possible new technologies

In the legal regulations group, 4 potential solutions that could be implemented were identified. Internet of Things solutions - IoT for city logistics and the Smart City. Internet of Things is a set of technological solutions which aim to automate the human environment with the use of technology related to data exchange. All devices connected to the Internet are IoT elements. Smart City is a city that uses information and communication technologies to increase interactivity and efficiency of urban infrastructure and its components.

1. Management of the availability of unloading spaces by means of a sensory network

Wireless sensor networks consist of groups of distributed, autonomous devices with the ability to receive and transmit information, integrated with applications in smartphones.

2. Automatic vehicle identification systems

Such a system consists of cameras recognizing license plates of commercial vehicles and automatically charging e.g. fees for entry to the centre.

3. Electronic platform combining the demand and supply of transport services in the city

A solution resembling a freight exchange dedicated for the city, where users could both report the demand for transport or free rides, as well as look for available loading spaces. A solution that involves sharing selected information about own company (e.g. location of customers, transport volumes, etc.).

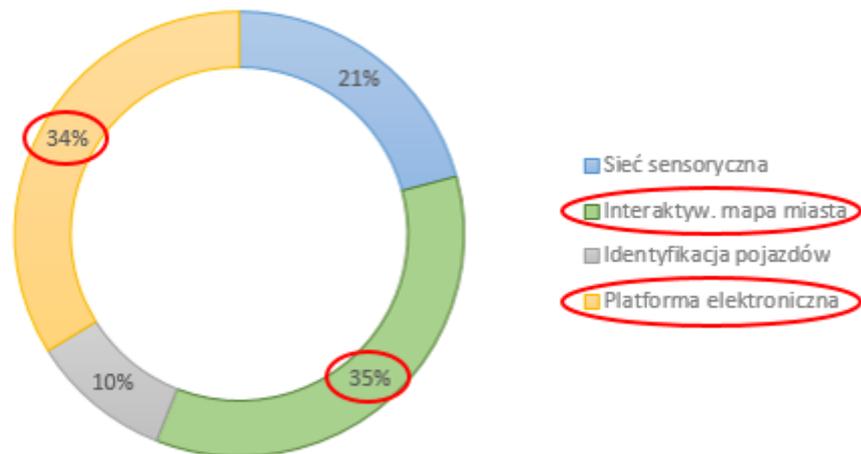
4. Interactive city centre map for suppliers

A map showing the traffic situation in the centre in real time (e.g. the intensity of traffic, availability of unloading spaces). This enables dynamic management of delivery routes.

During the survey respondents indicated one solution, the implementation of which could contribute the most to improving the flow of goods within the city.



Chart 13. Survey result in the category of new technologies



Source: ILaW study

Sieć sensoryczna	Sensory network
Interaktyw. mapa miasta	Interactive city map
Identyfikacja pojazdów	Vehicle identification
Platforma elektroniczna	Electronic platform

Among the solutions listed above, the most popular among the respondents were two solutions: the interactive city map (35%) and the electronic platform (34%), and both solutions were taken into account in further works.

7. Layout of measures

For each of the six solutions, the potential implementation of which in the city of Poznań was considered to be the most attractive by the respondents, a business model based on the Business Model Canvas (BMC) developed by Alexander Osterwalder was developed. It is a tool based on a scientific analysis of existing companies, during which nine basic elements of the business model were identified. These nine elements concern four core business areas, namely customers, supply, infrastructure and appropriate financial standing. The business model is in a certain sense a sketch of the strategy to be implemented within the structures, processes and systems of the organization. Presentation of BMC in the form of a visual canvas allows for better teamwork and drawing attention to the project approach to building a business model. These areas can be presented in the form of a single sheet (canvas) divided into the corresponding 9 fields.

1. Customer segments

The first area of the business model contains different groups of people and organisations targeted by the activities. They will benefit from the product/service offer. The division into groups should be based on the segments served, i.e. customers with similar characteristics should be included in one segment. Auxiliary questions for defining this area: Who is our customer? For whom do we build a product/service? To whom do we offer value? Who will pay?

2. Value proposition

We offer our customers (who were defined in the previous step) a certain value, i.e. a set of products/services that are important for them. The value proposition is the basic distinction between what we offer and our competitors. The value proposition aggregates the benefits that our customers will receive. Auxiliary questions for defining this area: What value do we generate for our customers? What will they pay for? What hurts them and what is crucial for them? Which customers' problems do we solve? What products and services will we offer?

3. Channels



The channels are the way in which we deliver value propositions to the customer. These are communication, distribution and sales channels. They indicate the points of contact between the customer and the company. These are the places which the customer visits and where he/she meets the brand. Auxiliary questions for defining this area: Which places are frequented by our customers? Where do we want to meet our customers? What channels will we use to make contact with the customer?

4. Customer relations

This area concerns the characteristics of the relations that are established with customers during the transmission of value propositions. It can be a very personal relation as well as a fully automatic service. The company should clearly define the type of relations it wants to enter into with its customers. Auxiliary questions for defining this area: What kind of relations do our customers expect from us? Do they expect personal support, or maybe fast and automatic service? Is the way of establishing customer relations integrated with other areas of the business model?

5. Revenue streams

The aim of business is to make money. Therefore, providing customers with an appropriate value proposition should generate revenue streams. In this area we indicate how the product or service will earn money. Different price mechanisms may exist for each customer segment. Auxiliary questions for defining this area: What are customers able to pay for? What will they pay for and how much will they pay? Which elements of our product/service will be free and which will be paid for?

6. Key resources

Each business requires specific resources for its operation. The resources mean tangible and intangible assets that are needed to give customers the right value. For one company they will be people, for another machines and production materials. Auxiliary questions for defining this area: What key resources do we need to offer our value proposition? What resources do our channels of reaching out to customers and establishing relationships with them require?

7. Key actions

In addition to resources, appropriate activities are also needed to ensure that each business model functions properly. In this area it is necessary to indicate which of them are key to create and offer value propositions to customers. As in the case of resources, the type of key activities strictly depends on the nature of the business. Auxiliary questions for defining this area: What activities do we need to take to provide our customers with a value proposition? What activities do our channels of reaching out to customers and establishing relationships with them require?

8. Key partners

Many businesses rely on working with key partners - companies or organisations whose services or products are necessary to offer value propositions. Key partners are often the necessary suppliers or subcontractors. Auxiliary questions for defining this area: Who is our key partner? What external companies or organisations are necessary for us to act? What key resources and activities are implemented by our partners?

9. Cost structure

Just as revenue streams are generated on the customer's side, there is a cost structure on the side of internal resources and activities. This area should show all expenses incurred in connection with the operation of the business model. Costs are easiest to calculate when the key resources, activities and partners of our business model are known. Auxiliary questions for defining this area: What are the costs of our business model? What financial outlays are generated by key resources, activities, partners?

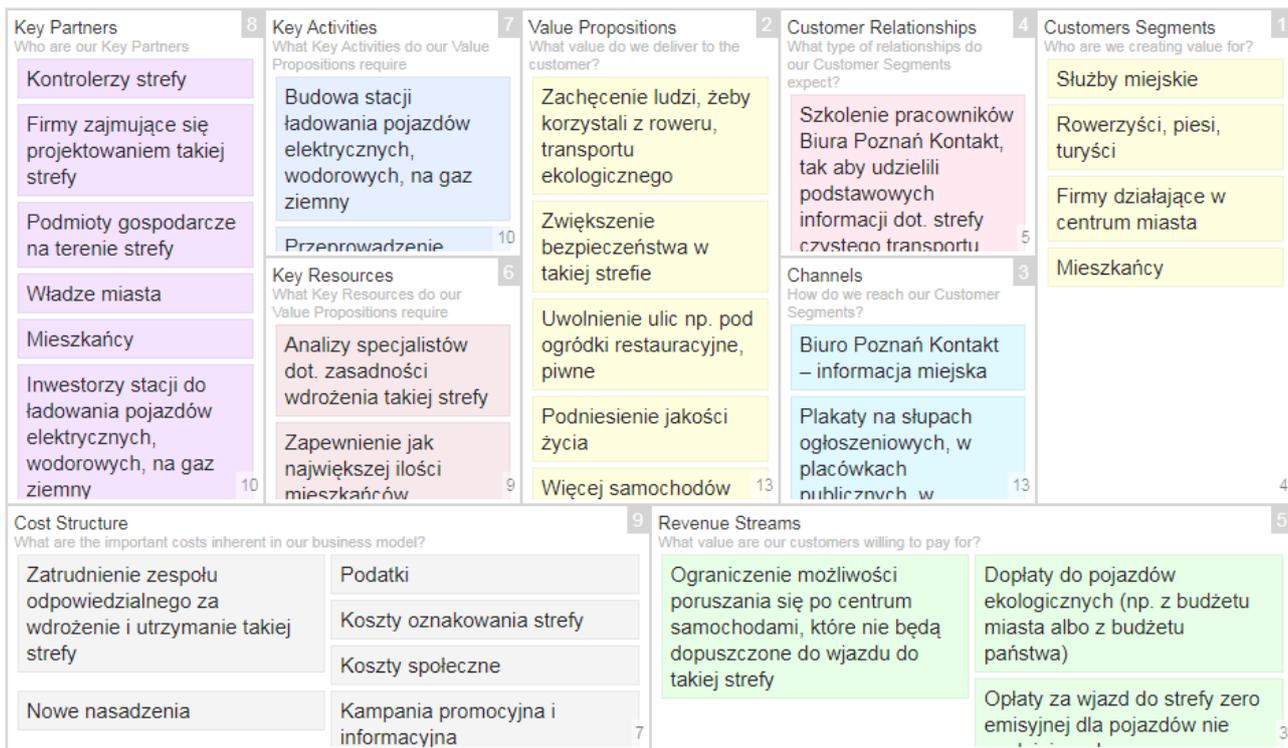
The business models selected in the cargo flow support solutions survey were developed in the framework of the third FQP meeting, which took place during the 2-day Cities Development Forum 2018, devoted entirely to the challenges of city logistics. On the first day there were lectures and a debate on the forum, which was attended by representatives of the city, experts from all over Poland and guests from abroad. The second day had a workshop character, during which possible scenarios of implementation of solutions were discussed. Prior to the BMC development, the participants were divided into smaller groups; each group received a large paper sheet presenting a BMC template on which the trainer put the ideas proposed by the group.

Photo Cooperation between FQP partners during the workshop

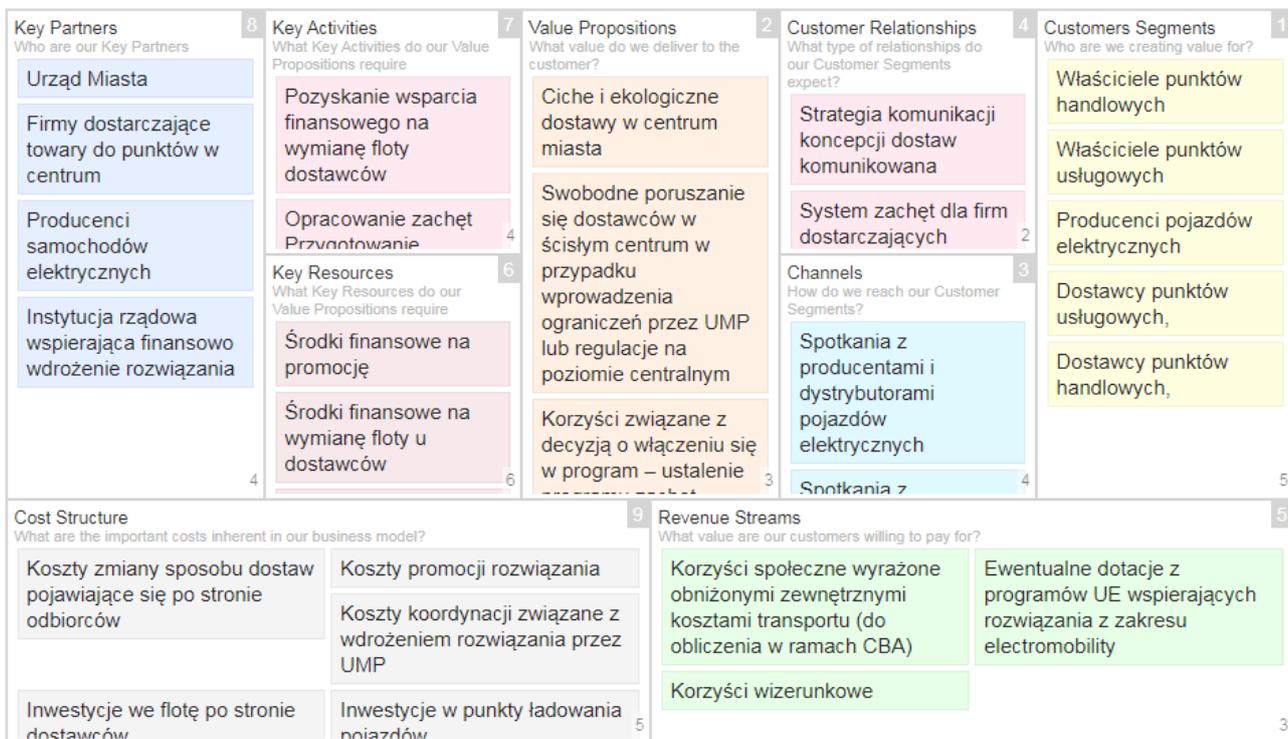


Then, on the basis of dialogue with the participants of the meeting, the BMC areas were supplemented. The obtained results are presented in the canvas below; the models have been supplemented quite extensively, so not all answers are visible on templates; the full version of the prepared BMC can be found in the appendices.

Solution from the area of legal regulations: **Low/Zero Emission Zones**



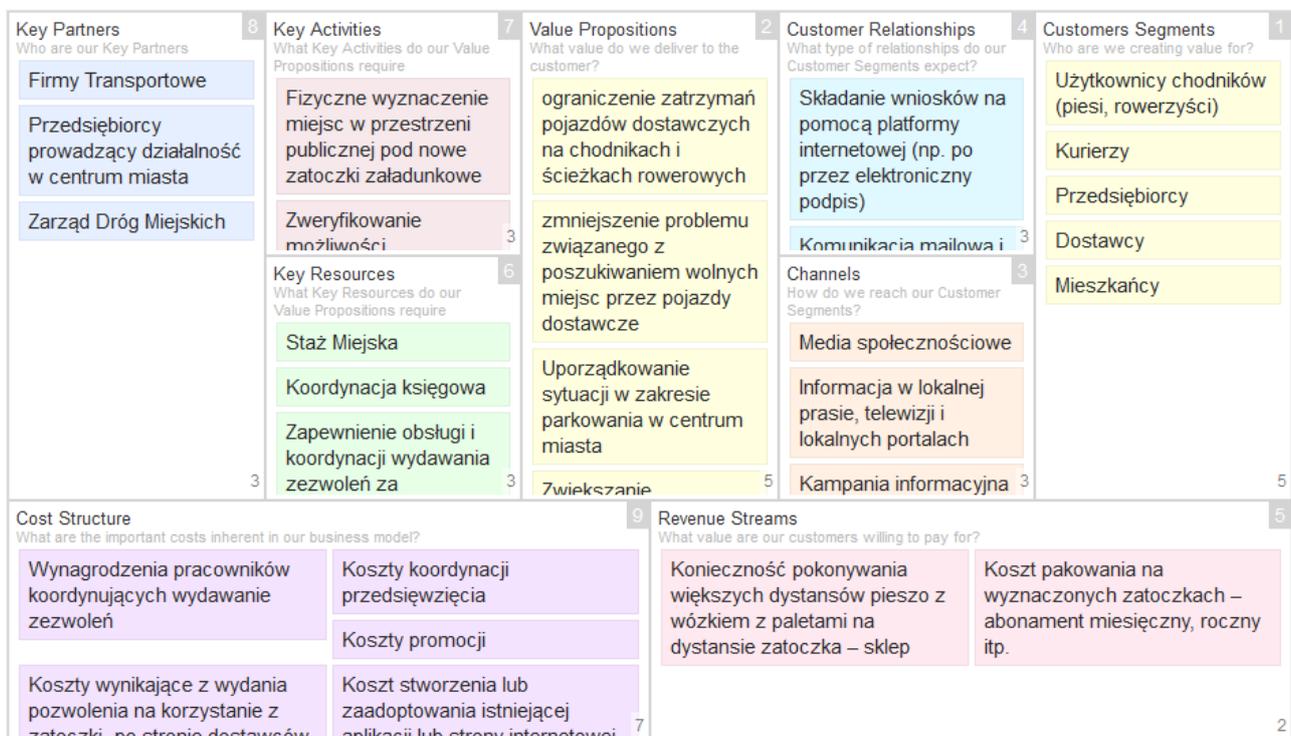
A solution in the area of technology and vehicles: **The so-called last mile deliveries using vehicles powered by alternative energy sources**



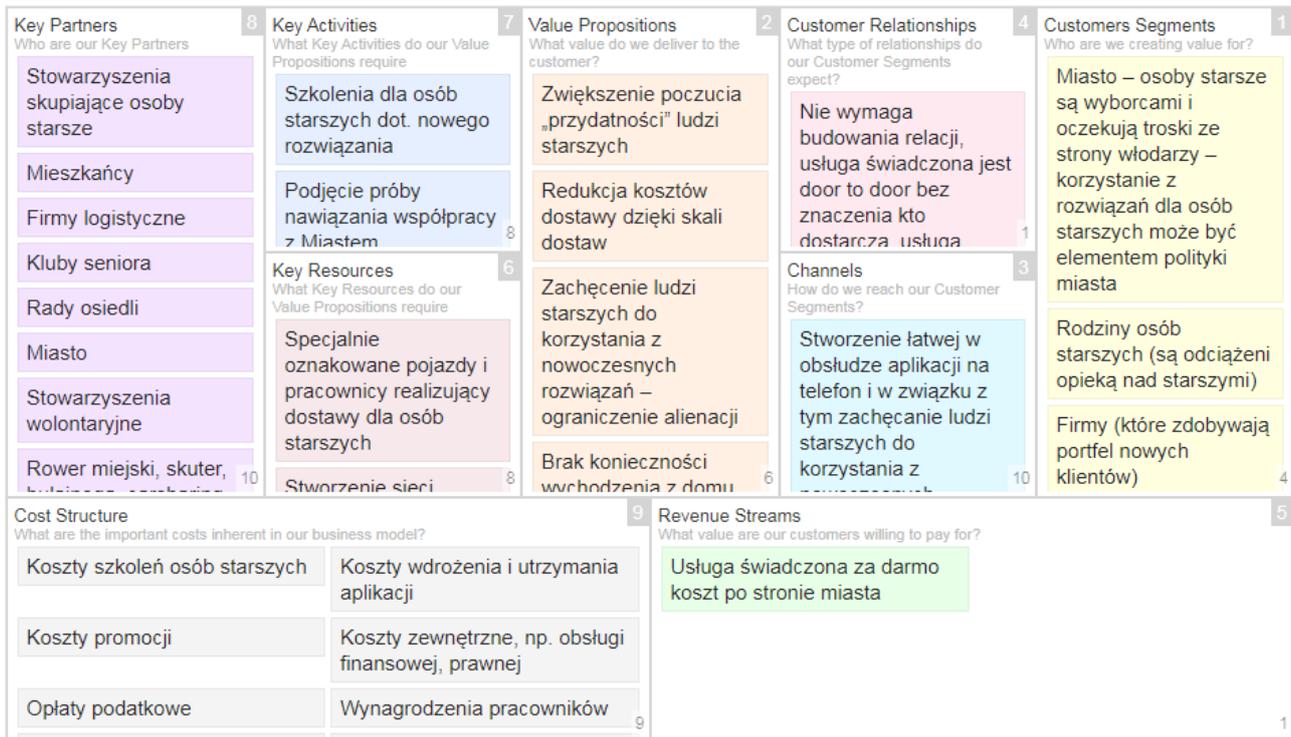
Solution from the area of infrastructure development: **Construction and organization of the work of urban cargo consolidation centres - so-called mini hubs.**



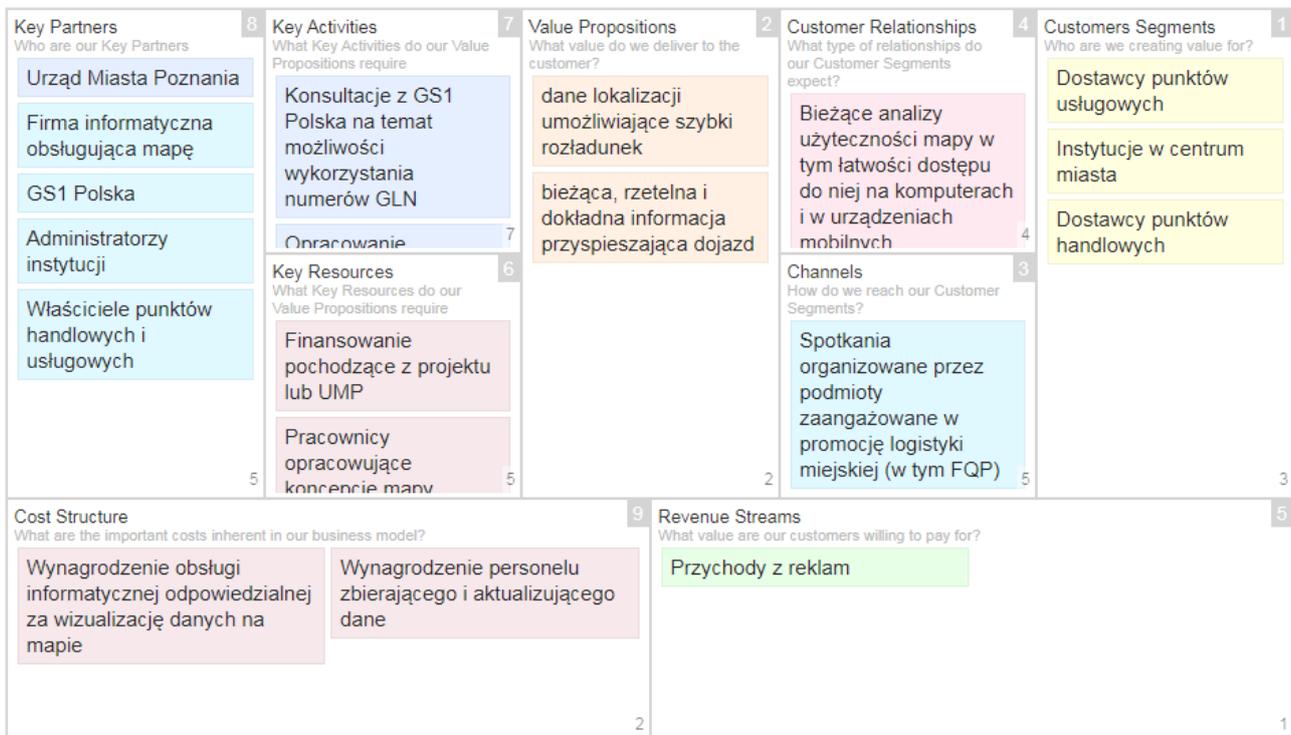
Solution from the area of infrastructure development: **Determination of the location, number and size of parking spaces for vehicles performing the delivery of goods**



Solution from the area of silver economy service: **Logistics solutions for the elderly // Service: free supply of medicines and food for the elderly**

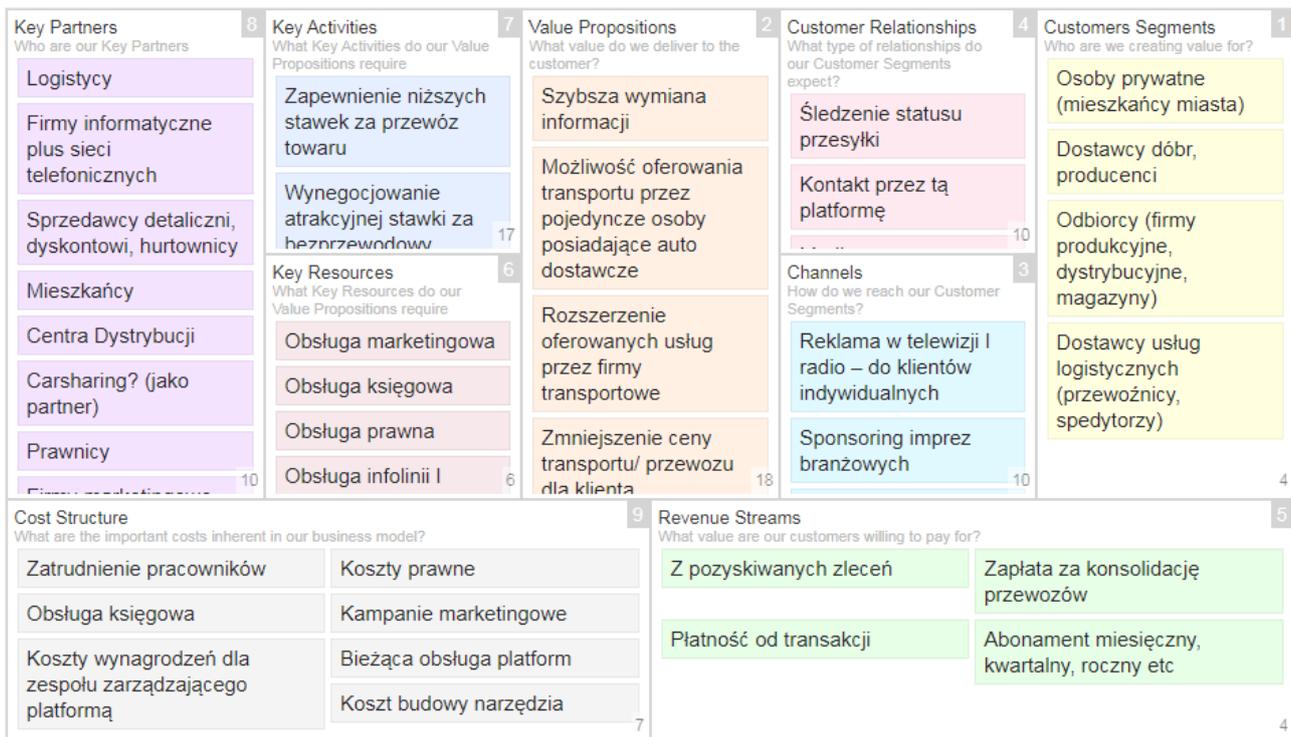


Solution from the area of new technologies: Interactive city centre map for suppliers



New

technologies Electronic platform combining the demand and supply of transport services in the city



8. Road-map for implementing the measures

The conclusions obtained from the BMC have allowed to identify implementation models that illustrate the important elements of the solution from the point of view of potential implementation.

1. Determination of the location, number and size of parking spaces for vehicles performing the delivery of goods

The envelopes for deliveries have already been created in Poznań. These are special parking spaces dedicated to business entities operating in Poznań. They entitle to a 15-minute parking of cars belonging to one or more companies that have purchased the envelope. The parking time is confirmed by a parking clock issued by the Municipal Roads Authority and placed behind the windscreen of the vehicle. The driver is obliged to indicate the starting time the parking on the parking clock, displayed in the vehicle in a place visible to the controller. The detailed functioning of the envelopes is determined by the resolution of the Poznań City Council no. XXXIII/558/VII/2016 of 12th July 2016.

In order to develop the opportunities offered by dedicated spaces for commercial vehicles, a review of solutions in this area was carried out, including both solutions that are operational in other cities or are recommended for implementation. The details have been described below.

In order to introduce dedicated delivery points on three streets in Gdynia (Świętojańska, Starowiejska and Abrahama), the following activities were carried out (among others)(source: materials from PROSPERITY / ELTIS training workshop):

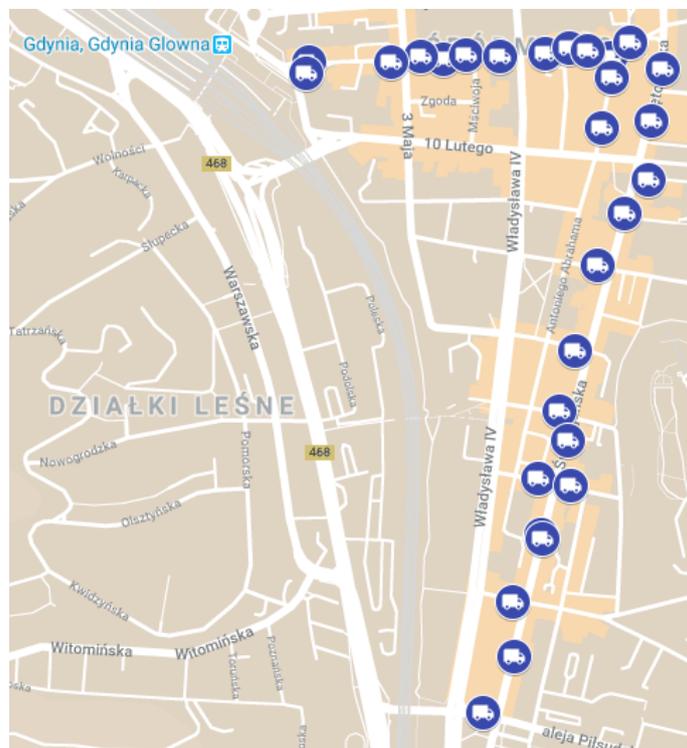
- verification of the number and type of entrepreneurs on a given street and their needs resulting from the need to supply their points (e.g. whether deliveries are made on pallets),
- study of the impact of deliveries on the fluidity of pedestrian and vehicle traffic,
- checking the use of public parking spaces.

As a result of the above work, the number of delivery points was calculated and verified, among others, on the basis of a number of meetings with:

- entrepreneurs from the surveyed streets,
- The Council of the District through which the selected streets run,
- Municipal Associations,
- Municipal Police,
- City Art Consultant,

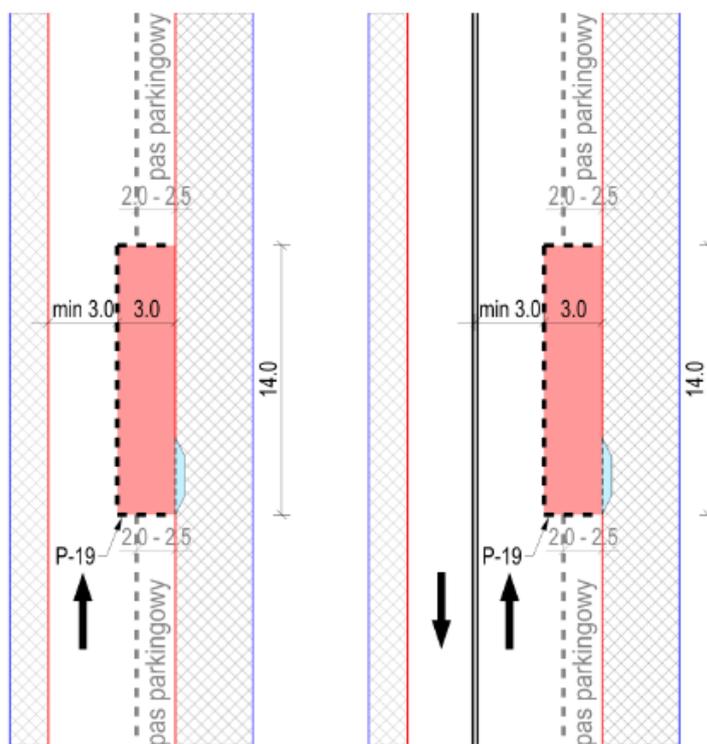
- Plenipotentiary of the President for bicycle traffic.

Finally, 11 envelopes were established for deliveries, and in the longer term, further 18 envelopes are planned on the three indicated streets (see the map, source: <https://www.zdiz.gdynia.pl/pozostale-aktualnosci/10-pozostae-aktualnoci/1136-szybsze-i-atwiejsze-dostawy-w-centrum>; access date: 14th March 2019)



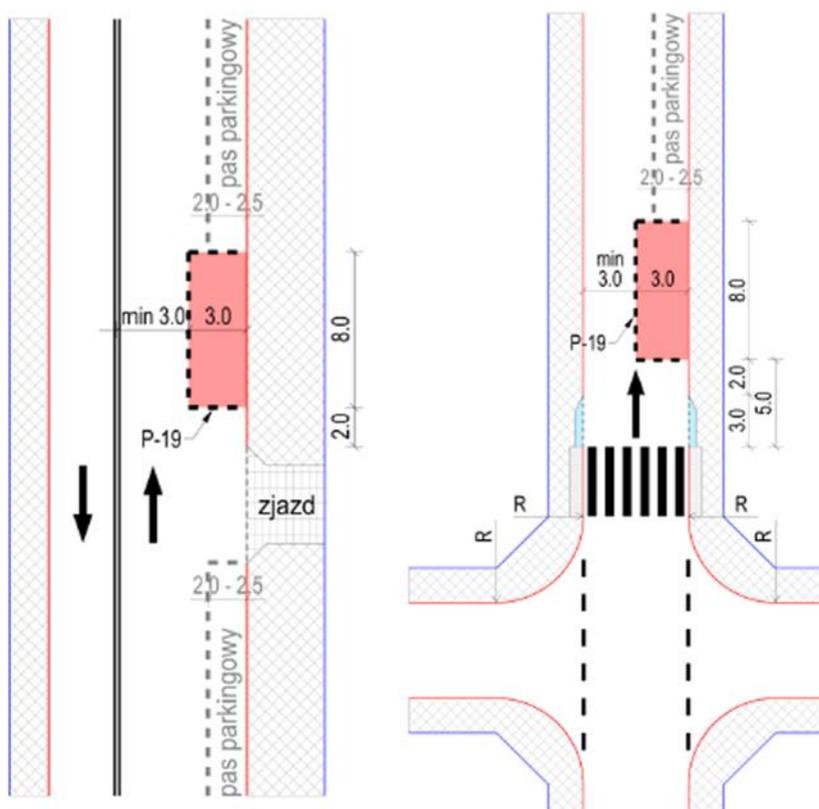
It was agreed that the length of spaces for deliveries should be a minimum of 10 metres. The spaces have been marked, among others, with signs B-35 "no parking" (with the reservation that the restriction also applies to the disabled, but does not apply to the supply of stores of up to 15 minutes) and T-24 (the plate indicating that the vehicle left at the space where the ban expressed with signs B-35 is in force shall be removed at the expense of the owner).

The issue of the length and width of delivery spaces has been developed in more detail by the specialists from the Warsaw University of Technology (source: <http://www.miastoitransport.il.pw.edu.pl/>, date of access: 14th March 2019). According to their recommendations, the length of the zone designated for a supply vehicle should be 14 m (8 m parking space and 6 m loading space) and 3 m wide (assuming that the total width of the delivery space and the adjacent space for vehicle traffic should be at least 6 m, so that vehicles passing by such a space do not have to drive on the opposite lane or on the pavement/cycling path). It was also noted that the final part of such a parking space should include a kerbstone lowering to allow pallet trucks to enter the pavement. This solution is shown in the following figure:



Parking lane	Pas parkingowy
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However, it was noted that in the case of locating delivery spaces at intersections or exits, it is possible to shorten their length to 8 metres while following the other previously mentioned guidelines. The solution is shown in the following figure:





Parking lane	Pas parkingowy
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Specialists from the Warsaw University of Technology also stated that exceptions may be allowed to the above model examples.

Furthermore, it is suggested that:

- the distance between the delivery space and the facility to be serviced shall not exceed 100 m, which means that in areas with a large number of operators, such spaces should be located approximately every 200 m.
- on one- and two-way streets with low traffic (e.g. residential areas delimited by signs D-40 and D41), with the appropriate width maintained, spaces for deliveries should not be introduced.

On the streets of Poznań it is therefore recommended to continue designating delivery spaces based on the good practices and solutions described above. On the basis of the results of BMC and other sources mentioned above it can be concluded, among others, that it will contribute to a further increase in the safety of pedestrians and cyclists (reduction of stoppages of commercial vehicles on pavements and cycling paths) and will have a positive impact on the traffic of commercial vehicles (reduction of the problem related to the search for free space).

2. Low/Zero Emission Zones

The implementation of this solution is regulated by the Act on Electromobility and Alternative Fuels adopted by the Polish government in 2018, which enables the creation of so-called "clean transport zones" in the cities. The Act stipulates that only electric vehicles, natural gas-powered vehicles or hydrogen-powered vehicles and the following vehicles will be allowed to enter such a zone::

- the Police, the Road Transport Inspection, the Internal Security Agency, the Intelligence Agency, the Military Counterintelligence Service, the Military Intelligence Service, The Central Anti-Corruption Bureau, the Border Guard, the State Protection Service, the Prison Service, the National Treasury Administration, fire protection units, the Maritime Search and Rescue Service and rescue services;
- the vehicles used in the fleet serving the Chancellery of the Prime Minister;
- the vehicles of road administrators and carrying out tasks for road administrators;
- the vehicles of the Armed Forces of the Republic of Poland, as well as of the armed forces of foreign countries, if the international agreement to which the Republic of Poland is a party provides so;
- vehicles with a maximum permissible laden weight of up to 3,5 t, owned, held or used by the inhabitants of clean transport zones;
- specialized means of sanitary transport used by medical rescue teams, sanitary transport teams;
- zero-emission buses and school buses.

What is also important, the Commune Council, in the resolution establishing a clean transport zone, may allow other vehicles to travel in the clean transport zone.

The very organization and implementation of the solution is a significant logistic undertaking, starting from the designation of the area to be covered by the zone with its designation, up to the development of a fee collection system and all marketing and promotional actions. It is worth taking a look at the existing zones by analysing them. In Stockholm, for example, the zone is delimited by bridges leading to the centre, which has made it significantly easier to delimit the zone and collect fees. In London, however, fees are charged with the use of license plate scanning cameras, but this is not a reliable solution. The analysis of the existing zones will allow to identify and implement best practices in the potential Poznań zero/low emissions zone.

It is assumed that clean transport zones should be established first of all in areas of historical buildings, including those of tourist importance, around which improvement of air quality will bring measurable health benefits for the city's inhabitants, including the groups most exposed to pollution from transport, i.e. children and the elderly. At the same time, the borders of the zone should include areas well connected by means of public transport, as well as areas adapted to zero- and low-emission rolling stock.



According to the results obtained in the BMC, the main expenses incurred in setting up this investment would be related to the employment of a team of professionals responsible for the implementation and maintenance of the zone, as well as the infrastructure costs associated with the appropriate designation of the zone. It is important to take into account additional costs related to hotline service, website construction, promotional and information campaign costs or costs related to the development and implementation of the payment method.

It is worth noting that the introduction of the zone will generate costs for entrepreneurs, resulting from the necessity to pay fees for entering the zone or to invest in a fleet of vehicles powered by hydrogen, natural gas or electricity.

Nevertheless, the implementation of a clean transport zone in a selected area of the city of Poznań could result in a reduction in the number of cars moving there, and thus reduce the need for parking. In this way it would be possible to reduce the number of parking spaces and to transform them into recreational areas (greenery), restaurant gardens and even to designate more spaces for delivery vehicles, which were described in the previous point.

3. The so-called last mile deliveries using vehicles powered by alternative energy sources

Alternatively powered vehicles use a variety of propulsion systems (electric, CNG, LNG or hydrogen). At present, there is a rapidly developing trend related to the development of both alternative energy vehicles and the infrastructure necessary to recharge / refuel them.



Nissan e-NV200 / VW e-crafter

Deliveries at the last mile using alternatively powered vehicles are tested by Dachser. One solution is an electric truck tested in Paris, in conditions typical for urban distribution with frequent engine starting and stopping. The vehicle had a relatively small range on a single charge of up to 100 km and a small maximum load capacity of up to 2,400 kg, yet it proved to be well suited to driving in congested urban areas.

This is not the only solution tested by Dachser. In Malaga, where 14% of stores are located in the pedestrian zone, a pilot project "El Carrito" is being implemented. It is a small and extremely agile electric vehicle that has been specially designed for use in pedestrian areas. Fully loaded "El Carrito" travels at a speed of 7 km/h. The vehicle spends the night in an underground garage, where it is charged until the next working day.



El Carrito

Another interesting solution of this type for last mile deliveries is Amazon Scout, which is currently being tested in Snohomish County. Deliveries are carried out by Amazon's specially developed autonomous electric-powered drones. The unit is the size of a small refrigerator and moves on the pavement at a walking pace. Drones are to travel fully autonomously, but in order to make sure that the devices are safe and move smoothly in the presence of animals, pedestrians or other potential obstacles on the road, they will be accompanied by Amazon employees. It is not yet specified how exactly the model of such deliveries should function, however, in the era of increasing Internet sales, this solution is worth noticing.



Amazon Scout

The implementation of solutions related to the performance of deliveries by means of vehicles powered by alternative energy sources depends to a large extent on the entrepreneurs dealing with the deliveries of goods, but also on legal regulations, which may be introduced by the cities. The implementation of the clean transport zone mentioned in the previous point could lead to an increased interest among businesses in purchasing alternative fuel vehicles.

It is recommended for the City of Poznań that activities in this area should be coordinated. The designated clean transport zone and therefore the creation of more space for commercial vehicles should go hand in hand with the provision of charging or refuelling conditions for vehicles powered with alternative fuels. It is therefore suggested that, among other things, new envelopes for deliveries should be designed in places where it will be possible to construct a charging station, which will not interfere with the process of loading and unloading goods from and onto the vehicle and will meet the broadly understood requirements in terms of aesthetics, functionality and safety.

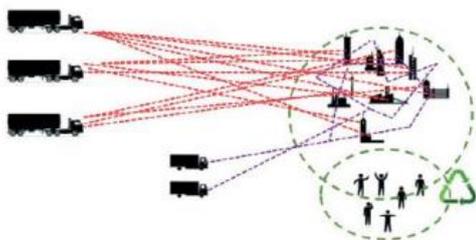
4. Construction and organization of the work of urban cargo consolidation centres - so-called mini hubs.

Mini hubs are usually located at a short distance from the serviced area, which may be the city centre, a commercial district or the whole city. Most deliveries from these places are made in the city centre with environmentally friendly vehicles - cargo bikes, electric trucks, electric vehicles. This results in a reduction in the number of entries of vehicles carrying out deliveries to a given region, thanks to the collection and association of shipments from various sources.

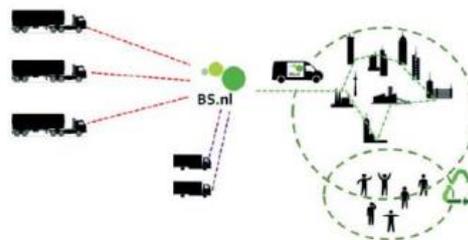
Over a period of 5 years this solution has been applied in 15 Dutch cities, where Binnenstadservice manages the Municipal Consolidation Centre (logistics warehouse and distribution service) on behalf of retailers and other organisations located in the city centre. A concept was developed, under which goods are delivered to the consolidation centre on the outskirts of the city centre, where goods are bundled together and delivered to shops in the city centre. The last mile to retailers is covered with a high

utilisation rate of vehicle payload, high density of delivery points and, where possible, with vehicles using alternative energy sources (bicycles, freight e-bikes, electric vehicles, natural gas vehicles).

Sytuacja bez Binnenstadservice



Zbiorczy punkt odbiorczy dla właścicieli sklepów: Binnenstadservice



Sytuacja bez Binnenstadservice	Situation without Binnenstadservice
Zborczy punkt odbiorczy dla właścicieli sklepów: Binnenstadservice	A collective pick-up point for shopkeepers: Binnenstadservice

Birgit Hendriks FRM 2018 Presentation of Binnenstadservice and Goederenhubs Experience from the Netherlands

Binnenstadservice started in Nijmegen as a non-profit initiative. Considerable efforts have been made to achieve sufficient retail and freight capacity. This concept is market-driven, but restrictive rules on urban freight transport have clearly motivated both retailers, shippers and transport companies to look for more efficient urban freight transport. An innovative aspect of Binnenstadservice approach is that it is a "bottom-up" concept, based on the needs of retailers who have decided that they want to receive their goods through a consolidation centre because it provides them with many benefits. Three main groups of benefits were observed:

- Financial ones: reduced stock of retailers, where warehouse space often located in the store generates high costs, reduced pick-up/delivery time, reduced delivery time for the last mile, and thus costs reduction by about 10%.
- in the field of services: the shopkeeper pays a small fee for time-consuming activities, e.g. order picking, collection of empty containers, etc.
- for society: less traffic congestion, fewer delivery journeys, a more life-friendly city centre, 40% reduction in CO2 emissions and pollution.



Binnenstadservice van and operations in Tilburg, NL

The business model is based on the fact that shopkeepers do not pay for the delivery of goods. However, they have to pay for additional services provided by Binnenstadservice (collection of packaging, empty containers, etc.). This is a transport company that used to deliver cargo to customers in the city centre and now pays a fee to Binnenstadservice. Then Binnenstadservice deals with the packaging of the goods and commissions it to one logistics service provider for the city. In order to create the critical mass necessary for the success, the involvement of many retailers was needed. In many cities it was possible to start operations thanks to public funding, which encouraged shopkeepers to participate in the project.

The construction of a mini-hub is a costly undertaking both at the stage of investment and operation; initial costs are primarily related to finding an appropriate location for the investment, project implementation and construction. The subsequent costs are the costs related to the promotion of the mini hub (website, promotion in the media, advertising), we must not forget about the costs related to the ongoing operation (staff costs: administrative and operating staff costs, IT service costs, the utilities). It is a solution which, in order to be effective, must achieve an appropriate level of commitment among the recipients of the goods. The Dutch example shows that the involvement of public authorities through the change of the legal regulations concerning the deliveries to the centre and the funding had a key impact on the success of the project.

In Poznań, for example, during the creation of a clean transport zone, it is suggested that the locations of mini-hubs should be designated on the basis of dialogue with entrepreneurs. Land for such a solution could, for example, be leased by the city, and the process of delivery and business maintenance of such hubs would be on the private sector side.

5. Silver economy.

An important aspect of freight transport in the city is the adaptation of deliveries to future trends in logistics services related to an ageing population. It is estimated that in about 15 years more than every fourth Pole will be over 60 years old.

As a result, new last mile delivery services are already being used. For example, Uber tests solutions in the field of:

- the supply of vaccines, medicines and personal care products for the elderly
- transport of the elderly and carers of the elderly.

This initiative is being implemented in consultation with healthcare providers and enables the procurement of transport services for patients.

Also in Poznań there is a problem related to the ageing of the society. As a part of the project called "Taxis for Seniors", Poznań inhabitants aged 70 years and older who have difficulties with independent travelling using public transport can order a free transport service at a convenient time for themselves. Free taxi rides to the doctor, hospital, office or cemetery to visit the graves of loved ones can be used up to three times a month.



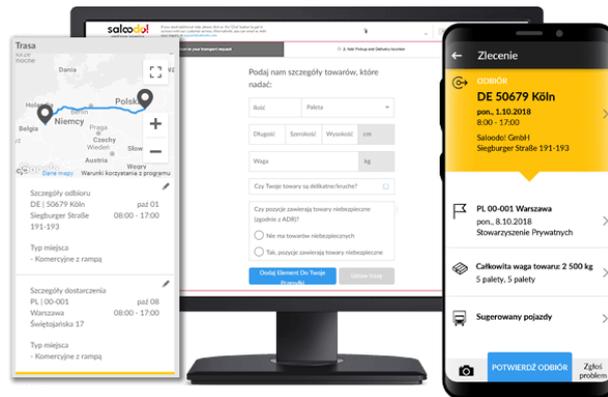
Since Silver Economy defines a group of services dedicated to seniors, a free supply of medicines and food for the elderly was chosen for the BMC development. It was specified that in order to implement such a solution it would be crucial to disseminate it among the recipients, which entails the costs of promotion (leaflets, brochures, radio advertising). Other important costs are the costs related to employment and remuneration of employees, IT, financial and legal services, operating costs as well as the costs of training for the elderly.

As the service does not generate revenues, the basis for making it available is to obtain sources of financing (sponsors, EU subsidies, funds from the city budget). It is also worth considering the involvement of volunteers.

6. Electronic platform combining the demand and supply of transport services in the city

The solution resembles a transport exchange, which is a tool used mainly for communication between participants of transport processes (carriers, forwarders, shippers), cargo search/ordering, freight negotiation, and conclusion of transport contracts. In order to use the software you need Internet access, which allows you to search for cargo/vehicles in real time and conclude service contracts. The proposed solution would differ in the area of activity, the platform would have a local character and would handle cargoes in the designated area, e.g. Poznań and neighbouring communes.

A similar type of solution called Saloodo was launched in 2017 by DHL. It is an electronic platform combining supply and demand for transport services created for companies from the SME sector. Transport companies are checked for reliability to increase safety. The shipper sends the data on the delivery he wants to make and then receives transport offers. If one of the offers is accepted, the transport takes place, and the sender can track and manage his delivery in real time. Carriers, on the other hand, after registration gain access to the declared cargo and may submit offers to the senders.



The main task of such a platform operating in the area of the city and neighbouring communes would be to connect companies transporting their cargo, as well as transport companies, through a system of vehicle sharing, which would make it possible to increase the use of cargo space.

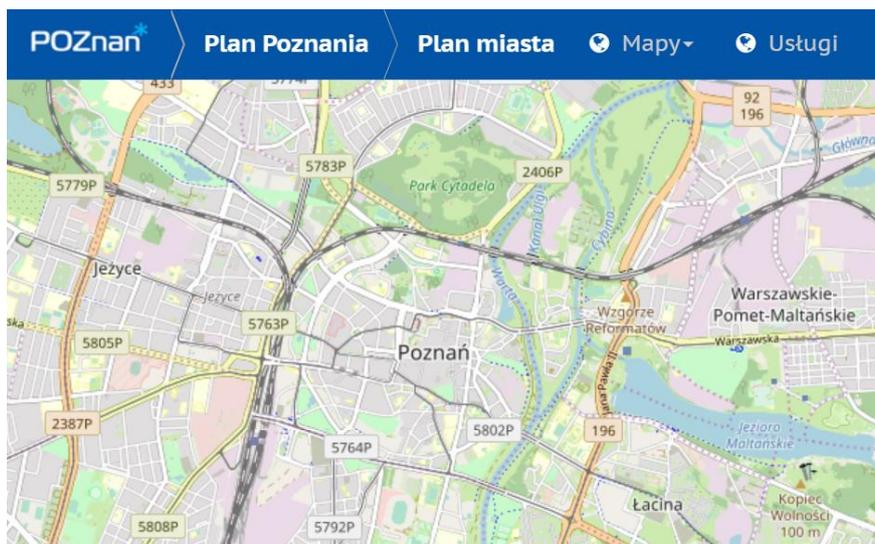
The initial costs of the implementation of the new model are primarily related to the construction of the platform, which will be most costly, and to its day-to-day operation. If the platform is to fulfil its assumed functions, it is necessary to take into account the costs related to the functioning of the platform (costs related to employment and remuneration for the management team). Despite the local reach of the platform on which it is to operate, it is necessary to reach the right segment of customers, which entails marketing costs. By means of a properly conducted advertising campaign (Internet, industry conferences, advertising, etc.), the proper functioning of the platform will be explained. One should also remember about legal and accounting costs.

The above solution is recommended for implementation by private entities, e.g. as a tool facilitating the use of mini-hubs located in areas previously agreed with the City.

7. Interactive city centre map for suppliers

An interactive centre map for suppliers is understood in this respect as a map showing the traffic situation in real time (e.g. traffic volume, availability of unloading spaces) and enabling dynamic management of delivery routes.

Currently there is an interactive map of Poznań where you can see, among other things, the occupancy of buffer parking lots and P&R (the data are generated in real time). There is currently no way to find delivery logistics information on the map.



Source: The map of Poznań is available at <http://www.poznan.pl/mim/plan>

Creating a similar solution for operators performing deliveries to the centre would improve the freight transport process by providing up-to-date, reliable and accurate information that will speed up the supplier's arrival at the right place, as well as providing an overview of the available unloading spaces.

In order to create an interactive map of the city centre for suppliers, it is possible to take advantage of the experience gained during the creation of the already existing interactive map of Poznań. It is worth verifying whether it would be possible to add further planes to the existing map, containing information needed during the delivery, such as e.g. placing on the map information resulting from the GLNs (Global Location Numbers) managed by the GS1 Poland Foundation (within this number, in addition to information on the location of the company, a number of useful pieces of information can be saved, such as, for example, unloading or access conditions to a given retail or catering point, logistic parameters, etc.).

Regardless of whether the implementation of this tool would require the creation of a map from scratch or the expansion of the existing solution, the basic costs will be related to the IT support for the project (construction/expansion, updating of the map). In order for an interactive map to be effective, efficient and fulfil its functions properly, it is necessary that it should present the situation in the city in real time. The staff is also needed to operate this tool, who will collect and update the data, as well as IT staff responsible for visualizing the data on the map, which is associated with the cost of remuneration for these teams.

9. Evaluation of impacts

The previously defined solutions were assessed in terms of expected benefits and impact on freight transport in the city and on the city itself. The results are summarised in the table: the first column contains the solutions; the next column contains expected benefits, and the last column contains the effects of the selected solutions.

Action	Expected benefits	Impacts
Determination of the location, number and size of parking spaces for vehicles performing the delivery of goods	<ul style="list-style-type: none"> ▪ Safe parking during loading/unloading ▪ improving the safety of other road users by reducing the number of commercial vehicles parked on the streets ▪ Increasing the safety of pedestrians and cyclists by reducing stoppages of commercial vehicles on pavements and cycling paths ▪ Ordering of the parking situation in the city centre 	<ul style="list-style-type: none"> ▪ Reducing the number of trips in the case of searching for available parking spaces will have an impact on the reduction of traffic in the city, and in the case of commercial vehicles without green propulsion - reduction of exhaust emissions.



<p>Low/Zero Emission Zones</p>	<ul style="list-style-type: none"> ▪ Limitation of the process of searching for free parking spaces by suppliers ▪ More space for pedestrians, city bikes ▪ environmental protection ▪ less noise ▪ increased safety ▪ improved air quality ▪ reduced street congestion ▪ free space for recreation areas (greenery) ▪ proceeds to the City from fees for entering such a zone ▪ increasing the share of green cars ▪ improving the quality of life ▪ releasing streets, e.g. to be used as restaurant gardens ▪ increased safety in such a zone ▪ encouraging people to use bicycles, clean transport 	<ul style="list-style-type: none"> ▪ Undoubtedly, the transport sector is one of the causes of the smog that occurs in Poznań. For the period 2014-2016, the permitted number of days with exceedances of 24-hour concentrations of PM10 and benzo(a)pyrene particulate matter was exceeded. Moreover, the number of vehicles per 1,000 persons is still increasing in the city (538 in 2011 and as many as 689 in 2017) with a still relatively low share of vehicles with low emissions or zero emissions (e.g. the total number of registered electric vehicles by September 2018 was about 300). If clean transport zones were to be set up, these problems could be reduced and there would be greater awareness among citizens and businesses of sustainable mobility, clean modes of transport and electromobility in general.
<p>The so-called last mile deliveries using vehicles powered by alternative energy sources</p>	<ul style="list-style-type: none"> ▪ reducing environmental pollution ▪ noise level reduction ▪ building a positive image of enterprises and the city as being geared towards the implementation of environmentally-friendly solutions 	<ul style="list-style-type: none"> ▪ A greater share of electric vehicles will result in a significant reduction of air pollution in the centre of Poznań. Emissions of CO2 and harmful gases resulting from the production of energy needed to power these vehicles are mainly generated outside areas with a large population density. What is more, it is possible to use alternative sources of energy from e.g. the newly established waste incineration plant in Poznań. In addition, it should be noted that the specificity of electric vehicles allows for energy recovery during the braking of the vehicle, which in addition has a positive effect on the reduction of dust caused by the wear of brake pads. ▪ Publicly available studies show that electric cars also emit significantly less noise than motor vehicles, in particular for speeds up to 60 km/h, which is the maximum permissible speed in built-up areas. According to the periodical Electric Machines - Problem Notebook No. 1/2016 (109), the difference between the noise emitted by a vehicle with an internal combustion engine and the noise emitted by a vehicle with an electric engine in the low speed range is from 7 to 17 dB (assuming a comparison of two vehicles of the same type).



<p>Construction and organization of the work of urban cargo consolidation centres - so-called mini hubs.</p>	<ul style="list-style-type: none"> ▪ Cargo consolidation ▪ Greater vehicle filling ▪ Reducing the number of so-called empty mileage of commercial vehicles ▪ Reduced need for parking space for deliveries ▪ Companies operating in the city centre ▪ Reducing environmental pollution ▪ Current status of "real time" deliveries ▪ Improving supply to stores ▪ Reduction of unloading time in the hub ▪ Possibility to control and organize deliveries ▪ Use of green vehicles (widespread use of alternatively powered vehicles) ▪ Reduction of delivery time - delivery to hub only ▪ More precise delivery time of "the delivery window" ▪ New jobs for inhabitants ▪ Less traffic, fumes, noise, lower costs 	<ul style="list-style-type: none"> ▪ Reduced stock at retailers, reduced pick-up/delivery time, reduced time losses during the last mile delivery and thus the cost reduction estimated at around 10% (on the example of Binnenstadservice Nederland). ▪ Benefits in the area of services for owners of small retail outlets resulting from incurring lower than current costs of order completion/consolidation, which would be carried out by the hub. ▪ Favourable social and environmental impact, reduced traffic congestion, resulting from fewer delivery journeys, more life-friendly city centre, reduction of CO2 emissions and pollution by 40%.
<p>Logistics solutions for the elderly Service: free supply of medicines and food for the elderly</p>	<ul style="list-style-type: none"> ▪ Improving the quality of life of the elderly ▪ New business opportunities from offering value-added logistics services ▪ Growth in online shopping platforms for the elderly could result in increased delivery volumes and individualized delivery schedules 	<ul style="list-style-type: none"> ▪ New solutions for aging population of the city will improve overall quality of life. Growing market segment of older people will necessitate new channels for special home delivery services. New value-added last-mile services, which go beyond traditional delivery services, can be offered to support the aging population. In the future, autoreplenishment of goods will be simpler with smart devices (such as fridges and pill boxes) enabling subscription-based delivery models
<p>Interactive city centre map for suppliers</p>	<ul style="list-style-type: none"> ▪ improvement of the cargo transport process through current, reliable and accurate information ▪ Time-saving by suppliers (avoiding traffic jams) ▪ Possibility of obtaining additional information facilitating the method of delivery (e.g. the possibility of obtaining a GLN - Global Location Number) ▪ Possibility of viewing the available unloading spaces in real time 	<ul style="list-style-type: none"> ▪ Reduction of delivery time thanks to current, reliable information on the road - thus relieving the most congested places in the city centre



	<ul style="list-style-type: none"> ▪ Possibility to plan a delivery route based on the current road situation 	
<p>Electronic platform combining the demand and supply of transport services in the city</p>	<ul style="list-style-type: none"> ▪ Integration of shippers and suppliers ▪ Cargo consolidation ▪ Sharing of cargo space ▪ Greater vehicle filling ▪ Companies operating in the city centre ▪ Reducing environmental pollution ▪ Reduced delivery costs ▪ Increased productivity of logistics operators ▪ Real-time information on free movements/cargoes ▪ Flexibility, speed of service delivery ▪ No need to own a vehicle ▪ Easy access to the service ▪ Fewer formalities (no need to draw up contracts) ▪ Reduction of the number of vehicles entering the city, moving around the city ▪ Favourable impact on the environment ▪ Reducing the number of so-called empty mileage of commercial vehicles ▪ Improved delivery to final destinations ▪ Reduction of costs for carriers ▪ Reduction of delivery time ▪ Reduction in the price of transport/transport for occasional customers ▪ Broadening of services offered by transport companies ▪ Possibility to offer transport by individual persons with a commercial vehicle ▪ Faster exchange of information 	<ul style="list-style-type: none"> ▪ Favourable impact on the urban transport system, increased integration between participants generating and handling freight traffic, through cargo consolidation, reducing the number of routes used, and thus reducing traffic congestion and transport costs. ▪ Favourable social and environmental impact, reduced traffic congestion, resulting from fewer delivery journeys, more life-friendly city centre, reduction of CO2 emissions and pollution

10. Role of the stakeholders involvement

In Poznań, 5 meetings of Freight Quality Partnership (FQP) partners were planned, within the framework of which cooperation between representatives of business, local authorities and representatives of research centres was assumed. FQP had played an important role in proposing measures and solutions for the development of SULPs. All members agreed that the situation requires mutual cooperation with the view to finding a common position on urban freight transport.

The first meeting of the FQP

The aim of the first meeting was to establish FQP, present the SULPiTER project and encourage further cooperation. The meeting was co-organized with VW Poznań. Issues related to city logistics were discussed, i.e.: increasing urban mobility, increasing importance of e-commerce as a distribution channel, impact of logistics on living conditions of city inhabitants and business environment, urban areas as nodes of large flows of goods, regulation of city logistics by public authorities (conditions, rules). Selected infrastructural and organisational solutions in the field of logistics successfully applied in many European cities were presented. The results of the research were presented and a discussion was held with the participants of the meeting on the biggest logistic challenges related to business activity in the urban environment. Global trends related to the movement of people and cargo (resource sharing) were discussed, with particular emphasis on two concepts of fleet management, which are part of the Poznań City Development Strategy 2020+:

- cargo sharing- the system for the sharing of commercial vehicles made available by external fleet operators.
- cargo pooling - the system for the pooling of cars made available by other users

As a summary of the discussion, the participants indicated the advantages and disadvantages and potential directions of development that may appear at the stage of implementation for both concepts.



The second meeting of the FQP

The aim of the workshop was to continue the cycle of meetings within the Freight Quality Partnership (FQP), focusing on establishing a dialogue between entrepreneurs, company representatives and the city authorities. Current activities in the field of city logistics carried out in the city of Poznań were discussed. Attention was drawn to the need for the city to support the development of clean freight transport, as in the case of passenger transport (car-sharing). During the meeting, the example of the FQP established in London in 2006 was also discussed. The results of research carried out at the end of 2017 by an external service provider (Delta Partner) commissioned by the Poznań City Hall were presented to a research group representing over 300 enterprises conducting business activity in the city of Poznań.

During an open discussion, participants presented proposals for potential solutions that could contribute to the improvement of traffic in the city, barriers / obstacles related to the implementation of new solutions were also identified. The participants of the meeting expressed their willingness to further cooperation and agreed on further activities to be carried out, including the preparation of a questionnaire with the use of Google Tools identifying the list of solutions / issues to be discussed at the next FQP meetings, from which the conclusion was to be included in the SULP.



The third meeting of the FQP

The results of a survey conducted in the period from June to August 2018 were presented, the aim of which was to define thematic areas and recommendations for this document. The results of the conducted research have been applied in designing future assumptions and solutions, thanks to which they are consistent with the expectations of the inhabitants and companies operating in the city. During the meeting, business models with the use of Business Model Canvas were developed for the solutions selected by the survey participants as the most interesting ones, which allowed to identify potential implementation assumptions.

The fourth meeting of the FQP

The meeting was organized on 7th February 2019 in the headquarters of W.P.I.P. sp. z o.o. in Swarzędz Jasina in cooperation with the Wielkopolska Capital Club. The meeting was attended by more than 20 entrepreneurs interested in hearing a presentation on the cooperation of companies for the development of city logistics in the Freight Quality Partnership formula. During the presentation, the general activities of the FQP were presented, as well as a list of initiatives planned for implementation. The presentation met with a lively interest of the participating companies.

The fifth meeting of the FQP

A meeting is at the planning stage - it will be devoted to planning further FQP activities for the time after the end of the SULPiTER project.



11. Main steps for the the adaptation of the SULP

It is assumed that the provisions of the Sustainable Urban Logistics Plan (SULP) will be used in the process of updating the Sustainable Urban Mobility Plan for the Poznań Functional Urban Area 2016-2025 (SUMP) and in creating a new Sustainable Urban Mobility Plan for the City of Poznań only.

The following steps are planned in order to achieve the objectives of including SULP in the updated SUMP for the Poznań Metropolitan Area and the new SUMP for the City of Poznań:

- The new SUMP for the City of Poznań and the updated SUMP for the Poznań Functional Urban Area (which will include aspects of strengthening regional freight transport included in this SULP) will be subject to public and internal consultations.
- After taking into account all comments and recommendations, the SUMP for the City of Poznań will be adopted by the Poznań City Council, while the SUMP for the Poznań Functional Urban Area will be adopted by the Poznań Metropolitan Area Association.

It is planned that the procedure of updating the SUMP for the Poznań Functional Urban Area of Poznań and creating a new SUMP for the City of Poznań will start in 2019. Moreover, the process of creating the SUMP for the City of Poznań will be initiated by a relevant Resolution of the Poznań City Council, which is planned to be adopted by mid-2019.

12. Application and monitoring

The risk matrix presents solutions identified and tested under previous activities, the implementation of which could have a beneficial effect on freight traffic in the city. The first column of the table contains the proposed solutions, another one contains the list of potential risks associated with the attempt to implement the selected solution, the subsequent columns contain the probability of occurrence of the indicated risk and the method of managing the risk in question, which would enable to eliminate the risks or mitigate their negative effects in the event of their occurrence.

Measures	Risks	Likelihood	Risk management
Determination of the location, number and size	<ul style="list-style-type: none"> ▪ Inhabitants' protests against a reduction in the number of parking spaces 	High	<ul style="list-style-type: none"> ▪ The need to carry out an appropriate awareness-raising



<p>of parking spaces for vehicles performing the delivery of goods</p>			<p>campaign (e.g. that the number of spaces for commercial vehicles has been calculated on the basis of multi-criteria assumptions and can still be verified so that each party to the dispute is satisfied).</p>
<p>Low/Zero Emission Zones</p>	<ul style="list-style-type: none"> ▪ protests on the part of the inhabitants of the City conditioned by the necessity to change the existing transport habits ▪ protests from other entrepreneurs who will be forced to buy low- or zero-emission vehicles or pay additional fees for entering such a zone. ▪ the risk of inefficiency of alternative solutions prepared in connection with the implementation of such a zone (e.g. the need to install a much larger number of charging points for electric vehicles compared to the number indicated in the Act on Electromobility and Alternative Fuels) 	<p>High</p>	<ul style="list-style-type: none"> ▪ Necessity of phased implementation of the zone with simultaneous consultations with inhabitants and entrepreneurs, also with regards to the needs for infrastructure for low- and zero-emission vehicles.
<p>The so-called last mile deliveries using vehicles powered by alternative energy sources</p>	<ul style="list-style-type: none"> ▪ Risk of lack of financial capacity of companies to purchase low- or zero-emission vehicles ▪ Risks due to lack of adequate charging and refuelling infrastructure 	<p>In the case of clean transport zones: high In other cases: low</p>	<ul style="list-style-type: none"> ▪ Conducting a promotional campaign among entrepreneurs ▪ The use of additional incentives, e.g. designation of new parking spaces only for commercial vehicles in clean transport zones
<p>Construction and organization of the work of urban cargo consolidation centres - so-called mini hubs.</p>	<ul style="list-style-type: none"> ▪ Social risk (e.g. resistance on the part of the inhabitants concerning the construction of cargo consolidation centres near their homes); ▪ Risk of reluctance of suppliers to use the mini hub; ▪ Project failure during the implementation phase 	<p>In the case of clean transport zones: high In other cases: average</p>	<ul style="list-style-type: none"> ▪ Carrying out a campaign to make inhabitants aware of the benefits of the solution. ▪ Introduction of legal regulations limiting the possibility of deliveries without the consolidation centre ▪ Cooperation between the City and the external investor ▪ Preparation of contingency plan and cost and time reserves during the construction process



<p>Logistics solutions for the elderly // Service: free supply of medicines and food for the elderly</p>	<ul style="list-style-type: none"> ▪ Initial difficulties in getting the elderly used to new forms of services ▪ Danger of potential fraud 	<p>average</p>	<ul style="list-style-type: none"> ▪ Development of an intensive campaign promoting new services dedicated to the elderly. ▪ Introducing mechanisms to protect the elderly against potential frauds impersonating suppliers.
<p>Interactive city centre map for suppliers</p>	<ul style="list-style-type: none"> ▪ Reluctance of users to use the interactive city centre map for suppliers ▪ A complicated tool to use ▪ Technical problems ▪ Difficulties in coordinating many aspects of the tool in real time 	<p>average</p>	<ul style="list-style-type: none"> ▪ Carrying out an awareness-raising campaign among entrepreneurs about the benefits resulting from the application of the solution ▪ Hiring a qualified team to operate the proposed tool in order to minimize technical problems and coordinate the use of the interactive map of the city centre
<p>Electronic platform combining the demand and supply of transport services in the city</p>	<ul style="list-style-type: none"> ▪ User reluctance to use the platform ▪ Failure at the solution development stage ▪ Technical problems in day-to-day use 	<p>high</p>	<ul style="list-style-type: none"> ▪ Carrying out a campaign to make inhabitants aware of the benefits of the solution. ▪ Promotion of the solution on a large scale. ▪ Cooperation with a proven software supplier ▪ Cooperation between the City and the external investor

13. Promotion and Communication Plan

The new SUMP for the City of Poznań adopted by the City Council of Poznań and the updated SUMP for the Functional Urban Area (which will include aspects concerning the strengthening of regional freight transport contained in this SULP) will be available in PDF format on dedicated websites (e.g. Poznań City Hall, Poznań Metropolitan Area Association). Tags for searching documents will be formulated in such a way that everyone interested can easily find the desired content. In addition, for ease of reference, a brief description of the most important assumptions of the documents will be presented on dedicated websites with the emphasis that information on strengthening regional freight transport has been taken from the SULP document, which was the final result of the SULPiTER project.

Moreover, press conferences are planned to inform the public about the creation of a new SUMP for the City of Poznań and to update the SUMP for the Functional Urban Area.

Moreover, in order to reach entrepreneurs and people who may be interested in the results of the prepared documents, it is planned to prepare several speeches to be presented during thematic conferences on city logistics and freight transport. Persons with substantive background will present the scope and purpose of the Sustainable Urban Mobility Plan, which will include the aspects addressed in the Sustainable Urban Logistics Plan and answer the questions and concerns that may arise.



14. Appendices

14.1. Appendix 3: Google survey

Survey content has been pasted in the form of text below.

Identification of thematic areas for further work within the Freight Quality Partnership in Poznań

The aim of the survey is to define thematic areas and recommendations for the Sustainable Urban Logistics Plan (SULP) developed in Poznań. The results of the research will allow us to adjust future solutions to the expectations of inhabitants and companies operating in the city.

Apart from the data identifying the respondent's profile, the survey was divided into several thematic blocks within which examples of projects already successfully applied in many European cities were defined.

- I. Profile of activity
 - Supplier (e.g. wholesaler/manufacturer),
 - Logistics service provider (e.g. carrier, courier, logistics operator),
 - Recipient - retail store,
 - Recipient - retail chain,
 - Recipient - HoReCa (hotels, restaurants, catering),
 - Recipient - service point (laundry, shoemaker, watchmaker),
 - Customer - manufacturer, wholesaler, distributor,
 - Inhabitant.

- II. Indicate one solution for each category, the implementation of which could contribute more to the improvement of the flow of goods within the city.

Legal regulations,

1. **A system of incentives and restrictions for heavy goods vehicle drivers to support proper behaviour in the city centre**
Video surveillance with the use of CCTV system. Closed Circuit TeleVision.
2. **Time limits and fees in city logistics**
Limitation of time spent by the vehicles in the city centre, introduction of fees, inevitability of financial penalties for unauthorised entry.
3. **Low/Zero Emission Zones**
The low emission or zero emission zone is a strictly defined area where, in order to improve air quality, access is restricted to vehicles which have an adverse impact on the environment, and fees are introduced for vehicles which do not meet the designated standards. Vehicles powered by alternative sources of energy shall be exempt from fees.
4. **Privileges for suppliers meeting certain environmental standards in transport**
For example, for suppliers using environmentally friendly vehicles.
5. **Industry solutions, e.g. ban on intraday delivery for a selected type of company**
In Amsterdam, deliveries to the catering industry are only made at certain times of the night.
6. **Distinguishing companies through certification based on the model of the London FORS (FORS). Fleet Operator Recognition Scheme)**
The FORS Certificate is a British document that determines the compliance with standards in the field of road safety, ecology, as well as improvements in the organisation of the transport process.
It is a voluntary accreditation scheme promoting best practice among users of commercial vehicles.

Technology

1. **The so-called last mile deliveries using vehicles powered by alternative energy sources**
Electric vehicles, hybrid vehicles, vehicles using CNG - compressed natural gas, LNG - liquefied natural gas.



2. **The use of bicycles in freight transport - cargo bicycles**
Bicycles suitable for freight transport, classic or electric ones. This solution is currently being tested by DB Schenker in Norway.
3. **The use of trams in freight transport - a cargo tram**
A cargo tram is a rail vehicle designed for cargo transport. Currently such solutions are used in Dresden and Zurich.
4. **Deliveries of small shipments on the so-called last mile with the use of drones**
The solution first used by Amazon to deliver a product purchased online (Amazon Prime Air service).
5. **Autonomous vehicles, preparation of special infrastructure**
Fully autonomous vehicles are still in the prototype phase. Currently, versions with conditional automation are available - i.e. a computer which, under certain driving conditions, controls all driving aspects. The driver is, however, obliged to react appropriately when the system notifies that it is necessary to do so.

Infrastructural solutions

1. **Determination of the location, number and size of parking spaces for vehicles performing the delivery of goods**
Unloading bays, dedicated parking envelopes for suppliers.
2. **Construction and organisation of work of municipal cargo consolidation centres - so-called mini hubs**
Municipal consolidation centres act as places from which trips to a given region of the city can be made in the rhythm of a daily cycle at specified times, with consolidated goods to all/selected recipients in a given area. This results in a reduction in the number of entries of commercial vehicles to a given region, thanks to the collection of shipments from various sources and associating similar ones. The most frequent deliveries from these locations are made in the city centre at short distances with environmentally friendly vehicles - cargo bikes, electric trucks.
3. **Multi-functional lanes**
Multifunctional lanes - lanes used by buses, commercial and passenger vehicles, depending on the messages appearing on the electronic boards with a variable content (e.g. depending on the time of day, traffic volume), e.g. in Barcelona on multi-lane roads, extreme Lanes are used for different purposes depending on the time of day: • 8:00 am - 10:00 am road traffic or bus traffic, • 10:00 am - 5:00 pm delivery and temporary stop, • 17:00 - 20:00 road traffic or bus traffic, • 8:00 pm - 8:00 am inhabitants parking.
4. **Unloading zones at the City Transport Company stops**
The use of the existing City Transport Company infrastructure (bus and tram stops) with the view to facilitating the deliveries.
5. **Urban parcel machines - financed from the city budget and available for entrepreneurs**
Introduction of devices with access for various operators in properties, in blocks of flats, closed housing estates. Operating on principles similar to InPost parcel machines; however, the city would be their owner and manager.
6. **Mobile parcel machines**
Urban parcel machines with the possibility of changing their location, depending on the demand.

Services

1. **Cargo sharing**
A system for the sharing of commercial vehicles made available by external fleet operators.
2. **Cargo pooling**
The system sharing cars made available by others users/owners of commercial vehicles.
3. **Silver economy**
Logistics solutions for the elderly - Adapting deliveries to future trends in logistics services related to the ageing population. New added value for the so-called last mile services, e.g. home delivery of groceries, health surveillance.
4. **Night deliveries**
Night time deliveries, the need for delivery vehicles and transshipment infrastructure to meet specific noise emission standards.

Energy



1. **Urban clean transport zones**
Definition of urban clean transport zone operating conditions
2. **Urban policies for the development of alternative fuel infrastructure**
Creation of a urban policy framework for the development of alternative fuel infrastructure with a manner of its implementation
3. **Infrastructure for vehicles using alternative fuels**
Definition of the principles for the development and operation of the infrastructure for using alternative energy sources in urban transport (e.g. location of charging stations)

New technologies,

1. **Management of the availability of unloading spaces by means of a sensory network**
Wireless sensor networks consist of groups of distributed, autonomous devices with the possibility of receiving and transmitting information, and are integrated with applications on smartphones.
2. **Automatic vehicle identification systems**
Such a system consists of cameras recognising the number plates of commercial vehicles and automatically charging e.g. fees for the entrance to the city centre.
3. **Electronic platform combining the demand and supply of transport services in the city**
A solution resembling a freight exchange dedicated to the city, where users could both report a need for transport or free rides and look for the available loading spaces. A solution that requires sharing selected information concerning your own company (e.g. location of customers, transport volumes, etc.).
4. **Interactive city centre map for suppliers**
A map showing the traffic situation in the centre in real time (e.g. the intensity of traffic, availability of unloading spaces). This enables dynamic management of delivery routes.

14.2. Appendix 4: BMC

14.2.1. Interactive digital map for suppliers

1. Customers Segments

Who are we creating value for?

- suppliers of retail outlets,
- suppliers of service points
- institutions in the city centre

2. Value Propositions

What value do we deliver to the customer?

- current, reliable and accurate information to speed up the journey
- location data for rapid unloading

3. Channels

How do we reach our Customer Segments?

- Newsletter
- Information materials of the Poznań City Hall
- Poznań City Hall website
- Information in social media
- Meetings organised by entities involved in the promotion of urban logistics (including FQP)

4. Customer Relationships

What type of relationships do our Customer Segments expect?

- Necessity of ongoing updating of data - constant contact with service points, retail outlets and institutions



- Examination of the usefulness of information
- Promotion of the map
- Current analysis of map usefulness, including the ease of access to the map on computers and mobile devices

5. Revenue Streams

What value are our customers willing to pay for?

- Revenues from advertising

6. Key Resources

What Key Resources do our Value Propositions require?

- Funding from the project or the Poznań City Hall
- Employees developing map concepts
- Employees collecting and updating information
- Visualization personnel
- Access to the existing virtual map of Poznań

7. Key Activities

What Key Activities do our Value Propositions require?

- Checking the possibility of obtaining financing
- Development of a detailed map concept
- Consultation with GS1 Poland on the possibility of using GLN numbers
- Collection of data
- Visualisation on the website
- Informing potential users
- Updating

8. Key Partners

Who are our Key Partners

- Owners of retail outlets and service points
- Administrators of institutions
- GS1 Poland
- IT company operating the map
- Poznań City Hall

9. Cost Structure

What are the important costs inherent in our business model?

- Remuneration of staff collecting and updating data
- Remuneration of IT staff responsible for data visualisation on the map

14.2.2. Construction and organisation of work of municipal cargo consolidation centres - so-called mini hubs

1. Customers Segments

Who are we creating value for?

- Manufacturers, Suppliers
- Specific industries, e.g. home appliances
- Service providers
- Wholesalers



- stores (not chain stores)
- retail chains
- Small entrepreneurs
- City inhabitants
- City of Poznań
- Small carriers
- Transport companies
- Logistics companies
- Drivers

2. Value Propositions

What value do we deliver to the customer?

- Development of alternatively powered vehicles
- Current status of "real time" deliveries
- Improving supply to stores
- Reduction of unloading time in the hub
- Cargo consolidation
- Greater vehicle filling
- Possibility to control and organize deliveries
- Use of green vehicles
- Reduction of delivery time - delivery to hub only
- More precise delivery time of "the delivery window"
- New jobs for inhabitants
- Delivery time
- Less traffic, fumes, noise, lower costs

3. Channels

How do we reach our Customer Segments?

- Online notification
- Online contract
- Online registration
- Invoice (including e-invoice)
- phone
- Online ordering
- payments
- e-mail address
- Internet platform access for each recipient
- Contract by post
- Personally in the office
- Mobile application
- Non-cash payments
- Each hub has its own sales platform
- Communication boards
- Leaflets, industry newspapers



- Individual information
- TV advertising
- Internet platform
- Direct talks, meetings with suppliers
- Information materials
- Branded cars
- Info in the media
- Info on transport exchanges
- Whispered Marketing/Word of mouth
- Social media
- Presentations at conferences/forums
- Promotion on the city website
- Cooperation with companies from the LSP sector

4. Customer Relationships

What type of relationships do our Customer Segments expect?

- Contact via application
- Willingness to develop/support local initiatives through a hub
- 24h hotline
- Community involvement
- SMS notifications (e.g. in case of a cargo problem)
- Mailing with delivery status
- Business relations
- Discounts and promotions for the best partners
- Full online service possible
- Building a sense of cooperation for a better life in the city
- Integration meetings
- Urgent matters by telephone Hub/Store
- Internet website
- Personal relations, dedicated hotline

5. Revenue Streams

What value are our customers willing to pay for?

- Based on specific characteristics of the vehicle
- Based on specific characteristics of the product
- Customization/re-packaging
- Payment for consolidation
- From acquired orders
- Making warehouse space available
- Subscription contracts
- Unit contracts (e.g. for the number of pallets)

6. Key Resources

What Key Resources do our Value Propositions require?

- Energy security



- IT system
- Development model and strategy
- Cash desk
- Infrastructure/equipment
- "Know how" - expertise
- Staff

7. Key Activities

What Key Activities do our Value Propositions require?

- Verification of service requirements
- Cost analysis
- Obtaining building permits, etc.
- Establishing contacts with logistic operators
- Resolution of the City Council
- design of the facility
- designation of the location
- dialogue with entrepreneurs (where to create a hub)
- Development of a platform and applications
- Dialogue with inhabitants
- Establishing cooperation with companies supporting business activity (media, IT services)
- Ensuring future expansion possibilities
- Monitoring of deliveries
- Transport coordination
- Adequate distribution of deliveries to the hub
- loading windows
- Finding last mile green suppliers
- Inventing individual promotions
- Presentation of an idea, convincing the authorities and inhabitants to it
- Idea/Implementation
- The right logistics at every level
- Maintaining good customer relations
- Packaging/re-packaging
- Cargo handling and consolidation
- Complaint handling
- Hotline service
- Acceptance and handling of orders
- Platform servicing
- Loading/unloading
- Invoicing

8. Key Partners

Who are our Key Partners

- Marketing company
- Local authorities



- Municipal Transport Authority (stops)
- Last mile suppliers
- Spatial Planning/Architects
- Utility providers
- Legal office/taxes
- IT companies
- Investors

9. Cost Structure

What are the important costs inherent in our business model?

- All additional services
- Taxes
- Marketing service
- Implementation/construction of a hub
- Operating costs
- Utilities
- Employees
- Accountants' fees

14.2.3. Electronic platform combining the demand and supply of transport services in the city

1. Customers Segments

Who are we creating value for?

- Logistics service providers (carriers, forwarders)
- Recipients (production companies, distribution companies, warehouses)
- Suppliers of goods, manufacturers
- Private persons (inhabitants of the city)

2. Value Propositions

What value do we deliver to the customer?

- Real-time information on free movements/cargoes
- Flexibility, speed of service delivery
- No need to own a vehicle
- Easy access to the service
- Fewer formalities (no need to draw up contracts)
- Cargo consolidation
- Reduction of the number of vehicles entering the city, moving around the city
- Favourable impact on the environment
- Reducing pollution and other external costs
- Increased filling of vehicles (reduction of transport costs)
- Reducing the number of so-called empty mileage of commercial vehicles
- Improved delivery to final destinations
- Reduction of costs for carriers
- Reduction of delivery time
- Reduction in the price of transport/transport for occasional customers



- Broadening of services offered by transport companies
- Possibility to offer transport by individual persons with a commercial vehicle
- Faster exchange of information

3. Channels

How do we reach our Customer Segments?

- The Internet (advertisements on websites, Facebook and in other social media)
- Hotline
- Industry conferences
- Publicity from the city
- Emailing to companies
- Direct talks with the biggest players
- Billboard
- Trade fair stands at industry trade fairs
- Sponsorship of industry events
- Advertising on television and in the radio - to individual customers

4. Customer Relationships

What type of relationships do our Customer Segments expect?

- Automated process via the Internet platform
- Business relations
- Confidentiality of data
- Close cooperation
- Closed group of proven partners
- Clear relationships through direct contact (meetings)
- Telephone or e-mail contact
- Social media (instant messengers)
- Contact through the platform
- Tracking of shipment status

5. Revenue Streams

What value are our customers willing to pay for?

- Monthly, quarterly, annual subscription, etc.
- Payment on transactions
- Payment for the consolidation of transport operations
- From acquired orders

6. Key Resources

What Key Resources do our Value Propositions require?

- IT service (support and development of an IT system and a mobile application)
- Servers
- Hotline and website support
- Legal services
- Accounting service
- Marketing service

7. Key Activities



What Key Activities do our Value Propositions require?

- Platform management
- Customer service through the hotline, complaints centre, reports, etc.
- Marketing activities
- Establishing contacts with interested players
- Definition of clear rules of cooperation, responsibility,
- Defining a clear and fair settlement model
- Drawing up the contents of a business contract
- Ensuring consistency between the different entities in the supply chain (each of the entities being responsible for a different region)
- Acquiring suppliers, wholesalers, sellers who want to cooperate on the platform
- Developing an application, creating a website
- Hiring people to operate such a platform
- Acquisition of co-financing of the "Business Incubator" type
- Carrying out an advertising campaign explaining the activity
- Attracting an investor
- Authorisation of non-cash payments
- Negotiating an attractive rate for wireless LTE Internet access
- Ensuring lower rates for the carriage of goods

8. Key Partners

Who are our Key Partners

- The city
- IT solution provider
- Marketing and accounting companies,
- Lawyers
- Carsharing? (as a partner)
- Distribution Centres
- inhabitants
- Retailers, discount retailers, wholesalers
- IT companies plus telephone networks
- Logistic entities

9. Cost Structure

What are the important costs inherent in our business model?

- Cost of construction of the tool
- Ongoing platform support
- Remuneration costs for the platform management team
- Marketing campaigns
- Accounting service
- Legal costs
- Employment of workers



14.2.4. The so-called last mile deliveries using vehicles powered by alternative energy sources

1. Customers Segments

Who are we creating value for?

- Suppliers of retail outlets,
- Suppliers of service points
- Manufacturers of electric vehicles
- Owners of service points
- Owners of retail outlets

2. Value Propositions

What value do we deliver to the customer?

- Quiet and green deliveries in the city centre
- Free movement of suppliers in the strict centre in the event of restrictions imposed by the Poznań City Hall or regulations at the central level
- Benefits related to the decision to join the scheme - establishment of an incentive scheme

3. Channels

How do we reach our Customer Segments?

- Information on the website
- Leaflets
- Meetings with suppliers (FQP)
- Meetings with manufacturers and distributors of electric vehicles

4. Customer Relationships

What type of relationships do our Customer Segments expect?

- Incentive scheme for companies providing incentives to use electric vehicles
- Communication strategy of the delivery concept to be communicated

5. Revenue Streams

What value are our customers willing to pay for?

- Image benefits
- Possible grants from EU programmes supporting electromobility solutions
- Social benefits in terms of reduced external transport costs (to be calculated under the CBA)

6. Key Resources

What Key Resources do our Value Propositions require?

- Employees developing incentive schemes
- Persons coordinating the implementation of the solution on the Poznań City Hall side
- Vehicle charging points
- Financial resources for fleet replacement by suppliers
- Financial resources for promotion

7. Key Activities

What Key Activities do our Value Propositions require?

- Convincing suppliers
- Extension of the charging points network
- Development of incentives
- Preparation of recipients for planned changes



- Obtaining financial support for the replacement of suppliers' fleets

8. Key Partners

Who are our Key Partners

- City Hall
- Companies supplying goods to points in the centre
- Manufacturers of electric cars
- Government institution providing financial support for the implementation of the solution

9. Cost Structure

What are the important costs inherent in our business model?

- Investments in the fleet on the suppliers' side
- Investment in vehicle charging points
- Coordination costs related to the implementation of the solution to be incurred by the Poznań City Hall
- Solution promotion costs
- Costs of changing the manner of deliveries to be incurred by recipients

14.2.5. Silver economy - logistics solutions created for the elderly

Service: free supply of medicines and food for the elderly

1. Customers Segments

Who are we creating value for?

- The elderly (persons that are retired, disabled, sick, lonely, with little income, immobile, with limited access to the Internet)
- Companies (which acquire a portfolio of new customers)
- Families of the elderly (they are relieved of the burden of caring for the elderly)
- The City - the elderly are voters and expect care from the authorities- the use of solutions for the elderly can be a part of the city policy

2. Value Propositions

What value do we deliver to the customer?

- Meeting basic needs quickly and free of charge (access to food and medicines)
- Products delivered to the doors of the elderly
- No need to leave home
- Encouraging the elderly to use modern solutions - reducing alienation
- Reduction of delivery costs due to the scale of deliveries
- Increasing the sense of 'usefulness' of the elderly

3. Channels

How do we reach our Customer Segments?

- Advertisements in local press,
- local television
- on the radio
- leaflets in outpatient clinics,
- posters in senior citizens' homes and places of their activity),
- leaflets and posters in pharmacies,
- Outgoing hotline (information, customer acquisition) and incoming hotline (older people can call and dispel their concerns)



- Organised information meetings, e.g. during events for the elderly or meetings, such as "the Senior Citizens Club".
- Information on the Internet to interest the younger generation in the family of the elderly who will encourage or benefit from the service on behalf of the elderly.
- Creating an easy-to-use application on the phone and therefore encouraging the elderly to use modern solutions which can help them

4. Customer Relationships

What type of relationships do our Customer Segments expect?

- Telephone contact to check the status of e.g. delivery
- Mailing - mature people also use the mailbox
- Letters for special occasions - e.g. Christmas greetings cards
- Social media

5. Revenue Streams

What value are our customers willing to pay for?

- The service is provided free of charge, the cost is borne by the city
- user costs
- Need to learn how to use e.g. smartphones, the Internet
- Need to buy access to and connect to the Internet
- Need to develop trust in new solutions (that nobody will cheat the elderly)

6. Key Resources

What Key Resources do our Value Propositions require?

- Information point and a point where a need can be submitted,
- Helpline, drivers,
- volunteers
- Delivery consolidation platform/network
- Local legislation giving preference to vehicles delivering goods to the elderly, e.g. the use of bus lanes
- Establishment of a supply network
- Specially designated vehicles and delivery workers for the elderly

7. Key Activities

What Key Activities do our Value Propositions require?

- Acceptance of applications,
- deliveries,
- recruitment of volunteers
- Establishing cooperation with companies providing transport services
- Employment of workers
- Conducting an advertising/information campaign
- Attempting to establish cooperation with the City
- Training for the elderly on the new solution

8. Key Partners

Who are our Key Partners

- Pharmacies,
- grocery stores,
- carsharing,
- city bike,



- city scooter,
- voluntary associations
- The city
- Settlement councils
- Senior citizen clubs
- Logistics companies
- inhabitants
- Associations for the elderly

9. Cost Structure

What are the important costs inherent in our business model?

- Promotion costs
- Hotline
- Operations service
- Compensation of employees
- Tax levies
- External costs, e.g. financial and legal services
- Promotion costs
- Implementation and maintenance costs of the application
- Training costs for the elderly

14.2.6. Low emission zones

1. Customers Segments

Who are we creating value for?

- inhabitants of city centres
- Drivers of passenger cars and heavy goods vehicles
- Cyclists
- Pedestrians
- Tourists
- Municipal services
- Companies operating in the city centre

2. Value Propositions

What value do we deliver to the customer?

- More space for pedestrians, city bikes and green cars
- Environmental protection
- Less noise
- Increased safety
- Improved air quality
- Reduced street congestion
- Free space for recreation areas (greenery)
- Proceeds to the City from fees for entering such a zone
- More green cars (which can enter this zone)
- Improving the quality of life



- Releasing streets, e.g. for restaurant and beer gardens
- Increased safety in such a zone
- Encouraging people to use bicycles, clean transport

3. Channels

How do we reach our Customer Segments?

- Internet
- Hotline
- Local television
- Appropriate zone marking
- Billboard
- Public campaign
- Dialogue with the inhabitants of the whole city (not only inhabitants of the zone)
- Dialogue with companies based in the zone
- Internet, local television, press
- Public consultation
- Leaflets for inhabitants informing about changes
- Posters on advertising poles, in public centres, in public transport means
- Poznań Contact Office- city information

4. Customer Relationships

What type of relationships do our Customer Segments expect?

- Building relationships with users of the zone through Public Consultations
- Listening to all arguments for and against the implementation of such a zone
- Participation of all interested persons in shaping such a zone
- Possibility to stage the implementation of such a zone (e.g. checking if such a zone is ok at the first stage, and then possible full implementation or modifications)
- Training of Poznań Contact Office employees so that they can provide basic information about the clean transport zone

5. Revenue Streams

What value are our customers willing to pay for?

- Fees for entering the zero-emission zone for vehicles that do not meet the standards for the city budget (use of fee revenues for other purposes important for the city)
- Subsidies for green vehicles (e.g. from the city budget or the state budget)
- Restrictions on the possibility of moving around the centre by cars which are not allowed to enter such a zone

6. Key Resources

What Key Resources do our Value Propositions require?

- Designations
- Hotline
- Website
- Appropriate resolution of the City Council
- Appropriately conducted public consultations (not only with the inhabitants of the zone, but also with the inhabitants of the whole city)
- Relevant State Laws
- Appropriate land that is suitable for the introduction of such a zone



- Ensuring that as many inhabitants as possible can enter such a zone (e.g. by means of eco-friendly car-sharing, scooter-sharing, bike-sharing, developed public transport (e.g. electric trams or buses).
- Analyses of specialists concerning the legitimacy of implementation of such a zone

7. Key Activities

What Key Activities do our Value Propositions require?

- Promotion of the concept
- Building public awareness
- Operation of the hotline, website, payment method
- Changing the city policy
- Changing the road layout
- Appropriate designation
- Conducting the legislative procedure
- Carrying out an awareness-raising campaign
- Conducting a public consultation
- Construction of charging stations for electric, hydrogen and natural gas vehicles

8. Key Partners

Who are our Key Partners

- Next bike
- Cargo sharing
- City scooter
- Investors of charging stations for electric, hydrogen and natural gas vehicles
- Inhabitants
- City authorities
- Economic operators within the zone
- Companies involved in the design of such a zone
- Zone Controllers

9. Cost Structure

What are the important costs inherent in our business model?

- Promotional and information campaign
- New plantings
- Social costs
- Costs of zone marking
- Taxes
- Employment of a team responsible for the implementation and maintenance of such a zone

14.2.7. Unloading bays

1. Customers Segments

Who are we creating value for?

- Inhabitants
- Suppliers
- Entrepreneurs
- Couriers
- Road users (pedestrians, cyclists)



- Children

2. Value Propositions

What value do we deliver to the customer?

- Safe parking during loading/unloading
- Reducing hazardous situations - improving the safety of road users
- Ordering of the parking situation in the city centre
- Reducing the number of interventions of municipal police
- Making space available to inhabitants, e.g. pavement
- In the case of so-called intelligent loading bays, the possibility to plan the occupation of the bay and monitor its status in real time.
- Adapting the number of spaces to the demand

3. Channels

How do we reach our Customer Segments?

- Information campaign
- Information in the local press, television and on local websites
- Social media

4. Customer Relationships

What type of relationships do our Customer Segments expect?

- Possibility of direct contact at the Municipal Roads Authority point
- Email and telephone communication in case of doubt
- Submission of proposals via an online platform (e.g. by means of an electronic signature)

5. Revenue Streams

What value are our customers willing to pay for?

- Proceeds from parking in designated bays - monthly, annual subscription, etc.
- Necessity to cover longer distances on foot with a pallet truck at the distance between the bay and the store

6. Key Resources

What Key Resources do our Value Propositions require?

- Ensuring service and coordination of issuing permits for parking in the area of the city
- Accounting coordination
- Municipal police

7. Key Activities

What Key Activities do our Value Propositions require?

- Submission of an application to the Municipal Roads Authority
- Verification of the possibility of designating a loading bay on a given street
- Physical designation of public spaces for new loading bays and possible installation of sensors to monitor the bay occupancy.

8. Key Partners

Who are our Key Partners



- Municipal Roads Authority
- Entrepreneurs operating in the city centre
- Transport Companies

9. Cost structure

What are the important costs inherent in our business model?

- Cost of painting a new loading bay
- Cost of installation of special sensors monitoring the occupancy of loading bays
- Cost of creating or adopting an existing application or website that monitors the occupancy of loading bays and offering the possibility of booking it.
- Costs resulting from issuing authorisations to use the bay - on the part of suppliers
- Promotion costs
- Costs of project coordination
- Remuneration of employees in charge of authorisation coordination