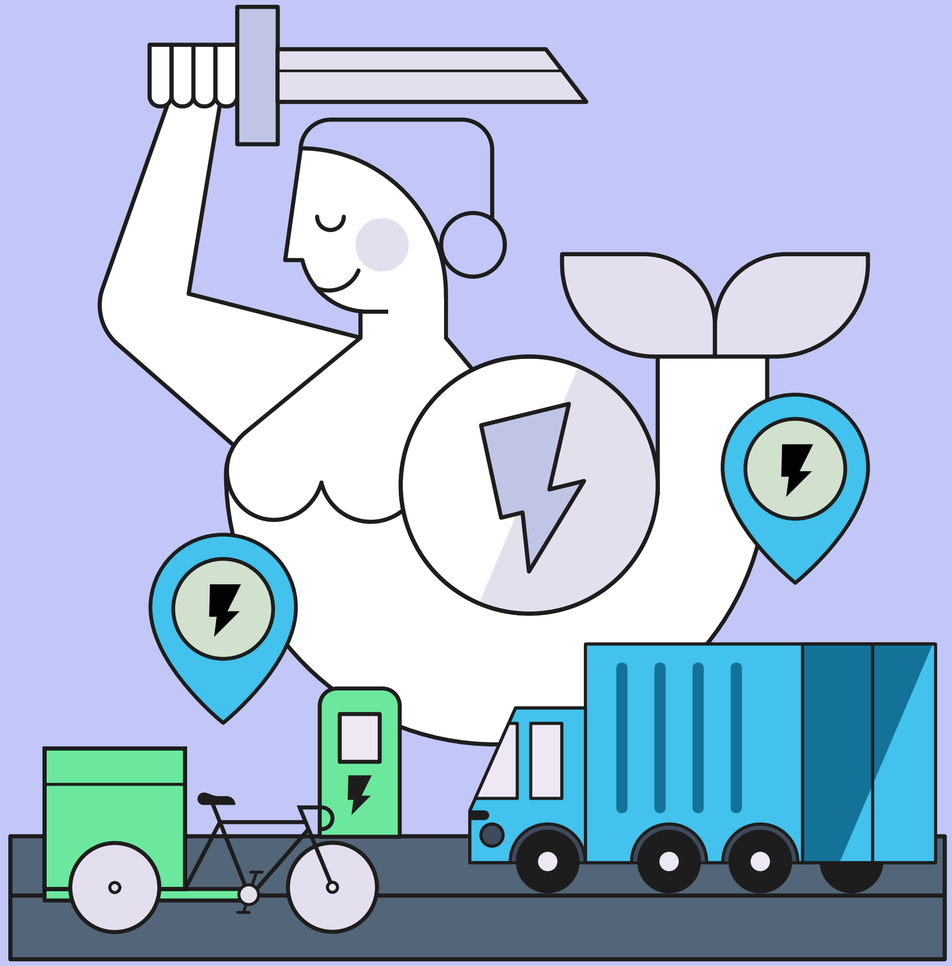
Fundacja Promocji Pojazdów Elektrycznych

UNIWERSYTET EKONOMICZNY we Wrocławiu

C40 CITIES

Warsaw Zero Emission Freight Transport

development of efficient, zero-emission city logistics



CASE STUDY

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The case study was developed as part of a project carried out by the Electric Vehicles Promotion Foundation and the Centre for Urban Logistics at Wrocław University of Economics entitled *Warsaw zero-emission freight transport: developing efficient, zero-emission urban logistics*, supported by C40 Cities.

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Fundacja Promocji Pojazdów Elektrycznych

The Electric Vehicles Promotion Foundation is a non-governmental organisation working for a climate-neutral and environmentally friendly transformation of the transport sector, mainly road transport. It is committed to developing viable and effective solutions to improve the quality of life in cities primarily by improving air performance and reducing the negative impact of the transport sector on air quality. The Foundation organises forums for dialogue and knowledge exchange between representatives of business, central and local government and NGOs, and engages in educational projects. For more information, see: www.fppe.pl

UNIWERSYTET EKONOMICZNY we Wrocławiu

The mission of the Center for City Logistics (CLM) at the Wrocław University of Economics is to develop and disseminate state-of-the-art knowledge and to expand and enrich competencies in improving the movement of people and cargo in the city by integrating the scientific community with representatives of various stakeholder groups. The CLM is an interdisciplinary, international team of experts whose aim is to support business (primarily courier, retail and e-commerce companies) and local governments in creating effective solutions to complex logistics problems.

C40 CITIES

C40 is a network of nearly 100 mayors of the world's leading cities working to deliver the urgent action needed right now to confront the climate crisis and create a future where everyone, everywhere, can thrive. Mayors of C40 cities are committed to using a science-based and people-focused approach to help the world limit global heating to 1.5°C and build healthy, equitable and resilient communities. C40 works alongside a broad coalition of representatives from labour, business, the youth climate movement and civil society to support mayors to halve emissions by 2030 and help phase out fossil use while increasing urban climate resilience and equity. One of C40's top priorities is to tackle air pollution, including working to reduce emissions from freight transport and encouraging the adoption of green logistics.

Introduction

Transport is one of the largest sources of greenhouse gas emissions and air pollutants worldwide. It is responsible for 20-25% of global CO_2 emissions. In the European Union, the transport sector generates 29% of $C0_2$ emissions, of which 60% come from passenger cars, 28% from delivery vehicles and trucks. In Poland, the situation is particularly alarming – between 2005 and 2019, CO_2 emissions from road transport almost doubled (an increase of 84%).

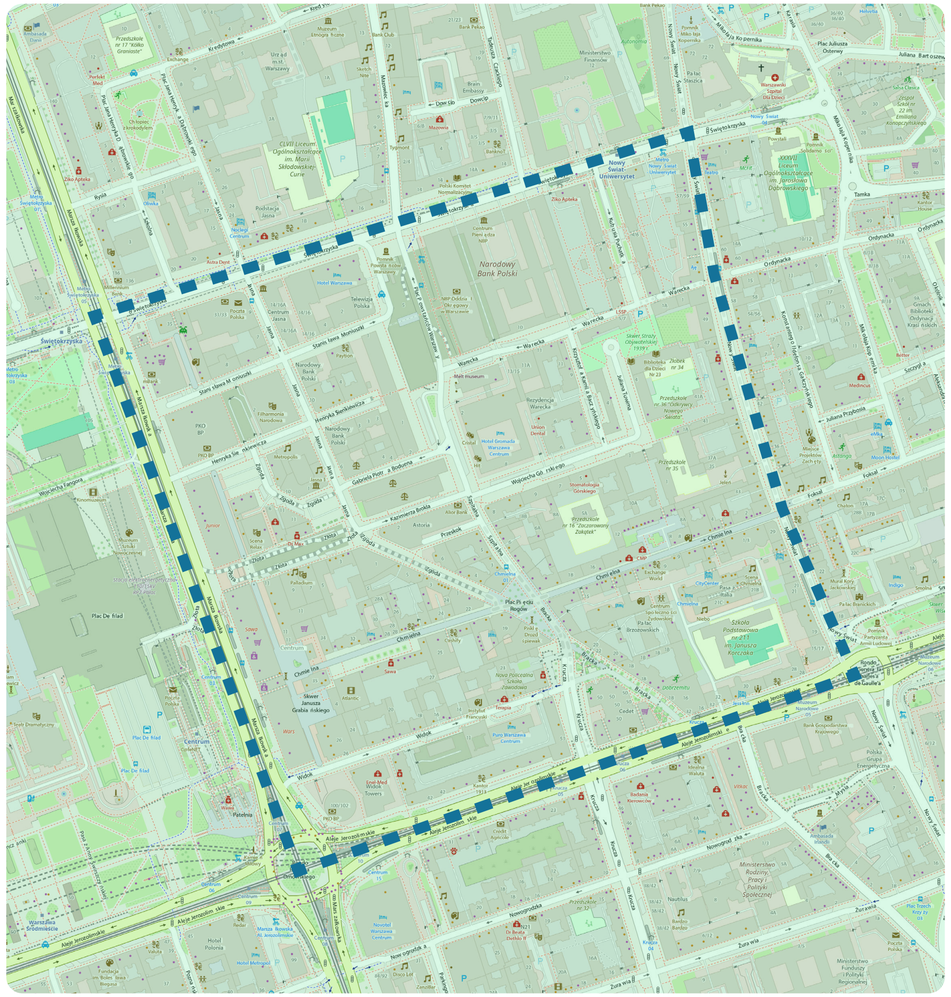
Due to high air pollution, Warsaw faces a particular challenge. Transport emissions, especially nitrogen dioxide (NO2) pollution, requires immediate action, especially in the area of urban logistics. The Low Emission Zone (in Poland called „Clean Transport Zone) introduced in July 2024 in a limited area of the city is a step in the right direction, but in its current stage of implementation (lenient entry criteria, significant number of exceptions and limited area) it is clearly insufficient. The development of sustainable technologies, the implementation of zero-emission transport and the efficient organisation of last-mile deliveries are key steps towards improving air quality and thus improving the quality of life in the city.

The aim of the study is to support a better understanding of the current situation in the area of freight transport in the city centre (the so-called New Centre of Warsaw) and to indicate optimal actions to prepare the urban freight transport sector for the implementation of zero-emission solutions and the creation of streets that are friendly to people above all.

Characteristics of the study area

The New Centre of Warsaw (NCW) was selected for the study. It is a broad project of changes - planned and already implemented - in the city centre, aiming to transform the space into a place more friendly and adapted to the needs and expectations of pedestrians and cyclists, where car traffic is to be significantly calmed down. Particular attention was focused on the selected area of the NCW, bounded by Świętokrzyska Street to the north, Nowy Świat Street to the east, Marszałkowska Street to the west and Jerozolimskie Avenue to the south. It is one of the most representative parts of Warsaw, fulfilling cultural, business, service and communication functions. It is located in the very centre of the city, making it both an attractive place to live and one of the capital's main transport hubs. The biggest challenges in the area include: traffic jams, air pollution and noise.

Area of the research - New Centre of Warsaw



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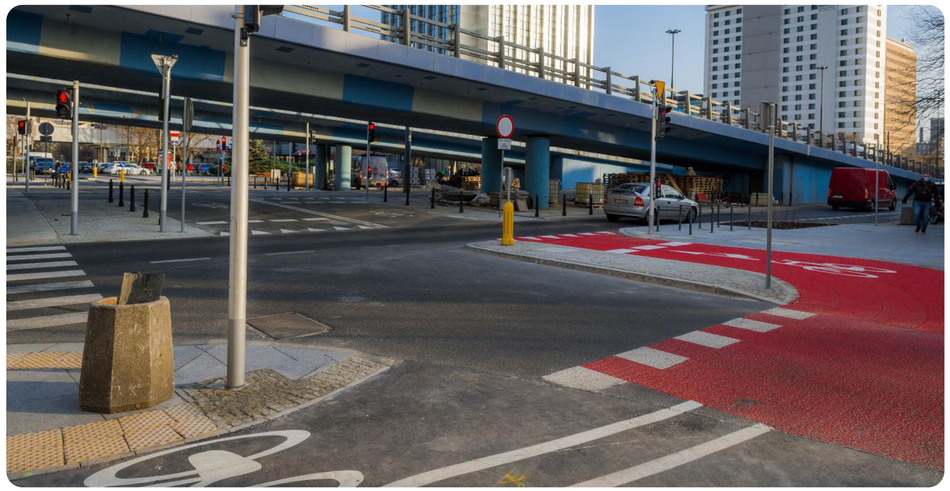

Identified stakeholders

Representatives of various organisational units of the City of Warsaw, residents, courier, transport and logistics companies, recipients (shops, restaurants, service institutions), e-platforms and food distributors.

Research methods

The research process consisted of nine key stages. In the first stage, available reports and completed projects were analysed. In the subsequent ones, two expert panels were conducted (at the beginning and at the end of the project) with experts representing universities from all over the world, local governments and NGOs.

The team conducted quantitative research with recipients of deliveries (shops, restaurants, service institutions) in the NCW using the CAPI method (Computer Assisted Personal Interviews; N=100) and with residents using the CATI method (Computer Assisted Telephone Interviews; N=100). The researchers hosted three in-person focus groups with representatives of courier companies and businesses located in the NCW (shops, restaurants, service institutes). Finally, researchers hosted four workshops - two with Warsaw government representatives and two with different groups of urban logistics stakeholders from the study area (residents, consumers, suppliers, local government).

During the project, the research team met regularly with representatives of C40 Cities and the City of Warsaw, allowing for ongoing consultation and the adaptation of activities to the needs and expectations of both parties.

Identified challenges for city logistics in the NCW

- Large dispersion of freight transport tasks between different organisational units in the City of Warsaw.
- Fragmented urban freight-focussed research undertaken by the City of Warsaw, and lack of in-depth research on the NCW area.
- Challenges in organising deliveries in the NCW caused by the redevelopment of streets forming part of the NCW and the resulting restriction on the entry of delivery vehicles into the area, such as calming road traffic at the expense of more space allocated for pedestrians, including by narrowing streets, introducing limited traffic and limited parking zones, more infrastructure that is friendly to pedestrians but makes it difficult to move around with a delivery vehicle, such as greenery, benches, fountains.
- A large proportion of deliveries are made outside of the regulated time windows.
- An insufficient number of unloading/loading zones which often lead to delivery vehicles blocking pavements or double parking.
- Environmental pollution in the city centre from delivery vehicles due to exhaust and noise emissions.
- Differing expectations from city logistics stakeholders regarding the organisation of deliveries in NCW.
- The need for greater stakeholder involvement in the change process.

Proposed recommendations to improve deliveries in the NCW

- Reorganise the organisational structure in the city to better coordinate city logistics activities. Numerous organizational units handle tasks associated with freight transport. However, the significant dispersion of these responsibilities has resulted in the absence of a dedicated unit to oversee and coordinate them comprehensively. Streamlining the organizational structure by designating a single individual to coordinate freight transport-related tasks could enhance the flow of information both within the organization and externally with various stakeholders.
- Develop a Sustainable Urban Logistics Plan (SULP).
- Establish an Urban Freight Quality Partnership in NCW. This initiative will establish a framework for collaboration among local authorities, businesses, the scientific community, non-governmental organizations, and the local population to address challenges related to freight transport in the city center. Through dialogue and cooperation among diverse stakeholder groups, the partnership aims to achieve ecological, efficient, and safe transport solutions. Proposed activities include organizing eco-friendly last-mile deliveries using cargo bikes, creating designated loading and unloading zones, optimizing delivery processes, and promoting best practices in urban logistics.
- Introduce programmes incentivising courier companies to use cargo bikes.
- Create a micro-distribution centre. Strategically located near the city center, the facility would function as a pivotal hub for redistributing cargo during the last mile of delivery using eco-friendly transport solutions, such as cargo bikes.
- Create intelligent unloading/loading zones. These systems leverage digital technologies to manage the availability of unloading spaces in real time. Equipped with sensors to monitor zone occupancy and mobile app-based reservation systems, they enable drivers to plan dynamically and avoid unnecessary circling in search of available spaces. This reduces traffic congestion and lowers exhaust emissions.
- Continuing and continuously improving communication and cooperation between City of Warsaw employees and external stakeholders.
- Change the scope of time windows for deliveries to the NCW and the organisation of deliveries with large dimensions and requiring special transport conditions.
- Improving the system for enforcing existing regulations. Infrastructure solutions must be implemented to physically prevent unauthorized vehicles from entering outside designated time windows. One effective approach is the use of retractable bollards. Ideally, these bollards would be supplemented with cameras capable of reading vehicle license plates or special passes, enabling flexibility for courier and delivery companies that may use different vehicles for deliveries within the area.
- Educate and raise awareness among various stakeholder groups about sustainable delivery in the NCW and the changes being implemented.

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