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THE UNDERSTANDING OT ENVIRONMENTAL AND SOCIAL BENEFITS OF "CAR-FREE" PROJECTS BY COMMON PUBLIC — CASE STUDY OF OPOLE, POLAND

Introduction

In 1998, global car production was 53 million units, in 2000 — 58.4 million units, on the eve of the global financial and economic crisis in 2007 — 73.3 million units. In 2009, it decreased by 12.4 % compared to the previous year and amounted to 61.8 million units. In 2010, the global automotive industry began to emerge from the global recession and car production increased by 25.8 % compared to 2009 and reached 77.8 million units. World car production in 2014 amounted to 89.7 million units, which is 2.6 % more than in 2013 and is 45.2 % higher than in 2009. As of 2019 the total number of produced cars has overcome 90 million units, including over 67 million of passenger cars and 27 million light commercial cars. Analyzing the current state of the global car market it should be noted that the geographical situation is significantly different depending on the region of the planet. China has been the world leader in motor vehicle production since 2010 (28.2 % of world production in 2019), outstripping of American, Japanese and European companies [1]. Being one of the most important and expensive consumer good car is also one of the most essential sources of environment destruction.

Everyday operation of cars consumes running materials, such as petroleum products, natural gas, atmospheric air, water for cooling systems of the internal combustion engine and car wash, land resources expropriated for the construction of roads, railways, airfields, pipelines, river, and seaports and other objects of transport infrastructure [2]. It is accompanied by a wide range of negative consequences for the environment, including pollution of the atmosphere and water bodies; change in the chemical composition of soils and damage to pedobiota; loss of agricultural lands and green spaces, degradation of plants; noise, electromagnetic and vibration effects; direct thermal pollution and contribution to climate change. All these effects result in various types of damage to human health and other biotic objects [3].

Another drastic issue is management of waste, originating at all stages of vehicles lifecycle, of various levels of hazard and complications on the way to utilization [4].

There are few important factors, inducing the intensity of transport impacts on the environmental and human health in the end:

• road transport is concentrated in places where people are concentrated;

• emissions from cars are delivered in the lowest, ground level of the atmosphere, which is the level of the basic living activity and breathing;

• components of car exhaust gases contain toxic components, which are further transformed in the environment into even more hazardous compounds.

Considering this fact there is a need to balance the important place of cars in a person's life with negative pressure on the biosphere growing annually.

Problem statement

Transportation, as a core component supporting the interactions and the development of socio-economic systems, has also been the object of much consideration to what extent it is sustainable. Obviously under the modern perception of sustainability it is impossible to refer conventional vehicles to the scope of sustainable activity due to the negative influence on ambient and living environment in cities, consumption of natural

resources, land use effects, accidents, traffic issues (waste of time, fuel overconsumption, stress etc.), degradation of motor activity and social connections of people. Thus, both scholars and authorities are looking for the solutions to reduce traffic at the urban areas. Different methods are used from a total ban on cars to only limitation of transport movement. The restrictions may vary by both the spatial and temporal nature or may be limited to a particular district or area. Vehicle restrictions may also vary by the time of day, day of the week, and even the season of the year. All these levels of restrictions are termed as a car-free city or in a milder form as "traffic-calmed" and "car-lite" areas. There is a variety of experience of such limitations around the world, summarized in Table 1.

Table 1

Summary information on projects of cities without cars

City	Scale	The essence of the program	Year of imple-mentation
Oslo	city center	• ban on cars from the city center; • cleaning parking spaces and build a network of cycle paths; • introduction of a cash levy for those who ride a car during rush hours	By 2019
Paris	whole city	• ban on diesel cars completely; • development of pedestrian and bicycle infrastructures; • staging real day without cars	By 2020
Hamburg	40 % of city streets	• closure of some streets for cars • development of a "green network"	By 2050
Berlin	whole city	• refurbishment of 12 motorways on the cycle highway	2017
Madrid	city center	• new pedestrian zones and an updated bus network; • 3.5 square kilometers in the city center are forbidden for cars (with further ban on all city center in the future); • launching of a full-fledged electric bicycle rental system; • limitation on the number of diesel vehicles on the roads on the days when emissions exceed the norms; • public transportation will work for free	By 2020
Milan	whole city	• free subway ticket if leave the car at home	—
Bogota	120 km roads of city	• once a week, 120 km of roads is closed to cars; • 300 km of bicycle lanes were built	Since 1974
Helsinki	whole city	• creation of an on-demand mobility system	By 2025
London	whole city and city center	• ban on diesel cars, by forbidding the sale of new diesel cars by 2040; • taxes, resulting $ 32 daily fee for using any car	2017–2040
Athens	city center and the whole city sometimes	• ban on the entry of diesel cars into the center (periodically restricts the entry of cars on diesel fuel, choosing even or odd numbers as a reason for the ban)	2016–2025
Tokyo	whole city	• ban on all diesel vehicles, except for those with exhaust gas purifiers	2000
Ponte-vedra	city center	• 300,000 square foot pedestrian zone was created in the historic city center, • banned street parking and instructed to stop cars, passing through the city; • replaced central land parking lots with underground ones; • most of the parking lots are out of town	—
Masdar	whole city	• "Emission-free city" is planned as the city without cars except electric cars and buses; • transportation of passengers and cargo is provided by the Cyber Cab system	By 2030
Chengdu Tianfu	whole city	• the small town offers possibility to reach everything in about 15 minutes	2012–2020
Zermatt	whole city	• leaving vehicles only in the neighboring town of Tesh; • own special "Swiss" electric cars; • horse-drawn transport is allowed	Already
Houten	whole city	• encourage the use of bicycles by citizens, renouncing them on any occasion to take the car; • a bypass is laid; • it is faster to go to another part of the city by bicycle than by car; • comfortable connections between bicycles and highways (tunnels)	Since 1970s

Some of the se cities have implemented this initiative as they faced difficulties in developing carinfrastructure for growing vehicles number. Virtually all these cities are tourist destinations: a car-free city is a highly attractive environment for people wishing to escape the stressful atmosphere of their home cities. Therefore, such strategy for a city may thus be appropriate for urban areas that are seeking to position themselves as a tourist destination.

Car-free days may also be triggered when pollution levels reach a certain critical point. For some cities, creating a large-scale car-free area can be a strategic decision built upon a sound analysis of the economic, social, and quality-of-life advantages — the cost of mitigating health and environmental effects of heavy transport pressure is higher than the need to rearrange the infrastructure to meet the car-free needs.

The implementation of car-free strategies is a long process and measures that restrict private vehicle movements and speeds are a basic step in this process. Shopping streets and ancient central streets are perhaps the most common examples of car-free areas. While such areas are not car-free, they do represent a potential reduction in the volume of motorized traffic and act as a safe transition to car-free zones. Areas that do not prohibit vehicles but strictly limit parking may also be considered as a part of the car-free project. The banning of all on-street parking can be another approach to the car-free city.

A visually car-free street can also help send a psychological message to everyone that children, pedestrians, cyclists, and other non-motorized users have priority. The lack of parking provision is an effective in centive to encourage residents and visitors to seek transport alternatives. From the other point, it is wise to start with car-free days — limited one-day experiment in banning motorized vehicles from street — on a week-day to demonstrate the viability of alternatives during a normal workday. The major idea is to show the people that it is possible.

Thus, we can state that there are three major constituents in the implementation of car-free strategy of any level — political will, technical and financial feasibility and population readiness. And the major issue in the way to reducing traffic in cities is not the monetary provision, but the population attitude. Since this represents a separate and insufficiently studied field of research it was decided to develop the car-free project for a city and conduct the survey among the local population. It is believed that Western European population is more environmentally aware and committed to sustainability goals. So, we have chosen the city of Opole, Western Poland as the basis for our research. The choice is conditioned by the status of the city as a tourist center, but the population is not very big. The municipal authorities have already introduced some optimization solutions into the local transport infrastructure, but it is not the car-free level. So, the **aim of the given research** was to determine how well population understand environmental impacts of transport and is it ready to change their lifestyle to less comfortable, but more efficient.

Analysis of the previous research

The question of sustainable life-style is on the agenda of many research and cultural-educational activities world-wide. The well known indices Ecological Footprint, Environmental Performance Index etc. are constantly calculated and delivered to the population via mass media and popular resources. However, the results in many cases are promising in one issue and disappointing in others. Thus, the well known research “913 people survey” involved over 900 people in the USA and Australia to a cross-generational study led by Southern Cross University to investigate how engaged citizens in both nations were regarding the environment, and just how far they were willing to go to protect the planet. A significant majority of Americans and Australians are intent on learning more about humanity’s impact on the environment, and what they can do to live a more sustainable lifestyle — 77 %, but only 42.3 % are actually doing something [5]. It especially true in terms of reducing personal comfort in favor of saving the nature — this is the thing with limiting peoples possibility to drive personal car. Moreover, the vast majority of respondents believe it is up to governments (79 %) to tackle environmental problems [5]. But it has been shown in fundamental works by Gilg et al., 2005; Marchand and Walker, 2008; Wells et al., 2008; Witt, 2012; Wai andBojei, 2015; Pappas et al., 2015, that an individual has a critical role when the success of efforts towards achieving sustainability in diverse contexts is concerned. Backhaus et al. showed that sustainability was intricately interwoven with people’s everyday choices and practices” [6].

The research works by Rae Simons (2011) in his work “Sustainable Lifestyles in a Changing Economy” mentions reduced usage of cars as one the biggest and most complicated steps in changing lifestyle [7].

The thing is that in terms of personal transport sustainable lifestyle involves not some kind of change, but rejecting of the commodity, in other words it is an element of anti-consumption — the term used by Papaoikonomou et al. and Black and

Cherrier [8; 9]. Bedford et al. show that being aware about the classic definition of sustainable life as meet basic needs with minimal use of natural resources, people are inclined to refer car to basic needs [10]. Of course, in most cases works about sustainable lifestyle deal with purchasing habits, but Rakicand Rakic show in their analytical research that most of the authors mention limitation on personal transport use as one of the core life patterns for sustainability [11].

The people's attitude to car-free city planning is diverse and the solutions implemented around the world show this. For example, Paris tried to decrease transport moving in the city by prohibiting odd and even car number in turns, but this practice wasn't supported by people. Hamburg has postponed the car-free idea under the public pressure and invests efforts into green spaces expansion [12].

Research methodology

The poll is one of the major ways to learn about social phenomena and processes. The survey method is based on a system of questions offered to the interviewee and answers which provide the necessary information.

There are two types of polls, related to the form of communication (written or oral) between respondent and interviewer: questionnaires and interviews. Each survey option represents one of the largest varieties of social and psychological communication, due to a number of conditions: the content of the questionnaire or interview (list of questions), quality of work of the interviewer or interviewer, the questionnaire or the interviewer, poll situation, the conditions of its holding, etc. A variety of subjective aspects are also of great importance.

The main stages of the survey are:

– preparatory phase — the development of a survey program;

– operational stage — the process of questioning itself;

– final (resultant) stage — processing and analysis of the received information, preparation of the report.

The most common type of survey in practice is the questionnaire. It can be group or individual. In terms of subject matter, the questionnaires are divided into questions about the facts, questions about knowledge, question about the respondent's opinion, and questions about motives. By the nature of answers, questions are divided into open, closed-ended, semi-closed-ended, question-menu, scale and dichotomous questions.

By their logical nature, questions are classified as follows:

– basic questions, the answers to which are the basis for making conclusions about the phenomena under study;

– filter questions are asked to screen out incompetents when interviewed for research problems;

– control questions are used to test the robustness, truthfulness and consistency of the answers, to determine their accuracy and sincerity;

– the questions that can help the respondent to understand the basic question correctly, to find the correct answer.

Respondents are distinguished by their level of competence:

– mass survey — the opinion of non-specialists on this or that topic;

– mass survey in cooperation with the researcher — provides informational assistance to the respondent by the interviewer in understanding the situation being analyzed;

– symptomatic survey — sufficient knowledge of the respondent of general information without a deep understanding of the goals and objectives of the research;

– expert survey — survey of specialists in the problem under study.

So, using the questionnaire method, we can gather the main mass of sociological information, but make it more authentic, it can be combined with other methods like observation and free interview, which was the case of the given research. The respondents were asked questions, but except the answers they were also asked to explain their choice and motivation for certain attitudes. The more efficient way of questioning in our opinion is to use questions of various types in order to make people think well about their answers and not loose interest to the survey. The respondents should be chosen of various social groups, but due to specific background of the research the efforts were invested in finding equal number of respondents — drivers and pedestrians. The results were subjected to quantitative statistic analysis.

Characteristics of the survey conditions

Opole is a Polish city with 126 000 residentsand together with adjacent communes, it comprises an urban agglomeration inhabited by over 262 000 people. It occupies the area of 96 km2 and is the capital of the Opolskie Voivodship situated in the south of Poland, near the border with the Czech Republic and Germany. Opole is one of the most densely populated areas in the country. Despite convenient railway and well developed public transport it also suffers from transport infrastructure problems, such as large number of cars; poorly

developed urban transport infrastructure on the outskirts of Opole; low number of quality bike paths; inefficient parking; noise and air pollution.

Thus, the particulate matter PM10 and benz-a-pyrene concentrations exceeded standards. Other pollutants are within the limits of safe concentration. The sources of emissions are local heating systems, domestic boiler rooms and stoves, road transport and fugitive dust emissions from roads and industrial areas [13].

Another important negative factor of road transport activity is noise. The area of the city, where noise exceeds permissible limits is 1,194 km^2 and it is inhabited by 11,608 people. Areas with particularly high noise pollution levels are the following street sections: Niemodlińska Street on the section from Wrocławska Street to Wojska Polskiego Street; Wrocławska Street near the intersection from Niemodlińska Street and from the intersection to Czysta Street; the intersection of Władysława Jagiełły Street at Plac Klasztorny; Nysy Łużyckiej Street from Luboszycka to Wrocławska; Stanisława Spychalskiego Street from Księdza Norberta Bonczyka to Licealna; Partyzancka Street from Wrocławskiej to Północna Street.

Accounting the environmental and social problems of the city and experience of other countries the car-free Opole project was designed. The main Project provisions are:

- to block main city centre roads for private car entry;
- to remove car parking spaces in the center;
- to convert the released roads into bicycle infrastructure and areas for landscaping and recreation;
- to reduce parking spaces in zone A and increase payment for parking space in zone B;
- to improve bike network and suburban public transport;
- to convert the old buildings in the center into multi-story underground and ground parking.

The SWOT-analysis showed that despite some drawbacks, the positive outcomes of the project are more valuable and include improving the environmental situation and economic benefits. In particular, the efficiency of the project was assessed by the change in the intensity of traffic at the studied area, which was defined in the morning, afternoon, and evening and recalculated to annual values for the project area. The calculations show that it would be possible to reduce traffic-related emissions of the major pollutants CO, NO_2, C_xH_y, Soot, SO_2, Formaldehyde, Benz(a) pyrene, greenhouse gases and decrease noise pollution proportionallyto the proposed decline in traffic intensity by reduction by over 2 million cars a year. The indirect benefits from the project implementation include added input to the public budget due to increasing usage of public transport and cost of the released territories in the city. However, it will be flattened due to the necessary expenses on public transport development, bicycle route organization, project analysis and legal substantiation. Still the major threats to the project are congestion of adjacent roads and opposition from population. The latter one was the core of the research. The work involves interviewing residents of Opole using the specially developed list of questions (Table 2).

Table 2

Structure of the survey

<table>
<tr><td colspan="4">1. Do you think that transport threatens people health in cities?</td></tr>
<tr><td rowspan="4">No — out of further questioning</td><td colspan="3">Yes — go on to further questioning</td></tr>
<tr><td colspan="3">2. Do you think that there is too much transport in the center?</td></tr>
<tr><td>No</td><td colspan="2">Yes</td></tr>
<tr><td>3. How do you feel about the perspectives to limit private transport movement in the center?
• Positive
• Negative
• Did not think about it</td><td>3. Which type of transport is excessive?
• private
• public
• there is a problem in city planning, but not in number of cars</td><td>4. How do you feel about perspectives of limitation/prohibition of transport in the center?
• Positive
• Negative
• Did not think about it</td></tr>
<tr><td></td><td>5. Are you ready to use the bike?
• Yes
• No
• Did not think about it</td><td>6. Are you ready to use only public transport?
• Yes
• No
• Did not think about it</td></tr>
<tr><td></td><td colspan="2">7. Are you ready to pay the money for entry into the center?
• Yes
• No
Did not think about it</td></tr>
</table>

The first two questions were filter questions that were asked to screen out incompetent and not interested individuals. So, if people responded negatively to the first question — no further survey was conducted, if positive — continued. Questions 3–7 were basic and related to the research topic, first and foremost to find out how people feel about this situation and whether they are ready for changes in the city's transportation infrastructure to improve the environmental situation.

The survey was based on the list of questions (table) compiled to obtain a general social opinion about the perspectives of car-free area in the center of Opole. The poll was conducted among the population of the city of Opole — 500 people of all ages. According to the level of competence of the respondents — the survey was a mass one (opinion of non-specialists on this or that topic was taken).

To the first two questions, the answer should be yes, and then the survey was conducted further. But when interviewed, 41 people answered “no” to the first question. Other people answered “yes” to the first two questions and were taken through the whole survey. The results are presented on the Fig. 1, 2.

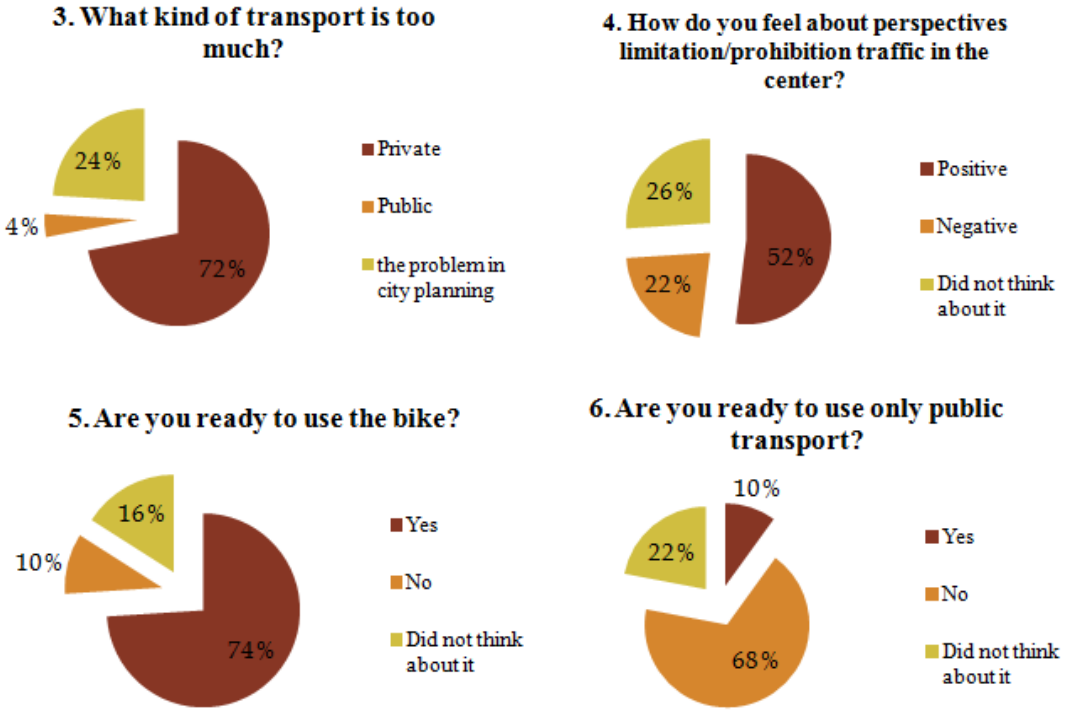

Fig. 1. Poll results for 3-6 questions

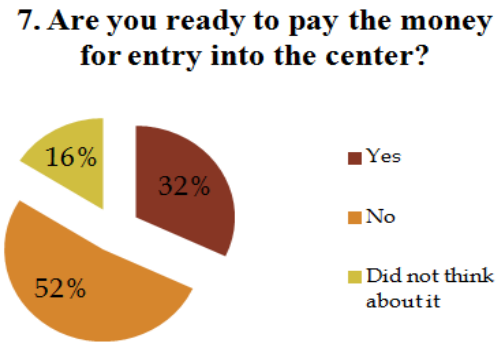

Fig. 2. Poll results for 7 question

The results of the survey show that most of the population understands the environmental situation, created by cars in the city, that is, recognize that car impact their health. And most people also agree that the major source of environmental problems in the city center is private transport.

But at the same time, the people are not yet fully prepared for the changes in the city in order to improve the situation, as about half of those surveyed are not ready to use only public transport, and are not ready to pay extra for entry to the center. And one-third of them is not ready for or didn't think

about cars banning in the center. On the other hand, about 70 % are interested in using a bicycle to move around the city, which is a very good result.

Thus, we see moderate and, in some points, weak sustainability consciousness among the population of an average European city, which is known as a tourist and educational center with high level of cultural, artistic and research activity.

The problem is probably in the firm psychological attitude that well-being is equal to active consumption of goods and service and possessing impressive property. However, we believe that mass culture has already started its transformation to a more sustainable world-view and values, and it will be enough to invest into information campaign to change the people opinion into positive one.

Recommendations for the project support

Important propositions for the support of the project by the city's residents are:

– to carry twice a year the campaign "One day without cars", when the main streets of the city will be blocked to enable using roads for hiking or biking;

– environmental awareness — hold festivals in popular places in the city, where issues about the impact of the car on the environment and human health will be presented — for children, this can be done in the form of games;

– promotion tickets — for drivers who leave the car in special parking places on the outskirts of the city, or those who use public transportation — during purchasing a ticket, can receive bonuses (or discounts) for shopping, cafes, cinemas or theaters;

– improving cycling infrastructure — small things that improve the bicycle using can also be one of the reasons to replace a car on a bicycle. Separate lanes, parking places near shops, and residential buildings, or parks, or special footrests while waiting for the green traffic light. The special bike maintenance spots (pump the wheels, basic tools) are of great value;

– posts on the internet about the impacts of cars and perspectives of the project;

– radio and TV series about the transport problems of the city and ways of their solution;

– publications in local newspapers with discussion of possible alternatives and solutions;

– distribution of information through the advertising spots and billboards;

– competition for the best city improvement proposals related to the urban transportation infrastructure and the environment

Conclusions

Opole is a city at the south of Poland that occupies the area of 96 km^2 and has 126 000 residents. It is known educational, cultural and industrial center of the region. Transportation infrastructure has both its positives and negative attributes. The positive factors are the authorities' interest in improving conditions, repairing urban roads, installing ticketing machines at bus stops and bicycle rental systems, and buying new electric buses. On the other hand, according to the research conducted, the city has excessive traffic pressure leading to air and noise pollution, as well as traffic organization problems.

The phenomena "car-free city" was analyzed as a new solution to the problem of cars in cities and the examples of "car-free cities" in various countries are given. Based on the considered examples of cities with limitations of traffic, the project of the car-free city for Opole was proposed. It involves blocking 6 main city center roads for private car entry, removing car parking spaces in the center, development of cycling network and creation of underground parking instead of old buildings. The released roads are to be converted into bike lanes, bicycle parking, and areas for landscaping and recreation.

However, the survey among local population shows that even though people understand the deteriorating effects of cars on the environment and health, they are not ready to make their life less comfortable and quit using cars in the center to improve the situation. To improve the situation the recommendations on information campaign for the support of the project were developed.

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РОЗУМІННЯ ГРОМАДСЬКІСТЮ ЕКОЛОГІЧНИХ І СОЦІАЛЬНИХ ПЕРЕВАГ ПРОЕКТІВ «БЕЗ АВТОМОБІЛІВ» - ДОСЛІДЖЕННЯ НА БАЗІ МІСТА ОПОЛЄ, ПОЛЬЩА

Актуальність теми. Міський транспорт, як відомо, є основним фактором, що погіршує якість навколишнього середовища в місті, включаючи забруднення повітря і шум, вплив на здоров'я та утворення відходів. Щоб поліпшити ситуацію, багато країн працюють над впровадженням програм по контролю і пом'якшенню наслідків, пов'язаних з транспортом. Одним з можливих рішень цієї проблеми є створення міст без автомобілів. Постановка задачі. На сьогоднішній день існує широкий спектр розроблених і реалізованих проектів для зниження інтенсивності руху всередині міст від повної заборони до обмеження і перерозподілу автомобільного транспортного потоку. Однак можливість впровадження таких підходів залежить від наявності фінансових ресурсів, технічної здійсненності та громадського сприйняття, яке може сильно варіюватися. Метою дослідження є оцінка рівня екологічної обізнаності населення щодо впливу транспорту і його готовності до змін у способі життя. Методи. Для виконання цього завдання було вирішено провести оцінку транспортних проблем в одному з європейських міст, розробити для нього стратегію міста без автомобілів і провести опитування громадської думки. Цільове місто — Ополе, адміністративний центр Південної Польщі. Адміністрація міста демонструє інтерес до поліпшення транспортної інфраструктури, але поки не реалізовано жодних планів обмеження руху. У той же час місто має цілий ряд екологічних проблем через інтенсивність транспортного потоку. Розроблений проект передбачає повну заборону транспорту у центрі міста з розвитком велосипедної інфраструктури і зелених насаджень на цій території. Ставлення людей до можливого проекту оцінювалася за допомогою спеціальної анкети. Результати опитування показали, що люди розуміють негативний вплив автомобілів на навколишнє середовище і здоров'я, але не хочуть відмовлятися від використання приватних автомобілів. Таким чином, зроблено висновок про необхідність проведення інформаційної кампанії з підтримки проекту.

Ключові слова: автомобіль; забруднення; ставлення;навколишнє середовище; стійкість; стиль життя; опитування.

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THE UNDERSTANDING OT ENVIRONMENTAL AND SOCIAL BENEFITS OF "CAR-FREE" PROJECTS BY COMMON PUBLIC — CASE STUDY OF OPOLE, POLAND

Relevance of the topic. Urban transport is known to be the major degrading factor for the quality of environment in the city, including air and noise pollution, health effects, and waste generation. To improve the situation many countries are working on introduction of programs for control and mitigation of transport related impacts. Among the possible solution of this problem is creation of car-free cities.

Problem statement. As of today there is a wide range of projects developed and implemented for the reduction of traffic inside the cities from complete ban to limitation and redistribution of road transport flow. However, the possibility of introduction of such approaches depends on the availability of financial resources, technical feasibility, and public perception, which may be very different. The aim of the research is to evaluate the level of population environmental awareness about transport impacts and their readiness for changes in lifestyle. Methods. To perform this task it was decided to conduct the assessment of transport issues in one of European cities, develop the car-free strategy for it and conduct the survey of public opinion. The target city is Opole, which is an administrative center of Southern Poland. It demonstrates interest to the improvement of transport infrastructure, but not implemented any car-free plans yet. At the same time the city experiences a range of environmental problems due to intensive transport flow. The project developed involved complete ban on transport at the city center with development of bicycle infrastructure and green spaces at the territory. The attitude of people to the possible project was evaluated, using special questionnaire. The results of survey showed that people understand the negative effects of cars on the environment and health, but they are not willing to refuse using private cars. Thus, it is concluded that there is a need to conduct an information campaign for the support of the project.

Keywords: car; pollution; environment, attitude; sustainability; lifestyle; survey.

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ПОНИМАНИЕ ОБЩЕСТВЕННОСТЬЮ ЭКОЛОГИЧЕСКИХ И СОЦИАЛЬНЫХ ПРЕИМУЩЕСТВ ПРОЕКТОВ «БЕЗ АВТОМОБИЛЕЙ» — ИССЛЕДОВАНИЕ НА БАЗЕ ГОРОДА ОПОЛЬЕ, ПОЛЬША

Актуальность темы. Городской транспорт, как известно, является основным фактором, ухудшающим качество окружающей среды в городе, включая загрязнение воздуха и шум, воздействие на здоровье и образование отходов. Чтобы улучшить ситуацию, многие страны работают над внедрением программ по контролю и смягчению последствий, связанных с транспортом. Одним из возможных решений этой проблемы является создание городов без автомобилей. Постановка задачи. На сегодняшний день существует широкий спектр разработанных и реализованных проектов для снижения интенсивности движения внутри городов от полного запрета до ограничения и перераспределения автомобильного транспортного потока. Однако возможность внедрения таких подходов зависит от наличия финансовых ресурсов, технической осуществимости и общественного восприятия, которое может значительно варьироваться. Целью исследования является оценка уровня экологической осведомленности населения относительно воздействия транспорта и его готовности к изменениям в образе жизни. Методы. Для выполнения этой задачи было решено провести оценку транспортных проблем в одном из европейских городов, разработать для него стратегию города без автомобилей и провести опрос общественного мнения. Целевой город — Ополе, административный центр Южной Польши. администрация города демонстрирует интерес к улучшению транспортной инфраструктуры, но пока не реализовано никаких планов ограничения движения. В то же время город испытывает целый ряд экологических проблем из-за интенсивного транспортного потока. Разработанный проект предусматривает полный запрет на транспорт в центре города с развитием велосипедной инфраструктуры и зеленых насаждений на этой территории. Отношение людей к возможному проекту оценивалось с помощью специальной анкеты. Результаты опроса показали, что люди понимают негативное влияние автомобилей на окружающую среду и здоровье, но не хотят отказываться от использования частных автомобилей. Таким образом, сделан вывод о необходимости проведения информационной кампании по поддержке проекта.

Ключевые слова: автомобиль; загрязнение; отношение; окружающая среда; устойчивость; стиль жизни; опрос.

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