

IMPACT STUDIES ON THE OVER-GROUND PARKING LOTS ABOVE DAMBOVITA RIVER

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ABSTRACT: *For the fluidization of the traffic jam, in an insufficient space it is necessary to find an innovating solution regarding a robotic parking lot equipped with an intelligent parking system. An impact study reached the conclusion that a robotic parking lot on a round platform along Dambovita river is necessary. Unconventional energies may be used.*

KEY WORDS: robotic parking lot, enquiry, impact, prognosis, biomass

The paper “THE NECESSITY OF DEVELOPING THE PARKING SYSTEM OF BUCHAREST” outlined the fact that due to the very large number of cars registered in the capital, transiting daily the capital, it is absolutely necessary to execute parking lots as large as possible in the shortest possible time.

Several possibilities were taken into account for the execution of the parking lot. The optimum version was chosen following a discussion with the specialized architects, building engineers and as a result of an impact study [1].

1. The analysis of the results obtained based on enquiries

Following the performed survey, certain conclusions may be identified which shall be presented below. The consent answers to each question are presented.

The study revealed that the agreed construction solution is the multilevel parking lot above Dambovita river, equipped with an intelligent actuation system.

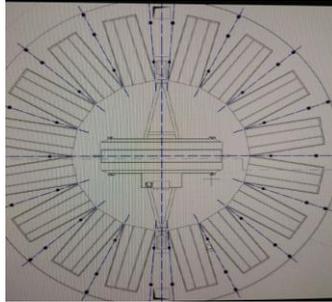


Figure 1

The possibilities of executing a parking lot above along Dambovita river	Consent (%)
Parking lot with two entries and two exits on both driving directions	23
Parking lot with only one entry and two exits	9
Multilevel parking lot equipped with an intelligent actuation system	52
Consider all the three versions equivalent as execution possibilities	11
Other models that can be executed	5

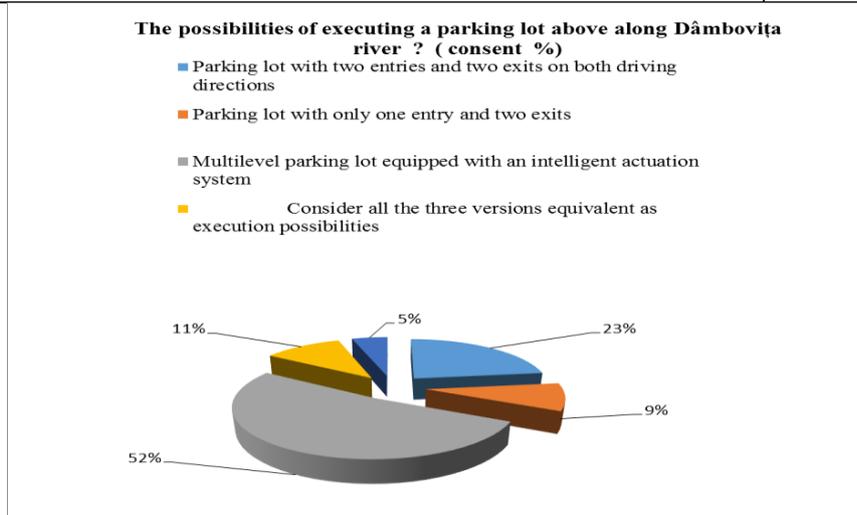


Figure 2

For the reduction of the carbon dioxide excess, do you think it is appropriate to plant on the margin of Dambovita energetic willows, representing in the same time a renewable energy source? (answers %)	
Yes	89
No	5
Neutral	6

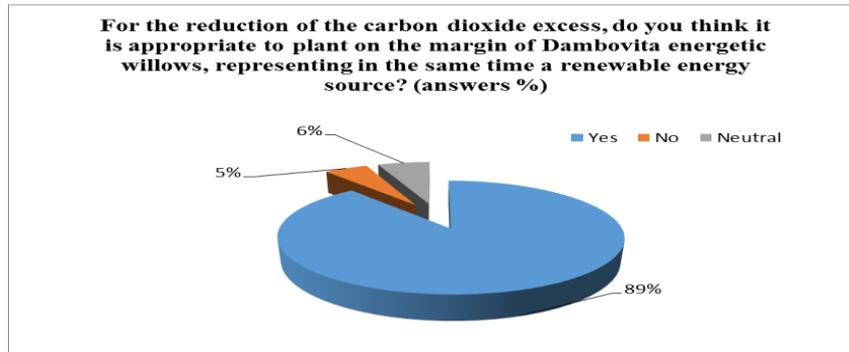


Figure 3

Do you believe that such a constructive solution of an ecological system consisting in multifunctional parks with multilevel parking lots and suspended gardens above Dambovita river contributes to the image of “Bucharest – a green capital”? (answers %)	
Yes	78
No	8
Neutral	12

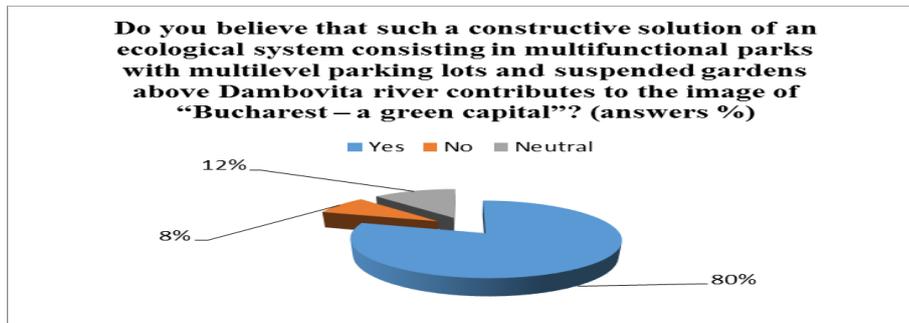


Figure 4

2. The evolution of the research in the field of study

Regarding the arrangement of Dambovita River, in 2015¹, it was specified that the architects of our capital intend to perform a rearrangement that includes parks and gardens. It was also indicated that the European Union provides funds if the City Hall executes projects. The issue of executing pedestrian bridges in the areas between Piața Națiunile Unite and Izvor and others between Ciurel and the exit from Bucharest was discussed, but there were no funds.

Also, the works at the opening Nicolae Grigorescu-Splai Dudescu should have

been completed in 2015 but they weren't even finished.

Mandatorily, in order to execute these parking lots, specialists in the field must be consulted – construction engineers and architects, as well as the staff of the City Hall of Bucharest so as to be able to evaluate the project's feasibility – the most important aspect is to obtain the necessary funds because the need for these parking lots can no longer be considered. The studies indicated that the constructive solution represented by an ecological system consisting in multifunctional parks with multilevel parking lots and suspended gardens is unique in Europe.

¹ Gândul newspaper as of 20.06.2015

3. The social impact of the project

3.1. Estimated impact

The construction period represents a phase with a limited duration and it is considered that it shall not significantly affect the landscape in the area. Landscaping arrangements are not necessary to be provided in the execution phase. Once the goal is achieved, the modification of the landscape is important and permanent on the area. The constructive solutions proposed in the project shall ensure the perfect framing of the new objective in area's landscape with a positive effect regarding the visual impact.

The architecture style used, the modern construction solutions adopted (“with green facades”) as well as the arrangement of green areas along Dambovită river, platforms shall be executed **on both margins** on which energetic willows “SALIX VIMINALIS”) will be planted, ensuring the **improvement of the urban landscape** comparing to the current situation.

The renewable energy is the energy which is collected from renewable sources, which are naturally restored over a cyclical period of time, such as sunlight, wind, rain, waves, and geothermal heat [2]

The renewable energy sources (wind energy, solar energy, hydroelectric energy, oceans energy, geothermal energy, biomass and biofuels) represent alternatives to the

fossil fuels, contributing to the reduction of the emissions of greenhouse gases, to the diversification of the energy offer and reducing the dependence on the volatile and unreliable markets of fossil fuels, especially oil and gas. [3] The European Union's legislation on the promotion of renewable sources has evolved significantly in the recent years. The framework of the future policies for the period post-2030 is currently under debate.

The power policy of EU aims to promote the development of new forms of renewable energy for a better alignment and integration of the targets regarding the climatic changes within the new market organization.

In case of electricity produced by **photovoltaic panels**, the percentage of the **solar energy** from the total energy produced on the globe increased in time and as technology grows, solar energy will increasingly be used. [3]

The current directive regarding the energy from renewable sources, adopted by the co-decision on April 23, 2009 (Directive 2009/28/CE, for the abrogation of the Directives 2001/77/CE and 2003/30/CE), set the mandatory objective that, by 2020, a share of 20% of the EU energy consumption comes from SRE. In addition, all the member states must make sure that until 2020, 10% of the fuels used in the transport field come from renewable energy sources. [4]

4. Biomass and biofuels

Currently, EU is pursuing two objectives regarding fuels, namely to generate 10% of the fuels intended for transport from SRE until 2020 [The Directive regarding the energy from renewable sources (2009/28/EC)] and to

require the fuels suppliers to reduce with 6% the intensity of greenhouse gas emissions of their fuels until 2020 [The Directive regarding the fuels quality (2009/30/CE)]. Within its communication from January 22, 2014, designated “A framework for the policy regarding the climate and energy in the period ”2020-

2030” (COM(2014)0015), the Commission suggested the renunciation on these two objectives until after 2020. This modification is related to the uncertainty regarding the way to reduce the indirect effect of the emissions related to the modification of the use of the lands related to biofuels.

In 2015, the Directive regarding the energy from renewable sources and the Directive regarding the fuels quality were reviewed so as to recognize and attenuate the negative impact on the environment which the biofuels production might have regarding the indirect modification of the use of lands and related emissions of greenhouse gas. [1].

Following the publication of the optional criteria for biomass in February 2010 (COM(2010) 0011), the Commission decided to review the measures, evaluate the success of its initial recommendations and decide whether in the future it will be necessary

5. The Social target group

This target group mainly consists in owners of vehicles transiting the capital that are interested in the execution of a parking lot in its centre part. A very important group of the vehicles’ owners is represented by the individuals working or living in the buildings found in the neighbouring areas of Splaiul Independenței (Bucharest City Hall, Politehnica University of Bucharest, UPB students housing, ICECHIM Institute, Grozavesti Heating Station, blocks in the area, etc.) and for which such an achievement might represent a special thing. In order to draw some conclusion regarding the opinions of the target groups regarding the project, an enquiry was performed, following its completion we will present certain results.

to adopt mandatory norms. The proposal of the Commission from November 2016 to review the Directive regarding the energy from renewable sources (COM(2016) 0767) includes updated sustainability criteria for the biofuels used in transport and bioliquids, as well as for solid and gas fuels from biomass used for the production of the thermal and electric energy. The proposal includes a secondary objective of 3% for advanced biofuels. While the current threshold of 7% is maintained for first generation biofuels, an obligation is introduced at the EU level that the fuel suppliers provide a certain share (6,8%) of fuels from renewable sources and with reduced emissions of carbon dioxide, as well as an extension of the scope of the EU sustainability criteria for bioenergy (so as to include the biomass and biogas used for heating and cooling and power generation). [4]

The respondents shall express their opinions regarding:

- 1) The current use of a vehicle in the capital
- 2) The reasons for the current use of a vehicle in the capital
- 3) The issues occurring when using a vehicle in the capital
- 4) The general issue of the parking lots in the capital
- 5) The existence of parking lots close to their jobs
- 6) Opinions regarding the initiative of executing a parking lot along Dambovita
- 7) The parking lot model between the two models presented
- 8) Parking coverage
- 9) Other opinions regarding the topic

CONCLUSIONS BASED ON THE PROPOSED IMPACT ANALYSES

The number of vehicles participating to the traffic in Bucharest increases every year. The circulation of the surface public transport vehicles is more and more difficult, their commercial speed does not exceed 10 km/h in certain moments of the day. The jamming of certain intersections is frequent and certain issues occur even in case of pedestrian traffic. In order to achieve a fluidization of the traffic, many parking places are necessary, leading to the appropriate parking of the vehicles.

By studying the presented examples, a conclusion might be drawn that a very useful parking lot may be executed along Dambovita river. [5]

Regarding the constructive solution for the parking lot which is the most preferred by the participants to traffic and specialists regarding the vehicle's safety, delivery speed on the road, smart application, equipment of the intelligent parking, design and environmental parking was the intelligent parking lot located on a round platform, without affecting the architecture style in the area

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