

THE VULNERABILITY OF TRANSPORT CRITICAL INFRASTRUCTURES

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Rezumat. *Infrastructurile de transport fac parte din categoria infrastructurilor critice ale societății alături de infrastructurile energetice, informatice, de alimentare cu apă, gaze etc., ale căror disfuncționalități pot genera efecte adverse în plan economic, social sau natural. Vulnerabilitatea reprezintă un concept important în analiza capacității rețelelor de transport de a asigura continuitate în operare, respectiv de a menține nivelul serviciului în limite acceptabile. Vulnerabilitatea infrastructurilor critice de transport este analizată prin intermediul consecințelor indisponibilității arcelor rețelei asupra indicelui de accesibilitate Hansen și al costului total de deplasare. Studiul de caz realizat cu ajutorul pachetului software TransCad prezintă efectele întreruperii legăturilor pe rețeaua rutieră română, rezultând o clasificare a importanței unor legături în condițiile fluxurilor actuale de trafic.*

Abstract. *Transport infrastructures belong to critical social infrastructures beside power, informational, water, gas supply infrastructures etc., whose malfunctioning could generate adverse economic, social or environmental effects. The concept vulnerability is important when investigating the ability of transport networks to provide continuity in operation and maintaining the level of service between acceptable bounds. Vulnerability of critical transport infrastructures is analyzed through the consequences of links or nodes failure to Hansen index of accessibility and users total cost. The case study realized with TransCad software investigates the Romanian road network vulnerability due to links failure, resulting in a classification of links importance for the present transport flows.*

Key words: critical infrastructures, transport networks, vulnerability, accessibility

1. Introduction

According to the European Council strategy for the identification and designation of critical infrastructures and the need for improving their protection [1], critical infrastructures represents «*those assets or parts thereof which are essential for the maintenance of critical societal functions, including the supply chain, health, safety, security, economic or social well-being of people*».

Among critical infrastructures, the EU acquis encompasses:

- Energy – Oil and gas production, refining, treatment, storage and distribution by pipelines, electricity generation and transmission;

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