



European
Commission

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TRANSPORT RESEARCH AND INNOVATION
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D I G E S T

Issue 9

June 2019

Financing Transport Infrastructure

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Source: Raicu, S., Costescu, D., Popa, M. and Rosca, M. A. (2019) Including negative externalities during transport infrastructure construction in assessment of investment projects. *European Transport Research Review*, 11:24.

Available [here](#)

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Assessing the social costs of transport infrastructure development



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The time required to implement large-scale transport infrastructure projects is substantial. However, the social costs generated during the construction phase are insufficiently included in assessment models. This study proposes a new method that aims to enhance current applied methods for investment assessment.

Transport infrastructure projects require substantial investment, and technical, financial and economic justification. Rational and reliable methods (e.g. cost benefit analysis and multi-criteria analysis) have been used to compare the advantages and disadvantages of projects, and to establish financing priorities.

Assessing investment projects for new infrastructure or to upgrade existing infrastructure highlights significant social costs. Cost benefit analysis considers externalities (e.g. safety and pollution) before and after project implementation, but not during construction. Therefore, a model is needed to better reveal the implementation time in project evaluation.

Large infrastructure projects require a long implementation time. If social costs generated during the construction phase are insufficiently included in the assessment, then an analysis may provide inaccurate conclusions in terms of the need and suitability of the project. In many cases, restriction measures (e.g. capacity reductions, traffic speed limits and safety measures) are needed in the upgrading and new capacity development projects for rail and road infrastructure. In addition, there are social costs generated by restriction measures resulting in congestion, long diversion routes, increased risk of collisions, etc., which have consequences for the local community. These consequences should be assessed in monetary terms and be included in the analysis of the economic efficiency of transport infrastructure projects.

This study presents a model to identify the most appropriate time for beginning and completing work for transport infrastructure projects, considering the social costs during three phases: the no-project reference phase; during the implementation phase; and after the completion of work.

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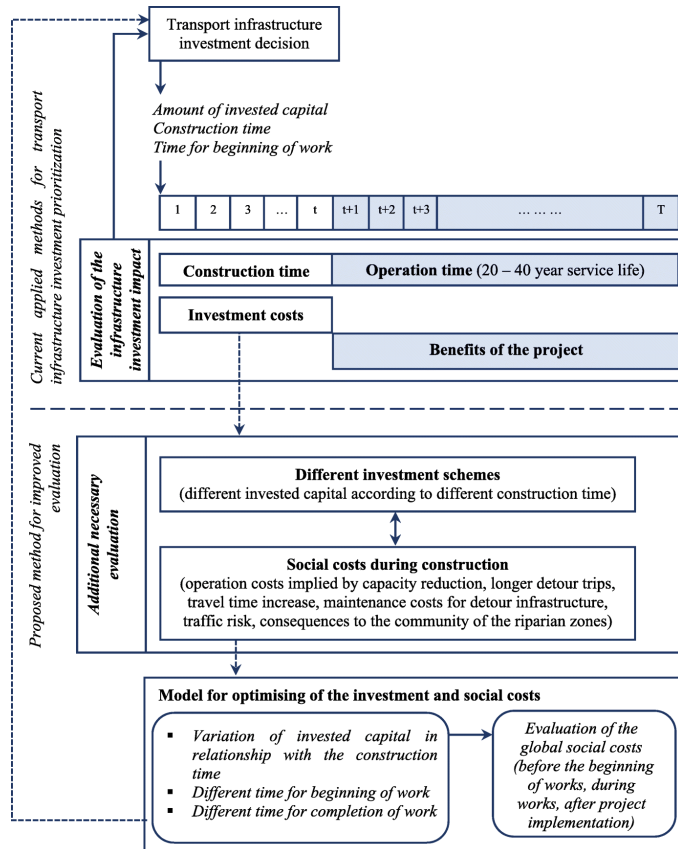
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Assessing the social costs of transport infrastructure development

The construction of transport infrastructure not only impacts transport operators and users, but also the local community through increased emissions of air pollutants and visual impact. For all traffic users, transport infrastructure work generates adverse impacts compared to a no-project situation. All the negative impacts generated during construction must be considered in an assessment. These should be considered in addition to the expected advantages after the completion of the work.

Transport infrastructure investment evaluation flowchart



The total investment amount in transport infrastructure depends on the necessary implementation time. Where there is a high social cost before and/or during the work, the recommended approach is to achieve the minimum implementation time with maximum investment to produce earlier social benefits. From technical and financial perspectives, prolonging the completion time beyond the minimum possible time could have a positive impact through a reduction in the investment needed.

Comparing the reduction in total investment due to prolonging the completion time with increasing total social-economic costs during construction, enables the optimal time for work to be estimated.

The study demonstrates to strategic decision makers that, by including social costs, planned moments of initiation and completion of a certain project are different from those determined by current assessment methods.

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