Assessment of Large Transport Infrastructure Projects: The CBA-DK Model - DTU Orbit (28/12/2018)

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This paper presents a newly developed decision support model to assess transport infrastructure projects: CBA-DK. The model combines use of conventional cost–benefit analysis to produce aggregated single point estimates, with quantitative risk analysis using Monte Carlo simulation to produce interval results. The embedded uncertainties within traditional CBA such as ex-ante based investment costs and travel time savings are of particular concern. The paper investigates these two impacts in terms of the Optimism Bias principle which is used to take account of the underestimation of construction costs and the overestimation of travel time savings. The CBA-DK methodological approach has been used to apply suitable probability distribution functions on the uncertain parameters, thus resulting in feasibility risk assessment moving from point to interval results. The proposed assessment model makes use of both deterministic and stochastic based information. Decision support as illustrated in this paper aims to provide assistance in the development and ultimately the choice of action, while accounting for the uncertainties surrounding transport appraisal schemes. The modelling framework is illustrated by the use of a case study appraising airport and runway alternatives in the capital of Greenland – Nuuk. The case study has been conducted in cooperation with the Home Rule Authorities of Greenland.

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