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Guest editorial

Planning and design of large infrastructure projects

Large infrastructure projects are being planned and designed all over the world. As these projects require state funding and have a strong spatial and environmental impact, they tend to figure prominently in all parts of the national political ball game. Though the physical results of infrastructure investments may be satisfactory, the preparation and execution of many large infrastructure projects are seriously flawed: the investment costs far exceed the initial estimate, urban and environmental integration is more problematic than anticipated, the financial returns (especially in rail projects) are less favourable than envisaged, and the transport performance fails to match the prognoses when the project was given the go-ahead.

This theme issue examines the planning and design of large infrastructure projects from various angles. What theoretical conclusions can be drawn with regard to preparation and execution? What experiences have been gleaned from the preparation and the execution of a number of specific infrastructure projects and what (serious) theoretical and empirical flaws do they highlight? How can the quality of demand forecasts and cost estimations be improved? And how can problems in the planning and design of large infrastructure projects be prevented or overcome?

In "Policy and planning for large infrastructure projects: problems, causes, cures", Bent Flyvbjerg identifies widespread misinformation on the costs, benefits, and risks of major infrastructure developments as the main problem. He explores the background causes of misinformation and concludes that it is not accidental. In addition to optimism bias, planners and promoters deliberately misrepresent the costs, benefits, and risks of their projects in order to win approval and funding. The result is the 'survival of the unfittest': often, it is not the best projects that are built, but the ones that are most misrepresented. Flyvbjerg proposes better structures of governance and better planning methods for large infrastructure projects. The key weapons in the war on deception and waste are accountability and critical probing. The driving principle is that the costs of a wrong forecast should be borne by those who made it.

Roger Vickerman, in his essay "Cost – benefit analysis and large-scale infrastructure projects: state of the art and challenges", reviews the problems associated with the use of cost – benefit analysis (CBA) in the appraisal of large infrastructure projects. He sets out the criteria for a best-practice transport CBA and shows how difficult it is for large projects to meet them. The complications include long-term forecasts, unequal competition in transport-using sectors, external influences, private finance issues, and the appraisal of network effects. CBA remains a valuable tool for the future, but the input needs to be carefully assessed. Computable general equilibrium modelling can also offer added value in the ex ante appraisal of large infrastructure projects.

Bert van Wee presents a literature review on the quality of demand forecasts and cost estimations. Van Wee concludes that the quality of transport demand and costs forecasts is often poor, especially for rail projects. This can be explained by strategic behaviour of some actors. Improvements are not limited to the methodologies of transport demand and cost estimation, but must include the question of how strategic behaviour can be limited. The impacts on cost – benefit analyses of the poor forecasts are often crucial. This illustrates the urgency of further research.

Finally, Hugo Priemus discusses the development and design of large infrastructure projects, including the ways in which the territorial impact of these projects is mitigated. In his contribution "Development and design of large infrastructure projects: disregarded alternatives and issues of spatial planning", Priemus observes that problems are often approached from the extremely narrow perspective of a single favourite solution. Many alternative solutions are dismissed out of hand or enter the picture too late. Problems concerning the mitigation of the territorial impact of large infrastructure projects are misconstrued in the beginning and lead to budget overruns at a later stage. The infrastructure track is the main object of attention, leaving area development in the back seat. In addition, the sharp focus on investment means that the operational aspects of infrastructure projects are consistently underestimated.

Priemus recommends a valid problem analysis for the future. A programme of performance specifications has to be placed at the core of infrastructure development. Spatial planning; territorial mitigation; the environment, health, and safety; and operational issues need to be dealt with right from the start. The maximum number of worthwhile alternatives must be generated, including measures to improve the efficiency of existing infrastructure capacity and the adoption of mobility charges. The generation and acknowledgement of alternatives enhances the democratic process and improves the quality of public decision making.

Collectively and individually, the essays by Flyvbjerg, Vickerman, Van Wee, and Priemus can teach politicians and planners some valuable lessons about developing and designing large infrastructure projects. If these lessons are taken to heart, taxpayers' money will be saved, important negative impacts will be avoided, and the value for money of the next generation of large infrastructure projects will increase.

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