Does transport planning have a 'dark side'?

An international review suggests many transport infrastructure promoters produce deliberately over-optimistic demand forecasts, says Danish academic Bent Flyvbjerg. **Andrew Forster** outlines the professor's argument

Two years ago the DfT published, without any fanfare, a highly critical assessment of the transport major scheme appraisal process. The report (*Procedures for dealing with optimism bias in transport planning*) argued that project promoters had to play a 'game' to try and win Government funding for their transport projects. The 'rules of the game' encouraged promoters to underestimate the cost of their scheme in an effort to make it appear more attractive than it actually was – a practice termed 'optimism bias'. After ministers had approved a project's business case, the costs would creep up. However, by then, the project would have so much political momentum that it was unlikely to be cancelled.

The author of that report has now turned his attention to an equally controversial topic: the accuracy of demand forecasts for road and rail schemes. Bent Flyvbjerg, professor of planning at Aalborg University's department of development and planning in Denmark, and colleagues Mette Holm and Søren Buhl, studied 210 projects completed between 1969 and 1998 in 14 countries in five continents. Some of the projects were from the UK. For each project they compared the opening year demand forecasts, produced by the project promoter at the time the project received funding approval, with the actual levels of demand recorded in the opening year (the authors accept that using first year demand could be controversial and devote considerable space to explaining why it is defensible).

The results, published in the peer-reviewed academic journal *Transport Reviews*, are startling. Of the 27 rail projects studied, the average overestimation of demand was 106%. In 72% of cases the forecasts were overestimated by more than two-thirds. Meanwhile, for road projects the demand forecasts were also subject to a large margin of error, though the pattern was different, with both under and overestimates. The difference between actual and forecast traffic was more than +/-20% in half the road schemes studied and larger than +/-40% in a quarter of cases.

The researchers say there is no evidence that forecasts have become more accurate over time. "If techniques and skills for arriving at accurate traffic forecasts have improved over time this does not show in the data," they remark. They express particular concern about rail forecasts. "The traffic estimates used in decision-making for rail infrastructure development are highly, systematically and significantly misleading," they remark. "Rail passenger forecasts are consistently and significantly inflated." Decision-makers should treat rail forecasts with a "pinch of salt", they say, although even this "might not be enough".

Bent Flyvbjerg, professor of planning at Aalborg University, Denmark

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Bent Flyvbjerg

Causes of error

Flyvbjerg et al are not afraid to say why they think demand forecasts are so often over-estimated. They point out that, when exaggerated passenger and revenue forecasts are combined with the habitual tendency to underestimate project costs, the result is benefit:cost ratios for schemes "that are contrived with a view to getting projects accepted and built". They say their findings cast light on the "dark side" of transport planning. "It is here we find lying planners."

Project promoters are, they say, often more concerned about getting projects built than trying to ensure that forecasts are accurate. "Accurate forecasts are often not an effective means of achieving this objective," they surmise. "Indeed, accurate forecasts may be counterproductive, whereas biased forecasts may be effective in competing for funds and securing the go-ahead for construction." They cite North American transport academic Martin Wachs, who has said: "The most effective planner is sometimes the one who can cloak advocacy in the guise of scientific or technical rationality."

Flyvbjerg et al conclude gloomily: "The consequence is a Machiavellian make-believe world of misrepresentation, which makes it extremely difficult to decide which projects deserve undertaking and which do not." They suggest the process results in many worthwhile public sector projects not proceeding because they lose out in the funding battle to schemes whose promoters have been less than honest.

The researchers suggest the striking difference in forecasting accuracy between rail and road projects could be explained by the different ways that road and rail schemes are often funded. Competition for rail funds is greater than for road, they suggest, giving promoters more incentive to present their projects in as favourable a light as possible. "One might further speculate that rail patronage will be overestimated in instances where there is a stronger political or ideological desire to see passengers shifted from road to rail," they remark. "Forecasts here become part of the political rhetoric aimed at showing voters that something is being done – or will be done – about the problems at hand." When the researchers asked project promoters to account for discrepancies between forecast and actual levels of demand, the explanation of "deliberately slanted forecasts" was actually given as a contributory factor for a quarter of the rail schemes.

"Road forecasts are also often inaccurate but they are substantially more balanced [between over and under-estimation] than rail forecasts, which indicates a higher degree of fair play in road forecasting," they say. "This is not to say that road traffic forecasts are never politically manipulated. It is to say that this appears to happen less often and less systematically for road than rail projects."

What could be done?

The researchers devote the latter part of the paper to considering what could correct the tendency for forecasting bias. This, they say, needs to be answered in two different situations: when planners want to get the forecasts right and when they do not.

If planners genuinely want to get forecasts right then they recommend using 'reference class forecasting'. This involves taking an 'outside' view of the project – that is, looking at the actual travel demand recorded on similar projects elsewhere. "[Reference class forecasting] does not try to forecast the specific uncertain events that will affect the particular project but instead places the project in a statistical distribution of outcomes from a group of reference projects." The researchers are currently working on a methodology for applying this approach to transport.

They say, however, that there are likely to be many instances in which planners are not interested in trying to ensure their forecasts are more accurate. "Here planners are part of the problem, not the solution," they remark. Though codes of ethics and professional conduct could help, they say that the literature is "replete with things planners and planning 'must' strive to do but which they do not".

"In this situation, the question is what others can do to impose on planners the checks and balances that would give planners the incentive to stop producing biased forecasts and begin to work according to their code of ethics," they say. They suggest a number of actions (some of which are already employed to an extent in the UK):

- National governments should not give grants to local and regional authorities for specific pieces of infrastructure. Instead, authorities should receive a block grant that local decision-makers choose how to spend.
- Forecasts should be subject to independent peer review.
- Reference-class forecasting should be used.
- All relevant documentation on project forecasts should be made publicly available.
- At least a third of the funding for projects should come from the private sector, without a government guarantee. The private sector would take a more critical assessment of the forecasts since their organisations would be financially hurt if they were not realised.
- Project promoters should have to share financial responsibility resulting from benefit shortfalls and cost overruns resulting from forecasting bias.

Perhaps most controversially of all, the researchers recommend professional and even criminal penalties enforced on planners and forecasters "who consistently and foreseeably produce deceptive forecasts". "An example of a professional penalty would be the exclusion from one's professional organisation if its code of ethics is violated," they say. "An example of a criminal penalty would be punishment as the result of prosecution before a court, for instance where deceptive forecasts have led to substantial mismanagement of public funds."

They conclude: "Malpractice in planning should be taken as seriously as it is in other professions. Failing to do this amounts to not taking the profession of planning seriously."

Inaccuracy in traffic forecasts **is available at www.lttonline.co.uk**