Benefits of Twinning Highway 3

Issue

Twinning construction of the remaining (approximately) 220 kilometers of Alberta Highway 3 known as Crowsnest Pass Highway, has been a concern for nearly two decades due to safety and efficiency concerns, but also concerns related to stagnating the economic benefits and market access along this corridor. The main benefits that accrue from twinning Highway 3 include not only safety improvements and time savings but also increased social/economic activities, tourism and agricultural needs.

Background

Alberta Provincial Highway 3 was designated as a core of the National Highway System in 1988, an interprovincial route connecting large population centers. Its entire length of 324 kilometers (201 miles) is a highway that transverses southern Alberta, connecting the Crowsnest Pass to the Trans-Canada Highway in Medicine Hat, and it serves as an alternative route to the Trans-Canada from Lower Mainland to the Canadian Prairies.

Highway 3 in Alberta begins in the Canadian Rockies at Crowsnest Pass, parallel to the Canadian Pacific Railway and is part of Alberta's "Export Highway" - a name given to the southern portion of Alberta's north-south trade corridor, which is a segment of the CANMEX Corridor that stretches from Alaska to Mexico.

From Fort Macleod to Taber, it is a divided highway (approximately 104 kilometers) with a speed limit of 100-110 km/h through the rural area with the remaining route as an undivided two-lane highway (approximately 220 kilometers) with a speed limit of 100 km/h.

The idea of twinning Highway 3 has been previously discussed and the costs and benefits study have been conducted by the Van Horne Institute, at the University of Calgary under the direction of Dr. Frank J. Atkins in 2002 and 2004 (revised report). The results from the final report show that the benefit-cost ratios vary from 3.03 (using 10% real discount rate) to 3.65 (using 4% real discount rate) indicating the highway 3 twinning is a worthy investment. Those benefit calculations were based on differences between real gross domestic product (GDP) forecasts with and without highway capitals for Southern Alberta region (economic activities).

In the updated 2017 report, results of the cost-benefit analysis demonstrate that the net present value of Highway 3 twinning project over twenty years, using Alberta Transportation recommended real discount rate of 4%, exceed $2.3 billion dollars. Equivalently in terms of benefit-cost ratio, the analysis shows that for each dollar spent on this project, there is $2.97 in benefits, which translates into the internal rate of return of 12.3%. Consequently, for a public infrastructure investment, these results are highly significant and demonstrate the worthiness of the twinning investment project.

The costs of Highway 3 twinning construction include the following:

(a) Direct cost of Highway 3 twinning construction;
(b) Maintenance costs;

It should be noted that the surrounding areas for construction are not all equal as there are approximately 25 kilometers from the B.C. border to the Crowsnest Pass area that are considered to be 'difficult' due to the mountainous terrain. Consequently, the costs of twinning (direct and maintenance) this part of the highway will be higher.

The estimated benefits of Highway 3 twinning construction in this analysis include the following:

(a) Travel time cost savings;
(b) Accident cost savings;
(c) Vehicle operating cost savings and emission cost savings;
(d) Other economic benefits (tourism and agricultural needs).

Summary of Analysis (In Millions of 2016 Dollars) Discount Rate: 4% over 20 years

Project Benefits	
Travel Time Cost Savings	$1,292.72
Accidental Cost Savings	$804.64
Vehicle Operating and Emission Cost Savings	$1,358.62
Tourism and Others	$94.41
Total Benefits	**$3550.39**
Projected Costs	
Direct Construction Costs	-$1,183.38
Maintenance and Repair costs	-$13.75
Total Cost	**-$1,197.13**
Net Present Value	**$2,353.26**
Benefit-Cost Ratio	**2.97**
Internal Rate of Return	**12.3%**

Source: based on author's calculations. The data were obtained from Alberta Transportation, Alberta Culture and Tourism, AMA, Alberta Treasury Board and Finance (Southern Alberta Region) and Environics Research/Economic Development Lethbridge.

In terms of benefit-cost ratio, the results show that for each dollar spent on this project there are over $2.97 in benefits. These results translate to an internal rate of return of 12.3%. Thus, for a public infrastructure investment, these results are highly significant and illustrate the worthiness of the project's investment.

The Alberta Chambers of Commerce recommends the Government of Alberta:

1. Conduct a study on the financial feasibility to assess the affordability condition with a view to twinning the remaining 220 km of Highway 3.