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Business & Labor

Megaprojects Need More Study Up Front to Avoid Cost Overruns

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By Peter Reina and William J. Angelo

More independent project appraisals are needed in order to end abuses leading to cost overruns found in 90% of megaprojects in 20 countries, according to new research published internationally July 8. Deliberate deception by project sponsors causes most cost hikes, averaging 28%, claim the Danish-led investigators.

Costs and benefits are routinely exaggerated to sell projects to policymakers, reports the research team led by Bent Flyvbjerg, a professor at Aalborg University' Dept. of Development and Planning, Aalborg. Distortions are worst in developing countries but also are widespread in the U.S. and other advanced economies, it claims. Rail projects had the worst overruns with an average of 45%, followed by tunnels and bridges at 34% and roads at 20%.

Funded by the Danish government, the researchers over the past five years gathered historic data either from project staff or from formal studies, discarding uncertain material, says Flyvbjerg. Of over 600 completed projects studied, the core 258 involved transportation. They included U.S. subway systems in Atlanta and Washington, D.C., and also the Channel Tunnel. Project sizes ranged from \$1.5 million to \$8.5 billion.

By statistical analysis, the researchers eliminated the possibility of hikes being unpredictably caused by technical snags. "If the reasons were technical, you'd have a much more random pattern," says Flyvbjerg.

And by finding similar types of overruns dating back 70 years, the team also eliminated ignorance as a cause. "Appraisal optimism," another possibility, also was ruled out. To explain the scale of overruns experienced, "forecasters would really have to be optimists," says Flyvbjerg.

The most likely motivations for cost-benefit deceptions are economic gain or political leverage, suggests the team. Economically, the cause could be corruption or the less base urge to attract investment to a particular region. But the researchers have been unable to unearth precise reasons. "You have to go out and make in-depth interviews [and] it's very difficult to get people to talk about this," says Flyvbjerg.

Flyvbjerg believes more transparency would eliminate false cost forecasting. More independent appraisals should be done before projects are approved, he says. He also believes introducing private risk capital, even to public projects, would create greater scrutiny and establishing good project organizations early will avoid the sort of huge hikes found in the Channel Tunnel.

MOVING AHEAD. Although not in the study, Boston's Central Artery/Tunnel project has been under federal fire for its steadily escalating cost. It started out as a relatively simple \$2.5-billion third harbor tunnel and depressed roadway concept in the late 1980s, championed by former Speaker of the House Thomas P. O'Neill Jr. (D-Mass.), and grew into what now is a \$14.6-billion megaproject, the largest in the U.S. Public demand for more features and soil conditions drove many cost and schedule changes.



GROWTH SPURT Central artery project is biggest in the U.S. (Photo courtesy of BigDig.com)

On July 3, the Massachusetts Turnpike Authority Board of Directors, the governing body for CA/T, voted to hire the National Academy of Engineering to evaluate CA/T management. The move comes as construction is about 85% complete and the project heads for an early 2005 finish.

Washington, D.C.-based NAE, founded in 1964, is one of four independent, non-profit academies formed by Congress to advise the government on scientific and technical matters. The academies normally provide impartial reports to executive agencies and Congress.

NAE has a \$300,000 peer-review contract that will focus on helping CA/T management complete the megaproject. "Our scope is to give them guidance for the future, not dwell on the past," says William J. Skane, spokesman for the academies. "We only have four months to do the job and are in the process of assembling a committee of global big-project experts." Skane notes that such committees typically consist of about 12 volunteers. To ensure impartiality, experts from project consultant Bechtel/Parsons Brinckerhoff and probably any expert associated with CA/T will not be involved in writing the report.

CA/T managers welcomed the news. "It's prudent to have periodic reviews," says Michael P. Lewis, CA/T project director. "Our last management review was in the

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mid-90s and we're now moving out of the construction phase and into the operations phase. The review will either validate our management procedures or find room for improvement. Either way it's a positive move for the project."

According to Lewis, CA/T management still faces several big challenges, such as getting the Intelligent Transportation System up and tested before the tunnels become operational, educating the public about the transition from an elevated highway to tunnels and coordinating all local street connections.

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