

Development of Benefit-Cost Policy in the Era of TEA-21

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Introduction - Taking the Broad View

There are often alternative ways of viewing issues – the narrow view or the broad view, the technical analysis view or the public policy view, as a literal reading of regulations or in terms of the effective interpretation of actions. And the answers can be very different depending on the view. This is the case with benefit-cost analysis in the era of TEA-21 – the US law known as “Transportation Equity Act for the Twenty-First Century” which authorizes funding for US surface transportation funding for a six year (1998 – 2003) period. Many of the same issues also apply for air transportation funding programs in the US.

In a narrow technical sense, TEA-21 itself was primarily an spending authorization bill. It did not require regulations or changes to regulations specifically concerning benefit-cost calculations. However, in a much broader sense, TEA-21 has expanded the set of benefits and impacts which are to be formally considered as factors in transportation investment decision-making. This paper examines how the consideration of transportation project benefits and costs in the US has encompassed an expanding set of factors. These various factors may come into play as direct elements of benefit-cost computation (efficiency measures), or as minimum standards of acceptable costs or benefits, or as distributional equity considerations. This paper examines these issues from two perspectives: (1) in terms of public policy, and (2) in terms of approaches to benefit-cost modeling. It also gives particular attention to the changing nature of how “economic development” impacts are considered in project assessment, both in the US and in the UK.

Policy Defining the Range of Benefits and Costs to be Considered in Decision-making

To understand the role of TEA-21, it is first worthwhile to clarify what is “benefit-cost analysis.” In the narrow technical view of some transportation economists, benefit-cost analysis is a present value calculation of the dollar valuation of system efficiency benefits minus costs. However if we go back to the textbooks, we see that the philosophy of benefit-cost analysis is fundamentally a comparison of all of the various types of benefits and costs of alternatives, considered for decision-making in a way that can consider both efficiency and distributional equity. In practice, public policy around North America and Europe has been evolving to explicitly consider the nature of externality and distributional equity in transportation investment decision-making.

We do not know of any government in North America, Europe or anywhere else that actually accepts simple benefit/cost ratios (or net benefit calculations) as the sole factor in project decisions. For instance, a new technology that would save massive time for travelers would still not be built if it had the side effect of also causing massive health or environmental damages, even if the dollar value of net benefits is positive. Similarly, a program that only helps a narrow constituency of rich neighborhoods at the expense of economically-depressed people would also be likely to be rejected by policy-makers regardless of the overall net benefit calculation. Additionally, we do not know of any government that creates a benefit/cost ratio for each and every project (in fact projects corresponding with a formal benefit cost ratio study are the exception in the United States). This is to be expected because many projects are small in scope (e.g., resurfacing, culvert repair) and formal benefit/cost studies can be quite expensive (e.g., typically over \$100,000 in the case of a multi-modal urban corridor study several miles long).

What TEA-21 did in the US was to explicitly expand the range of externality and distributional impacts to be considered in project funding decisions. It did this by setting:

- (1) ***Benefit Criteria*** -- policy concerning the types of impacts that are explicitly recognized as benefit goals to be considered in project decision-making; and the types of distributional impacts and externality impacts which are to be considered in determining project acceptability;
- (2) ***Set-asides*** – creation of programs, or continuation of ISTEA (the previous surface transportation authorization) created programs, to fund some types of projects which are deemed to be socially beneficial though they might not normally pass the traditional benefit-cost tests;
- (3) ***Targeting*** – allocation of funds for disadvantaged areas and populations where there are special needs based on equity considerations.

(source: Federal Highway Administration. *TEA-21 - Transportation Equity Act for the 21st Century: A Summary*, section on “Rebuilding America’s Infrastructure,” US Dept of Transportation Washington, DC, July 1998. Available at: <http://www.fhwa.dot.gov/tea21/suminfra.htm>)

Together, these policies effectively altered appraisal requirements for projects to be selected for federal funding. They were accompanied by a requirement to streamline the project planning process and added more flexibility to state and local decision-making, while still requiring benefit-cost assessment where appropriate. The remainder of this paper provides specific examples of these policies, and then examines how they affect the design and use of benefit-cost analysis methods in the US.

Highway Funding Benefit Criteria Recognized Under TEA-21

Transportation projects in the US are typically proposed by metropolitan planning organizations and state transportation departments, and often submitted to the federal government for funding. Metropolitan and statewide planning for projects seeking federal funding under TEA-21 are required to address seven key criteria (or planning factors) set by that legislation. Those seven criteria are:

- *Economic Vitality* – support the economic vitality of the US, the states and metropolitan areas, especially by enabling global competitiveness, productivity and efficiency;
- *Safety* – increase the safety and security of the transportation system for motorized and non-motorized users ;
- *Accessibility* – increase the accessibility and mobility options available to people and for freight;
- *Environment* – protect and enhance the environment, promote energy conservation and improve quality of life;

- *Integration* – enhance the integration and connectivity of the transportation system, across and between modes, for people and freight;
- *Efficiency*– promote efficient system management and operation (including efficient user movement and costs); and
- *Preservation*– emphasize preservation of the existing transportation system.

(Source: Federal Highway Administration. *TEA-21 - Transportation Equity Act for the 21st Century: Fact Sheets*, US Dept of Transportation Washington, DC, July 1998. “Fact Sheet – Metropolitan Planning” available at: <http://www.fhwa.dot.gov/tea21/factsheets/metropln.htm> and “Fact Sheet – Statewide Planning” available at: <http://www.fhwa.dot.gov/tea21/factsheets/statepln.htm> .)

The focus on these seven planning factors is itself a streamlining of ISTEA language, in that it consolidates what were 16 metropolitan and 23 statewide planning “factors.” The consolidation into seven factors allows for a clearer representation of the extent to which projects do or do not provide the desired types of impacts.

It is notable that two of these seven criteria – *efficiency* and *safety* – are typically covered in traditional benefit-cost analysis as forms of transportation system efficiency benefits. In theory, all of the others could be also captured in a benefit-cost analysis: *preservation* considerations could be captured in a full life cycle costing analysis, *integration* benefits could also be captured as a form of user benefit, *economic competitiveness* benefits could reflect business cost savings benefits of transportation investments, and the value of *accessibility* benefits could be measured in terms of economies of scale for businesses and/or cost savings for individuals. However, current practice does not normally capture these types of benefits in benefit-cost calculations, so TEA-21 provides a means for recognizing and funding projects that do achieve those social goals even if they do not come out on top in traditional benefit-cost calculations.

TEA-21 legislation also supported the movement towards greater consideration of local “quality of life” considerations (including social, environmental and economic development factors) by giving greater flexibility and more planning control to state and local government agencies. That was done through:

- *More State and Local Control* -- Moving responsibilities for planning of non-Interstate portions of the national highway system to the states, and increasing the involvement of local officials in non-metropolitan areas;
- *Expanding Stakeholders* -- Adding freight shippers and public transit users to the list of named stakeholders to be included in metropolitan and statewide planning processes; and
- *Streamlining the Alternatives Analysis Process*– eliminating requirements for separate reports covering environmental assessment and transportation alternatives analysis (Major Investment Study), allowing for the planning provisions of environmental and transportation regulations to be integrated.

Similarity to Highway Funding Benefit Criteria in Britain

The seven benefit criteria recognized in the US under TEA-21 has parallels in other countries. The process of applying a set of efficiency, distributional and externality criteria in project appraisal is formalized even further in the “Roads Review Appraisal” process used by the Department of the Environment, Transport and the Regions (DETR) in Britain for national investment in highways. That system, initiated in 1998, provides a process combining monetary measurement of user benefits together with a qualitative (non-monetary) scoring system for other economic development, environmental and public accessibility criteria. That process leads to an *Appraisal Summary Table (AST)* -- a one-page summary of the main economic, environmental and social impacts of a highway. Its five basic criteria (and their sub-criteria) are:

- *Economic Benefit and Cost* – including total project (scheme) costs, plus system efficiency measures of benefits on journey time, vehicle operating costs and journey time reliability, plus desired distributional impacts on regeneration (economic revitalization);
- *Safety* – including reduction in vehicle and medical costs;
- *Accessibility* – including level of access to public transport, as well as impacts on “community severance” and pedestrians;
- *Environmental Impact* – including sub-criteria for noise, local air quality, landscape, bio-diversity, heritage, water; and
- *Integration* -- with other government programs & policies.

(Source: UK Dept. of the Environment, Transport and the Regions. *Understanding the New Approach to Appraisal*, London, Sept. 1998. available at:

<http://www.detr.gov.uk/itwp/appraisal/understanding/index.htm> .)

These UK criteria are roughly parallel to the seven US criteria, except for (a) a focus on economic development in terms of regenerating depressed areas, whereas the US version also recognizes economic development in terms of improving economic competitiveness, and (b) no mention of system preservation as a distinct goal by itself. For each of the criteria and their sub-criteria, the impacts of a proposed road are expressed in terms of qualitative terms, quantitative terms and a summary assessment. Depending on the criteria, the summary assessment may be either (1) a money value, (2) a non-money quantitative indicator, or (3) a textual, qualitative ranking.

Set Aside programs for Specific Types of Social Benefits

To ensure that some projects can be justified based on social or environmental benefits, TEA-21 set aside funding for programs addressing specific types of social benefits. This included budgeting funding for:

- *Safety* - funding set-aside for construction activities to enhance road safety;
- *Recreation and Scenery* – separate funding programs for “Scenic Byways”, Recreational Trails and Historic Covered Bridge Replacement;
- *National Parks* – application of the Federal Lands Highways Program to cover transit facilities within national parks, as a means to preserve the environment and enhance visitor experiences;
- *Pedestrian and Bicycle Routes* – funding to improve facilities for bicycle and pedestrian travel;
- *National Corridors and Border Infrastructure* – funding for coordinated development of corridors of potential national significance, economic growth or international growth, including what are popularly referred to as Canada-to-Mexico “NAFTA Trade Corridors”; and
- *New Technology Development* –funding for further development of a range of technologies, from Clean Fuels to Magnetic Levitation (MAGLEV) systems.

In addition, TEA-21 and/or subsequent annual appropriation acts within the TEA-21 authorization period targeted specific communities, regions and constituencies which are economically distressed and have traditionally been under-served by the transportation system. That included:

- *Appalachian Development Highways* – funding for highways to serve economically depressed and isolated communities in the thirteen state Appalachian Region;
- *Indian Reservation Roads* – funding under the Federal Lands Highway Program;
- *Welfare-to-Work* – reverse commute services for public welfare recipients to get to workplaces in newer suburban employment centers;
- *Rural Transportation Accessibility*– funding bus services in low-density, rural areas;
- *Rural Minor Collector Roads* – permitting a portion of Surface Transportation Program funding for low volume rural roads that are nonetheless important for rural access;
- *Economic Development Highways* – funding to assess highway needs for multi-state regions with persistent unemployment (beyond the national average); and
- *Disadvantaged Business Enterprises* -- Expansion of prior programs.
- *Project specific direction* --- Sometimes called earmarks, TEA-21 required implementation of several thousand individual projects and appropriation acts under TEA-21 have added hundreds more. A significant number of these earmarks are based on local and region desires for transportation related economic development.

(Source: Federal Highway Administration. *TEA-21 - Transportation Equity Act for the 21st Century: A Summary*, section on “Rebuilding America’s Infrastructure,” US Dept of Transportation Washington, DC, July 1998. Available at: <http://www.fhwa.dot.gov/tea21/suminfra.htm>)

Procedural Guidelines for Highway Feasibility Studies.

FHWA’s current procedural guidelines for conducting highway feasibility studies were developed in the mid 1990s (the most recent update is from September 1998, shortly after TEA-21 was signed into law). They also reinforce the position that economic, social and environmental benefits receive equal footing in project decision-making. It should be noted that guidelines are inherently not a regulation. However, the FHWA does require use of these guidelines when performing Congressionally mandated feasibility studies. (Source: Federal Highway Administration, Office of Intermodal and Statewide Programs, *Procedural Guidelines for Highway Feasibility Studies*, Washington, DC, Sept. 1998. available at www.fhwa.dot.gov/hep10/corbor/feastudy.html).

Specifically, the guidelines define a project alternative as feasible if: (a) it has economic justification, (b) it has environmental or social justification and (c) it can be financed. The guidelines specify that a realistic base case alternative and other modal alternatives all be considered (in accordance with environmental regulations). They also specify that the monetary benefits should include the cost savings, the value of time savings and the value of safety benefits. Other non-monetary impacts should also be considered when possible, and “in addition to addressing the economic justification for an alternative facility or strategy, feasibility studies should, if possible, determine the degree to which such an alternative is considered preferable from an environmental or social perspective.”

The Case of Economic Development

FHWA Guidelines. One of the more interesting debates within the US and elsewhere has concerned the treatment of “economic development benefits.” The FHWA *Procedural Guidelines for Highway Feasibility Studies* (cited above) note that:

“The issue of accounting for local and regional economic development benefits has sometimes resulted in contention within the context of feasibility studies. Typically, development benefits are essentially equivalent to a transfer payment. That is, forecasted local economic growth in the vicinity of a new transportation facility is growth that would have occurred elsewhere if the transportation facility would have occurred elsewhere. In such cases, the development benefits should not be considered in the benefit-cost calculation.”

Further on, however, the guidelines, within the section on economic justification note that:

“To the extent possible, all impacts should be translated into monetary, dollar equivalent terms. Notwithstanding this, however, non-monetary, but quantifiable considerations can sometimes be an important part of the economic justification of a transportation facility or strategy. For example, construction of a transportation facility may lead to quantifiable improvement in access to an important education, medical or recreational facility. Similarly, such construction may lead to a quantifiable decrease in evacuation time required in the event of a disaster, etc.”

and

“To the extent possible, all impacts that can not be stated in dollars should be quantified in other understandable measures. Notwithstanding this, however, non-quantifiable considerations can also sometimes be an important part of the economic justification of a transportation facility or strategy. For example, construction of a transportation facility may lead to improved stability of the local economy or support a well considered locally funded comprehensive development plan, etc. “

Source: Federal Highway Administration, Office of Intermodal and Statewide Programs, *Procedural Guidelines for Highway Feasibility Studies*, Washington, DC, Sept. 1998. available at www.fhwa.dot.gov/hep10/corbor/feastudy.html).

TEA-21 Issues. The former and to some extent the middle quote represents the ‘narrow’ or ‘technical’ view as discussed at the beginning of this paper. The latter represents the ‘broad’ or ‘public policy’ view. The FHWA does not currently have economic development guidelines. If it did, it would likely have to address, either directly or indirectly two areas which are not addressed in the feasibility study guidelines, namely:

- (1) cases where economic development *is not* just a spatial transfer of activity, but actually an indicator of productivity benefits (beyond the traditional measures of user cost savings)?
- (2) cases where economic development *is* just a spatial transfer of activity, but that transfer is a socially desirable and economically efficient change?

The full scope of TEA-21 and separate FHWA or other federal transportation programs for Economic Trade Corridors, Economic Development Highways, Welfare-to-Work Transportation and Appalachian Development Highways represents the broader and public policy view. This view clearly recognizes that highways can potentially affect economic development by helping to:

- (a) bring economic activity into economically depressed areas – a form of socially desirable transfer which could also be efficient in reducing public costs of unemployment; or
- (b) bring productivity benefits associated with market scale economies, improved logistics and reduced production costs– all forms of efficiency benefits which are not fully captured by the currently-defined values of time savings for freight and service delivery.

The Welfare-to-Work Program and the Appalachian Development Highway Program are examples where spending is justified (in part) based on type “a” impacts. The Trade Corridors Program is an example where spending is justified (in part) based on the type “b” impacts. The additional productivity benefits associated with these trade corridors are, in theory, supposed to allow businesses to achieve greater productivity by expanding market access, obtaining greater reliability of incoming and outgoing freight deliveries, and enhancing global trade opportunities.

The Federal Highway Administration is currently engaging in efforts to establish better benefit-cost measures for freight transportation, including some recognition of business productivity benefits. This is intended to improve upon current methods – which generally fail to capture the full range of logistics, production scheduling and market scale economy benefits associated with certain types of commodity flows in certain types of circumstances. That work is still ongoing.

FAA Guidelines. The Federal Aviation Administration, in producing its recent guidelines on benefit-cost analysis, explicitly recognize that there can be shipper benefits and business productivity impacts beyond the values of travel time and travel cost savings currently estimated for aircraft operators. The FAA guidebook itself notes that beneficiaries of aviation improvement projects can include not only passengers and transportation service operators, but also firms that ship and receive cargo. It recognizes that the business benefits from improved air freight movements can include not only refunded shipping refunds for late deliveries and opportunity costs of cargo delayed in transit, but also spoilage of time sensitive cargo, productivity gains from restructured logistics processes, and other macroeconomic gains associated with net economic expansion. (source: *FAA Airport Benefit-Cost Analysis Guidance*, Federal Aviation Administration, Office of Aviation Policy and Plans, Federal Aviation Administration, US Dept. of Transportation, Washington, DC, December 1999. available at: <http://www.faa.gov/arp/pdf/faabca.pdf> .)

More recently, the FAA has approved the findings of a benefit-cost analysis which justified investments in an airport expansion investment project based on the savings in just-in-time production scheduling costs to manufacturers. (Source: *Benefit-Cost Analysis for Rock County Airport Expansion*, prepared by Economic Development Research Group for the Wisconsin Dept. of Transportation, 2000.)

UK Perspectives. The DETR in Britain also formally recognizes “regeneration” (economic revitalization in economically depressed areas) as a form of economic benefit in addition to traditional user benefits. However, its Roads Review Appraisal does not currently recognize economic productivity or economic trade competitiveness as additional classes of benefits (as TEA-21 does in the US). (Source: UK Dept. of the Environment, Transport and the Regions. *Understanding the New Approach to Appraisal*, London, Sept. 1998. available at: <http://www.detr.gov.uk/itwp/appraisal/understanding/index.htm> .)

A newer position paper from DETR, though, concludes that there is still a need for wider economic impact assessment beyond the calculation of direct user benefits and costs. It notes that in theoretical world where “all prices are correctly aligned to the costs of production by ... active competition among enough firms to ensure that none can dominate the market,” then the value of the direct user benefits would reflect all subsequent aspects of economic development benefits. In that case, there would be no need for wider economic impact assessment to capture

additional benefits. However, that is not the case, so there is a remaining need to consider the magnitude of any economic gains or losses and their incidence. (Source: The Standing Advisory Committee on Trunk Road Assessment, Department of the Environment, Transport and the Regions. *Transport and the Economy*. October 1999. available at: <http://www.roads.detr.gov.uk/roadnetwork/sactra/report99/index.htm> .)

Current USDOT Tools for Benefit-Cost Analysis

The preceding discussions indicate that the evolution of US policy concerning transportation project appraisal has generally been one of expanding recognition for social, environmental and economic development (or productivity) factors. This has led to an accompanying widening of benefit factors considered in government-sponsored benefit-cost appraisal methods.

Federal Level Software Development. In the US, the Federal Highway Administration is now using (or promoting use of) several benefit-cost analysis tools. They include:

- ***HERS and TERM*** -- At a national level, the Federal Highway Administration relies on the HERS (Highway Economic Requirements System) software model to estimate the magnitude of the national highway system investment needs, for the US Congress. The model estimates the costs and benefits associated with alternative options for national highway spending. In parallel, the Federal Transit Administration relies on TERM (Transit Economic Requirements Model) to assess the costs and benefits associated with national benefits and costs associated with alternative options for investments in public transportation. Both systems include three classes of benefits: (a) transportation user benefits – travel time, operating costs, other congestion reduction and mobility benefits; (b) agency benefits -- revenues and operating costs; and (c) social benefits – air quality and noise impacts. (Source: *1999 Status of the Nation's Surface Transportation: Conditions and Performance Report*, US Department of Transportation, 1999; see especially Appendices G and I. Available at: <http://www.fhwa.dot.gov/policy/1999cpr/report.htm> .)
- ***STEAM*** –The Federal Highway Administration also offers a “sketch planning” benefit-cost analysis tool to local and state agencies. Known as STEAM (Surface Transportation Efficiency Analysis Model), it is unique in that it now emphasizes the assessment of multi-modal alternatives and demand management alternatives as promulgated under TEA-21. The software is a benefit-cost analysis tool which seeks to provide an inclusive set of benefit estimates – including benefits associated with reducing energy consumption, reducing air pollution emissions, reducing congestion and improving reliability of service, and reducing accidents. It also includes a risk analysis component. (Source: *Surface Transportation Efficiency Analysis Model (STEAM)*, Federal Highway Administration, US Dept. of Transportation. Oct. 1999. Available at: <http://www.fhwa.dot.gov/steam/index.htm> .)
- ***SCALDS*** – FHWA also offers regional and local agencies a new tool for assessing the costs of alternative land use patterns, known as SCALDS (Social Cost of Alternative Land Development Scenarios). It is designed to estimate the transportation costs and other public costs associated with urban development alternatives, in accordance with

TEA-21 directives to consider the environmental, quality of life and efficiency impacts of transportation spending. The software provides information for “least cost planning” and is designed to calculate the full social cost of alternative transportation spending, including both monetary costs and non-monetary estimates of air pollution and energy consumption impacts. (Source: *Social Cost of Alternative Land Development Scenarios (SCALDS)*, Federal Highway Administration, US Dept. of Transportation. August 1999. Available at: <http://www.fhwa.dot.gov/scalds/scalds.html> .)

State Level Software Development. Some state transportation departments have also taken initiative in developing benefit-cost analysis tools which encompass economic development and/or environmental impacts at the state and sub-state levels. These include:

- **MCIBAS** – Over the 1997-1999 period, Indiana Dept. of Transportation has developed and applied a computer software system which integrates: (1) its statewide traffic forecasting model, (2) a user benefit assessment model and (3) an economic impact forecasting model. The computer software system known as the “*Major Corridor Investment-Benefit Analysis System*” (MCIBAS). The system provides estimates of the impacts of alternative highway scenarios on: (a) user benefits – in terms of user time, expense and accident cost savings, (b) statewide economic growth – in terms of additional jobs and income generated and (c) regional economic growth – in terms of shifts between regions of the state. By separating the economic growth impacts from the user impact calculations, MCIBAS provides two views of project impacts. (Source: *Major Corridor Investment-Benefit Analysis System*, prepared by Cambridge Systematics for Indiana Department of Transportation, 1999. Also summarized in: Kaliski, J., S. Smith and G. Weisbrod. “Major Corridor Investment - Benefit Analysis System” *Proceedings of the Seventh TRB Conference on the Application of Transportation Planning Methods*, Transportation Research Board, Washington, DC, 1999. Available at: <http://www.edrgroup.com/pages/pdf/MCIBAS.pdf> .)

In a world of perfect competition and information, with no distinction between state jurisdictions, the user benefit would reflect the dollar value of net income growth from productivity improvements and there would be no need to measure economic growth separately from user benefits. Underlying the MCIBAS approach was a recognition that those perfect conditions do not currently exist, so there is reason for interest in separately estimating economic growth impacts as well as estimating direct user benefits. The State of Indiana was also interested in net impacts on the state’s economy and comparing it to total project costs, while still recognizing that such an impact measure does ignore out-of-state impacts – both benefits to out-of-state users and income transfers from other states. The system has since been used for at least three major highway corridor studies in the state.

- **ABC** – The State of Wisconsin implemented its “*Airport Benefit-Cost System*” (ABC) to estimate the benefits and costs of projects in the State Airport System Plan. For individual projects, as well as packages of projects, the system distinguishes: (a) aviation system efficiency benefits – in terms of user travel time and travel expense savings, (b) statewide economic growth – in terms of statewide jobs and income, (c) local economic growth – in terms of county-wide jobs and income, and (d) fiscal impacts on revenues

collected by local and state governments. In its formal benefit-cost analysis process, the state actually uses only category “a” (user impacts) as a benefit measure, but then it allows for the addition of environmental benefits as well as business productivity benefits (including logistics, scheduling and production cost savings). (Source: *Airport Benefit-Cost (ABC) Analysis System*, prepared by Economic Development Research Group for the Wisconsin Department of Transportation, Wisconsin Department of Transportation, Bureau of Aeronautics, 2000.)

The Federal Aviation Administration recently accepted the results of the ABC system to justify the expansion of a cargo airport, based largely on just-in-time productivity benefits for industry. (Source: *Benefit-Cost Analysis for Expansion of the Rock County Airport*, Wisconsin Department of Transportation, 2000.)

Conclusion

It has long been recognized that transport projects can have significant social, environmental and economic development (revitalization or productivity) impacts. In the past, many of these impacts have been acknowledged as “externalities” and then ignored in formal benefit-cost calculations. The recent trend in public policy has clearly been towards pushing agencies to more formally those other types of impacts as an explicit part of project decision-making. In general, the evolution of public agency guidelines and approaches to project appraisal in the US reflect an attempt to include a broader set of project impacts even if they are not easily measured or reflected in traditional benefit-cost calculations. Federal policies such as TEA-21 have gone even further – to expand the set of “prescriptive” programs that allocate funds for specific social goals, modes and groups which are often not well served by the narrow benefit-cost measures of transportation system efficiency. The challenge for project appraisal is to evolve in ways that can better encompass the full set of social benefits and distributional effects by adopting a broader view of what is benefit-cost analysis. To do anything less would be to reduce the future importance of benefit-cost analysis.