

CHAPTER 10

ASSESSING SUSTAINABLE URBAN TRANSPORT

Sir Peter Hall

Transport project assessment has changed greatly over the last half century, although in different ways between one country and another. Essentially we have moved from 'predict and provide' to approaches based on public capacity to pay for investments, or social equity, or, increasingly, environmental sustainability. This has been associated with a move away from providing additional physical capacity to meet rising car ownership, underpinned by cost-benefit analysis, to analysing alternative solutions, including public transport, within a wider framework incorporating other impacts: economic, safety, environment, accessibility and integration. As this chapter shows, there has been increased interest in assessing the indirect effects of transport investment on regional and urban development and regeneration, mainly by trying to quantify effects such as the uplift in land values after the investment. And this has been associated with attempts to capture these uplifts for the public purse, on the basis that the investments have invariably been made by public agencies while the gains have gone to private investors without any conscious effort on their part.

Changing approaches to transport project assessment

The way we assess transport projects has changed quite fundamentally in the half century since 1960 – but to varying degrees, and in different ways, from one country to another. The fundamental shift, almost everywhere, is from an approach based on the principle of predict and provide – simply planning to meet predicted demand, whatever it may be – to one based on the principle of limits set by public capacity to pay for investments, or social equity, or, increasingly in recent decades, environmental sustainability. This has been associated with another fundamental shift: away from providing additional

physical capacity to meet rising car ownership. The assemblage of computer-based modelling and assessment techniques, developed by American consultants and rapidly exported to other countries and cities in the developed world – particularly to the United Kingdom – was devoted to that end. In particular, cost–benefit analysis, then in its infancy, was chiefly employed to demonstrate the predicted economic return from highway investment through time savings. Not until the end of the 1960s was this approach subjected to fundamental academic criticism from British academics, in particular Professor Peter Self, who derided it in Jeremy Bentham’s term as ‘Nonsense on Stilts’.^{1, 2} In particular, he criticised the fact that, by using wage rates, the technique reckoned savings for rich people more highly than those for poor people. And it had difficulty once it sought to move into other aspects that were inherently more difficult to evaluate in monetary terms. Particular criticism was directed at the extremely complex cost–benefit analysis employed by the Roskill Commission for the Third London Airport, which evaluated the value of a Norman church, threatened with demolition, in terms of its insurance value.

The response of policy-makers at that time, illustrated in the report of the UK Leitch Committee on trunk road assessment (1977), was to try to incorporate the monetary analysis inherent in cost-benefit analysis within a wider assessment framework that could also take account of elements that were measurable but difficult to express in monetary terms, such as noise or air quality, but also elements that were so subjective that they could not easily be quantified at all, such as the value of a landscape. Over the years that followed UK advisory committees made successive attempts to improve on this approach, culminating in the Department for Transport’s New Approach to Appraisal (NATA) of 2007, set out in the DfT website as Transport Analysis Guidance – WebTAG.³ This takes account of the following considerations:

- *economy* (Public Accounts, Transport Economic Efficiency; Business Users & Transport Providers, Transport Economic Efficiency; Consumers, Reliability, Wider Economic Impacts);
- *safety* (Accidents, Security);
- *environment* (Noise, Local Air Quality, Greenhouse Gases, Landscape, Townscape, Heritage of Historic Resources, Biodiversity, Water Environment, Physical Fitness, Journey Ambience);
- *accessibility* (Option values, Severance, Access to the Transport System);
- *integration* (Transport Interchange, Land-Use Policy, Other Government Policies).

One major reason for this fundamental change was a widespread criticism that, however modified, any approach based on cost–benefit analysis

inevitably gave disproportionate weight to time savings, which in turn favoured road schemes that relieved congestion. Almost inevitably, such schemes offered high benefit–cost ratios which put them above the bar for entry into the UK Department for Transport’s investment programme, while public transport schemes like light rail projects tended to perform poorly in comparison. By the early twenty-first century it was frequently observed that very few such schemes were approved for British cities, while in comparison all major French cities (and even smaller towns) were constructing entire urban networks.

Estimating indirect effects

One major reason for this anomaly was the difficulty of evaluating the indirect effects of transport investments in stimulating investment in regeneration of urban areas that were suffering from the cumulative effects of economic decline. A number of attempts have been made to estimate such effects, using a variety of measures ranging from the direct (land and property values) to indirect (measures of the performance of the local economy). In an early study, Peter Hall and Carmen Hass-Klau compared a number of urban transport schemes in British and German cities, and concluded that they had boosted local economic potential where that potential existed, but had done relatively little to revive economies that were suffering from more basic structural economic decline.⁴ Twenty years later, Hass-Klau and her colleagues made an in-depth study of a range of British, mainland European and American cities, concluding similarly that new light rail schemes had boosted values in cities with strong potential, like Manchester or Nottingham, but had not demonstrated a similar effect in Sheffield which had demonstrated lower economic potential.⁵

A comprehensive analysis of the indirect impacts of transport investment was made by Banister and Berechman.⁶ Using available literature, they analysed in detail the impacts of a number of major road, rail and airport project in different countries. Particularly interesting were their conclusions on the light rail line in Buffalo, an American city that suffered catastrophic industrial decline at about the time the project was being carried out: ‘the key general lesson from this study is that improved accessibility per se is neither a necessary nor sufficient condition for such a goal as CBD revitalisation. A corollary to this conclusion is that capital for transport investment must be targeted and the implications of the investment, land development, employment increase and location of service facilities must be clearly determined and enforced through complementary public policies’.⁷ Likewise, they found that the BART network in the San Francisco Bay Area had

succeeded in the aim of encouraging associated residential development, but that ironically such development had occurred more rapidly on corridors not served by the network, where other factors – such as freeway access – played a role.⁸ Summing up, they conclude: ‘the analytical and empirical evidence suggests that development impacts are not uniform and only occur where other economic conditions already favour development. These investments do not act as the catalyst for change, but they can act to reinforce a change that is already taking place (or is likely to take place).’⁹ For high-speed rail they do find an association, but they stress that this is not automatic.¹⁰ This last conclusion is underlined by a recent study from Chia-Lin Chen and Peter Hall on the economic impact of high-speed rail investment in the United Kingdom, which concludes that though there were generally positive effects on economic performance for cities that were brought within a two-hour travel radius of London, this effect was not noticed in a few places (Doncaster in South Yorkshire, Newport in South Wales), probably because their inherited economic structure was unfavourable.¹¹

These findings came to be associated with a criticism – particularly voiced in the UK – that when investments were made, as with the extension of London’s Jubilee tube line through south and east London to Stratford in 1999 (the Jubilee Line Extension, JLE), no advance provision was made to capture the big rises in land and property values that were to occur after completion. Don Riley, a property restorer in south east London, calculated that land values around the new Jubilee Line stations had increased by £13 billion, while the extension had cost taxpayers £3.5 billion to build.¹² In response, TfL (Transport for London) and the UK Department for Transport commissioned the University of Westminster’s Transport Studies Group to prepare a report into the impacts of the JLE.¹³ It found that the new line had delivered substantial benefits to London, both locally and regionally, including provision of potential for further office development at Canary Wharf which generated some 45,800 jobs. In addition to Canary Wharf, a number of other prestigious developments were in progress, principally at London Bridge, Canada Water, North Greenwich and Stratford. The scale and form of these new residential and commercial developments, the report concluded, would not have been possible without the JLE. Overall, employment in the JLE catchment areas increased from 373,000 in 1998 to 425,000 in 2000 – an increase of 15 per cent, compared with a 9 per cent increase in Greater London as a whole, which equated to an additional 32,400 jobs between 1998 and 2000, most of which were of a ‘high value, high productivity’ type. But, despite this success, the study found that the JLE had not significantly reduced unemployment in the catchment areas studied. Achieving that, the report concluded, might take much longer, because it

would require either having the appropriate skills to take advantage of the corridor's new financial and business services jobs, or by using the JLE to reach employment centres elsewhere in London (Figure 10.1).

The University of Westminster researchers found it difficult to obtain quantitative information on the relative change in residential prices in the JLE Corridor compared with suitable reference areas. This was complicated by the very rapid rise in values that had occurred between 1992 and 2002. Qualitative evidence, in the form of opinions obtained from estate agents who specialise within the JLE Corridor area, suggested that residential property



Figure 10.1 London's O2 Arena, served by a station on the Jubilee Line.
Source: Wikimedia Commons.

Table 10.1 Cumulative property market value directly attributable to the JLE by market type and distance band (December 2002).

Southwark 2002						
	Residential	Shops	Offices	Sub-Total	Completions	Total with completions
250m	£12,405,085	£294,599	£30,926	£12,730,610	£0	£12,730,610
500m	£30,293,315	£835,115	£1,165,464	£32,293,894	£0	£32,293,894
750m	£51,318,249	£2,262,650	£7,117,307	£60,698,206	£0	£60,698,206
1000m	£59,157,470	£2,705,606	£16,229,528	£78,092,604	£0	£78,092,604

Canary Wharf 2002						
	Residential	Shops	Offices	Sub-Total	Completions	Total with completions
250m	£0	£1,406,037	£59,647,803	£61,053,840	£1,778,767,437	£1,839,821,277
500m	£269,201	£1,487,223	£60,159,881	£61,916,305	£2,043,984,611	£2,105,900,916
750m	£2,750,555	£1,687,648	£62,855,841	£67,294,044	£2,043,984,611	£2,111,278,655
1000m	£5,746,230	£2,117,653	£65,448,827	£73,312,711	£2,043,984,611	£2,117,297,322

Source: Bannister and Thurstain Goodwin 2005.

values have risen particularly fast in most of the Corridor and particularly in the area south of the River Thames. Jones Lang LaSalle estimated that the total value of land within 500 metres (for commercial) and 750 metres (for residential) of Canary Wharf station had increased by between £1.82 billion and £2.84 billion between 1992 and 2002; and within 500 metres of Southwark station, by between £0.82 billion and £1.68 billion. Their best estimate of land 'uplift' attributable to the JLE in the Canary Wharf area was £2.0 billion (in the range between £0.3 billion and £2.7 billion), and in the Southwark area was £0.8 billion (in the range £0.0 billion to £1.45 billion). Jones Lang LaSalle also estimated that the total value of property had increased by £3.9 billion at Canary Wharf and by £2.0 billion at Southwark. They estimated that between £0.75 billion and £1.9 billion of this at Canary Wharf, and between £150 million and £650 million of the increase at Southwark, would not have occurred without the JLE. 'Uplift' due to the JLE is estimated towards the top of the range quoted for Canary Wharf and towards the bottom of the range quoted for Southwark.¹⁴

Banister and Thurstain-Goodwin¹⁵ analysed property price changes in depth around two JLE stations. Their key results are summarised below.

The estimated total property value increase around Southwark and Canary Wharf Stations was just under £2.2 billion, and this could be solely attributable to the impact of the JLE: it would not have occurred if the extension had not been built (though unfortunately, due to a lack of transactional data, the land value uplift could not be estimated). In essence, results for Southwark showed the greatest effect of the JLE on residential property value; it was responsible for about 75 per cent of total uplift, but overall the effect was less great than predicted. Some limitations of the data available might have accounted for this, but the proximity of the area to central London also means that accessibility was less fundamentally changed than in other JLE station catchments. Around Canary Wharf station, the attributable effect of the JLE on commercial property was much greater. This assumes that none of the completions in Canary Wharf between 1999 and 2002 would have occurred without the JLE.

Boucq¹⁶ analysed the impact of a new tramway, the T2 in the western suburbs of Paris, on residential property values. Opened in 1997, it was actually a conversion of an old railway line that had closed four years earlier. Connecting two key employment nodes at the two ends (La Défense and Issy-les-Moulineaux) it ran through a former industrial zone that was rapidly being converted to residential land use, and notably improved accessibility to the new developments. Boucq found a definite rise in value which at that point could not be revealed due to a confidentiality clause with the sponsors, RATP, but was somewhat under 5 per cent. This growth was strongly concentrated in the central zone crossed by the T2 and a zone extending towards

the south-west, where the accessibility gains between 1996 and 1997 were the highest. So, the study concludes, 'the implementation of the T2 had a positive and significant impact on the evolution of housing prices, by the means of the accessibility gains to jobs due to the infrastructure'.¹⁷ This could suggest the possibility to tax landowners to recover the added values. But in France these added values are not captured, because – as in the UK and other countries – the local tax base is not consistently updated.

Network Rail commissioned research into the economic value of investments in railway stations in conjunction with international transport consultants Steer Davies Gleave. Their report¹⁸ sought:

- to investigate the commercial potential of station development;
- to quantify, as far as possible, the impact of station investment on the economy;
- to identify the implications for future station investment.

Based on interviews with over 60 stakeholders, and economic modelling and case study investigations, the key findings of the research¹⁹ were:

- Stations can have a major impact on the towns and cities that they serve, often acting as regional gateways, helping to stimulate economic growth and attract businesses.
- The productivity benefit associated with increased development around stations enabled by station investment can by as much as five to seven times exceed the benefits estimated by traditional transport appraisal techniques.
- Investment in Sheffield Station and the surrounding area contributed to a 67 per cent increase in the rateable value of property within 400 metres of the stations between 2003 and 2008 – three times the average increase for Sheffield over the same time period.
- Investment in Manchester Piccadilly Station had similarly helped to create 650,000 square feet of new and refurbished office space and to increase property values by some 33 per cent.
- Obtaining maximum value from station investment often requires supporting investment in the area surrounding a station, especially where there is a legacy of under-investment in adjacent land and property.
- At the same time, station investment can act as a catalyst to broader development providing there is an appropriate balance between railways' operational, commercial and regeneration objectives.
- Almost all stakeholders who were interviewed identified the significant contribution that railway stations can make in attracting inward investment to a city or region.

- In Sheffield, the direct employment impact was estimated to be 185 additional jobs, while the increase in employment in areas around station developments following station investment for each of Sheffield and Manchester was estimated to be up to 3,000 jobs. While it is difficult to attribute employment impacts specifically to station investment, there was a clear view among stakeholders that, over the longer-term, improvements delivered by station investment and associated regeneration were key to supporting the overall growth of city centre economies and employment.

Are indirect effects the main objective anyway?

It remains extremely difficult to make a direct comparison between the assessment procedures and techniques used for transport investments in different EU countries. In a study for the SINTROPHER project, Hasiak and Richter have suggested that France, Germany and the United Kingdom adopt radically different strategies for public transport investment (Table 10.2). In France, tram investments are seen less as transport projects in their own right than as devices to regenerate the city.²⁰ Thus one can distinguish three different forms of rationality: investment decisions in the United Kingdom are driven by 'economic rationality' (or value for money), in Germany by 'functional rationality' (achievement of a smoothly-functioning system) and in France by 'political rationality' (a political vision of the future city), a model the authors describe as 'open to criticism, but effective'.²¹ This, it must be said, has been possible because of the existence of a hypothecated tax on employers, the *versement transport*, which has no equivalent elsewhere²², and which has provided a ready source of funds for urban transport investment.

Capturing land value uplift

In the UK political controversy had raged for many decades over the issue of capturing rises in land values following public investment, or *betterment*. The historic 1947 Town and Country Planning Act had tried to deal with this in the most radical way possible, by nationalising development rights, compensating owners for the prospective losses in value, and thence taking all subsequent rises in value for the state. But, though the basic nationalisation provision has survived for over six decades, as the legal foundation of development control powers in the UK, the associated financial provisions were soon dismantled and subsequent attempts to capture value were also repealed. However, some degree of consensus seems to have been reached through the application of Section 106 Agreements (named for a

Table 10.2 Modes of rationality in planning European tram systems.

Country	Development of tramway network	Dominant decision-making model	'Style'	Hypothesis on tram investment planning
UK	Virtually complete closure of old networks; relatively few new lines	Economic rationality	Profitable economic return	Open up highest-value economic sectors; organisation of Park and Ride for modal effect and environmental balance
Germany	Retention of most existing networks but relatively few new lines	Technical rationality	Efficient performance	Provide best possible service level in synergy with the existing transport system and economic regeneration; provision of frequent, simply-designed tram stops
France	Systematic closure of existing networks after WW2, but then many new lines	Political rationality	Achieve highest possible level of urban design	Investment seen as part of systematic development of an enhanced 'modernistic' urban image, accompanied by public policy and urban marketing

Source: Hasiak and Richter 2011.²³

clause in the 1990 Planning Act) which allow local planning authorities to agree contributions from developers as a condition of receiving planning permission. Even more recently, the Community Infrastructure Levy (CIL) provides for local planning authorities to devise fixed tariffs for such contributions, specified in advance for all developments. And in the case of Crossrail, a very large project to build a new longer-distance express west–east line under central London, the Mayor of London obtained special powers allowing him to levy advance imposts on the grant of planning permissions in central and inner London, even though this has been criticised on the basis that these levies have been imposed on developments far from the line of the route.

In the United States, Tax Increment Financing (TIF) has represented a longer-term approach to capturing land value uplift to finance major urban investments. It uses future tax gains to finance current improvements (which theoretically will create the conditions for those future gains), by creating funds within a defined district to finance debt issued to pay for the project, thus borrowing against future property tax revenues. There are thousands of examples. California, which invented tax increment financing in 1952, has over 400 TIF districts of varying kinds and with an aggregate of over \$10 billion per year in revenues, over \$28 billion of long-term debt, and over \$674 billion of assessed land valuation (in 2008).

TIF is widely cited in connection with schemes like the extension of the Washington DC Metro's Silver Line to the Tysons Corner business centre, the largest in the state of Virginia and the twelfth-largest in the United States.²⁴ However, the reality there is somewhat different.

Tysons Corner, now being marketed as 'The next US City', is a remarkable phenomenon. As recently as the mid-1960s it was a rural area of Fairfax County at the crossroads of Routes 7 and 123, with a single general store. Then, construction of the Capital Beltway and the Dulles Airport Access Road in the 1960s improved access to highway and air transportation. This made Tysons one of the region's most strategic locations for capturing suburban office and retail development. First one and then a second large regional mall was opened, beginning the area's transformation into a major commercial centre. It became home to several Fortune 500 (top US and global corporation) headquarters and many other prominent national firms, and in 2010 had around one-quarter of all of the office space in Fairfax County. Tysons was identified as the archetypical 'Edge City' by Joel Garreau in his 1991 book of the same name.²⁵

But now Tysons is entering a new phase of development. It is to have four new Metro stations along the Washington DC Metro's new Silver Line Phase 1, due to open in late 2013 and to be extended to Dulles International Airport

by 2016 (Figure 10.2). The aims of the revised Plan, developed by a Tysons Land Use Task Force, are: to promote more mixed use; facilitate transit-oriented development (TOD); enhance pedestrian connections; increase the residential component of the density mix; improve the functionality of the area; and provide for amenities such as public spaces, public art and parks. It has a vision of clusters of high density buildings surrounding the four Metrorail stations, and tree-lined streets connect neighbourhoods, with people at sidewalk cafes, walking or jogging down tree-lined boulevards, enjoying public art and outdoor performances, and playing in the parks.

Tysons has been widely cited as a successful example of Tax Increment Financing. However, the cost of Phase 1 of the Silver Line is being met in quite a different way: it is shared, 43 per cent by \$900 million of federal funding, 28 per cent by a special tax district on commercial property along the route, and 28 per cent by the Metropolitan Washington Airports Authority through an additional toll on the Dulles Toll Road along which most of the extension will run. TIF, in so far as it plays a role, will be part of a package to develop the associated works necessary to transform the area from a car-based Edge City into a model of Transit-Oriented Development.

And here, it is clear on closer examination that TIF is being contemplated only as a relatively small part of a much larger package. It usually works best for relatively small geographic areas; in the state of Virginia, examples so far are limited in scope and are usually coupled with formation of a so-called Community Development Authority (CAD), a flexible tool, funded by ad



Figure 10.2 New Tysons Corner Silver Line Station.
Source: Wikimedia Commons.

valorem special taxes or special assessments, negotiated with petitioners, which unfortunately has proved extremely complex in establishment and administration owing to a number of factors concerning the use of public funds, the degree of control desired by the developer and the tenants, and the use of special assessments as the developer's preferred funding mechanism. The experience of CDAs across the United States is mixed, with such a high degree of failure that as a group they are considered among the riskiest municipal bond investments in today's market. TIF bonds are usually unrated and carry the highest interest rates – up to 4 per cent higher than General Obligation Bond debt, which is characteristically AAA-rated and carries lowest possible interest rates – considerably reducing any general fund leverage.

Conclusion

Thus, despite half a century of evolution in the way that nations and cities assess their urban transport investments, the remarkable fact is that they go about the process in very different ways, with very different outcomes – which are evident, even to the casual observer, in the contrast between the scale of investment in every French major city and now in smaller cities too, and the relative paucity of such investments in the United Kingdom. This is to a considerable degree explicable in different funding structures, so much more generous and explicit in the French case than in the British one. But finally such differences are explicable in terms not of economic rationality, but of political rationality. The French system – like that of Spain – is essentially based on deep cooperation between public and private actors, at local, regional and national scales, to maintain high levels of public investment in the interests of economic modernisation programmes which are of long duration and are driven not by narrow accounting considerations but by grand long-term visions of a desired future. Such strategic planning has never been accepted for very long in the British system and is now completely out of fashion. And, of course, after the collapse of the model in Spain after the 2008 global crisis and the deep questions hanging over it in France, it raises major questions of comparative economic policy that go beyond the scope of this chapter.

All this might have been different if in any country there had been an effective way of capturing land and property value rises, following transport investment, and appropriating them for future investment. But, with the rare exceptions of countries with a tradition of public land ownership (Sweden, the Netherlands, Hong Kong, Singapore), this so far is an aspiration for the future. Perhaps the innovations now taking place in collecting Community

Infrastructure Levy, in London and other British cities, may at last provide the long-sought breakthrough.

Editors' note

Sir Peter Hall died on 30 July 2014. Writing this chapter had been one of his final projects.

Notes

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