

Transport and the economy: a 21st century approach

This article interrogates over 30 years of transport and economics research into the relationships between transport investments and desirable economic development results. It finds the evidence in favour of this virtuous relationship at best weak and in most respects non-existent. Investing in new highways, airports and other large transport infrastructure projects does not appear to generate the anticipated economic development benefits. There is, however, compelling evidence that de-coupling policies to improve competitiveness and quality of life through reducing the demand for transport, emissions and oil dependence does encourage gains in economic performance.

Artikulu honek garraioko inbertsioaren eta garapen ekonomikoaren arteko harremanari buruzko ikerketaren hogeita hamar urte baino gehiago aztertzen ditu. Hainbat ikerketaren emaitzek azaltzen dute harreman hori oso txikia edo hutsala dela kasu gehienetan. Autobide, aireportu eta garraio-azpiegituren beste proiektu handi batzuetan egindako inbertsioek ez dituzte aurreikusitako irabaziak eragin garapen ekonomikoari dagokionez. Hala eta guztiz ere, froga sinesgarrien arabera desakoplamendu-politikak (lehiakortasuna eta bizi-kalitatea hobetzeko garraio-eskaera murriztuz, eta isuriak eta petrolioaren mendeotasuna gutxiagotuz), hobekuntzak eragiten dizkio funtzionamendu ekonomikoari.

Este artículo analiza más de treinta años de investigación sobre la relación entre inversión en transporte y desarrollo económico. Los resultados muestran que esta relación es débil o inexistente en la mayoría de los casos. La inversión en nuevas autopistas, aeropuertos y otros grandes proyectos de infraestructura de transporte no parece generar los beneficios previstos en términos de desarrollo económico. Sin embargo, existen pruebas convincentes de que la política de desacoplamiento, para mejorar la competitividad y la calidad de vida mediante la reducción de la demanda de transporte, la disminución de emisiones y de la dependencia del petróleo, provoca una mejora del funcionamiento económico.

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JEL classification: L91, Q51.

1. INTRODUCTION

One of the most remarkable characteristics of the debate around transport investment, job creation and economic development in European countries is that it is very difficult indeed to find evidence of a direct link between the investment and the hoped-for economic gain. This raises important methodological, political and policy issues which will be explored in this paper.

The political and policy issues have been explored in some detail in the UK but there is still very little agreement on the central question “Does a new road, highway or a bypass actually create jobs as opposed to draining away jobs or re-arranging the location of those jobs?”. In 1998 a regional business organisation, Furness Enterprise, campaigned for a new road known as the High-Low Newton Bypass, which is in NW England on the main route from the M6 motorway to the port and industrial centre

of Barrow in Furness. The road was costed at £11 million for 2.6 kms and Furness Enterprise claimed in its literature that the road would be “a stimulus to over 2000 new jobs, a more diverse economy, enhanced competitiveness of manufacturing firms, more inward investment with faster development of strategic industrial sites in Furness”. Furness Enterprise refused to explain the methodology behind the 2000 jobs claim and there has been no audit to check whether or not the stated purposes for building this road have been achieved. The vast majority of new road construction in the UK has been justified in terms of its impact in stimulating economic growth, creating jobs and reducing congestion but these claims are not validated after the road has been built and road building continues to be an area of public expenditure that is not tested in any ex-post methodology to assess whether or not its stated objectives have been achieved.

Table 1
**Published scientific work on transport investment
 and local economic gain**

Author	Date	Headline Finding
Cleary, M J and Thomas R E	1973	The Severn Bridge..(has produced) no significant relocation of manufacturing establishment as a consequence of the bridge
Gwilliam and Judge	1978	(M62)..as far as regional development is concerned we have seen little strong evidence to suggest that the motorway is a powerful influence on inter-regional location of activity
Leitch Committee Report,	1977	Largely rejected the view that trunk road construction engenders economic growth
Blonk, W A G	1979	A new link between an area of concentration and an underdeveloped region improves the flow of traffic not in one direction but two. This entails a risk of competition from outside and a draining of resources for the underdeveloped region
European Conference of Ministers of transport (ECMT)	1991	When companies are deciding where to locate their activities, transport is a secondary criterion.. by and large businesses do not consider transport costs to be an important factor as they average only 3-5% of operating costs
ECMT (Plassard)	1991	Nagoya in Japan has lost 20% of its employment since the opening of the high speed rail link between Tokyo and Osaka
Goodacre, C	1994	(M65) local authorities through which the M65 passes have not performed any better than those through which the road does not pass
Whitelegg, J	1994	The analysis of variation in economic performance and variation in accessibility has found no evidence of a positive relationship.

Source: Made by the author.

Road building throughout the European Union follows the same UK pattern. Roads are justified in terms of their economic stimulus effect with very little recognition of the paucity of data that can be accessed to demonstrate that this effect is real.

There are similar problems with airports expansion projects and whilst airports do in fact employ people there is evidence that the claims made for economic benefits are exaggerated by those organisations seeking public funds for airport investment projects.

This paper sets out the evidence for being far more cautious and sceptical about the automatic association of virtuous economic gain from large scale transport investments than is normally the case in Europe. It sets out the evidence for this caution and concludes that overall approaches to transport investment that focus on de-coupling, demand reduction and sustainability have far more to offer cities, regions and nations than a policy based on big roads, airports, bridges, tunnels and high speed trains.

2. THE EVIDENCE BASE

The research evidence that points to the absence of a clear link between transport investments and job creation is rather abundant. Table 1 lists a selection of the published research material that refutes the proposition of an unambiguous link between transport investment and local economic gain.

The research evidence in Table.1 is reinforced by official and governmental evidence and this is summarised in Table 2.

An objective assessment of the weight of evidence both scientific and public policy would lead inevitably to the rejection of a proposal that claimed economic and social gains from a large item of transport infrastructure. It would further reject the assertion that such investments could maintain accessibility improvements over time as traffic levels rise and erode the temporary gains made in the few months following opening of a scheme.

The clear view of the Royal Commission on Environmental Pollution in its 1994 report "Transport and the Environment" still stands as a significant and telling finding from an

authoritative, independent and prestigious government body:

In the Treasury's view it is not possible to generalise about the importance of transport infrastructure as a factor in bringing about economic growth in depressed or deprived regions..a recent study concluded that road building is not the key to economic growth in the regions..indeed it seems that good roads can sometimes speed the decline of less prosperous areas by allowing their needs to be met conveniently from sources outside the area (para 2.14, page 15).

3. EVIDENCE ON ROAD TRANSPORT

SACTRA (1999) represents a significant milestone in the understanding of relationships between transport and the economy. The report was commissioned in 1996,

to consider the effects on the performance of the economy which might be caused by transport projects and policies, including new infrastructure, changing prices, demand measures and measures to reduce traffic.

The origins of the report lie in the debate about roads and the economy but its relevance is far wider than roads:

Our terms of reference go beyond the specific questions of trunk road schemes and, therefore, the Committee has aimed at a general approach which treats even-handedly all types of transport investment or policy initiative, for all modes.

There is a statistical correlation between increased traffic flows and economic growth, but this does not necessarily mean that there is a causal link whereby improved transport facilities necessarily lead to more economic activity. The increased levels of travel could be a consequence of economic growth rather than the other way round. The SACTRA report concludes that

Table 2

UK governmental documents on transport and the economy

RCEP, 1994	In the Treasury's view it is not possible to generalise about the importance of transport infrastructure as a factor in bringing about economic growth in depressed or deprived regions. A recent study concluded that road building is not the key to economic growth in the regions, indeed it seems that good roads can sometimes speed the decline of less prosperous areas by allowing their needs to be met conveniently from sources outside the area (para 2.14, page 15).
SACTRA 1999	The SACTRA report on Transport and the Economy was the culmination of a 3 year inquiry chaired by Eileen Mackay CB into claims of economic benefit from road schemes. The report notes (summary, page 17, paragraph 11) that the contribution of road construction to sustainable economic growth of a mature economy, with well developed transport systems, is likely to be modest. It states that the results of studies of the economic impact of completed transport projects "do not offer convincing general evidence of the size, nature or direction of local economic impacts". The report goes on to state "Our studies underline the conclusion that generalisations about the effects of transport on the economy are subject to strong dependence on specific local circumstances and conditions."
SACTRA 2000	While in certain circumstances transport schemes may bring added economic benefits to an area needing regeneration, in other circumstances the opposite might occur. Better communications will enlarge markets for goods, services and workers: the area as a whole may gain or lose from this depending on the structure and competitiveness of the local economy. It follows that there is no simple, unambiguous link between transport provision and local regeneration. http://www.dft.gov.uk/stellent/groups/dft_econappr/documents/page/dft_econappr_504831.hcsp
Inspectors Report into the M74 motorway extension in Glasgow, 2004	M74 will encourage traffic growth (11.85); business benefits will be short lived and/or will disadvantage other areas in Scotland (11.86); will worsen social exclusion (11.88); the M74 extension should not be authorised and the compulsory purchase orders should not be confirmed (11.99). http://www.scotland.gov.uk/library5/transport/m74r-00.asp
Professor David Begg, Chairman of CfIT	Summing up, David Begg cautioned against what he described as an "infrastructure junky" approach. The starting point needed to be asking what kind of communities we want to see and how transport can help deliver them. Conference organised by the Office of the Deputy prime Minister. C4: Opening up potential - the role of transport in sustainable communities. http://www.odpm.gov.uk/stellent/groups/odpm_communities/documents/page/odpm_comm_037004.hcsp

Source: Made by the author.

Table 3

**Extracts from the final report of R M Hickman, Inquiry Reporter
into the proposed M74 extension in Glasgow, July 2004**

11.96 Drawing these numerous elements together, the evidence has shown that the proposal would be likely to:

- seriously hinder the achievement of important Scottish Executive commitments and objectives for traffic reduction, public transport improvements, and CO2 emissions;
- have very serious adverse impacts on the environment of communities along the route, both during construction and in operation;
- be at variance with policies to promote social inclusion and environmental justice;
- temporarily ease traffic congestion, to the benefit of car commuters and road freight transport, but that these benefits would be progressively lost due to continuing traffic increases, in the absence of measures to restrain and reduce traffic; and
- make a positive contribution to the local economy in Glasgow, South and North Lanarkshire, Renfrewshire, and East Renfrewshire, at the expense of the Forth valley, the Stirling area, Ayrshire, Inverclyde, and West Dunbartonshire.

11.97 Drawing these various strands together, and looking at all the policy, transport, environmental, business, and community disadvantages of the proposal as a whole, it must be concluded that the proposal would be very likely to have very serious undesirable results; and that (in the context of the advice in the SACTRA report, the transfer of jobs from other parts of Scotland, and the potential harm to existing businesses along the route) the economic and traffic benefits of the project would be much more limited, more uncertain, and (in the case of the congestion benefits) probably ephemeral.

11.98 In this context, it cannot be concluded that the public benefits of the proposal would be sufficient to outweigh the considerable disadvantages that can be expected, nor that it is necessary in the public interest to acquire compulsorily all of the properties where objections to the CPO have been maintained.

11.99 Accordingly, on the basis of the consideration of the material put forward by objectors, the TRA, and those who support the project, the conclusion is that this proposal should not be authorised, and that the compulsory purchase order should not be confirmed.

Source: <http://www.scotland.gov.uk/library5/transport/m74f-13.asp>

although there are theoretical reasons why improved transport infrastructure could lead to more economic activity, the empirical evidence for this is weak. In particular, they conclude that in a mature economy with well developed transport systems such as the UK, any contribution to economic

growth from improved transport is likely to be modest (para 12, p.17).

Another major clarification of the links between transport and the economy came about as a result of a formal Inquiry into the case for motorway expansion within the city

of Glasgow (the M74 motorway). The Inspector at the Inquiry came down firmly against the M74 and accepted the case made by the objectors.

4. EVIDENCE ON AIR TRANSPORT

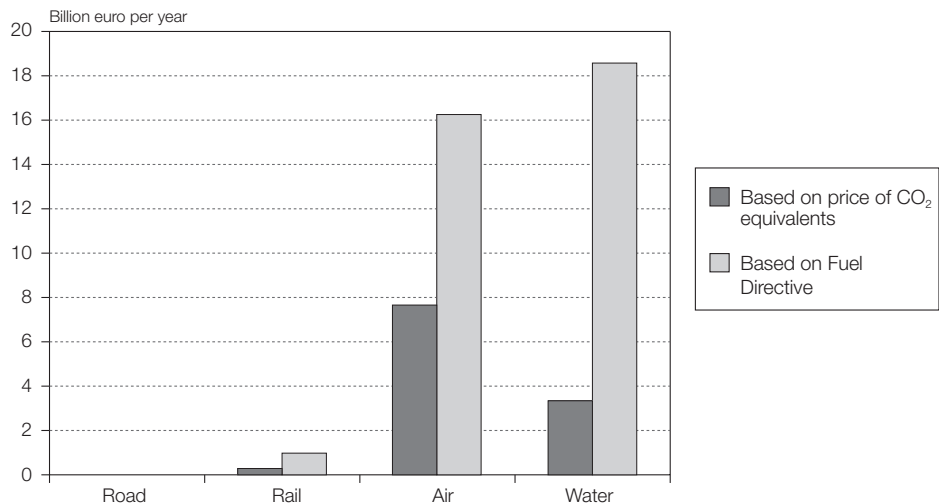
Airports are major growth nodes throughout the European Union and are in receipt of substantial subsidy from the European Union in the form of grants and soft loans for airport expansion. In the EU these subsidies are estimated to be in the range 27-35 billion Euros pa (EEA, 2007) and mainly delivered in the form of fuel duty exemptions (Figure 1).

Aviation also receives state aid in the form of infrastructure grants and loans and these are made available on the assumption that airports are successful engines of economic growth and job creation. This is contested but the EU and most national governments provide uncritical support to the idea that airport expansion creates jobs and is therefore an attractive macro-economic policy.

The debate about the economic impact of aviation has been enriched by the publication of two very different reports.

1. *The Contribution of the Aviation Industry to the UK Economy* was prepared by Oxford Economic

Figure 1
Value of exemptions and rebates from fuel-excise taxes
(based on hypothetical baseline tax rates)



Note: This graph provides estimates of the value of fuel-tax exemptions and rebates based on reference values selected by the study authors. This note must accompany any use of this graph.

Source: EEA (2007).

Forecasting (OEF, 1999) for a consortium of the UK's major airport operators and airlines and DETR.

2. *Transport and the Economy* was prepared by the Standing Advisory Committee on Trunk Road Assessment (SACTRA, 1999) for DETR. Although SACTRA's general remit deals with road transport, this report addresses the impact of all transport modes.

4.1. The OEF Report

OEF argue that there are important functional links between economic growth and aviation. These are derived from:

- the contribution aviation makes in its own right in terms of employment, production, exports, value added, investment and Exchequer contributions.
- the impact aviation has on the performance of other industries as a facilitator of economic growth and rising productivity.

The report produces quantitative estimates of the negative economic effects of restricting air travel, including the claim that restricting passenger growth to 3.5% per annum rather than the predicted 4% would reduce UK GDP by 2.5% by 2015. They estimate that over the last 10 years the impact of aviation growth in the UK economy has been to increase output in the whole economy by about £550 million per year. Their general conclusion is that there are significant economic implications of restricting the growth of aviation. They state that the environmental effects of air travel have an economic cost, but their terms of

reference explicitly exclude these from their analysis.

4.2. The SACTRA report

The SACTRA report already discussed in the context of road transport evidence, concluded that it is not possible to give a complete and unbiased estimate of the economic impact of transport without an assessment of environmental costs, which the OEF Report does not do because of its terms of reference.

The SACTRA report makes the point that transport improvements connect different locations and areas, and that the benefits do not necessarily accrue evenly (para 40, p. 22). There may be losers as well as winners as a result of more competitive areas gaining improved access to weaker areas. Improved access could thus in some cases lead to loss of employment at particular locations. This applies at all scales from local through regional to national and international, and to all transport modes.

4.3. Evaluation

Both these reports raise issues that are central to any discussion of the economic impact of aviation and, more generally, to the economic impact of any transport infrastructure investment. The following points are relevant:

- the terms of reference for the OEF Report explicitly exclude consideration of environmental costs. The Report therefore presents an incomplete analysis and it is not possible to conclude whether or not the economic benefits of new

investment are greater or smaller than the economic disbenefits associated with environmental damage. This introduces a significant element of uncertainty into the discussion as the economic benefits themselves may not be as large as is claimed.

- The OEF use their own forecasting model of the economy and input data from the UK National Accounts and other sources. Some of these data are estimates of the required variables (such as the indirect employment caused by aviation) and moreover the methodology used makes assumptions about the nature of the links between aviation and the economy which the SACTRA Report reveals to be complex and themselves context dependent and geographically variable. The use of these data and assumptions in a model of the national economy is therefore dubious.
- Even within their own narrow terms of reference OEF conclude (as do SACTRA) that the economic effects of aviation do not benefit everyone everywhere to the same extent. This is particularly significant with respect to tourism. Much of the growth of air travel has been generated by tourism and a large outflow of tourists from a UK airport to another country does not necessarily bring local economic benefits to the exporting regions.
- In 2004, UK residents on visits overseas spent £30.3 billion whereas overseas visitors to the UK spent £27.7 billion, giving a deficit of £2.5 billion. If air travel were to be restricted by TDM it is possible that the net economic effect in terms of spending and employment on the UK economy would be positive. If we compare more recent figures for expenditure for the period June to August 2005, UK residents on overseas visits spent £7.8 billion, whereas visitors to the UK from overseas spent £3.5 billion, giving a deficit over a three-monthly period of £4.3 billion. If air travel were to be constrained by, for example, fares increases to internalise the external costs of aviation then it is possible that the net economic effect in terms of spending and employment on the UK economy would be positive.
- The aviation industry is heavily subsidised (van de Pol 1998) and given the high level of labour productivity in the industry it can be strongly argued that jobs could be created more cost effectively in other ways. Jacobs (1996) quotes estimates of job creation numbers and costs from energy conservation, investment in public transport and recycling. The cost per job created is much lower than the figure for creating jobs through investment in new airport capacity. Meeting predicted demand by expanding infrastructure (such as Heathrow Terminal 5) will absorb large amounts of resources which could arguably be better used in other ways. Removal of the subsidies and investment of the resources gained in more sustainable employment would have both economic and environmental advantages. Examples of subsidy in the European Union include 17.5 billion Euros per annum because there

is no taxation on aviation fuel, 6.5 billion Euros because tickets are zero rated for VAT purposes and direct subsidies such as 3.4 billion Euros to Air France in 1994 and 2.11 billion Euros to Olympic Airways in the same year (Whitelegg, 2001).

- The theoretical justifications made by OER for the links between aviation and economic growth are weak. It is claimed for example that excellent air services are a key factor in foreign direct investment (FDI) decisions and that the UK leads Europe in terms of FDI at least partly because of excellent accessibility by air. No convincing evidence has been produced to justify this claim. Good air services are necessary but any incremental enhancement from an already high level is unlikely to make a significant difference compared with other advantages that the UK offers such as language and financial incentives (Airports Policy Consortium 1999). There is a further weakness in the FDI argument which relates to regional airports. Regions are in competition for FDI. New airports are being promoted in Kent and Yorkshire specifically on the assumption that they will bring more FDI. The consequences of this are that the total available FDI is being pursued by more airports and regional development agencies that will all back increases in airport capacity as part of the competitive strategy. This in turn will produce the capacity which is then used by tourists and package holidays. Liverpool airport has long used regional development arguments to support its expansion

and its biggest user is now EasyJet providing very low cost tourist flights. The regional development arguments in Liverpool have increased the demand for air travel in a way that does not bring any FDI benefits.

- Measuring or predicting the impact on local employment of transport investments is still a very inexact science. This was one of the main conclusions of the SACTRA report (1999) on transport and the economy. In aviation the situation is even more complicated than that described by SACTRA because of the variability in choice of multiplier e.g. very different multipliers have been used for Manchester Runway 2 and Heathrow Terminal 5 without explanation.

Taking these arguments into consideration, the bullish claims made in the OEF Report lack credibility. Moreover, given the negative economic effects of the environmental impact of aviation (for example defensive health expenditures) and the large resource take that would be required to cope with predicted levels of air travel, it is by no means clear that unrestricted growth of air travel would benefit the economy. It is more probable that a restriction of air travel would have beneficial economic effects in addition to environmental and quality of life gains. These would include the following:

- reduced defensive health expenditures as a result of reduced pollution. These are estimated to be around £20 billion pa for road transport alone (Maddison et al 1996).
- a more efficient allocation of resources, especially if subsidies to aviation are reduced.

- reduced congestion, labour market inflation and housing market inflation at and near major airports scaling down and reallocation of the annual £9.2 billion subsidy from the taxpayer to aviation (Sewill, 2003).

5. DE-COUPLING: A NEW POLICY AGENDA

There is a long standing assumption in transport policy and transport investment that economic growth inevitably produces higher levels of demand for transport. The UK Royal Commission on Environmental Pollution in its 1994 report "Transport and the Environment" (RCEP, 1994) concluded that: "the growth of freight transport, measured in tonne-kilometres, has broadly paralleled the growth in GDP". This assumption is at variance with other economic activities. Advances in energy efficiency in buildings, energy efficiency in the manufacturing process and computer power/cost ratios show very clearly that it is possible to "get more for less". It is possible to decouple linkages between growth in output and growth in energy use. This is the central argument by Weizsaecker et al (1997) in detailed examples of "Revolutionising Transport Productivity". These include:

- Videoconferencing as a substitute for physical travel.
- Quadrupling the capacity of existing railways.
- Curitiba's "surface underground".
- Car sharing in Berlin.
- Car-free mobility.

The European Union is the first governmental body to adopt the de-

coupling (also known as de-linking) principle as a key part of its transport policy. Denmark has recently adopted a similar policy. In its September 2001 Transport policy document: "European Transport Policy for 2010: time to decide" the European Commission established the principle of de-coupling economic growth and transport growth:

This will involve greater efforts in order gradually to break the link between transport growth and economic growth and make for a modal shift, as called for by the European Council in Gothenburg. Such a shift cannot be ordered from one day to the next, all the less so after half a century of constant deterioration in favour of road, which has reached such a pitch that today rail freight services are facing marginalisation (8%)... European Transport Policy 2010: time to decide, page 10.

The latest transport policy document from the European Commission (CEC, 2009) carries with it the strong message that de-coupling has now been abandoned as a formal policy commitment:

Decoupling transport growth from GDP growth, which was one of the objectives of the 2001 White Paper and of the SDS, has taken place on the passenger side, where transport demand grew on average by 1.7 % per year between 1995 and 2007, as opposed to an average GDP increase of 2.5 %. The demand for freight transport in the EU, on the other hand, grew on average by 2.7 % per year. The strong increase in global trade and the deepening integration of the enlarged EU prevented the decoupling of freight transport from GDP in the last decade (paragraph 16, page 11).

De-coupling is a powerful idea but also realistic and practical. It offers another way of assessing proposals for transport investment decisions. Is a particular proposal (highway or rail) likely to lead to

higher levels of transport output (freight or rail) and is this consistent with a policy objective to de-couple? More importantly it also reduces the importance of the general argument in favour of more transport capacity if this argument is founded on the existence of a link which has now been challenged.

Gray et al (2006) have explained in some detail the economic downside of a rate of growth in the demand for transport that matches or outpaces the rate of growth in the economy as a whole. This can be an indicator of considerable inefficiency where the transport system makes demands on energy and cash that are greater than could be the case if transport systems were managed more efficiently. This in turn releases resources for other non-transport projects which would benefit the labour force (better skills and training) or provide more resources for R&D or improve competitiveness because transport costs for businesses are lower. Conventional discussion about roads, bridges and airports are locked into an out-dated notion that capacity must increase to serve economic growth when this is not the case.

The concept of de-coupling is illustrated in Figure 2.

The importance of de-coupling in a wider economic analysis of transport investment cannot be under-estimated. It is perfectly possible to increase economic output, support a vibrant, competitive local economy and sustain a high quality of life for all citizens at lower levels of transport intensity measured in terms of energy use per tonne-km of freight or unit of passenger km by road or size of demand for flying. Reducing transport intensity is an intelligent policy option in an oil-constrained world

and a world that is committed to reductions in greenhouse gases as part of Kyoto and post-Kyoto commitments to climate change interventions.

De-coupling opens up a whole range of policy options that are totally different to the “usual suspects” from the 1960s. Policies that emphasize new airports, runways, highways and large urban bypasses can be justified by 1960s thinking about benefit-cost analysis but cannot be justified when considered within a de-coupling framework. Expansions in capacity leading to increases in demand and yet more pressure for increases in capacity is the direct equivalent of building more electricity generation power stations to supply a growing demand for electricity. It is now well-established within electricity supply systems that reducing demand through very efficient appliances, energy efficient lighting, smart meters etc is the “smart” thing to do and increasing generation capacity is no longer a viable option. EU transport policy has not yet achieved this level of understanding in spite of the empirical evidence pointing to problems with the global availability of oil and the need to move transport systems into fossil fuel free and oil-free futures (Gilbert and Perl, 2008)

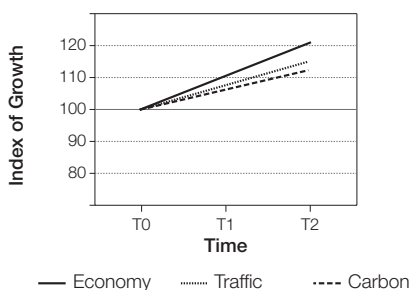
6. THE FUTURE OF TRANSPORT INVESTMENT

The study of transport futures within a strong sustainability policy context is well-established in the European Union. OECD (2002) has produced an “environmentally sustainable transport” scenario (EST3), Banister (2005) has set out a clear policy direction for getting sustainable transport right and Whitelegg (2009) has set out a

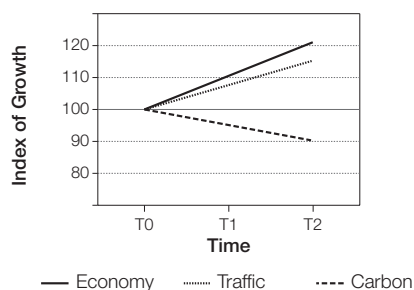
Figure 2

Relative and absolute decoupling scenarios (indicative only)

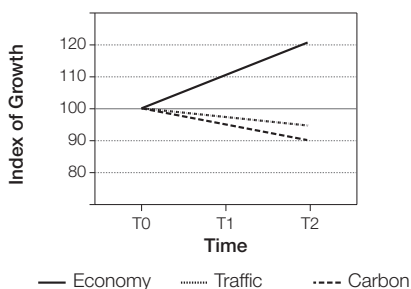
Current situation - some relative decoupling of traffic and carbon



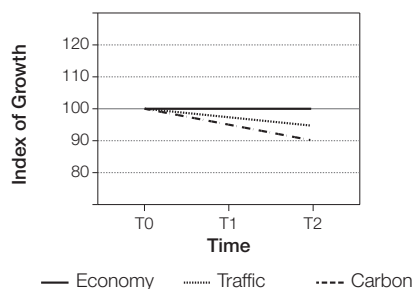
Can relative decoupling of traffic and the economy achieve absolute carbon emission reductions?



Or is absolute decoupling of traffic and the economy necessary in order to achieve absolute carbon emission reductions?



Or will economic growth need to be stabilised in order to achieve absolute carbon emissions reductions?



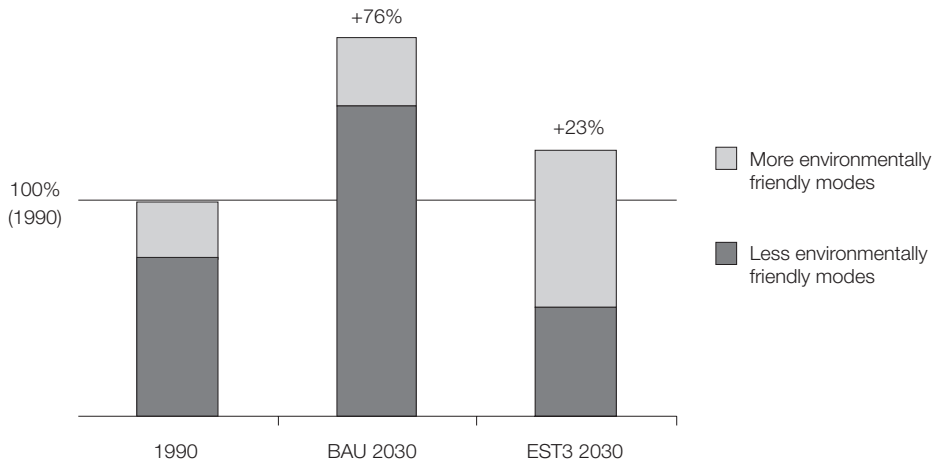
Source: Gray et al (2006), page 6.

vision for zero-carbon transport future for the UK. There are no technical or financial problems associated with the much-needed transition to a sustainable transport reality but there is a marked lack of will on the part of senior governmental figures and politicians to deliver. This is the case at all geographical scales from regions through national to the European Union itself.

The OECD (2002) study is very clear about the feasibility of reducing transport demand in line with de-coupling concepts (Figures 3 and 4).

Substantial reductions in passenger kms and tonne kms have been made by the year 2030 when the EST scenario in 2030 is compared with the Business as Usual scenario (BAU). The EST scenario produces

Figure 3
OECD, EST Scenario for the year 2030 and business as usual (BAU) comparison



Source: OECD, 2002.

significant improvements in air quality, reductions in greenhouse gases and reductions in demand for new highways and other expensive items of transport infrastructure. It includes changes in spatial planning to make cities more accessible to more people and deliver social improvements in rewarding all income groups with better air quality and accessibility that does not depend on car use.

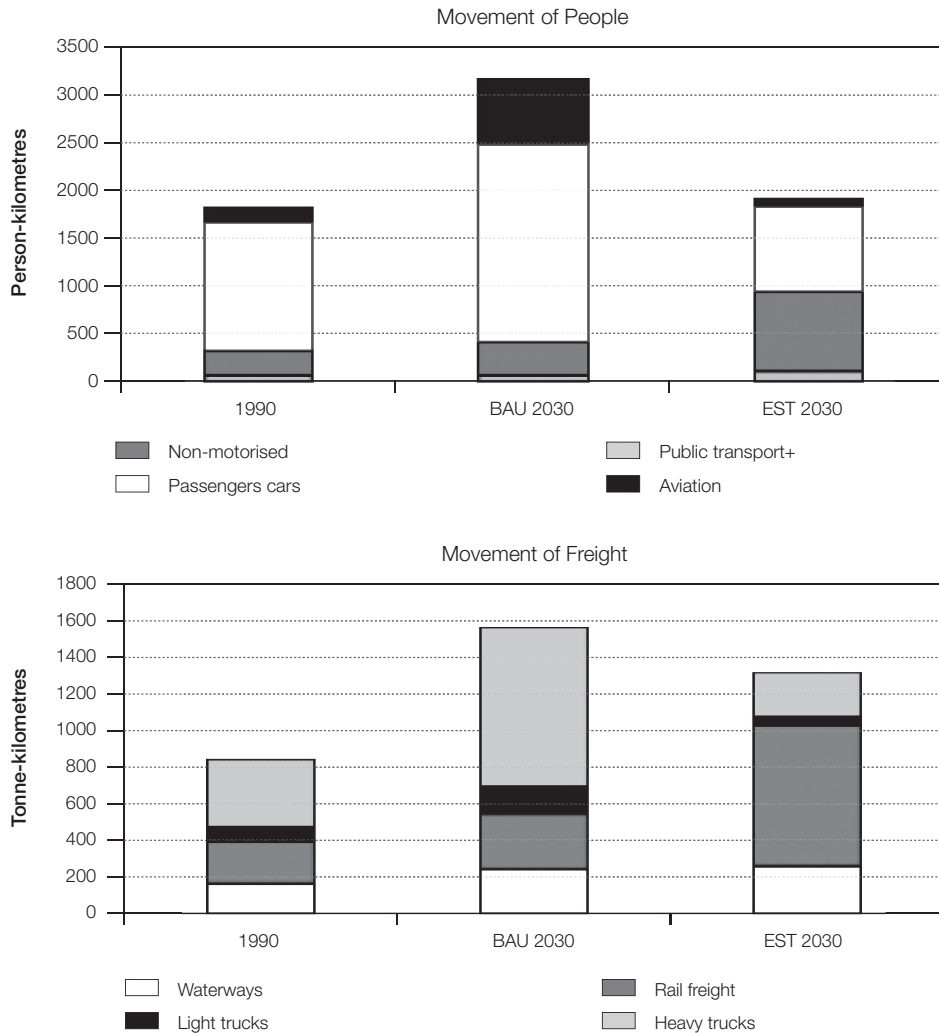
Discussions around sustainable transport frequently look ahead to 2030 or even 2050 but there are already many examples in existence of transport services and geographical areas that have already made the transition and can act as a beacon showing the way to what can be done everywhere. The problem then becomes

easier to resolve in that it is not about what kind of geography or transport services we need but how do we learn from best practice and transfer that best practice to every urban and rural area in the European Union. This is normally a discussion about passenger transport, walking, cycling and public transport but Whitelegg (1995) has described the elements of a sustainable freight transport system.

7. CONCLUSIONS

This article has described the traditional approach to transport investment that is based on the false premise that economic development requires transport investment as a necessary pre-condition and

Figure 4



Source: OECD, 2002.

consequence of that development. Traditional transport investments are based on the premise that the investments will generate economic development benefits and the evidence reviewed in this article shows a large amount of credible research

pointing to the lack of this direct causal connection. In an advanced economy like the European Union new highways, airports and high speed trains may well have an impact on reducing journey times and may well perform well in conventional benefit-

cost analysis but they do not bring new jobs and new income to the areas in which they are located. The evidence reviewed in this chapter could not be clearer. There is no direct causal connection between transport investment and virtuous economic outcomes.

Transport investments do, however, have a powerful role to play in increasing competitiveness, reducing the cost to business of mobility and reducing dependency on oil at a time when serious questions are being asked about the ability of oil supplies to match growing world demand. This is the de-coupling debate and the potential for harvesting economic development benefits at lower levels of transport output. The evidence in the de-coupling literature is that there is considerable potential for reducing transport intensity (the amount of transport consumed per unit of GDP or energy consumed per unit of transport) and promoting sustainable development with significant increases in

quality of life at lower levels of fossil fuel consumption and CO₂ emissions.

The existence of a well-rehearsed discourse on sustainable development in an oil constrained world requires a fundamental shift in thinking and policy away from the 20th century view of transport investments and economic development characterised by the major new highway or major airport expansion. Roads and airports will still feature in a 21st century transport investment landscape but the shift to a smarter investment strategy will emphasise reductions in demand for physical travel and long distance movement of freight. The acceptance of year on year increases in the demand for transport will be replaced by more intelligent strategies that reduce oil dependency, greenhouse gas emissions, protect landscape, ecology and biodiversity, improve air quality and bring improvements in quality of life for all Europe's citizens. This is the challenge for 21st century transport investment strategists and decision-takers.

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