



**An Roinn Iompair  
Turasóireachta agus Spóirt**

**Department of Transport,  
Tourism and Sport**

**Investing In Our Transport Future: A Strategic Framework for Investment in  
Land Transport**

**Background Paper Nine**

**Wider Economic Impact of Transport Investment: Case Study Analysis**

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## **Background**

The Department of Transport, Tourism and Sport (DTTAS) is currently preparing a Strategic Framework for Investment in Land Transport (SFILT). The objective of this work is to develop a Strategic Framework that will underpin the land transport element of the Government's Capital Programme 2017 – 2021, and which over the longer term will provide the framework for decision-making on the appropriate quantum and type of public expenditure on land transport. As part of this preparation work DTTAS commissioned AECOM to prepare Case Studies on the wider economic impact of the LUAS network in Dublin and the M4/M6 motorway between Dublin and Galway. This document details the output from this case study analysis.

### **1.2 Overview of Paper**

The focus of this case study analysis is on an assessment of the impact of the LUAS network and the M4/M6 in terms of wider economic benefits. The original decision to invest in the light rail and road network was based largely on the benefits that it would secure for travellers. A transport infrastructure investment of this scale will also have had Wider Economic Effects by affecting the location decisions of firms, and the behaviour of consumers. These effects on the wider economy will have impacted on the amount, location and type of productive activity in Ireland.

Separate quantitative analysis in the SFILT working paper entitled 'Impacts of Previous Investment' showed that both the M4/M6 and the LUAS provided a good return on investment with Benefit to Cost Ratios (BCRs) of 1.56 and 2.96 respectively. The purpose of this paper is to identify the broader economic impacts through a qualitative analysis.

As wider economic effects are not currently quantifiable, we developed a qualitative view of these impacts through interviews with knowledgeable stakeholders.

### **1.3 Wider Economic Impacts of M4/M6**

The M4/M6 was one of a number of major road projects that was completed under the National Development Plan (2000-2006). The new infrastructure, 71km in length, saw significant time savings in travelling between Dublin and Galway. The cost-benefit results set out in the SFILT background paper entitled 'Impact of Previous Investment' concerned the

benefits of the M4/M6 for travellers in terms of travel times, vehicle operating costs etc. An investment in transport infrastructure of this scale may also have had impacts on the economy as a whole. Firstly, it may have affected the location of firms, so bringing additional economic activity and jobs opportunities to certain parts of the country, without necessarily increasing the total volume of economic activity.

Of potentially more interest, an investment of this scale may actually increase productivity and hence the total value of economic activity and incomes in the country. A transport investment can have this type of “Wider Economic Impact” through some or all of the following effects:

- By decreasing the effective distance between firms and so creating agglomeration effects;
- Reducing business costs in imperfectly competitive markets will lead to increases in firms’ output;
- Reducing the effective distance between members of the labour force and firms will lead to greater participation and opportunities for workers to move to more productive jobs.

The necessary research has not yet taken place to allow these benefits to be estimated using a modelling approach in Ireland. However for this case study the potential existence of this type of effect was investigated through interviews with key stakeholders.

### **1.3.1 Interview Results – M4/M6**

Consultation interviews have taken place with representatives of the following stakeholders:

- Ireland West Airport, Knock;
- Galway Chamber of Commerce;
- South Dublin Chamber of Commerce;
- The Western Development Commission;
- Irish Business and Employers Confederation;
- Dublin Airport Authority;
- NUI Maynooth;
- Failte Ireland;

- Industrial Development Authority;
- Allergan/Mayo Industries Group; and,
- Enterprise Ireland.

These consultations elicited qualitative information on the effect of the M4/M6 on decisions on the location and volume of business activity. In addition they canvassed views on the profile of businesses in the area served by this road and to strengths and weaknesses of the catchment area as a location for businesses.

The representative of Knock Airport regarded the completion of the M4/M6 as a factor behind the end of a PSO subsidised air service between Dublin and Knock. In his opinion the motorway also contributed to the closure of Galway Airport, which in turn has led to some additional traffic to Knock airport. Low cost flights from Knock airport draw in passengers from a large catchment area that extends as far as Mullingar. The improved road network allows this and gives people a greater choice of air service. A core element of the demand for Knock is commuters flying to the UK for the working week. The motorway network has not removed the need for this service. He underlined the need to improve the N5, to serve key employers such as Baxter, Allergan and Coca Cola and to attract additional investment to the North West.

Galway Chamber believed that Galway airport could have survived the end of PSO subsidised air services between Dublin and Galway. In their opinion the closure of Galway airport was due to the improvement in the road link to Dublin Airport as a result of the M4/M6. In their opinion the combination of improved road connections to the east of Galway and continued road congestion in Galway city had led to people living in the eastern catchment of Galway city going to Athlone or Longford for shopping. They were not able to identify an effect of the road on tourism. The past year (2013) had been a very successful one for the tourist sector in Galway but this was due to a combination of weather, the Gathering, new bus lanes and the M4/M6.

South Dublin Chamber of commerce had an interesting example of the effect of better connectivity on business efficiency. They cited an unnamed firm based in Dublin South

which is committed to providing its clients with a three hour response. This used require them to operate bases in Athlone and Cork. With the improved national road network this is no longer necessary and they have consolidated all of their operations in Tallaght. This is a clear example of an improved road network improving economic efficiency, although this is being achieved at the expense of greater centralisation of economic activity. In general the South Dublin Chamber said that accessibility was a major problem for its member businesses 10 years ago, but is now off the agenda.

The Western Development Commission was concerned that the current form of the national motorway network could have the effect of drawing economic activity out of the north west of the country. They pointed out that there was no motorway link north of Galway. This had the effect of reinforcing the relative disadvantage of this area. In general they saw a risk that radial links to Dublin would have the effect of weakening regional economic development.

IBEC pointed to the M6 as a good example of the successful use of PPP approaches to financing infrastructure. In general they believed that motorways such as the M6 boosted productivity by allowing meetings and collaboration between firms in different cities. They also saw positive labour market effects. For example the effective distance between Galway and Athlone was now decreased with people travelling between the two for work, or shopping and services. This improved the attractiveness of both cities as a location for people and businesses and led to deeper labour markets.

Dublin Airport saw its role as providing air connectivity between all of Ireland and the rest of the world. The improved M4/M6 improves this service, and makes it easier to use. NUI Maynooth were able to identify benefits in their ability to attract students from a wide catchment area who commute to the College and to attract and retail staff.

Failte Ireland carries out detailed research on visitors to Ireland. They have had some feedback suggesting that the M4/M6 has had a negative effect on tourist businesses in the West, with fewer visitors overnighing in the area. However this is not a consensus view, other firms believe that they can now attract more visitors as they are more accessible from tourist entry points. They point out that a full 84 per cent of foreign tourists arrive by air,

and the vast majority of these arrive in Dublin Airport. Good road links are essential to distribute these to the west, or to any destinations outside Dublin.

The Industrial Development Authority regards a motorway link as an essential hygiene factor to attract investors to a location. However they point out that investors are not impressed by the motorways – it's what they expect and if it isn't there then more questions are asked about the state of other infrastructure such as broadband, electricity and schools. The Mayo Industries Group reinforced all of these points, finding that they are at a severe disadvantage without good motorway links. Enterprise Ireland were equally positive about the need for motorway links. They emphasised the need for good links from all parts of the country to ports and airports.

#### **1.4 Wider Economic Impacts of LUAS System**

The LUAS light rail system was originally proposed in the early 1990's by the Dublin Transport Initiative (DTI), which was appointed by the Minister for the Environment to analyse Dublin's future transport needs. Following an iterative planning and policy process, the LUAS network opened in 2004. The cost-benefit results set out in the background paper entitled 'Impact of Previous Projects' concern the benefits of the LUAS network for travellers in terms of travel times, vehicle operating costs etc. An investment in transport infrastructure of this scale may also have had impacts on the wider economy of the Greater Dublin Area.

Firstly, it may have affected the location of firms, so bringing additional economic activity and jobs opportunities to certain parts of the GDA, without necessarily increasing the total volume of economic activity. Of potentially more interest, an investment of this scale may actually increase productivity and hence the total value of economic activity and incomes in the city. Recent research in transport economics has emphasised that improvements in transport services can increase the productivity of other parts of the economy and so increase output and incomes across the economy. A transport investment can have this type of "Wider Economic Impact" through some or all of the following effects:

- Agglomeration effects on productivity;
- Labour Market Effects:
  - Encouraging people to enter the labour market;
  - Allowing people to move to more productive jobs; and,
- Expanded output in imperfectly competitive markets.

Agglomeration benefits arise from the increase in productivity that comes with increases in the level of concentration of economic activity. These productivity benefits from greater concentrations of economic activity were first noticed in studies of the economic performance of cities. In general firms in larger cities, with greater concentrations of individuals and business, are more productive than firms in smaller towns and cities or in rural areas. These productivity benefits come from having access to:

- Larger labour markets providing access to a specialised labour force;
- Larger product markets providing a bigger potential market for their production; and,
- A broader range of other firms providing specialist inputs and services and acting as potential partners and sub-contractors.

The transport benefits of the LUAS arise from shorter journey times. These reduce the generalised costs to individuals and firms of making journeys within the catchment area of the LUAS. These reductions in journey times reduce the effective distances between firms and individuals in this area. This potentially leads to the type of agglomeration effect described above. These reductions in effective distances will bring firms closer to potential customers, employees and partners, giving them access to larger labour and product market and to a greater range of potential suppliers and partners. In general the LUAS can bring

firms the benefits normally associated with being part of a larger denser area of economic activity.

Equally the reduction in effective distance between firms and individuals may encourage additional people to enter the labour market. For example firms in city centre will have access to a larger pool of labour. In standard cost benefit terms, the decision of an additional person to enter the labour market has welfare benefits from the additional output produced by that person but a welfare cost equal to the effort and lost leisure contributed by that person. The economic value of the output from an additional member of the labour force is the "value added" from that persons production, which will be equal to the full cost of employing that person to the employing firm. The economic value of the cost to the employee of their lost leisure is the net income they gain by taking up employment. Therefore the "tax wedge" between the gross cost of employing and additional person and the net income of that person, broadly equivalent to payroll taxes on the employer and income taxes paid by the employee, represents a net welfare gain to society as a whole.

Lower effective distances may also allow people who were already active in the labour market to travel further for work and take up opportunities to take on more productive jobs that offer them a higher income. The additional "tax wedge" from such decisions will also represent a net welfare increase for the economy as a whole.

Finally, the majority of markets for goods and services operate in conditions of less than perfect competition. As a result the level of production in these markets will be lower than the socially optimal level that would be reached under conditions of perfect competition. Increasing output in these markets leads to additional consumer surplus and producer surplus and so to net increases in total economic welfare. Transport costs, comprising fares and travel time, are a cost to firms, and the reduction in these costs as associated with a transport investment will reduce the cost of firms that produce other goods and services. When a profit maximising firm's costs are reduced it will normally respond by increasing its output. The additional producer and consumer surplus from this increased output will represent a net increase in economic welfare. In this way the reduction in transport costs



from the introduction of the LUAS will lead to increased output from firms using the road and so to net economic welfare benefits.

The necessary research has not yet taken place to allow these benefits to be estimated using a modelling approach in Ireland. However for this case study the potential existence of this type of effect was investigated through interviews with stakeholders.

#### **1.4.1 Interview Results - LUAS**

Consultation interviews have taken place with representatives of the following stakeholders:

- Peter Byrne: South Dublin Chamber of Commerce;
- Kevin Mooney, Gerard Brady, Aiden Sweeney: IBEC;
- Vincent Harrison, Dublin Airport Authority;
- John O'Connell, Tallaght Hospital;
- Nessa Skehan: Fáilte Ireland;
- Ray Bowe: IDA;
- Cathy Holohan: Enterprise Ireland;
- Kieran Rose: Dublin City Council;
- Liam Walsh, Dublin South Council;
- Monica Cullinane: IMMA; and,
- Caeman Wall: Fáilte Ireland.

The South Dublin Chamber of Commerce considers the of Red LUAS line to be a core piece of infrastructure for South Dublin. In their opinion South Dublin is now the second best location for business in the GDA after the city centre. Easy connectivity to the rest of the GDA and the country as a whole is essential to this. However they consider the road network to be the key provider of this connectivity. They stated that certain features of the Red LUAS line limited its usefulness for business. These were:

- Concerns about safety for users of the Red line;
- The journey time to and from Dublin city centre;
- Lack of link to Green Line, or any link to south city centre; and,
- Route is indirect and does not serve areas of densest population.

They acknowledged the very valuable social role played by the Red LUAS in connecting residents in its catchment area with hospitals, schools, colleges and cultural facilities. However they felt that the route was such as to limit its use for commuting in and out of Dublin city centre. However they acknowledged that it was used for short distance commuting within the Dublin South area.

The Irish Business and Employers' Confederation was very positive about the impact of LUAS as a piece of transport infrastructure. They regarded the introduction of LUAS as having been very positive for businesses in the GDA. They were interested in seeing further uses for the infrastructure, citing the mooted use of the LUAS Redline by Diageo to transport freight from St James' Gate to Dublin Port.

They confirmed that the LUAS played a valuation role in allowing labour mobility, supporting the idea that it could have the type of Wider Economic Impact discussed above. They cited the example of Sandyford which now hosts a large, mature cluster of information technology firms. This would not have been possible without LUAS allowing workers to commute in to this area. They expected that the extension of the LUAS network would have a similar positive effect on the development of the Grangegorman site. They also were of the opinion that the level of successful development along the north, and south, docklands would not have been possible without the extension of the LUAS to the O2. They regarded the operation of LUAS on a PPP concession basis as a valuable positive example of partnership with private sector operators to deliver efficient and innovative public services. Dublin Airport Authority stated that LUAS was "too local" a service to impact their operations.

Tallaght Hospital provided an interesting illustration of the labour market effects of LUAS, and how it allows collaboration between institutions, again suggesting that the Wider

Economic Impacts discussed above may arise. They stated that LUAS is a significant transport provider for their staff, and its availability makes it easier for them to recruit staff. They also pointed out that they work in close co-operation with St. James's hospital, with many key staff working in both locations. These staff make extensive use of LUAS to travel between the hospitals.

Fáilte Ireland made the interesting observation that by providing a quick and simple way to travel to attractions outside the immediate city centre, LUAS improves the attractiveness of Dublin for visitors. Attractions such as Collins' Barracks, the Phoenix Park and the Royal Hospital Kilmainham are now easily accessible to visitors to the city. In general visitors are much more likely to use a fixed line system than a bus or taxi to reach visitor attractions. In addition, the quick, reliable connection to such attractions means that they are an option for weekend visitors to Dublin.

The Industrial Development Authority stated that the presence of LUAS makes Dublin in general an easier "sell" to potential foreign investors. In fact the overall impression of modernity that comes from the LUAS and the motorway network benefits the country as a whole. On a more practical level, the length and predictability of commuting times are a factor in foreign investors' location decisions, and LUAS has improved these in Dublin. The IDA particularly emphasised the importance of the Green Line in allowing and promoting development in Sandyford and Bride's Glen. Two comments worth quoting verbatim were that "LUAS is superb...we could do with another 4 or 5 of them" and that the positive impression it makes on visitors was such that "we would deliberately bring people on the LUAS." Enterprise Ireland reinforced the idea that public transport is key to the development of the city, and that LUAS is particularly effective in this respect.

The Museum of Modern Art at Kilmainham confirmed the tourism impact that had been suggested by Fáilte Ireland. They stated that LUAS is very important for their business. They promote themselves as being 8 minutes walk from the Heuston stop, which they find much more effective than marketing based on a bus number.

The local authorities confirmed that both LUAS lines serve brownfield type sites and that they will allow additional development to take place on these rather than on new Greenfield sites, at a considerable saving in the provision of other public infrastructure by the local authorities.

Stakeholders are clearly of the opinion that the Green line has improved the attractiveness of Dublin as a location for businesses. Industry representatives also point out that the LUAS network has allowed commuting in and out of key growth areas in Sandyford and the IFSC, and so allowed the growth of these key economic clusters. Tallaght hospital is an example of a major employer who states that it has improved its access to staff. Interestingly the hospital emphasises the importance of LUAS as a link between Tallaght Hospital and St James for staff, providing an example of agglomeration effects in practice.

The LUAS also appears to be having an effect on Dublin as a tourism destination by increasing the number of attractions that can be reached by visitors to the city. Future potential exists to use the LUAS to allow visitors to Dublin to avail of the coast and Dublin mountains.

## **1.5 Conclusion**

It is clear from this case study analysis that both the M4/M6 and the LUAS have had a wider economic impact than that suggested in cost-benefit appraisal<sup>1</sup>. Through qualitative interview analysis a positive wider impact has been identified suggesting that the actual benefit arising from these projects was greater than reported elsewhere as wider benefits cannot currently be quantified.

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<sup>1</sup> See SFILT Background Paper 'Impact of Previous Investment'.