

Institution: University College London		
Unit of Assessment: 13 – Architecture, Built Environment and Planning		
Title of case study: Connecting deprived regions in North West Europe through innovative tram projects		
Period when the underpinning research was undertaken: 2009-2017		
Details of staff conducting the underpinning research from the submitting unit:		
Name(s):	Role(s) (e.g. job title):	Period(s) employed by submitting HEI:
Robin Hickman	Professor in Transport & City Planning	2007-present
Peter Hall	Professor of Planning	1992-2014
Period when the claimed impact occurred: 2014-2020		
Is this case study continued from a case study submitted in 2014? Y		
1. Summary of the impact (indicative maximum 100 words)		
<p>The Bartlett School of Planning's research on trams has provided insights that have influenced public transport investments across North West Europe (NWE). As part of the Sintropher project, the research examined innovative tram-based systems as a means to tackle social and economic deprivation by examining impacts of public transport investments in over 50 European urban areas. Research findings: i) underpinned EUR22,300,000 in strategic investments in public transport across NWE; ii) provided the basis for regeneration in urban areas and regions, and shifts in travel behaviours; and, iii) critiqued professional project appraisal approaches in NWE and internationally.</p>		
2. Underpinning research (indicative maximum 500 words)		
Planning and implementing best practice in public transport projects		
<p>Funded as an EU Interreg transnational cooperation project, from 2014-17, Sintropher (Sustainable Integrated Transport Options for Peripheral European Regions) was designed to develop improved and sustainable transport links for poorly-connected regions in North West Europe (NWE). Public transport has been particularly difficult to fund in areas of NWE that have multiple social deprivation problems. As a result, there is a strong and widespread local perception that little infrastructure investment is being directed to these areas. To improve access to 'peripheral' or 'left-behind' regions, Sintropher examined tram-train systems, as well as single-track tramways and interchanges linking national or transnational rail or air hubs in European cities and regions.</p>		
<p>Sixteen partners, including public transport operators, local authorities and regional transport agencies, joined lead partner UCL on the project. The Bartlett's School of Planning led research on the planning of transport and new urban neighbourhoods [a] and the linkages between transport, urban development and social equity [b, c]. For example, the research examined how tram projects are planned, appraised and implemented in Germany and France, and how this good practice might be applied elsewhere, such as in the UK. Tram-based technologies, associated developmental and social impacts of infrastructure investment, and national decision-making and project appraisal processes were explored.</p>		
<p>As impact-driven research, Sintropher invested over 80% of its EUR26,800,000 funding in pilot projects and demonstrations. New tram-based projects were supported with funding, including: an extended Blackpool tramway along the Fylde Coast, UK; an extended Kusttram, West Flanders, Belgium; upgrades to the Kassel RegioTram, North Hesse, Germany; the new singletrack, Ligne 2 in Valenciennes, France; and assessment of the disused cross-border rail link, Nijmegen Kleve, the Netherlands.</p>		

Transferring best practice from the Kassel 'model' project

Sintropher examined the regionally integrative Kassel tram-train system and its economic impacts to inform investments in Blackpool, Valenciennes, Saarbrücken and West Flanders. By integrating transport modes across urban areas and regions, innovations led to reduced costs and increased social benefits [d].

The research and projects demonstrated the benefits of tram-based infrastructure in economically disadvantaged urban areas and regions in allowing integrated connections with central cities and peripheral urban areas and facilitating improved access to employment and other activities. The research further examined the decision-making process and the impact of transport projects on social mobility in relation to appropriation and the take up of newly-accessible employment opportunities and other activities. In addition, Sintropher used a political economy perspective to explore why certain innovative transport projects were implemented, examining the different viewpoints and discourses in a transport project case study and showing how the mediation of multi-actor perspectives are critical to project implementation [e].

Developing an appraisal framework that includes wider public policy benefits and multi-actor viewpoints

Transport planning projects are conventionally evaluated through cost-benefit assessment (CBA) and multi-criteria assessment (MCA). Bartlett research [f] challenged these traditional approaches, showing that such methodologies are too simplistic for transport planning, and lead to ineffective prioritisation. The findings suggested that they should instead be complemented with or replaced by participatory MCA approaches, which more fully represent diverse actors' views.

The research developed a novel appraisal framework and participatory MCA decision support tool, incorporating multi-actor views and assessing project options against local policy criteria. This was tested in the UK Fylde coast regional case study, considering the upgrading of the South Fylde rail line, including tram and tram-train options, to improve connectivity and promote regeneration and growth [g]. When compared to the CBA, this analysis produced a much stronger case for investment. It also resulted in a preference for tram and tram-train options with a connection to the Blackpool tram, diverging from the conventional option of an improvement of the existing rail service or indeed highways. Hence the type of project investment and process of project appraisal can both be critical to the resultant impact on urban development and wider public policy goals.

3. References to the research (indicative maximum of six references)

- a) Hall, P. 2014, *Good Cities, Better Lives*, Abingdon, Routledge.
- b) Hickman, R., Givoni, M., Bonilla, D. & Banister, D. (eds.) 2015. *Handbook on Transport and Development*, Cheltenham: Edward Elgar.
- c) Hickman, R., Mella Lira, B., Givoni, M. & Geurs, K. (eds.) 2019, *A Companion to Transport, Space and Social Equity*, Cheltenham: Edward Elgar.
- d) Sintropher project summary and project video; also summarised in Hamiduddin, I. & Hickman, R. 2018. *Planning for public transport: applying European good practice to UK regions?* In: Ferm, J. & Tomaney, J. (eds.) *Planning Practice: Critical Perspectives from the UK*. Abingdon: Routledge.
- e) Sintropher project summary: <https://bit.ly/3lvspfv>
- f) Hickman, R. and Huaylla Sallo, K. 2020, *The political economy of transport projects*, draft paper, in review.
- g) Hickman, R. & Dean, M. 2017, *Incomplete cost-incomplete benefit analysis in transport appraisal*, *Transport Reviews*, 38(6), 689-709.
<https://doi.org/10.1080/01441647.2017.1407377>

h) Dean, M., Hickman, R. & Chen, C.-L. 2019, Testing the effectiveness of participatory MCA: the case of the South Fylde Line, *Transport Policy*, 73, 62-70.
<https://doi.org/10.1016/j.tranpol.2018.10.007>

Funding details:

EU Interreg IVB (2009-2017) EUR26,800,000, led by Professor Sir Peter Hall and Professor Robin Hickman.

4. Details of the impact (indicative maximum 750 words)

Sintropher has had major impacts in reconceptualising and investing in new tram-based projects across North West Europe, leading to significant travel behaviour changes, urban development and economic and social impacts.

4.1 Changing public transport investment strategy in North Western Europe

The economic impacts of regional public transport systems, connecting urban centres to their surrounding regions are often a very positive influence on GDP and growth [1]. Utilising best practice from Kassel and Saarbrücken, tram-train projects are being developed in the UK, Europe, and internationally, including Sintropher's case studies. Organisations such as the Light Rail Transit Association have used the analysis and evidence from Sintropher to plan and lobby for tram-train projects in the UK. For example, the Sheffield-Rotherham tram-train pilot project is underway and a regional tram-train project is being planned in the Manchester city-region. The Technical Director, Light Rail Transit Association, cites Sintropher research – specifically evidence pointing to employment, educational, leisure and environmental benefits to areas of social and economic deprivation – as being of “great significance [in] changing the way that innovative tram-based projects are perceived in the UK, and will lead to many more project investments of this type” [2].

The research influenced proposals for new regional public transport investments in Blackpool. The Group Leader for Transport Projects in Blackpool Council cites Sintropher as providing the foundation for a “new [transport] system [that] is superior and future-proofed to enable further extensions,” and further states that the project “has made a real contribution to the north-west England economy. The new system has made a major positive difference to the Blackpool promenade environment, particularly as the now heritage trams continue to operate in between the core services” [3].

Sintropher has been fundamental to developing innovative proposals for urban and regional public transport investments in Northern England [4] [5]. This includes regional tram-train and also a high-speed rail connection linking Liverpool-Manchester-Leeds-Sheffield-Hull, initially proposed by Professor Sir Peter Hall. This latter project was subsequently developed by the UK Government as High Speed Rail 3 (HS3) within the Northern Way proposals [6].

Other cities, such as Oxford, are considering regional tram-based investments, using lessons from Sintropher [7], and Transport for London (TfL) is developing large public transport projects that regenerate urban corridors and neighbourhoods, such as Crossrail2. Sintropher's emphasis on wider measures of investment value, such as the potential for trams to facilitate regeneration, are assisting in the planning and appraisal of such projects.

4.2 Impacts of Sintropher's investment in tram-based projects for public infrastructure

By examining the social impacts of the demonstration projects, Sintropher's research has shown that innovative tram-based projects benefit areas with high levels of social and economic deprivation – so-called ‘left behind’ areas. These areas are the focus of new public transport investments, assisting with environmental and social equity public policy goals. Sintropher invested EUR22,300,000 in tram-based projects, which leveraged further EUR1,000,000,000-EUR1,500,000,000 for infrastructure and promote related commercial and housing developments in the public transport corridors and station catchment areas [8].

Influencing travel behaviour in low-income areas in Valenciennes

The tram projects led to changed travel behaviours in the case study cities, with wider environmental, social and economic impacts. For example, in Valenciennes, around 19,000,000 passengers use the tram system annually. EUR13,000,000 from Sintropher co-funded an innovative single-track tramway system, as part of a EUR150,000,000 Ligne 2 project. This was a major EU demonstration project for single-track tram technology, and the investment supported a priority urban regeneration corridor in the Valenciennes urban plan.

A survey of passengers on the Valenciennes tram (Hickman et al., 2019), illustrates the impact of Sintropher-funded public transport investment on travel behaviours in a low-income urban area. The results show that use of the tram was by low-income groups: 66% of respondents had a household income of less than EUR2,000 per month and 39% less than EUR1,000 per month. 45% agree or strongly agree that the tram allows them to access employment opportunities; and 17% agree or strongly agree that the tram helps them to reach employment opportunities that were not reachable before. 95% agree or strongly agree that the tram network is well configured and goes to useful destinations. Finally, 67% agree or strongly agree that the tram helps to reduce inequalities of income and education in the region [9].

4.3 Challenging conventional project appraisal approaches and disseminating good practice

The research contributed to wider professional debate on transport project appraisal approaches, including the requirement for multi-actor MCA approaches as part of a more participatory approach to transport appraisal. TfL, for example, has developed project appraisal approaches that draw on multi-criteria strategic appraisal. The Head of Strategic Analysis at TfL indicates that Sintropher as a whole and the “approaches to transport project appraisal, including CBA, MCA and participatory MCA... [have] been of great significance, influencing the debate and practice relating to the way projects are assessed” [10].

Research and best practice guidance on appraisals have been disseminated internationally. The POLIS network – a network of EU cities and regions concerning transport innovation – has hosted briefing papers on its website, covering innovative approaches to the financing of transport infrastructure and technologies for light- rail or tram-based systems. A good practice interchange guide for NWE was published, and similar resources have been developed for the Asian Development Bank for use in the planning of high-speed railway stations and surrounding neighbourhoods in China [11].

An online course on sustainable urban mobility, developed by the Bartlett School of Planning, and Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), is available via Futurelearn. Aimed at transport planning practitioners, participants on the first runs of the Part 1 and 2 course totalled over 5,000, including professionals and public stakeholders from the Global South [12]. This course discusses the implementation of sustainable urban mobility projects worldwide, giving attendees the tools to sustain and extend the impact of these projects.

5. Sources to corroborate the impact (indicative maximum of 10 references)

1. Testimonial: Emeritus Professor, University of Kassel
2. Testimonial: Technical Director, Light Rail Transit Association (LRTA)
3. Testimonial: Group Leader (Transport Projects), Blackpool Council
4. S-MAP 2030. North West of England case study: irrigating the region, North West of England Case Study <https://bit.ly/3s5bbcA>
5. Testimonial: Chief Planner, North West Development Agency, 2000-2010
6. Speech: George Osborne, 'We Need a Northern Powerhouse' <https://bit.ly/30Vt6Xb>
7. Trams for Oxford: Could Light Rail improve our historic cities? <https://bit.ly/2P3QDT9>

Impact case study (REF3)

8. Project report: Hickman, R. & Osborne, C. 2017. Sintropher Executive Summary, Interreg IVB. London: UCL.
9. Hickman, R. and Mella-Lira, B. 2020 Valenciennes tram investment and social mobility: survey results.
10. Testimonial: Head of Strategic Analysis, Transport for London
11. Chen, C.-L., Hickman, R. & Saxena, S. 2014. Improving Interchanges. Towards Better Multimodal Hubs in the PRC. Manila: Asian Development Bank
<https://bit.ly/3c0Ooc8>
12. Futurelearn online course: Transforming Sustainable Urban Mobility
<https://bit.ly/3bXJGff>.