

Understanding the transformational change potential of local transport investment on local economic development; developing a programme of research with a particular focus on the Devolution and Local Growth Agenda¹

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Context

Many local development projects involve some element of transport investment. Project appraisals often focus on standard generalised cost savings, but they also refer to other wider benefits. These wider benefits are often a prominent feature in appraisals. However, once the project investment has taken place it seems difficult to find them. Research has shown that *contextual* factors appear to influence what is actually delivered. These include frictions that constrain land market adjustment, funding issues and the effectiveness with which local stakeholders deliver the project and whether there has been strong local vision and integration with other policy initiatives³.

DfT wishes to understand more about the potential for transport investment to have a transformational impact on local economic development in the United Kingdom and the factors that constrain benefit realisation. Iven Stead from DfT commissioned Professor Peter Tyler to produce a scoping paper to identify where new research could help to fill some of the gaps in knowledge.

Existing research has focused mainly on the economic impacts of transport investment on traditional land use activities including housing development. However, transport investment, along with other policies, may support HM Government's objectives as they relate to the Devolution and Local Growth Agenda⁴. Assessing the possible transformational impacts on these areas should be the focus of new research.

A preliminary review of the evidence⁵ summarised the factors that could be responsible for transformational benefits being less than expected. It pointed to problems in establishing the counterfactual position, limited understanding of the pathways by which impact is achieved and how contextual factors influenced outcomes. Moreover, the displacement of economic activity between areas was likely to be significant, but very little was known about the actual amount, how it varied by area and the type of investment project.

¹ https://www.gov.uk/government/speeches/the-kings-speech-2024?utm_medium=email&utm_campaign=govuk-notifications-topic&utm_source=e94390e7-0ebd-49f5-8469-77a52a4375e8&utm_content=immediately

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³ [Transformative impacts of transport investment \(publishing.service.gov.uk\)](https://www.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/123456/transformative-impacts-of-transport-investment.pdf)

⁴ https://www.gov.uk/government/speeches/the-kings-speech-2024?utm_medium=email&utm_campaign=govuk-notifications-topic&utm_source=e94390e7-0ebd-49f5-8469-77a52a4375e8&utm_content=immediately

⁵ Understanding the transformational change potential of local transport initiatives; developing a programme of research Some initial thoughts. Document to DfT Professor Peter Tyler. 28th January 2024.

Building on the DfT response to the scoping document a Workshop was held at the DfT in London on the 30th of April 2024 to investigate the key issues that might shape the development of new research.

The Workshop considered:

- Setting the context. How transport infrastructure affects land use and economic development (Professor Tony Venables). Key Findings from recent research undertaken for DfT - (CEPA and Arup)⁶;
- Developing a programme of research, focusing specifically on local growth and transformation - some initial thoughts on key issues and implications for research including issues around methodology (Professor Peter Tyler);
- The economic impacts of transport investment on the local economy and the economic dimension as it affects local economic growth (clustering and sectoral effects). (Dr Adam Brown);
- The role of contextual factors on transformative land-use as they relate to housing, including planning and land frictions (Professor Michael Ball);
- The role of contextual factors on transformative land-use as they relate to infrastructure land use including planning and land frictions (Professor Alexander Lord and Kelvin MacDonald);
- The role of contextual factors on transformative land-use as they relate to institutions, strategic approach and devolution (Professor Danny MacKinnon);
- How the social dimension and the broader Well-Being agenda should be considered as it relates to the transformative impacts of transport investment (Dr Sara MacLennan);
- How can research findings be better incorporated into appraisal and evaluation (Professor Peter Tyler)

The Workshop produced a number of valuable insights and the contributors provided further comments after it. The collected summaries of the presentations are available at:

<https://drive.google.com/drive/folders/16DzcA6dEu2UGAFyyp4qI31ZqRZh0Xohv?usp=sharing>

Building on the key findings from the Workshop this document proposes key themes around which a programme of research could be commissioned to enable this important agenda to be taken forward.

A Programme of Research to understand the transformative change potential of local transport investment with a particular focus on the Devolution and Local Growth Agenda.

Introduction

The Research should be structured by theme. The following themes are appropriate:

1. Theory and conceptualisation;

⁶ <https://www.gov.uk/government/publications/transformational-impacts-of-transport>

2. Methodology: assessing transformational impacts;
3. Modelling: further development of land-use modelling with a specific focus on transformative change and the integration of the broader Devolution and Local Growth Agenda. It is desirable to extend the scope of the land-use modelling research to consider the implications for well-being and thus how changes in physical space translate into changes in how people interact with, and use space⁷;
4. Contextual factors;
5. Tools

Research undertaken under each theme should begin by summarising what is already known, identify key gaps in existing knowledge and how the new research could contribute to the evidence base. The emphasis will be on identifying what is actually possible given the available data and research techniques.

1. Theory and conceptualisation

Research under this theme should:

- Consider how transformational change is defined and the relevance of ‘thresholds’ and ‘tipping-points’. This is not straight forward because there are different views depending on the underlying theoretical and conceptual framework adopted;
- Identify the *pathways* by which transport investment can have a transformational impact on devolution and local growth through changes in land-use, changes in how people interact with and use space and other transmission mechanisms. This could build on the six capitals approach recently developed by the Ministry of Housing, Communities and Local Government⁸;
- Develop the *theories of change* (and associated logic models)⁹ as to how investment in transport projects can influence economic, social and environmental outcomes;
- Understand more about how contextual factors affect the attainment of final outcomes;
- Understand more about how complementary investments can support transport related investment to deliver the required outcomes. This should be incorporated into the logic modelling;
- Consider how ‘geography’ (access, proximity, connectivity, type of settlement) affects the possible scale of impact;
- Consider how labour and product market interactions influence displacement, leakage (commuting), substitution and migration effects.
- Consider distributional impacts and assemble an evidence base.

Recommended research

The objective of research under this theme would be to provide a strong conceptual framework with which to underpin future research. The conceptual framework should begin by identifying the economic, social and environmental outcomes that result from transformative transport

⁷ I am grateful for Dr Sara MacLennan for her comments on this and how the broader well-being agenda could be incorporated into the overall research agenda.

⁸ https://assets.publishing.service.gov.uk/media/61fd3c71d3bf7f78df30b3c2/Levelling_Up_WP_HRES.pdf

⁹ https://assets.publishing.service.gov.uk/media/5e96cab9d3bf7f412b2264b1/HMT_Magenta_Book.pdf

investment. It should then consider how these outcomes affect the types of capital in an area (including social and natural capital). The impacts on the capitals can then be related to the objectives and missions as defined in the Devolution and Local Growth Agenda. This could be assisted by a systems mapping approach showing the relevant interactions and loops. The research should also consider what is known from the relevant literature about tipping points and thresholds. It is important to consider how they have been theorised, assessed empirically, and applied in practical research.

It is recommended that a research project be commissioned that considers the pathways by which transport investment can bring about transformative change as it relates to improvements in economic, well-being and environmental outcomes. The theory of change approach will identify these and it would then be important to assess what is known from existing literature, particularly as it relates to the size of potential impacts and the factors that influence them (contextual factors). It is understood that environmental/ net zero research is already being undertaken as part of other TAG related work in DfT and so this research would be integrated with this commission.

This research projects is essentially developing conceptual frameworks, but it will also identify the indicators, and thus the data, required in the modelling research, as discussed below. It should provide the logic models required to advance the research programme.

2. Methodology

Research under this theme should:

- Consider how transformational impact is defined and how tipping-points and thresholds can be incorporated in future modelling building on the literature review undertaken as part of the theory and conceptualisation research discussed above;
- Establish the best approaches with which to assess the alternative position, or the 'counterfactual'. A historical perspective is important, particularly as it enables more understanding of adaptive change, that is how local economies adjust to changes in the local conditions they face. There is an extensive literature, particularly in economics that assesses how economic systems respond and adjust to economic shocks and how resilient they are. In economic geography there has been much interest in modelling the extent to which local economies return to their pre-shock trajectory after an economic shock or whether their growth trajectory has been affected, positively or negatively, by the consequences of the shock (See Martin et al, 2016¹⁰). This research, and particularly the modelling of the counterfactual position in the absence of the shock, or in the present context, possible transformative investment, would seem to have much to contribute.
- Consider how best to disentangle the contribution of transport investment from other contextual (policy and non-policy) factors. There has been much attention given to this in the evaluation literature and this should be reviewed to draw out key lessons for methodology;

¹⁰ Tyler, P with Martin R., Sunley P and Gardiner B (2016). How Regions React to Recessions: Resilience and the Role of Economic Structure. *Regional Studies*. Pgs. 561-585.

- Assess how the impact of transformation change delivered in places affects the people in, and around, them, as well as distributional impacts. Again, the evaluation literature should be reviewed for its relevance.

Recommended research

Two research projects are recommended. They would examine methodological issues in assessing transformational change on a) standard land-use outcomes (i.e. housing, office space etc) and b) well-being. The research could usefully be informed by a number of empirical case studies.

3. Modelling

Research on the modelling theme comprises two strands. The first concerns model selection and the second the derivation of reliable empirical estimates of the key parameters required to build models and tools (ex-ante appraisal and ex-post evaluation).

Model selection.

- There is currently much interest in developing Spatial Computable General Equilibrium and Land Use/Transport Interaction models. There are concerns as to how to manage complexity and the granularity of analysis. A lack of good quality data remains a key barrier to widespread application. DfT has a substantial programme of research in this broad area and this is not discussed further in this document; Outside of the traditional land-use modelling agenda there is scope to model broader impacts on well-being and thus how changes in physical space translate into changes in how people interact with, and use space, as discussed above¹¹. Thus, it is considered that there are a number of factors that affect an individual's well-being that include their employment, disposable income, health, the quality and affordability of their housing and their physical environment. In all cases transport infrastructure can affect the ability of an individual to access these. The welfare enhancing effects can be modelled drawing upon established techniques that include hedonic pricing and stated preference.

Empirical

- Research is required to understand more about how *responsive* business investment and household location decisions are to significant transport investment. There is relatively limited evidence on the determinants of business location in the United Kingdom at the present time. The locational determinants analysis should consider dynamic clustering effects as they are influenced by increased transport investment and enhanced connectivity. The research should be aligned with research undertaken by the Department for Business and Trade¹² and also the research being undertaken by Dr Jens Kandt at UCL.¹³

¹¹ I am grateful for Dr Sara MacLennan for her comments on this and how the broader well-being agenda could be incorporated into the overall research agenda.

¹² [Identifying and describing UK innovation clusters \(publishing.service.gov.uk\)](https://publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/614442/identifying-and-describing-uk-innovation-clusters.pdf)

¹³ <https://www.ucl.ac.uk/bartlett/casa/jens-kandt>

- There is very limited understanding of how transformative transport investment affects well-being and its determinants (including levels of trust, crime, safety etc)¹⁴ and the beneficiaries from transformative transport investment (including a focus on those who may suffer negative impacts). There may be trade-offs between some economic and social outcomes.

Recommended research

In relation to model selection DfT already have research that is of relevance, particularly on land-use transport interaction models. There is scope for commissioning research that adopts a systems-based approach to the modelling of transformative change more specifically focused on the broader Devolution and Local Growth agenda. The approach recognises explicitly that we are dealing with Complex Adaptive Systems¹⁵ and it might enable more consideration of tipping-points and when critical thresholds are achieved. It is important to understand more about how investment in transport can enhance the stock of capital assets in an area.

It is important to know more about the factors that make areas more attractive to new investment. There is scope to assess the spatial determinants of inward investment (by sector) with a view to quantifying the relative responsiveness of investment to them. This project would require a budget that allowed empirical research probably based on a substantial survey of companies locational preferences. It is recommended that the sample size be quite large to enable disaggregation by sector and other key characteristics. Besides a substantial business survey it is also envisaged that other relevant stakeholders are included in the survey work (including property agents). This research would be survey based. It is also possible, if resources permit, to complement it with a more quantitative based analysis using ONS and other publicly available data sources.

4. Contextual

Research under this theme should:

- Understand more about how the economic impact of transport investment in a local area is strengthened by coordination with other policy initiatives affecting land use (planning) and the provision of other services;
- Understand more about how *land-use frictions* (including planning) could affect impacts. And, as Professor Alex Lord has commented, this could encompass the potential regulatory impacts of land-use planning on broader development outcomes but should also include the ‘planning gain’ of investment in transport and other public goods through developer contributions policies: collectively worth £7bn at the moment of their last valuation in 2018/19¹⁶;

¹⁴ I am grateful for Dr Sara MacLennan for her comments on this.

¹⁵ Oughton, E, Usher, W, Tyler, P and Hall, J (2018). Infrastructure as a Complex Adaptive System. Hindawi. Complexity. Wiley. Volume 2018, Article ID 3427826, 11
https://ora.ox.ac.uk/objects/uuid:090b4cbd-8ec6-4631-8bec-26640a801e8f/download_file?file_format=pdf&safe_filename=Oughton_2018_infrastructure_as_a_complex_adaptive_system.pdf&type_of_work=Journal+article

¹⁶ I am grateful to Professor Alexander Lord for this helpful addition

- Assess the responsiveness of housebuilding to transport investment (including integrated transport responses) and the release of latent demand as in situations where underlying population growth in an area has not been able to be met by an adequate housing supply response;
- Assess the role of strategic leadership, vision, leadership and the presence of intermediaries. It has been suggested by MHCLG¹⁷ that institutional change should be considered as a complementary policy intervention that has the potential to accelerate of decelerator change. There is strong interest in understanding how horizontal (department) and vertical (tiers) integration and coordination by government affects the likelihood of outcome attainment (this is of particular importance given the emphasis in the Devolution and Local Growth agenda);
- There could also be benefit in exploring two suggestions from the Workshop. Professor Tony Venables mentioned that it would be helpful to study local economies that have experienced transformative change and understand more about the factors, including significant transport investment, behind this. Andrew Charlesworth-May from MHCLG also pointed to possible benefits from assessing the factors that have enabled high performing areas to do well (on basis of economic and wellbeing indicators) and what are the key factors, including transformative transport investment, that has assisted them to perform well. This research could provide valuable insight into the ‘types’ of areas that benefit most from transformative investment and assist in the development of appraisal tools. It could enable a typology to be developed. This would be a quantitative in nature.;

Recommended research

A number of research projects are desirable under this theme.

It would be of use to undertake further research into the factors that impede the workings of local land and property markets including planning control, land tenure and remediation issues. As the Workshop showed, it is important to consider the role of planning at different spatial levels. This research would be of particular importance if there is more use of strategic economic planning at the sub-regional level. The research could be case-study based underpinned by a robust statement of how planning impacts on the realisation of transformative outcomes at different spatial levels. It could usefully build on some of the existing case study research already undertaken by CEPA for DfT¹⁸.

Further research is required to understand the impact of transformative transport investment on the provision of housing and its affordability. It was highlighted in the Workshop that more evidence is required on how increased supply facilitated by transformative investment can address local housing need by housing *type*. Understanding more about impacts on housing and its affordability also feeds into, and would complement, the well-being research agenda highlighted earlier and, as Dr Sara MacLennan commented ‘how people use spaces – their active travel choices and interactions with others, which influence loneliness, crime and as a result, wellbeing’. The Workshop highlighted the importance of good case study research to support this agenda.

¹⁷ Grateful for this comment from Andrew Charlesworth-May at MHCLG

¹⁸ <https://www.cepa.co.uk/news-insights/view/transformational-impacts>

Further research should probe the importance of strategic leadership, vision, the role of intermediaries. This is an important research area in the light of the Devolution and Local Growth Agenda¹⁹ and the importance of coordinating activity across the levels and tiers of governance in England. The research should be based on case studies reflecting geographical diversity and evidence of good practice.

As discussed above, it was suggested in the Workshop that it could also be helpful to select local areas that had undergone significant economic change in recent decades and to ‘decompose’ the key influences and the impact that significant transport investment might have made. If a pilot study of this sort was commissioned then it would be necessary to know more about the underlying characteristics of local areas. In this respect there could be scope to use recently published research from ONS to group and cluster UK local authorities according to economic, demographic, health and well-being and connectivity and sustainability indices²⁰.

5. Tools

There is a keen interest to improve the ex-ante decision making appraisal process. At the present time there is:

- A relatively poor ex-ante appreciation of the scale of the benefits possible from transformational change. MHCLG are particularly Interested in developing a robust practical tool with which to appraise transformational impacts, particularly given the objectives in the Devolution and Local Growth Agenda²¹. New appraisal guidance should seek to incorporate the wider social and well-being issues, including impacts on affordability and accessibility, as discussed above;
- Relatively little integration of appraisal approaches across government departments. A more joined-up approach would be highly desirable and could make an important contribution to place based analysis²². It was also suggested by Dr Adam Brown at the Workshop that the tool would benefit from a systems approach²³.
- Little opportunity to enable scenario based modelling to assist early decision making and enable better appreciation of balance between risk and return in appraisal.

¹⁹ ¹⁹ https://www.gov.uk/government/speeches/the-kings-speech-2024?utm_medium=email&utm_campaign=govuk-notifications-topic&utm_source=e94390e7-0ebd-49f5-8469-77a52a4375e8&utm_content=immediately

²⁰ <https://www.ons.gov.uk/peoplepopulationandcommunity/wellbeing/methodologies/clusteringlocalauthoritiesagainstsubnationalindicatorsmethodology>

²¹ https://www.gov.uk/government/speeches/the-kings-speech-2024?utm_medium=email&utm_campaign=govuk-notifications-topic&utm_source=e94390e7-0ebd-49f5-8469-77a52a4375e8&utm_content=immediately

²² Grateful for this comment from Andrew Charlesworth-May at DHCLG

²³ Dr Adam Brown from Cambridge Econometrics suggested ‘commissioning a systems modeller to build a model that is able to represent the evolution of economies over time and identify how the transport system shapes this through interaction with other policy areas. The current method of applying paradigm-specific empirical heuristics to estimate effects is by definition incapable of capturing system transformation’.

Recommended research

It is recommended that research assesses the feasibility of developing an ex-ante appraisal tool that would allow a better quantitative appreciation of the potential benefits from transformation transport investments when combined with support from other government departments (and particularly MHCLG). The starting point should be to understand more about how existing Departmental appraisal processes assess the potential benefits of transformative transport investment, particularly in the light of the Devolution and Local Growth Agenda. It is necessary to understand a) how departments appraise a project jointly when there are possibly multiple impacts of relevance to different departments and b) the ability of the appraisal process to incorporate several possible interventions associated either directly, or indirectly, with the transformative investment.

A better understanding of the theory of change and associated logic models through the research mentioned earlier will help in understanding the type of benefits that should be considered in the appraisal processes.

Following this exploratory research it would be possible to develop an integrated appraisal template which could be 'tested' by applying it to a small number of case study projects. The objective would be to undertake ex-ante appraisals of projects that featured in earlier research that DfT has commissioned.

Satisfactory testing of the template and the associated procedures would then pave the way for the required software to be developed. There would then be a role for follow-on studies to develop and refine the approach. It is also envisaged that there is also the opportunity to develop ex-post evaluation guidance and associated supporting software.