Australian Transport Assessment and Planning Guidelines

T3 Wider economic benefits
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Wider economic benefits

At a glance

The concept of ‘wider economic benefits’ (WEBs) is relatively new to the practice of transport appraisal in Australia.

WEBs are improvements in economic welfare that are acknowledged, but that have not been typically captured, in traditional cost-benefit analysis (CBA). They arise from market imperfections: that is, prices of goods and services differing from costs to society as a whole.

There are currently three categories of WEBs that may be relevant for transport initiatives in Australia:

- WEB1 – agglomeration economies
- WEB2 – output change in imperfectly competitive markets
- WEB3 – tax revenues from labour markets.

Although the calculation of WEBs is still in its infancy, the correct interpretation and high-quality estimation of WEBs (using the most suitable data available) can add texture to the decision-making process for certain initiatives.

Importantly, WEBs are not the same as the economic impacts determined by CGE (computable general equilibrium) or input–output models. It is also important not to include in WEBs secondary impacts that do not increase net benefits, or that double count benefits already captured in the CBA or the accepted WEBs listed above.

There are currently serious WEB measurement difficulties in Australia due to limited data availability. Econometric work now under way, funded by the Australian Government, is expected to result in significantly improved estimation of WEBs for Australia. In the interim, practitioners should follow Infrastructure Australia’s advice and present CBA results without WEBs, and then with WEBs, treating WEBs effectively as a sensitivity test.
1. Context and introduction

The concept of ‘wider economic benefits’ (WEBs) is relatively new to the practice of transport appraisal in Australia. It has been primarily introduced into Australian practice in a restricted manner by Infrastructure Australia (IA, 2014). The guidance presented here is introductory, and in line with the approach to use of WEBs adopted by IA.

The ATAP Guidelines on options assessment (F3) and cost-benefit analysis (T2) provide the primary framework in which to assess the economic costs and benefits of all transport initiatives. The main area of departure in some circumstances is taking into consideration what have been referred to as ‘wider economic benefits’ (WEBs) of initiatives, such as agglomeration effects.

WEBs are improvements in economic welfare that are acknowledged, but that have not been typically captured, in traditional CBA. Importantly, WEBs are not the same as the economic impacts determined by CGE (computable general equilibrium) or input–output models. It is also important not to include in WEBs secondary impacts that do not increase net benefits from an initiative or double count benefits already captured in the CBA or the accepted WEBs discussed below.
2. Types of WEBs

There are currently three categories of WEBs that may be relevant for transport initiatives – discussed below. Using the terminology adopted in the UK, they are termed WEB1, WEB2 and WEB3. They arise from market imperfections, that is, prices of goods and services differing from costs to society as a whole.

2.1 Agglomeration economies (WEB1)

Agglomeration economies are benefits that flow to firms and workers located in close proximity (or agglomerating). Firms derive productivity benefits from being close to one another and from being located in large labour markets. Greater productivity in agglomerations arises from the fact that firms have access to larger product, input and labour markets, as well as face to face contact, information exchange and networking only available to industries working close to each other. Knowledge and technology spillovers are also important sources of agglomeration effects. Being an unpriced positive externality (Head, Ries and Swanson, 1995), agglomeration gives rise to a market imperfection. By bringing firms closer together and closer to their workforces, transport investment can generate an increase in labour productivity above that calculated from the direct user benefits alone (UK DFT, 2014).

Agglomeration effects are usually the largest source of WEBs, in terms of quantified benefits based on past estimates provided to Infrastructure Australia, and are only likely to be significant for initiatives that improve access to CBDs and other business districts of capital cities.

WEB1 is calculated by multiplying the change in ‘effective density’ (an accessibility measure) caused by a transport improvement by a ‘productivity elasticity’. Productivity elasticities vary by location and industry, and the relationship decays with distance. Econometric analyses of detailed firm-level data to estimate productivity elasticities have been undertaken for the UK and New Zealand, but not yet for Australia.

Transport initiatives can have offsetting negative agglomeration impacts where they shift economic activity away from one location to another. Hence,WEBs can be negative for some proposals. This is sometimes ignored in CBAs.

2.2 Output change in imperfectly competitive markets (WEB2)

A reduction in transport costs to business passengers or freight transport allows firms to profitably increase the outputs of the goods or services that use transport in their production. If the prices of the goods and services affected exceed costs, the increase in output will deliver a welfare gain as consumers’ willingness to pay for the increased output exceeds the cost of producing it. This welfare gain is on top of the benefit estimated for the associated generated trips in the conventional CBA framework.
For estimating WEB2, UK DFT (2014) recommends a simple approach of applying a 10 per cent uplift to business user benefits. The uplift percentage is derived from information about the average elasticity of demand for the goods and services affected and price–cost margins.

2.3 Tax revenues from labour markets (WEB3)

Transport costs (including time and reliability) affect individuals’ decisions about whether or not to work, where they locate and how far they are prepared to commute. If, as a result of a transport improvement, more people decide to work and some people are prepared to travel further to higher paying jobs, the full benefit to them from their additional trips will be captured by conventional CBA methods in estimating benefits from generated trips. However, commuters value benefits in terms of their post-tax incomes. Conventional CBA omits the additional benefit to society of the increase in tax revenues that accrues to the government.

Estimation of WEB3 requires use of labour supply elasticities to estimate numbers of new workers and workers moving to more productive jobs as a result of a transport improvement.
3. Current limitations in estimating WEBs

Each of these three WEBs is a legitimate benefit in theory. However, there are serious measurement difficulties, with the availability of Australian-specific data needed to calculated WEBs currently being sub-optimal. So much so that IA recommends that cost-benefit analysis results (BCRs and NPVs) be presented first without WEBs, and then with WEBs, treating WEBs effectively as a sensitivity test.

It is recognised that the calculation of these wider benefits is still in its infancy, both in Australia and internationally. Notwithstanding this, the correct interpretation and accurate calculation of WEBs (using the most suitable data available) can add texture to the decision-making process for certain initiatives. However, in currently estimating WEBs, it is crucial to acknowledge the following key points:

- Only certain initiatives, addressing a specific set of economic fundamentals, will generate WEBs. For example, a project would have to show a significant change in business travel between employment centres in order for agglomeration benefits to be material. This is because agglomeration benefits derive from business-to-business interaction.
- Significant WEBs will only be found in initiatives with strong traditional benefits, since WEBs require high levels of behaviour change (e.g. strong demand for the new asset).
- WEBs may be negative for some initiatives.
- The availability of Australian-specific data needed to calculate WEBs is currently sub-optimal.

Therefore, WEBs should be treated separately to the traditional CBA. It is recommended that practitioners seeking to calculate WEBs consults with Infrastructure Australia before proceeding with the analysis. Any subsequent study should base the justification for inclusion of WEBs on the economic theory and applicability of this to the initiative’s strategic objectives and impacts upon the transport and labour market. The quantitative analysis should use well informed assumptions about the most appropriate, initiative-specific data.

It is bad practice to apply a broad percentage up-lift to the results of the traditional appraisal. This does not provide any additional or meaningful information for consideration in the decision-making process.

The following links provide additional information on WEBs and their calculation to assist those preparing economic appraisals:

- General guidance on wider economic benefits is included at the UK Department of Transport site: http://www.dft.gov.uk/pgr/economics/rdg/webia/
- Specific technical guidance on the calculation of wider economic benefits is provided in the UK Department of Transport document titled, Transport, Wider Economic Benefits and Impacts son GDP, June 2006, and The Wider Impacts Sub – Objective, April 2009, available at the following site: http://www.dft.gov.uk/webtag/webdocuments/doc_index
4. Next steps

If WEBs are to play a more significant, reliable role in Australian practice, the current poor domestic estimates of key WEBs parameter values need to be improved. In 2014, the Australian Government engaged consultants to investigate the econometric modelling and data requirements to obtain a robust set of productivity elasticities for Australia (for agglomeration estimation), as well as the parameters needed to estimate the other WEBs. The report *Developing productivity elasticities for estimating WEBs in Australia—Scoping Study* was published in March 2015.

Following on from the scoping study, the Australian Government has commissioned consultants to work with the Australian Bureau of Statistics to undertake econometric and economic modelling to obtain the best possible set of parameter value estimates using currently available data for publication in the Guidelines. The work is expected to be completed by early 2017. Sets of parameters for individual jurisdictions will be made available prior to publication as they are finalised.

After completion of the WEBs parameter values estimation work, the ATAP Guidelines on WEBs will be updated. The updated Guidelines will set out a methodology for using the new parameter value estimates. This should enable WEBs to be estimated with greater confidence for Australian CBAs in the future. Whether estimation of WEBs will become reliable to the point where WEBs can be routinely counted with core benefits and costs in CBAs remains to be seen.
References


