

Broadening appraisal: Capturing the full impacts of transport investments

At a glance

- Cost–benefit analysis (CBA) is a widely used tool for assessing transport projects but has been criticised for undervaluing equity concerns.
- The need for accessible transport policies has increased calls for changes to the way transport investments are reviewed and selected.
- At the same time, the climate emergency has led some countries to increase their carbon prices when using CBA in project selection.
- CBA does not need to be replaced but supplementary analysis should be presented alongside CBA outcomes to ensure decision makers fully understand policies' equity impacts.
- Values used in CBA for greenhouse gas emissions should reflect national emissions targets.
- Initial project selection and a final check against the needs case are key stages in the appraisal process.
- Well-planned and executed *ex-post* evaluations have improved appraisal practice and led to benefits for future projects.

Transport planning policies are changing. Many countries are fundamentally rethinking their transport policy and planning objectives. They are shifting the emphasis from mobility to accessibility, with a focus on equitable access for all.

As the objectives of transport policy expand, expectations increase that public policies and projects consider multiple aims.

Decarbonisation, equitable access (including gender equity) and urban liveability are now central concerns. Standard approaches to project identification, appraisal and selection may not reliably deliver a portfolio of transport projects that meet the strategic objectives of government and society.

This Policy Brief summarises a 2022 ITF report on the subject, ***Broadening Transport Appraisal***. The report outlines the findings of a discussion among experts from 21 countries at a 2021 ITF Roundtable. It reviews trends in transport appraisal and discusses the implications of the shift towards accessibility.

The report concludes that cost–benefit analysis (CBA) should be supplemented by other tools but not replaced. Analysing impacts on different parts of the community should complement assessments of economic costs and benefits.

Read the full publication

[Broadening Transport Appraisal: Summary and Conclusions](#) (2022)
International Transport Forum Roundtable Reports, No. 188
OECD Publishing, Paris



How can cost–benefit analysis be improved?

Use supplementary analysis to make equity impacts clearer to decision makers

Transport affects equitable access to opportunities, goods and services. CBA, which aggregates outcomes, tends to overlook the many dimensions of equity (e.g. horizontal, vertical, spatial and inter-generational). Policy makers should therefore consider a mix of qualitative and quantitative approaches to analysing the distributional impacts of transport investment options.

Disaggregate data by geographical region or socio-economic group

Policy makers can use disaggregated data to assess benefits and disadvantages arising from a project for specific regions or groups. For example, a transport project may lead to overall time-travel savings but worsen congestion in disadvantaged areas. Disaggregated results enable decision makers to consider equity impacts of policies (see box).

Disaggregated data can also help determine the highest-impact policies and highlight the need for mitigating measures to avoid negative impacts on disadvantaged groups. It can therefore result in projects with low benefit–cost ratios progressing through the appraisal process where they benefit disadvantaged groups. For example, [CBA guidelines in the Netherlands](#) (PDF) state that distributional analysis across societal groups “can provide a basis for deciding . . . that a measure that delivers a negative rate of return should still go ahead because of its distributional effects”.

Align shadow carbon prices with national emission-reduction targets

The climate emergency demands new approaches when using CBA to select projects. Shadow carbon prices estimate the cost of greenhouse gas emissions for a proposed project or policy. Government guidance on the prices to use when assessing transport projects in CBA is often based on the cost of trading CO₂ emission allowances in carbon markets. But inappropriate methods for setting ceilings on carbon allowances usually result in prices that are too low to affect CBA results.

Accessibility analysis in Tel Aviv–Jafa

The standard appraisal framework in **Israel** is based on cost–benefit analysis (CBA) but requires accessibility, environmental, safety and broader equity impacts to be presented to decision makers alongside core CBA results.

Rising congestion and distributional concerns resulted in the development of strategic plans for the Tel Aviv–Jafa metropolitan transport system, with appraisal results to be assessed for consistency with the objectives of the plans.

A travel demand model was developed, segmenting the city into over 1 000 zones and recording number of households, population size, gender and age distribution, socio-economic status, car ownership, and employment.

The model showed changes in accessibility for each socio-economic group, across the zones over time. It indicated major accessibility gains for all zones served by the proposed options, with substantially higher gains for the lowest socio-economic groups. The results were presented as heat maps to decision-makers.

In response, some countries now publish guideline values for shadow carbon prices that better reflect international CO₂ emission-reduction targets, resulting in much higher shadow prices.

For example, in the **United Kingdom**, the shadow carbon price for estimating emissions in 2030 is now around 3.5 times the value assigned in 2019 (280 GBP/tonne in 2021 versus 80 GBP/tonne in the 2018 guidance). In 2015, **France** adopted shadow carbon values that rise from EUR 56/tonne in 2020 to EUR 100/tonne in 2030.

While countries still diverge on the exact shadow carbon price to use, prices that reflect national emissions reduction targets help ensure investment decisions are consistent with national climate policies. This change is already having a major impact on project selection by systemically favouring investments in public and active transport. All countries should consider aligning the shadow carbon prices used in CBA with their own emission-reduction targets.

Use available tools to conduct gender analysis of transport policies to improve gender equity

Historically, transport policies were assumed to be gender neutral. However, research reveals significant differences between the travel patterns and preferences of men and women.

For example, [recent analysis](#) of a road tunnel project in **Madrid** confirmed that women would benefit less from the project, as men make greater use of private transport. Women's higher use of active transport meant they were more exposed to the negative pollution impacts of the proposed project.

Such differences can have consequences for project selection when strategic guidance addresses gender inequality, or when projects need to attract all users to be successful. Gender impact analysis is especially important to planning a just transition to a low-carbon transport system. Research by the ITF suggests that [more gender-sensitive transport policies could speed up decarbonisation of the sector](#).

The research also shows that service improvements benefiting women also improve access for other groups frequently neglected in transport planning and design decisions (including people with disabilities and the elderly). Strategic planning should incorporate the specific needs of these groups.

The [ITF Gender Analysis Toolkit](#) provides guidance on how to consider gender in transport policies, including collecting gender-disaggregated data in appraisals.

Present analysis of distributional and climate impacts alongside CBA outcomes

Presenting distributional and climate impacts alongside the aggregate economic CBA result can often significantly improve the quality of information available to decision makers, and thus contribute to better decision making.

To be effective, a transparent summary format is needed that decision makers and stakeholders can readily understand. This could take the form of charts, tables, heat maps or write-ups. For an example, see the UK Government's [webtag appraisal summary table](#).

Getting the rest of the planning cycle right

Initial project selection and final review of the needs case are key stages in the appraisal process

Improved project appraisal will not lead to better transport outcomes aligned with government policy unless the right projects are selected for appraisal in the first place. This requires attention at the initial long-listing stage of project development where options are explored and identified, and the option to do nothing is also on the table.

Assessment of projects usually proceeds in stages (see box). The analysis can become increasingly detailed and specific but should include revisiting and, where necessary, updating the initial needs case before implementation is approved. Strategic infrastructure plans will help ensure the projects selected for appraisal meet identified long-term objectives and priorities.

Multi-stage proposals are a good way to reduce the risk of project failure

Long-term infrastructure investments are subject to high levels of uncertainty. It can take years to go from problem identification to completion. Transport

New Zealand's Policy Appraisal Tool

New Zealand's Ministry of Transport is piloting a light-touch Policy Appraisal Tool designed by the Domain Strategy, Economics and Evaluation team for policy advisers to run their own initial assessments ahead of an assisted, full cost-benefit analysis (CBA).

Multiple-choice drop-down boxes help policy advisers quickly consider the impact of their proposed policy across all aspects of the Transport Outcomes Framework.

Figures are not essential: the tool allows high, medium and low estimates and a space to cite evidence or research that supports claims. It provides a quick, easily readable way for policy advisers to consider a wide range of potential policy impacts that may be significant enough to warrant deeper analysis for presentation alongside CBA.

planning is dependent on technical elements and societal responses. Furthermore, a project may be modified as governments change, more information becomes available, technologies advance and citizens' preferences evolve.

An iterative approach to project design can increase the likelihood of success. Examples of iterative actions include:

- splitting proposals into stages that only progress when there is sufficient certainty
- involving stakeholders at every stage of a project and focusing the needs case on problem-solving
- ensuring interaction between decision makers, officials and experts so that values and expectations are clearly communicated
- ensuring appraisals identify and model all impacts relevant to stakeholders and present results in an easily understandable way.

This approach gives governments a chance to demonstrate progress in a transparent way without presenting early cost and time estimates as final and precise. It also accepts the reality of major projects and engages the public throughout the process.

Use *ex-post* evaluations to improve appraisal practice and influence future projects

Evaluating a project once it has been completed (*ex-post* evaluation) has considerable potential to refine and improve appraisal practice. It can help identify systemic biases and provides a basis for improving appraisal methods.

Countries that have adopted systematic approaches are seeing significant benefits. **France**, **Norway** and the **UK** (see box) have committed to systematic evaluation schemes of transport projects over several decades.

Ex-post evaluation in practice

In **France**, *ex-post* evaluation of large transport projects has been mandatory since 1982. Some projects (e.g. the [Bordeaux high-speed rail line](#)) adopt a permanent observatory model. Permanent observatories are external bodies that track projects over time, gathering data on projected costs, timelines and actual results.

In **Norway**, the Ministry of Finance funds the Concept Programme at the Norwegian University of Science and Technology to conduct project appraisals. It uses internal and external resources to undertake two to three *ex-post* evaluations of large government projects per year.

In **the United Kingdom**, the National Highways' Post-Opening Project Evaluation ([POPE](#)) programme evaluates road infrastructure schemes or programmes one and five years after a project opens to traffic.

This has improved their pre-project (*ex-ante*) appraisal methods and led to more accurate costings.

Ex-post evaluations are most effective when they begin at the start of a project. Much of the data used in projecting revenues (e.g. prices on competing services) is ephemeral and cannot be retrieved later on.

Starting early also sets an expectation that the results will be made public and used. Good *ex-post* evaluation relies on a timely start, a sustained approach (to capture all effects over time) and independent evaluators.

Colophon

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