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 Twenty One

## New Transport Appraisal Framework


*Issued by:*

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Department Of Transport, Tourism and Sport

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Ireland

# A New Transport Appraisal Framework

## Presentation to SFILT Steering Group
## 10th April 2013

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## Updating and Reviewing the Transport Appraisal Framework

- Objectives:
  - Review, update and expand transport appraisal guidance
  - Minimise discretion in appraisal
- Greater detail required in some areas, other areas currently not dealt with
- Current appraisal framework lacks cohesion and enforcement
- Requirement for single source of transport appraisal guidance with consistent set of data and parameter values maintained by DTTAS and DPER.

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## Updating and Reviewing the Transport Appraisal Framework

- SFILT work should identify issues which feed into the new appraisal framework – is our existing appraisal framework fit for purpose?
- Drawing on and integrating ongoing work by others:
  - DPER (appraisal parameters, discount rate, shadow prices)
  - Interdepartmental Working Group on Emissions in CBA
  - Transport agencies (NTA, NRA, RPA)

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## Initial Areas of Focus

1. Wider Impacts
2. Treatment of Risk and Uncertainty
3. Residual Value
4. Value for Money Assessment
5. Other Areas for New or More Detailed Appraisal Guidance

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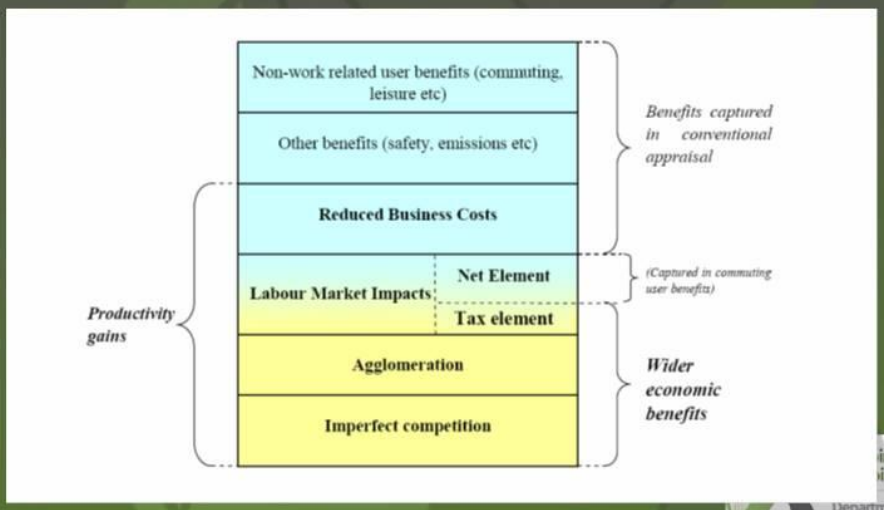
# Wider Impacts

- Formerly known as Wider Economic Benefits:




# Wider Impacts

- Agglomeration economies (increased productivity through agglomeration and the facilitation of jobs moving to more productive areas)
- Labour market effects (increased labour supply)
- Increased competition
- Increased output in imperfectly competitive markets (related to business travel)

# Wider Impacts

- Standard element in UK transport appraisal for 7/8 years
- Bespoke research and guidance on WIs has now been prepared for Australia and New Zealand

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# Wider Impacts

- Requires the output of a transport model – required for conventional appraisal anyways
- Extensive economic data required – spatially and sectorally disaggregated (GDP/worker, sectoral employment, spatial productivity indices etc.)
- A lot of the raw data already exists (CSO etc.)
- Bespoke Irish research required for some of the parameter values (productivity elasticities, price/cost margin, tax rates etc.)
- UK: "Wider Impacts Economic Dataset"

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# Treatment of Risk and Uncertainty

- Movement away from point value estimates of NPV, BCR etc. to probability distributions of same, to better reflect the risks involved in major scheme appraisal (demand, revenue, benefits, costs)
- Assign probability distributions for critical variables
- This approach is already standard practice in treatment of risk and uncertainty in cost estimation (QCRA). The steps are:
  - Identification of risks;
  - assessment of impact of risks;
  - estimation of the probability of occurrence of risk; and
  - derivation of overall distribution and expected value of costs for scheme

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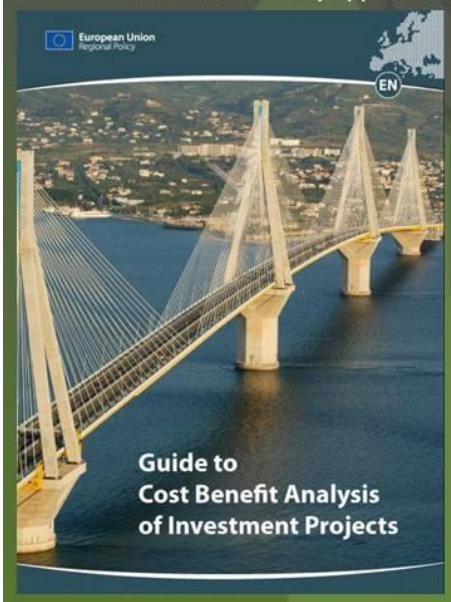
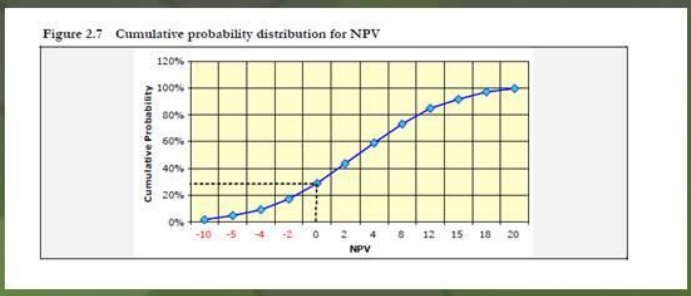
# Treatment of Risk and Uncertainty

- EU Guide to *Cost Benefit Analysis of Investment Projects* recommends the use of Monte Carlow techniques on probability distributions of critical variables to produce probability distributions of key appraisal metrics




Better reflects inherent risks of large projects and makes treatment of risks more transparent.

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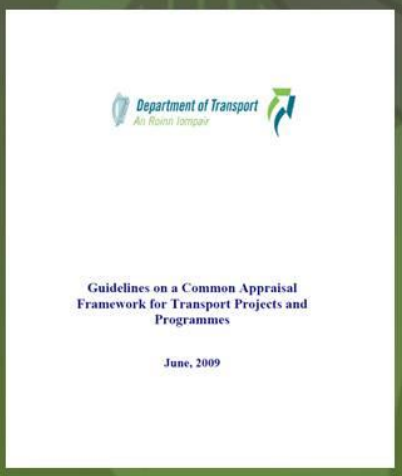
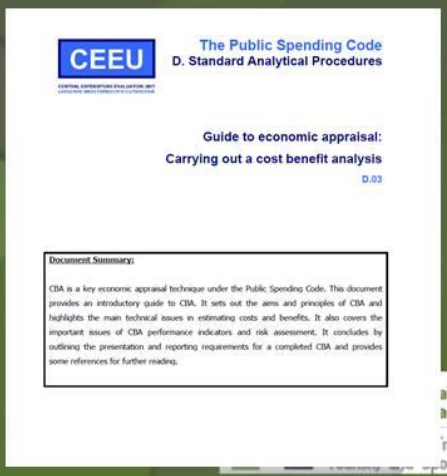
# Residual Value

- CAF states: "residual values may be included as appropriate".
- Public Spending Code states: "if the project has capital assets that have a useful life exceeding the time period of the CBA, the residual assets should be calculated and included as a benefit"




# Residual Value

- Many different approaches to the estimation of residual value:
- CAF
  - calculate a residual value based on the NPV of the costs and benefits of the asset over its remaining life, OR
  - ascribe a residual value equal to the original capital cost of the infrastructure, where maintenance and renewal activities…are sufficient to ensure that the infrastructure will continue to provide an identical level of service over the long term.
- Public Spending Code
  - Residual value should be understood to as the market value for the fixed assets…and includes the appraisal of net revenues the project can generate beyond the time horizon.
- EU CBA Guide
  - Market value of fixed assets and remaining net liabilities
  - Use of standard accounting depreciation formula
  - The NPV of cash flows in the remaining life of the project

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# Residual Value

- NRA provides more detailed guidance:

| | |
|---|---|
| Discount Rate | 4% |
| Appraisal Period | 30 |
| Base Year | 2002 |
| First Scheme Year | 2013 |
| Residual Value Year | 2043 |

| | Useful Life (years) | Remaining Life | % of value retained |
|---|---|---|---|
| Road | 60 | 30 | 50% |
| Land and Property | Infinite | Infinite | 100% |

| | |
|---|---|
| Depreciation method | Straight line |

Residual Value

| Year | Option 1 | Option 2 | Option 3 | Option 4 | Option 5 | Option 6 | Option 7 |
|---|---|---|---|---|---|---|---|
| Land (€m) | € 100.1 | € - | € - | € - | € - | € - | € - |
| Road (€m) | € 10.0 | € - | € - | € - | € - | € - | € - |
| Total Residual Value (€m) | € 110.2 | € - | € - | € - | € - | € - | € - |

*Table 6.1.2: Period for Calculation of Residual Value*

| Category | Examples | Residual Value Period* |
|---|---|---|
| Long Life | Bridges, structures, tunnels, earthworks and other major investment in offline improvements | 30 |
| Moderate Life | Pavements or other online network rehabilitation on existing roads, where the design is such that no further major rehabilitation is required within a 40-year period | 10 |
| Short Life | Intelligent Transport Systems or other Traffic Management Solutions | 0 |

** This relates to residual value calculated beyond the 30 year appraisal period*

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# Assessment of Value for Money

- No formal hurdle rates but BCR >1:1 seems to be target
- Implication that BCR > 1:1 is sufficient to remove the need for further project or option analysis
- UK Government approach is:
  - A project will generally be:
    - Poor value for money if its BCR is less than 1
    - Low value for money if its BCR is between 1 and 1.5
    - Medium value for money if its BCR is between 1.5 and 2
    - High value for money if its BCR is over 2

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# Assessment of Value for Money

- The Government generally aims to fund:
  - No projects with poor VfM
  - Very few projects with low VfM
  - Some, but by no means all, projects with medium VfM
  - Most, if not all, projects with high VFM
- Use of "Wider BCR" also
- Significance of non-monetised impacts identified
- Possibly use in broader assessment framework which uses probability distributions of key appraisal indicators instead (85% probability of NPV over €XXbn)

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# Areas for New or More Detailed Guidance

- Values of time
- Changes in VOTs over time
- Journey purpose splits by mode and time of day
- Vehicle operating costs
- Reliability
- Emissions
- Valuation of urban realm
- Appraisal of sustainable modes
- Noise impacts
- Valuation of crowding relief – appraisal of capacity enhancement schemes more generally

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# Issues for SFILT

- Are all economic impacts sufficiently understood and captured?
- FDI, tourism, international access, freight?
- Are external effects (emissions, health, access to public services) appropriately quantified and valued?
- Are current 5 assessment criteria appropriate?
  - Economy
  - Safety
  - Environment
  - Accessibility and Social Inclusion
  - Integration
- Are non-monetisable impacts dealt with satisfactorily under current MCA approach and Project Appraisal Balance Sheet (PABS)?

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# Thank You

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