



Supporting Decision Makers: The Decision Makers' Guidebook and related decision-support tools

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Outline



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- The European Conference of Ministers of Transport survey of barriers to sustainable transport
- The EC PROSPECTS Decision Makers' Guidebook
 - Aim, approach and key messages
- The UK DISTILLATE developments of decision-support tools
 - Option generation
 - Finance
 - Prediction
- European research into effective strategies



The ECMT study, 2002



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- Survey of 168 cities worldwide
- Widespread agreement that integrated packages are needed:
 - public transport enhancements
 - charging for road use
 - better road network management
 - compatible land use plans
- But implementing such integrated policy packages “has proven easier said than done”
- Need to tackle the barriers to policy development and implementation



The ECMT barriers to implementation



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- Institutional
 - Split or duplicated responsibility
- Process
 - Identifying objectives, specifying problems
 - Selecting possible solutions, appraisal, implementation
- Political and public acceptability
- Information and skills
- Financial
- Legislative and regulatory



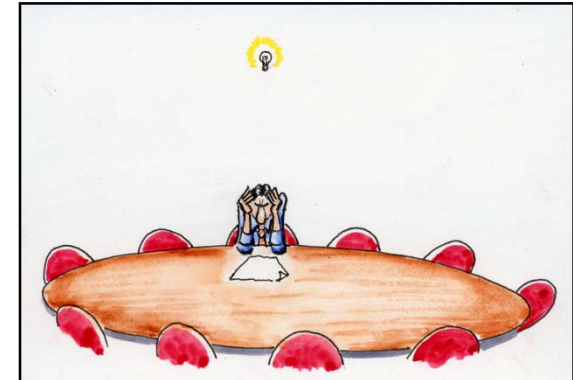
[Source: ECMT, 2002, 2006]

Improving decision making



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- A survey of 60 European cities showed that they needed help with the process of developing urban transport strategies
 - How to make decisions and whom to involve
 - What options to consider
 - How to formulate and assess a strategy
 - What the barriers might be and how to overcome them
 - How to implement effective strategies
- But they did not want to be told what to do!
 - And in any case their needs varied considerably between cities
- Politicians and senior professionals did not have time to read lengthy documents



The Decision Makers' Guidebook



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- Designed to help decision-makers develop strategies to meet their own needs and aspirations
- The design approach
 - Short sections (2-6 pages per topic)
 - A logical structure
 - Fully illustrated using diagrams and cartoons
 - With sources of further information
 - And four case studies indicating strengths and weaknesses
- Published in 2003, updated in 2005 to reflect results from the EC City of Tomorrow programme
- In six European languages
- Now available in English on www.konsult.leeds.ac.uk



Approaches to decision-making



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- The “muddling through” approach
- Three characteristic approaches
 - Vision-led
 - Plan-led
 - Consensus-led
 - Most cities adopt a combination of these
- Levels of stakeholder participation
 - Information provision
 - Consultation
 - Deciding together
 - Acting together
 - And who should be involved





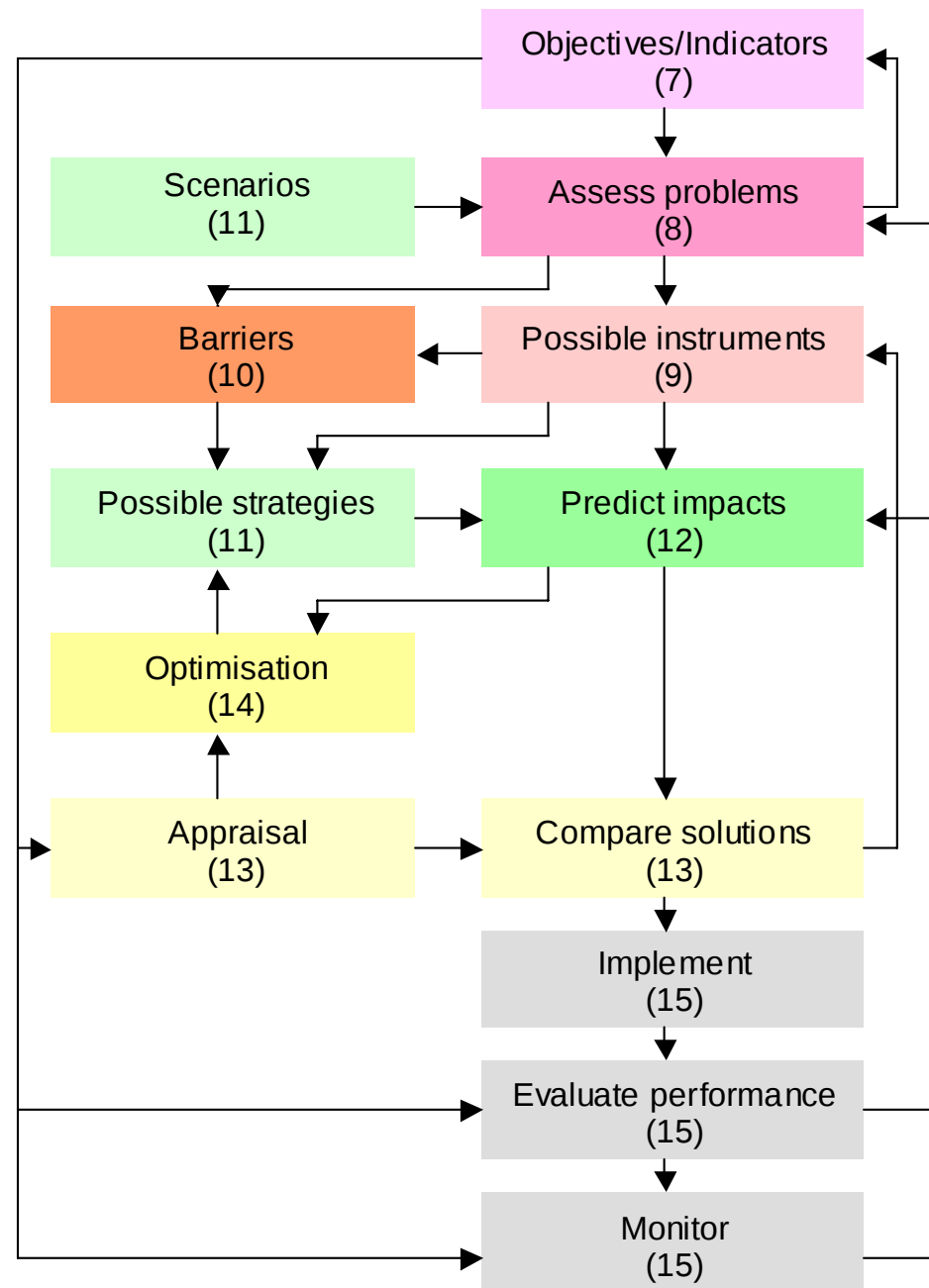
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- ```

graph TD
 A[Objectives/Indicators (7)] --> B[Assess problems (8)]
 C[Scenarios (11)] --> B
 B --> D[Possible instruments (9)]
 D --> E[Barriers (10)]
 D --> F[Possible strategies (11)]
 D --> G[Predict impacts (12)]
 E --> F
 F --> G
 G --> H[Optimisation (14)]
 H --> F
 I[Appraisal (13)] --> F
 I --> J[Compare solutions (13)]
 J --> K[Implement (15)]
 K --> L[Evaluate performance (15)]
 L --> M[Monitor (15)]
 M --> A
 M --> B
 M --> D
 M --> G
 M --> J
 M --> L
 M --> M

```
- The flowchart illustrates the Strategic Planning Process, starting with Objectives/Indicators (7) and Scenarios (11) leading to Assess problems (8). This leads to Possible instruments (9), which branches into Barriers (10), Possible strategies (11), and Predict impacts (12). Barriers (10) and Possible strategies (11) both lead to Predict impacts (12). Predict impacts (12) leads to Optimisation (14), which leads back to Possible strategies (11). Appraisal (13) leads to Possible strategies (11) and Compare solutions (13). Compare solutions (13) leads to Implement (15), which leads to Evaluate performance (15), which leads to Monitor (15). Monitor (15) has feedback loops to Objectives/Indicators (7), Assess problems (8), Possible instruments (9), Predict impacts (12), Compare solutions (13), Evaluate performance (15), and Monitor (15).



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ITS



- 
- The flowchart illustrates the Policy Planning Process, consisting of 15 numbered steps arranged in a flow from top to bottom. The steps are color-coded: pink for Objectives/Indicators (7) and Assess problems (8); orange for Barriers (10); green for Possible instruments (9), Possible strategies (11), and Predict impacts (12); yellow for Optimisation (14) and Compare solutions (13); and grey for Implement (15), Evaluate performance (15), and Monitor (15). Red ovals highlight the 'Possible instruments (9)' and 'Possible strategies (11)' boxes. Arrows indicate the flow: Objectives/Indicators (7) leads to Assess problems (8); Scenarios (11) leads to Assess problems (8); Assess problems (8) leads to Possible instruments (9); Barriers (10) leads to Possible instruments (9); Possible instruments (9) leads to Possible strategies (11); Possible strategies (11) leads to Predict impacts (12); Optimisation (14) leads to Possible strategies (11); Predict impacts (12) leads to Compare solutions (13); Appraisal (13) leads to Compare solutions (13); Compare solutions (13) leads to Implement (15); Implement (15) leads to Evaluate performance (15); Evaluate performance (15) leads to Monitor (15). Feedback loops exist from Monitor (15) back to Objectives/Indicators (7), from Evaluate performance (15) back to Assess problems (8), and from Compare solutions (13) back to Possible strategies (11).
- ```

graph TD
    7[Objectives/Indicators (7)] --> 8[Assess problems (8)]
    11[Scenarios (11)] --> 8
    8 --> 9[Possible instruments (9)]
    10[Barriers (10)] --> 9
    9 --> 11[Possible strategies (11)]
    11 --> 12[Predict impacts (12)]
    14[Optimisation (14)] --> 11
    12 --> 13[Compare solutions (13)]
    13 --> 15a[Implement (15)]
    15a --> 15b[Evaluate performance (15)]
    15b --> 15c[Monitor (15)]
    15c --> 7
    15b --> 8
    13 --> 11

```

The KonSULT Knowledgebase



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- Knowledgebase on Sustainable Urban Land use and Transport (www.konsult.leeds.ac.uk)
- Designed to provide consistent information on a wide range of policy instruments
- Based on first principles and on international empirical evidence
- Using a consistent 11 point assessment score



The KonSULT option generation tool



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- Identifies a shortlist of policy options
- Based on users' specification of
 - Their role and responsibilities
 - The type of area involved
 - Their objectives, problems or indicators
 - Their overall strategy
- Using the 11 point scores from KonSULT
- With a range of outputs including:
 - All ranked options
 - The top X options
 - All options scoring $> Y$

A screenshot of the 'KonSULT Option Generation Filter' web interface. The page has a light beige background. At the top, the title 'KonSULT Option Generation Filter' is displayed. Below it, a small text block states: 'This filter has been developed by the Institute for Transport Studies, University of Leeds. The filter allows users to create a list of ranked policy instruments based on individual search criteria. To start using the filter, select your user group and area type'. There are two main sections: 'SELECT USER GROUP' and 'SELECT AREA TYPE'. The 'SELECT USER GROUP' section has a dropdown menu with three options: 'Decision Makers from National Organisations', 'Decision Makers from Regional Organisations', and 'Local Authority Decision Makers'. The 'SELECT AREA TYPE' section has a dropdown menu with eight options: 'Any Area Type', 'Town or City Centre', 'Inner Suburb', 'Outer Suburb', 'District Centre', 'Corridor', 'Large Town or City >100K', and 'Small or Tourist Town <100K'. At the bottom left of the form is a 'CONTINUE' button.

e.g. Specifying an overall strategy



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ConsULT Charged access

LINKS | GLOSSARY | MESSAGES | SITEMAP | HELP

HOME
TRANSPORT
STRATEGY:
*A Decision
-Makers'
Guidebook*
POLICY
INSTRUMENTS:
Select
Search
Filter
SITE CREATED
BY MEEG

Filter

Please select policy [STRATEGY/STRATEGIES](#)

You can assign weights (1 to 5) to indicate the relative importance of each strategy. 1 = low importance, 5 = high importance

☐ Any Strategy

- ☐ 1 Reducing the need to travel
- ☒ 5 Reducing Car Use
- ☐ 1 Improving the Use of Road Space
- ☒ 3 Improving the use of Public Transport
- ☐ 1 Improving walking and cycling
- ☐ 1 Improving Freight

Back Start over RUN FILTER

A typical output



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HOME
TRANSPORT STRATEGY:
A Decision-Makers' Guidebook
POLICY INSTRUMENTS:
Select
Search
Filter
SITE CREATED BY MEEG

Ranked policy instruments based on individual search criteria

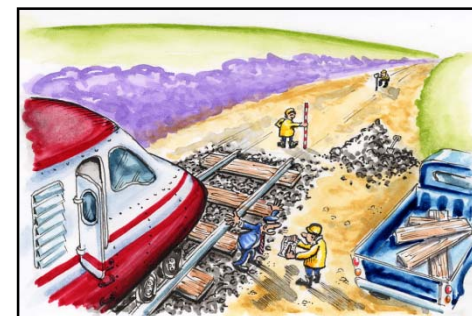
Code	Instrument	Score	Cost	Presentation Options
607	Road pricing	73.67	neutral	
403	ITS	41.56	high	Number of policy instruments: 42
305	Light Rail Systems	37.50	high	Minimum score: -100
102	Development Densities Mix	27.73	high	Show only instruments with cost: All
406	Regulatory Restrictions	27.60	low	Show only instruments of type: All
101	Parking Standards	27.56	low	Sort instruments: Score
600	Private parking charges	24.11	neutral	
100	PT Focused Development	22.40	high	
205	Ride Sharing	21.72	medium	
204	Telecommunications	21.67	medium	

Financial barriers



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- Finance more available for some solutions than others
 - Supply side investment rather than demand management
- Capital rich – revenue poor
 - Investment easy; operation and maintenance difficult
- User charges not considered as a funding source
 - Fares, parking charges, road tolls
- An increasing range of funding sources
 - Each with its own rules and timetables
- Frequent changes in funding regimes and requirements
 - Considerable wasted staff effort



Source: ECMT (2002); DISTILLATE

ECMT Recommendations on finance



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- Sustainable long term funding needed
 - Focused on the strategy, not specific solutions
 - Encouraging the most cost-effective approaches
 - With less emphasis on supply-side solutions
- Taxation and charging are important policy instruments
 - Apply as close to the point of use as possible
 - Reflecting externalities, consistent across modes
- Hypothecate revenues to increase acceptability of charging
- Use Public Private Partnership funds to support the overall strategy



Source: ECMT (2006)

The UK Funding Toolkit

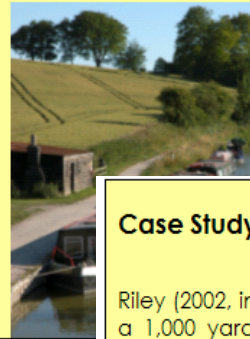


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- Aimed at Local Authorities
 - *Section One:* Barriers to identifying and obtaining funding
 - *Section Two:* Overcoming barriers to identifying and obtaining funding
 - *Section Three:* Funding Considerations by Scheme Type
 - *Section Four:* Mechanisms to obtain and effectively utilise funding
 - *Appendix A:* Funding Sources
 - *Appendix B:* Case Studies

Case Study E2: Waterways Trust - Droitwich Canals Restoration

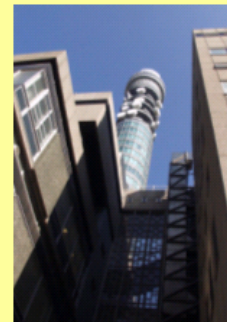
The Droitwich Barge Canal and Droitwich Junction Canal are undergoing restoration as part of a £11.5 million project - £1 million of which will be funded by the Waterways Trust. The rest of the funding is coming from Heritage Lottery Fund State One support (£4.5 million), and Advantage West Midlands (£5 million) (Waterways Trust, 2006a).



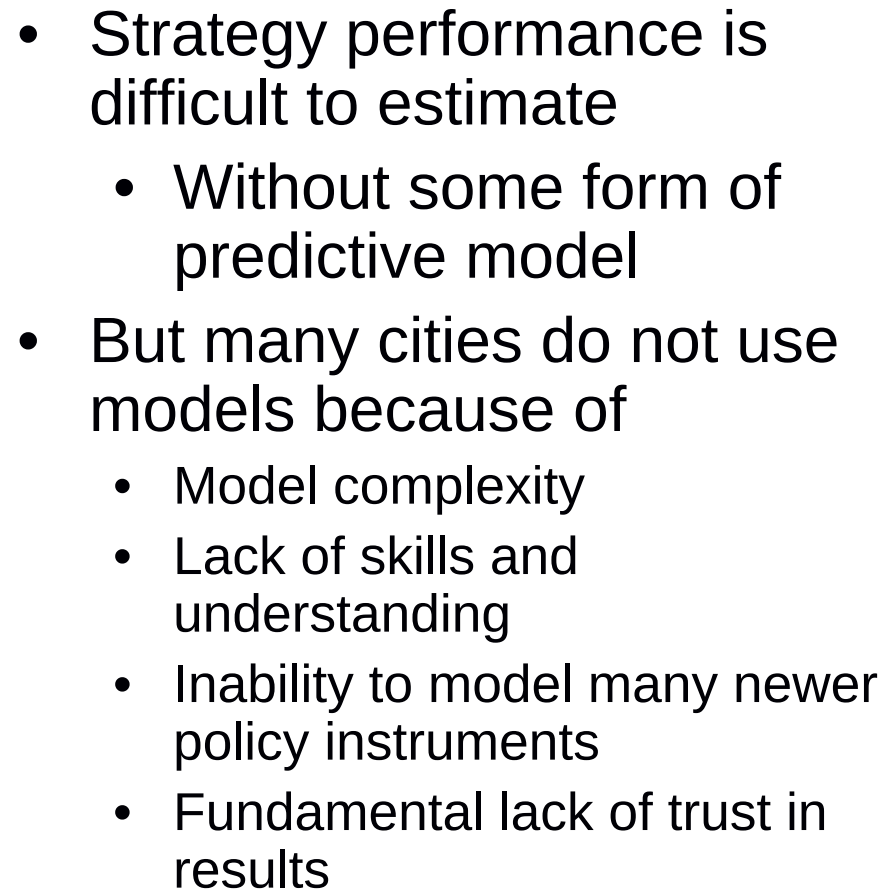
The scheme will involve linking the Worcester and Birmingham Canal with the River Severn, thereby enhancing the accessibility and integration of the waterways. The project will also involve upgrading the walkways around the canal route, and creating a new link under the M5 It is

Case Study G3: Land Value Tax - Jubilee Line Extension

Riley (2002, in Wetzel, 2005) calculated the total land value increase that arose within a 1,000 yard radius of the JLE extension. He found that these land values alone



increased by £13 billion when construction cost £3.5 billion. Riley suggests that some of this wealth should have been collected by the government in order to fund the project. An independent study carried out by Transport for London, also estimated that between 1992 and 2002 the JLE caused land values to rise by £2.8 billion close to two of the 11 new stations (Southwark and Canary Wharf). The extension could have been paid for by the land value increase, but instead it was paid for from taxation (with the exception of two small contributions). One of these contributions was from the owners of Canary Wharf to the value of £180 million – only a fraction of the amount that they gained as a result of the transport investment. Other developers and landlords along the route did not, however, contribute anything despite having seen the value of their properties double, and in some cases quadruple.

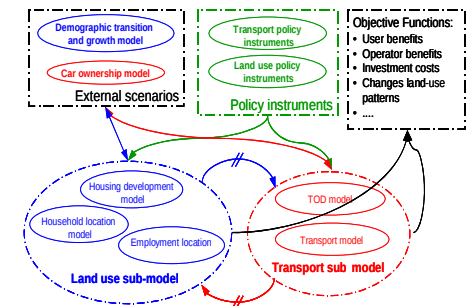
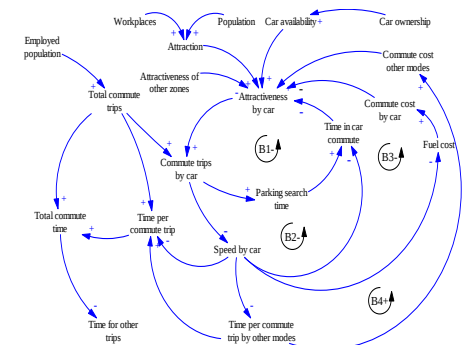


The MARS model



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- Designed to:
 - Enable the user to test a wide range of policies
 - Represent resulting interactions between land use and transport over a 30 year period
 - Generate an appropriate set of performance indicators
 - Operate quickly, producing results within a minute
 - Be easy for the user to understand and interact with
 - Facilitate stakeholder involvement



A simple input screen



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Vensim Application Environment

Transport Policies

Start Value / Start Year	End Value / End Year
Tele Work	
0 5	0
+0 Tele Work +100 [%]	
Public Transport	
0 5	0 30
PT Awareness -marketing campaigns On/Off	
0 5	0 30
-20 Bus Speed peak +20 [%]	
0 5	0 30
-20 Bus Speed off peak +20 [%]	
0 5	0 30
-50 Change Bus Fares peak +50 [%]	
0 5	0 30
-50 Change Bus Fares opeak +50 [%]	
0 5	0 30
-50 Change Bus Freq peak +50 [%]	
0 5	0 30
-50 Change Bus Freq off peak +50 [%]	
Car	
0 5	0 30
+0 Cordon charges peak +20 [Euro]	
0 5	0 30
+0 Cordon charges off peak +20 [Euro]	
0 5	0 30
-50 Fuel Tax +100 [%]	

HELP

Policy Graph

Clear Runs SIMULATE Main Menu

← →

5 20
+0 Rise Parking fees (City) peak +6,500 [VND]

5 20
+0 Rise Parking fees (City) off peak +6,500 [VND]

5 30
+0 Rise Parking fees (City) peak +20 [Euro]

5 30
+0 Rise Parking fees (City) off peak +20 [Euro]

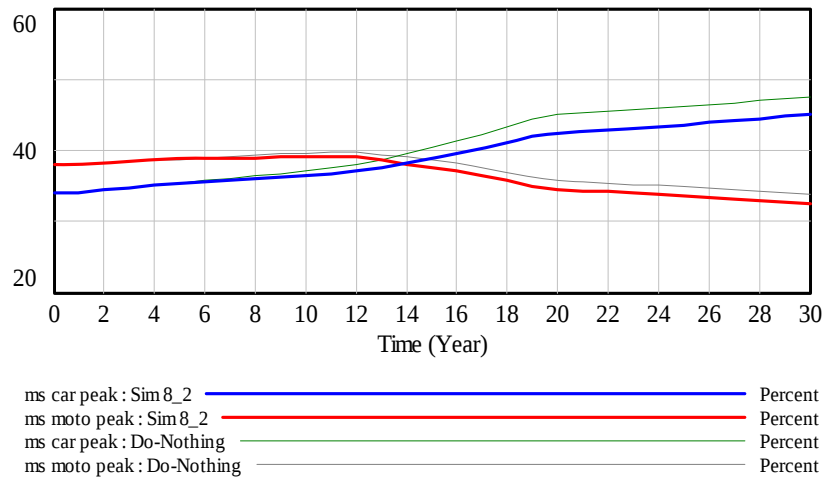


Comparative performance indicators generated within seconds



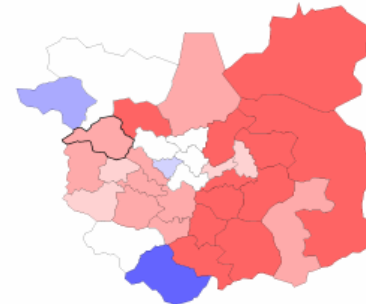
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Mode Share Peak - motorized

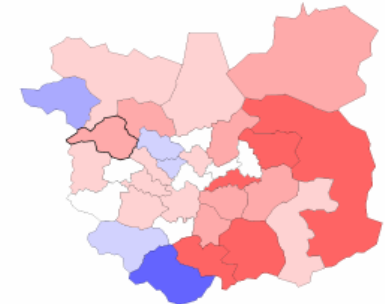


Export to Clipboard

residents j (%t0)
scenario01



difference
scenario01 - scenario00

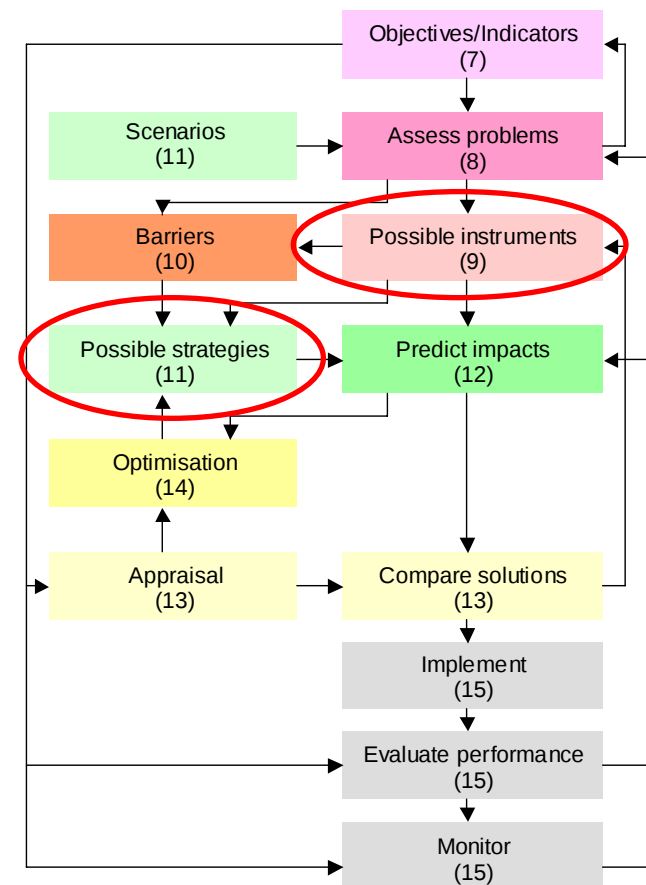


Developing a strategy



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- No one policy instrument will be sufficient alone
- An effective strategy
 - Uses the full range of policy instruments
 - Ensures that each policy instrument reinforces the others
 - Uses one policy instrument to help overcome the barriers to using another



The Optimal Strategies

Study results [Six UK cities]



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- Optimal strategies typically involve
 - Substantial reductions in fares area-wide
 - Increases in service frequency within urban areas
 - Peak period city centre cordon charges
 - Low cost increases in road capacity
- Optimal strategies typically cost more
 - But strategies with no net financial outlay can be achieved for only 15% lower benefit
 - Typically involve a 15% reduction in car use
 - And have benefits of £5000 to £10000 per capita by comparison with current strategies



The PROPOLIS results

[Seven European cities]



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- Public transport speed, service and fare improvements contribute well
 - But encourage longer distance travel
- Pricing of car use achieves significant benefits
 - But may encourage relocation
- Alternative land use policies have little impact alone
 - But higher density mixed development linked to public transport can support public transport and pricing measures
- Infrastructure schemes can provide benefits
 - But only if designed to be cost-effective
 - And consistent with the overall strategy





- The Decision-Makers' Guidebook and the DISTILLATE support tools are based on European experience and contexts
- As are the strategy recommendations
- But most of the principles are transferable
- We have tested the DMG and MARS in four South East Asian countries
 - Cambodia, Laos, Thailand, Vietnam
- And are discussing a Japanese version of the DMG
- But the specific guidance needs to be prepared locally!