

Survey and Analysis of Transportation Investment Models in Other Countries

Stage 1 Report: Survey and Analysis of the Frameworks that Govern Transportation Investment in Other Countries

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Limitations

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I. Key Objectives and Overview of Research Approach

Survey and Analysis of Transportation Investment Models in Other Countries – Key Objectives:

- Conduct an analysis of transportation investment models in other countries addressing:
 - Stage 1: Survey and Analysis of the Frameworks that Govern Transportation Investment in Other Countries
 - Stage 2: Survey and Analysis of the Use of Public Sector Comparator (PSC) and Value for Money (VfM) Analyses in Developed Countries with Mature PPP Programs
 - Stage 3: Survey and Analysis of Investment through Government-Sponsored Lending Institutions
- Develop a resource for U.S. transportation officials to better understand international approaches and how to incorporate best practices and innovations in U.S. transportation investment programs

Objective of Stage 1: Survey and Analysis of the Frameworks that Govern Transportation Investment in Other Countries

The objective of Stage 1 is to:

- Provide an understanding of how other governments approach transportation investment decisions; and
- Provide insight into potential investment frameworks and appraisal models from national governments, or potentially leading sub-national governments, which could be adapted in the U.S.
- Complete a survey for the UK, Australia and Japan that includes:
 - The objectives of the transportation investment framework
 - The roles of the public and private sector in transportation investment
 - A process to identify needs, develop and assess options, and make investment decisions
 - A process for taxpayers to receive a valuable return on transportation investment
 - An assessment of how transportation systems contribute to economic growth
 - Methods for upfront financing for transportation investment
 - A process to assess if the transportation investment framework is achieving valuable results
- Provide insight on Canadian and Swedish livability and sustainability policies and their impact on transportation investment decisions
- Highlight potential opportunities for the U.S. to incorporate best practices and innovations into U.S. transportation investment programs

Objective of Stage 1: Survey and Analysis of the Frameworks that Govern Transportation Investment in Other Countries

The following table highlights the key research questions requested by U.S. DOT and identifies where the questions are addressed in this Report:

Research Questions	Summary of International Approach	Reference
What are the objectives of the jurisdiction's transportation infrastructure investment model?	The jurisdictions have specific social, environmental, and economic goals for their transportation infrastructure investment models.	Slides 28-31, 37-38, 43, 53
What are the relative roles of the public and private sector in transportation infrastructure investment?	The public sector is responsible for making investment decisions typically using input from the private sector. The private sector acts as investors and external advisors, and is increasingly responsible for new and on-going infrastructure through public-private partnerships.	Slides 21, 36, 52
What are the best ways to provide upfront financing for transportation infrastructure investment, including the use of government sponsored credit assistance?	The UK and Australia use a combination of government grants and revenues with private sector financing, and no dedicated allocation for transportation exists.	Slides 23, 39, 56
What is the best way to ensure that taxpayers are getting a valuable return for dollars invested in the transportation system?	Value for money analysis assists decision makers in identifying options with the potential for the greatest quality and effectiveness from taxpayer investments. Investment frameworks provide a consistent and transparent decision process.	Slides 10-12, 15-16
What are the best ways to ensure that transportation systems are contributing to economic growth?	Throughout the investment decision process, jurisdictions can use appraisal models to evaluate and compare the benefits and costs of options.	Slides 15-16, 29, 44-45
How does the jurisdiction ensure that its transportation infrastructure investment model is achieving valuable results?	Jurisdictions can use investment frameworks that assess benefits realization and conduct project evaluations to evaluate if their investments are achieving valuable results. Performance based decision making can help jurisdictions determine which projects to invest in based on return from previous investments.	Slides 24-26, 30, 40, 57-58

Objective of Stage 1: Survey and Analysis of the Frameworks that Govern Transportation Investment in Other Countries

Primary Jurisdictions:

UK

- Underwent substantive reforms of its transportation frameworks following the landmark Eddington Transport Study in 2006
- History of using quantitative appraisal models (e.g., cost-benefit analysis, multi-criteria analysis) to test the value for money or social returns from projects before making investment decisions

Australia

- Similar governance structure, car ownership/mass transit patronage levels, bulk freight and land mass/urbanization characteristics to the U.S.
- Extensive guidance material on evaluation methods (e.g., cost-benefit analysis, financial analysis and cost-effectiveness analysis)
- Creation of a federal body (Infrastructure Australia) to set national priorities

Japan

- Evolving transportation framework, including: adjusting the infrastructure investment approach according to unique modal needs, and investing in new research and development options for the next generation of transportation
- History of using cost-effectiveness models to analyze transportation projects

Specialized Jurisdictions:

Canada

- Variety of programs that emphasize sustainable transportation (e.g., Building Canada, ecoTRANSPORT, Moving on Sustainable Transport)
- History of incorporating sustainability and livability into transportation policy planning

Sweden

- Global leader for sustainable transportation policies and initiatives (Stockholm ranked second in the European Green City Index for 2009)
- Recent transportation projects, including the congestion charge and on-going railway expansions (e.g., Citybanan project)

II. Overview of Transportation Investment Frameworks & Appraisal Models

Overview of Transportation Investment Frameworks

An Investment Framework:

- Is a process to identify needs, develop and assess options to address needs, and make investment decisions for transportation infrastructure
- Establishes an overarching, long-term policy approach to transportation investment decision-making that achieves agreed upon economic objectives (e.g., at national government or department level)

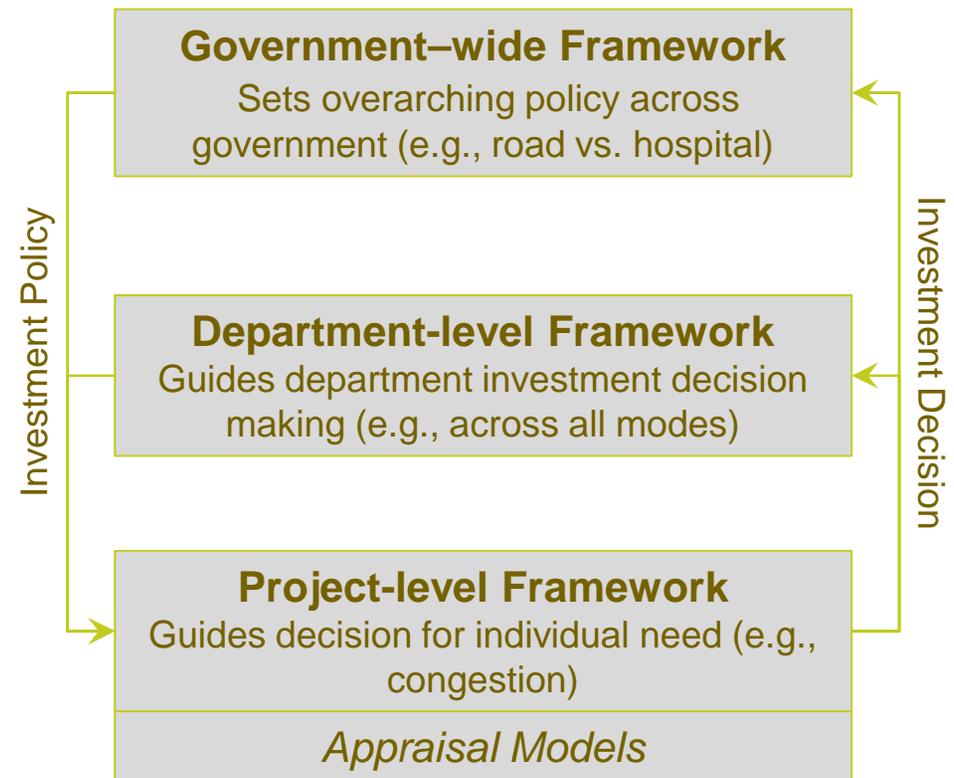
Rationale for Investment Frameworks:

- Investment frameworks are used in other jurisdictions to help governments identify priority needs and determine how to allocate funds among departments or programs
- Adopting a consistent and transparent investment decision process may help to:
 - Promote overall value for money and optimize use of limited budget resources (e.g., valuable return on taxpayers' investment)
 - Make objective and accurate decisions that deliver cross-sector goals
 - Create public and political consensus on long-term policy approach

Investment Frameworks Support Investment Decisions

Investment frameworks can be used at multiple levels of the government to drive investment decisions

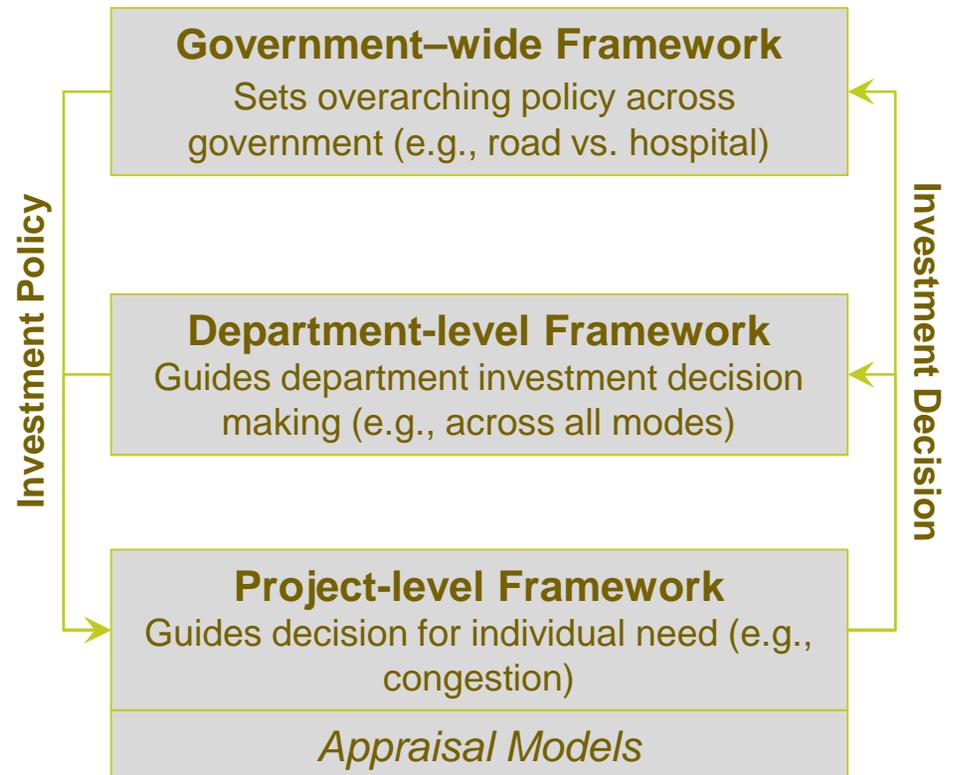
- Dependencies and relationships exist between the frameworks used Government-wide and at the Department-level and Project-level
- Government-wide frameworks can inform the policy that the Department-level and Project-level frameworks follow
- Project-level frameworks can inform the investment decisions by identifying the potential projects that make up the department's request for Government-wide funds



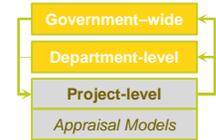
Investment Frameworks Support Investment Decisions

Value for Money (VfM):

- VfM seeks to secure the best mix of quality and effectiveness for the least outlay, over the whole lifetime of the goods or services, from purchase through to disposal
- VfM is a key concept that underlies the investment decision making process:
 - At the government-wide level, VfM refers to funds being allocated between departments to deliver the greatest value from the government investments
 - At the department-level, VfM refers to investing in the programs that provide the greatest value across all modes
 - At the project-level, VfM refers to the project providing the greatest quality and effectiveness from the investment, taking into consideration the quantitative and qualitative impacts of the project
- VfM analysis can also assist in determining the preferred procurement method for a project and this is discussed in Stage 2 of this analysis



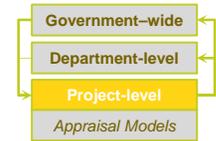
Government-wide & Department-level Frameworks



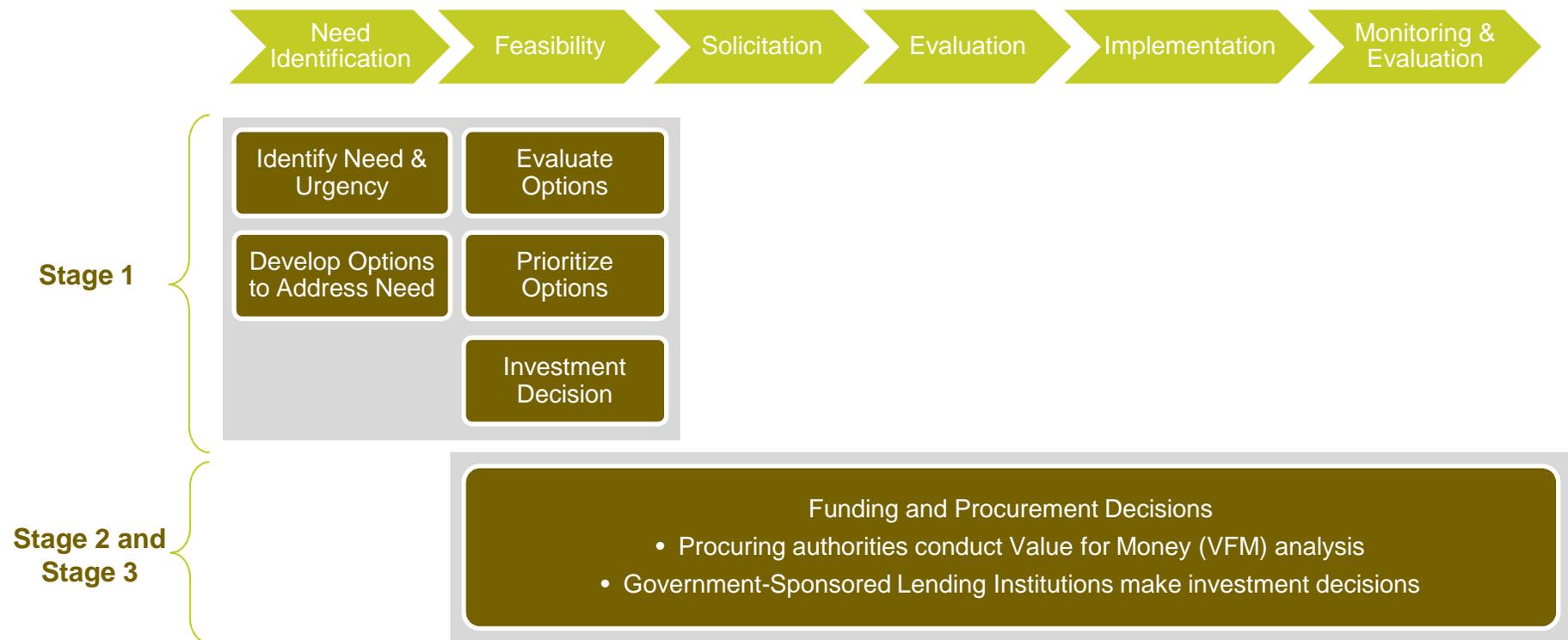
Government-wide and Department-level frameworks can inform investment policy and appraisal models for individual projects

Framework Type	Examples
<p>Government-wide Framework: Sets overarching policy across the government to promote consistent decision making across individual departments</p>	<ul style="list-style-type: none"> • UK’s HM Treasury Green Book • UK’s & Australia's Gateway Review Process • U.S. American Recovery and Reinvestment Act
<p>Department-level Framework: Guides department investment decision making by following government-wide policies that are adopted for a specific department’s needs</p>	<ul style="list-style-type: none"> • UK Department for Transport’s New Approach to Appraisal • U.S. DOT’s TIGER & TIGER II Discretionary Grant Programs

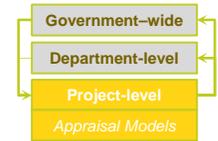
Project-level Frameworks



Below is an overview of how the investment framework relates to the project lifecycle, which illustrates how appraisal models support the investment decision process at the project level:

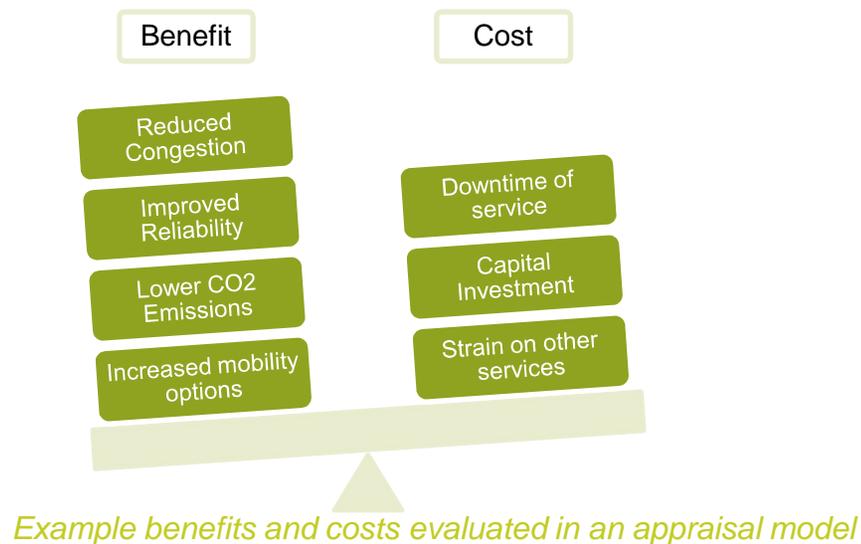


Project-level Frameworks

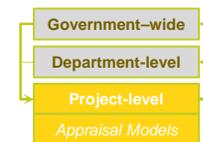


Appraisal Models

- Appraisal Models are tools used in the investment decision process to assess and compare the merit of different options
- They support decision makers by evaluating and comparing actions at various points in the investment decision process (e.g., evaluate options, prioritize options)
- One or multiple appraisal models can be used throughout the investment decision process, to identify and estimate the relative costs and benefits of an option. In general, appraisal models may consider the qualitative and quantitative factors that inform the value for money offered by a project



Project-level Frameworks



Key Appraisal Models Used in the Transport Sector:

- Reliable data outputs from Travel Demand Models, Capital / Operating Cost Estimation tools, and wider-effect models are important for successful appraisal models. The wider-effect models are designed to account for the "spill-over" economic benefits and costs that accrue to a geographic area which is not the recipient of the transportation investment.
- Key examples of appraisal models used by transportation and other sectors include:

Cost-Benefit Analysis

An economic approach that quantifies the benefits derived and costs incurred by those parties affected by an activity to determine the aggregate net impact to society and the economy

Multi-Criteria Analysis

Establishes preferences between options by reference to an explicit set of objectives and measurable criteria to assess the extent to which the objectives have been achieved

Economic Impact Analysis

Focuses on measurable changes in the flow of money going to households and businesses.

Two key tools: Input-output modeling and Computable general equilibrium (CGE)

Financial Evaluation/Analysis

Determines the net cash inflows (benefits) vs. net cash outflows (costs) to an agency, rather than the net benefit to the economy or society

Cost-Effectiveness Analysis

Measures the benefits in physical units rather than in monetary terms
Offers a priority ranking of programs or activities on the basis of a comparative 'cost per unit of effectiveness'

Key Observations:

Project justification beyond financial evaluation supports the need for a broader cost/benefit analysis

The use of accurate data outputs from reliable travel demand forecasting and capital / operating expense estimation tools is important to provide valuable results from economic appraisal models

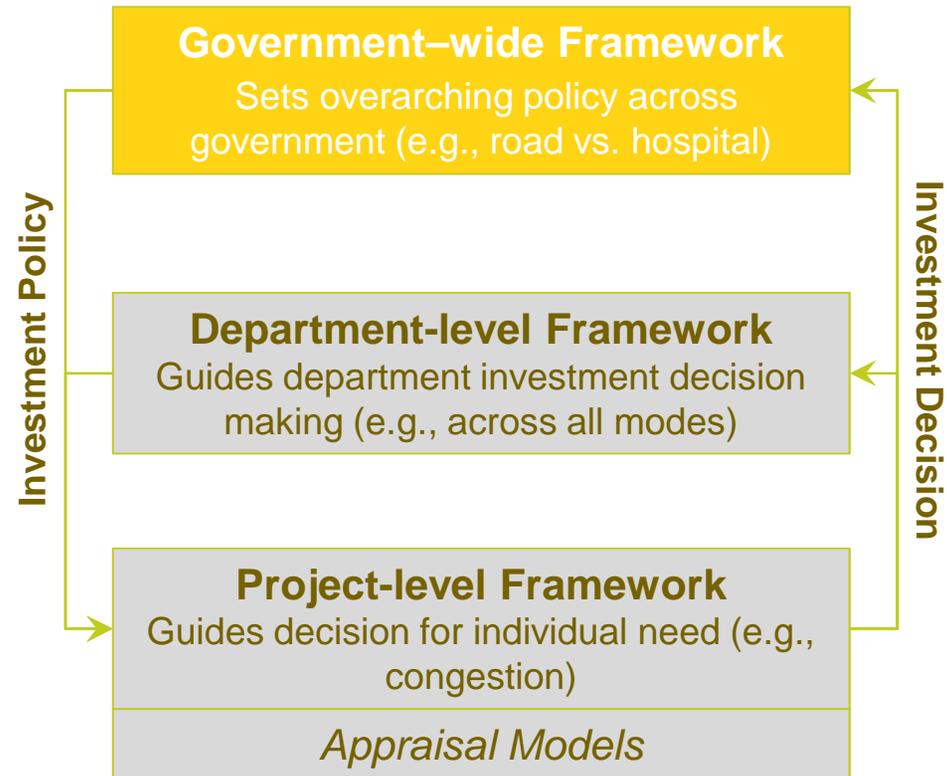
III. Transportation Investment Frameworks in the UK, Australia and Japan

United Kingdom (UK)

Attributes of the UK's Transportation Investment Frameworks

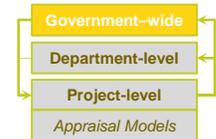
Attributes of Transportation Investment Frameworks	Present in the UK?	Comment
Single Government Infrastructure Advisory Body	✓	Infrastructure UK advises the Government's economic infrastructure priorities
National Appraisal/Evaluation Guidelines	✓	HM Treasury's Green Book, Department for Transport's WebTAG, Office of Government Commerce's Gateway Review Process
Balance of Qualitative and Quantitative Assessment	✓	Five goals for transport include monetized, numerical and other non-monetized impacts
Incorporation of Social, Economic and Environmental Factors in Assessments	✓	Transport system that balances the needs of the economy, the environment and society
Begin Framework with Need Identification	✓	Green Book begins with justification of need prior to procurement or investment decision occurring
Strong State/Regional Guidelines/Policies that build on National Objectives	N/A	UK follows a National/Local governance structure
Nationally Funded Projects Funded from General Revenues	✓	Department for Transport must compete with other agencies for general revenue funds

UK's Government-wide Frameworks



UK Government: Investment Framework

Key Stakeholders



- **National Level:**

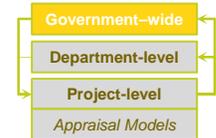
- **Departments (e.g., Department for Transport - DfT):** Sets and achieves objectives by working with regional, local and private sector partners
 - **Infrastructure UK:** Helps Treasury prioritize long-term, cross-sector infrastructure support and guidance
 - **HM Treasury:** Makes spending decisions and provides guidance on the appraisal and evaluation process
 - **Office of Government Commerce (OGC):** Provides guidance on the procurement process, and project/risk management reviews
- **Regional Assemblies:** Produces Regional Transport Plan and establishes regional priorities for the environment, transport and infrastructure
 - **Local Government:** Manages day-to-day aspects of local transport networks, and prepares a Local Transport Plan
 - **Private Sector:** Acts as contractors, investors and external advisors (e.g., technical, financial, and legal). Responsible for majority of building for new and on-going infrastructure and service delivery
 - Project delivery, preparation and ownership is generally handled by the project sponsor (e.g., Rail Authority)

In December 2009, Partnerships UK and HM Treasury's PPP unit was consolidated to create Infrastructure UK. As of March 2010, its key responsibilities included:

- Working with key government and private sector stakeholders to:
 - Identify required changes in policies and regulation to encourage infrastructure investment in the UK
 - Identify the interdependencies that impact infrastructure investment needs, and publish an action plan in response
- Developing a National Infrastructure Framework with a long-term, cross-sector view of infrastructure needs
- Teaming with departments to develop an Infrastructure Technology Strategy that coordinates future investment in research, development and innovation for infrastructure

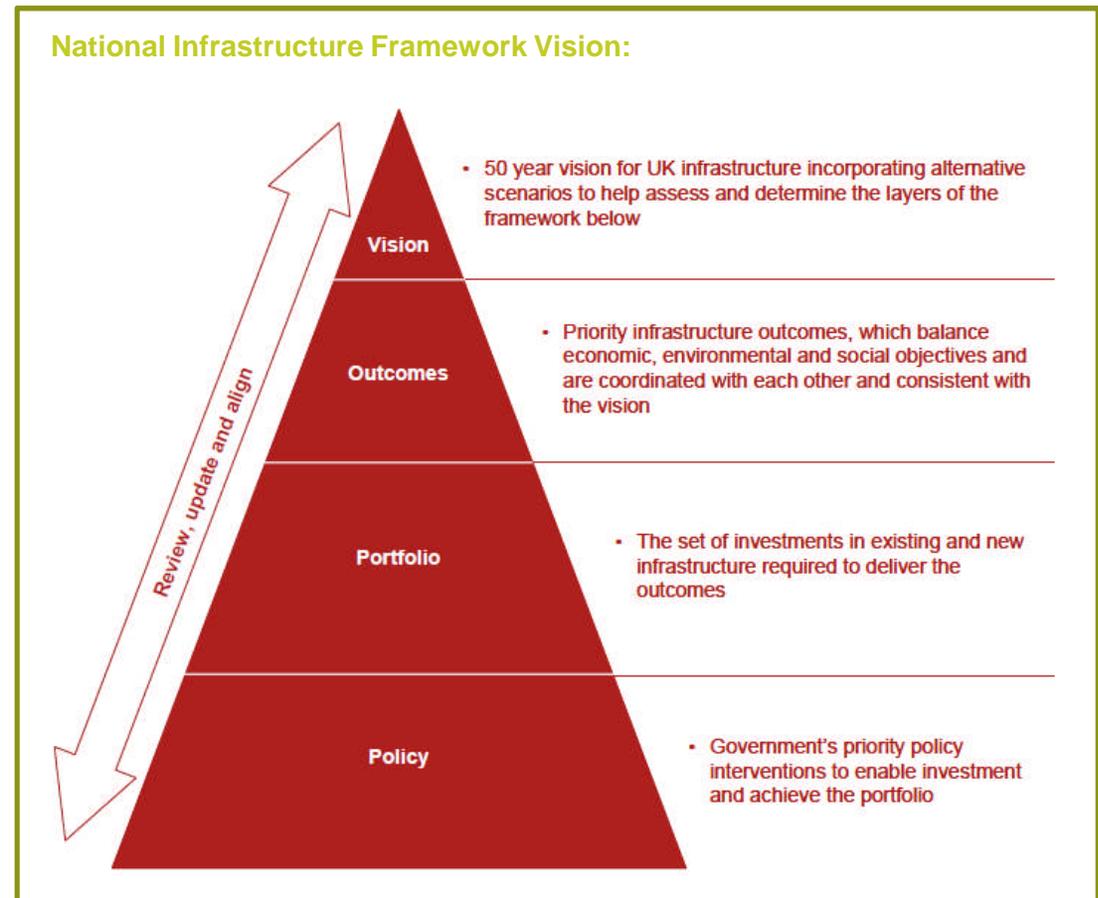
UK Government: Future Direction of Frameworks

National Infrastructure Framework

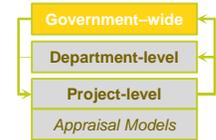


A National Infrastructure Framework is expected to be published by Infrastructure UK by the end of 2010. The framework will help Ministries make effective decisions on prioritization and timing in the context of a long-term, cross-sector view of infrastructure needs.

- UK's response to the investment challenge may focus on:
 - Attracting diverse investment (e.g., geography and investor type); and
 - Enabling investment for large, complex projects by clarifying policies to mitigate long-term risks for investors, and using co-investment (e.g., investing alongside other public or private parties) as a form of direct government financing intervention



UK Government: Upfront Financing for Infrastructure Economic Infrastructure



The UK has a variety of upfront financing methods available for transport infrastructure investment.

Financing refers to the upfront capital required to build infrastructure through:

- Private sector investment, (e.g., through Infrastructure UK)
- Public borrowing (e.g., direct borrowing from government, or European Investment Bank)

Funding refers to the payment of infrastructure over time through:

- User funding (e.g., tolls, or fare box revenue)
- Taxpayer funding (e.g., Government grants directly to DfT from General Revenue Funds)

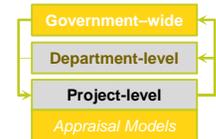
Example: Economic Infrastructure Funding and Financing Models

			Energy	Telecoms	Transport	Waste	Water
Public capital	User funding	Public industry				commercial waste operations by Local Authorities	Scottish water
	Taxpayer funding	Conventional capital procurement			most roads	municipal waste facilities	flood and coastal defences
Private finance	Taxpayer funding	PPP/PFI			M25 widening	municipal waste treatment	Northern Ireland water PFIs
	User funding	Economically regulated private industry	National Grid	BT Openreach	some airports		England & Wales water supply and sewerage
		Other private industry	electricity generation	cable networks	ports	commercial waste disposal	

Source: Infrastructure UK, Strategy for National Infrastructure, April 2010

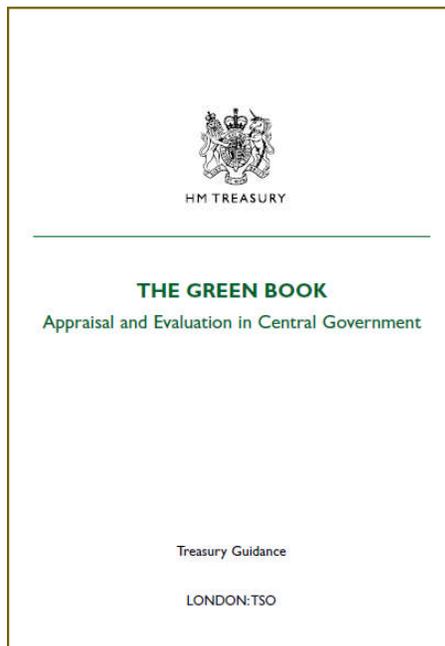
UK Government: Appraisal and Evaluation Guidance

HM Treasury's Green Book



The HM Treasury's Green Book - Appraisal and Evaluation in Central Government, published in 2003, establishes a base set of guidelines for how transportation projects are appraised in the UK. The Green Book:

- Provides a consistent and transparent process for appraisal and evaluation of policies and capital projects for all of the Central Government (i.e., department and ministers responsible for national affairs)
- Covers activities such as: policy & program development, new or replacement capital projects, use or disposal of existing assets, specification of regulations, and major procurement decisions



Key Observations:

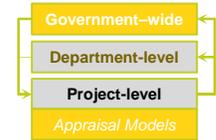
All departments compete for national funding, therefore a cross-government process that justifies action prior to funding commitment is required to support the allocation of limited funds and resources across departments

Appraisal processes performed by the departments justify the overall value for money of their potential projects, and help decision-makers prioritize funds across sectors

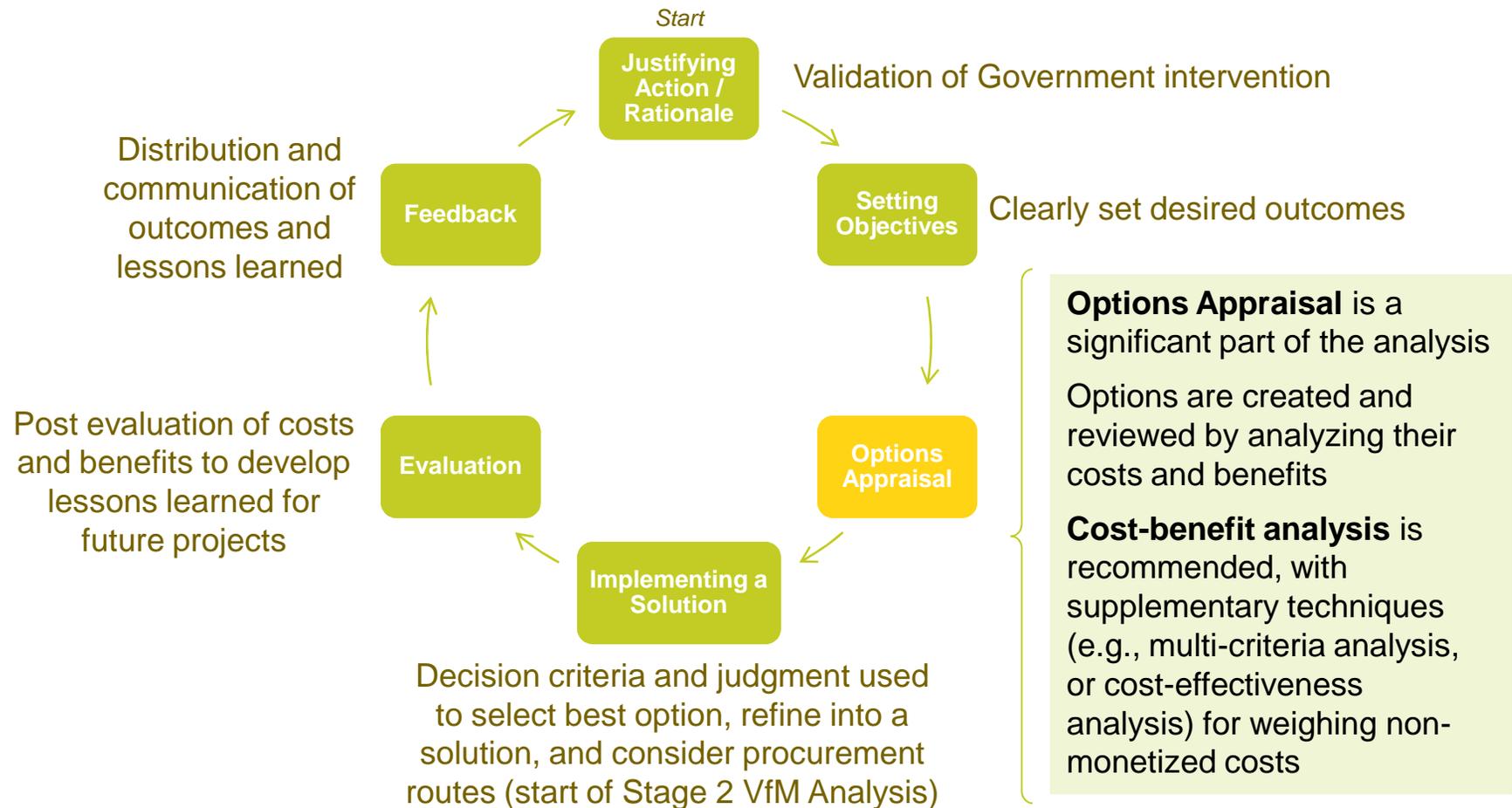
Treasury guidelines facilitate a department's ability to adopt rigorous frameworks that are consistent with national guidelines

UK Government: Appraisal and Evaluation Process

HM Treasury's Green Book

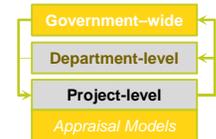


The Green Book's process for appraisal consists of six steps, starting with justification of action.

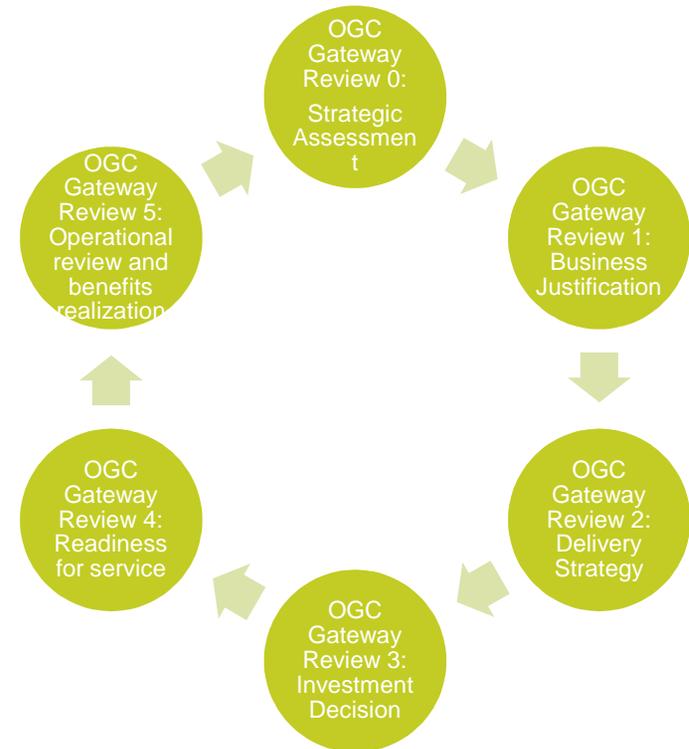


UK Government: Appraisal and Evaluation Process

Gateway Review Process



OGC's Gateway Review Process:



Projects must also follow the Office of Government Commerce (OGC) Gateway Review process that:

- Examines the policies/projects after each critical stage in their lifecycle to assure they can progress successfully
- Includes one program review (Gateway Review 0) and five steps in the project-level review
- Helps track if investment goals were met, as well as other unexpected outcomes or “flow-in effects” (e.g., loss of local retail business or increase in bicycle accidents due to re-routing of trucks to expressway) that can be added to improve future cost-benefit analysis
- Is supported by detailed guidance materials, including specific questions and documentation required for each review step
- Complies with the Green Book in Gateway Reviews 1 & 2 so that the appraisal and development of options is adequately performed

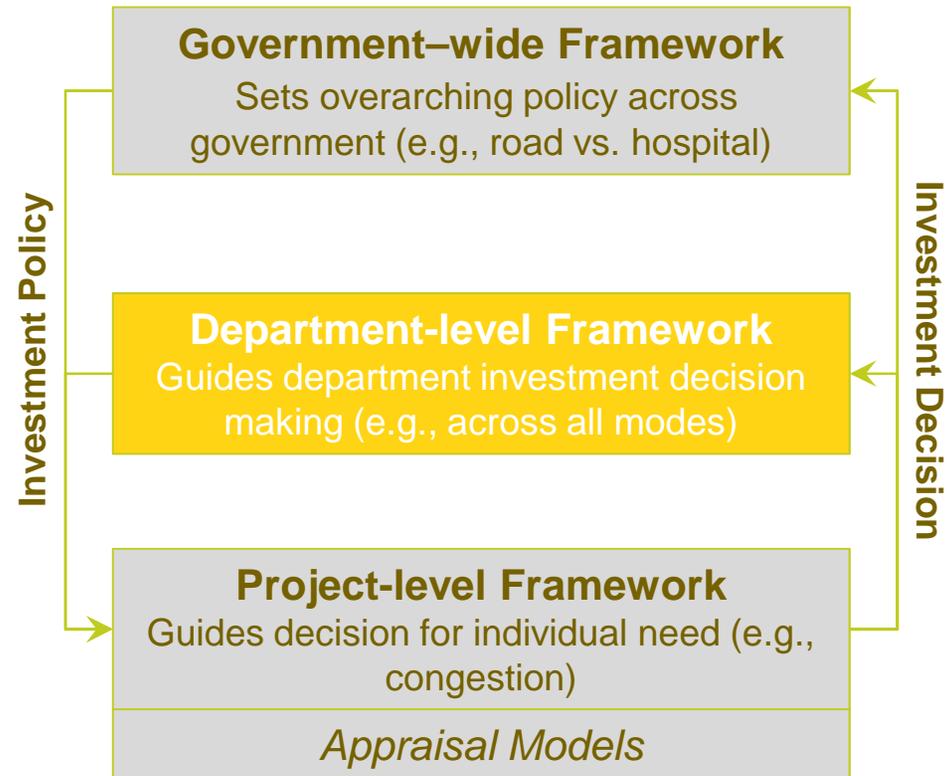
Key Observations:

The Gateway Review Process assists in delivering projects that meet the intended objectives, which may help to improve the return to taxpayers

It also promotes continuous improvement and learning by identifying ways to refine procurement policies and guidance

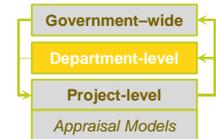
A challenge when implementing reviews can be to identify tangible project improvements

UK's Department-level Frameworks



DfT: Investment Framework

Objectives of Transport Investment



- **Objective:** Transport systems that balance the needs of the economy, the environment and society
- **The Government's Five Goals for Transport** are used as key objectives or criteria for evaluating projects during the appraisal process:
 - 1) To reduce transport's emissions of carbon dioxide and other greenhouse gases, with the desired outcome of tackling climate change.
 - 2) To support national economic competitiveness and growth, by delivering reliable and efficient transport networks.
 - 3) To promote greater equality of opportunity for all citizens, with the desired outcome of achieving a fairer society.
 - 4) To improve quality of life for transport users and non-transport users, and to promote a healthy natural environment.
 - 5) To contribute to better safety, security and health and longer life-expectancy through reducing the risk of death, injury or illness arising from transport, and promoting travel modes that are beneficial to health.
- For each goal, key performance indicators with set targets are used to measure progress and success
- In 2007, the UK developed 30 cross-government Public Service Agreements (PSAs) that set out the Government's priority outcomes over the period 2008-2011. The DfT leads the PSA for "Deliver reliable and efficient transport networks that support economic growth," which aligns well with its five goals

Key Observations:

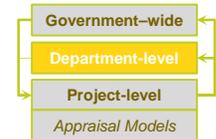
The UK's future transport strategy depends on the new government that was formed in May 2010.

As of June 2010, each of the Five Goals for Transport are:

- Consistently applied during the appraisal process to support decisions
- Aligned with overall government goals
- Relate to cross-agency Public Service Agreements (PSAs)
- Supported by sub-objectives and key performance indicators to monitor progress of investment decisions
- An example of how a national strategy can be applied to the sector level and refined for sector specific interests and issues

DfT: Investment Framework

The Eddington Study on Transport & Economic Growth



In 2005, Sir Rod Eddington (CEO of British Airways from 2000-2005) was jointly commissioned by the transport and economic ministries to examine the long-term links between transport and economic growth. The key findings:

- Identified seven microeconomic drivers, as ways transport impacts the economy (outlined in figure below)
- Warns that “transport cannot of itself create growth...Economic growth causes rising transport demands, which if left unchecked, can put the transport network under strain, damaging productivity and competitiveness”

DfT used the findings and recommendations to develop a new, merit-based approach to decision making that facilitates government’s ability to identify and select projects among available options on the basis of hard-edged and comprehensive economic appraisal. Key attributes include:

- Clear focus on non-transportation objectives for the transportation system (e.g., supporting economic growth, and reducing emissions) with rigorous strategy and policy development to address objectives
- Emphasis on assessing a range of transportation options to meet an objective without bias towards mode or type of intervention (e.g., large capital project, pricing, or small strategic project)

Seven ways transport impacts the economy:

Source: Eddington Transport Study

Increasing **business efficiency**, through time savings and improved reliability

Increasing **business investment and innovation** by supporting economies of scale or new ways of working

Supporting **clusters of economic activity** (e.g., expand labor market, job matching, and business interactions)

Improving the **efficient functioning of labor markets**, increasing labor market flexibility and the accessibility of jobs

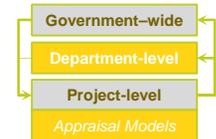
Increasing **competition** by opening up access to new markets

Increasing **domestic and international trade** by reducing the costs of trading

Attracting **globally mobile activity** to the UK by providing an attractive business environment and good quality of life

DfT: Appraisal Guidance

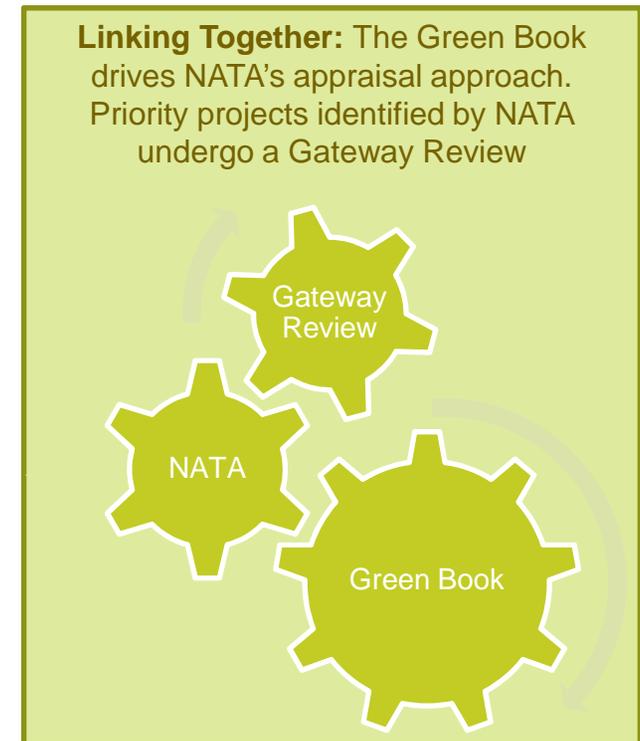
New Approach to Appraisal



The DfT's **New Approach to Appraisal (NATA)** is a body of advice, software and data products to support business case development for Government funding or approval.

- NATA follows a similar appraisal approach to the Green Book that starts with consideration of problems and ends with identification of a preferred solution. Guidance from the Treasury Green Book is applied during the economic appraisal of transport schemes under NATA
- Detailed guidance materials, tools and templates are available on the DfT's Transport Appraisal Guidance website (known as WebTAG), including:
 - Data sources (e.g., Trip-end Modeling Program which forecasts travel demand at geographical level)
 - Software for assessing whether road schemes provide VfM
 - A National Transport Model, an analytical and policy testing tool that provides a systematic means of comparing the national consequences of applied transport policies
 - Research work that aims to improve transport modeling and economic appraisal
- Guidance materials are currently being refreshed, with consultation and drafts posted for comment

See Appendix B for additional detail on NATA & WebTAG

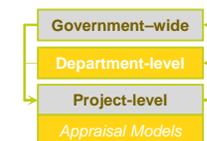


Key Observation:

NATA illustrates how a national strategy can be incorporated at the sector level, and refined for sector specific interests and issues

DfT: Key Appraisal Models

Appraisal Summary



The Green Book suggests using a multi-criteria analysis to incorporate non-monetized impacts into the overall value for money decision. The NATA process can be considered a variation of a multi-criteria analysis, which uses an Appraisal Summary Table (AST) to establish a structured approach to include impacts without known market values.

NATA's Appraisal Summary Table (AST):

- Indicates the degree to which the five Government goals for transport would be achieved
- Includes qualitative (e.g., livability) and quantitative (in either monetized or numerical terms) impacts
- Must be limited to a single page and include all sub-objectives even if impact is very small or neutral
- Is analyzed by decision makers as they use their judgment to reach an assessment on the overall value for money of the proposed option (e.g., compare 'overall net value' derived from judgment to the overall value)

Example Sub-objectives from the AST for each Transport Goal:

Tackle Climate Change	Support Economic Growth	Promote Equality of Opportunity	Improve Quality of Life	Better Safety, Security & Health
<ul style="list-style-type: none"> • Reduce greenhouse gases 	<ul style="list-style-type: none"> • Improve reliability • Improve connectivity • Wider (economic) impacts 	<ul style="list-style-type: none"> • Improve accessibility • Improve affordability • Enhance regeneration 	<ul style="list-style-type: none"> • Reduce exposure to noise • Minimize impact on biodiversity • Improve access to leisure 	<ul style="list-style-type: none"> • Reduce risk of death or injury • Improve health through physical activity • Reduce crime

See Appendix B for additional detail on AST

UK: Summary Observations

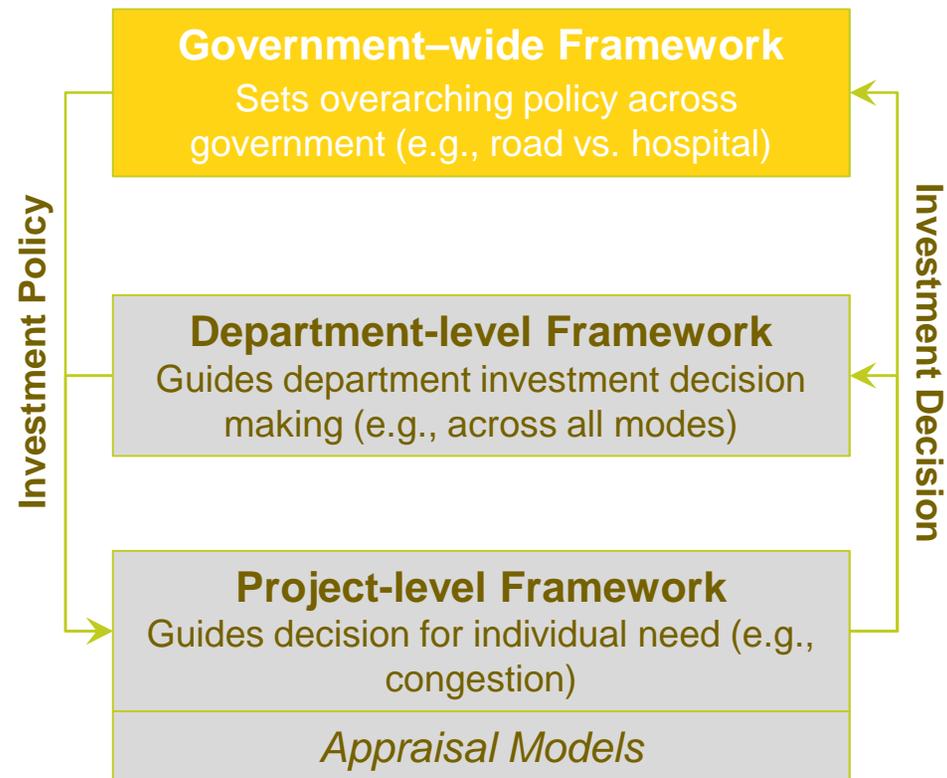
- Justifying action, prior to funding commitment, supports the prioritization and allocation of limited funds and resources to programs and projects that demonstrate the potential to deliver the highest value
- Detailed guidance, aligned with strategic National and Department goals, supports transparency and consistency of investment decisions
- DfT's extensive WebTAG materials and transparent consultation process can act as a valuable resource
- On-going development of a National Infrastructure Framework under the current economic environment may also act as a key resource for other countries, including the U.S.

Australia

Attributes of Australia's Transportation Investment Framework

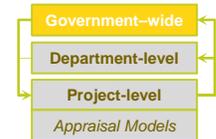
Attributes of Transportation Investment Frameworks	Present in Australia?	Comment
Single Government Infrastructure Advisory Body	✓	Infrastructure Australia (IA) was established to advise the federal government
National Appraisal/Evaluation Guidelines	✓	Infrastructure Australia provides guidance on national frameworks that builds upon the Australian Transport Council's national appraisal framework and is supplemented by detailed State guidance
Balance of Qualitative and Quantitative Assessment	✓	Use of analytical tools to measure both quantitative and qualitative impacts
Incorporation of Social, Economic and Environmental Factors in Assessments	✓	Objectives across six areas including: economic, safety, social, environmental, integration and transparency
Begin Framework with Need Identification	✓	Infrastructure Australia's Reform and Investment Framework
Strong State/Regional Guidelines/Policies that build on National objectives	✓	State-level guidelines follow National requirements while customizing to State requirements and strategic objectives. Key states include: New South Wales, Victoria and Queensland
Nationally Funded Projects Funded from General Revenues	✓	Transport competes with other agencies for general revenue funds

Australia's Government-wide Frameworks



Australian Government: Investment Framework

Key Stakeholders



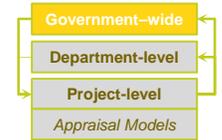
- **Department of Infrastructure, Transport, Regional Development & Local Government:**
 - Provides funding for transport infrastructure and a framework for competition between and within transport modes
 - Provides policy advice on whole of government strategies to maximize the potential of regions
 - Provides information about relevant Government policies and programs that is disseminated to regional Australia
- **Infrastructure Australia:** Advises governments and investors of infrastructure on:
 - Policy and regulatory reforms to improve the efficient utilization of national infrastructure networks
 - Nationally significant infrastructure priorities and possible financing mechanisms
- **Bureau of Infrastructure, Transport and Regional Economics (BITRE):** Provides economic analysis, research and statistics on infrastructure, transport and regional/local development to inform policy and understanding
- **Australian Transport Council:** Provides a forum for Commonwealth, State, and Territory Ministers to consult and provide advice on the coordination and integration of all transport policy issues.
- **State and Territory Governments:** Create state transport plans and fund majority of improvements. Regulate transport operation and safety standards. Key State Departments include: Queensland Department of Transport and Main Roads; VicRoads and Victoria Department of Infrastructure; New South Wales Roads and Traffic Authority. Similar to the UK, project delivery, preparation, and ownership is generally provided by State and Local Governments' Project Sponsor
- **Private Sector:** Provides expert inputs (e.g., technical, financial, legal) and advice, as well as investment

Key Observation:

Historically, the Australian states provided the majority of infrastructure funding. However, an increase in federal funding has resulted from political and tax system changes, and has increased the Federal Government's role.

Australian Government: Investment Framework

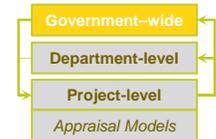
Objectives of Infrastructure Investment



Infrastructure Australia identified the following guiding principles to assist with better infrastructure decision making:

- Infrastructure Pricing - Sending the appropriate signals to influence supply and demand for infrastructure
- Competitive Markets - Establishing competitive markets wherever possible to minimize the need for regulation
- Private Sector - Involve the private sector, where it is efficient to do so, in delivering outcomes
- National Regulation - A national perspective should be adopted where regulation is required
- National Markets - Encourage national markets where possible
- Customer - Customer focused. Equitable access for all users

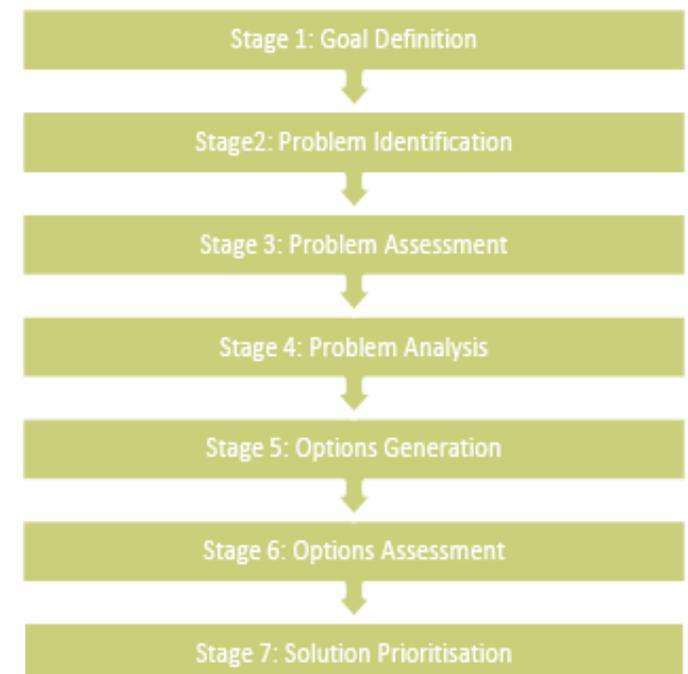
Australian Government: Investment Framework Infrastructure Priorities



In 2009, Infrastructure Australia’s National Infrastructure Priorities highlighted an economically, socially, and environmentally sustainable infrastructure future. Through guidance from Sir Rod Eddington, an analytical assessment approach for cross-sector infrastructure investment, known as the Reform and Investment Framework was introduced.

The Framework:

- Is a top-down approach to infrastructure decision-making with seven distinct stages
- Aims to “ensure decisions are taken in an objective and systematic way, thus leading to the adoption of the most effective and efficient policy solutions”
- May replace several legacy frameworks (e.g., Australian Transport Councils’ National Guidelines for Transport System Management)
- Is suitable to use as an overall planning process for infrastructure to identify a group of initiatives, or to describe the approach taken for identification of a single initiative



Key Observation:

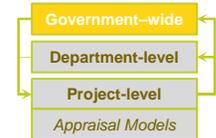
The Reform and Investment Framework illustrates how changes to the political landscape can affect the frameworks used for investment decisions

See Appendix C for additional detail on the Reform & Investment Framework

Source: Infrastructure Australia – National Infrastructure Priorities

Australian Government: Investment Framework

Building Australia Fund (BAF)



In January 2009, the Nation Building Funds Act of 2008 established the AUD\$20B Building Australia Fund for critical infrastructure in the transport, communications, water and energy sectors. Infrastructure Australia was tasked with developing a priority list of projects for the Government to consider. The prioritization and selection criteria for the BAF included:

- Supporting the seven key themes for action, including: national broadband network; creation of a true national energy market; competitive international gateways; a national rail freight network; transforming our cities through transport; providing essential Indigenous infrastructure; and adaptable and secure water supplies
- A project of national significance (but not necessarily interstate)
- Meeting three project assessment criteria, reflecting the BAF legislation:
 - 1) How well the project meets Australia's wider policy goals: supporting economic growth, protecting the environment and promoting social inclusion, measured against a series of qualitative criteria;
 - 2) The contribution the project would make to Australia's economic success: this was measured through an objective economic assessment of the projects, identifying the level of incremental economic benefits of the project compared to the incremental economic costs, expressed in the project's economic benefit cost ratio; and
 - 3) Project governance and delivery: an assessment of the quality of governance, procurement and risk management plans put in place to deliver the project

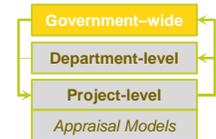
Out of over 1,000 potential projects, Infrastructure Australia identified ten priority projects, of which seven were ultimately funded 50/50 by federal and state government.

In the 2009-10 Budget, \$8.5B was committed to projects for road, rail and port infrastructure, including \$7.6B through the Building Australia Fund (remaining \$0.9B through separate funds)

Key Observation:

Infrastructure Australia, as a central infrastructure advisor, advises the government on investment priorities through performance of audits and assessments

Australian Government: Investment Framework Gateway Review Process



Similar to the UK's OGC Gateway Review, the Australian Department of Finance has implemented a Gateway Review Process. The process:

- Is an independent ex-post review at critical points in the project's lifecycle - conducted by a team not associated with the project - assesses the project against its specified objectives and identifies areas for corrective action
- Was introduced to strengthen the oversight and governance of major projects and to deliver agreed projects on-time, on-budget and in-line with stated objectives
- Is required for any procurement and infrastructure projects over AUD\$20M
- Is similar to UK approach, where the reviews track realization of expected and unexpected outcomes, to identify outcomes that can be added to improve future analysis predictions
- Is supported by detailed guidance materials, including specific questions and documentation required is provided by the Department of Finance for each review step:



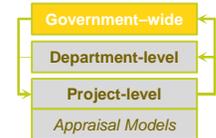
Key Observation:

Similar to the UK, a challenge when implementing reviews can be to identify tangible project improvements

See Appendix C for mapping of Gateway Review Process to overall project lifecycle

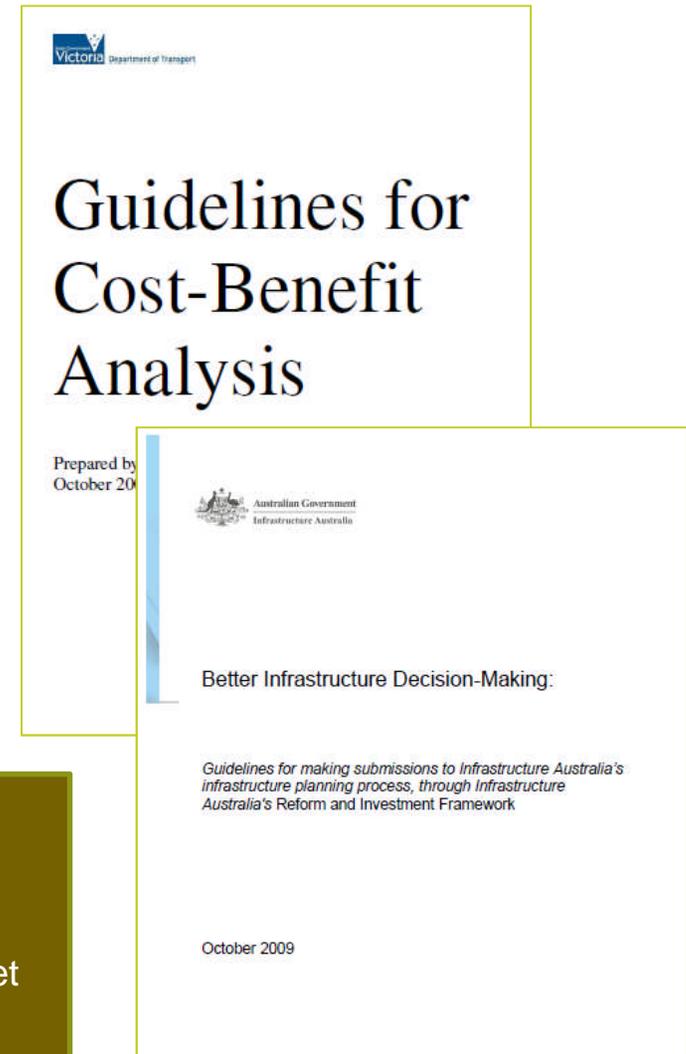
Source: Australian Department of Finance website

Australian Government: Investment Framework State Transport Frameworks



Australia provides an example of how National and State Governments can align processes.

- National guidelines supplemented by State specific requirements seek to provide a consistent approach for appraisals and investment decisions
 - States customize the National policies by adding additional detail to align with their strategic objectives and jurisdictional requirements (e.g., The State of Victoria published State-level plans which lay out in more detail the high order goals adopted by the National government)
 - Additional examples include: State-level Cost-Benefit Analysis Guidance, and Economic Appraisal Guidelines
- Often State-level policies or initiatives are used as a base foundation for the National policies to inform directions for further reform

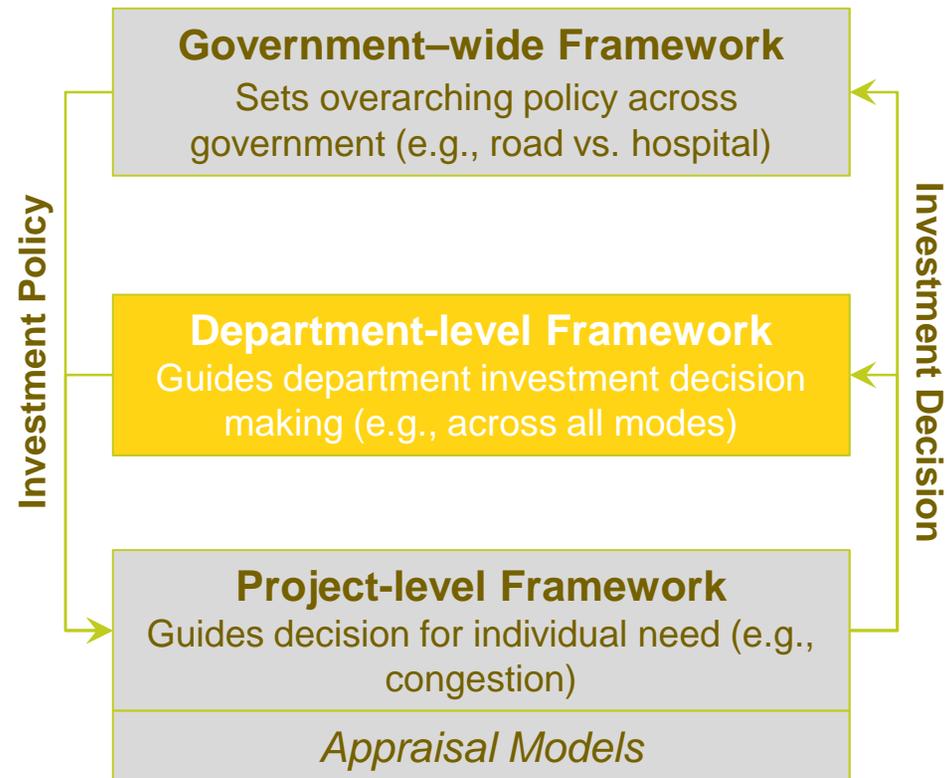


Key Observations:

Aligning the State and National processes supports the effective implementation of objectives and appraisals

The States differ by their ability to adopt standard processes that meet national requirements

Australia's Department-level Frameworks



Transport Department: Investment Framework

Objectives of Transport Investment

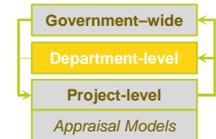


Transport Policy Objectives:

- **Economic** - To promote the efficient movement of people and goods in order to support sustainable economic development and prosperity
- **Safety** - To provide a safe transport system that meets Australia's mobility, social and economic objectives with maximum safety for its user
- **Social** - To promote social inclusion by connecting remote and disadvantaged communities and increasing accessibility to the transport network for all Australians
- **Environmental** - Protect our environment and improve health by building and investing transport systems that minimize emissions and consumption of resources and energy
- **Integration** - Promote effective and efficient integration and linkage of Australia's transport system with urban and regional planning at every level of government and with international transport systems
- **Transparency** - Transparency in funding and charging to provide equitable access to the transport system, through clearly identified means where full cost recovery is not applied

Transport Department: Investment Framework

Transportation & Economic Growth



The selection criteria for the Building Australia Fund balanced the project's ability to contribute to Australia's economic growth and success with environmental protection and social inclusion goals.

Australian research has found that transport infrastructure supports economic growth by:

- Reducing costs to business through faster, more efficient roads, rail and ports
- Creating more efficient freight networks and export infrastructure so Australian businesses will have better access to global business
- Promoting lower transit costs (e.g., actual user-fee, or lost time due to congestion/unreliability) improve the competitiveness of Australian businesses

Challenges in meeting economic growth goals include:

- Poor economic framework having poor pricing mechanism
- Insufficient investment in infrastructure over a sustained period
- Policy and infrastructure investment are not aligned
- Poor coordination across governments
- Capacity constraints
- Poor supply-chain performance
- Urban congestion

Cost of Investment Gaps:

The Bureau of Infrastructure, Transport and Regional Economics forecasted that the cost of doing nothing about congestion in Australia's capital cities is around \$12.9B in 2010.

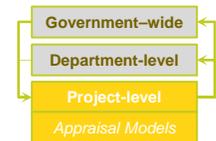
Along with a growing population, this cost is estimated to rise to around \$20B per year by 2020.

Significant and strategic investments in key cities/corridors is needed to continue to support productivity growth, and avoid constraining future economic growth.

Dollars values are in AUD

Transport Department: Key Appraisal Models

Cost-Benefit Analysis, Financial Evaluation, and Cost-Effectiveness Analysis



Three appraisal methods have frequent relevance to the Australian Government Agencies

Cost-Benefit Analysis (CBA):

- Methodology for assessing the net benefits accruing to society as a whole
- Conducted from the point of view of the local country or possibly the international community
- Appropriate time period over which a CBA should be conducted is generally the projected life of the project

Financial Evaluation (or “Investment Evaluation”):

- Assesses the impact of a program or project on the organization’s own financial performance
- Conducted from the perspective of an individual firm or agency, rather than community as a whole
- Can answer the question of whether a proposal offers an acceptable return from an organization’s perspective or determining the lowest cost procurement method

Cost-Effectiveness Analysis (CEA):

- Determines the cost of achieving a specific physical target
- May be undertaken from a national or local perspective
- Differ from CBA in that benefits are expressed in physical units rather than in money units. As in CBA, costs are expressed in money terms
- Useful in areas such as health, accident safety and education where it is often easier to quantify rather than monetize benefits

Australia: Summary Observations

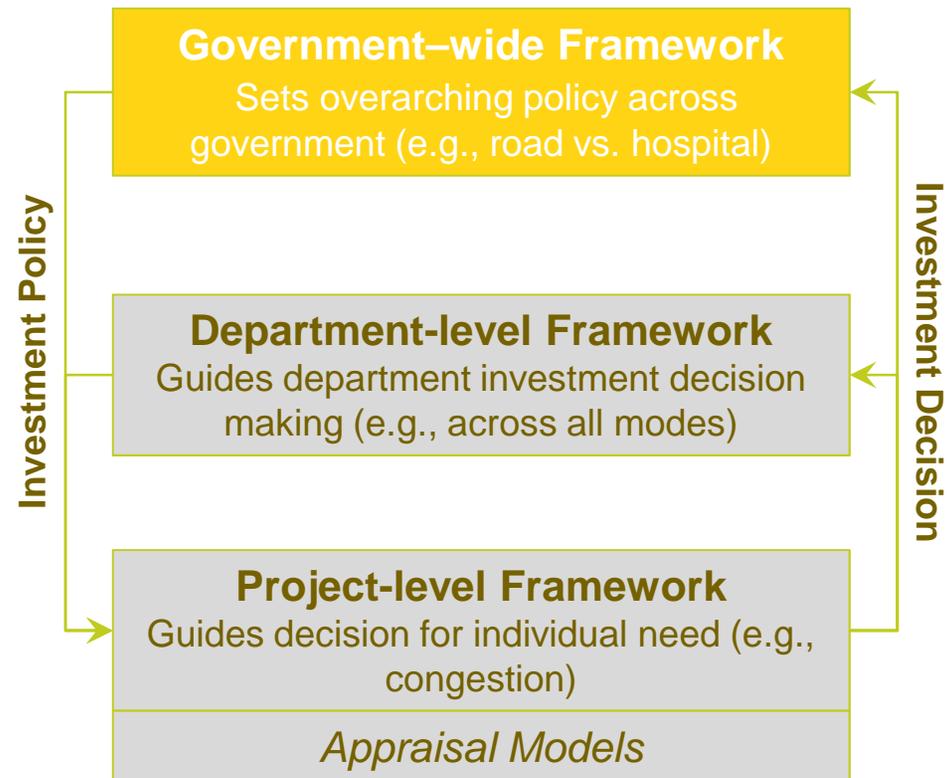
- A central infrastructure advisor seeks to balance cross-sector priorities and facilitate inter-dependencies
- National guidelines supplemented by State specific requirements support a consistent approach for appraisals and investment decisions
- A key challenge to implementing Gateway Reviews is the ability to identify tangible recommendations for improvement
- An increase in federal funding for infrastructure reflects changes in the political and financial landscape
- States influence the development of national policies
- Similar upfront financing methods are adopted as the UK, with a combination of government grants and revenues with private sector financing. There is no dedicated funding stream for transportation investment (such as the U.S. gas tax).

Japan

Attributes of Japan's Transportation Investment Framework

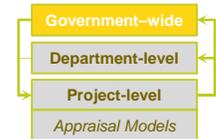
Attributes of Transportation Investment Frameworks	Present in Japan?	Comment
Single Government Infrastructure Advisory Body	✓	Ministry of Land, Infrastructure, Transport and Tourism (MLIT)
National Appraisal/Evaluation Guidelines	✓	Sector specific guidelines for road, rail, seaport and airport project evaluations
Balance of Qualitative and Quantitative Assessment	✓	Projects with a benefit-cost ratio less than 1.2 are reassessed with consideration for qualitative, non-tangible values.
Incorporation of Social, Economic and Environmental Factors in Assessments	✓	“Effects on the whole society,” including impact on daily lives of residents, local economy, local community and the environment, are considered in project evaluations
Begin Framework with Need Identification	✓	MLIT's Evaluation and Appraisal Process
Strong State/Regional Guidelines/Policies that build on National objectives	N/A	
Nationally Funded Projects Funded from General Revenues	✓	Funds previously earmarked for road improvements (e.g., Gas Tax) were folded into general funds in FY2009

Japan's Government-wide Frameworks



Japan Government: Investment Framework

Key Plan for Infrastructure Framework



Japan's Key Plan for Infrastructure Development:

- Was jointly submitted by the National Police Agency, the Ministry of Agriculture, Forestry and Fisheries and MLIT, and endorsed by Japan's Cabinet in 2003 to promote infrastructure that integrates long-term programs established for each project area
- Shifted the focus of policy-making from the budget of projects to the achievement of priority goals
- Is part of MLIT's effort to promote autonomy of regions through creation of development plans

Process for Infrastructure Plan Development:

- Involve public and gather opinions of local government to prepare the plan for Cabinet approval
- Ex-post review of plan during implementation to adjust as needed to social and economic conditions

Example Performance Goals and Indicators:

Themes: Living, Safety, Environment, Vitality

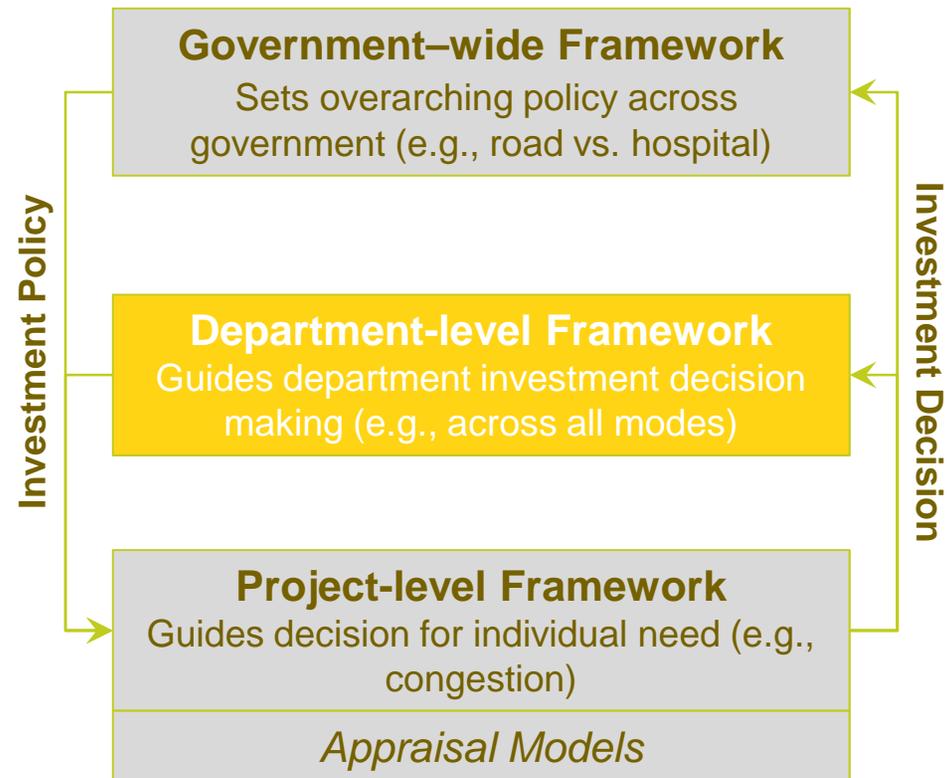
Measures:

- Formation of good residential communities
- Improving comfort and convenience of urban transportation
- Securing transportation services and improving international competitiveness and attractiveness

Key Observation:

Japan's Plan for Infrastructure Framework encourages regional autonomy to effectively utilize local expertise and private sector resources

Japan's Department-level Frameworks



MLIT: Investment Framework

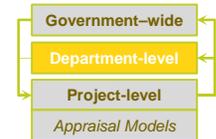
Key Stakeholders in Transport Investment

The Ministry for Land, Infrastructure, Transport and Tourism (MLIT) is the National ministry responsible for transportation systems and infrastructure investment. Key transport related bureaus under Japan's MLIT:

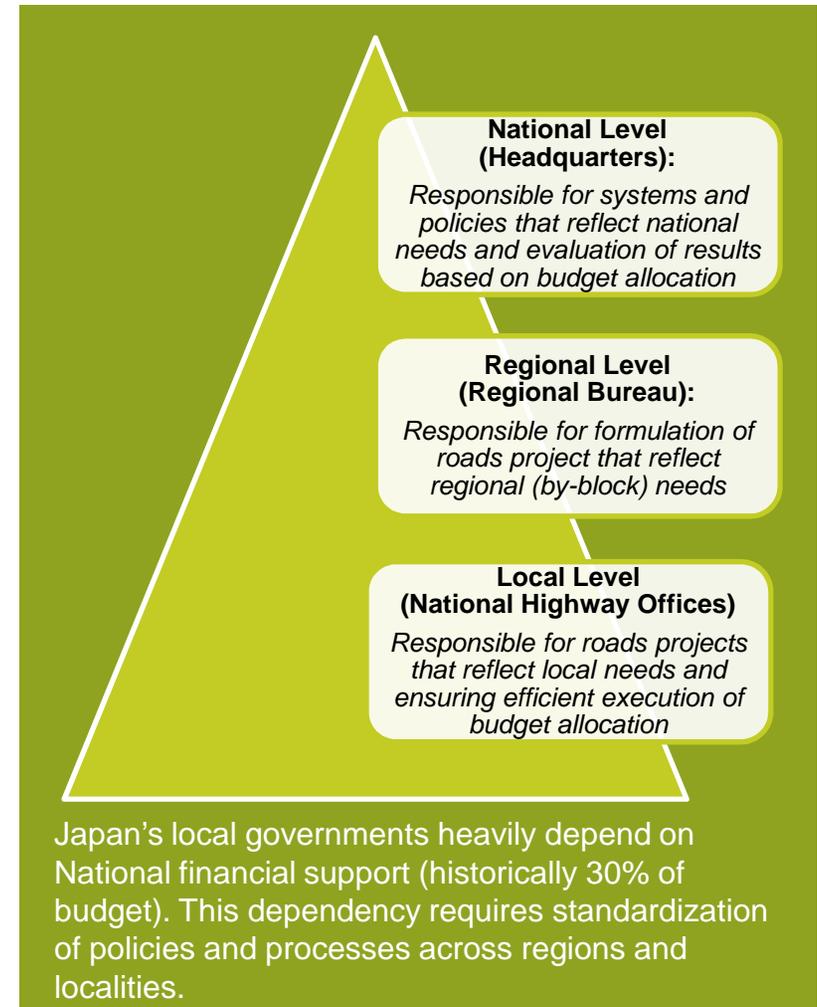
- **Road Bureau:** Oversees road projects and policy
- **Road Transport Bureau:** Oversees automobile travel and traffic systems
- **Railway Bureau:** Oversees rail projects and policy
- **National and Regional Planning Bureau:** Develops comprehensive land use policies
- **City and Regional Development Bureau:** Creates the policy vision, and develops balanced infrastructure

Other Key Stakeholders Include:

- **Road:** National and local governments are responsible for non-toll roads. Private companies are responsible for the construction, operation and maintenance of toll roads (expressways)
- **Rail:** National and local governments are responsible for new construction. Privatized National Railway Companies operate railways, and may receive Government O&M subsidies
- **Private Investors:** There are currently a limited number of PPP/PFI transport projects in Japan.

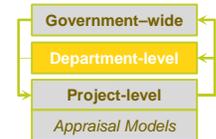


Example of the Division of Japan's Road Bureau Responsibilities



MLIT: Investment Framework

Objectives of Transport Investment



- MLIT's five goals reflect its broad responsibilities and focus on economic, social and environmental factors:
 - 1) **Supporting Joyful Life:** Realize a society where people can enjoy life in a safe environment to pursue activities with freedom and initiative to suit their own lifestyles and stages of life
 - 2) **Enhancing Global Competitiveness:** Realize a globally competitive economic society that is sustainable with stable growth
 - 3) **National Safety:** Minimize disaster, ensure traffic safety and maintain maritime order and safety
 - 4) **Preserve and Create a Beautiful and Benign Environment:** Playing our part to help improve the environment, creation and preservation of a healthy environment, and enhancing Japan's national beauty for a sense of pride
 - 5) **Enhancing Regional Diversity:** Foster and utilize the unique qualities of various regions through independent development supported by interregional cooperation

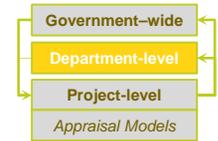
Transportation:

- Japan's transportation infrastructure investment approach aims to help form a vital economic society and region, respond to global environmental issues, promote safety and security, and aid tourism development
- Each transportation mode has its own laws and policies to guide investment decisions, and MLIT encourages policy evaluation and provides subsidies to promote key priorities (e.g., safety)



MLIT: Investment Framework

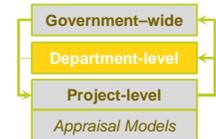
Recent Changes in Transport Investment



- Japan's transportation framework model has changed with the restructuring of key transportation bodies (e.g., railway, and highway), and has experienced multiple national and rural issues (e.g., rise in low operational efficiency and non-profitable infrastructure needs)
- As a result, Japan's transport policy has taken a multi-faceted direction, including:
 - Adjusting the infrastructure investment approach according to unique modal needs (e.g., Private Finance Initiative (PFI) scheme for expansion of Tokyo Airport, privatization of Tokyo Metro)
 - Promoting regional revitalization policies that enhance autonomy of regions and encourage use of private sector expertise and funds
 - Implementing mobility management and transportation demand management initiatives (e.g., park and ride systems, and alternative work schedules)
 - Investing in new research and development options for the next generation of transportation (e.g., intelligent transport systems, dual mode vehicles, and magnetic levitation trains)

MLIT: Investment Framework

Recent Changes in Transport Investment



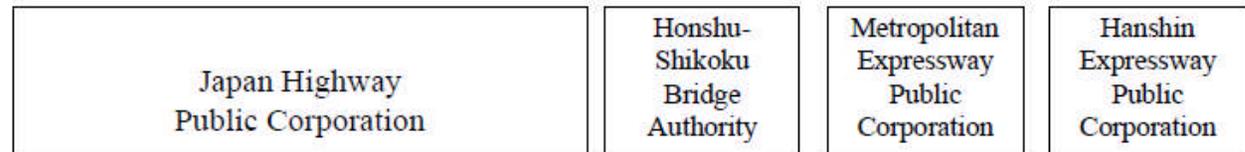
Toll-Road Restructuring:

The Japan Highway Public Corporation was restructured in 2005, and separated into six companies.

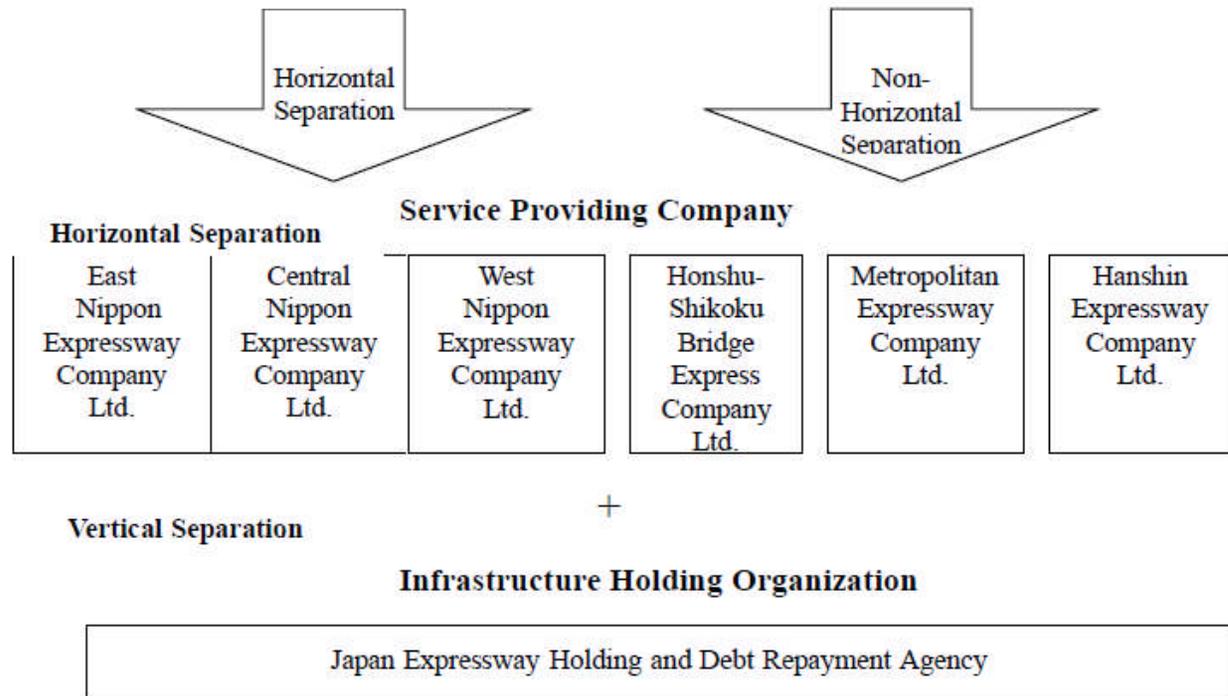
These six companies are joint-stock companies and all shares are held by the government.

A new organization was founded as an incorporated administrative organization to reduce the financial burden for highway companies and to support the successful operation of highway services for highway companies.

Before restructuring:

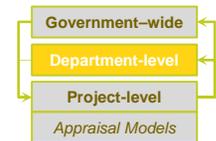


After restructuring:



MLIT: Investment Framework

Up-front Financing Methods for Transport Infrastructure

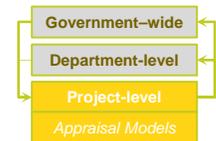


Japan's up-front financing options for infrastructure vary by transport mode:

- **Roads:**
 - The majority of the road investment is traditionally procured by National and Local Governments, except toll roads which are conducted by private road companies
 - Historically, the two major sources of funding were the earmarked tax revenue system, which appropriated gasoline tax and others for highway development and maintenance, and the toll road system, which repaid loans from toll fee receipts
 - In FY2009, earmarked revenue such as the gasoline tax for road improvements were shifted into the general revenues. The impact of this new policy is still to be determined.
- **Rail:**
 - Seven companies (Japan Railways) were privatized in 1987 and are operators of Japan's railway. Some of these firms receive operating and maintenance subsidies from the Government.
 - For new construction, the Government funds are partly provided for most of the railway companies. The amount/percentage of subsidies varies according to the structure of the railroad.
 - MLIT is starting to research the possibility of Public Private Partnerships (PPPs) for new railroad construction

MLIT: Appraisal and Evaluation Process

Framework Guidelines



- Evaluation and investment decisions are made by the MLIT, after budgets are approved by Ministry of Finance and the Cabinet (known as the Diet)
- In the late 1990s, specific guidelines for the evaluation of road, railway, airport and seaport projects were first introduced. Most notable are the Evaluation of Road Investment Projects, which was last revised in 2006.
- In 2007, Japan shifted to a **result-oriented policy development** process to better align evaluation measures with budget measures. A three-tier system was established, which included ex-ante, in-progress and ex-post project evaluations, as well as post-reviews of forecasting methods.
 - **Ex-Ante Evaluation:** Performed at the appraisal phase
 - **In-Progress:** Re-evaluation conducted if the project has not started after three years of appraisal and then again after five years of appraisal
 - **Ex-Post Evaluation:** Conducted five years after completion of the project

Roles & Responsibilities in Transport Evaluation:

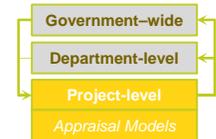
- MLIT conducts the evaluation, and project evaluation. Monitoring committees are formed with a third-party to discuss results.
- MLIT develops and revises the evaluation process through inputs received from experts outside of MLIT.

Key Challenges of Transport Evaluation:

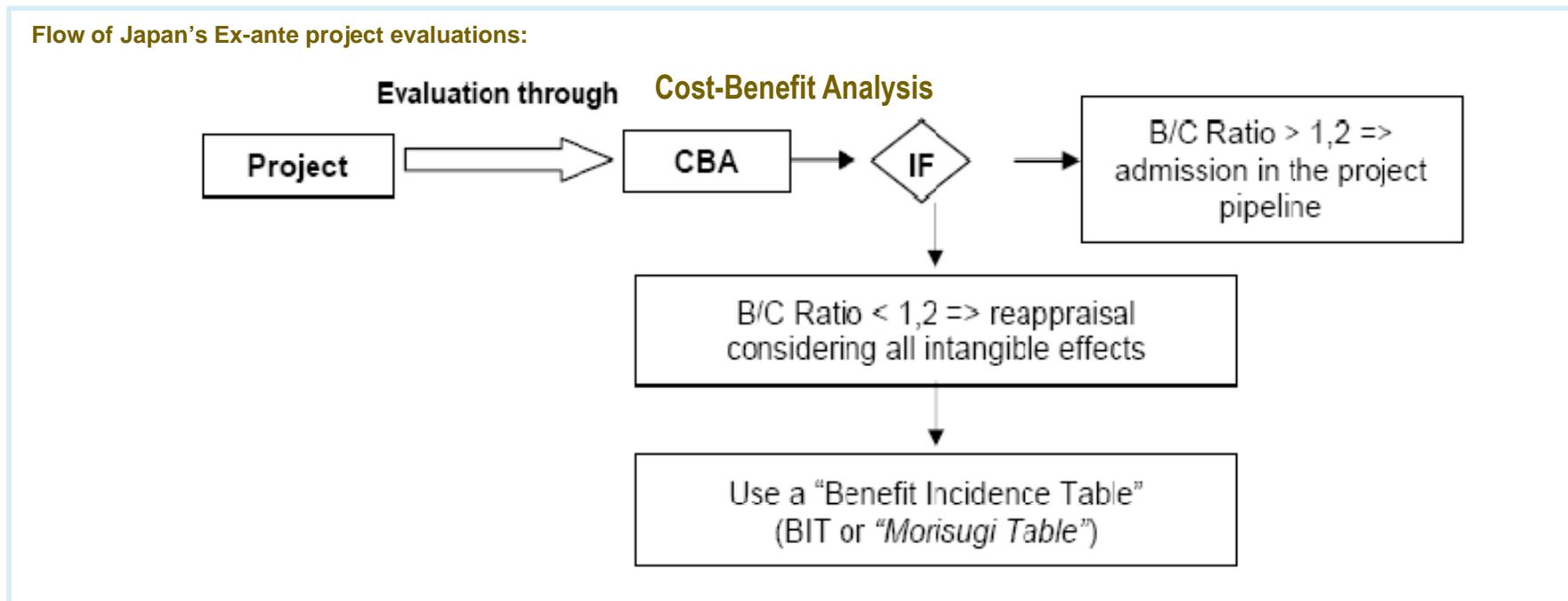
- Evaluation challenges vary by project, however many relate to changes in the demand and cost estimate projections, and delays in the project's progress

MLIT: Appraisal and Evaluation Process

Ex-ante Project Evaluations



- Ex-ante project evaluations are conducted through a combination of appraisal models:
 - Cost-Benefit Analysis (CBA) is used to select a set of projects among the available options
 - Multi-Criteria Analysis (MCA) helps to rank the projects that have been selected



- CBAs are followed by an environmental and social impact assessment which use established economic values based on the Contingent Valuation Method Guidelines published in 2009

Japan: Summary Observations

- Japan's evolving transportation framework with privatization of road, rail and metro companies demonstrates an alternative approach for relieving government's transportation debt
- The Japanese structure encourages regional autonomy to effectively utilize local expertise and private sector resources

Comparison of Transportation Investment Frameworks

Attributes of Transportation Investment Frameworks	UK	Australia	Japan
Single Government Infrastructure Advisory Body	✓	✓	✓
National Appraisal/Evaluation Guidelines	✓	✓	✓
Balance of Qualitative and Quantitative Assessment	✓	✓	✓
Incorporation of Social, Economic and Environmental Factors in Assessments	✓	✓	✓
Begin Framework with Need Identification	✓	✓	✓
Strong State/Regional Guidelines/Policies that build on National objectives	N/A	✓	N/A
Nationally Funded Projects Funded from General Revenues	✓	✓	✓

IV. Livability & Sustainability Impacts on Investment in Canada & Sweden

Canada: Livability & Sustainability Policy Overview

- Livable communities in Canada are characterized by increased access to safe drinking water, protection against natural disasters, improved urban development, and access to sports facilities
- Canada defines sustainable development as “development that meets the needs of the present without compromising the ability of future generations to meet their own needs”
- In line with Canada’s environmental agenda, key infrastructure and transportation initiatives include:

Building Canada Fund

- Provides long-term, stable, flexible and predictable funding for specific infrastructure projects
- Clear goals and streamlined processes
- High collaboration between federal, provincial and municipal governments
- Balances regional needs with national priorities

ecoTRANSPORT Strategy

- Focuses on Transportation Demand Management (TDM) policies that shift personal auto travel to other modes, disperses travel from congested times and routes, or eliminates travel all together
- Pursues cutting edge technologies
- Works with manufacturers to bring clean vehicles to Canada safely and quickly

Impact on Infrastructure Investment:

- Mandatory greenhouse gas reduction targets established by Federal Government in its environmental agenda requires a shift in investment strategies for major industries
- Certain projects must meet livability and sustainability criteria to receive funding
 - For example, under the Building Canada Fund, large-scale transit infrastructure projects must include Transportation Demand Management measures that improve environmental outcomes

Canada: Key Stakeholders in Transport

Canada’s Transport, Infrastructure, and Communities Portfolio includes two key authorities:

Transport Canada:

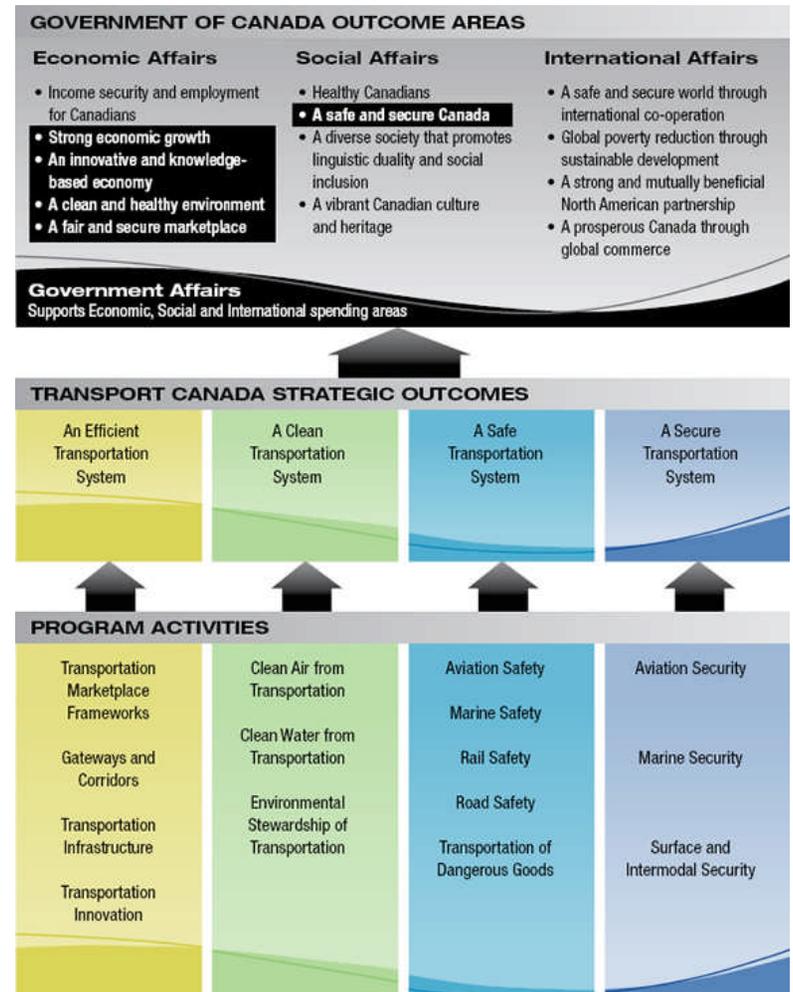
- Supports the government’s environmental agenda through policies, regulations and programs that reduce the harmful impact of all transportation modes
- Ensures all parts of the transportation system are safe, secure, efficient, and environmentally responsible
- Develops a Program Activity Architecture framework to highlight how the department’s activities contribute to reaching the government’s strategic outcomes

Infrastructure Canada:

- Leads federal efforts to implement an action plan that enhances infrastructure through strategic investments, key partnerships, sound policies, and practical research
- Manages funds providing investments in infrastructure initiatives across the country (e.g. Building Canada Fund)
- Invests in research and analysis to increase knowledge and expertise in Canada about infrastructure management

Overall, the Federal Government selects projects to invest in, which are implemented by State/Local Governments

Transport Canada’s Program Activity Architecture:



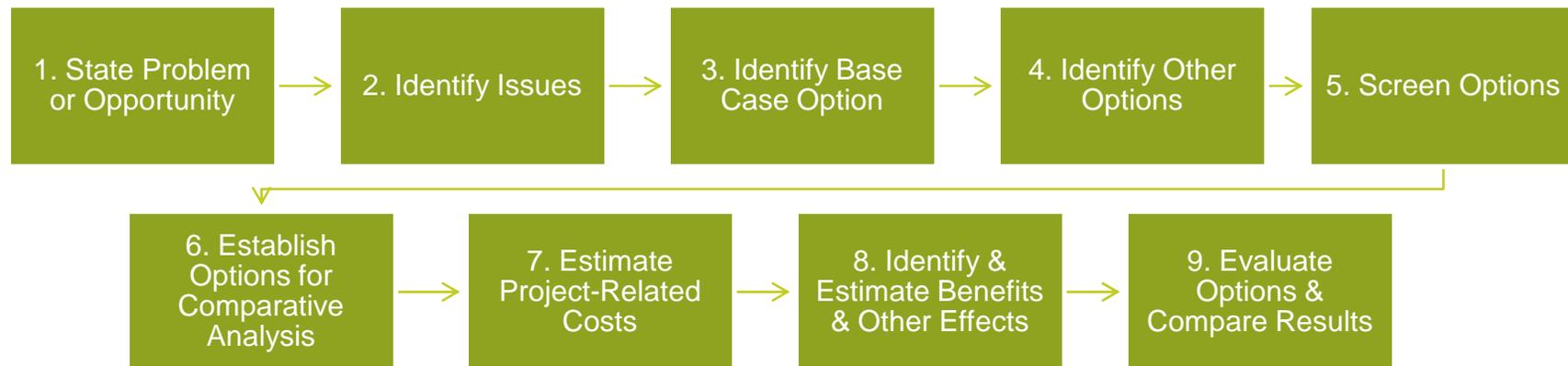
Source: Transport Canada’s Program Activity Architecture, 11/2009

Canada: Transportation Investment Appraisal Model

Canadian Benefit-Cost Analysis Approach

- Transport Canada uses a nine-step evaluation process to perform a benefit-cost analysis (BCA)
- Process determines a preferred transportation investment option from an economic standpoint using net present values (NPV), but the NPV does not automate decision-making as uncertainties must also be assessed

Transport Canada's Nine Step Benefit-Cost Analysis



Source: Transport Canada, Guide to Benefit-Cost Analysis, September 1994

Transport Canada's Evaluation Services Group:

- Determines the impact of policies, programs, or initiatives and the extent to which they are relevant, successful, and cost-effective
- Provides evaluations with the necessary information managers need to make sound decisions and design effective and efficient policies, programs, and initiatives
- Follows an evaluation process that is collaborative, bringing together policy, program, and initiative experts and evaluators, thereby building relationships across the Department and other government departments

Canada: Policies and Initiatives – Building Canada Plan

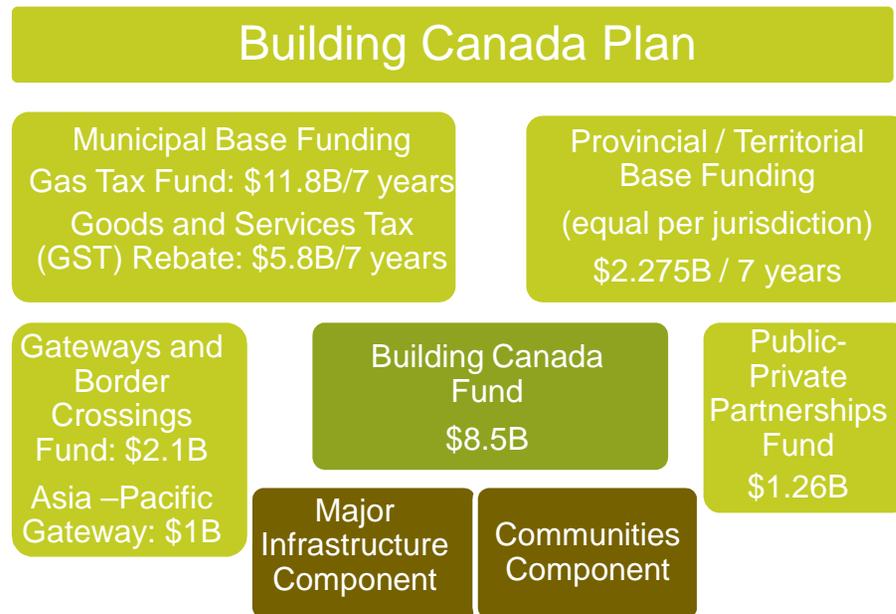
The Building Canada Plan (BCP):

- Delivers results that support Canada's priorities: a stronger economy, cleaner environment and better communities
- Provides CAD\$33B in flexible and predictable funding from 2007-2014
- Includes up to 1% of funding that will be available for research, planning, feasibility, and other studies

The Building Canada Fund:

- Is the flagship fund of the BCP
- Is led by Infrastructure Canada
- Provides a total Federal Funding allocation of CAD\$8.5B for key public infrastructure priorities
- Unifies delivery of currently distributed infrastructure program funding into a single instrument
- Consists of two components to balance the needs of both urban and rural communities:
 - The Major Infrastructure Component (MIC) targets larger projects of national and regional significance
 - The Communities Component (CC) focuses on communities with populations less than 100,000
- The division of funding between MIC and CC are set in each federal-provincial-territorial framework agreement

Funding Allocations under the Building Canada Plan:



Source: Infrastructure Canada, Building Canada Plan, all dollars in CAD

See Appendix E for detail on the Building Canada Plan funding allocation

Canada: Policies and Initiatives – Building Canada Fund (BCF)

The BCF Overall Selection Criteria and Process includes:

- Fifteen eligible categories – five of which are national priorities
- Funding allocated to provinces and territories based on population
- Framework Agreements with each province and territory, where the Government works in partnership to address infrastructure issues in a consistent and coherent manner, taking into account long-term planning
- Funding recipients that may be provincial, territorial, or local government, a private partner, a non-government organization or a combination

The Major Infrastructure Component (MIC) Selection Process includes:

- 67% of MIC funding will be directed to the five national priority categories
- Projects selected on the basis of merit through joint negotiations
- A requirement for all projects to meet criteria targeting environmental, economic and quality-of-life objectives, with additional emphasis on innovative technologies and inter-agency partnerships
- A requirement for all project to be cost-shared, with a maximum federal share of one-third when involving municipalities

The Communities Component (CC) Selection Process includes:

- A requirement for all projects to meet environmental, economic and quality-of-life objectives, as well as category specific criteria
- A competitive, application-based process
- The federal and provincial governments and municipalities each contributing one-third to finance community projects

BCF Themes & Categories:

Growing Economy

Core National Highways*
Shortline Rail/Shortsea Shipping
Connectivity and Broadband
Tourism
Regional/Local Airports

Cleaner Environment

Wastewater Treatment*
Public Transit*
Green Energy*
Solid Waste Management

Strong Communities

Clean Drinking Water*
Disaster Mitigation
Brownfield Redevelopment
Culture
Sport
Local Roads

* Denotes National Priority

Canada: Policies and Initiatives - ecoTRANSPORT

In 2007, the Government of Canada launched its ecoTRANSPORT strategy to address one of the country's largest sources of air pollution--transportation. The ecoTRANSPORT strategy provides over \$100M to promote clean, sustainable transportation choices for Canadians and includes the following initiatives:

1. ecoMOBILITY Program

- CAD\$10M to develop programs, services, and products that encourage Canadians to choose public transit/other sustainable transportation options

2. ecoTECHNOLOGY for Vehicles

- CAD\$15M for in-depth testing and publishing of emerging technologies and to foster new partnerships with the automotive industry

3. ecoENERGY for Personal Vehicles

- CAD\$21M to provide fuel consumption information and decision-making tools to encourage consumers to purchase fuel-efficient vehicles

4. ecoFREIGHT Program:

- CAD\$61M to reduce the environmental and health effects of freight transportation

Goals of the ecoTRANSPORT Strategy

Improve the health of Canadians and the environment by reducing the environmental impacts of transportation

Contribute to Canada's future prosperity and competitiveness by making transportation sustainable

Promote an efficient transportation system that supports choice and the high quality of life Canadians expect

Key Observations:

The ecoTRANSPORT strategy emphasizes Transportation Demand Management (TDM) policies and programs that influence the demand for travel in private vehicles by increasing awareness and offering travel incentives

Canada: Summary Observations

- The Building Canada Fund includes a funding split between rural (population < 100,000) and metropolitan communities, as determined in each province/territory's framework agreement
- The federal funding commitment to any single project is a maximum of 50% under the Building Canada Fund, and based on population
- The framework agreements formally establish a partnership between the Government of Canada and each province/territory to address immediate infrastructure needs and conduct long-term planning
- The ecoTRANSPORT Strategy invests in education, research, and strategic partnerships to reduce emissions across Canada

Sweden: Livability & Sustainability Policy Overview

For Sweden, the aim of the transport system is to ensure that the entire journey or mode of transport functions smoothly for everyone

Four strategic challenges have priority in the national strategy for sustainable development (SD), including: building sustainable communities, encouraging good health on equal terms, meeting the demographic challenge, and encouraging sustainable growth.

Sweden's political climate and proactive initiatives have contributed to making sustainable transportation development a reality. Recent initiatives include:

Hammarby Sjöstad	Stockholm Congestion Tax	Clean Vehicles in Stockholm
<ul style="list-style-type: none">• An urban development project in Stockholm, turning a brownfield site into a green city• Demonstrates a successful multi-agency approach for planning awards	<ul style="list-style-type: none">• Implemented in downtown Stockholm in 2006/2007• Reduced traffic by 20% in downtown Stockholm• Green cars are exempt from paying the tax	<ul style="list-style-type: none">• Since 1994, it has promoted clean vehicles and renewable fuels• The goal is to have half of buses running on renewable fuel by 2011 and all by 2025

Impact on Infrastructure Investment:

- All policy decisions must take account of the longer-term economic, social and environmental implications
- Funds collected from congestion tax are used for transport projects (the estimated 2010 net revenue is €60M)

Sweden: Key Stakeholders in Transport

Sweden's Transport Government Structure:

- On April 1, 2010, the Swedish Transport Administration and Transport Agency began operations, replacing the Swedish Rail Administration, the Swedish Road Administration, and the Swedish Institute for Transport and Communications Analysis
- The new joint agency provides improved organization, and the administering of infrastructure and development of transport modes to be conducted from a holistic/global perspective
- The Swedish Transport Administration and Transport Agency cooperate with existing government authorities to simplify everyday travel. The key responsibilities include:

Swedish Transport Administration

- Responsible for long-term planning of the transport system for road, rail, maritime, and air traffic
- Responsible for construction, operation and maintenance of public roads and railways

Swedish Transport Agency

- Stipulates rules and monitors how they are followed
- Grants permissions
- Manages congestion and vehicle taxation

Transport Analysis

- Reviews bases for decisions
- Assesses measures
- Responsible for statistics

Key Observations:

Centralizing the road and rail administration has provided for efficient and integrated planning

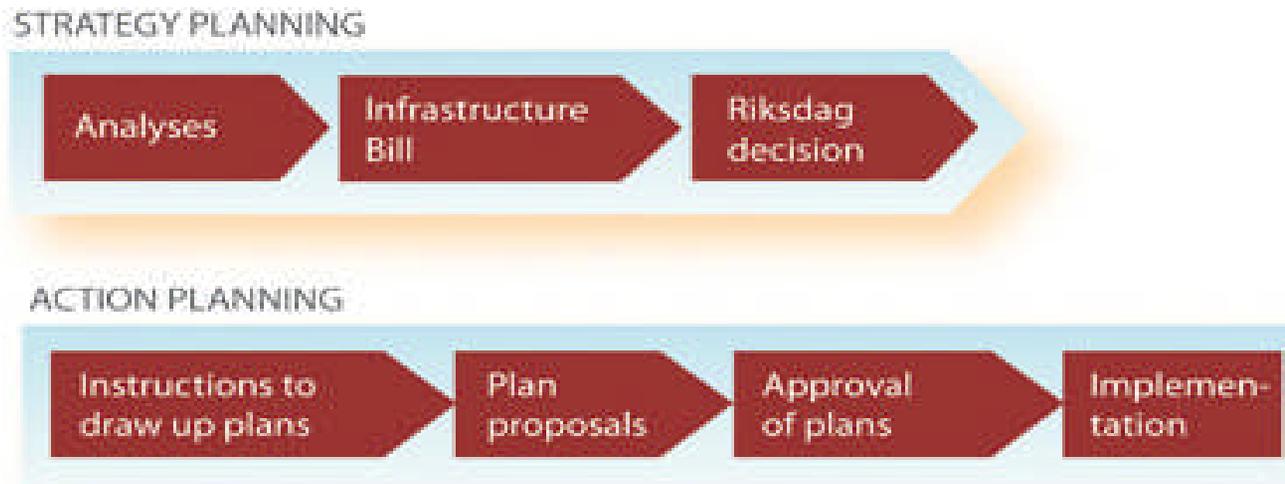
A cross-mode transport analysis team supports consistent decision making and gathering of important data and statistics

Sweden: Planning Infrastructure in Sweden

Sweden's Infrastructure Planning Approach:

- The infrastructure planning process is jointly performed by the traffic agencies and the regions in dialogue with traffic system users
- During strategic planning, strategic issues related to the development of transport system and desired outcomes are addressed
- The Government then produces its proposal for the strategy and financial framework for the development of the transport system

Swedish Infrastructure Planning Process:

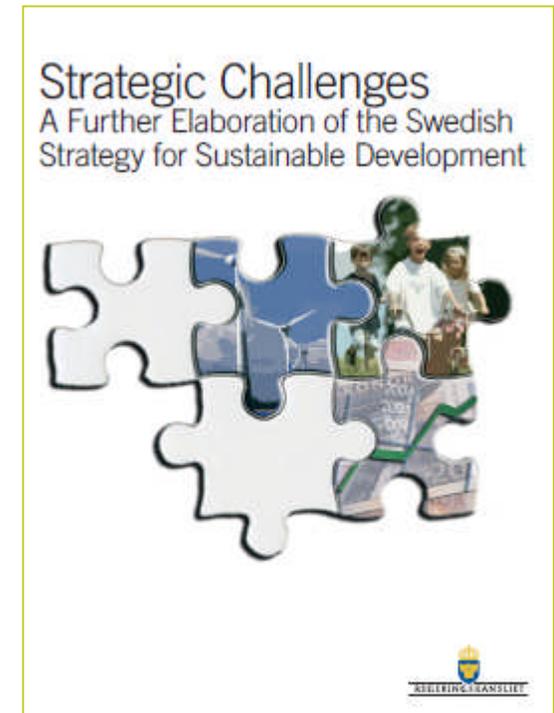


Source: Government of Sweden, Planning Infrastructure in Sweden, May 2009

Sweden: Sustainable Development Background

Sustainable Development:

- This was adopted as an overall Government policy objective in 2003
- It is coordinated by a single government body known as the “Division for Sustainable Development” under the Ministry of Environment, who helps to facilitate the Strategy for Sustainable Development (SDS) across agencies and levels of government (e.g., all ministry links regarding sustainable development refer to a single website)
- It requires recognition across all ministries that sustainable development must actively shape all policy decisions. One report highlighted that “sustainable development policy is seen as a key catalyst for renewal, growth and employment”
- Progress is monitored by a total of 87 sustainable development indicators :
 - Headline Indicators (12): average life expectancy, violence, energy efficiency, investments, employment rate, public debt, growth, risk of poverty, demographic support ratio, greenhouse gases, hazardous substances and development assistance
 - Each headline indicator is broken down into six different areas: health, sustainable consumption and production, economic development, social cohesion, environment and climate, and global development.



Sweden: Stockholm's Livability and Sustainability Success

Two recent reports analyze Stockholm's Success:

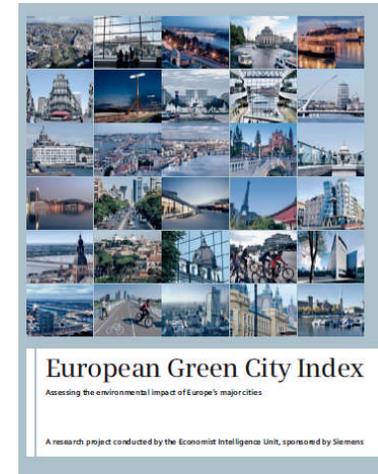
The **Siemens' European Green City Index Report** for 2009 ranked Stockholm #1 in Transport and #2 Overall. Key highlights include:

- 68% of people cycle or walk to work, and 25% use public transit
- Trafik Stockholm system provides constant traffic data to drivers and adjusts traffic lights/variable road signs to reduce congestion
- Universal political support for green public alternatives, including political pressure on public transit officials to develop new solutions

The report also found a strong correlation between citizen engagement and environmental performance, noting that the city leaders should explore ways of engaging more closely with their citizens.

Stockholm was also included in the **2010 Cities of Opportunity Report**, which provides a quantitative and qualitative analysis of 21 capitals:

- Stockholm ranked #1 in sustainability management, greenness, air quality, and congestion management
- Gunnar Söderholm, City Director of Environment and Health, attributes sustainability success to Stockholm's long-term perspective in planning, starting in the 1950s, and consensus among political parties to invest in green alternatives and research new technologies



Source: European Green City Index, 2009



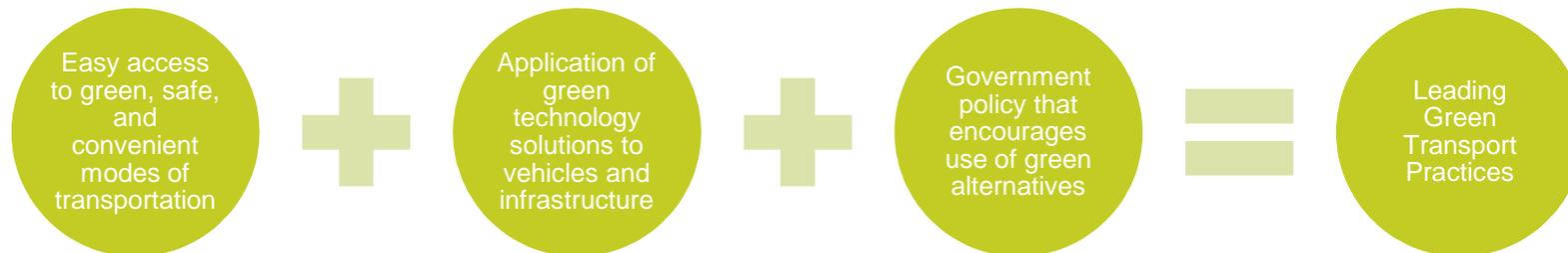
Cities of opportunity

Source: Cities of Opportunity, 2010

Sweden: Livability and Sustainability Success Factors

What makes Sweden so successful in sustainable green transportation?

- The Siemens' European Green City Index noted three key building blocks for Stockholm's success:



In addition, other critical success factors for Sweden include:

- Setting lofty goals and experimenting with new technology to achieve them
- Engaging and motivating communities to make greener decisions
- A shifting political climate that now supports green solutions for sustainable development
- Collecting and analyzing performance data to improve system performance

Key Observations:

Shifting public and political opinions regarding initiatives requires significant effort and time

Prior to its implementation, 75% of residents opposed the congestion tax, however today 65% of residents are in favor of it

Communication and collaboration have been the key drivers for change (e.g., running a public awareness program for sustainable lifestyles)

Sweden: Success Factors - Communication & Collaboration

How does Sweden achieve high levels of communication and collaboration with stakeholders?

- Builds a collaborative network of government and private interests, through development of mutually beneficial partnerships with the private sector (e.g., IBM for Congestion Tax, Energy Company for transit energy use) and public sector (e.g., Housing Authority for Hammarby Sjöstad)
- Markets sustainable lifestyle benefits through public awareness campaigns
- Advocates clean technology and leads by example by setting goals for 100% of the municipality's own vehicles to be clean by 2010, and 100% of its buses to run on renewable fuel by 2025
- Promotes clean vehicles through disseminating newsletters and seminars, and raising awareness of clean vehicles in private companies using external market activities, including establishing a company register, supplying journalists with research results, and providing advice to companies through direct contacts
- Drives consensus about the necessity of improving the environment regardless of political party majorities

Lessons learned from Hammarby Sjöstad:

- Hammarby Sjöstad involved various authorities and administrations during the early stages of planning to create a residential environment based on sustainable resource usage
- The GlashusEtt environmental information center informs residents through exhibitions and demonstrations how they are a part of the eco-cycle solution of Hammarby Sjöstad, known as the Hammarby Model

Key Observations:

Long-term planning perspectives can be important in creating sustainable change and cultural shifts

Engaging users and developing cross-agency approaches have supported this transformation

See Appendix F for more information on Hammarby Sjöstad

Sweden: Lessons Learned from Stockholm Initiative

National Policies

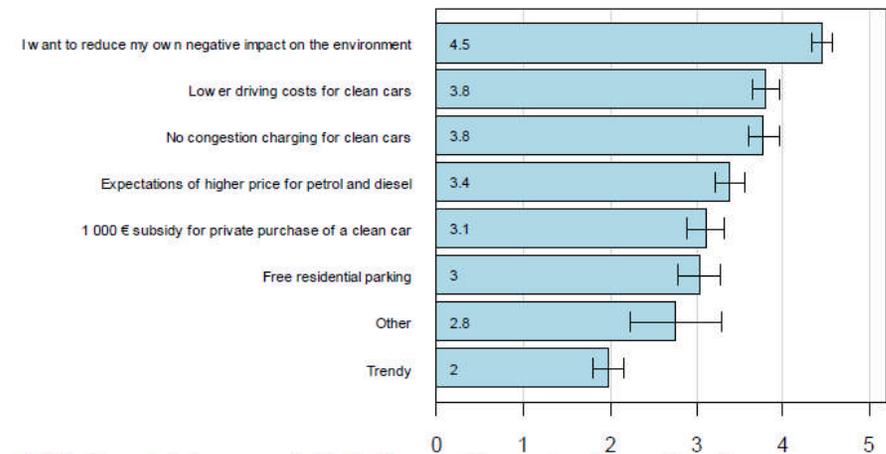
- The Clean Vehicles in Stockholm initiative paved the way for some of Sweden’s national policies, including the following:
 - 1999: Company car taxation of alternatively fuelled vehicles becomes equivalent to conventional cars
 - 2003: The Minister of Finance reduces the tax on biofuels through the end of 2012
 - 2006: The “pump law” requires all refuelling stations of a certain size to supply at least one alternative fuel, and requirements have since increased
 - 2007: Purchase subsidy to all private buyers of clean cars until June 2009

The Impact of Incentives

- An analysis of the Clean Vehicles in Stockholm initiative provides the following insights on incentives:
 - Incentives affecting the operating costs of vehicles are strongest (e.g. congestion charging and fuel price)
 - Incentives that introduce a privilege for clean cars over conventional counterparts are stronger than incentives that simply “even out” their differences
 - The most influential factor for company car drivers to choose a clean vehicle is the lower employee benefit tax assessed to a clean company car

Most important factors of household purchases of alternatively fuelled vehicles:

1. Desire to reduce negative impact on the environment
2. Clean vehicle’s lower fuel costs
2. Clean vehicles are exempt from congestion charges



Statistical uncertainties are marked in the figure by 95 percent confidence intervals.

Source: Promoting Clean Cars, BioEthanol for Sustainable Transport (BEST), February 2009

See Appendix F for more information on the Clean Vehicles in Stockholm Initiative

Sweden: Summary Observations

- The consolidated Swedish Transport Administration allows for the administering of infrastructure and development of transport modes to be conducted from a holistic perspective
- Incentives have supported the city in influencing the market spread of clean cars:
 - Incentives that offer the largest monetary gain, that drivers experience frequently (e.g. congestion charges), and that introduce a privilege for clean cars have been effective
- A complete approach has been implemented to reduce the environmental impact of the community:
 - Hammarby Sjöstad held early consultations with administrative departments and companies responsible for energy, waste management, water & sewage to develop solutions that would meet environmental goals
 - Communication and collaboration with residents has been critical to the success of the project

V. Summary of Key Lessons Learned And Considerations for the U.S.

Key Lessons Learned from UK, Australia, and Japan

Long-term land-use vision, cross-sector views, and justification for need are common themes across the key jurisdictions that could provide benefits to the United States

- Long-term planning that incorporates land-use visions and cross-mode infrastructure needs helps to provide stability and security to public and private partners
- Established frameworks and appraisal methods, that are aligned with national objectives and involve significant stakeholder consultation, may provide transparency and support cross-mode infrastructure investment
- Central infrastructure advisory bodies may contribute to cross-sector investment prioritization and funding
- State-level guidance can assist in addressing individual state requirements and strategic objectives while aligning with national guidelines
- Justifying action, prior to funding commitment, may focus the allocation of limited funds and resources to those areas that provide the greatest value

Key Lessons Learned from Canada and Sweden

Long-term planning, engagement of residents, and collaboration between public and private entities have assisted in making livable and sustainable communities a reality

- Long-term planning perspectives provide crucial support to sustainable development and cultural shifts
- Consensus on improving the environment across political parties has also assisted the progress towards sustainability
- Deliberate distribution of funding between rural and metropolitan areas may help to in addressing the infrastructure needs of smaller communities
- Engaging residents and developing cross-agency approaches support transformation and may reduce the environmental impact on a community
- Policies that emphasize Transportation Demand Management (TDM) measures may influence the demand for travel in private vehicles by increasing awareness and offering travel incentives
- Incentives that offer the largest monetary gain or that drivers experience frequently can influence the market spread of clean vehicles

Appendix A: Source List

Australia:

- Australian Transport Council, National Guidelines for Transport System Management In Australia: <http://www.atcouncil.gov.au/documents/ngtism.aspx>
- Infrastructure Australia. <http://www.infrastructureaustralia.gov.au/>

Canada:

- Infrastructure Canada: <http://www.infc.gc.ca/department/about-afpropos/about-afpropos-eng.html>
- Infrastructure Canada, Building Canada Plan: <http://www.buildingcanada-chantierscanada.gc.ca/plandocs/index-eng.html>
- Government of Canada, ecoTRANSPORT Strategy: <http://www.ecoaction.gc.ca/ecotransport/index-eng.cfm>
- Government of Canada, Transport Canada: <http://www.tc.gc.ca/eng/aboutus-menu.htm>

Japan:

- Japan's MLIT Ministry of Land, Infrastructure, Transport and Tourism http://www.mlit.go.jp/index_e.html

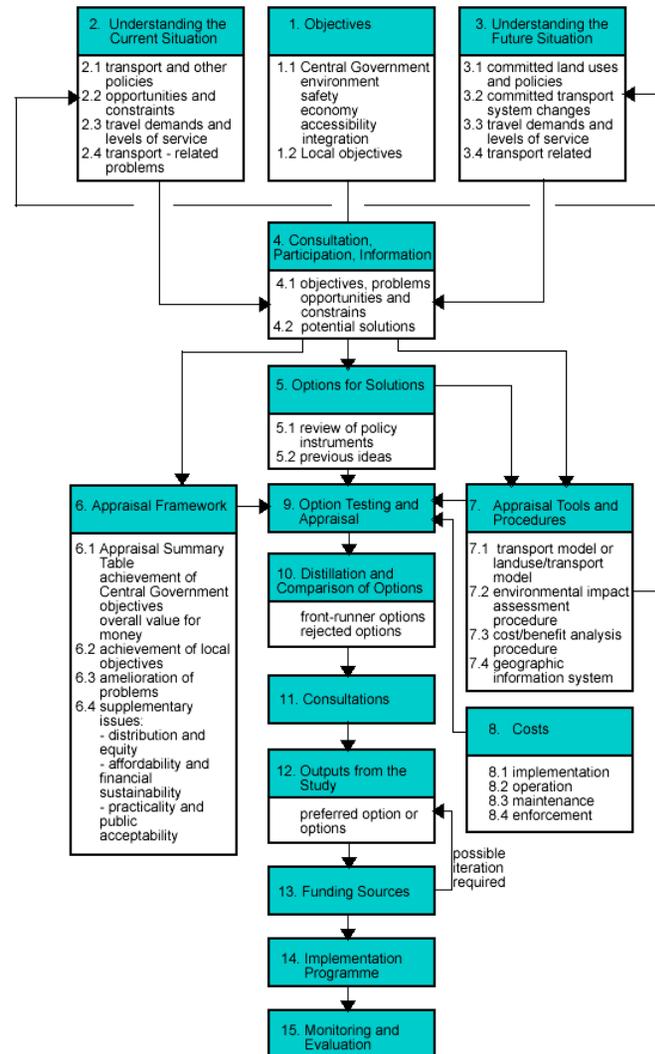
Sweden:

- BioEthanol for Sustainable Transport (BEST), Promoting Clean Cars: Case Study of Stockholm and Sweden, February 2009: http://www.best-europe.org/upload/BEST_documents/incentives/D.5.12%20Promoting%20Clean%20Cars%20Report.pdf
- Economist Intelligence Unit, European Green City Index: http://www.siemens.com/entry/cc/features/urbanization_development/all/en/pdf/report_en.pdf
- Division for Sustainable Development – Strategic Challenges: <http://www.sweden.gov.se/content/1/c6/07/01/83/1a9ae133.pdf>
- HammarbySjostad: <http://www.hammarbysjostad.se/>
- PricewaterhouseCoopers and the Partnership for New York, Cities of Opportunity: http://www.pwc.com/en_U.S./us/cities-of-opportunity/assets/pwc-citiesofopportunity-2009.pdf
- Trafikverket: <http://www.trafikverket.se>

UK:

- Eddington Transport Study: <http://www.dft.gov.uk/adobepdf/187604/206711/executivesummary.pdf>
- HM Treasury – Green Book: http://www.hm-treasury.gov.uk/d/green_book_complete.pdf
- HM Treasury – Office of Government Commerce (OGC) Gateway Review for Programmes & Projects: http://www.ogc.gov.uk/what_is_ogc_gateway_review.asp
- UK's Department for Transport - Transport Analysis Guidance – WebTAG: <http://www.dft.gov.uk/webtag/>

Appendix B: UK's DfT NATA Process Flow



Appendix B: UK WebTAG Excerpts

<p>The Appraisal Process</p> <p>TAG Unit 2.5</p> <p>IN DRAFT</p> <p>February 2010</p> <p>Department for Transport</p> <p>Transport Analysis Guidance (TAG)</p>	<p style="text-align: right;">TAG Unit 2.5 The Appraisal Process</p> <p>Appraisal Summary Table</p> <p>tes to one option only. In the case of a study which involves the of a transport strategy (before going on to develop a 'plan' to enact strategy), it may be that the 'options' being tested and appraised alternative strategies - that is, complete packages of measures o the whole study area. In these cases, an AST should be each alternative strategy. It is expected that testing would also be o examine the contribution of each of the main elements of the the whole. Further guidance on this is given in the COBA manual. e discipline of the AST should be maintained for each element, y be that not all objectives need be addressed in every case. For was found that a particular element had a large negative economic be considered unnecessary to undertake any further analyses objectives.</p> <p>ite for a complete AST to be prepared for each element of a Plan fferent options are considered for each element, for each option ent, although some detail may be sacrificed in the early stages. Ts are required for each transport plan prepared.</p>
	<p>1.2.16 Complete ASTs are required - for input to the distillation process described in Section 1.6 - for each alternative strategy and plan. ASTs may also be completed, either fully or partially, for each of the elements of a strategy or plan which are tested separately, as an aid to deciding whether they should feature in any of the alternative strategies or plans.</p> <p>Assessing the Overall Value for Money of the Option</p> <p>1.2.17 The table of impacts in the AST will contain all the significant costs and benefits of an option (whether an individual intervention, or overall strategy or plan). The balance of this information gives the 'overall net value' of the option. It takes account of all factors, not just the economic worth, and also takes account of all kinds of impact, both monetised and non-monetised, and qualitative as well as quantitative information.</p> <p>1.2.18 The way in which this 'overall net value' is derived is by judgement. The person assessing the 'overall net value' - the 'assessor' - is required to derive their own estimate by exercising their own judgement about the relative importance of the various impacts - the costs and benefits shown in the table of impacts in the AST. Thus, different people may come to different conclusions about the 'overall net value' of an option, depending upon the weights which they attach to the impacts.</p> <p>1.2.19 In order to make an assessment of value for money, assessors will need to compare their assessment of 'overall net value' with the cost of the project. Because affordability within the broad transport budget will often be a critical factor in deciding whether options are realistic and practical, it is recommended that the Cost to the Broad Transport Budget, shown in the third part of the AST, be used for this comparison. Note that indirect tax revenues and other wider public finance impacts should be included in the assessment of 'overall net value'. This is a change from previous practise. Further discussion of this topic may be found in <i>NATA Refresh: Appraisal for a Sustainable Transport System</i> (DfT, 2009). Further guidance on this topic is provided in <i>The Economy Objective</i> (TAG Unit 3.5).</p> <p>1.2.20 In forming these judgements, the assessor may wish to consult the analyses which have been undertaken to derive the summary information presented in each line of the AST. Of necessity, the information in the AST is a summary and may not be readily understood by some readers of the table. In these</p> <p style="text-align: right;">Page 7</p>

<p>Cost Benefit Analysis</p> <p>TAG Unit 3.5.4</p> <p>IN DRAFT</p> <p>January 2010</p> <p>Department for Transport</p> <p>Transport Analysis Guidance (TAG)</p>	<p style="text-align: right;">In Draft - TAG Unit 3.5.4 Cost Benefit Analysis</p> <p>Box 2: The Willingness to Pay Calculus</p> <p>of the willingness-to-pay (WTP) calculus is to arrive at a money welfare change for each individual that is brought about by the deration, and then to sum these. The welfare change for any red by the compensating variation, i.e. the individual's WTP for stive of his/her willingness to accept compensation for disbenefits. d this calculus is the Kaldor-Hicks compensation test: a move from to another passes this test if, in principle, those who benefits from / compensate those who lose (without themselves becoming losers). ft accounts are presented in this way, there often are items which for one person and equally-valued costs for someone else: such payments or pecuniary externalities, items which do not cancel social costs or benefits (sometimes called resource or real benefits). The word 'social' is used to signify that these are costs or in 'society as a whole', understood as the aggregate of all individuals.</p> <p>al costs and benefits seeks to measure the value of the 'resources' efits created by a project. This approach distinguishes between and transfer payments at the outset, and takes account only of the former. For example, consider a straightforward market transaction: a person buys and consumes a can of beer. In the calculation of social costs and benefits, the marginal cost of producing the beer is a social cost, while the consumer's enjoyment of the beer is a social benefit; the actual payment made for the beer - is a transfer payment, and is ignored. (In contrast, the calculus of WTP would record a benefit to the consumer equal to the consumer's surplus on the beer, i.e. the excess of WTP over the price paid, and it would record a benefit to the producer of the beer equal to the producer's surplus, i.e. the excess of price received over marginal cost.) Because the calculus of social costs and benefits nets out transfer payments, this approach does not allow the net social benefit of a project to be disaggregated into impacts on different economic interest groups.</p> <p>Clearly, the two methods are equivalent. It is important to realise that the difference between the two methods is simply a difference in presentation. It is not a difference between wider and narrower ways of defining the class of effects that ultimately count in CBA.</p>
	<p>4 Framework for Calculation of Measures of Economic Worth</p> <p>4.1 Discounting</p> <p>4.1.2 Discounting is a technique used to compare costs and benefits that occur in different time periods. It is based on the principle known as time preference that people prefer goods and services now rather than later. This preference for goods and services now rather than later applies to both individuals and society.</p> <p>Formally any sum (S) can be reduced to its present value (PV) by this formula:</p> $PV = S/(1+r)^n$ <p>Where: PV = the present value S = the sum r = the discount rate n = year in which the sum is received n = 0 is the present value year</p> <p style="text-align: right;">Page 5</p>

Source: DfT WebTAG website

Appendix B: UK DfT's NATA - Appraisal Summary Table

Appraisal Summary Table Worksheet from WebTAG:

Appraisal Summary Table				
Option	Description			Date & Contact
GOAL	CHALLENGE	KEY POINTS	METRICS	ASSESSMENT
TACKLE CLIMATE CHANGE	Reduce greenhouse gas emissions			PVB £m
	SUPPORT ECONOMIC GROWTH	Improve reliability		PVB £m
	Improve connectivity			PVB £m
	Support the delivery of housing			None/PVB £m
	Enhance resilience			
	Wider (economic) impacts			PVB £m
PROMOTE EQUALITY OF OPPORTUNITY	Improve accessibility			Verbal score
	Improve affordability			Verbal score
	Reduce severance			Verbal score
	Enhance regeneration			Number
	Reduce regional economic imbalance			Verbal Score
IMPROVE QUALITY OF LIFE & PROMOTE A HEALTHY NATURAL ENVIRONMENT	Reduce exposure to noise			PVB £m
	Minimise impact on biodiversity			Verbal score
	Minimise impact on the water environment			Verbal score
	Minimise impact on heritage			Verbal score
	Minimise impact on landscape			Verbal score
	Improve experience of travel			Verbal score/PVB £m
	Improve the urban environment			Verbal score
	Improve access to leisure			PVB £m
BETTER SAFETY, SECURITY & HEALTH	Reduce the risk of death or			PVB £m
	Improve health through physical activity			PVB £m
	Reduce air quality health costs			PVB £m
	Reduce vulnerability to			
	Reduce crime			Verbal score
IMPACT ON PUBLIC ACCOUNTS	Broad transport budget			PVC £m
	Wider public finance impacts			PVB £m

Source: DfT WebTAG website

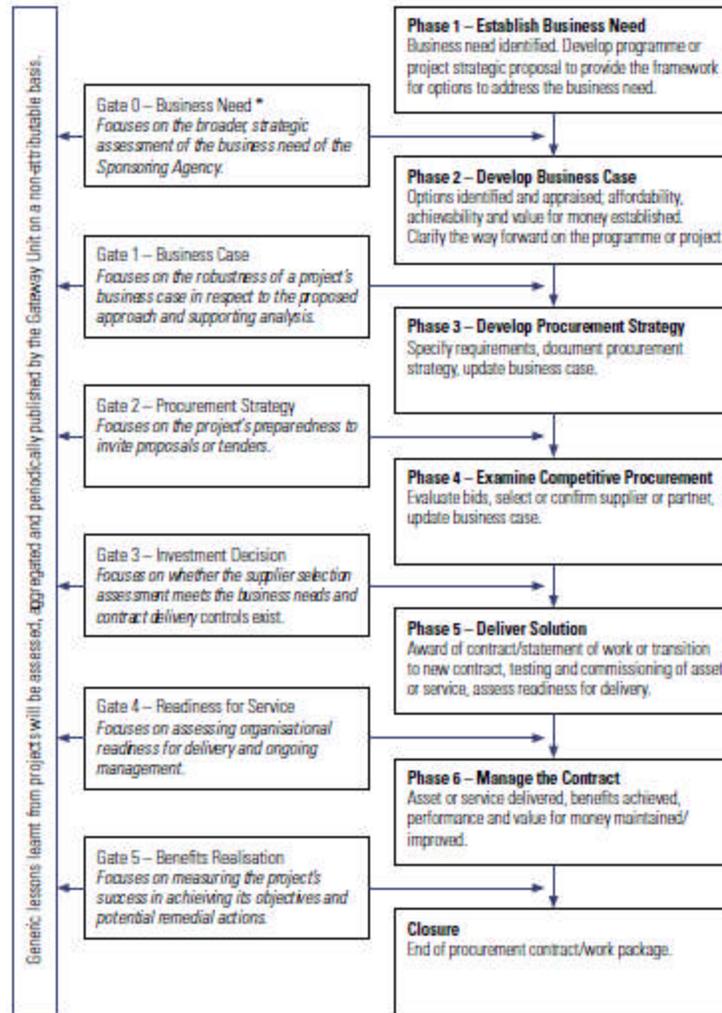
Appendix C: Infrastructure Australia’s Framework

STAGE	DESCRIPTION	COMPONENTS REQUIRED	RATIONALE
1. Goal definition	Definition of the fundamental economic, environmental and social goals that society seeks to achieve, for example: sustained economic growth and increased productivity, lower carbon emissions and lower local pollution, greater social amenity and improved quality of life.	<ul style="list-style-type: none"> Formalised, comprehensive, and agreed goals/targets. Quantified, objective and specific goals/targets. 	A performance benchmark is needed against which the adequacy of infrastructure can be assessed.
2. Problem identification	Objective, specific, evidence-based, and data rich identification of deficiencies with the condition, operation and services provided by infrastructure that may hinder the achievement of those economic, environmental and social goals.	<ul style="list-style-type: none"> A list of specific problems clearly identified, including network or geographical location. Those problems accurately quantified and defined, including an assessment of future trends. 	Specificity regarding inadequacies is essential in order to take targeted and therefore more effective action.
3. Problem assessment	Objective and quantified appraisal of the economic, environmental and social costs of those deficiencies, so that the most damaging deficiencies can be identified and prioritised.	<ul style="list-style-type: none"> Accurate and objective assessment of the econ/envt/soc impacts of those problems. Priorities identified which reflect the scale of impacts. 	Understanding the costs/impact of deficiencies allows the worst problems to be identified and prioritised.
4. Problem analysis	Objective policy and economic analysis of why these deficiencies exist – i.e. what is the underlying cause (depending on the sector, reasons could include market failure, government failure, capital restrictions, etc). This should include an assessment of non-infrastructure reasons for the problem – e.g. land use patterns, peak demand; or education/business hours.	<ul style="list-style-type: none"> For each deficiency, analysis of why those problems have developed. Covers both immediate and underlying causes (e.g. not just ‘lack of investment’, but causes of underinvestment, e.g. regulatory environment). 	Understanding the causes allows effective and targeted solutions to be created. Infrastructure not the only cause of problems.
5. Option generation	Development of a full range of interventions that might address the issue – e.g. pricing, regulatory, better use, packages/systems, capacity increases, informed by the Problem Analysis completed at Stage 4.	<ul style="list-style-type: none"> A full range of option types have been identified for each deficiency/problem. Those options have been objectively assessed, without some options having been ruled out early or favoured. 	Looking at a range of options rather than relying on early judgements is more likely to identify the best solutions.
6. Solution assessment	Use of cost-benefit analysis to assess those options/solutions. The appraisal should incorporate the full range of economic, environmental and social impacts (including agglomeration and trade impacts, carbon impacts, noise, and social amenity) so that the impact on all society’s goals is measured and understood as far as is possible.	<ul style="list-style-type: none"> Accurate and justifiable Cost-Benefit Analysis has been used to appraise options. Cost-Benefit Analysis is comprehensive and includes wider economic, environmental and social impacts. 	An understanding of the impact of solutions on all goals is essential to understand how the portfolio will achieve those goals.
7. Solution prioritisation	Identification of policy and project priorities from the list of solutions, on an objective basis. The objective basis should give primacy to the Benefit-Cost Ratio (BCR) of policies, but could include broader considerations set out in a transparent framework – such as portfolio/package issues, deliverability, risk, and affordability.	<ul style="list-style-type: none"> Priority List clearly identified. Priorities reflect primacy of BCR analysis alongside objective framework. Relationship to State-funded policies/projects clear – i.e. prioritisation reflects all ideas, not just the unfunded. 	BCRs provide the best available objective evidence as to how well solutions will impact on goals – but not the whole story.

Source: Infrastructure Australia website

Appendix C: Australia's Gateway Review & Project Lifecycle

Figure 1: Gateway and the Project Lifecycle



* A Gate 0 Review may occur prior to the start-up stage of a programme or project if required, or during later stages of the project if required. The majority of projects subject to Gateway are not expected to undertake Gate 0 Reviews.

Appendix E: Building Canada Fund Example

Framework Agreements: <http://www.buildingcanada-chantierscanada.gc.ca/plandocs/agreements-ententes/ifa-eci-eng.html>

Building Canada Plan Allocations for 2007 – 2014: Top Four Provinces

	Ontario	Quebec	British Columbia	Alberta
Building Canada Fund	\$3,097 m (36%)	\$1,953 m (23%)	\$1,040 m (12%)	\$841 m (10%)
- <i>Major Infrastructure Component</i>	\$2,735 m (88%)	\$1,729 m (89%)	\$929 m (89%)	\$753 m (90%)
- <i>Communities Component</i>	\$362 m (12%)	\$210 m (11%)	\$111 m (11%)	\$88 m (10%)
Base Funding	\$175 m	\$175 m	\$175 m	\$175 m
Gas Tax Fund	\$2,987 m	\$1,854 m	\$1,003 m	\$798 m
TOTAL	\$6,259 m	\$3,983 m	\$2,218 m	\$1,814 m

Appendix F: Sweden - Hammarby Sjöstad

Overview:

- A sustainable urban development project in Stockholm
- Started in the early 1990s and estimated to be completed in 2016
- Reconstructing an industrial area into an energy-efficient, environmentally conscious neighborhood of 25,000 people
- Imposed strict environmental requirements on buildings, technical installations, and the traffic environment
- Goal is to have half the environmental impact compared to other areas built in the early 1990s



Transportation Goals:

- Provide fast, attractive public transport, combined with carpool and cycle paths, to reduce private car usage
- Goal for 80% of all residents' and workers' travel be made by public transport, foot, or bicycle
- Ensure at least 15% of households and at least 5% of workplaces be signed up to the carpool
- 100% of heavy transportation be by vehicles that meet current environmental zone requirements

A breakdown of Hammarby Sjöstad residents' everyday journeys against comparable districts

Transport Type	Referent	Hammarby
Car	35%	21%
Tvärbanan (Light Rail)/Ferry*	0%	34%
Bus	50%	18%
Bicycle	7%	9%
Walking	8%	18%

*Referent districts do not have Tvärbanan light rail or ferry options.

Source: Grontmij, Report Summary, March 2008

Appendix F: Sweden - Clean Vehicles in Stockholm Initiative

Clean Vehicles in Stockholm:

- Initiative started in 1994 to promote clean vehicles and renewable fuels
- Stockholm leads by example – goal is for half of its buses to run on renewable fuel by 2011 and all by 2025
- Extensive activities of the initiative in Stockholm have positively influenced the introduction of several national incentives, including reduced tax assessment value for clean company cars
- Early success includes the following achievements:
 - 15% of all private car traffic in and out of the central city is green
 - 40% of new cars sold in Stockholm were alternative-fuel vehicles in 2008

Methods used to promote clean vehicles	
Market Incentives	<ul style="list-style-type: none"> • Exemption from congestion charges for alternatively-fueled vehicles • Minister of Finance reduced tax on biofuels from 2003-2012
Awareness-raising	<ul style="list-style-type: none"> • In 2000, Stockholm introduced information activities targeted towards private companies to help them choose clean vehicles
Infrastructure Development	<ul style="list-style-type: none"> • Expansion of public transit, such as the Citybanan project (€1.7B project to double rail capacity in Stockholm) • Installing car charging stations in parking lots and close to homes

Initiative's Goals for the end of 2010:

- 35% of new car sales be of clean vehicles
- All of the municipality's own vehicles be clean and fuelled by at least 85% renewable fuels

Source: BioEthanol for Sustainable Transport (BEST), Promoting Clean Cars: Case Study of Stockholm and Sweden