



Sustainability of Transport Projects: Toolkit



The Sustainability Toolkit of Transport Projects was prepared for the World Bank Transport Anchor group (TWITR) in Washington which administers and manages the Transport Research Support Program (TRSP), a collaborative program funded by DFID, the United Kingdom's Department for International Development.

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1 Introduction

1.1 Objective

This report is the output of the Finalise Toolkit Phase (Phase 3) for the project *Sustainability Toolkit for Transport Projects*, being undertaken by TRL for the Transport, Water and Information and Communication Technology Department of the World Bank.

The overall objective, as defined in the Terms of Reference, is 'to make development projects more sustainable by reducing the risk of failure of projects attaining their long-term development goals and enhance the prospects for their sustained impact on development ensuring that there is local commitment to longer-term buy-in'.

The main deliverable of the project is a Project Sustainability Toolkit, of which this report outlines the final version. This toolkit helps to gauge the potential for the project to be sustainable into the long-term and provide advice to help overcome common barriers to the successful development and implementation of projects. The guidance covers the expected opportunities and constraints related to sustainability.

A set of core sustainability principles has been developed to inform the process of providing loans and grants to recipient countries, and providing the evidence base necessary to demonstrate to World Bank clients that they should have a sustainable product representing value for money.

The Toolkit is intended to reduce the risk of project failure in terms of sustainable development and enable recipient country clients to incorporate core sustainability principles into transport projects at every stage of project planning, design and delivery. This will improve the prospects for longer-term sustainability and will enhance the long-term impacts of development projects. Task Team Leaders (TTL's) will benefit from additional evidence that supports investments intended to consolidate long-term development, and borrowers will benefit from projects with improved and demonstrable longer-term beneficial impact.

1.2 Project stages

Following discussions with the client representatives for this project, subtle but fundamental changes to the Terms of Reference and scope of the project, were agreed and reported in the Inception Report.

The change in vision for this project necessitated minor changes to the methodology which are grouped into the four stages outlined below:

Phase 1: Reconnaissance Phase

- Reviewing World Bank staff experience
- Evaluating experiences relating to different sustainability components
- Determining criteria for country and project selection
- Establishing criteria and methodology for data collection
- Interrogating information collected

Phase 2: Developing the draft Toolkit

- Developing the toolkit
- Undertaking an intermediate peer review

Phase 3: Finalising the Toolkit

- Preparing the final Toolkit and undergoing a peer review

Phase 4: Dissemination Strategy

- Preparing dissemination presentations
- Conducting a dissemination workshop

This report relates to Phase 3: Finalising the Toolkit.

The information collected from the previous phases, including the case study report and literature review, have informed the preparation of the Toolkit by highlighting key issues, providing the context for sustainable projects, and exploring how problems were addressed.

1.3 Sources of information

The sources of information used for developing the sustainability toolkit included:

- A literature review investigated the issues surrounding project sustainability;
- A survey of task team leaders gathering information on their experiences;
- Interviews with task team leaders;
- A review of 20 projects from the World Bank's internal evaluation database of projects;
- Information gathered from three in-depth case study visits, during which interviews were held with key project stakeholders;
- An in-depth review of four other case studies, involving document analysis and interviews with stakeholders;
- Information contained in the Mitric Report¹;
- Internet searches to identify useful documentation, i.e. sources of guidance; and
- Recommendations made from independent peer reviewers.

Information on the methodologies used at the various stages of the project can be found in the previous project reports.

¹ World Bank Lending for Urban Transport Projects Since 1999: Patterns And Trends, Slobodan Mitric, February 28, 2011

1.4 Content of toolkit

The toolkit provides general advice for transport sector investments and is not modally specific. Information on the sub-components of the key sustainability principles has not been included since it was considered that this did not add value or further understanding of the issues.

As a web based toolkit it will be possible to further develop, update and adapt the toolkit over time, as new topics, techniques and guidance etc emerge.

Where it has been possible to provide web links this has been undertaken, however there are a number of occasions in the document where this will need to be completed as the website is created.

2 Front page of website

Welcome to the World Bank's Sustainability Toolkit, for Task Team Leaders working in the transport sector.

It is widely agreed that there is a need to make investment in transport projects more sustainable. The aim of this toolkit is to help Task Team Leaders make their development projects more sustainable by reducing the risk of projects not attaining their long term development goals and by enhancing the prospects for their sustained impact on development.

In a period of financial constraint it is essential that projects are effectively managed to ensure their long-term sustainability and so allow more projects to be funded and development goals to be achieved. World Bank projects are likely to be more sustainable if the incentives for stakeholders involved are constructed in such a manner so as to encourage efficient and effective management of projects that will help towards achieving their development goals.

The core principles found through a comprehensive literature review to be important for project sustainability and considered in this toolkit include the need for:

- Institutional capacity;
- Embedment;
- Political support;
- Balancing the roles & responsibilities of the public & private sector;
- Financial sustainability & economic viability;
- Stakeholder engagement & social acceptance;
- Environmental sustainability;
- Adaptation to climate change; and
- Technological appropriateness.

For further information on each of these core sustainability principles please [click here](#).

This toolkit includes an illustrative list of topics, based on a review of World Bank projects, outlining potential barriers to project sustainability, and their impacts, and suggests possible techniques that can be used to address these topics. Topics may be seen as opportunities for improvement, problems or barriers to be addressed. By recognising and, where necessary, addressing the issues that a project may experience early in the development process, problems can be avoided later.

The toolkit has been designed to assist in the development of a project's [Operation Risk Assessment Framework \(ORAF\)](#) and [Risk to Development Outcomes](#). [Provide links to appropriate WB documents]. Projects should be developed with the framework set by 'Safe, Clean and Affordable... Transport for Development', the World Bank's Transport Business Strategy for 2008-2012 [Provide links to appropriate WB documents].

This toolkit is not intended to be modally specific, instead providing general advice covering all transport modes. Nevertheless it may also be applicable for other investments funded by World Bank. Follow this link to [access the toolkit](#).

The intention in publishing this toolkit is to provide 'a reference of first resort' for all TTLs and others engaged professionally or otherwise in developing transport projects for the World Bank. By providing advice on topics that are important in project planning and preparation TTLs can easily search for information that is most relevant to their specific

needs. The toolkit provides an index of topics from which TTLs can select those items of greatest importance for their project.

It is intended to be a living document. Suggestions for modifications and/or new topics, techniques, case studies and guidance are welcomed. These should be sent to: sustainabilitytoolkit@worldbank.org. [Suggested email address.]

The World Bank often operates in countries in which other aid agencies are also operating. It is good practice to maintain close and regular liaison with other aid agencies to secure project sustainability, for example where possible, to co-ordinate programme plans.

Various organisations provide technical information and advice that may of use to TTLs and their clients when developing transport projects. For links to these organisations please [click here](#).

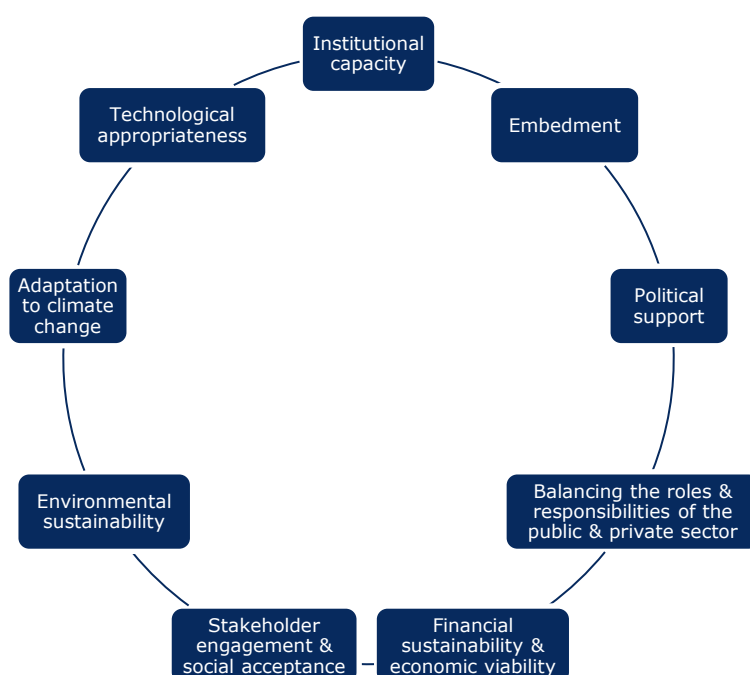
3 How to use the toolkit

The toolkit is structured so that users can search by:

- Core sustainability principle;
- An element of the World Bank's project life cycle;
- The risk categories in the Operational Risk Assessment Framework (ORAF);
- The criteria used to assess the Risk to Development Outcome; or
- The index of topics.

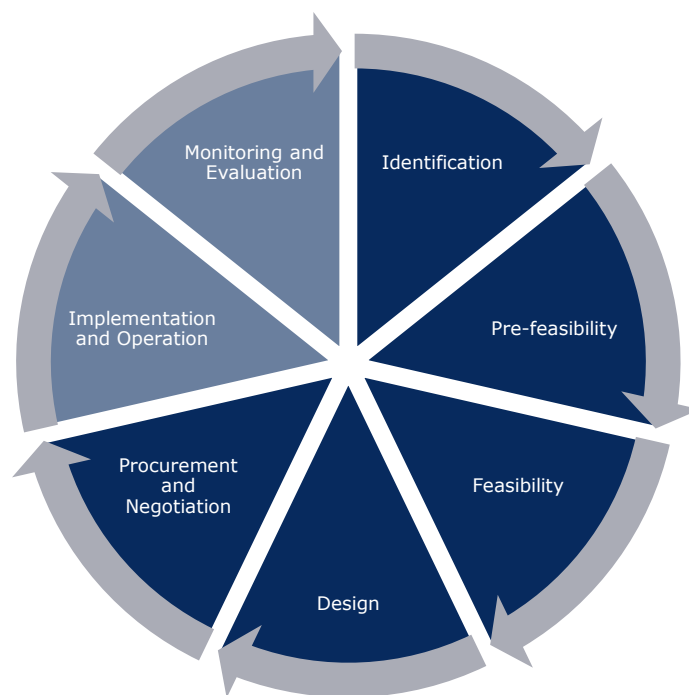
For information on the layout of the toolkit please [click here](#).

To search for advice based on a **sustainability principle** [click on the chosen principle](#) below.



The toolkit covers five of the seven stages of the project life cycle, from identification through to procurement and negotiation. Thus it focuses on the planning and preparation stages of World Bank transport projects.

To search for advice by stage in the **project life cycle** [click on the chosen stage](#) below.



To search for advice by the risk categories in the **Operational Risk Assessment Framework (ORAF)** [click on the chosen category](#) below.

1. Project Stakeholder Risks	<ul style="list-style-type: none"> • 1.1 Stakeholder Risk
2. Operating Environment Risks	<ul style="list-style-type: none"> • 2.1 Country Risk • 2.2 Institutional Risk
3. Implementing Agencies Risk	<ul style="list-style-type: none"> • 3.1 Capacity Risk • 3.2 Governance Risk • 3.3 Fraud & Corruption Risks
4. Project Risks	<ul style="list-style-type: none"> • 4.1 Design Risk • 4.2 Social and Environmental Risks • 4.3 Program and Donor Risk • 4.4 Delivery Quality Risk • 4.5 Other Risks

[Suggest add ORAF diagram to replace the above.]

To search for advice by the criteria used to assess the **Risk to Development Outcome** [click on the chosen criteria](#) below.

- Technical
- Financial
- Economic
- Social
- Political
- Environmental
- Government ownership/commitment
- Other stakeholder ownership
- Institutional support
- Governance
- Natural disasters exposure

It should be appreciated that any topic, problem or barrier that is not identified and accommodated in the project process, could influence or compromise intended project outcomes². It is therefore advisable to consult as widely as possible with the main local and other stakeholders during the process of identifying constraints and developing solutions. In this way, the risk of missing key issues, problems or barriers will be minimised.

It is also important to appreciate how the various topics are related or interact. This will help facilitate the formulation of remedial initiatives.

² O'Neill *et al*, 2010

4 The toolkit layout

4.1 Introduction

All topics are described in a common format. Follow this link to access an [example format](#).

Each tool includes:

- A description, and link, to the project stage(s) in which the topic may be experienced.
- A description, and link, to the core sustainability principle(s) to which the advice relates.
- A description, and link, to the relevant ORAF category(ies).
- A description, and link, to the relevant Risk to Development Outcome criteria.
- An explanation/ description of the topic encountered.
- A description of the impact that the topic could have upon the project.
- Suggestions on how to address the potential impacts – the solution.
- A description, in general terms, of how to address the topic – suggested techniques to use.
- Who should be responsible for leading/ undertaking the action(s).
- When the actions should be undertaken i.e. during which stage of the project.
- Links to other World Bank reports that provide further information on the case study examples cited. Some of these case studies highlight the problems experienced while others describe how the topic was addressed. Provides link to relevant project Implementation Completion Report (ICRs).
- Links to sources of additional guidance.

4.2 Example topic

Each topic contains several fields each of which has a specific role in the toolkit. The content of each topic listed above are outlined below in the example format.

Topic #X: Explanation/ description of the topic encountered**Linkages****Life Cycle Stage***To identify to which project stage(s) the topic refers***Core Sustainability Principle***To identify to which of the core sustainability principles the topic relates***ORAF Category***To identify to which ORAF category the topic relates***Risk to Development Outcomes Criteria***To identify to which Risk to Development Outcome Criteria the topic relates***Webpage 1****Topic #X***Explanation/ description of the topic encountered***Potential Impacts***What the impacts of the topic are likely to be***How to address the potential impacts**

Solution	<i>In general terms what approach/ actions need to be undertaken</i>
Techniques	<i>How to address the topic – suggested techniques to use</i>
Who	<i>Who should be responsible for leading/ undertaking the action(s)</i>
When	<i>When the actions should be undertaken</i>

Webpage 2**Link to Core Principle(s)***Links to a more extensive description of the core principle***Case Study Example(s)***Example(s) of case study(ies) in which the topic has been identified/ addressed.**Link to ICR(s)***Other Related Topics***Other related topics which possibly give useful supplementary advice***Webpage 3****Sources of Guidance***Any useful guidance that may assist*

5 Index of topics

The following table provides an index of the topics covered within the toolkit.

Topic	Related Topics
1 Understanding the client government's needs.	2, 4, 7, 8, 11, 14, 17, 20, 22, 43, 44
2 Roles and responsibilities of the client government and project stakeholders.	1, 3, 5, 6, 8, 18, 19, 23
3 Knowledge of local laws and regulations.	16, 19, 20, 22, 40, 42, 45
4 Policy differences between the World Bank and the client government.	1, 9, 11, 14, 15, 27, 42
5 Coordination among aid agencies.	1, 2, 4, 8, 9, 12, 18, 19, 23, 24, 38, 42
6 Continuity of responsibility for project delivery.	2, 8, 18, 19, 23, 24, 27, 40, 48
7 Needs assessment.	1, 4, 5, 8, 9, 10, 11, 13, 17, 29, 39
8 Project planning.	1, 2, 3, 5, 6, 7, 9, 13, 14, 15, 19, 20, 22, 23, 24, 30, 39, 40, 48
9 Transport strategy context.	1, 4, 5, 7, 11, 18, 29, 46
10 Complex projects.	7, 8, 11, 13, 17, 19, 20, 27, 29, 30, 32, 40, 42, 45
11 Iconic projects.	1, 4, 7, 8, 9, 10, 13, 14, 17, 20, 24, 28, 29, 30
12 Reform programme.	1, 2, 4, 7, 10, 11, 17, 18, 29, 42
13 Project business case.	1, 2, 7, 8, 10, 11, 14, 15, 16, 19, 20, 22, 26, 27, 29, 30, 42, 48
14 Environmental and social factors.	1, 2, 3, 4, 7, 8, 15, 16, 20, 22, 23, 24, 40, 42, 44, 46, 47
15 Climate change adaptation in project design.	1, 4, 5, 7, 13, 14, 17, 19, 20, 22, 30, 39, 44, 48
16 Land acquisition.	3, 5, 8, 14, 19, 23, 24, 30, 39
17 Support for necessary (but seemingly unattractive) projects.	1, 4, 5, 6, 7, 8, 9, 13, 23, 24, 29, 30, 42
18 Institutional change.	1, 2, 3, 4, 5, 6, 7, 19, 23, 42
19 Technical capacity and capability.	2, 5, 6, 7, 8, 10, 13, 15, 20, 21, 22, 27, 29, 31, 33, 39, 40, 41, 45
20 Appropriate design.	1, 3, 6, 8, 10, 11, 13, 14, 15, 16, 19, 24, 27, 28, 29, 48
21 ICT applications.	6, 7, 8, 10, 13, 19, 27, 30, 33
22 Materials.	1, 3, 8, 14, 15, 19, 20, 27, 28, 31, 48
23 Stakeholder engagement.	2, 3, 5, 7, 8, 14, 16, 18, 19, 24, 27, 48
24 Community involvement.	2, 3, 5, 6, 7, 8, 11, 14, 16, 19, 20, 22, 23, 42, 46, 47, 48
25 Transfer of assets to private companies.	1, 3, 4, 13, 14, 17, 18, 26, 27, 39, 42, 48
26 Public-private partnerships (PPPs).	1, 2, 3, 4, 6, 8, 13, 19, 25, 27, 42, 45
27 Private sector involvement.	1, 2, 3, 4, 6, 8, 13, 16, 19, 25, 26, 32, 33, 34, 36, 37, 38, 40, 41, 42, 45
28 Maintenance funding.	1, 2, 5, 7, 9, 13, 14, 15, 17, 19, 20, 22,

		24, 27, 31, 40, 42, 44, 45
29	Large projects.	1, 4, 5, 7, 8, 9, 10, 11, 13, 19, 20, 27, 30, 41, 42, 48
30	Uncertain project costs.	1, 2, 5, 7, 8, 10, 13, 15, 16, 19, 20, 21, 22, 27, 33, 37, 38, 40, 41, 42, 45, 48
31	Performance related maintenance contracts.	3, 5, 6, 8, 13, 14, 15, 19, 20, 21, 22, 27, 28, 33, 34, 37, 38, 39, 40, 42, 45
32	Large number of sub-contracts.	3, 6, 8, 19, 27, 33, 34, 36, 37, 38, 40, 42, 45
33	Terms of Reference (ToR) for sub-contractors and consultants.	3, 6, 8, 9, 27, 34, 36, 37, 38, 40, 42, 45
34	Multi-year contracts.	3, 6, 8, 19, 27, 28, 31, 33, 36, 37, 38, 40, 42, 45
35	Loan formats.	1, 2, 3, 5, 8, 13, 27, 36, 41, 42
36	Time-bound covenants.	3, 8, 13, 27, 35, 41, 42
37	Procurement documents.	1, 2, 3, 4, 5, 8, 13, 19, 27, 32, 33, 34, 38, 45
38	Procurement procedures.	2, 3, 5, 8, 19, 27, 32, 33, 34, 37, 42, 45
39	Asset inventories.	2, 5, 6, 7, 8, 9, 13, 15, 16, 25, 31
40	Supervision.	2, 3, 5, 6, 8, 19, 20, 23, 24, 25, 27, 31, 33, 42, 48
41	Exchange rate risks.	19, 27, 29, 30, 35, 36
42	Corruption.	2, 3, 4, 5, 6, 8, 10, 13, 14, 16, 18, 19, 22, 25, 26, 27, 29, 30, 31, 32, 38, 40
43	In country conflict.	1, 2, 5, 7, 8, 14, 19, 23, 24, 30, 40, 46, 48
44	Natural disasters.	1, 2, 5, 7, 8, 14, 15, 19, 20, 22, 23, 24, 28, 30, 40, 46, 48
45	Contractual methods.	2, 3, 6, 8, 19, 26, 27, 31, 32, 33, 34, 36, 37, 38, 42, 48
46	Access to rural areas.	1, 2, 4, 5, 7, 9, 13, 14, 15, 16, 19, 20, 22, 24, 25, 40, 43, 44
47	Road safety.	1, 2, 3, 5, 7, 9, 19, 20, 22, 24, 28, 31, 40, 43, 44
48	Project flexibility.	3, 4, 5, 8, 10, 13, 14, 15, 19, 20, 22, 23, 24, 27, 30, 43, 44

6 The toolkit

Topic #1 Understanding the client government's needs.

Linkages

Life Cycle Stage
Identification
Core Sustainability Principle
Political support; stakeholder engagement and social acceptance; balancing the roles & responsibilities of the public & private sector
ORAF Category
1.1 Stakeholder risk; 2.2 Institutional risk
Risk to Development Outcome Criteria
Government ownership/commitment

Webpage 1

Topic #1	
Understanding the client government's needs.	
Potential Impacts	
<p>A poor understanding of client government needs could result in:</p> <ul style="list-style-type: none"> • An inappropriate solution being developed and implemented resulting in the original problem being unsolved or only partially solved or the benefits/opportunities not being maximised. • Unclear project objectives being defined. • Lack of clarity concerning the main beneficiaries of the project. • Over/under costing the project against budget. 	
How to address the potential impacts	
Solution	<ul style="list-style-type: none"> • Projects should be responsive to the clients' needs and their levels of competence. • The World Bank needs to liaise closely with the client Government and help them to achieve their development goals. • Need to set out a clear plan with the client government specifying the aims and goals of the project.
Techniques	<ul style="list-style-type: none"> • Review previous relevant documentation from the World Bank and client government to understand potential transport needs. • Meetings and conversations, initiated by the World Bank to include the client government and stakeholders to discuss and agree priorities and objectives. • Communication with the client and stakeholders should lead to clear end goals for the project. These goals must be agreed upon by all parties before full project commencement. • Undertake an assessment of the development needs of the client and the contribution that transport investments will make. • Ensure that the proposed transport investment sits within a wider and long-term transport strategy for the country or region. • Identify the main beneficiaries and then design the project to assist them. • To liaise with other aid agencies to formulate a transport strategy and programme, with priorities, for discussion with the client government.

	<ul style="list-style-type: none"> Throughout the project, objectives should be revisited to ensure that the development goals are being met.
Who	The World Bank should lead and consult with the client government, key stakeholders and project managers in order to specify the project goals.
When	<ul style="list-style-type: none"> During problem identification a needs assessment should be undertaken and the project objectives clearly set out. Objectives should be revisited to ensure that the development goals are being met throughout the project.

Webpage 2

Link to Core Principle(s)	
Political support ; stakeholder engagement & social acceptance ; balancing the roles & responsibilities of the public & private sector	
Case Study Example(s)	
<p>National Emergency Employment Program For Rural Access Afghanistan P082472 http://go.worldbank.org/N30H3P25S0</p> <p>This project showed that understanding the client and the context is important in a successful project.</p> <p>National Transport Program Support Project Chad P035672 http://go.worldbank.org/QPZ3VPJMW0</p> <p>This project showed that initiatives need to be demand-driven and developed in a participatory manner.</p> <p>Tri-provincial Highway China P045788 http://www.worldbank.org/projects/documents/2007/11/9349516/china-tri-provincial-highway-project</p> <p>This project showed that success in infrastructure projects is strongly dependent on client motivation.</p> <p>Gujarat State Highway India P010566 http://go.worldbank.org/RKOGOTFPP1</p> <p>This project showed that the success of a project rests on continued strong leadership and commitment of the top management.</p>	
Other Related Topics	
2. Roles and responsibilities of the client government and project stakeholders 4. Policy differences between the World Bank and the client government 7. Needs assessment 8. Project planning 11. Iconic projects 14. Environmental and social factors 17. Support for necessary (but seemingly unattractive) projects 20. Appropriate design	

22. Materials 43. In country conflict 44. Natural disasters

Webpage 3

Sources of Guidance

Topic #2 Roles and responsibilities of the client government and projects stakeholders.

Linkages

Life Cycle Stage
Identification; Pre-feasibility; Feasibility; Design; Procurement and Negotiation
Core Sustainability Principle
Institutional capacity; political support
ORAF Category
2.2 Institutional risk
Risk to Development Outcome Criteria
Government ownership/commitment; institutional support

Webpage 1

Topic #2	
Roles and responsibilities of the client government and projects stakeholders.	
Potential Impacts	
<p>Lack of clarity and agreement of the roles and responsibilities of the client government and project stakeholders could result in:</p> <ul style="list-style-type: none"> • Delays to project implementation possibly resulting in additional costs to the donor agencies. • Incorrect project solutions to identified problems. • Poor liaison with the client government. 	
How to address the potential impacts	
Solution	<ul style="list-style-type: none"> • World Bank and client government must clarify and agree the roles and responsibilities of all project stakeholders. • Actions must be set out with a timeline for the achievement of tasks by those involved.
Techniques	<ul style="list-style-type: none"> • World Bank should take the lead to ensure the client government nominates people or groups to take leading roles from the start of the project. • Communications between the World Bank and client government to clarify and agree roles and responsibilities. • The World Bank should clearly state and agree the roles of the interested parties and explain why it is important for the project that all constituents fulfil their roles. • Create an organogram of the relevant government departments. • Secure an agreement that defines roles and responsibilities. • Define the responsibilities of the client government and project stakeholders, including key personnel involved, within the project plan. • Ongoing monitoring by the World Bank to ensure that the roles are fulfilled.
Who	World Bank, client government and other key project stakeholders.
When	Roles should be clarified during project design, with ongoing monitoring.

Webpage 2

Link to Core Principle(s)

[Institutional capacity](#); [political support](#)

Case Study Example(s)**Sumatra Regional Roads**

Indonesia

P003993

<http://go.worldbank.org/UXNMQHY2T0>

This project shows that due to ambiguity in the roles and responsibilities of different government levels in implementing projects under decentralization, it is important that the responsible government level be identified from the outset.

Karnataka State Highways Improvement Project

India

P070421

<http://go.worldbank.org/280JUADV81>

This project shows that having a Memorandum of Outstanding with a clear explication of requirements and delineation of responsibilities between the implementing entity and other relevant entities is a good way of securing inter-agency cooperation.

Other Related Topics

1. Understanding the client government's needs
3. Knowledge of local laws and regulations
5. Coordination among aid agencies
6. Continuity of responsibility for project delivery
8. Project planning
18. Institutional change
19. Technical capacity and capability
23. Stakeholder engagement

Webpage 3**Sources of Guidance**

Topic #3 Knowledge of local laws and regulation.**Linkages**

Life Cycle Stage
Pre-feasibility; Feasibility; Design; Procurement and Negotiation
Core Sustainability Principle
Stakeholder engagement & social acceptance
ORAF Category
4.1 Design risk
Risk to Development Outcome Criteria
Technical

Webpage 1

Topic #3	
Knowledge of local laws and regulation.	
Potential Impacts	
<p>A lack detailed knowledge of local laws and regulations by World Bank staff could result in:</p> <ul style="list-style-type: none"> • Delays in project design and implementation or abandonment of all or parts of a project. • Possible litigation against stakeholders during and after the project has been completed. 	
How to address the potential impacts	
Solution	Ensure that all World Bank staff and consultants involved in projects have knowledge of the relevant country's laws and regulations.
Techniques	<ul style="list-style-type: none"> • Identify where local laws and regulations might become an issue and address these through: <ul style="list-style-type: none"> ◦ Discussion with World Bank staff who have worked or are working in the country. ◦ Reading any available World Bank country guidance. ◦ Discussions with senior government ministers and officials. ◦ Contracting a (local) legal expert for specialist advice. • Consultants used in the Project Appraisal process should also display knowledge of local laws so that environmental impact, social assessment and resettlement plans are in accordance with local laws. • Complicated parts of projects could be separated into projects in their own right (or simply as separate project components) thereby allowing the borrower (Government) and World Bank to fully concentrate on their preparation and implementation.
Who	World Bank in association with client government.
When	During feasibility stage and throughout the project.

Webpage 2

Link to Core Principle(s)
Stakeholder engagement & social acceptance

Case Study Example(s)

Klaipedia Port

Lithuania

P035776

<http://go.worldbank.org/B58HTTX7R0>

As a result of an unclear legal basis and unsolved land property and responsibility issues the planned Confined Disposal Facility was not built. This project showed that the World Bank needs to ensure that there is a comprehensive knowledge of a country's laws and regulations vis a vis the Bank's own rules and guidelines prior to any agreement being signed.

Other Related Topics

- 16. Land acquisition
- 19. Technical capacity and capability
- 20. Appropriate design
- 22. Materials
- 40. Supervision
- 42. Corruption
- 45. Contractual methods

Webpage 3

Sources of Guidance

Regulatory Guidelines For Urban Upgrading: Towards Effecting Pro-Poor Change [Majale, 2002]

http://www.dfid.gov.uk/r4d/PDF/Outputs/Urbanisation/R7850_Majale_RGUU02.pdf

Topic #4 Policy differences between the World Bank and the client government.**Linkages**

Life Cycle Stage
Identification; Feasibility
Core Sustainability Principle
Political support
ORAF Category
1.1 Stakeholder risk; 2.2 Institutional risk
Risk to Development Outcome Criteria
Government ownership/commitment

Webpage 1

Topic #4	
Policy differences between the World Bank and the client government.	
Potential Impacts	
Differences on policy matters between the World Bank and the client could result in: <ul style="list-style-type: none"> • The project not being implemented. • Wrongly specified project objectives and solutions. • A lack of flexibility by the borrower. • Delays during implementation. 	
How to address the potential impacts	
Solution	Agree matters of policy between the World Bank and the client government as early as possible in the project life cycle. Be prepared to vary the project in response to potentially changing client needs.
Techniques	<ul style="list-style-type: none"> • Identify the policy differences and reconcile or agree a process of how to deal with them. • High level discussions with Government ministers and senior officials to secure agreement on policy matters. • World Bank staff need to be involved, with other donors, in a co-ordinated national sector policy dialogue covering transport investments.
Who	World Bank in association with the client government.
When	Maintain a flexible approach during problem identification and throughout all other stages of the project.

Webpage 2

Link to Core Principle(s)
Political support
Case Study Example(s)
National Emergency Employment Program For Rural Access Afghanistan P082472 http://go.worldbank.org/N30H3P25S0

This project showed that understanding the client and the context is important in a successful project.

National Transport Program Support Project

Chad

P035672

<http://go.worldbank.org/QPZ3VPJMW0>

This project showed that initiatives need to be demand-driven and developed in a participatory manner.

Tri-provincial Highway

China

P045788

<http://www.worldbank.org/projects/documents/2007/11/9349516/china-tri-provincial-highway-project>

This project showed that success in infrastructure projects is strongly dependent on client motivation.

Other Related Topics

- 1. Understanding the client government's needs
- 9. Transport strategy context
- 11. Iconic projects
- 14. Environmental and social factors
- 15. Climate change adaptation in project design
- 27. Private sector involvement
- 42. Corruption

Webpage 3

Sources of Guidance

Topic #5 Coordination among aid agencies.**Linkages**

Life Cycle Stage
Identification; Pre-feasibility; Feasibility; Design; Procurement and Negotiation
Core Sustainability Principle
Financial sustainability & economic viability
ORAF Category
1.1 Stakeholder risk; 4.3 Program and donor risk
Risk to Development Outcome Criteria
Financial; Other stakeholder ownership

Webpage 1

Topic #5	
Coordination among aid agencies.	
Potential Impacts	
Lack of coordination among aid agencies could result in: <ul style="list-style-type: none"> • An unnecessary and wasteful duplication of effort, causing confusion and poor project implementation. • Missed opportunities for co-ordinated investments or the potential full benefits of the investment not being maximised. • Less efficient procurement and other processes throughout the project life cycle. 	
How to address the potential impacts	
Solution	World Bank to be pro-active in organising and supporting effective and ongoing communication between aid agencies in the transport sector.
Techniques	<ul style="list-style-type: none"> • Discussion between aid agencies to produce a comprehensive investment plan, which includes timescales and responsibilities. Ensure the inclusion of newly emerging financing partners such as the BRICs (Brazil, China, India and Russia). • Match the World Bank programme plans with those of other aid agencies to identify synergies and potential economies of scale. • Develop an agreement on transport investment priorities and timings between the aid agencies. • Set up a steering group comprising aid agencies to monitor progress on all projects and proposals.
Who	World Bank and other aid agencies.
When	During problem identification and lasting throughout the project life.

Webpage 2

Link to Core Principle(s)
Financial sustainability & economic viability
Case Study Example(s)
Second Rural Roads Project Peru P044601

<http://go.worldbank.org/YD1GGPFDPD0>

This project showed that strong co-ordination between financing partners can bring added value to project design and supervision and promote learning, besides making procurement and other procedures more efficient.

Other Related Topics

1. Understanding the client government's needs
2. Roles and responsibilities of the client government and project stakeholders
4. Policy differences between the World Bank and the client government
8. Project planning
9. Transport strategy context
12. Reform programme
18. Institutional change
19. Technical capacity and capability
23. Stakeholder engagement
24. Community involvement
38. Procurement procedures
42. Corruption

Webpage 3

Sources of Guidance

Topic #6 Continuity of responsibility for project delivery.**Linkages**

Life Cycle Stage
Identification; Pre-Feasibility; Feasibility; Design; Procurement and Negotiation
Core Sustainability Principle
Institutional capacity; political support
ORAF Category
3.1 Capacity risk; 3.2 Governance and risk; 4.4 Delivery quality risk
Risk to Development Outcome Criteria
Government ownership/commitment; Other stakeholder ownership; institutional support

Webpage 1

Topic #6	
Continuity of responsibility for project delivery.	
Potential Impacts	
<p>A lack of continuity in the responsibility for the delivery of the project, particularly should the level of support for the project reduce as a result of changing responsibilities within, for example, the client government or stakeholder organisations, could result in:</p> <ul style="list-style-type: none"> • Reduced capacity at critical points in the project delivery. • Funding constraints at critical points in the project delivery. • Project delays and higher costs. 	
How to address the potential impacts	
Solution	Encourage continuity of personnel responsible for the project throughout its lifetime and identify potential substitutes for key personnel.
Techniques	<ul style="list-style-type: none"> • In order to reduce the risk of project failure, as a result of the 'project champion' leaving an organisation (i.e. within the client government), encourage the client to ensure that there is an identified person with responsibility for the project should the champion leave and who is involved in its on-going management. • Develop a personnel succession plan for key members of the project team. • Advise the client government on pay and working conditions required to retain key personnel. • Help to build institutional capacity and capability in local public and private organisations.
Who	World Bank, client government and other stakeholders should all try to ensure continuity of personnel responsible for the project.
When	Throughout the life of the project.

Webpage 2

Link to Core Principle(s)
Institutional capacity ; political support
Case Study Example(s)
Urban Transport Improvement Project

Vietnam
P004833
<http://go.worldbank.org/GV7EYVU5Q0>
This project suggests that continuity of responsibility from project preparation to execution is essential.

Other Related Topics

2. Roles and responsibilities of the client government and project stakeholders
8. Project planning
18. Institutional change
19. Technical capacity and capability
23. Stakeholder engagement
24. Community involvement
27. Private sector involvement
40. Supervision
48. Project flexibility

Webpage 3

Sources of Guidance

Topic #7 Needs assessment.**Linkages**

Life Cycle Stage
Identification
Core Sustainability Principle
Institutional capacity
ORAF Category
4.1 Design risk
Risk to Development Outcome Criteria
Technical; Institutional support

Webpage 1

Topic #7	
Needs assessment.	
Potential Impacts	
<p>An inadequate or a lack of a needs assessment could result in:</p> <ul style="list-style-type: none"> • A lack of clarity over the long term development needs. • Confusion over the priorities for funding and identification of the primary development issues leading to a lack of political support for the project especially over the longer term. • The incorrect solution being devised, possible corruption and an inappropriate level of funding provided. 	
How to address the potential impacts	
Solution	In conjunction with the client government the World Bank and other aid agencies must assess the client country's needs and the priorities for transport investments.
Techniques	<ul style="list-style-type: none"> • Undertake a targeted needs assessment to determine the "gaps" between current conditions and desired conditions. • Review asset condition inventories. • Ensure that the proposed transport investment sits within a wider and long-term transport strategy for the country, region or local area. • Identify the main beneficiaries and design the project to assist them. • Discuss development needs with senior government ministers and officials. • Agree development needs with the client government.
Who	World Bank in association with the client government.
When	During problem identification.

Webpage 2

Link to Core Principle (s)
Institutional capacity
Case Study Example (s)
Sumatra Regional Roads Indonesia

P003993

<http://go.worldbank.org/UXNMQHY2T0>

This project suggests that local governments should prepare their own needs assessment for road improvements/maintenance.

Other Related Topics

- 1. Understanding the client government's needs
- 4. Policy differences between the World Bank and the client government
- 5. Coordination among aid agencies
- 8. Project planning
- 9. Transport strategy context
- 10. Complex projects
- 11. Iconic projects
- 13. Project business case
- 17. Support for necessary (but seemingly unattractive) projects
- 29. Large projects
- 39. Asset inventories

Webpage 3

Sources of Guidance

Gupta, K. Sleezer, C. and Russ-Eft D.F. (2007) A practical guide to needs assessment. CA: Pfeiffer

Neuber, K.A. (1980). Needs assessment: a model for community planning. Sage

Witkin, B.R. & Altschuld, J.W. (1995). Planning and conducting needs assessments: A practical guide. Thousand Oaks, CA: Sage.

Topic #8 Project planning.**Linkages**

Life Cycle Stage
Identification
Core Sustainability Principle
Political support; institutional capacity
ORAF Category
4.1 Design risk
Risk to Development Outcome Criteria
Technical

Webpage 1

Topic #8	
Project planning.	
Potential Impacts	
<p>The lack of a clear project plan could result in:</p> <ul style="list-style-type: none"> • Incorrect prioritisation of tasks. • Running over-budget. • Project delays. • Undefined project responsibilities. • Lack of support from stakeholders. 	
How to address the potential impacts	
Solution	Set out a clear and agreed project plan that supports the overall long-term vision for the client country.
Techniques	<ul style="list-style-type: none"> • Define a clear project plan based on the findings of a needs assessment and business case for the project. • Review the asset condition inventory. • Clear leadership and management from the World Bank, through client government to contractors and stakeholders (including the local community). • Secure agreement on the project plan with all concerned parties. • Identify the critical path of the project and potential risks and associated remedial measures. • Identify means of removing constraints on the critical path. • Continual monitoring of delivery according to the project plan.
Who	World Bank, client government and other stakeholders, with the World Bank taking the lead using their experience to improve the project plan.
When	During the design stage and then continually revise throughout the project.

Webpage 2

Link to Core Principle(s)
Political support ; institutional capacity
Case Study Example(s)

Wuhan Urban Transport Project

China

P069852

[ICR not currently available]

This project indicates that developing a comprehensive strategy with local participation and government ownership is crucial for program planning.

Other Related Topics

1. Understanding the client government's needs
2. Roles and responsibilities of the client government and project stakeholders
3. Knowledge of local laws and regulations
5. Coordination among aid agencies
6. Continuity of responsibility for project delivery
7. Needs assessment
8. Project planning
9. Transport strategy context
13. Project business case
14. Environmental and social factors
15. Climate change adaptation in project design
19. Technical capacity and capability
20. Appropriate design
22. Materials
23. Stakeholder engagement
24. Community involvement
30. Uncertain project costs
39. Asset inventories
40. Supervision
48. Project flexibility

Webpage 3

Sources of Guidance

Participatory Budgeting Toolkit for Local Governments in Albania [World Bank, 2006]
http://siteresources.worldbank.org/INTALBANIA/Resources/PBP_Toolkit_Dec_06_Eng.pdf

Local Government Budgeting Tool [Michael Shaeffer, 2003]
<http://info.worldbank.org/etools/docs/library/128834/Schaeffer%202000.pdf>

Topic #9 Transport strategy context.**Linkages**

Life Cycle Stage
Identification; Pre-feasibility; Feasibility; Design; Procurement and Negotiation
Core Sustainability Principle
Political support; technological appropriateness
ORAF Category
3.2 Governance risk
Risk to Development Outcome Criteria
Government ownership/commitment; Institutional support

Webpage 1

Topic #9	
Transport strategy context.	
Potential Impacts	
<p>If the proposed projects are not undertaken as part of wider transport or development strategy that sets investment priorities this could result in:</p> <ul style="list-style-type: none"> • The benefits of the investment not being maximised, as the project is unrelated to other transport schemes. • Could lead to delays and poor co-ordination with other projects etc. 	
How to address the potential impacts	
Solution	Align the proposed transport investment with a long term transport or development strategy within which the proposed project may feature.
Techniques	<ul style="list-style-type: none"> • Check whether the proposed transport investment accords with the client or local governments' transport or development strategy. • If there is no current strategy, through discussions with senior government ministers and officials develop a long-term transport strategy that sets out priorities for transport or help to revise an existing plan if the plan is out of date. • If there is a strategy and the project is not aligned with it, consider alternative investments which fit within the strategy.
Who	Client government in association with World Bank and other donor agencies.
When	During problem identification.

Webpage 2

Link to Core Principle(s)
Political support ; technological appropriateness
Case Study Example(s)
<p>Guangzhou City Transport China P003614 http://www.worldbank.org/projects/documents/2008/06/9735455/china-quangzhou-</p>

[city-transport-project](#)

In Guangzhou a comprehensive government strategy underpinned the approach to transport management and implementation of an innovative urban transport initiative.

Liaoning Urban Transport Project

China

P041890

<http://www.worldbank.org/projects/documents/2006/06/6954097/china-liaoning-urban-transport-project>

This project suggests that a transport strategy endorsed by the city and the Bank is essential to provide a framework for assessments.

Santiago Urban Transport Technical Assistance Project

Chile

P086689

[ICR not yet available]

The lessons learnt from this project suggest that projects should support an overall Government strategy.

Moscow Urban Transport Project

Russian Federation

P046061

<http://go.worldbank.org/2XB09GM030>

This project indicates that the idea of defining programmes rather than individual project investments is beneficial.

Other Related Topics

- 1. Understanding the client government's needs
- 4. Policy differences between the World Bank and the client government
- 5. Coordination among aid agencies
- 7. Needs assessment
- 11. Iconic projects
- 18. Institutional change
- 29. Large projects
- 46. Access to rural areas

Webpage 3

Sources of Guidance

Preparing a National Transport Strategy: Suggestions for Government Agencies in Developing Countries

http://siteresources.worldbank.org/INTTRANSPORT/Resources/tp-19_NTS.pdf

Topic #10 Complex projects.**Linkages**

Life Cycle Stage
Identification; Design
Core Sustainability Principle
Financial sustainability & economic viability; technological appropriateness
ORAF Category
4.1 Design risk
Risk to Development Outcome Criteria
Financial

Webpage 1

Topic #10	
Complex projects.	
Potential Impacts	
Developing very complex projects could result in: <ul style="list-style-type: none"> • Difficult project management that may lead to delays. • Potential overspend. • An inappropriate solution for the needs of the client country. 	
How to address the potential impacts	
Solution	Collaboration to ensure projects are not overly complex for the client country's needs and/or separate the project into components/ or a sequence of separately funded projects e.g.: <ul style="list-style-type: none"> • Preparation and implementation issues. • Land acquisition etc.
Techniques	<ul style="list-style-type: none"> • Project design should be simple and focus on implementation. • Identify self-contained/ independent elements of the project and fund these under a different programme. • In large projects where there are multiple implementation agencies or units it may be necessary to set up and maintain a high level steering committee who can oversee the entire project. In addition, the co-ordination of these agencies/units must be at an appropriate level of authority and responsibility and they must be kept small and staffed full time. • Meetings between World Bank and client government and continuous communication.
Who	World Bank and client government.
When	During project design.

Webpage 2

Link to Core Principle(s)
Financial sustainability & economic viability ; technological appropriateness
Case Study Example(s)
Shijiazhuang Urban Transport Project

China

P056596

<http://www.worldbank.org/projects/documents/2009/06/10888857/china-shijiazhuang-urban-transport-project>

This project suggests that comprehensiveness leads to unsustainable project complexity, and that this could be avoided by having a sequence of projects in any given city, with potentially large savings in processing costs for successor projects. It is thought that some of the delays to this project could have been prevented or shortened if the project had been simpler, and if the overall context of the city had been taken into account, specifically the presence of other projects competing for attention and resources.

Wuhan Urban Transport Project

China

P069852

[ICR not currently available]

This project suggests that project design should be simplified to ensure greater focus and to facilitate implementation. The extensive approach to technical assistance taken within this project made implementation difficult and it is thought that having fewer, more in depth activities would be more effective.

Dhaka Urban Transport Project

Bangladesh

P009524

<http://go.worldbank.org/81YLF0D7C0>

It is reported that this project was too large and too complex, with numerous participants on the national and metropolitan level.

Metro Line Manila Urban Transport Integration Project and Bicycle Network Demonstration Pilot

Philippines

P057731 and P066509

[ICRs not available]

The outcomes of this project suggest that where there are multiple implementation agencies, the setting up and maintenance of a high level steering committee is important.

Other Related Topics

- 7. Needs assessment
- 8. Project planning
- 11. Iconic projects
- 13. Project business case
- 17. Support for necessary (but seemingly unattractive) projects
- 19. Technical capacity and capability
- 20. Appropriate design
- 27. Private sector involvement
- 29. Large projects
- 30. Uncertain project costs
- 32. Large number of sub-contracts
- 40. Supervision
- 42. Corruption
- 45. Contractual methods

Webpage 3

Sources of Guidance

Topic #11 Iconic projects.**Linkages**

Life Cycle Stage
Problem identification
Core Sustainability Principle
Institutional capacity; technological appropriateness, political support
ORAF Category
2.2 Institutional risk; 4.1 Design risk
Risk to Development Outcome Criteria
Technical; Financial; Economic

Webpage 1

Topic #11	
Iconic projects.	
Potential Impacts	
<p>The inappropriate desire for an iconic project could result in:</p> <ul style="list-style-type: none"> • The formulation of an inappropriate solution to the client country's transport needs, although this could secure political support. • Higher costs than may be necessary. • An inability to maintain efficient operations over the longer term. • Excessive capacity provided. 	
How to address the potential impacts	
Solution	Ensure that the iconic project delivers the client country's transport and development needs.
Techniques	<ul style="list-style-type: none"> • Check whether the project forms a key part of the wider transport strategy. • Consult with all concerned parties in order to determine the nature of the project, its necessity and contribution to meeting the country's development needs. • Investigate whether an alternative project could deliver the necessary improvements benefits at a lower cost. • Secure agreement on the project goal.
Who	World Bank, client government, stakeholders.
When	During problem identification and feasibility.

Webpage 2

Link to Core Principle(s)
Institutional capacity ; technological appropriateness , political support
Case Study Example(s)
Airports Development Egypt P082914 http://go.worldbank.org/WES5XZTHT0

This project showed that infrastructure sector reform can best be achieved with World Bank support through a large scale high impact project.

Other Related Topics

1. Understanding the client government's needs
4. Policy differences between the World Bank and the client government
7. Needs assessment
8. Project planning
9. Transport strategy context
10. Complex projects
13. Project business case
14. Environmental and social factors
17. Support for necessary (but seemingly unattractive) projects
20. Appropriate design
24. Community involvement
28. Maintenance funding
29. Large projects
30. Uncertain project costs

Webpage 3

Sources of Guidance

Participatory Budgeting Toolkit for Local Governments in Albania [World Bank, 2006]
http://siteresources.worldbank.org/INTALBANIA/Resources/PBP_Toolkit_Dec_06_Eng.pdf

Local Government Budgeting Tool [Michael Shaeffer, 2003]
<http://info.worldbank.org/etools/docs/library/128834/Schaeffer%202000.pdf>

Topic #12 Reform programme.**Linkages**

Life Cycle Stage
Problem identification; Pre-feasibility; Feasibility; Design; Procurement and Negotiation
Core Sustainability Principle
Political support; stakeholder engagement & social acceptance
ORAF Category
2.2 Institutional risk
Risk to Development Outcome Criteria
Government ownership/commitment

Webpage 1

Topic #12	
Reform programme.	
Potential Impacts	
<p>An over ambitious reform programme could result in:</p> <ul style="list-style-type: none"> • Delays to the project being completed as part of the programme, as there is too much to achieve within the proposed timeframe. • Parts of the programme not being completed and therefore the proposed benefits not being achieved. • Confusion over the roles and responsibilities of different agencies involved in the reforms. 	
How to address the potential impacts	
Solution	The expected pace and scale of reforms and related risks should be carefully assessed and potential remedial actions identified.
Techniques	<ul style="list-style-type: none"> • Undertake a review of the reform programme and if necessary scale back to an achievable programme. • Revise timescales if appropriate. • Undertake a risk assessment. • Identify remedial actions for potential risks. • Assess the capability of the client to secure reforms.
Who	World Bank in association with client Government.
When	During the problem identification and feasibility stages.

Webpage 2

Link to Core Principle(s)
Political support ; stakeholder engagement & social acceptance
Case Study Example(s)
<p>Moscow Urban Transport Project Russian Federation P046061 http://go.worldbank.org/2XB09GM030</p> <p>This project indicates that the idea of defining programmes rather than individual project</p>

investments is beneficial.

Other Related Topics

1. Understanding the client government needs
2. Roles and responsibilities of the client government and project stakeholders
4. Policy differences between the World Bank and the client government
7. Needs assessment
10. Complex projects
11. Iconic projects
17. Support for necessary (but seemingly unattractive) projects
18. Institutional change
29. Large projects
42. Corruption

Webpage 3

Sources of Guidance

Port Reform Toolkit (Second Edition)

<http://www.ppiaf.org/ppiaf/sites/ppiaf.org/files/documents/toolkits/Portoolkit/toolkit.htm>

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Topic #13 Project business case.**Linkages**

Life Cycle Stage
Feasibility; Design
Core Sustainability Principle
Financial sustainability & economic viability; balancing the roles & responsibilities of the public & private sector
ORAF Category
3.2 Governance risk
Risk to Development Outcome Criteria
Governance; Financial

Webpage 1

Topic #13	
Project business case.	
Potential Impacts	
<p>The lack of a well founded business case for the proposed investment could result in:</p> <ul style="list-style-type: none"> • Partial or complete financial failure of the project. • Misdirected resources. • Over or underuse of the project. • The formulation of inappropriate solutions - i.e. technologically inappropriate. 	
How to address the potential impacts	
Solution	There is a need to examine the business case for the project, and possibly redesign or even abandon it if no business case can be found. In designing infrastructure, it is important to take into account the likely demand.
Techniques	<ul style="list-style-type: none"> • Identify clear objectives against which the business case can be evaluated. • Review the business case in detail, identifying potential cost savings or revenue sources. • If possible separate the project into phases of individual projects for which there is a business case. • Consider involving the private sector as a way of improving the business case. • Consider the wider social and economic benefits of the investment e.g. employment generation, improved accessibility. <p>To understand the likely demand for the project:</p> <p>In general:</p> <ul style="list-style-type: none"> • Review the demand projections, using different assumptions, and possibly using a different approach, to validate data. • Review the impact of other relevant projects being undertaken/ proposed. <p>For road infrastructure:</p> <ul style="list-style-type: none"> • Review the projected volumes of traffic and vehicle types. • If traffic includes heavy trucks and buses, then the standards of the

	<p>design must be able to meet the projected demand.</p> <ul style="list-style-type: none"> • Introduce appropriate measures to prevent the use by vehicles whose weight exceeds the design limit of the pavement or bridges. • Review the location and number of access points for traffic. <p>For rail infrastructure:</p> <ul style="list-style-type: none"> • Review the projected volumes of passenger/ freight traffic. • Review the location of stations/ goods yards. <p>For airport/ aviation infrastructure:</p> <ul style="list-style-type: none"> • Review the projected volumes of passenger/ freight traffic. • Redesign the airport – terminal and runway capacity. <p>For seaports:</p> <ul style="list-style-type: none"> • Review the projected volumes of passenger/ freight traffic. • Redesign the port – terminal and capacity.
Who	World Bank in association with the client government and other stakeholders.
When	Within the feasibility stage.

Webpage 2

Link to Core Principle(s)	
Financial sustainability & economic viability ; balancing the roles & responsibilities of the public & private sector	
Case Study Example(s)	
<p>Transport Sector Investment Tunisia P043700 http://go.worldbank.org/2NOW63U6P0</p> <p>The Tunisia project showed that a strong business case for services and market trends is important in reaching financial sustainability objectives for revenue generating entities.</p> <p>Gujarat State Highway India P010566 http://go.worldbank.org/RKOGOTFPP1</p> <p>An overarching business plan was developed which was well grounded in a long term vision. This included: the policy framework, including the identification of existing legal authorities and any necessary legal and regulatory developments; organisational changes, with a clear delineation of the new structures; the physical work plan; and the associated budget requirements. This set the business plan within which individual projects could proceed.</p>	
Other Related Topics	
<ol style="list-style-type: none"> 1. Understanding the client government's needs 2. Roles and responsibilities of the client government and project stakeholders 7. Needs assessment 8. Project planning 10. Complex projects 11. Iconic projects 14. Environmental and social factors 15. Climate change adaptation in project design 16. Land acquisition 	

- 19. Technical capacity and capability
- 20. Appropriate design
- 22. Materials
- 26. Public-private partnerships (PPPs)
- 27. Private sector involvement
- 29. Large projects
- 30. Uncertain project costs
- 42. Corruption
- 48. Project flexibility

Webpage 3

Sources of Guidance

Local Government Budgeting Tool [Michael Shaeffer, 2003]

<http://info.worldbank.org/etools/docs/library/128834/Schaeffer%202000.pdf>

Participatory Budgeting Toolkit for Local Governments in Albania [World Bank, 2006]

http://siteresources.worldbank.org/INTALBANIA/Resources/PBP_Toolkit_Dec_06_Eng.pdf

Operational Policy 10.04 - Economic Evaluation of Investment Operations [World Bank]

<http://go.worldbank.org/JAIVOHUE30>

Bank Procedures 10.04 - Economic Evaluation of Investment Operations [World Bank]

<http://go.worldbank.org/ILGFMZUEA0>

Toolkit for Public Private Partnerships in Roads &Highways

<http://www.ppiaf.org/ppiaf/sites/ppiaf.org/files/documents/toolkits/highwaystoolkit/index.html>

The Urban Bus Toolkit: Tools and Options for Reforming Urban Bus Systems

<http://rru.worldbank.org/Toolkits/UrbanBus/>

Topic #14 Environmental and social factors.**Linkages**

Life Cycle Stage
Feasibility; Design
Core Sustainability Principle
Environmental sustainability; stakeholder engagement & social acceptance
ORAF Category
2.1 Country risk; 4.2 Social and environmental risks
Risk to Development Outcome Criteria
Social; Environmental

Webpage 1

Topic #14	
Environmental and social factors.	
Potential Impacts	
<p>A lack of recognition of the environmental and social factors in project design could result in:</p> <ul style="list-style-type: none"> • A detrimental impact on the environment, e.g. air quality, carbon emissions, noise, visual intrusion, loss of habitat etc that may require additional expenditure at a later date. • A detrimental impact on social processes, social networks and social capital through community severance, HIV/AIDS, changing access to opportunities, changing local markets, and reduced employment opportunities etc. 	
How to address the potential impacts	
Solution	Ensure that environmental and social sustainability factors are built into project design.
Techniques	<ul style="list-style-type: none"> • Engage with stakeholders to define the environmental and social factors of importance. • Undertake a Strategic Environmental Assessment (SEA). • Conduct an environmental appraisal of the project following World Bank requirements: <ol style="list-style-type: none"> a) Projects generating major environmental impacts require an EIA (Environmental Impact Assessment) and Environmental Management Plan (EMP); b) Projects generating minor environmental impacts do not require an EIA but do require an EMP; c) Projects with minimal environmental impacts, e.g. buying buses, do not require any EMP or EIA. • Ensure that environmentally-friendly construction methods will be used, e.g. minimising the noise and air quality impacts. • Conduct social and gender impact assessments of the proposal. • Adjust the project to accommodate environmental and social improvements, including climate change adaptation measures if necessary.
Who	World Bank and design consultants.

When	During feasibility and project design.
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Webpage 2

Link to Core Principle(s)
Environmental sustainability ; stakeholder engagement & social acceptance
Case Study Example(s)
None
Other Related Topics
<ol style="list-style-type: none"> 1. Understanding the client government's needs 2. Roles and responsibilities of the client government and project stakeholders 3. Knowledge of local laws and regulations 4. Policy differences between the World Bank and the client government 7. Needs assessment 8. Project planning 15. Climate change adaptation in project design 16. Land acquisition 20. Appropriate design 22. Materials 23. Stakeholder engagement 24. Community involvement 40. Supervision 42. Corruption 44. Natural disasters 46. Access to rural areas 47. Road safety

Webpage 3

Sources of Guidance
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Topic #15 Climate change adaptation in project design.**Linkages**

Life Cycle Stage
Design
Core Sustainability Principle
Adaptation to climate change
ORAF Category
2.1 Country risk; 4.2 Social and environmental risk
Risk to Development Outcome Criteria
Environmental; Financial

Webpage 1

Topic #15	
Climate change adaptation in project design.	
Potential Impacts	
<p>Project design that does not take into account assessments of infrastructure resilience to potential climate change impacts could result in:</p> <ul style="list-style-type: none"> • Significant risks of failure of assets caused by changes in severity and increases in weather events. • Costly reconstruction and/or adaptation measures required at a later stage. 	
How to address the potential impacts	
Solution	When designing infrastructure, it is important to build-in resilience to projected climate change.
Techniques	<ul style="list-style-type: none"> • Undertake a vulnerability assessment to identify potential risks e.g. coastal erosion, landslides, damage to structures, track buckling in heat, erosion, pavement cracking, flooding, pavements deformation, and bridge scour etc. • Identify appropriate climate resilience measures e.g. pavement design; slope and height of embankments and capacity of culverts, based on criteria evaluation and prioritisation etc.
Who	World Bank to require vulnerability assessment.
When	During feasibility and the design stages.

Webpage 2

Description of Link to Core Principle(s)
Adaptation to climate change
Case Study Example(s)
None
Other Related Topics
1. Understanding the client government's needs 4. Policy differences between the World Bank and the client government 5. Coordination among aid agencies 7. Needs assessment

- 13. Project business case
- 14. Environmental and social factors
- 17. Support for necessary (but seemingly unattractive) projects
- 19. Technical capacity and capability
- 20. Appropriate design
- 22. Materials
- 30. Uncertain project costs
- 39. Asset inventories
- 44. Natural disasters
- 48. Project flexibility

Webpage 3

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Topic #16 Land acquisition.**Linkages**

Life Cycle Stage
Feasibility; Design
Core Sustainability Principle
Stakeholder engagement & social acceptance
ORAF Category
4.2 Social and environmental risk
Risk to Development Outcome Criteria
Social

Webpage 1

Topic #16	
Land acquisition.	
Potential Impacts	
<p>A project can be delayed either by objections/obstructions by owners to land acquisition (e.g. due to a lack of incentives) and/or a failure to acquire land in sufficient time for construction. This could result in:</p> <ul style="list-style-type: none"> • Higher costs. • Project delays. • Lack of stakeholder support. 	
How to address the potential impacts	
Solution	Plan and coordinate land acquisition with the schedule of works to avoid delays in their execution.
Techniques	<ul style="list-style-type: none"> • Projects should be designed to minimise, as far as practically possible, the major resettlement of communities. • Encourage stakeholder engagement with the local population early in process. • Encourage the client government and consultants to plan land acquisition to coordinate with schedule of works and ensure that schedule of works is detailed and updated regularly. • Check that funding is available to cover the land acquisition costs (including the provision of incentives to current owners) and ensure that client government has identified funding for any potential resettlement requirements. • If necessary develop a Resettlement Action Plan.
Who	Client government and consultants.
When	During problem identification, feasibility and design.

Webpage 2

Link to Core Principle(s)
Stakeholder engagement & social acceptance
Case Study Example(s)
Klaipedia Port

Lithuania
P035776

<http://go.worldbank.org/B58HTTX7R0>

As a result of an unclear legal basis and unsolved land property and responsibility issues the planned Confined Disposal Facility was not built. This project showed that the World Bank needs to ensure that there is a comprehensive knowledge of a country's laws and regulations vis a vis the Bank's own rules and guidelines prior to any agreement being signed.

Other Related Topics

3. Knowledge of local laws and regulations
5. Coordination among aid agencies
8. Project planning
14. Environmental and social factors
19. Technical capacity and capability
23. Stakeholder engagement
24. Community involvement
30. Uncertain project costs
39. Asset inventories

Webpage 3

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Topic #17 Support for necessary (but seemingly unattractive) projects.**Linkages**

Life Cycle Stage
Identification; Procurement and Negotiation
Core Sustainability Principle
Political support
ORAF Category
2.2 Institutional risk; 3.2 Governance risk
Risk to Development Outcome Criteria
Government ownership/commitment

Webpage 1

Topic #17	
Support for necessary (but seemingly unattractive) projects.	
Potential Impacts	
<p>Lack of buy-in by decision-makers for necessary but seemingly unattractive projects could result in:</p> <ul style="list-style-type: none"> • A weak commitment to the project by the borrower. • Project progresses without political and public support. • The project being incompletely defined. • Under-funding of the project. • Reduction in the overall scope of project, so potential opportunities may be missed. • Delays to the execution of the project. 	
How to address the potential impacts	
Solution	To try to secure buy-in by the decision-makers to the project.
Techniques	<ul style="list-style-type: none"> • The World Bank should assess both the borrower's commitment to the project objectives and its institutional capacity to implement the project. • The benefits of the projects should be clearly specified. Valid, clear reasons for the project should be discussed with the client government. Demonstrate how the project supports the client or local government's transport strategy or development goals. • Discussions with ministers and senior officials in the client government should lead to clear reasons for the project and a long-term vision which all parties agree to. • Encourage the client government outline and specific reservations that they have so these can be addressed. • Communicate with elected representatives and senior officials to secure financial support. • Secure agreement to continue funding, e.g. in development plan, prior to project commissioning. • Consider how support for the project will be maintained in the long term. • Maintain on-going communications with the client emphasising the importance of the project.
Who	World Bank, in association with the client government and other key stakeholders.

When	During the problem identification stage and throughout the project.
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Webpage 2**Link to Core Principle(s)**

[Political support](#)

Case Study Example(s)**Road Maintenance and Development**

Nepal

P045052

<http://go.worldbank.org/GFESOYSNG0>

Road maintenance is rarely politically attractive but, to some extent as a result of the insurgency and the inability to proceed with the planned construction of new roads progress was made by focussing on maintenance via a Roads Board that secured continued political support.

Gujarat State Highway

India

P010566

<http://go.worldbank.org/RKOGOTFPP1>

This project showed that the success of a project rests on strong continued leadership and commitment of the top management.

Air Quality Management

Bangladesh

P057833

<http://go.worldbank.org/3KY25JBF30>

In this project a lack of Government ownership and involvement and weak implementing agency capacity led to significant delays in project execution, while political interference constrained the effectiveness of some project measures.

Shijiazhuang Urban Transport Project

China

P056596

<http://www.worldbank.org/projects/documents/2009/06/10888857/china-shijiazhuang-urban-transport-project>

The turnabout of the Shijiazhuang Municipality re median bus lanes could have been avoided through more effective and continuous communication with all of the affected parties. This suggests that borrower commitment needs to be sustained throughout the life of the project.

Other Related Topics

1. Understanding the client government's needs.
4. Policy differences between the World Bank and the client government
5. Coordination among aid agencies
6. Continuity of responsibility for project delivery
7. Needs assessment
8. Project planning
9. Transport strategy context
13. Project business case
23. Stakeholder engagement
24. Community involvement
29. Large projects
30. Uncertain project costs

42. Corruption

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Sources of Guidance

Topic #18 Institutional change.**Linkages**

Life Cycle Stage
Problem Identification; Pre-feasibility; Feasibility; Design; Procurement and Negotiation
Core Sustainability Principle
Institutional capacity; stakeholder engagement & social acceptance
ORAF Category
2.2 Institutional risk; 3.2 Governance risk
Risk to Development Outcome Criteria
Institutional support; Government ownership/commitment; Other stakeholder ownership

Webpage 1

Topic #18	
Institutional change.	
Potential Impacts	
<p>The lack of support for institutional change could result in:</p> <ul style="list-style-type: none"> • Transport infrastructure and operations being treated in isolation. • Responsibilities for different modes of transport being fragmented between different institutions. • Responsibilities for infrastructure provision being separate from pricing (i.e. institutions that construct infrastructure are unable to set the price for using that infrastructure). • All resulting in transport institutions conflicting priorities and making decisions on an ad hoc basis. • A lack of ongoing support for projects. 	
How to address the potential impacts	
Solution	Ensure that there is support for the proposed institutional change.
Techniques	<ul style="list-style-type: none"> • Identify barriers to change e.g. individuals and institutions. • Discuss the proposed changes with those involved and those likely to be effected by the changes. • Develop an organogram to identify responsibilities. • Develop a change management plan. • Ensure that enabling legislation for the executing agencies is enacted, lines of responsibility are clearly defined and key staff appointments are made. These could be achieved either as objectives as part of the project or they could be conditions to be met prior to the project commencing.
Who	World Bank, in association with the client government
When	Prior to the project commencing.

Webpage 2

Link to Core Principle(s)
Institutional capacity ; stakeholder engagement & social acceptance
Case Study Example(s)

Dhaka Urban Transport Project

Bangladesh

P009524

<http://go.worldbank.org/81YLF0D7C0>

This project showed that where institutional capacity is known to be weak it is important to ensure that enabling legislation for the executing agencies is enacted, lines of responsibility are clearly defined and key staff appointments are made. It is also important that project design is not overly complex where institutional weaknesses are evident.

Other Related Topics

1. Understanding the client government's needs
2. Roles and responsibilities of the client government and project stakeholders
3. Knowledge of local laws and regulations
4. Policy differences between the World Bank and the client government
5. Coordination among aid agencies
6. Continuity of responsibility for project delivery
7. Needs assessment
19. Technical capacity and capability
23. Stakeholder engagement
42. Corruption

Webpage 3**Sources of Guidance**

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Topic #19 Technical capacity and capability.**Linkages**

Life Cycle Stage
Problem identification; Pre-feasibility; Feasibility; Design; Procurement and Negotiation
Core Sustainability Principle
Institutional capacity; embedment
ORAF Category
3.1 Capacity risk
Risk to Development Outcome Criteria
Institutional support

Webpage 1

Topic #19	
Technical capacity and capability.	
Potential Impacts	
<p>A lack of technical capacity and capability in the client country could result in:</p> <ul style="list-style-type: none"> • Incorrect solutions to the problem being applied. • Delays to project implementation. • Poor quality work. • Possible overspend. • Need for more management oversight. • Health and safety risks for users. • Possible need to recruit overseas consultants. 	
How to address the potential impacts	
Solution	Build capacity over the short and longer-term in public/private institutions, covering all the sectors, to enable the client country to undertake projects with minimal assistance. In the short term introduce overseas contractors with the appropriate local experience and develop mechanisms for knowledge transfer.
Techniques	<ul style="list-style-type: none"> • Analyse and determine if there is a lack of technical capability in the client country and in which subjects e.g. highway engineering. • Provide resources to build the local knowledge base. • Introduce overseas experts to deliver advice and support. Also consider the use of South-South exchange and collaboration that may bring more relevant expertise and experience. • Second World Bank staff and consultants into client country institutions. • Second client country staff into overseas institutions. • Training courses in client country institutions e.g. universities and vocational training colleges. • Co-ordinate efforts with other areas of World Bank activities and other donors to develop tertiary and vocational education. • Consider using teams which combine local staff with foreign consultants. • Draw up a plan with client organisations as to how local capacity will be maintained after World Bank staff leave. • Consider the institutional capacity needed for each project component and prepare the design and governance arrangements assuming that

	<p>progress may not move at the same speed for each component.</p> <ul style="list-style-type: none"> • Consider institutional reform to focus efforts. • Consider taking a broad approach to developing capacity for example put in place a programme that will help to ensure that local training schemes produces staff with the requisite skills. • Design simple projects which can be implemented with the available capabilities and local capacity. • Plan project components and schedules to take the “learning curve” into account and structure the institutional capacity development required accordingly. • In order to reduce the risk of project failure, as a result of the ‘project champion’ leaving an organisation (i.e. within the client government), encourage the client to ensure that there is an identified person with responsibility for the project should the champion leave and who is involved in its on-going management. • Develop a personnel succession plan for key members of the project team. • Advise the client government on pay and working conditions required to retain key personnel. • Help develop up to date sources of information on new technical developments and experiences.
Who	World Bank using independent consultants as necessary.
When	Staffing assessment should take place prior to project commencement. Continuous staff learning should occur throughout and following completion of the project.

Webpage 2

Link to Core Principle(s)
Institutional capacity ; embedment
Case Study Example(s)
<p>Second Rural Roads Project Peru P044601 http://go.worldbank.org/YD1GGPFDP0</p> <p>This project showed that it is necessary for road agencies to have a diverse range of staff. It also showed that there is a need for strong coordination between financing partners as this can bring added value to project design and supervision and promote learning, in addition to making procurement and other procedures more efficient.</p> <p>Provincial Infrastructure Project Laos P042237 http://go.worldbank.org/OKAFV3M7T0</p> <p>Within this project a lack of prior experience with the World Bank and weak in-house capacity led to delays. Decision making by the Provinces was cumbersome and financial management weak, resulting in overruns of project administrative costs.</p> <p>Road Sector Development Program Ethiopia P000755 http://go.worldbank.org/89460JJJB0</p> <p>This project shows that borrower capacity needs to be enhanced to enable proactive and</p>

effective contract administration.

Urban Mobility Improvement Project

Senegal

P055472

<http://go.worldbank.org/BYK3J2B1W0>

Risks in the post-completion phase are linked to Governments and municipalities having low capacity (in terms of staff and funds) to maintain roads and sidewalks improved through the project.

Doula Infrastructure Project

Cameroon

P074490

<http://go.worldbank.org/4NABGBQTW0>

This project showed that in a weak institutional environment it is important to avoid project spread across multiple agencies.

Guangzhou City Centre Project

China

P003614

<http://www.worldbank.org/projects/documents/2008/06/9735455/china-guangzhou-city-transport-project>

Project design and governance should consider the institutional capacity for each component and recognize that progress may not move at the same speed.

Moscow Urban Transport Project

Russian Federation

P046061

<http://go.worldbank.org/2XB09GM030>

The outcomes suggested that there is a need for a broader approach to capacity building to ensure that the job market produces staff with the necessary skills.

Dhaka Urban Transport Project

Bangladesh

P009524

<http://go.worldbank.org/81YLF0D7C0>

This project showed that where institutional capacity is known to be weak it is important to ensure that enabling legislation for the executing agencies is enacted, lines of responsibility are clearly defined and key staff appointments are made. It is also important that project design is not overly complex where institutional weaknesses are evident.

Liaoning Urban Transport Project

China

P041890

<http://www.worldbank.org/projects/documents/2006/06/6954097/china-liaoning-urban-transport-project>

This project suggests that heavy use of foreign consultants may not be beneficial as they are less able to 'connect' with the client. It is thought that a combined local and foreign team would have been more successful.

Other Related Topics

2. Roles and responsibilities of the client government and project stakeholders
5. Coordination among aid agencies
6. Continuity of responsibility for project delivery
7. Needs assessment
8. Project planning

- 10. Complex projects
- 13. Reform programme
- 15. Climate change adaptation in project design
- 20. Appropriate design
- 21. ICT applications
- 22. Materials
- 27. Private sector involvement
- 29. Large projects
- 31. Performance related maintenance contracts
- 33. Terms of Reference (ToR) for sub-contractors and consultants
- 39. Asset inventories
- 40. Supervision
- 41. Exchange rate risks
- 45. Contractual methods

Webpage 3

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Topic #20 Appropriate design.**Linkages**

Life Cycle Stage
Feasibility; Design
Core Sustainability Principle
Technological appropriateness; institutional capacity
ORAF Category
Design risk
Risk to Development Outcome Criteria
Technical

Webpage 1

Topic #20	
Appropriate design.	
Potential Impacts	
<p>Inappropriate design could result in:</p> <ul style="list-style-type: none"> • An inappropriate solution for the development needs being implemented. • Unnecessarily expensive solutions which will result in the poor use of available funds. • Potentially higher maintenance costs. • Adverse impacts on the environment and local communities. • Higher risk of project failure. • Reliance on outside consultants if the necessary technical capacity is not available. • Incorrect capacity being catered for by the scheme. • Health and safety risks for users. 	
How to address the potential impacts	
Solution	Check that the proposed project is appropriate for the local conditions, i.e. in terms of transport demand, technical capacity and capability, environmental and societal impacts. Closely oversee the design phase to mitigate potential risks.
Techniques	<ul style="list-style-type: none"> • Review the demand forecasts, perhaps by commissioning an independent study. • Check that the route/location chosen is the best solution. • Check that the materials proposed will be long lasting and that they are readily available locally and at low cost. • Calculate the costs of the project on a whole life cost basis. • Design the project so that it can be maintained at a low cost. • Ensure that both an EIA and SIA is undertaken. • Involve community groups in the project planning and design processes. • Ensure that sufficient attention is placed on transport safety. • Assess the technical capability and capacity of the in country staff to construct, operate and maintain the scheme. • If possible undertake a pilot project or test of technical systems, e.g. ICT. • If appropriate, introduce climate change adaptation measures into the design. • Employ design and supervision consultants for projects.

	<ul style="list-style-type: none"> Ensure the use of or help to develop new appropriate design standards and specifications, with associated guidelines.
Who	World Bank in association the client government
When	At the feasibility and design stages.

Webpage 2

Link to Core Principle(s)

[Technological appropriateness](#); [institutional capacity](#)

Case Study Example(s)

Rural and Main Roads

Guatemala

P035737

<http://go.worldbank.org/163245UN50>

Social conflict and insurgency affects project design and implementation. Projects in conflict-affected areas should therefore have a flexible design and implementation plan. The project team should have leeway to redefine project components as long as the project objectives do not change. Institutional strengthening strategies in particular need to go beyond technical aspects and address the need to facilitate dialogue and build trust among actors involved.

Rural roads projects need to be realistic in balancing the expected poverty impacts and investment sustainability. Transport services are only one of many social and economic elements in a poverty reduction strategy which requires the coordination of, and complementary interventions, from the central government.

Project sustainability is determined by beneficiaries' participation in project design and implementation, and the financing of maintenance activities, which is the single most important challenge for rural roads

Road Sector Development Project

Ethiopia

P000755

<http://go.worldbank.org/89460JJJB0>

Climate change adaptation measures should be introduced because of the high risks of negative impacts from road construction.

Road Maintenance and Development

Nepal

P045052

<http://go.worldbank.org/GFESOYSNG0>

This project suggests that more attention needs to be given to road safety in highway schemes. The Government employs design and supervision consultants for projects.

Port Development and Environmental Protection

Mauritius

P001926

<http://go.worldbank.org/ZCVB22KET0>

This project suggests that the World Bank needs to oversee the design phase more closely to mitigate potential technical risks in future projects.

Provincial Infrastructure

Laos

P042237

<http://go.worldbank.org/OKAFV3M7T0>

In designing road infrastructure, it is important to take into account the likely demand. This would include projected volumes of traffic and vehicle types. If the latter will include heavy trucks and buses, then the standards of the design should be able to meet that demand.

Road Reconstruction And Improvement

Honduras

P057538

<http://go.worldbank.org/OZQ1OUGHBO>

The reconstruction of infrastructure damaged by hurricanes etc is imperative but the designs of, and locations for, replacement infrastructure should take into account the possibility of similar future events.

Other Related Topics

1. Understanding the client government's needs
3. Knowledge of local laws and regulations
6. Continuity of responsibility for project delivery
8. Project planning
10. Complex projects
11. Iconic projects
13. Project business case
14. Environmental and social factors
15. Climate change adaptation in project design
16. Land acquisition
19. Technical capacity and capability
24. Community involvement
27. Private sector involvement
28. Maintenance funding
29. Large projects
48. Project flexibility

Webpage 3

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http://www.transport-links.org/transport_links/publications/publications_v.asp?id=699&title=ORN3+A+GUIDE+TO+SURFACE+DRESSING+IN+TROPICAL+AND+SUB%2DTROPICAL+COUNTRIES%2E

Overseas Road Note 5 – A guide to road project appraisal [TRL and DFID, Revised Edition 2005]

http://www.transport-links.org/transport_links/publications/publications_v.asp?id=851&title=ORN5+A+guide+to+road+project+appraisal

Overseas Road Note 6 – A guide to geometric design [TRL, 1998]

http://www.transport-links.org/transport_links/publications/publications_v.asp?id=702&title=ORN6+A+GUIDE+TO+GEOMETRIC+DESIGN

Overseas Road Note 9 – A design manual for small bridges [TRL and DFID, Second Edition, 2000]

http://www.transport-links.org/transport_links/publications/publications_v.asp?id=706&title=ORN9+A+GUIDE+TO+SMALL+BRIDGE+DESIGN+FOR+HIGHWAY+ENGINEERS

Overseas Road Note 12 – Design guidelines for busway transit [TRL and the Overseas

Development Administration, 1993]

http://www.transport-links.org/transport_links/publications/publications_v.asp?id=709&title=ORN12+DESIGN+GUIDELINES+FOR+BUSWAY+TRANSIT

Overseas Road Note 14 – Hydrological design manual for slope stability in the tropics [TRL and the Overseas Development Administration, 1997]

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Overseas Road Note 16 – Principles of low cost road engineering in mountainous regions [TRL and the Overseas Development Administration, 1997]

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Overseas Road Note 19 – A guide to the design of hot mix asphalt in tropical and sub-tropical countries [TRL and DFID, 2002]

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Overseas Road Note 31 – A guide to the structural design of bitumen-surfaced roads in tropical and sub-tropical countries [TRL and the Overseas Development Administration, 1993]

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Guidelines on the selection and use of road construction materials [TRL]

<http://www.dfid.gov.uk/r4d/PDF/Outputs/R6898.pdf>

Tractor Solutions for Rural Roads and Agriculture [Petts and Cutler, 2006]

http://www.anafide.org/doc/HTE%20134/Art_Cutler_134.pdf

Design & Appraisal of Rural Transport Infrastructure: Ensuring Basic Access for Rural Communities, World Bank Technical Paper no. 496

<http://www4.worldbank.org/afr/ssatp/Resources/WorldBank-TechnicalPapers/TP496/tp496.pdf>

Topic #21 ICT applications.**Linkages**

Life Cycle Stage
Procurement and negotiation
Core Sustainability Principle
Technological appropriateness; institutional capacity
ORAF Category
3.1 Capacity risk
Risk to Development Outcome Criteria
Technical

Webpage 1

Topic #21	
ICT applications.	
Potential Impacts	
<p>Poor planning, implementation and operation of ICT systems could result in:</p> <ul style="list-style-type: none"> • Inefficiency and poor quality of transport operations, such as empty running and unnecessary journeys on bus services. • Operational disruptions. • Higher costs. • Loss of vital information. 	
How to address the potential impacts	
Solution	Improve planning, implementation and operation of ICT systems using specialized personnel.
Techniques	<ul style="list-style-type: none"> • Introduce consultants with experience of developing ICT systems in similar situations. • Specify clear performance contracts for ICT systems. • Develop in-country technical capacity for operating ICT systems and ensure this capacity can be maintained. • Introduce a continual training programme for ICT staff.
Who	World Bank with the support of the client government.
When	During project design and contract negotiation.

Webpage 2

Link to Core Principle(s)
Technological appropriateness ; institutional capacity
Case Study Example(s)
<p>Guangzhou City Transport China P003614 http://www.worldbank.org/projects/documents/2008/06/9735455/china-guangzhou-city-transport-project Computer-based management systems require exceptional inter-disciplinary coordination</p>

and specialized experience for procurement. The technical complexity of these systems, which may involve intellectual property rights, require coordination between specialists who understand the business processes, technology options, and procurement. A technical and functional architecture encompassing the project is also needed to ensure current and future system interoperability (e.g. Guangzhou's GPS-based bus dispatching and monitoring system may be a model for other cities).

Other Related Topics

- 6. Continuity of responsibility for project delivery
- 7. Needs assessment
- 8. Project planning
- 10. Complex projects
- 13. Project business case
- 19. Technical capacity and capability
- 27. Private sector involvement
- 30. Uncertain project costs
- 33. Terms of Reference (ToR) for sub-contractors and consultants

Webpage 3

Sources of Guidance

Competency-based Training Guidelines for ICT Initiatives at the Community Level
[ESCAP, 2009]
http://www.unescap.org/idd/working%20papers/IDD_TP_09_04_of_WP_7_2_914.pdf

Topic #22 Materials.**Linkages**

Life Cycle Stage
Design; Procurement and Negotiation
Core Sustainability Principle
Technological appropriateness; financial sustainability & economic viability
ORAF Category
Design risk
Risk to Development Outcome Criteria
Technical; Financial

Webpage 1

Topic #22	
Materials.	
Potential Impacts	
<p>Use of inappropriate materials could result in:</p> <ul style="list-style-type: none"> • Full capacity of the scheme not being available for use and/or longer journey times for users, e.g. as a result of roads being washed away. • Project failure and the need to reconstruct due to a lack of maintenance as materials are either unavailable, too costly or lack of local capacity and capability to undertake the work. • Higher maintenance costs, for example as a result of the need to import materials, or the need to bring in expert assistance. • Potentially adverse environmental effects. • Health and safety risks for users. • The facility being unable to adapt to the effects of climate change. 	
How to address the potential impacts	
Solution	Check that the proposed materials are appropriate for the local conditions, i.e. in terms of transport demand, technical capacity and capability, environmental and societal impacts.
Techniques	<ul style="list-style-type: none"> • Undertake research into the availability, cost and quality of local materials and use as appropriate. • Check that the materials proposed will be long lasting. • Review the demand forecasts, perhaps by commissioning an independent study. • Assess the technical capability and capacity of the in-country staff to construct, operate and maintain the scheme. • Develop a partnership with the constructing industry, including materials suppliers. • Supervise and monitor the works to ensure that the correct materials are used throughout the life of the project, especially for rural roads and those facilities spread over extensive areas. • Introduce output and performance based contracts to ensure that the correct materials are used throughout the life of the project. • Ensure the use of or help to develop new appropriate materials specifications, with associated guidelines. • Adopt and disseminate environmentally sustainable road construction

	and maintenance practices. <ul style="list-style-type: none"> Undertake stakeholder engagement in local villages during the construction period.
Who	World Bank in association the client government
When	Design and procurement and negotiation stages.

Webpage 2

Description of Link to Core Principle(s)
Technological appropriateness ; financial sustainability & economic viability
Case Study Example(s)
Road Maintenance and Development Nepal P045052 http://go.worldbank.org/GFESOYSNG0 <p>Stakeholder engagement is considered to be useful during the construction period e.g. by using forums in villages.</p> <p>The use of a binder was recommended by the World Bank as an intermediate intervention (between gravel roads and full blacktop construction) for sealing gravel roads in remote areas with low traffic levels.</p>
Other Related Topics
1. Understanding the client government's needs 3. Knowledge of local laws and regulations 8. Project planning 14. Environmental and social factors 15. Climate change adaptation in project design 19. Technical capacity and capability 20. Appropriate design 27. Private sector involvement 28. Maintenance funding 31. Performance related maintenance contracts 48. Project flexibility

Webpage 3

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http://www.transport-links.org/transport_links/publications/publications_v.asp?id=712&title=ORN15+GUIDELINES+FOR+THE+DESIGN+AND+OPERATION+OF+ROAD+MANAGEMENT+SYSTEMS

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Overseas Road Note 31 – A guide to the structural design of bitumen-surfaced roads in tropical and sub-tropical countries [TRL and the Overseas Development Administration, 1993]

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Designing concrete mixes using local materials [Overseas Development Administration, 1997]

http://www.bgs.ac.uk/research/international/DFID-KAR/ADD033_COL.pdf

Topic #23 Stakeholder agreement.**Linkages**

Life Cycle Stage
Identification; Design; Procurement and Negotiation
Core Sustainability Principle
Stakeholder engagement & social acceptance; political support
ORAF Category
1.1 Stakeholder risk
Risk to Development Outcome Criteria
Social; Other stakeholder ownership

Webpage 1

Topic #23	
Stakeholder agreement.	
Potential Impacts	
<p>A lack of consensus between project stakeholders (e.g. central, regional and local governments, government agencies, private financiers, transport operators, etc.) could result in:</p> <ul style="list-style-type: none"> • Delays in implementation as decision-making will be slow. • Obstruction by discontented stakeholders. 	
How to address the potential impacts	
Solution	Build a consensus between stakeholders.
Techniques	<ul style="list-style-type: none"> • Develop a consultation strategy which has a clear set of objectives, a timetable, a budget and allocation of responsibilities. • Make use of existing consultation mechanisms, such as village councils, rather than developing a new consultation process for each new project. • Organise early discussions between the stakeholders to discuss the project. • Ensure that there is sufficient time built into the project timetable to allow for effective consultation. • Segment the project into constituent parts over which agreement can be made. • Identify barriers to agreement e.g. individuals, institutions and reasons for objections. • Undertake a risk assessment. • Identify incentives to encourage stakeholder support, such as higher payments for land acquisition or re-routing infrastructure. • Undertake one-to-one negotiations with stakeholders using the Chatham House Rule to guarantee anonymity. • Secure agreements to ensure that the project can move forward.
Who	World Bank and other stakeholders.
When	At feasibility stage and then throughout its lifetime.

Webpage 2

Link to Core Principle(s)

[Stakeholder engagement & social acceptance](#); [political support](#)

Case Study Example(s)

Transport Technical Assistance Project

Algeria

P072458

<http://go.worldbank.org/3A68LKG70>

This project suggests that there is a need to focus more on consensus building in situations of conflicted interest groups.

Klaipedia Port

Lithuania

P035776

<http://go.worldbank.org/B58HTTX7R0>

This project showed that the World Bank needs to ensure that there is realistic time frame for effective consultation with stakeholders.

Other Related Topics

2. Roles and responsibilities of the client government and project stakeholders
3. Knowledge of local laws and regulations
5. Coordination among aid agencies
7. Needs assessment
8. Project planning
14. Environmental and social factors
16. Land acquisition
18. Institutional change
19. Technical capacity and capability
24. Community involvement
27. Private sector involvement
48. Project flexibility

Webpage 3

Sources of Guidance

Stakeholder Engagement: A good practice handbook for companies doing business in emerging markets [IFC, 2007]

[http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/p_StakeholderEngagement_Full/\\$FILE/IFC_StakeholderEngagement.pdf](http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/p_StakeholderEngagement_Full/$FILE/IFC_StakeholderEngagement.pdf)

Guidance Note on Bank Multi –Stakeholder Engagements [World Bank, 2009]

http://www-wds.worldbank.org/external/default/WDSPContentServer/WDSP/IB/2009/07/08/000333037_20090708235404/Rendered/PDF/492200BR0SecM2101Official0Use0Only1.pdf

Sustainable Livelihoods Guidance Sheets [DFID, 2001]

<http://www.ennonline.net/resources/667>

Topic #24 Community involvement.**Linkages**

Life Cycle Stage
Identification; Design
Core Sustainability Principle
Stakeholder engagement & social acceptance
ORAF Category
1.1 Stakeholder risk; 4.2 Social and environmental risks
Risk to Development Outcome Criteria
Social; Other stakeholder ownership

Webpage 1

Issue	
Community involvement.	
Potential Impacts	
<p>Lack of local community involvement (those potentially affected by the scheme) could result in:</p> <ul style="list-style-type: none"> • The maximum potential benefits of the project not being achieved. • The project not being used by the local community. • Projects having negative impacts on social and cultural activities. • The exclusion of certain groups from the project processes who are then adversely affected by the project. • Health and safety risks for users. 	
How to address the potential impacts	
Solution	Consult with local communities at all stages of the project life cycle to ensure that local perceptions, attitudes, values and knowledge are fully taken into account.
Techniques	<ul style="list-style-type: none"> • Involve local communities in the decision making processes from the outset. Including in terms of location, design, nature of the infrastructure, implementation, operation and maintenance. • Develop a consultation strategy which has a clear set of objectives, a timetable, a budget and allocation of responsibilities. • Ensure that the implementing authority forms and is able to maintain viable relationships and partnerships with the local communities. • Develop a good quality and well timed process which: <ul style="list-style-type: none"> ○ Provides meaningful information in a format and language that is readily understandable and tailored to the needs to the project stakeholders; ○ Provides information in advance of consultation activities and decision-making; ○ Disseminates information in a way and at locations that make it easy for stakeholders to access it; ○ Shows respect for local traditions, languages, timeframes and decision-making processes; ○ Allows two-way dialogue that gives all sides the opportunity to exchange views and information, to listen and to have their views heard and addressed;

	<ul style="list-style-type: none"> ○ Ensures inclusiveness in representation of views, including women, the vulnerable and/or minority groups; ○ Ensures processes are free from intimidation or coercion; ○ Ensures clear mechanisms exist for responding to people's concerns, suggestions and grievances; ○ Ensures that the project representatives managing the engagement process have, or can access, the right skills, experience and attitudes for the job. <ul style="list-style-type: none"> • Make use of existing consultation mechanisms, such as village councils, rather than developing new consultation process for each new project. • If the potential number of stakeholders is likely to be large it may be effective to organise a smaller representative group to reflect opinions. • Use project consultation to help build capacity of civil society in order to help them engage in consultation on other projects.
Who	World Bank, in association with the client government.
When	At the problem identification stage and throughout the life of the project.

Webpage 2

Link to Core Principle(s)
Stakeholder engagement & social acceptance
Case Study Example(s)
<p>Bogota Urban Transport Project Columbia P006872 http://go.worldbank.org/55ROQ4Q350</p> <p>This project suggests that community involvement is crucial in helping to overcome class barriers.</p> <p>Klaipedia Port Lithuania P035776 http://go.worldbank.org/B58HTTX7R0</p> <p>This project showed that the World Bank needs to ensure that there is realistic time frame for effective consultation with stakeholders.</p>
Other Related Topics
<ul style="list-style-type: none"> 2. Roles and responsibilities of the client government and project stakeholders 3. Knowledge of local laws and regulations 5. Coordination among aid agencies 6. Continuity of responsibility for project delivery 7. Needs assessment 8. Project planning 11. Iconic projects 14. Environmental and social factors 16. Land acquisition 19. Technical capacity and capability 20. Appropriate design 22. Materials 23. Stakeholder engagement 42. Corruption 46. Access to rural areas 47. Road safety

48. Project flexibility

Webpage 3

Sources of Guidance

Gender and Transport Resource Guide [World Bank, 2006]

<http://www4.worldbank.org/afr/ssatp/Resources/HTML/Gender-RG/>

Breaking Ground: Engaging Communities in Extractive and Infrastructure Projects [World Resources Institute, 2009]

<http://www.wri.org/publication/breaking-ground-engaging-communities>

Participatory Development: Guidelines on Beneficiary Participation in Agricultural and Rural Development [Food and Agriculture Organization of the United Nations, 2003]

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Addressing the Social Dimensions of Private Sector Projects [IFC, 2003]

[http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/p_socialGPN/\\$FILE/SocialGPN.pdf](http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/p_socialGPN/$FILE/SocialGPN.pdf)

Participatory Methods Toolkit [King Baudouin Foundation and the Flemish Institute for Science and Technology Assessment (viWTA), 2005]

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Stakeholder Engagement: A good practice handbook for companies doing business in emerging markets [IFC, 2007]

[http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/p_StakeholderEngagement_Full/\\$FILE/IFC_StakeholderEngagement.pdf](http://www.ifc.org/ifcext/enviro.nsf/AttachmentsByTitle/p_StakeholderEngagement_Full/$FILE/IFC_StakeholderEngagement.pdf)

Doing Better Business Through Effective Public Consultation and Disclosure: A good practice manual [IFC, 1998]

http://www-wds.worldbank.org/external/default/WDSContentServer/WDSP/IB/1999/10/19/000094946_99093005545763/Rendered/PDF/multi_page.pdf

Sustainable Livelihoods Guidance Sheets [DFID, 2001]

<http://www.ennonline.net/resources/667>

Topic #25 Transfer of assets to private companies.**Linkages**

Life Cycle Stage
Identification; Pre-feasibility; Feasibility; Design; Procurement and Negotiation
Core Sustainability Principle
Financial sustainability & economic viability; balancing the roles & responsibilities of the public & private sector
ORAF Category
2.2 Institutional risk
Risk to Development Outcome Criteria
Financial

Webpage 1

Topic #25	
Transfer of assets to private companies.	
Potential Impacts	
Impediments to the transfer of assets to private companies could result in: <ul style="list-style-type: none"> • Project delays. • Additional costs being incurred. • Inefficient operation. 	
How to address the potential impacts	
Solution	The World Bank needs to identify the causes of impediments to the transfer of assets and attempt to liaise between conflicting parties to resolve the issue.
Techniques	<ul style="list-style-type: none"> • Identify acceptable criteria under which assets are to be transferred. • Help set up a regulatory framework for private sector involvement. • World Bank to liaise with the client government and private companies, acting as a third party intermediary. • World Bank to advise the client government on contractual issues.
Who	World Bank, client government and private companies.
When	During project design and procurement and negotiation.

Webpage 2

Link to Core Principle(s)
Financial sustainability & economic viability; balancing the roles & responsibilities of the public & private sector
Case Study Example(s)
Railway Concessions Project Cameroon P054786 http://go.worldbank.org/RONXY92L50 This project showed that in railway projects it is important to involve the private sector in concession design.

Other Related Topics

1. Understanding the client government's needs
3. Knowledge of local laws and regulations
4. Policy differences between the World Bank and the client government
13. Project business case
14. Environmental and social factors
17. Support for necessary (but seemingly unattractive) projects
18. Institutional change
26. Public-private partnerships (PPPs)
27. Private sector involvement
39. Asset inventories
42. Corruption
48. Project flexibility

Webpage 3

Sources of Guidance

Toolkit for Public Private Partnerships in Roads & Highways

<http://www.ppiaf.org/ppiaf/sites/ppiaf.org/files/documents/toolkits/highwaystoolkit/index.html>

The Urban Bus Toolkit: Tools and Options for Reforming Urban Bus Systems

<http://rru.worldbank.org/Toolkits/UrbanBus/>

Topic #26 Public-private partnerships (PPPs).**Linkages**

Life Cycle Stage
Pre-feasibility; Feasibility; Design; Procurement and Negotiation
Core Sustainability Principle
Balancing the roles & responsibilities of the public & private sector
ORAF Category
2.2 Institutional risk
Risk to Development Outcome Criteria
Financial; Other stakeholder ownership

Webpage 1

Topic #26	
Public-private partnerships (PPPs).	
Potential Impacts	
<p>Failure to secure an effective public-private partnership (PPP) could result in:</p> <ul style="list-style-type: none"> • Project failure or the need to re-negotiate the partnership agreement. • Lengthy preparation periods. • Delayed project implementation. • Higher costs. 	
How to address the potential impacts	
Solution	Advise the client government on how to speed up the development of a PPP.
Techniques	<ul style="list-style-type: none"> • Identify the barriers to PPP formulation. • Research, plan and negotiate an effective PPP. • If necessary appointment a transaction advisor to advise and guide the government. • Encourage early discussions between the client government and private partners involved in the potential partnership. • Specify PPP requirements. • Identify weaknesses in legal frameworks and encourage the client government to rectify these. • Identify limitations in local capacity causing the delay. • If necessary introduce outside experience in the form of consultants with PPP experience. • Use the World Bank's guidelines which provide capacity building in all aspects of the project cycle, incorporating institutional strengthening, legal and contractual frameworks, project financing, risk management, regulation and competition.
Who	World Bank in association with the client government and private partners.
When	During the feasibility stage.

Webpage 2**Link to Core Principle(s)**

Balancing the roles & responsibilities of the public & private sector**Case Study Example(s)****Airports Development Project**

Egypt

P082914

<http://go.worldbank.org/WES5XZTHT0>

Management contracts are an effective PPP model to foster the modernization of economically viable public entities, enhance operational and financial performance, and transfer know-how, especially when private partners are competitively selected at an early stage, on the basis of well prepared bidding documents.

Railway Concessions Project

Cameroon

P054786

<http://go.worldbank.org/RONXY92L50>

This project shows that developing PPPs can take a long time, especially where there is a lack of an appropriate legal framework and limited capacity.

Other Related Topics

1. Understanding the client government's needs
2. Roles and responsibilities of the client government and project stakeholders
3. Knowledge of local laws and regulations
4. Policy differences between the World Bank and the client government
6. Continuity of responsibility for project delivery
8. Project planning
13. Project business case
19. Technical capacity and capability
25. Transfer of assets to private companies
27. Private sector involvement
42. Corruption
45. Contractual methods

Webpage 3**Sources of Guidance**

Toolkit for Public-Private Partnership in Roads and Highways [World Bank]

<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTTRANSPORT/0,,contentMDK:22759355~pagePK:210058~piPK:210062~theSitePK:337116,00.html>

Partnerships to improve access and quality of public transport: guidelines [WEDC, Loughborough University, 2003]

<http://www4.worldbank.org/afr/ssatp/Resources/HTML/Gender-RG/Source%20%20documents/Tool%20Kits%20&%20Guides/Participatory%20Project%20Approaches/TLPAR2%20Partnerships%20to%20Improve%20Transport%20Access%20WEDC.pdf>

Private-Public Partnership for Low Volume Roads: The Swedish Private Road Associations [Sven Ivarsson and Christina Malmberg Calvo, 2003]

http://www.transport-links.org/transport_links/filearea/documentstore/322_Swedish%20Private%20Roads%20Associations.pdf

Public Private Partnership Readiness Self-Assessment [UNESCAP, 2005]

http://www.unescap.org/ttdw/ppp/PPP2007/ppp_readiness_selfassessment.pdf

Toolkit for Public Private Partnerships in Roads & Highways

<http://www.ppiaf.org/ppiaf/sites/ppiaf.org/files/documents/toolkits/highwaystoolkit/inde>

[x.html](#)

The Urban Bus Toolkit: Tools and Options for Reforming Urban Bus Systems

<http://rru.worldbank.org/Toolkits/UrbanBus/>

Topic #27 Private sector involvement.**Linkages**

Life Cycle Stage
Procurement and negotiation
Core Sustainability Principle
Balancing the roles & responsibilities of the public & private sector
ORAF Category
2.2 Institutional risk
Risk to Development Outcome Criteria
Other stakeholder ownership

Webpage 1

Topic #27	
Private sector involvement.	
Potential Impacts	
Lack of private sector involvement could result in: <ul style="list-style-type: none"> • Inefficient implementation. • Lack of capacity building. • Lack of innovation. • Shortfall of funds for the project. 	
How to address the potential impacts	
Solution	Ensure a balance of responsibilities (covering issues such as investment funding, management, regulation and control, implementation etc.) between the public and private sectors that can be delivered within the existing capacities of these organisations.
Techniques	<ul style="list-style-type: none"> • Consider introducing a Public Private Partnership (PPP) model. • Ensure that there is the necessary time to complete the process of private participation/concessioning. Also ensure that contracts with the private sector are competitively let and that the process is transparent. • Secure private sector involvement via sub-contracting if necessary. • Introduce specific management contracts. • Specify private sector involvement in bidding documents. • Engage with the private sector to investigate potential for funding. • Ensure that private sector contractors will be managed and regulated by a competent authority.
Who	World Bank and client government.
When	During the feasibility, design and procurement and negotiation stages.

Webpage 2

Link to Core Principle(s)
Balancing the roles & responsibilities of the public & private sector
Case Study Example(s)
Airports Development Project

Egypt

P082914

<http://go.worldbank.org/WES5XZTHT0>

Management contracts are an effective PPP model to foster the modernization of economically viable public entities, enhance operational and financial performance, and transfer know-how, especially when private partners are competitively selected at an early stage, on the basis of well prepared bidding documents.

Railway Concession Project

Cameroon

P054786

<http://go.worldbank.org/RONXY92L50>

Confidence in political and financial institutions needed to be built for the private sector to become an engine of economic expansion. This factor is often underestimated by transaction advisors and governments. There is also a need to strike a balance regarding the likely outcomes of a concession between what a private institution requires with respect to its profitability, and the demands of the government which are to a great extent often politically driven. The World Bank and other financiers' views towards divestiture and the concessions demonstrated that the private sector's willingness to finance rail infrastructure was far lower than expected. Support for the revision of concession arrangements facilitated the establishment of a legal framework for railway private-public partnerships and the private provision of infrastructure.

Liaoning Urban Transport Project

China

P041890

<http://www.worldbank.org/projects/documents/2006/06/6954097/china-liaoning-urban-transport-project>

This project suggests that heavy use of foreign consultants may not be beneficial as they are less able to 'connect' with the client. It is thought that a combined local and foreign team would have been more successful.

Other Related Topics

1. Understanding the client government's needs
2. Roles and responsibilities of the client government and project stakeholders
3. Knowledge of local laws and regulations
4. Policy differences between the World Bank and the client government
6. Continuity of responsibility for project delivery
8. Project planning
13. Project business case
16. Land acquisition
19. Technical capacity and capability
25. Transfer of assets to private companies
26. Public-private partnerships (PPPs)
32. Large number of sub-contracts
33. Terms of Reference (ToR) for sub-contractors and consultants
34. Multi-year contracts
36. Time-bound covenants
37. Procurement documents
38. Procurement procedures
40. Supervision
41. Exchange rate risks
42. Corruption
45. Contractual methods

Sources of Guidance

Safe, Clean and Affordable... Transport Development, in particular Sections 3.2 Rationalising public and private sector roles in transport delivery and 3.5 Encouraging private sector participation [World Bank, 2008]

Partnerships to improve access and quality of public transport: guidelines [WEDC, Loughborough University, 2003]

<http://www4.worldbank.org/afr/ssatp/Resources/HTML/Gender-RG/Source%20%20documents/Tool%20Kits%20&%20Guides/Participatory%20Project%20Approaches/TLPAR2%20Partnerships%20to%20Improve%20Transport%20Access%20WEDC.pdf>

Toolkit for Public-Private Partnership in Roads and Highways [World Bank]

<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTTRANSPORT/0,,contentMDK:22759355~pagePK:210058~piPK:210062~theSitePK:337116,00.html>

Engaging the Private Sector in Skills Development [DFID]

<http://www.dfid.gov.uk/Documents/publications1/eng-priv-sect-skills-dvmt.pdf>

Developing Best Practices for Promoting Private Sector Investment in Infrastructure: Roads [ADB, 2000]

http://www.adb.org/documents/Books/Developing_Best_Practices/Roads/roads.pdf

Developing Best Practices for Promoting Private Sector Investment in Infrastructure: Ports [ADB, 2000]

http://www.adb.org/documents/Books/Developing_Best_Practices/Ports/ports.pdf

Developing Best Practices for Promoting Private Sector Investment in Infrastructure: Airports and Air Traffic Control [ADB, 2000]

http://www.adb.org/documents/Books/Developing_Best_Practices/Airports/airports.pdf

Privatising Highways in Latin America: Is it possible to fix what went wrong? [Engel, Fischer and Galetovic, Yale University, 2003]

http://www.econ.yale.edu/growth_pdf/cdp866.pdf

Topic #28 Maintenance funding.**Linkages**

Life Cycle Stage
Problem identification; Pre-feasibility; Feasibility; Design; Procurement and Negotiation
Core Sustainability Principle
Technological appropriateness; financial sustainability & economic viability; institutional capacity; embedment
ORAF Category
2.2 Institutional risk; 4.4 Delivery quality risk
Risk to Development Outcome Criteria
Financial; Institutional support; Technical

Webpage 1

Topic #28	
Maintenance funding.	
Potential Impacts	
<p>Lack of stable maintenance funding could result in:</p> <ul style="list-style-type: none"> • Infrastructure failure. • Inefficient operation. • Additional costs over the longer-term. • Higher user costs because of poor maintenance of road surfaces and other infrastructure. 	
How to address the potential impacts	
Solution	Develop a sound policy and institutional framework to ensure that funding is secured for future maintenance.
Techniques	<ul style="list-style-type: none"> • Design the project so that it can be maintained at a low cost. NB: The costs of the entire project should be calculated on a whole life cost basis. • Secure agreement to ensure that funds are allocated for future maintenance in the project plan. • Base maintenance funding assumptions on actual recent and current funding available. • Ensure that funds are released year on year for maintenance. • Ensure that maintenance of the existing assets is given priority over the expansion of road networks in countries with a good road network already. • Ensure that the basic legislative requirement for the provision of dedicated funding is available. • Ensure that all maintenance contracts are performance related. • Establish a road maintenance fund to generate a funding stream e.g. from fuel taxation or road tolls. • Consider introducing leverage funding, perhaps on a competitive basis. • Research and assess the current condition of assets. • Develop a database of asset conditions. • Undertake detailed monitoring and ongoing evaluations, training and supervision designed to improve asset monitoring.

Who	World Bank, client government and local contractors.
When	During the feasibility, design and procurement and negotiation stages.

Webpage 2**Link to Core Principle(s)**

[Technological appropriateness](#); [financial sustainability & economic viability](#); [institutional capacity](#); [embedment](#)

Case Study Example(s)**Road Sector Development Program**

Ghana

P050623

<http://go.worldbank.org/WDMKHXY0R0>

This project showed that supervision and monitoring of works especially for rural roads that are small but spread over large areas proves difficult. It also showed that maintenance of the existing assets needs to be given a priority over the expansion of road networks.

Metro Line Manila Urban Transport Integration Project and Bicycle Network Demonstration Pilot

Philippines

P057731 and P066509

[ICRs not available]

Outcomes suggested that a stronger focus on the proper future maintenance of project-funded infrastructure is warranted.

Road Reconstruction And Improvement

Honduras

P057538

<http://go.worldbank.org/OZQ1OUGHB0>

In order achieve more reliable road maintenance funding, there needs to be a sound policy and institutional framework. Ensuring the basic legislative requirements for the provision of dedicated funding up-front is a necessary but not sufficient condition to improve maintenance funding. The project experience shows the need for prioritization within a constrained resource framework.

National Transport Program Support Project

Chad

P035672

<http://go.worldbank.org/QPZ3VPJMW0>

The introduction of performance-based maintenance contracts for unpaved roads proved successful and is being expanded widely across the Africa region. The experience could be improved by better studying the level of service that will be demanded from the contractor, by documenting lessons learned and by developing capacities of local small and medium enterprises to carry out this type of contract.

Other Related Topics

1. Understanding the client government's needs
2. Roles and responsibilities of the client government and project stakeholders
5. Coordination among aid agencies
7. Needs assessment
9. Transport strategy context
13. Project business case
14. Environmental and social factors

15. Climate change adaptation in project design
17. Support for necessary (but seemingly unattractive) projects
19. Technical capacity and capability
20. Appropriate design
22. Materials
24. Community involvement
27. Private sector involvement
31. Performance related maintenance contracts
40. Supervision
42. Corruption
44. Natural disasters
45. Contractual methods

Webpage 3

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<http://www.dfid.gov.uk/r4d/SearchResearchDatabase.asp?OutputID=5291>
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http://www.gtkp.com/assets/uploads/20100129-161927-1001-SettingUpARoadFund_Heggie.pdf
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http://www.transport-links.org/transport_links/filearea/documentstore/312_Working%20Paper5.pdf
- Monitoring Road Works Contracts and Unit Costs for Enhanced Governance in Sub-Saharan Africa [World Bank, 2008]
<http://siteresources.worldbank.org/INTTRANSPORT/Resources/336291-1227561426235/5611053-1229359963828/TP-33-RoadContracts-ECA.pdf>
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http://www.worldbank.org/transport/roads/rd_fnds.htm
- Commercial Management and Financing of Roads, World Bank Technical Paper 409.
<http://www4.worldbank.org/afr/ssatp/Resources/WorldBank-TechnicalPapers/tp409.pdf>
- Africa Road Funds, What Works and Why ? SSATP Working Paper No. 14.
<http://www4.worldbank.org/afr/ssatp/Resources/SSATP-WorkingPapers/SSATPWP14.pdf>
- Financing of Road Maintenance in Sub-Saharan Africa, Reforms and progress towards second generation road funds. SSATP Discussion Paper No. 6.
<http://www4.worldbank.org/afr/ssatp/Resources/SSATP-DiscussionPapers/dp06.pdf>

Topic #29 Large transport projects.**Linkages**

Life Cycle Stage
Design
Core Sustainability Principle
Political support; institutional capacity; embedment; financial sustainability & economic viability
ORAF Category
2.1 Country risk; 4.4 Delivery quality risk
Risk to Development Outcome Criteria
Financial; Government ownership/commitment

Webpage 1

Topic #29	
Large transport projects.	
Potential Impacts	
<p>Investing in large transport projects could result in:</p> <ul style="list-style-type: none"> • An underestimation of costs. • An overestimation of demand. • The project not being able to be funded in its entirety. • The project not proceeding at all disrupting the overall transport strategy. • Potential benefits being lost. • Additional costs. • The need to develop alternative project(s). 	
How to address the potential impacts	
Solution	If there is no prospect of implementing the complete project consider redesigning to allow for the possibility of partitioning the project so that the project can be part-funded and proceed incrementally.
Techniques	<ul style="list-style-type: none"> • Discuss with other aid agencies if they are able to provide investment to fund the entire project. • Consider involving the private sector to provide funding e.g. via a PPP agreement. • Consider alternatives, including technologies, that may be less expensive but deliver the same goals e.g. bus rapid transit instead of rail. • Discuss with senior government ministers and officials which elements of the project should be retained and/or prioritised. • Revise the project plan accordingly.
Who	World Bank, in association with client government and stakeholders.
When	During the feasibility and design stages.

Webpage 2

Description of Link to Core Principle(s)
Political support ; institutional capacity ; embedment ; financial sustainability & economic viability

Case Study Example(s)

Salvador Urban Transport Project

Brazil

P048869

<http://go.worldbank.org/A56ASN1G60>

This project showed that in planning large urban transport projects, the project design should allow for the possibility of splitting the lines into sections. This is critical as the project has to survive through difficult times such as an economic crisis leading to large devaluations and a lack of counterpart funding.

Other Related Topics

1. Understanding the client government's needs
4. Policy differences between the World Bank and the client government
5. Coordination among aid agencies
7. Needs assessment
8. Project planning
9. Transport strategy context
10. Very complex projects are developed
11. Need for an iconic project
12. Over ambitious reform programme
13. Project business case
19. Technical capacity and capability
20. Appropriate design
27. Private sector involvement
30. Uncertain project costs
41. Exchange rate risks
42. Corruption
48. Project flexibility

Webpage 3

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Policy and Planning for Large Infrastructure Projects: Problems, Causes and Cures [Flyvbjerg, 2008 in Environment and Planning B]

Bent Flyvbjerg, Nils Bruzelius, and Werner Rothengatter, 2003. Megaprojects and Risk: An Anatomy of Ambition [Cambridge: Cambridge University Press]

Topic #30 Uncertain project costs.**Linkages**

Life Cycle Stage
Design; Procurement and Negotiation
Core Sustainability Principle
Financial sustainability & economic viability
ORAF Category
2.1 Country risk; 4.4 Delivery quality risk
Risk to Development Outcome Criteria
Financial

Webpage 1

Topic #30	
Uncertain project costs.	
Potential Impacts	
<p>If the costs of a project are uncertain this could result in:</p> <ul style="list-style-type: none"> • Costs being substantially above or below the allocated funding. • Delays to project implementation. • The full benefits of the scheme not being secured. 	
How to address the potential impacts	
Solution	Design the project so that the costs are clearly specified. Identify cost risk factors in the project and whether over/under spend is likely.
Techniques	<ul style="list-style-type: none"> • Identify where cost overruns appear most likely and undertake a risk assessment. These may affect: <ul style="list-style-type: none"> ○ Construction costs; ○ Borrowing costs; ○ Operational costs; or ○ Maintenance costs. • Identify cost savings e.g. removing unnecessary elements of budget. • Use reference class forecasting to reduce the risk of optimism bias in forecasting. Ensure that all forecasts are peer reviewed and made available to stakeholders for comment. • Secure lower cost inputs (if quality is maintained) e.g. via competitive tendering. • Over spend should be avoided by proper budget control: <ul style="list-style-type: none"> ○ Precise specification (in detail) of all the project components is required. ○ Budgets for consultants should be clearly specified, usually on a fixed cost basis. ○ If cost variations are permitted clear criteria must be given prior to the project initiation. • Ensure processes exist to avoid corrupt payments being made to reduce cost uncertainties. • Under spent funds could be used for related projects.
Who	World Bank to lead in association with stakeholders.
When	During design and procurement and negotiation.

Webpage 2

Link to Core Principle(s)
Financial sustainability & economic viability
Case Study Example(s)
<p>2nd Inland Waterways project China P003619 http://www.worldbank.org/projects/documents/2007/06/8139299/china-second-inland-waterways-project</p> <p>This project indicated that in a known environment of uncertain costs it may be advisable to hold in readiness for implementation some additional sub-projects consistent with agreed objectives to be ready for the possibility of potential savings.</p>
Other Related Topics
<ol style="list-style-type: none"> 1. Understanding the client government's needs 2. Roles and responsibilities of the client government and project stakeholders 5. Coordination among aid agencies 7. Needs assessment 8. Project planning 10. Complex projects 13. Project business case 15. Climate change adaptation in project design 16. Land acquisition 19. Technical capacity and capability 20. Appropriate design 21. ICT applications 22. Materials 27. Private sector involvement 33. Terms of Reference (ToR) for sub-contractors and consultants 37. Procurement documents 38. Procurement procedures 40. Supervision 41. Exchange rate risks 42. Corruption 45. Contractual methods 48. Project flexibility

Webpage 3

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<p>Policy and Planning for Large Infrastructure Projects: Problems, Causes and Cures [Flyvberg, 2008 in Environment and Planning B]</p> <p>Local Government Budgeting Tool [Michael Shaeffer, 2003] http://info.worldbank.org/etools/docs/library/128834/Schaeffer%202000.pdf</p> <p>Participatory Budgeting Toolkit for Local Governments in Albania [World Bank, 2006] http://siteresources.worldbank.org/INTALBANIA/Resources/PBP_Toolkit_Dec_06_Eng.pdf</p> <p>A Framework for Assessing Systematic Risk [Dijkman, 2011] http://www-wds.worldbank.org/servlet/WDSCContentServer/WDSP/IB/2010/04/26/000158349_20100426151636/Rendered/PDF/WPS5282.pdf</p>

Topic #31 Performance-related maintenance contracts.**Linkages**

Life Cycle Stage
Procurement and negotiation
Core Sustainability Principle
Institutional capacity; embedment; technological appropriateness
ORAF Category
4.4 Delivery quality risk
Risk to Development Outcome Criteria
Technical; Institutional support

Webpage 1

Topic #31	
Performance-related maintenance contracts.	
Potential Impacts	
<p>Incomplete performance-related maintenance contracts could result in:</p> <ul style="list-style-type: none"> • Poor quality maintenance of assets. • Infrastructure failure. • Inefficient operation. • Additional costs over the longer-term. 	
How to address the potential impacts	
Solution	Maintaining existing infrastructure is very important; otherwise previous investments deteriorate and become unusable. Ensure that maintenance contracts are performance related.
Techniques	<ul style="list-style-type: none"> • Specify performance-related maintenance contracts. However if this is not deemed appropriate consider the use of force account. • Review all maintenance contracts prior to completion. • Implement a change management process. • Ensure that priorities for highway maintenance are set in the client government's transport policy. • Road maintenance activities can be broken into four categories: <ol style="list-style-type: none"> 1. Routine works. These are works that are undertaken each year that are funded from the recurrent budget. 2. Periodic works. These include activities undertaken at intervals of several years to preserve the structural integrity of the road, or to enable the road to carry increased axle loadings. 3. Special/ emergency works. These are activities whose need cannot be estimated with any certainty in advance. 4. Upgrading and development. These are construction works that are identified as part of the national development planning activity. <p>The balance between these different elements will form part of the policy decisions and funding allocations that should be reflected in maintenance contracts.</p>
Who	World Bank and client government.

When	During the procurement and negotiation stage.
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Webpage 2

Link to Core Principle(s)
Institutional capacity ; embedment ; technological appropriateness
Case Study Example(s)
<p>National Transport Program Support Project Chad P035672 http://go.worldbank.org/QPZ3VPJMW0</p> <p>The introduction of performance-based maintenance contracts for unpaved roads proved successful and is being expanded widely across Africa. The experience could be improved by better studying the level of service that will be demanded from the contractor, by documenting lessons learned and by developing capacities of local small and medium enterprises to carry out this type of contract.</p>
Other Related Topics
<ul style="list-style-type: none"> 3. Knowledge of local laws and regulations 5. Coordination among aid agencies 6. Continuity of responsibility for project delivery 8. Project planning 13. Project business case 14. Environmental and social factors 15. Climate change adaptation in project design 19. Technical capacity and capability 20. Appropriate design 21. ICT applications 22. Materials 27. Private sector involvement 28. Maintenance funding 33. Terms of Reference (ToR) for sub-contractors and consultants 34. Multi-year contracts 37. Procurement documents 38. Procurement procedures 39. Asset inventories 40. Supervision 42. Corruption 45. Contractual methods

Webpage 3

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<p>World Bank Resource Guide. Performance-based Contracting for Preservation and Improvement of Road Assets [updated August 2009] http://www-esd.worldbank.org/pbc_resource_guide/index.html</p> <p>Performance-based Contracting for Preservation and Improvement of Road Assets World Bank Transport Note. TN 27 [2005] http://www-esd.worldbank.org/pbc_resource_guide/Docs-latest%20edition/PBC/trn_27_PBC_Eng_final_2005.pdf</p> <p>Managing a Modern Road Fund, 15 Years of Lessons Learnt [University of Birmingham, 2009] http://www.gtkp.com/assets/uploads/20100129-162232-395-</p>

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Topic #32 Large number of sub-contracts.**Linkages**

Life Cycle Stage
Procurement and negotiation
Core Sustainability Principle
Institutional capacity; balancing the roles & responsibilities of the public & private sector; financial sustainability & economic viability
ORAF Category
3.3 Fraud & corruption risks; 4.4 Delivery quality risk
Risk to Development Outcome Criteria
Financial; Institutional support

Webpage 1

Topic #32	
Large number of sub-contracts.	
Potential Impacts	
A large number of sub-contracts could result in: <ul style="list-style-type: none"> • Corruption. • Delays to project implementation. • Higher costs. 	
How to address the potential impacts	
Solution	Reduce the number of contracts to a manageable size, albeit possibly of larger contract value.
Techniques	<ul style="list-style-type: none"> • Design contracts to match project elements. • Review contracts and merge where possible. • Ensure that there is competitive tendering for the contracts. • Only contract to reputable, known companies. • Ensure that the World Bank and client government has the capacity to effectively monitor contracts. • Monitor the performance of contract holders throughout project. • Implement a change management process.
Who	World Bank with the support of the client government.
When	During the design and procurement and negotiation stages.

Webpage 2

Link to Core Principle(s)
Institutional capacity; balancing the roles & responsibilities of the public & private sector; financial sustainability & economic viability
Case Study Example(s)
Sumatra Regional Roads Indonesia P003993 http://go.worldbank.org/UXNMQHY2T0 Better plans for combating corruption are required and this needs to extend beyond the

transport sector. One particular area requiring consideration is the large number of contracts awarded under a project. It is suggested that reducing the number of contracts, and having tighter controls in place could help in avoiding mis-procurement problems.

Other Related Topics

- 3. Knowledge of local laws and regulations
- 6. Continuity of responsibility for project delivery
- 8. Project planning
- 19. Technical capacity and capability
- 27. Private sector involvement
- 33. Terms of Reference (ToR) for sub-contractors and consultants
- 34. Multi-year contracts
- 36. Time-bound covenants
- 37. Procurement documents
- 38. Procurement procedures
- 40. Supervision
- 42. Corruption
- 45. Contractual methods

Webpage 3

Sources of Guidance

Governance And Anti-Corruption - Project Preparation: Good Practices For Financial Management Specialists [World Bank, 2009]
http://siteresources.worldbank.org/EXTGOVANTICORR/Resources/3035863-1281627136986/GAC_ProjectPreparation_GoodPracticesforFMSpecialists_6509.pdf

Topic #33 Terms of Reference (ToR) for sub-contractors and consultants.**Linkages**

Life Cycle Stage
Procurement and negotiation
Core Sustainability Principle
Institutional capacity; balancing the roles & responsibilities of the public & private sector
ORAF Category
2.2 Institutional risk; 4.4 Delivery quality risk
Risk to Development Outcome Criteria
Institutional support; Other stakeholder ownership

Webpage 1

Topic #33	
Terms of Reference (ToR) for sub-contractors and consultants.	
Potential Impacts	
A poor definition of the Terms of Reference (ToR) for sub-contractors and consultants could result in: <ul style="list-style-type: none"> Objectives not being achieved. Project delays. Higher costs. Corruption. 	
How to address the potential impacts	
Solution	Provide clear ToRs for sub-contractors and consultants.
Techniques	<ul style="list-style-type: none"> Ensure that the ToR for the sub-contracts and contract requirements are clearly specified. Review the ToRs prior to agreement. Monitor the performance of sub-contractors and consultants throughout the project using key performance indicators. Implement a change management process.
Who	World Bank with the support of the client government.
When	During procurement and negotiation.

Webpage 2

Link to Core Principle(s)
Institutional capacity ; balancing the roles & responsibilities of the public & private sector
Case Study Example(s)
None
Other Related Topics
3. Knowledge of local laws and regulations 6. Continuity of responsibility for project delivery 8. Project planning 9. Transport strategy context 27. Private sector involvement

34. Multi-year contracts
36. Time-bound covenants
37. Procurement documents
38. Procurement procedures
40. Supervision
42. Corruption
45. Contractual methods

Webpage 3

Sources of Guidance

Topics #34 Multi-year contracts.**Linkages**

Life Cycle Stage
Procurement and negotiation
Core Sustainability Principle
Institutional capacity; balancing the roles & responsibilities of the public & private sector
ORAF Category
2.2 Institutional risk; 4.4 Delivery quality risk
Risk to Development Outcome Criteria
Institutional support; Other stakeholder ownership

Webpage 1

Topic #34	
Multi-year contracts.	
Potential Impacts	
<p>A lack of multi-year contracts could result in:</p> <ul style="list-style-type: none"> • Delays to the project if contracts must be renegotiated every year. • Costs rising and more management resource will be needed. • Project objectives not being achieved. 	
How to address the potential impacts	
Solution	Agree longer term contracts potentially in return for lower costs due to economies of scale.
Techniques	<ul style="list-style-type: none"> • Agree contracts that relate to project components of up to 5 years possibly with indexing to account for inflation. • Introduce annual monitoring of contract compliance. • Implement a change management process.
Who	World Bank with the support of the client government.
When	During procurement and negotiation.

Webpage 2

Link to Core Principle(s)
Institutional capacity ; balancing the roles & responsibilities of the public & private sector
Case Study Example(s)
<p>Federal Highway Maintenance Project Mexico P065779 http://go.worldbank.org/41K15FH4E0</p> <p>This project shows that maintenance by multi-year contract requires that certain preconditions are met. These include:</p> <ul style="list-style-type: none"> • Budget authorizations for multi-year contracts that are legally permissible; • There exist comprehensive data inventories on the asset condition; • There exist competence and methods to evaluate alternative maintenance strategies;

- There exist clearly defined output or outcome criteria against which payments are made; and
- The road administration has the skills and a method to monitor that contract conditions are met.

Other Related Topics

- 3. Knowledge of local laws and regulations
- 6. Continuity of responsibility for project delivery
- 8. Project planning
- 19. Technical capacity and capability
- 27. Private sector involvement
- 28. Maintenance funding
- 31. Performance related maintenance contracts
- 33. Terms of Reference (ToR) for sub-contractors and consultants
- 36. Time bound covenants
- 37. Procurement documents
- 38. Procurement procedures
- 40. Supervision
- 42. Corruption
- 45. Contractual methods

Webpage 3

Sources of Guidance

Topic #35 Loan formats.**Linkages**

Life Cycle Stage
Procurement and negotiation
Core Sustainability Principle
Institutional capacity; financial sustainability & economic viability
ORAF Category
4.4 Delivery quality risk
Risk to Development Outcome Criteria
Financial; Institutional support

Webpage 1

Topic #35	
Loan formats.	
Potential Impacts	
An inappropriate loan format could result in: <ul style="list-style-type: none"> • Delays to project implementation. • Higher costs of implementation. 	
How to address the potential impacts	
Solution	Revise loan format.
Techniques	<ul style="list-style-type: none"> • Discuss with World Bank finance officers what is an appropriate loan format for project. • Agree loan format with the client government.
Who	World Bank with the support of the client government.
When	During procurement and negotiation.

Webpage 2

Link to Core Principle(s)
Institutional capacity ; financial sustainability & economic viability
Case Study Example(s)
Transport Sector Investment Tunisia P043700 http://go.worldbank.org/2NOW63U6P0 <p>This project indicates that an Adaptable Program Loan may be a superior option compared to adjustment lending, where complex sector reform needs dedicated resources, and time, to be implemented and stabilized.</p>
Other Related Topics
1. Understanding the client government's needs 2. Roles and responsibilities of the client government and project stakeholders 3. Knowledge of local laws and regulations 5. Coordination among aid agencies

8. Project planning
13. Project business case
27. Private sector involvement
36. Time-bound covenants
41. Exchange rate risks
42. Corruption

Webpage 3

Sources of Guidance

Operational Policy 3.10 - Financial Terms and Conditions of IBRD Loans, IBRD Hedging Products, and IDA Credits [World Bank]

<http://go.worldbank.org/2DXSXPUD80>

Bank Procedures 3.10 - Financial Terms and Conditions of IBRD Loans, IBRD Hedging Products, and IDA Credits

<http://go.worldbank.org/XF2WANUDF0>

Topic #36 Time-bound covenants.**Linkages**

Life Cycle Stage
Procurement and negotiation
Core Sustainability Principle
Institutional capacity; balancing the roles & responsibilities of the public & private sector
ORAF Category
4.4 Delivery quality and risk
Risk to Development Outcome Criteria
Institutional support; Other stakeholder ownership

Webpage 1

Topic #36	
Time-bound covenants.	
Potential Impacts	
Excessive time bound covenants could result in: <ul style="list-style-type: none"> • Delays in project implementation. • Higher costs. 	
How to address the potential impacts	
Solution	Review the appropriateness of the time bounds covenants for the project.
Techniques	<ul style="list-style-type: none"> • Conduct a systematic review of covenants. • Identify and remove covenants that can be avoided. • Monitor compliance with covenants throughout project implementation.
Who	World Bank with the support of the client government.
When	During procurement and negotiation.

Webpage 2

Link to Core Principle(s)
Institutional capacity ; balancing the roles & responsibilities of the public & private sector
Case Study Example(s)
Transport Sector Investment Tunisia P043700 http://go.worldbank.org/2NOW63U6P0 <p>This project showed that too many time-bound covenants may become counter-productive, since they risk becoming too demanding for the borrower, and difficult for the Bank to monitor and follow up.</p>
Other Related Topics
3. Knowledge of local laws and regulations 8. Project planning 13. Project business case

27. Private sector involvement
35. Loan formats
41. Exchange rate risks
42. Corruption

Webpage 3

Sources of Guidance

Topic #37 Procurement documents.**Linkages**

Life Cycle Stage
Procurement and negotiation
Core Sustainability Principle
Institutional capacity; balancing the roles & responsibilities of the public & private sector
ORAF Category
2.2 Institutional risk; 4.4 Delivery quality risk
Risk to Development Outcome Criteria
Institutional support; Other stakeholder ownership

Webpage 1

Topic #37	
Procurement documents.	
Potential Impacts	
Delays in agreeing procurement documents could result in: <ul style="list-style-type: none"> • Delays in project commissioning and implementation. • Higher costs. 	
How to address the potential impacts	
Solution	Secure agreement to procurement documents as soon as possible.
Techniques	<ul style="list-style-type: none"> • Discuss content of documents with client government and other stakeholders. • Identify barriers to securing agreement. • Consider the use of incentives, such as amending the payment profile. • Revise procurement documents if necessary. • Secure legal advice if necessary.
Who	World Bank with the support of the client government.
When	During procurement and negotiation.

Webpage 2

Link to Core Principle(s)
Institutional capacity ; balancing the roles & responsibilities of the public & private sector
Case Study Example(s)
Urban Transport Project Uzbekistan P050508 http://go.worldbank.org/L72BVI96N0 <p>In the case of projects with large contracts with new borrowers, it is important to agree during negotiations on the main procurement documents that would be required, so that procurement can start immediately after the effectiveness date and without delays.</p>
Other Related Topics
1. Understanding the client government's needs

2. Roles and responsibilities of the client government and project stakeholders
3. Knowledge of local laws and regulations
4. Policy differences between the World Bank and the client government
5. Coordination among aid agencies
8. Project planning
13. Project business case
19. Technical capacity and capability
27. Private sector involvement
32. Large number of sub-contracts
33. Terms of Reference (ToR) for sub-contractors and consultants
34. Multi-year contracts
38. Procurement procedures
45. Contractual methods

Webpage 3

Sources of Guidance

Operational Policy 11.00 – Procurement
<http://go.worldbank.org/Y66EAJUGL1>

Bank Procedures 11.00 – Procurement
<http://go.worldbank.org/Z33TBIUH90>

Topic #38 Procurement procedures.**Linkages**

Life Cycle Stage
Procurement and negotiation
Core Sustainability Principle
Institutional capacity; balancing the roles & responsibilities of the public & private sector
ORAF Category
2.2 Institutional risk; 3.3 Fraud and corruption risks
Risk to Development Outcome Criteria
Institutional support; Other stakeholder ownership

Webpage 1

Topic #38	
Procurement procedures.	
Potential Impacts	
A lack of transparency in procurement procedures could result in: <ul style="list-style-type: none"> • Corruption by contractors. • Delays in project commissioning and implementation. • Higher costs in implementation. 	
How to address the potential impacts	
Solution	Ensure that all procurement procedures are transparent.
Techniques	<ul style="list-style-type: none"> • Publish procurement procedures. • Use competitive tendering. • If possible adopt e-procurement.
Who	World Bank with the support of the client government.
When	During procurement and negotiation.

Webpage 2

Link to Core Principle(s)
Institutional capacity ; balancing the roles & responsibilities of the public & private sector
Case Study Example(s)
Public Works II Yemen P060132 http://go.worldbank.org/T5Y0RYQ0U0 Transparent procurement procedures for selecting contractors and consultants, in the end, can satisfy all parties concerned and reduce otherwise considerable pressures upon and unqualified claims to local project authorities.
Other Related Topics
2. Roles and responsibilities of the client government and project stakeholders 3. Knowledge of local laws and regulations 5. Coordination among aid agencies 8. Project planning

- 19. Technical capacity and capability
- 27. Private sector involvement
- 32. Large number of sub-contracts
- 33. Terms of reference (ToR) for sub-contractors and consultants
- 34. Multi-year contracts
- 37. Procurement documents
- 42. Corruption
- 45. Contractual methods

Webpage 3

Sources of Guidance

Operational Policy 11.00 – Procurement

<http://go.worldbank.org/Y66EAJUGL1>

Bank Procedures 11.00 – Procurement

<http://go.worldbank.org/Z33TBIUH90>

Guidelines: Procurement of Goods, Works, and Non-Consulting Services under IBRD Loans and IDA Credits by World Bank Borrowers [World Bank]

Guidelines: Selection and Employment of Consultants under IBRD Loans and IDA Credits by World Bank Borrowers [World Bank]

Topic #39 Asset inventories.**Linkages**

Life Cycle Stage
Feasibility
Core Sustainability Principle
Institutional capacity; embedment; financial sustainability & economic viability
ORAF Category
2.2 Institutional risk
Risk to Development Outcome Criteria
Institutional support; Financial

Webpage 1

Topic #39	
Asset inventories.	
Potential Impacts	
<p>The lack of an asset inventory could result in:</p> <ul style="list-style-type: none"> • Inadequate information on the state of infrastructure. • Poor knowledge of the necessary maintenance requirements. • Poor investment decisions. • Limited understanding of long term financial commitments. 	
How to address the potential impacts	
Solution	Establish a timely and monitorable asset inventory system of project assets at the beginning of the project.
Techniques	<ul style="list-style-type: none"> • Review asset condition and valuation. • Develop an asset database. • Use consultants if necessary. • Ensure the system maintained in the country by local institutions. • Develop capacity to maintain the inventory over the longer-term.
Who	World Bank in association with the client government.
When	During the project design stage and maintain throughout the life of the project (and beyond).

Webpage 2

Link to Core Principle(s)
Institutional capacity ; embedment ; financial sustainability & economic viability
Case Study Example(s)
<p>National Emergency Employment Program for Rural Access Afghanistan P082472 http://go.worldbank.org/N30H3P25S0</p> <p>At the time of writing the Implementation Completion Report, there were missing assets amounting to US\$297,101. The UNOPS has prepared a list of available and missing assets, and a new physical inventory of assets was planned.</p>

Other Related Topics

- 2. Roles and responsibilities of the client government and project stakeholders
- 5. Coordination among aid agencies
- 6. Continuity of responsibility for project delivery
- 7. Needs assessment
- 8. Project planning
- 9. Transport strategy context
- 13. Project business case
- 15. Climate change adaptation in project design
- 16. Land acquisition
- 25. Transfer of assets to private companies
- 31. Performance related maintenance contracts

Webpage 3

Sources of Guidance

Topic #40 Supervision.**Linkages**

Life Cycle Stage
Design; Procurement and Negotiation
Core Sustainability Principle
Institutional capacity; balancing the roles & responsibilities of the public & private sector
ORAF Category
3.1 Capacity risk; 3.3 Fraud and corruption risk; 4.4 Delivery quality risk
Risk to Development Outcome Criteria
Institutional support; Government ownership/commitment; Other stakeholder ownership

Webpage 1

Topic #40	
Supervision.	
Potential Impacts	
<p>Inadequate supervision of works could result in:</p> <ul style="list-style-type: none"> • Project failure due to poor construction and maintenance. • Higher costs. • Health and safety risks to workers and users. • Risks to the environment. • The need for legal redress. 	
How to address the potential impacts	
Solution	Ensure appropriate levels of supervision.
Techniques	<ul style="list-style-type: none"> • Ensure TTL supervision of the project throughout, following World Bank procedures. • Ensure local project supervisors are fully trained and given clear guidance on their roles and responsibilities. • Introduce implementation supervision reports to monitor progress. • Introduce output and performance based contracts. • Ensure environmental mitigation measures are being complied with during construction. • Prepare a schedule for reporting and supervision visits by the World Bank, at least twice a year. • Employ design and supervision consultants for projects. • Assess and where necessary help to improve the technical capacity of local public/private institutions.
Who	World Bank in association with the client government.
When	During the design and procurement and negotiation stages. Then throughout the life of the project.

Webpage 2

Link to Core Principle(s)
Institutional capacity ; balancing the roles & responsibilities of the public & private sector
Case Study Example(s)

Road Sector Development Project

Ethiopia
P000755

<http://go.worldbank.org/89460JJJB0>

Projects should ensure that environmental mitigation measures are being complied with during construction and this will require supervision.

Road Maintenance and Development

Nepal
P045052

<http://go.worldbank.org/GFESOYSNG0>

The Government employs design and supervision consultants for projects.

Railway Concession Project

Cameroon
P054786

<http://go.worldbank.org/RONXY92L50>

The World Bank undertook regular supervision missions which were followed by detailed aide-memoires and Implementation Supervision Reports (ISRs) which were extensive, and highlighted key issues providing prompt information to the client and the World Bank management. The quality of supervision was further enhanced by good cooperation between the World Bank team and the Government.

Airport Development

Egypt
P082914

<http://go.worldbank.org/WES5XZTHT0>

Financial management aspects were closely supervised by the World Bank Financial Specialist of the project team who in addition to participating in supervision missions, reviewed the financial sections of the quarterly progress reports and analysed the annual audit reports. Management contracts are an effective PPP model to foster the modernization of economically viable public entities, enhance operational and financial performance, and transfer know-how, especially when private partners are competitively selected at an early stage, on the basis of well prepared bidding documents.

Second Inland Waterways Project

China
P003619

<http://www.worldbank.org/projects/documents/2007/06/8139299/china-second-inland-waterways-project>

Timely, consistent, and well-resourced supervision is necessary for effective project implementation and for client relationships and to understand and resolve issues that always emerge in a project.

Federal Highway Maintenance Project

Mexico
P065779

<http://go.worldbank.org/41K15FH4E0>

The adoption of new concepts and technologies is very demanding in terms of data and human resources, therefore supervision of innovative project components must be frequent and adequately resourced with experienced staff.

Sumatra Regional Roads

Indonesia

P003993

<http://go.worldbank.org/UXNMQHY2T0>

Independence of construction supervision engineers is essential for high quality works. The supervision system should empower the supervision engineer to refuse work and withhold payment.

Road Sector Development Program

Ghana

P050623

<http://go.worldbank.org/WDMKHXY0R0>

Supervision and monitoring of works, especially for rural roads that are small in financial terms but spread over large areas, proves difficult. Output and Performance Based Road Contracts can be used. The preparation, and implementation, of safeguards requires extensive training and close supervision, especially for the first time. A detailed monitoring, and evaluation, system is critical for effective supervision and to adapt the project to address specific needs during implementation.

Gujarat State Highway Project

India

P010566

<http://go.worldbank.org/RKOGOTFPP1>

Strong coordination between financing partners can bring added value to project design and supervision and promote learning, besides making procurement and other procedures more efficient.

Guangxi Highway

China

P058843

<http://www.worldbank.org/projects/documents/2007/12/9349540/china-guangxi-highway-project>

An up-front cash deposit by the contractors strengthens the likelihood that environmental safeguard measures contained in civil works contracts will be carefully executed.

Other Related Topics

2. Roles and responsibilities of the client government and project stakeholders
3. Knowledge of local laws and regulations
5. Coordination among aid agencies
6. Continuity of responsibility for project delivery
8. Project planning
19. Technical capacity and capability
20. Appropriate design
23. Stakeholder engagement
24. Community involvement
25. Transfer of assets to private companies
27. Private sector involvement
31. Performance related maintenance contracts
33. Terms of Reference (ToR) for sub-contractors and consultants
42. Corruption
48. Project flexibility

Webpage 3

Sources of Guidance

Operational Policy 13.05 – Project Supervision [World Bank]

<http://go.worldbank.org/UFL0PSUG20>

Bank Procedures 13.05 – Project Supervision [World Bank]

<http://go.worldbank.org/ICDORKUFH0>

Topic #41 Exchange rate risks.**Linkages**

Life Cycle Stage
Procurement and Negotiation
Core Sustainability Principle
Financial sustainability & economic viability
ORAF Category
2.1 Country risks
Risk to Development Outcome Criteria
Economic; Financial

Webpage 1

Topic #41	
Exchange rate risks.	
Potential Impacts	
Fluctuating exchange rates could result in: <ul style="list-style-type: none"> • Higher costs of inputs from overseas, i.e. raw materials, expert advice. • Delays to implementation. • The withdrawal of private sector partners. 	
How to address the potential impacts	
Solution	Review the potential impacts of exchange rate fluctuations on the planning and implementation of the project and mitigate the risks.
Techniques	<ul style="list-style-type: none"> • Consider providing one time transfer funding. • Consider using forward hedging to reduce the exchange rate risk, although this can be expensive. • Consider the use of counterpart funds.
Who	World Bank, in association with the client government.
When	Procurement and negotiation and throughout project.

Webpage 2

Description of Link to Core Principle(s)
Financial sustainability & economic viability
Case Study Example(s)
Salvador Urban Transport Project Brazil P048869 http://go.worldbank.org/A56ASN1G60 In mixed-currency agreements, such as the one in this project where the suburban train concession had its investment priced in dollars and its revenue in local currency, it is important that the risk of major devaluation is mitigated through the provision of one-time transfers from the government. Local currency appreciation should be mitigated by having the concessionaire reduce fares or transfer the windfall profit back to the owner.

Other Related Topics
19. Technical capacity and capability 27. Private sector involvement 29. Large projects 30. Uncertain project costs 35. Loan formats 36. Time-bound covenants

Webpage 3

Sources of Guidance
Risk Management Guide [Asian Development Bank, 2005] http://www.adb.org/Projects/TradeFacilitation/Documents/Publications-RiskManagementGuide-ENG.pdf

Topic #42 Corruption.**Linkages**

Life Cycle Stage
Identification; Pre-feasibility; Feasibility; Design; Procurement and Negotiation
Core Sustainability Principle
Political support; institutional capacity; embedment; financial sustainability & economic viability; stakeholder engagement & social acceptance; balancing the roles & responsibilities of the public & private sector
ORAF Category
2.2 Institutional risk; 3.3 Fraud and corruption risks
Risk to Development Outcome Criteria
Political; Government ownership/commitment; Institutional support; Governance

Webpage 1

Topic #42	
Corruption.	
Potential Impacts	
<p>Corruption by politicians, officials and/or contractors could result in:</p> <ul style="list-style-type: none"> • Investment not being spent where intended. • Higher than necessary project costs. • Poor quality construction. • Delays to the project. • Project objectives not being achieved. • Adverse impacts on those reliant on public services. 	
How to address the potential impacts	
Solution	Identify the main opportunities for corruption and take measures to avoid or minimise the risk.
Techniques	<ul style="list-style-type: none"> • Carry out corruption risk assessment for the project to identify the potential risks. • Review governance and functional structures in ministries and agencies providing advice for improvements. • Ensure that all budgets, expenditures and their purposes are published and available for audit. • Benchmark infrastructure project costs with other similar projects in the country and in the region and obtain explanations for significant variations of project costs (e.g. cost/km for roadworks) from averages. • Limit individual expenditures to manageable amounts. • Develop an ethics code, prohibitions on and disclosure of conflicts of interest, including the receipt of gifts and other benefits received, asset declaration laws, procurement laws and financing laws are amongst the most prominent ones. • Consider the introduction of "Integrity Pacts" whereby all parties agree on a set of rules and procedures in relation to business practices and the avoidance of corruption for the project. • Formulate and promote action plans to fight corruption, e.g. seminars, conferences, and workshops are effective ways of publicizing

	<p>information about the patterns and severity of corruption, building coalitions amongst anticorruption champions and developing action plans.</p> <ul style="list-style-type: none"> • Monitor governments' actions and decisions relevant to the project e.g. privatization plans, procurement reforms, public expenditure tracking, election monitoring and legal reforms. • Develop low-cost methods of dispute resolution. • Introduce bright-line rules³ which are easy to understand and apply but come at the cost of reduced flexibility e.g. ban the hiring of relatives or friends regardless of qualification; ban receiving any gift in excess of a small set value or a mandatory declaration of assets. • Institute meritocratic systems for appointment, promotion, and performance evaluation. • Require all bidders for services or works under the project to include in their proposals details of their anticorruption policies and procedures. • Ensure full budget coverage and control by reducing the diversion of resources into off-budget accounts that typically lack oversight and transparency e.g. extra-budgetary funds and contingent liabilities stemming from non-transparent off-budget commitments. • Ensure that independent external audits are carried out. • Initiate periodic user surveys of service delivery, publish findings, and rank public entities according to their efficiency, integrity, and adherence to service standards. • Establish a telephone hotline for people to report suspicions of corrupt practices and abuses of power and take any necessary remedial action.
Who	World Bank along with client government.
When	Throughout the project.

Webpage 2

Link to Core Principle (i.e. evidence of problem)

[Political support](#); [institutional capacity](#); [embedment](#); [financial sustainability & economic viability](#); [stakeholder engagement & social acceptance](#); [balancing the roles & responsibilities of the public & private sector](#)

Case Study Example (i.e. evidence of problem)

Dhaka Urban Transport Project

Bangladesh

P009524

<http://go.worldbank.org/81YLF0D7C0>

In an effort to insulate the Dhaka City Corporation project unit from corruption, the Project placed it outside the mainstream institutions.

Other Related Topics

2. Roles and responsibilities of the client government and project stakeholders
3. Knowledge of local laws and regulations
4. Policy differences between the World Bank and the client government
5. Coordination among aid agencies
6. Continuity of responsibility for project delivery

³ A bright-line rule (or bright-line test) is a clearly defined rule or standard, generally used in law, composed of objective factors, which leaves little or no room for varying interpretation

8. Project planning
10. Complex projects
13. Project business case
14. Environmental and social factors
16. Land acquisition
18. Institutional change
19. Technical capacity and capability
22. Materials
25. Transfer of assets to private companies
26. Public-private partnerships (PPPs)
27. Private sector involvement
29. Large projects
30. Uncertain project costs
31. Performance related maintenance contracts
32. Large number of sub-contracts
38. Procurement procedures
40. Supervision

Webpage 3

Sources of Guidance

Overview of Anticorruption [World Bank]

<http://web.worldbank.org/WBSITE/EXTERNAL/TOPICS/EXTPUBLICSECTORANDGOVERNANCE/EXTANTICORRUPTION/0,,menuPK:384461~pagePK:149018~piPK:149093~theSitePK:384455,00.html>

Project Anti-Corruption System (PACS)

http://www.giaccentre.org/project_anti_corruption_system_home.php

Construction Sector Transparency Initiative (CoST)

<http://www.constructiontransparency.org/>

Governance And Anti-Corruption - Project Preparation: Good Practices For Financial Management Specialists [World Bank, 2009]

http://siteresources.worldbank.org/EXTGOVANTICORR/Resources/3035863-1281627136986/GAC_ProjectPreparation_GoodPracticesforFMSpecialists_6509.pdf

Making Inroads on Corruption in the Transport Sector through Control and Prevention [Paterson and Chaudhuri in the Many Faces of Corruption, World Bank, 2007]

Preventing Corruption on Construction Projects [Transparency International]

http://www.transparency.org./tools/contracting/construction_projects

Integrity Pacts [Transparency International]

http://www.transparency.org/global_priorities/public_contracting/integrity_pacts

Anti-corruption Resources [UK Anti-Corruption Forum]

http://www.anticorruptionforum.org.uk/acf/pages/acf_resources.php

Monitoring Road Works Contracts and Units Costs for Enhanced Governance in Sub-Saharan Africa. World Bank Transport Paper No. TP-21

http://www-esd.worldbank.org/psc_resource_guide/Docs-latest%20edition/PBC/trn_27_PBC_Eng_final_2005.pdf

Topic #43 In country conflict.**Linkages**

Life Cycle Stage
Identification; Pre-feasibility; Feasibility; Design; Procurement and Negotiation
Core Sustainability Principle
Institutional capacity; political support
ORAF Category
2.1 Country risk
Risk to Development Outcome Criteria
Political

Webpage 1

Topic #43	
In country conflict.	
Potential Impacts	
<p>Delays to a project caused by conflict in country could result:</p> <ul style="list-style-type: none"> • Project failure due to a lack of flexibility in adapting to changing circumstances. • Overspend versus budget. • Loss of focus on key objectives. • Project delays. • Loss of key personnel. 	
How to address the potential impacts	
Solution	Redesign the project, or have an alternative plan, to maximise the local benefits, as far as possible, but in a different way.
Techniques	<ul style="list-style-type: none"> • Undertake a review of the hostilities: are they temporary or likely to be long-lasting? • Redesign the project to avoid operations in areas of conflict. • Identify possible changes to the project e.g. emphasising maintenance of existing infrastructure rather than constructing new facilities. • Negotiation with all parties to verify the necessity of the project. • Use the World Bank fast track procedure for project preparation in conflict-affected countries. • Employ local consultants and contractors, who can negotiate with conflicting parties. • Consider using labour based approaches. Possibly providing payment in food, in association with other organisations such as the World Food Programme.
Who	World Bank in association with the client government.
When	At the feasibility stage with on-going monitoring.

Webpage 2

Link to Core Principle(s)
Institutional capacity ; political support
Case Study Example(s)

National Emergency Employment Program For Rural Access

Afghanistan

P082472

<http://go.worldbank.org/N30H3P25S0>

This showed the importance of understanding the client and the context of the project. It also showed that simple projects succeed in post-conflict areas and that fast track project procedures should apply until completion.

Transport Technical Assistance Project

Algeria

P072458

<http://go.worldbank.org/3A68LKG70>

This project indicates the need for care when designing programmes in turbulent environments.

Road Maintenance and Development Project

Nepal

P045052

<http://go.worldbank.org/GFESOYSNG0>

This highlights that in conflict-affected areas projects should have a flexible design and implementation plan and the project team should be allowed leeway without undue process burden to redefine project components, as long as the project objectives do not change. The project also indicates that local consultants and contractors are more effective than foreign entities in conflict areas.

Other Related Topics

1. Understanding the client government's needs
2. Roles and responsibilities of the client government and project stakeholders
5. Coordination among aid agencies
7. Needs assessment
8. Project planning
14. Environmental and social factors
19. Technical capacity and capability
23. Stakeholder engagement
24. Community involvement
30. Uncertain project costs
40. Supervision
46. Access to rural areas
48. Project flexibility

Webpage 3

Sources of Guidance

Operational Policy 2.30 – Development Cooperation and Conflict [World Bank]

<http://go.worldbank.org/JX30IRUFL0>

Bank Procedures 2.30 – Development Cooperation and Conflict [World Bank]

<http://go.worldbank.org/TJOAF2GSF0>

Operational Policy 7.60 – Projects in Disputed Areas [World Bank]

<http://go.worldbank.org/P4TDHAUEK1>

Bank Procedures 7.60 – Projects in Disputed Areas [World Bank]

<http://go.worldbank.org/AUPI7UI00>

Risk Management Guide [Asian Development Bank, 2005]

<http://www.adb.org/Projects/TradeFacilitation/Documents/Publications->

[RiskManagementGuide-ENG.pdf](#)

Topic #44 Natural disasters.**Linkages**

Life Cycle Stage
Identification; Design
Core Sustainability Principle
Technological appropriateness; adaptation to climate change
ORAF Category
2.1 Country risk
Risk to Development Outcome Criteria
Natural disasters exposure

Webpage 1

Topic #44	
Natural disasters.	
Potential Impacts	
<p>If infrastructure is unexpectedly damaged, e.g. due to natural disaster, this could result in:</p> <ul style="list-style-type: none"> • Project delays. • Increases in costs due to the need to repair damaged infrastructure. • Cancellation of investments due to the need to change priorities. 	
How to address the potential impacts	
Solution	Take action to repair existing infrastructure or develop an alternative solution.
Techniques	<ul style="list-style-type: none"> • Assessment of damage should take place as soon as possible. • Undertake emergency repairs to prevent damage worsening. • Undertake permanent repairs, rebuild or develop another alternative, e.g. using different methods materials or a different route. • Undertake a risk assessment of vulnerability to future damage from natural disasters.
Who	World Bank, client government and engineers should collaborate as quickly as possible.
When	As soon as possible after the damage occurs.

Webpage 2

Link to Core Principle(s)
Technological appropriateness ; adaptation to climate change
Case Study Example(s)
<p>Road Reconstruction And Improvement Honduras P057538 http://go.worldbank.org/OZQ1OUGHBO</p> <p>This project showed that the reconstruction of the infrastructure damaged by hurricanes is imperative.</p>

Other Related Topics

1. Understanding the client government's needs
2. Roles and responsibilities of the client government and project stakeholders
5. Coordination among aid agencies
7. Needs assessment
8. Project planning
14. Environmental and social factors
15. Climate change adaptation in project design
19. Technical capacity and capability
20. Appropriate design
22. Materials
23. Stakeholder engagement
24. Community involvement
28. Maintenance funding
30. Uncertain project costs
40. Supervision
46. Access to rural areas
48. Project flexibility

Webpage 3

Sources of Guidance

Operational Policy 8.00 - Rapid Response to Crises and Emergencies

<http://go.worldbank.org/54R3G3UES0>

Bank Procedures 8.00 - Rapid Response to Crises and Emergencies

<http://go.worldbank.org/GCWAAQRAK0>

Disaster Risk Management: Webpage [World Bank]

<http://go.worldbank.org/BCQUXRROW0>

Risk Management Guide [Asian Development Bank, 2005]

<http://www.adb.org/Projects/TradeFacilitation/Documents/Publications-RiskManagementGuide-ENG.pdf>

Topic #45 Contractual methods.**Linkages**

Life Cycle Stage
Procurement and negotiation
Core Sustainability Principle
Institutional capacity; balancing the roles & responsibilities of the public & private sector
ORAF Category
3.1 Capacity risk; 4.4 Delivery quality risk
Risk to Development Outcome Criteria
Governance; Institutional support

Webpage 1

Topic #45	
Contractual methods.	
Potential Impacts	
<p>Use of an inappropriate contractual method could result in:</p> <ul style="list-style-type: none"> • Misunderstandings of roles and responsibilities. • Delays to implementation. • Cost over-runs. • Poor value for money. • Conflicts between sub-contractors/stakeholders. • Legal actions. • Poor quality of construction/maintenance (i.e. if performance related contracts are not used). 	
How to address the potential impacts	
Solution	Ensure contracts are robust and appropriate for the type of the facility and the legal institutions of the client country etc.
Techniques	<ul style="list-style-type: none"> • Introduce output and performance related contracts. • Hold pre-bid meetings to ensure all potential contractors and other service providers fully understand the terms of the proposed contract. • Undertake a risk assessment of the proposed contract before signature. • Ensure contracts are reviewed independently. • The contract should specify: roles and responsibilities, costs, timescales for delivery (with intermediary deadlines), materials to be used and methods to be used etc. • If appropriate apply fixed cost contracts. • Clarify how risks such as exchange rate variations and significant construction materials costs changes will be shared between the Client and the contractor. • Consider engaging a "Dispute Resolution Expert" for large or complex infrastructure contracts. • Introduce systems to ensure timely payment of contractors' and consultants' invoices. • Hold regular monthly site meetings during construction.
Who	World Bank and the client government.

When	At procurement and negotiation.
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Webpage 2**Link to Core Principle(s)**

[Institutional capacity](#); [balancing the roles & responsibilities of the public & private sector](#)

Case Study Example(s)**Road Maintenance and Development Project**

Nepal

P000755

<http://go.worldbank.org/89460JJJB0>

The contracts for this project defined maintenance requirements (both routine and periodic) but excluded reconstruction and rehabilitation needs. Thus while basic maintenance could be secured more significant engineering requirements were excluded.

Airports Development Project

Egypt

P082914

<http://go.worldbank.org/WES5XZTHT0>

Management contracts are an effective Public-Private Partnership (PPP) model to foster the modernization of economically viable public entities, enhance operational and financial performance, and transfer know-how, especially when private partners are competitively selected at an early stage, on the basis of well prepared bidding documents. For airport terminal construction projects involving integrated facilities, it would be preferable for a single contractor to carry out the works and equipment supply including the IT system.

Road Sector Development Program

Ethiopia

P000755

<http://go.worldbank.org/89460JJJB0>

In a large infrastructure program contract administration is key and the use of Dispute Resolution Experts can yield significant benefits such as avoiding high arbitration costs. Borrower capacity needs to be enhanced to enable proactive and effective contract administration. This will ensure improved contractor performance in future contracts.

Gujarat State Highway Project

India

P010566

<http://go.worldbank.org/RKOGOTFPP1>

Within this project strong and cooperative contract management ensured good, cost-effective results. The key changes and improvements that affected the cooperation between the contractual parties were:

- Mandatory Monthly Meetings with the Contractor and the Engineer;
- Timely payments to the Contractors; and
- Timely redress of contract disputes, including an active encouragement of dispute prevention, and 'across-the table' resolution culture.

National Transport Program Support Project

Chad

P035672

<http://go.worldbank.org/QPZ3VPJMW0>

Continuous and close monitoring of the execution of contracts is essential for achieving a

faster construction rate.

Other Related Topics

- 2. Roles and responsibilities of the client government and project stakeholders
- 3. Knowledge of local laws and regulations
- 6. Continuity of responsibility for project delivery
- 8. Project planning
- 19. Technical capacity and capability
- 26. Public-private partnerships (PPPs)
- 27. Private sector involvement
- 31. Performance related maintenance contracts
- 32. Large number of sub-contracts
- 33. Terms of Reference (ToR) for sub-contractors and consultants
- 34. Multi-year contracts
- 36. Time-bound covenants
- 37. Procurement documents
- 38. Procurement procedures
- 42. Corruption
- 48. Project flexibility

Webpage 3

Sources of Guidance

World Bank Standard Bidding Documents

<http://web.worldbank.org/WBSITE/EXTERNAL/PROJECTS/PROCUREMENT/>

Performance Based Contracting – TOR, Bidding Documents and sample Contract Documents [World Bank]

http://www-esd.worldbank.org/psc_resource_guide/documents.htm

FIDIC (International Federation of Consulting Engineers) international contract documents for the engineering industries.

<http://www1.fidic.org/resources/default.asp#contracts>

Topic #46 Access to rural areas.**Linkages**

Life Cycle Stage
Identification
Core Sustainability Principle
Technological appropriateness; stakeholder engagement & social acceptance
ORAF Category
4.2 Social and environmental risks
Risk to Development Outcome Criteria
Technical; Social

Webpage 1

Topic #46	
Access to rural areas.	
Potential Impacts	
Poor access to rural areas could result in: <ul style="list-style-type: none"> • Lack of economic and social development. • Inequalities. • National security problems. 	
How to address the potential impacts	
Solution	Transport strategies should prioritise those rural regions where improved access will be most effective in generating economic development.
Techniques	<ul style="list-style-type: none"> • Ensure that there is a transport strategy in place which gives appropriate priority to accessing rural areas. • Ensure maximum coverage of basic access to communities via a spot improvement approach. • The World Bank, the client government and experts need to co-ordinate to determine the most effective solution and the highest priority locations for implementation. • Identify simple, cost-effective solutions. • World Bank, client government and other stakeholders should meet to discuss the costs and benefits of projects. • Involve the local community in developing transport strategies and determining their priorities.
Who	World Bank, in association with the client government.
When	Problem identification, feasibility and project design.

Webpage 2

Link to Core Principle(s)
Technological appropriateness ; stakeholder engagement & social acceptance
Case Study Example(s)
Rural & Main Roads Guatemala P035737

<http://go.worldbank.org/163245UN50>

This project showed that rural roads projects need to be realistic in balancing expected poverty impacts and investment sustainability. It also showed that project sustainability is determined by beneficiaries' participation in project design and implementation, and financing of maintenance activities, which is the single most important challenge in the rural roads.

Second Rural Roads Project

Peru

P044601

<http://go.worldbank.org/YD1GGPFPO>

This project indicates that simple improvements like non-motorised transport tracks can represent a major improvement for most rural communities and be sufficient to relieve bottlenecks to some income-generating activities.

Other Related Topics

1. Understanding of client government's needs
2. Roles and responsibilities of the client government and project stakeholders
4. Policy differences between the World Bank and the client
5. Coordination among aid agencies
7. Needs assessment
9. Transport strategy context
13. Project business case
14. Environmental and social factors
15. Climate change adaptation in project design
16. Land acquisition
19. Technical capacity and capability
20. Appropriate design
22. Materials
24. Community involvement
25. Transfer of assets to private companies
40. Supervision
43. In country conflict
44. Natural disasters

Webpage 3

Sources of Guidance

Toolkit for Promoting Sustainability of Rural Transport Infrastructure [IFRTD]

<http://www.ifrtd.org/new/proj/infrast.php>

Overseas Road Note 20 – Management of rural road networks [TRL and DFID, 2003]

http://www.transport-links.org/transport_links/filearea/publications/1_808_ORN20.pdf

Design & Appraisal of Rural Transport Infrastructure: Ensuring Basic Access for Rural Communities, World Bank Technical Paper no. 496

<http://www4.worldbank.org/afr/ssatp/Resources/WorldBank-TechnicalPapers/TP496/tp496.pdf>

Implementing the Rural Access Programme Nepal, Evaluation Paper 1 Assessment of Rural Transport Impacts in Nepal, 1950 – 2000, July 2002, DfID

Topic #47 Road safety.**Linkages**

Life Cycle Stage
Design
Core Sustainability Principle
Technological appropriateness; stakeholder engagement & social acceptance
ORAF Category
4.2 Social and environmental risks
Risk to Development Outcome Criteria
Technical; Social

Webpage 1

Topic #47	
Road safety.	
Potential Impacts	
<p>Failure to address transport safety could result in:</p> <ul style="list-style-type: none"> Increased deaths and injuries for road users and those living in communities close to the road. Increased direct costs: emergency response; repairs to highway; medical care; insurance; legal costs; congestion etc. Wider socio-economic costs: reduced economic outputs of victims; pain grief and suffering; impact on wider families etc. Typically road safety crashes cost countries between 1% and 3% of GDP. Reduced community support for the project. 	
How to address the potential impacts	
Solution	Ensure that road safety issues are addressed throughout the project.
Techniques	<ul style="list-style-type: none"> Undertake a road safety review at project identification stage to: <ul style="list-style-type: none"> Facilitate the avoidance of common issues such as community severance (e.g. where a major road splits a community in two, often amenities one side and housing on the other) and the road safety issues that arise (e.g. travel between housing and school requires children to cross or walk along high speed roads). Anticipate modal shift and the safety issues that might arise. Undertake a Road Safety Impact Assessment (RSIA) to: <ul style="list-style-type: none"> Estimate the potential safety impact of different options or the safety benefits expected from road safety measures. Estimate the financial implications of changes in collisions using cost-benefit analysis, comparing the net cost of injuries against the net cost of works. Undertake Road Safety Audits (RSAs) and put in place contractual requirements for sign off before progression to next stage of project is permitted. <ul style="list-style-type: none"> A RSA is an independent evaluation of a highway scheme by road safety experts to identify potential road safety problems that may affect any users of the highway.

	<ul style="list-style-type: none"> ○ RSAs are intended to identify road safety concerns early in the life of a project and to make sure that any problems are identified and addressed both before the works are actually implemented and also post construction. ○ Designs should be revised according to the recommendations of the RSA report before progression to the next stage of the project is permitted. ○ RSAs can be undertaken at 5 stages in a project: <ul style="list-style-type: none"> ▪ Stage F - Feasibility stage audit ▪ Stage 1 - Preliminary design ▪ Stage 2 - Detailed design ▪ Stage 3 - Pre-opening/completion of construction ▪ Stage 4 – Monitoring at 12 and 36 months post construction ○ For very minor schemes some stages can be combined or omitted. For medium to large scale schemes RSA should be completed at all stages. ○ With respect to the stages of the project lifecycle of interest in this toolkit, the following RSAs should be undertaken: <ul style="list-style-type: none"> ▪ Feasibility – Stage F ▪ Preliminary design – Stage 1 ▪ Detailed design – Stage 2 ○ Contracts should ensure that Stage 3 and Stage 4 audits are also undertaken post construction and after opening. ○ Ensure that the RSA team is independent of the design team. ○ Set criteria for acceptable levels of qualification and experience of Road Safety Auditors and include in contracts. ○ RSAs should be undertaken in teams and should include as a minimum a RSA Team Leader and RSA Team Member. Each position in the audit team should be specified in terms of level of experience required. <ul style="list-style-type: none"> • Include on-going safety requirements in contracts. <ul style="list-style-type: none"> ○ Increase the road safety reporting and safety requirements in contracts. ○ Specify a standard set of requirements to be included in contracts. Where these are not complied with, there should be scope for applying penalties and ensuring that any poor performance is rectified. ○ These may include: <ul style="list-style-type: none"> ▪ Compliance with highway design standards ▪ Compliance with standards for road works ▪ Specification of crash database systems and crash report format to be used once the road is open ▪ Specification of other data that must be collected (e.g. traffic flows) ▪ Specification of minimum safety performance standards (e.g. crash rate per vehicle km travelled) ▪ Safety key performance indicators (e.g. vehicle speeds, seatbelt wearing etc.) ▪ Stage 3 and 4 RSAs ▪ Routine periodic maintenance inspections (to check for condition of safety barriers, road surface, drainage, vegetation growth etc).
Who	World Bank and client government should commission experienced road safety consultants to undertake the road safety review, RSIA and RSA.

When	<p>A road safety review during the project identification stage.</p> <p>The RSIA should be undertaken during the pre-feasibility and feasibility stages.</p> <p>RSAs can be undertaken at 5 stages in a project (as outlined above).</p> <p>The on-going safety requirements should be considered during the procurement and negotiation stages.</p>
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Webpage 2

Link to Core Principle(s)
Technological appropriateness ; stakeholder engagement & social acceptance
Case Study Example (s)
None
Other Related Topics
<ol style="list-style-type: none"> 1. Understanding of client government's needs 2. Roles and responsibilities of the client government and project stakeholders 3. Knowledge of local laws and regulations 5. Coordination among aid agencies 7. Needs assessment 9. Transport strategy context 19. Technical capacity and capability 20. Appropriate design 22. Materials 24. Community involvement 28. Maintenance funding 31. Performance related maintenance contracts 40. Supervision 43. In country conflict 44. Natural disasters

Webpage 3

Sources of Guidance
<p>General:</p> <p>iRAP toolkit has guidance on road safety engineering and treatments: http://toolkit.irap.org/</p> <p>TRL's "Towards safer roads in developing countries". Available at http://www.transport-links.org/transport_links/filearea/publications/1_826_TSR%20in%20Dev%20Countries.pdf</p> <p>Guidelines for Estimating the Cost of Road Crashes in Developing countries (2003). Available at http://www.transport-links.org/transport_links/filearea/publications/1_807_R%207780.PDF</p> <p>A Quimby, B Hills, C Baguley and J Fletcher (2003). Urban Safety Management: Guidelines for Developing Countries. TRL Report PR/INT/254/2003. http://www.transport-links.org/transport_links/filearea/documentstore/104_USMv2%20Full.PDF</p> <p>Case notes main report. Available at: http://www.transport-links.org/transport_links/filearea/documentstore/103_Final%20Report.pdf</p> <p>Case note on Vulnerable Road Users. Available at:</p>

<http://www.grsproadsafety.org/themes/default/pdfs/Vulnerable%20Road%20Users.pdf>

Case note on Roadside, Village and Ribbon Development. Available at:

<http://www.grsproadsafety.org/themes/default/pdfs/Roadside,%20Village%20and%20Ribbon%20Development.pdf>

Case note on Horizontal Curves. Available at:

<http://www.grsproadsafety.org/themes/default/pdfs/Horizontal%20Curves.pdf>

Case note on Surface Water Drainage Channels. Available at:

<http://www.grsproadsafety.org/themes/default/pdfs/Surface%20Water%20Drainage%20Channels.pdf>

RSA guidelines:

NRA HD 19/09, "Road Safety Audit" (2009), National Roads Authority, Ireland.

"FHWA Road Safety Audit Guidelines" (2006), Federal Highway Administration, USA.

HD 19/03, "Road Safety Audit" (2003), DMRB, Volume 5, Section 2, Department for Transport, UK.

The Canadian Road Safety Audit Guide (2001), Transportation Association of Canada, Canada.

Topic #48 Project flexibility.**Linkages**

Life Cycle Stage
Identification; Pre-feasibility; Feasibility; Design; Procurement and Negotiation
Core Sustainability Principle
Financial sustainability & economic viability; technological appropriateness
ORAF Category
4.1 Design risk
Risk to Development Outcome Criteria
Technical; Financial

Webpage 1

Topic #48	
Project flexibility.	
Potential Impacts	
A lack of flexibility within the project could result in: <ul style="list-style-type: none"> • Inappropriate investments. • High completion costs. • Failure to achieve project objectives. 	
How to address the potential impacts	
Solution	Ensure projects have built in flexibility in relation to, for example, timings, finances and resources etc.
Techniques	<ul style="list-style-type: none"> • The project plan should be developed in a way that allows for flexibility throughout the project life cycle. • Identify the critical path of the project and potential risks and associated remedial measures. • Identify means of removing constraints on the critical path. • Undertake a risk assessment to identify all potential risks to the project. • Develop methods for combating the risks identified. • Undertake regular monitoring of the project plan and identified risks.
Who	World Bank.
When	Project design and throughout the life of the project.

Webpage 2

Link to Core Principle(s)
Financial sustainability & economic viability ; technological appropriateness
Case Study Example(s)
Bogota Urban Transport Project Columbia P006872 http://go.worldbank.org/55ROQ4Q350 This project suggests that flexibility should be maintained in project design.

Salvador Urban Transport Project

Brazil

P048869

<http://go.worldbank.org/A56ASN1G60>

It is thought that being flexible about revisions to the investment programme saved this project, specifically by de-constructing the metro component into a smaller, operationally coherent sections and another one that could be completed later.

Kyrgyz Urban Transport Project

Kyrgyz Republic

P050719

<http://go.worldbank.org/KIZFSN70F0>

The importance of maintaining flexibility was demonstrated in this project by having a radical change in project design made just one month before the project appraisal. In this case the change was dropping the objective of investing in bus vehicles and the objective of improving the performance of state-owned public transport operators.

Other Related Topics

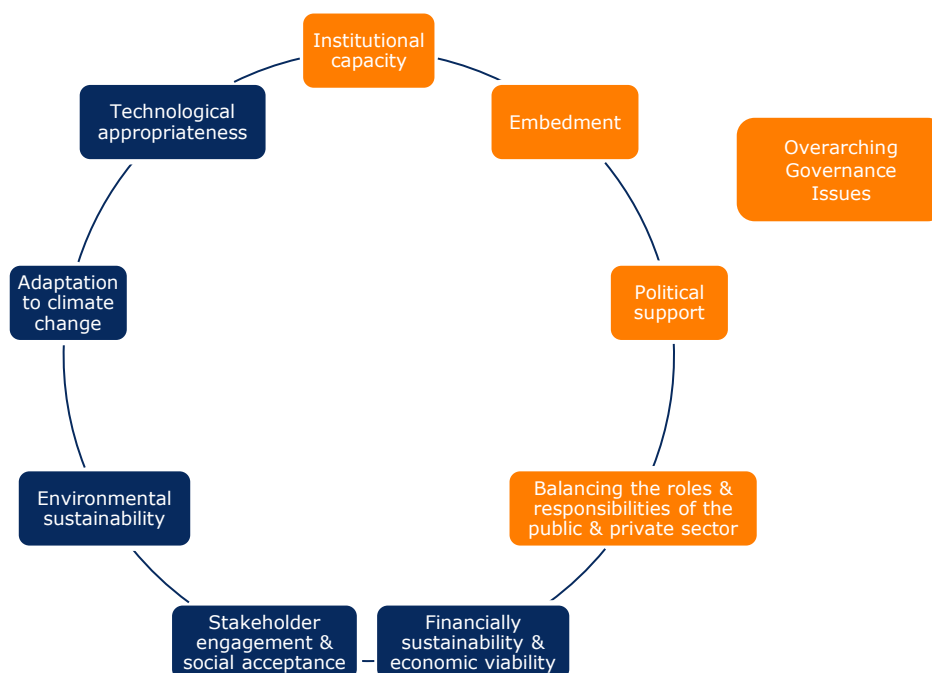
- 3. Knowledge of local laws and regulations
- 4. Policy differences between the World Bank and the client government
- 5. Coordination among aid agencies
- 8. Project planning
- 10. Complex projects
- 13. Project business case
- 14. Environmental and social factors
- 15. Climate change adaptation in project design
- 19. Technical capacity and capability
- 20. Appropriate design
- 22. Materials
- 23. Stakeholder engagement
- 24. Community involvement
- 27. Private sector involvement
- 30. Uncertain project costs
- 43. In country conflict
- 44. Natural disasters

Webpage 3**Sources of Guidance**

None

7 The core sustainability principles

This section describes the nine sustainability principles identified in the literature review. (For the full literature review please click [here](#).) For more information on each of the nine sustainability principles [click on the diagram below](#).



[Each core principle should be on a different webpage.]

7.1 Overarching governance issues

Effective governance, within policies designed to achieve development goals, is integral to ensuring successful transport project implementation and sustainability^{4,5}. Governance covers not only state level institutions but all those organisations where policies and programmes are designed and implemented. It covers those bodies which have responsibility for preparing, signing and monitoring contracts and their compliance, and those agencies responsible for the implementation of projects.

Good governance requires three elements:

- State capacity, i.e. the extent to which leaders and governments are able to get things done, within institutional arrangements.
- Responsiveness, i.e. whether public policies and institutions respond to the needs of citizens and uphold their rights.
- Accountability, i.e. the ability of citizens, civil society and the private sector to scrutinise public institutions and governments and hold them to account⁶.

⁴ Jahan and McCleery, 2005

⁵ IEG, 2007

⁶ DFID, 2006

Improved governance results in:

- Increased resource efficiency, with less waste and corruption;
- Increased service delivery efficiency; and
- Improved transparency and accountability⁷.

Transport projects may be particularly susceptible to corruption due to the high value of contracts, the large number of organisations involved and transactions made, and the wide geographical distribution of project locations, all of which increase the difficulty of introducing effective monitoring and accountability mechanisms⁸. Corruption can take place at any stage of the project, from identification through to operation and maintenance, although the tendering process is particularly at risk. Corruption can result in poor quality projects, for example where the funds to pay bribes are taken from budgets intended for the works, or more expensive projects, where the cost of bribes is incorporated into tenders⁹. (But corruption can also speed work up and ensure activity takes place where otherwise there may be undue blockage and delay.)

Poor project performance may start early in the procurement process by the acceptance of very low cost tenders with the resulting need to recover costs causing contractors to use sub-standard materials¹⁰ or 'short measure'¹¹. It can also be caused by late payments from clients, for example as a result of 'commission seeking', inadequate budgets or bureaucratic procedures.

Clear and transparent project prioritisation and transparent procurement systems are needed to minimise corrupt practices¹². Incentives should not skew choices towards large scale, and technologically sophisticated, projects rather than more appropriate alternatives. Private sector involvement may help reduce corruption, by bringing in more commercial practices. Several international anti-corruption initiatives have also been established to minimise corruption, including the Project Anti-Corruption System (PACS)¹³, and the Construction Sector Transparency Initiative (CoST)¹⁴.

Other recommendations for enhancing accountability and controlling corruption include:

- Establishing a tighter timeframe for contract signing to reduce opportunities for corrupt practices and back-door negotiations;
- Using a selection procedure of post-qualification instead of pre-qualification in bidding for large projects;
- Developing, and keeping up to date, a unit cost database including realistic equipment, finance, materials and labour costing, for planning, design, maintenance and monitoring purposes;

⁷ Jahan and McCleery, 2005

⁸ Lynch *et al*, 2010

⁹ Lynch *et al*, 2010

¹⁰ Hawkins *et al*, 2006

¹¹ Omitted items or reduced dimensions

¹² Barton *et al*, 2002

¹³ http://www.giacentre.org/project_anti_corruption_system_home.php

¹⁴ <http://www.constructiontransparency.org/>

- Creating a system for monitoring and assessing contractors' performance and associated costs which allow for ranking of contractors and consultants;
- Strengthening monitoring of the procurement and implementation processes to enhance detection of risks to integrity.
- Public reporting of contract outcomes and costs.

Independent monitoring mechanisms capable of preventing and identifying corrupt practices need to be introduced at project level¹⁵.

Citizen involvement in planning can foster accountability thereby helping to reduce corruption¹⁶, as can 'watch dog' institutions and 'oversight committees'. Civil society groups should also participate, either by managing their own services or through active monitoring.

7.1.1 Institutional capacity

Project sustainability is dependent on the technical capabilities and resource capacity of public and private sector institutions. Institutional weaknesses are the source of many failures in transport investment in developing countries¹⁷; with transport institutions being typically weak and inadequately staffed. Three key institutional barriers exist¹⁸:

- Transport infrastructure and operations are treated in isolation;
- Responsibilities for different modes of transport are fragmented between different institutions. This requires methods to ensure effective both horizontal and vertical coordination; and
- Responsibilities for infrastructure provision are separate from pricing (i.e. institutions that construct infrastructure are unable to set the price for using that infrastructure).

As a result, transport institutions are following conflicting priorities and making decisions on an ad hoc basis¹⁹. Institutional reform is therefore required although the exact nature of this will vary between countries. Three factors are important:²⁰

- Clarification and realignment of institutional mandates at all geographical levels (local, regional, sub-national, national and global);
- Strengthening of institutional and human resource capabilities within all sectors (governments, civil society, academia and the private sector); and
- Improvement of co-ordination and co-operation between different sectors within, and between, each geographical level.

Institutional reform will typically require restructuring of management, building on existing but effective institutions and, if necessary, creating new institutions²¹. In many cases collaboration is necessary between institutions operating under different incentives

¹⁵ Hawkins *et al*, 2006

¹⁶ Barton *et al*, 2002

¹⁷ World Bank, 2002

¹⁸ World Bank, 2002

¹⁹ Binsted and Dalkmann, 2010

²⁰ Asian Development Bank, 2010

²¹ Jahan and McCleery, 2005

and having no inducement to act in concert²². Governments need support to develop capacity for investment appraisal, for transparent procurement, for bringing in the private sector, for working with users and intermediaries and for regulation to promote competition²³.

Institutional capacity building can be aided through the establishment of Road Funds²⁴, where revenues from road user charges finance road maintenance expenditures²⁵.

Technical Assistance sometimes has limited lasting impacts on strengthening client capacity²⁶. Although support is still required from external expertise to conduct some projects, most developing countries are building the in-house professional expertise required. Nevertheless capacity building through knowledge awareness, exchange and training is essential and greatly strengthens the sustainability prospects.

There is also a need to consider whether the province, district or rural community, where the project is undertaken, has the capacity to plan, resource and undertake maintenance and other work in an effective and sustainable manner and to monitor and evaluate the process of transport development (including investment, construction, maintenance, rehabilitation, etc.) and its impacts on the economy and society²⁷. To ensure success this institutional capacity will need to be considered during planning and if found to be lacking either training or other methods (e.g. involvement of the private sector) for undertaking these processes will need to be implemented.

7.1.2 Embedment

Transport projects, especially those related to the provision of road infrastructure, often involve innovative approaches that have either been developed in-country through research or have been transferred or adapted from research or experience elsewhere. Acceptance of such practices to a degree that it becomes part of a country's accepted approach often takes time. When such practices are fully embedded within institutions they are said to be mainstreamed and are considered to be sustainable.

The systemic resistance to new knowledge and innovation should not be underestimated²⁸. In the past, the process of creation and application of transport knowledge has been strongly supported in the initial steps of the 'knowledge chain': *Research and Compilation* (Figure 1). However, usually insufficient resources and effort have been applied to taking the process through to its embedment and beneficial outcome. Project design must take account of the distinct steps, resources and time required to achieve embedment of new knowledge and innovation.

²² World Bank, 2002

²³ Barton *et al*, 2002

²⁴ http://www.worldbank.org/transport/roads/rd_fnds.htm

²⁵ IEG, 2007

²⁶ IEG, 2007

²⁷ Seddon, 2001

²⁸ Rolt, 2008

Figure 1: Steps in the Knowledge Chain
**Research – Compilation – Dissemination – Acceptance – Adaption
– Pilot/Demonstration – Training – Embedment**

For the sustainable application of research results into actual practice there is a need to embed the results into policy, law or decree, and hence into technical specifications and good practice guidelines that are observed and respected. The last two knowledge depositories are particularly important as the operational framework for the sector practitioners. These need to be credible, appropriate, and achievable, inclusive of all proven options and regularly reviewed to incorporate new knowledge and local experiences. Local mechanisms and resources to facilitate this process are often lacking.

Further there is a need for this research to be reflected in funding decisions, i.e. in the formulation of national and local budgets²⁹. However, it may not always be possible to create the conditions necessary for sustainability as agreements, or understandings, reached with a government institution can be reversed when individual politicians or civil servants move posts or are replaced. In addition, budgeting decisions are generally the subject of intense political debate and are not necessarily always consistent with accepted policies. There is therefore a need for a consistent long term effort with a clear message to ensure that what is currently embedded in government strategies and specifications will be sustained³⁰. Identifying a champion to promote sustainability could help to raise the profile of the issue across government. These concepts of sustainability could also be applied at a project level.

Another issue related to embedment is the need for the projects to be guided by national level long-term transport plans rather than by other means, such as donor organisation's country assessment reports³¹. It is important that the country strategies of donors are in line with national policies and that they have common strategic goals. Social benefits are most likely to be achieved when donors support projects that are in line with development objectives as set out in national strategies and plans.

7.1.3 Political support

Consistent political support across national, regional and local government and ideally across parties and other political groupings is an essential requirement for project sustainability³². The main point of contact for a project is usually with the partner government institution responsible for the sector in which the project is to be undertaken. However, a broader political base for projects across Government departments could reduce the risk of failure due to political change or from competition between ministries. Achieving strong broad support in the Ministry of Finance, as well as the client Ministry (e.g. Transport) is essential for long-term sustainability.

²⁹ Van Gijn and Benjamin, 2009

³⁰ Van Gijn and Benjamin, 2009

³¹ Hawkins *et al*, 2006

³² Pinard and Greening, 2009

Projects are often linked to one person within an institution, who acts as the in-house champion. This arrangement often aids the acceptance, and initiation, of projects and endows some responsibility for driving the initiatives to fruition. However it is high risk in terms of sustainability; project champions can be transferred or lost. They often attain a higher profile than other colleagues and are targets for the private sector and whilst this expertise is not lost to the country, it can render projects susceptible to future failure. It is essential that the responsibilities, training, and management, of projects is based on more than one individual.

Political support is essential when implementing, and subsequently enforcing, controversial (sustainable) transport measures, as (political) decision-makers may be criticised by the press and public, putting successful implementation and project sustainability at risk³³.

Finally, it is important to note that in the long term project sustainability could be at risk from political unrest resulting from civil conflict and poor governance³⁴.

7.1.4 *Balancing the roles and responsibilities of the public and private sector*

Transport infrastructure and service delivery are shared by the public and private sectors. However, the dominance of the public sector has often resulted in several adverse effects: costs have sometimes been high and tariffs have been low, resulting in large public deficits³⁵. Public sector management teams are often given little financial autonomy, nor any real incentives to improve service delivery³⁶. In addition, public sector enterprises are frequently over-staffed, with employees being poorly paid and poorly motivated.

Private operation of transport services can lead to better outcomes, if the markets are competitive (or periodically contestable) and if the regulatory framework protects public interests from misuse or market power³⁷. The public sector can be seen as the custodian of the public interest regulating the private sector as appropriate. To ensure the transport system is safe and clean, regulation is likely to be required regardless of whether the assets are under public or private ownership. Competition between suppliers can lead to greater efficiencies and make transport more affordable. Where appropriate the government can act as a customer to contract for specific, socially required, services.

Transport infrastructure delivery can be contentious. Although state-owned infrastructure services face the ongoing challenge to maintain adequate efficiency incentives, many countries are uncomfortable with fully private ownership or free market operation of transport infrastructure despite the benefits of greater private sector participation in their financing, management and operation³⁸. Particular problems are encountered with the maintenance of rural road networks where a functioning 'market' is difficult to realise, and duplication of scarce resources for supervisory and

³³ Dalkmann and Brannigan, 2007

³⁴ IEG, 2007

³⁵ World Bank, 1996

³⁶ Barton *et al*, 2002

³⁷ World Bank, 2008a

³⁸ World Bank, 2008a

implementation roles over a dispersed network can actually lead to inefficiencies. In such circumstances a participatory arrangement with government, communities and the private sector may provide a workable solution³⁹.

Increased private sector participation in transport infrastructure should help to improve management skills, attract private funding, increase operating efficiency and impose market discipline on project delivery and operations⁴⁰. It also reduces the risk of factors, such as political change, and increases the prospects for project sustainability. Nevertheless there is a need to guard against the profit motive where that may cause loss of service to low ridership areas or times of day. The costs of such obligations need to be built into the cost structure by the private owner/operator.

There are many models for increasing private sector participation in transport, including management contracts, lease contracts, franchises and concessions, or full privatisations⁴¹. The success of these will depend on structures that provide a clear delineation of rights and obligations, including the allocation of commercial and other risks, on transparent competitive procedures for selecting private participants, on the regulatory arrangements that apply, and on the rights of recourse in situations in alleged breaches of agreements. Through contract management and franchising, private operation of state-owned infrastructure is a model increasingly being used, since the risk is seen by the private sector as generally being lower than for full privatisation⁴². Nevertheless under full privatisation the strain on public sector budgets can be reduced. However, effective regulation by government may be required where infrastructure services are both owned, and operated, privately⁴³.

Bringing in the private sector is often politically controversial and it may not be desirable or possible to ensure that all services are provided commercially⁴⁴. Given the likelihood of public sector involvement in transport, particularly in terms of infrastructure, the contribution of transport to development will be influenced by the effectiveness of transport departments, agencies, and enterprises that are publicly owned and operated⁴⁵. Structural reforms of these entities, along with capacity building, may be required to ensure sustained improvements in transport.

State-owned enterprises can face many challenges to sound business management which the private sector can help overcome, including⁴⁶:

- The multiple, changeable and often conflicting pressures of government which can filter down to the management of these enterprises, leading to a lack of clear purpose and weak commitments to specific goals;
- Fluctuating national budgets that can weaken business and investment planning;

³⁹ Ivarsson and Malmberg Calvo, Private-Public Partnership for low volume roads: the Swedish Private Roads Associations, 2003

⁴⁰ World Bank, 2008a

⁴¹ World Bank, 2008a

⁴² Barton *et al*, 2002

⁴³ Barton *et al*, 2002

⁴⁴ Barton *et al*, 2002

⁴⁵ World Bank, 2008a

⁴⁶ World Bank, 2008a

- The public service norms and procedures which can lead to inflexibility;
- The selection of board members and senior managers through political patronage rather than on merit; and
- Lack of an asset management approach, so that avoidance of asset wastage, 'good housekeeping', whole life considerations, cost-effectiveness and rational works prioritisation are not regarded as important management tasks.

Options for improving the efficiency and cost effectiveness of public sector enterprises include:

- Managers need to be motivated and staff should be appropriately paid⁴⁷ with regular review of performance.
- Enterprises need to be operated commercially, generally as a public corporation, recovering the full financial costs of its operations through charges⁴⁸ or with any subsidies subject to regular, independent value-for-money reviews.
- The performance of state-owned enterprises typically requires the separation of the policy and regulatory functions of government from the operational and commercial functions of business management⁴⁹.

Such separation allows for further reforms, including⁵⁰:

- A more professional and independent board of directors;
- Management to be selected on merit;
- Management accountability through short and medium-term business planning targets;
- Business segmentation and concentration on core functions;
- Greater freedom of pricing to reflect actual costs and the market;
- Use of internationally recognised commercial accounting and auditing standards;
- Formal agreements between private enterprises and government for reimbursement of the public service obligations imposed by governments through mandated services or tariff conditions.

There is a potentially significant role for Public-Private Partnerships (PPP) in transport, whereby the private party provides a public service or project and assumes a substantial financial, technical and operational. PPPs can help overcome weak public sector governance. As indicated previously, rural road networks are likely to be less suitable for such arrangements due to the lack of an effective 'market'. In such cases the potential for government-community-private sector arrangements should be investigated.

Country ownership is key to change with a need for adequate understanding and support for it from within the client government.

⁴⁷ Barton *et al*, 2002

⁴⁸ Barton *et al*, 2002

⁴⁹ World Bank, 2008a

⁵⁰ World Bank, 2008a

7.2 Financial sustainability and economic viability

Transport investments generally involve three types of costs: initial once off capital expenditure; ongoing maintenance costs; and operating costs. Loans, grants and revenue, for example from tolls and fares, aim to cover such costs but do not always achieve this so subsidies may be needed.

Funding of infrastructure often becomes financially unsustainable when shortfalls in revenue (e.g. through the under-pricing of infrastructure, poor demand forecasts, low tariffs or the lack of a stable funding source) are combined with excessive expenditure (e.g. through poorly controlled costs, political changes or corruption)⁵¹. Financial sustainability depends on the long-term commitment of funding, and finance therefore must not be one-off or short-term⁵². There is also a need to consider how to deal with major shifts in government policy. Reliable and predictable funding sources are necessary to ensure that costs incurred at every stage of the project, from planning and implementation to governance and monitoring, can be supported⁵³. Three steps will help achieve financial sustainability⁵⁴:

1. Understanding the financing needs for a sustainable system;
2. Understanding the various financing options/mechanisms; and
3. Combining the options/mechanisms effectively.

Starting a project with a sound economic base is fundamental to its sustainability. Projects should continue to be subject to rigorous cost benefit analysis, which covers environmental externalities⁵⁵. International experience indicates that transport systems are most financially sustainable when they reflect the polluter pays principle, with the prices reflecting the full external costs⁵⁶. Using the polluter pays principle⁵⁷ is also beneficial due to its relative financial stability, owing to its future predictability and transparency⁵⁸, although this may be politically unacceptable in some places.

The long term sustainability of projects requires strategies for fund replenishments, adequate funds for operation and management, adoption of financial rules and a framework for financial transparency and accountability⁵⁹. It also requires that capital assets are adequately maintained⁶⁰, as the cost of rehabilitation is usually much higher than the relatively low cost of regular and appropriate maintenance⁶¹. This is often hampered by inadequate budgeting and follow-up of maintenance, which can be

⁵¹ Sakamoto, 2010

⁵² Binsted and Dalkmann, 2010

⁵³ Binsted and Dalkmann, 2010

⁵⁴ Sakamoto, 2010

⁵⁵ World Bank, 1996

⁵⁶ Binsted and Dalkmann, 2010

⁵⁷ Under the polluter pays principle the party responsible for producing pollution is made responsible for paying for the damage done to the natural environment.

⁵⁸ Asian Development Bank, 2010

⁵⁹ Jahan and McCleery, 2005

⁶⁰ World Bank, 1996

⁶¹ O'Neill *et al*, 2010

accentuated when governments defer maintenance during a debt crisis^{62,63} or consistently reallocate maintenance budgets to other uses. In addition, regulated prices are often set at levels which are too low to provide for future maintenance^{64,65}.

Transport infrastructure is an asset with a long life if it is maintained effectively⁶⁶. Conversely, transport infrastructure that is not well maintained can deteriorate rapidly, particularly in harsh climates. The government's custodial role should ensure that the economic value of these assets is protected and preserved. Failure to develop and maintain such policies is usually costly to both users and governments, as a result of the asset's substandard economic, safety and or environmental performance, and premature re-instatement or replacement costs⁶⁷. Assets that are maintained by revenue-earning transport enterprises generate funds that usually contribute some of the resources needed for asset maintenance. However some forms of transport, such as public roads, are treated as public goods and therefore have no direct fee for use.

Maintenance of the public road network needs to be allocated the resources it needs. This will require institutional arrangements that encourage a network management culture; systematic use of asset management tools; innovative technologies that utilise local materials, labour and low cost capital equipment^{68,69}, local SMEs⁷⁰ and communities; effective exploitation of private sector efficiencies through competitively tendered output based maintenance contracts where feasible (although this can be problematic for unpaved rural road networks where rapid/premature deterioration due to traffic, weather or variable materials can involve risks); enforcement of maximum truck loading regulations; and stable long-term financing sources for maintenance and safety⁷¹.

The cost of maintaining overambitious projects frequently imposes unsustainable fiscal burdens⁷². Alternative financing mechanisms for maintenance, such as the establishment of Road Funds⁷³, sometimes known as 'second-generation' funds, alongside institutional reforms designed to bring private sector skills into the road sector have been used in some countries⁷⁴. Some progress is being made where Road Funds have been introduced, with an increase in the percentage of roads in good condition. However, progress varies and although it may have improved the likelihood of sustainability in some countries, the existence of a fund does not mean that it is fully efficient or fully

⁶² World Bank, 1996

⁶³ IEG, 2007

⁶⁴ World Bank, 1996

⁶⁵ IEG, 2007

⁶⁶ World Bank, 2008a

⁶⁷ World Bank, 2008a

⁶⁸ Gongera and Petts, A Tractor and Labour Based Routine Maintenance System for Unpaved Rural Roads, 2nd edition 2003

⁶⁹ Cutler and Petts, Tractor solutions for Rural Roads & Agriculture, 2006

⁷⁰ Small and Medium Enterprises

⁷¹ World Bank, 2008a

⁷² World Bank, 1996

⁷³ http://www.worldbank.org/transport/roads/rd_fnds.htm

⁷⁴ Pinard and Greening, 2009

autonomous⁷⁵. If a road fund is to be successful in helping to fund maintenance there needs to be government commitment to good budget planning and management, off-budget financing and to commercially orientated forms of road management. Road funds should not be contemplated if there is a high risk of corruption. However, regardless of the method used the main objectives should be sound asset and financial management and efficient construction and maintenance operations to ensure the preservation of the asset.

Maintenance funds for low volume roads have traditionally been provided by the central government, but are typically inadequate to meet the minimum requirements for sustainability. As mentioned previously, public-community-private resourcing arrangements should be investigated for these assets.

In order to achieve efficient use of transport assets cost-reflective pricing is essential⁷⁶. There is also an argument for the use of peak pricing for congested facilities and for the use of market based elements to recover those elements of fixed infrastructure costs that cannot clearly be attributed to specific user groups. In practice, most pricing for commercial transport is set at least partly to recover costs and reflect market conditions⁷⁷. Where markets are competitive, or sufficiently contestable, there is a case against government interference in pricing mechanisms; however where market power is more concentrated, regulatory oversight of pricing may be justified⁷⁸.

Government subsidy of transport systems could be considered a legitimate public policy choice, if it is affordable to taxpayers and if mechanisms are in place to deploy the resources in an efficient way. However, maintaining high levels of subsidy, ratcheted up by holding down fares at times of political pressure, typically leads to long-term instability in funding, a poor and fluctuating service and inadequate investment (i.e. in maintenance)⁷⁹. Although this need not be the case if there is a real commitment to a sustainable integrated transport development policy with funds coming in part out of general taxation. Providing budgetary support should therefore not be based on covering the costs of any losses; instead it should be based on financial capacity and specific support aims and criteria. Partly for these reasons, the use of controlled fares has sometimes resulted in increasing losses for public transport providers and a progressive deterioration of service due to an inability to invest. The key therefore is to secure, the right balance or mix of public and private sector involvement (in investment, regulation, implementation, etc) to ensure efficiency, effectiveness and long term viability and sustainability.

In theory competition creates incentives to managers to meet market needs at the lowest possible cost. It also encourages transport operators to innovate to obtain market advantage⁸⁰. However, wholly free competition in the market is not always practical, for example some transport infrastructure have a natural monopoly or a monopoly due to location, some markets are too thin to sustain effective competition, while some

⁷⁵ IEG, 2007

⁷⁶ World Bank, 2008a

⁷⁷ World Bank, 2008a

⁷⁸ World Bank, 2008a

⁷⁹ World Bank, 2008a

⁸⁰ World Bank, 2008a

transport concessions create exclusivity, either to encourage long-term investment or to promote a particular pattern of service.

In both competitive and exclusive markets, economic regulation can strengthen public interests, ensuring fair competition and helping to avoid predation and cartels⁸¹ forming⁸². Within exclusive operations however, regulation may be required to protect against abuse of market power. Regulation needs to be combined with strategic financial and technical support.

Regulation is not a panacea and regulation that replaces the functions of markets needs to be well considered and proportionate. Economic regulators are considered rarely to be perfect and indeed can be costly, ineffective or influenced by special interest groups⁸³.

Transport is at risk from corrupt practices which can affect financial sustainability, for example informal payments may be demanded by vehicle inspectors, traffic police, customs officers, all of which can mean higher transport costs⁸⁴. (In addition some of the bribes may be facilitating other problems such as dangerous driving, unsafe vehicles, noxious emissions or overloaded vehicles). Generally, corruption makes both freight and passenger transport less safe, less clean and less affordable for the community. To combat corruption, reforms such as electronic documentation processing or modernising of border stations to minimise opportunities for informal transactions will need to be encouraged. Ensuring accountability for expenditure is essential. Better employment conditions and stronger protection for labour, either through legislation or through trades unions may be needed.

Financial sustainability is also linked to political change and other factors. Thus the long term funding that is essential for project sustainability might be a difficult objective to achieve. Governments are normally reluctant to break agreements with international partners and so perhaps what is needed are stronger legally binding agreements that extend beyond the initial loan period and beyond the term of a particular government.

7.3 Stakeholder engagement and social acceptance

Stakeholder engagement and acceptance by local communities of proposed projects is a vital component of long-term success and sustainability. This is particularly important where displacement of people and involuntary resettlement may result from acquisition of land and private property for building or expanding transport facilities.

Without broad, popular participation in decision-making processes, i.e. in terms of location, design and nature of the infrastructure, and without the local community's involvement in the implementation, operation and maintenance of infrastructure it can neither provide the maximum potential benefits, nor be sustainable⁸⁵. Transport sector

⁸¹ A cartel is an explicit agreement among competing firms to fix prices, marketing, and production. Cartels usually occur in an oligopolistic industry, where there is a small number of sellers and usually involve homogeneous products. Cartel members may also agree on such matters as market shares, allocation of customers, allocation of territories, bid rigging, establishment of common sales agencies, and the division of profits. The aim of the cartel is to increase individual members' profits by reducing competition.

⁸² World Bank, 2008a

⁸³ World Bank, 2008a

⁸⁴ World Bank, 2008a

⁸⁵ Jahan and McCleery, 2005

projects have usually been undertaken without the engagement of the local community. Projects intended to be beneficial to local communities often depend on these communities for their success. Empowering local communities is an important element of stakeholder engagement.

Stakeholder consultations at all stages of the project cycle are of paramount importance to ensure that local perceptions, attitudes, values and knowledge are fully taken into account⁸⁶. Consultations are an integral part of development activities and failure to engage with project beneficiaries can result in inappropriate use of resources, reluctant acceptance of innovation, negative impacts on social and cultural activities and increased risks for sustainability.

The way in which stakeholders are involved in the planning and implementation process may be instrumental to the success of the project⁸⁷. It is important that the implementing authority is able to form, and maintain, viable relationships and partnerships with stakeholders. Stakeholder analysis should examine stakeholders who may be affected by the intervention and those who may affect the intervention by supporting or resisting it. Key players are those with a high level of influence and high interest in the project⁸⁸. Potential stakeholders include^{89,90}:

- Public authorities (national, regional and local government);
- Transport service providers, transport employees, trades unions;
- Community representatives;
- Community service providers (school teachers, health workers, religious leaders, local government officials);
- All transport users and all those likely to be affected positively or negatively by the development of the transport project envisaged;
- Non-governmental organisations, including potential transport users' groups, groups representing disabled people, women, older people, the poor and disadvantaged and other special groups; and
- Press and media.

Involvement of national engineering and other transport professionals is also valuable for infrastructure projects, with their in-country knowledge of infrastructure planning, design and implementation⁹¹.

Stakeholder engagement can be a complex process for transportation projects, due to the significant number of direct and indirect stakeholders who have a range of competing interests and perspectives. Also, many of the poorest stakeholders have little voice in formal processes, so special measures may be needed to ensure that they are involved⁹².

⁸⁶ Pinard and Greening, 2009

⁸⁷ Dalkmann and Brannigan, 2007

⁸⁸ TRL, 2005

⁸⁹ Dalkmann and Brannigan, 2007

⁹⁰ TRL, 2004

⁹¹ Hawkins *et al*, 2006

⁹² Lynch *et al*, 2010

Engagement should reflect the basic rights of allowing project-affected stakeholders and communities to participate in decision-making that affects their livelihoods, create an environment in which all people's views can be heard and respond appropriately to legitimate concerns. The key elements of stakeholder engagement good practice are⁹³:

- A good quality and well-timed process which:
 - Provides meaningful information in a format and language that is readily understandable and tailored to the needs of the stakeholders;
 - Provides information in advance of consultation and decision-making;
 - Disseminates information in ways and locations that make it easy for stakeholders to access it;
 - Shows respect for local traditions, languages, timeframes and decision-making processes;
 - Allows two-way dialogue that gives all the opportunity to exchange views and information, to listen and to have their views heard and addressed;
 - Ensures inclusiveness and balance in the representation of views including women, the vulnerable and/or minority groups;
 - Ensures processes are free from intimidation or coercion;
 - Ensures clear mechanisms exist for responding to people's concerns, suggestions and grievances; and
 - Ensures that the project representatives managing the engagement process have the right skills, experience and attitudes for the job.
- Early engagement to influence public perception and set a positive tone with stakeholders;
- Integration with the design process to improve the sustainability and appropriateness of the project and program design;
- Disadvantaged and vulnerable groups, including women, the disabled and ethnic minorities, who can often be the stakeholders with the most to gain or lose. Negative impacts on these groups (even if unintentional) can generate negative publicity and adversely affects their livelihoods;
- Addressing the key issues or concerns of the community, even if these issues are difficult for the proponent. Failure to address serious concerns will compromise the engagement process and could result in negative perceptions of the project;
- Systems to ensure that the stakeholder engagement is managed. The process should be driven by a well-defined strategy and have a clear set of objectives, timetable, budget, and allocation of responsibilities;
- Managing expectations by ensuring that nothing is promised which cannot realistically be delivered and that all promises are recorded; and
- Ensuring engagement processes are in place for the entire project life cycle not just for the planning and construction phases.

Making transport systems inclusive will be important in ensuring that they are socially acceptable and therefore less likely to fail. There are three identified areas of need in relation to transport inclusivity:

⁹³ Lynch *et al*, 2010

- **Gender.** In both urban and rural areas, women have different transport priorities and needs, are affected differently by transport interventions and the risks and insecurities associated with them. Furthermore women sometimes bear the major part of the transport burden in families (in particular for water and firewood collection)⁹⁴. Transport policies and programs developed should reflect the full range of needs that exist. Project design may require that women share in the leadership of local community management structures and be represented in project planning meetings⁹⁵. Logistical arrangements, such as transportation, timing of activities, alternative support for domestic work, could be used to help facilitate women's participation⁹⁶.
- **Disability.** In developing countries, disabled and elderly people (as well as children) are denied the basic mobility which would allow them to participate in economic and social life as a result of inaccessible vehicle design and/or operational practices⁹⁷. Inclusion will require developing the right policies and the supporting legislative, regulatory and operational measures.
- **Non-motorised modes.** Non-motorised modes of transport are important in moving people and freight, in serving rural and urban areas, and in achieving social and economic goals⁹⁸. The importance of, and the specific needs for, these modes can be determined by well-designed transport surveys. Use of non-motorised transport and compatibility of new projects with existing modes of transport and transport practices can be supported by the way that projects are conceived and the way infrastructure is designed so as to improve their accessibility, safety and amenity. Better infrastructure includes cycle lanes and pedestrian zones, and links with other transport systems and modes, which currently receive little attention.
- **Intermediate Means of Transport (IMTs).** In some communities IMTs such as motorcycles and agricultural vehicles form an important part of the transport system. It is essential to consider their use in any interventions, particularly with respect to appropriate standards and safety issues.

Transport infrastructure may not always be the appropriate solution for dealing with local problems. In some situations improved transport services, or the development of health, education or water related infrastructure may provide more cost-effective and sustainable transport solutions. Appropriate planning methods such as Integrated Rural Accessibility Planning (IRAP) in full consultation with the local communities can help develop appropriate transport system solutions⁹⁹.

Social Impact Assessments (SIAs) can ensure that the full range of social impacts and benefits are identified and their magnitude assessed¹⁰⁰. SIA should be a core component

⁹⁴ World Bank, 2008a

⁹⁵ Bamberger, 1999 in Dani, 2003

⁹⁶ Dani, 2003

⁹⁷ World Bank, 2008a

⁹⁸ World Bank, 2008a

⁹⁹ ILO, Infrastructure for Rural Productivity Enhancement: Tools for Identifying Rural Infrastructure Investment Priorities (RATP14) 2006

¹⁰⁰ Lynch *et al*, 2010

of the design process, fully integrated in the project cycle and should be used to inform the final option selection and its design^{101, 102}.

The World Bank undertakes ex ante Poverty and Social Impact Analysis (PSIA) of the distributional impacts of public policies, with particular emphasis on poor and vulnerable groups before the policy takes effect. PSIA is a tool to generate evidence that can inform the dialogue, debate and decisions on policy choices, and the PSIA Good Practice Note provides advice on *when*, *why* and *how* to conduct Poverty and Social Impact Analysis (PSIA) as part of preparing a Development Policy Operation (DPO)¹⁰³.

7.4 Environmental sustainability

Degradation of the environment has often been regarded as the price to pay for economic development, often resulting in environmentally unsustainable projects being undertaken. Typical causes of environmental concern are¹⁰⁴:

- Inadequate planning: such that environmental impacts are not considered in the appraisal process.
- Design defects: where little or no allowance is made for dealing with environmental impacts on site.
- Unsustainable use of natural resources, such as the use of wasting gravel road surfaces where natural deposits are limited or involve excessive haul distances, or where traffic and weather related surface material losses are unmanageably high.
- Poor project documentation: such that contracts make it difficult to enforce environmental measures.
- Weak institutions: where insufficient legal backing to implement environmental measures is given.

Attitudes to the environment are however changing and many governments have become aware that, in the long-term, environmental conservation and economic development are mutually reinforcing. When planning for infrastructure projects there is a need to consider minimising the potential environmental damage, including land use changes, deforestation, loss of biodiversity and migration to and from project areas¹⁰⁵. Environmental assessments are increasingly becoming an essential component of development projects, providing an understanding of the linkages between society, the natural environment and the sustainable use of resources¹⁰⁶. The introduction of systematic Environmental Impact Assessment (EIA) for all World Bank projects since 1989, has been seen to prevent direct harm¹⁰⁷.

The World Bank has ten safeguard policies for environmental (and social) issues, which prevent, and mitigate, undue harm to people and their environment:

1. Environmental assessment

¹⁰¹ Lynch *et al*, 2010

¹⁰² TRL, 2005

¹⁰³ World Bank, 2008b

¹⁰⁴ Pinard and Greening, 2009

¹⁰⁵ Barton *et al*, 2002

¹⁰⁶ Pinard and Greening, 2009

¹⁰⁷ World Bank, 1996

2. Natural habitats
3. Forests
4. Pest management
5. Physical cultural resources
6. Involuntary resettlement
7. Indigenous peoples
8. Safety of dams
9. International waterways
10. Disputed areas

Environmental impacts will affect all types of transport infrastructure: road construction as well as urban transport systems. In addition to the above other direct and indirect impacts of transport facilities: air quality; noise; visual intrusion; the countryside; wildlife; ancient monuments and historic buildings; landscape; townscapes; biodiversity; the water environment etc.

Climate change impacts must also be recognised – these are considered in the next section due to their global significance.

However, although environmental impact assessments (EIAs) are routinely completed, there is still inadequate attention being paid to the impacts of projects on the environment¹⁰⁸. Also, as the environmental impacts of infrastructure projects have long term implications there remains a concern over what happens once projects are completed and supervision (including environmental supervision) ceases¹⁰⁹. Although the overall application and quality of EIAs is improving, the overall standard is still reported to be poor¹¹⁰, with assessment processes often inadequately applied during the approval stage or even being undertaken after the project has been approved. There is also a problem with the findings of EIAs being ignored.

These failures are one reason why donor agencies and international development agencies are increasingly emphasising the use of Strategic Environmental Assessment (SEA) to promote sustainable and integrated approaches to sectoral and broader development, plans, programs and policies. SEA covers a range of 'analytical and participatory approaches that aim to integrate environmental considerations into policies, plans and programs and evaluate the linkages with economic and social considerations'¹¹¹. Applying SEA to development co-operation has benefits for both decision-making procedures and development outcomes¹¹². For example, it provides the environmental evidence to support more informed decision making, and to identify new opportunities by encouraging a systematic and thorough examination of development options. It helps to ensure that the prudent management of natural resources and the environment provide the foundations for sustainable economic growth which, in turn, support political stability. Finally, it can also assist in building stakeholder engagement

¹⁰⁸ Barton *et al*, 2002

¹⁰⁹ IEG, 2007

¹¹⁰ Hawkins *et al*, 2006

¹¹¹ OECD DAC SEA Guidance, 2006

¹¹² OECD DAC, 2005

for improved governance, facilitate trans-boundary co-operation around shared environmental resources, and contribute to conflict prevention. Undertaking SEA of overarching transport plans, programs and policies should benefit the environmental sustainability of projects since projects which are undertaken in line with these plans should be more environmentally sustainable.

Policies and measures designed to enhance environmental performance also have potential co-benefits that are likely to lead to the creation of jobs, especially green jobs (which support the development of sustainable transport)¹¹³. These include the:

- Development of high fuel economy vehicles;
- Development of infrastructure for public transport;
- Promotional campaigns to encourage behaviour change; and
- Implementation of national policies and legislation.

It should be recognised that some of the jobs created, such as those involved with the development of infrastructure for public transport (for example new Metro systems) will be significant but short term, whilst others, such as the operation of the integrated transportation systems provided will support the development of jobs over a longer time period.

Current concerns related to climate change have increased awareness of adverse environmental impacts and the need for these to be minimised to improve project sustainability. It is likely that an even stronger emphasis will be placed on reducing greenhouse gas emissions from transportation, which will change the way that transport developments are planned, and implemented, with increasing emphasis on adopting low-carbon construction materials and methods¹¹⁴. The 'avoid-shift-improve' approach is a useful tool that should be considered to reduce the use of carbon by transport^{115,116}.

- 'Avoid' means reducing the need to travel, for example by integrating land use and transport planning to create local clusters of economic activity that require less mobility; by changing how production is organised; and by developing multimodal logistics chains to cut wasteful and unnecessary trips.
- 'Shift' means changing to more energy-efficient modes or routes, such as shifting from road to rail or waterways, or onto well-defined trucking routes, or shifting passengers from private vehicles to public transport and non-motorised modes.
- 'Improve' means using technologies that are more energy efficient, including through improving vehicle standards, inspection and enforcement; developing improved vehicle technologies and fuels; and improving transport efficiency using information technology.

There is a need to consider how to alter demand for, and modal distribution of, transport in economically efficient ways to reduce carbon intensity¹¹⁷. It is important that transport policies and projects are not decided on the basis of energy efficiency or emissions

¹¹³ EU T-MAPPER www.sutp.org

¹¹⁴ Lynch *et al*, 2010

¹¹⁵ Asian Development Bank, 2010

¹¹⁶ GTZ, 2007

¹¹⁷ World Bank, 2008a

alone, instead these issues should be embedded within the wider context that reflects all environmental aspects, economic efficiency, social equity and political feasibility. Also, policies need to reflect local circumstances. Current infrastructure decisions influence future modal choice, hence it is important to take this into consideration in transport investment decisions. For the large, and fast growing, middle-income countries, policies should be aimed at reducing greenhouse gas emissions. For small, poor countries, there is a need to explore synergies between local and global benefits to avoid carbon intensive growth by shifting policy directions early.

7.5 Adaptation to climate change

In addition to mitigation measures it is also important to consider adaptation when considering transport investments. Adaptation measures focus on resilience to climate change and are the principal way to address the potential impacts. It is a mechanism that allows the management of risks; adjusts development, including economic, environmental, and socio-cultural activities, to reduce the vulnerability of national economies, population and ecosystems to the impact of climate change in order to achieve national development and economic growth.

In the northern countries, prolonged periods of rain or heavier snowfalls will lead to more frequent road, and rail, closures as well as damage to infrastructure. Flooding will also be a problem for transport infrastructure in low lying areas. This will cause problems for bridges and tunnels as well as coastal erosion. Many places could experience periods of intense heat leading to pavements deforming and cracking as well as railway tracks buckling. Landslides could also occur leading to damage to infrastructure.

The impacts of climate change on transport infrastructure will vary, and include:

- Coastal erosion;
- Landslides;
- Damage to structures;
- Track buckling in heat;
- Erosion;
- Cracking;
- Flooding; and
- Pavements deforming.

Transport systems are vulnerable to the effects of climate change, such as the effects from rises in sea level, changes in permafrost conditions and locations, changes in precipitation, and changes in the frequency and intensity of storms, floods and droughts¹¹⁸. These potential vulnerabilities will have consequences on the design, construction, alignment, operation and maintenance of transport systems¹¹⁹ and could have implications for the sustainability of projects. Consideration will need to be given to adapting projects to the likely effects of climate change, including adjustments to engineering specifications, alignments and master planning; incorporating environmental

¹¹⁸ Asian Development Bank, 2010

¹¹⁹ Lynch *et al*, 2010

measures; and adjusting maintenance and contract scheduling¹²⁰. It will become increasingly important for transport infrastructure to be designed, built and maintained to be resilient to climate change impacts if they are to be sustainable. It will become increasingly important for transport infrastructure to be designed, built and maintained to be resilient to climate change impacts if projects are to be sustainable.

7.6 Technological appropriateness

The extent to which a transport sector project adopts appropriate technology is vital to its sustainability and the chance of long-term success. In all areas of transport provision, donor funding is vulnerable to wastage when project design, and implementation, is not cognisant of the most suitable, and low-cost, technologies available. The conduct of trials and pilot studies can demonstrate the applicability of certain technologies before widespread adoption is undertaken. Technology knowledge transfer ensures that lessons can be learned and project success shared between countries and across regions.

Appropriate technology should be used for rural road construction¹²¹. Resource availability (i.e. local resourced or low-whole-life-cost construction materials) and cost issues (i.e. labour wage rates, and access to and cost of credit) suggest that local labour-based and low-capital technologies should predominate.

Increasing the input of in-country goods and services (i.e. local content), could provide increased opportunities for local employment in construction or in the supply industries, better opportunities for local businesses as contractors, sub-contractors, producers, or suppliers of materials and equipment, and increased local knowledge and skills¹²². However, mainstreaming this approach has been hampered by inappropriate designs, insistence on tight schedules and corruption, where small local contractors and suppliers have few funds with which to bribe corrupt officials and therefore cannot compete¹²³. An 'enabling environment' is required to be created to facilitate technological changes and the essential motivation and support for change¹²⁴. This involves identifying and tackling the range of barriers/challenges.

Involvement of national engineering professionals helps ensure projects are technologically appropriate, as they will have local knowledge regarding infrastructure planning, design and implementation¹²⁵. National consultants complain that design and projects objectives are often drawn up by the World Bank rather than at country level so designers have limited knowledge of local conditions, and available materials, so designs are not adapted to the local context.

In the project planning and design stage consideration should be given to on-going maintenance¹²⁶. Maintenance often becomes an issue when foreign workers leave or if designs depend on foreign technologies and skills. If designs maximise the use of local

¹²⁰ Asian Development Bank, 2010

¹²¹ O'Neill *et al*, 2010

¹²² Wells and Hawkins, 2008

¹²³ Hawkins *et al*, 2006

¹²⁴ O'Neill *et al*, 2010

¹²⁵ Hawkins *et al*, 2006

¹²⁶ Hawkins *et al*, 2006

technologies, skills, materials and components, the ability to operate and maintain the system will be enhanced.

It is vital for designs appropriate to local conditions and road users be applied, that local research-based knowledge is adequately reflected in standards and that specifications for the use of locally available materials reflect their performance in local environments¹²⁷. Imported standards, specifications and techniques can lead to unnecessarily costly solutions.

Hand responsibility for operation and management to local communities may require that they are incentivised to carry out maintenance, with the required knowledge, materials, tools and capacity are available¹²⁸ and that appropriate support or mentoring is provided.

For projects to be sustainable in the long term there needs to be flexibility so that that they can respond to changing customer needs. Monitoring and evaluation therefore is necessary throughout¹²⁹. Analysis should be carried out at regular intervals to monitor progress against social and environmental issues. Monitoring of projects should be undertaken independently¹³⁰.

Greater flexibility may be needed in procurement strategies, as the 'one size fits all' approach creates an inflexible system that is not appropriate for all projects¹³¹. Design and build, turnkey, or performance based contracts may be more successful.

7.7 References for section 7

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¹²⁷ Pinard and Greening, 2009

¹²⁸ Lynch *et al*, 2010

¹²⁹ Lynch *et al*, 2010

¹³⁰ Hawkins *et al*, 2006

¹³¹ Hawkins *et al*, 2006

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8 Further technical information

Various organisations provide technical information and advice that may be of use to TTLs and their clients when developing transport projects. These include the:

American Academy of Environmental Engineers: <http://www.aaee.net/>

American Society of Civil Engineers: <http://www.asce.org/>

American Society of Safety Engineers: <http://www.asse.org/>

Association for Project Management: <http://www.apm.org.uk/>

Canadian Academy of Engineering: <http://www.acad-eng-gen.ca/>

Canadian Society for Civil Engineering: <http://www.csce.ca/>

Chartered Institution of Highways & Transportation: www.ciht.org

Engineers Australia: <http://www.engineersaustralia.org.au/>

Institute of Highway Engineers: <http://www.theihe.org/>

Institute of Transportation Engineers: <http://www.ite.org/default.asp>

Institution of Civil Engineers: www.ice.org.uk

Institution of Engineering and Technology: <http://www.theiet.org/about/>

Institution of Engineers of Ireland: <http://www.engineersireland.ie/>

Institution of Professional Engineers New Zealand: <http://www.ipenz.org.nz/ipenz/>

Institution of Structural Engineers: <http://www.istructe.org/Pages/default.aspx>

International Association of Engineers: <http://www.iaeng.org/>

Project Management Institute: <http://www.pmi.org/>

Transport Planning Society: <http://www.tps.org.uk/>

Transport Research Laboratory: www.trl.co.uk

Verein Deutscher Ingenieure (Association of German Engineers): <http://www.vdi.eu/>