BEST PRACTICES IN INVESTMENT FOR DEVELOPMENT

CASE STUDIES IN FDI

How to Utilize FDI to Improve Transport Infrastructure – Roads

Australia and Peru

APEC Committee on Trade and Investment
Investment Experts Group

June 2009

CTI 03/2008A

Prepared by
United Nations Conference for Trade and Development
(UNCTAD) Secretariat
Palais des Nations
8-14, Av. de la Paix
1211 Geneva 10
Switzerland
Tel: (41) 22 917 1234 Fax: (41) 22 917 0057
Email: info@unctad.org Website: www.unctad.org

For
APEC Secretariat
35 Heng Mui Keng Terrace Singapore 119616
Tel: (65) 68919 600 Fax: (65) 68919 690
Email: info@apec.org Website: www.apec.org

APEC#208-CT-01.14

NOTE

As the focal point in the United Nations system for investment, enterprise and development, and building on 30 years of experience in these areas, UNCTAD, through its Division on Investment and Enterprise (DIAE), promotes understanding of key issues in these areas. DIAE also assists developing countries in attracting and benefitting from foreign investment, and in building their productive capacities and international competitiveness. The emphasis is on an integrated policy approach to investment, enterprise and development.

The term "country" as used in this study also refers, as appropriate, to territories or areas; the designations employed and the presentation of the material do not imply the expression of any opinion whatsoever on the part of the Secretariat of the United Nations concerning the legal status of any country, territory, city or area or of its authorities, or concerning the delimitation of its frontiers or boundaries. In addition, the designations of country groups are intended solely for statistical or analytical convenience and do not necessarily express a judgment about the stage of development reached by a particular country or area in the development process.

The following symbols have been used in the tables and elsewhere in the publication:

> Two dots (..) indicate that data are not available or not separately reported. Rows in tables have been omitted in those cases where no data are available for any of the elements in the row.

A dash (-) indicates that the item is equal to zero or its value is negligible.

A blank in a table indicates that the item is not applicable.

A slash (/) between dates representing years – for example, 2004/05, indicates a financial year.

Use of a dash (–) between dates representing years – for example 2004–2005 signifies the full period involved, including the beginning and end years.

Reference to the "dollars" ($) means United States dollars, unless otherwise indicated.

Annual rates of growth or change, unless otherwise stated, refer to annual compound rates.

Details and percentages in tables do not necessarily add to totals because of rounding.

PREFACE

The UNCTAD series of Best Practices in Investment for Development is a programme of case studies in making foreign direct investment (FDI) work for development. Launched in response to a call at the 2007 Heiligendamm G-8 summit for UNCTAD and other international organizations to undertake such work, the programme analyses practices adopted in selected countries in which investment has contributed to development, with the aim of disseminating best practice experiences to developing countries and countries with economies in transition. The analysis forms the basis of a new technical assistance work programme aimed at helping countries to adopt and adapt best practices in the area of investment policies. In pursuit of UNCTAD XII's mandate in this area (Accra Accord, para. 148), this series builds on UNCTAD's advisory and research work in the area of FDI and development.

UNCTAD's approach is to undertake case studies of a pair of developed and developing or transitional economies from which we can learn best practices in a selected issue. Country selection follows a standard methodology, based primarily on the significant presence of FDI and resulting positive outcomes. Fact-finding missions were undertaken in Australia and Peru in May and June 2008 and the report benefited from views of current and former government officials, the domestic and foreign private sector and academics. The report received financial support from the Asia–Pacific Economic Cooperation forum (APEC) under the APEC–UNCTAD Joint Capacity-Building Project for Addressing Knowledge Gaps in the Use of Foreign Direct Investment, and was presented to the APEC Committee on Trade and Investment's Investment Experts Group (APEC#208-CT-01.14). The programme also receives financial support from the Government of Germany.

The report was prepared by Rory Allan, Rene Cornejo and Max Lay, under the direction of James Zhan. Thomas Westcott finalized the study. Comments were received from Peer Review Panel members Khalil Hamdani, John Kline and Stephen Young, as well as from Chantal Dupasquier and Jörg Weber.

Geneva, June 2009

CONTENTS

Boxes

Figures

Tables

ABBREVIATIONS

ADB	Asian Development Bank
BOO	build–own–operate
BOOT	build–own–operate–transfer
BOT	build–operate–transfer
CAF	Andean Development Corporation
CRPAO	certificate acknowledging the right to collect annual construction payments
D&C	design and construct
FDI	foreign direct investment
GDP	gross domestic product
IIRSA	Initiative for the Integration of Regional Infrastructure in South America
IR	Independent Reviewer
LDC	least developed country
MTC	Ministry of Transport and Communications
ODA	official development assistance
OSITRAN	Supervisory Agency for Investment in Public Transport Infrastructure
PAO	annual construction payments
PPP	public–private partnerships
PSC	public sector comparator
RTA	Road Traffic Authority
SPV	special purpose vehicle
TNC	transnational corporation

Australia

Peru

Key facts table

	Australia				Peru			
	1990	**2000**	**2005**	**2007**	**1990**	**2000**	**2005**	**2007**
Population (millions)	17.07	19.15	20.40	21.02	21.76	25.66	27.27	27.90
GDP at market prices ($ million)	305 783	405 110	674 009	821 716	26 294	53 290	79 462	109 080
Annual GDP growth (%)[a]	3.34	3.67	3	2.7	-0.09	4.45	7	8.99
GDP per capita ($)[b]	18 914	20 880	36 321	37 414	1 354	2 078	2 911	3 316
GDP by sector (%)[b]								
Services	66.2	69.9	68.9	69.8	61.9	61.6	58.0	59.7
Industry	30.1	26.1	28.0	27.0	30.4	29.9	34.8	32.9
Manufacturing	14.5	12.7	11.0	11.7	19.4	15.8	16.3	16.1
Agriculture	3.6	4.0	3.1	3.3	7.7	8.5	7.2	7.4
FDI inflows ($ million)[c]	4 334	6 834	-35 295	22266	30	1 652	2 579	5 343

	Australia				Peru			
	1990	2000	2005	2007	1990	2000	2005	2007
FDI outflows ($ million) [c]	2 348	3 417	-33 523	24 209	11	12	174	809
FDI stock (% of GDP)	23.2	28.6	27.9	34.4	4.5	20.7	20.0	22.7
Gross fixed capital formation (% GDP)	23.6	25.07	26.25	27.5	19.3	20.16	18.57	20.18
FDI flows (% gross fixed capital formation)	10.8	16.0	-18.6	9.0	0.7	7.5	17.7	22.8
Total exports ($ million)	49 957	83 765	136 879	180 806	4 029	8 510	18 877	31 022
Exports of goods and services (% GDP)	16.20	19.91	18.69	19.8	15.76	16.00	24.73	27.38
Imports of goods and services (% GDP)	16.38	21.92	21.21	21.5	13.83	18.16	19.15	19.48

[a] Annual GDP growth rates for 1990 and 2000 are calculated as annual average growth rates of the previous decades.
[b] 2006 figures, 2007 not available.
[c] FDI Inflows and Outflows for 1990 and 2000 are calculated as annual averages of the previous decades.

Source: UNCTAD, FDI/TNC database, WB WDI database.

INTRODUCTION

A. Purpose and issues

The purpose of this study is to describe and analyse the policies and approaches of two countries with experience in private sector solutions to improving roads infrastructure. Whilst one of the cases is a developed country, the aim of the study is to elucidate best practices experiences that can give guidance, in a practical form, to policy makers in developing countries.

A poor road network and poor standards of maintenance characterize many developing countries. Landlocked developing countries face additional constraints of international road access to sea ports. Perceptions of an inadequate road network exist both:

- In very poor and slow growing developing countries, where a lack of roads is seen as presenting an obstacle to development take-off; and

- In fast-growing developing countries, where roads and complementary transport infrastructure are seen as a bottleneck to maintaining the pace of expansion.

These perceptions persist despite decades of public funding and operation of roads supported by large-scale official development assistance (ODA). Attracting private investment, including foreign direct investment (FDI), is seen by many governments as an attractive means of complementing public funding.

From another standpoint, quality of road infrastructure is frequently cited among key factors in country "competitiveness" in both developed and developing countries. Roads are seen as a factor

in enabling countries to mobilize business investment in order to help take advantage of globalization. Thus, private investment can be sought not only to complement the public budget but also to expand the network and bring private sector efficiencies to construction, operations and maintenance.

UNCTAD's Investment Policy Reviews frequently find that poor road networks are an impediment to the attraction of FDI and its contribution to development.[1] The *Least Developed Countries Report* (UNCTAD, 2006) noted that the low level and poor quality of infrastructure stock reflects poor maintenance and underinvestment. In least developed countries (LDCs), the per capita mileage of roads was lower in 1999 than in 1990. The *World Investment Report* (UNCTAD, 2008) took up the infrastructure challenge as its principal theme on foreign investment and its contribution to development.

Worldwide, roads have been the dominant form of transport concession. Nevertheless, the use of concessions in roads is relatively new and represents a small fraction of road networks in developing countries. For example, in Latin America, Ecuador, Chile and Uruguay have had the highest percentages of concessioning in their intercity system (up to 2003). Yet, these only accounted for up to 3 per cent.

Moreover, the overall experience of private investment in roads has been mixed. An Asian Development Bank (ADB) study of Asia's experience by 2000 concluded that:

> ". . . private investment has produced some successes but also many failures. After more than a decade of concerted effort, implementation experience has not matched expectations" (ADB, 2000).

That study attributed this result to three reasons: (a) inadequately developed policy, including leaving project identification to the private sector; (b) projects generally proving to be unprofitable without government support; and (c) difficulty in imposing user charges for a service that has historically been free to the user.

In the last century, roads have traditionally been provided by the public sector.[2] In principle, road construction and operations can be commercialized, but there are many issues to resolve if this is to be successful for both the government and investors. Among the issues that can make roads different from, or more complicated than, those in a typical business investment are:

- They provide a public service that affects the day-to-day welfare of many individuals and a backbone service that affects everybody's cost of doing business;

- Economic returns on road investment may exceed financial returns and raise the case for public subsidy. For example, new roads benefit continued users of previously congested roads;

- Roads may occupy a quasi-monopoly position and thus private operations may require a degree of regulation, given the community and business impact of any abuse of this dominant position;

- Road users already pay fuel taxes and registration fees and may question why they should also pay tolls;

- New roads are large-scale and immobile investments with no diversification option if an investment goes sour. Yet tolls are likely to be regulated and long-term traffic forecasting is difficult;

- New roads are long-term investments. Almost inevitably, the commercial assumptions that underlie a project will change in unforeseen ways over the course of time and cause a lopsided sharing of costs and benefits. Some can be foreseen (e.g. changes in inflation) and mechanisms to deal with them can be established by contract. But not every eventuality can be foreseen and documented contractually. Flexible methods of resolving these events to the mutual satisfaction of all parties need to be established;

- Roads interconnect with other roads and other transport modes in public or private ownership. The quality and capacity of upstream and downstream transport investments will affect road viability. On the other hand, road capacity and pricing may be crucial for the viability of linked ventures, e.g. ports or airports;

- Construction is on a large scale and entails risks of delays and cost overruns, including those arising from government action or inaction.

These are distinctive issues for private investment in roads. From a public interest standpoint, investment in roads shares with other industries issues of security, safety and environmental impact. From an investment standpoint, they require large sums of equity and debt finance that are likely to surpass local capacity and require foreign financing. However, revenues are in local currency and (at least in developing countries) investors and lenders may require toll levels to be regulated in foreign currency and assurances of currency convertibility. Ultimately, the capacity of local capital markets may be a hard constraint in determining how many road projects proceed.

Foreign investors in particular are likely to have a heightened sense of political risk of breach of contract, adverse regulatory action or expropriation due to the politically sensitive nature of such projects.

B. Scope and terminology

The term used in this report to describe private investment in roads infrastructure will be "road concessions" and derivative terms such as "concessioning" and "concession law". Other terms in wide use are "public–private partnership" (PPP), "build–own–operate–transfer" (BOOT and similar expressions, see box 1) and "private finance initiative".

"Roads" as used in this study will include tunnel and bridge projects.

There is a spectrum of forms of concession that involve increasing degrees of private participation and risk. The scope of this study will be confined to those forms of concession that involve equity risk taken by a strategic investor. Box 1 sets out where the line has been drawn for the scope.

Box 1. Terms used and scope of FDI

The following forms of concession are excluded from the scope of the study: design-build (the traditional form of contracting road construction to the private sector), design-build-maintain, design-build-operate, build-operate-transfer (BOT), service contracts, alliance contracts and management contracts. Reference may sometimes be made to these non-equity forms of concession (for example in discussing the merits of these simpler forms as learning experiences for the public sector).

The study uses a narrow definition of FDI that focuses only on cases where equity (ownership) risk is involved. FDI incorporates investment and control in a business by an entity resident in another country.

Accordingly the relevant forms of concession for the purpose of this study are:

- Build–own–operate–transfer (BOOT) – where the government grants a concession to a private investor to finance, build and operate a road for a period of time after which ownership of the facility is transferred to the government; and

- Build–own–operate (BOO) – a BOOT project except that ownership remains with the private investor.

Where there is an arrangement for the long-term leasing back of the road and private investors have the responsibility for rehabilitating a road, this may also entail relevant equity risk.

C. The case studies

Australia and Peru were chosen as suitable example countries. In the last 15 years, Australia has developed a reputation as a leader in the field of road concessioning. It now has a series of toll roads in commercial operation representing capital expenditure of over $8.6 billion. It offers the varied approaches of different states, has undertaken both public and private reviews of outcomes and lessons learned, and has innovated in important areas of procurement and financing. Over the last decade, Peru has initiated over $1.5 billion of concession roads to achieve varied outcomes such as rehabilitating, upgrading, and widening of existing roads and pioneering extensions to its road network in disadvantaged regions. It offers important lessons in how a developing country can scale up the quality of construction and maintenance of its road network within the usual budgetary and administrative constraints faced by developing countries.

Australia's experiences are of concessions to improve urban traffic conditions. Peru's focus is on trunk roads. Thus, the country choices also provide a breadth of experiences in this regard.

All roads in the Australia case study began operating after 1991, with the exception of the Sydney Harbour Bridge, tolled since 1934 and the first road across Sydney Harbour.

The Australian study is of urban roads in major cities. The trunk road network is essentially complete in Australia. Traffic flows outside the cities are insufficient to justify toll-based concessions. Indeed, all toll schemes are in the three largest cities – Sydney, Melbourne and Brisbane – all coastal towns in eastern Australia with low population densities by world standards. Table 1 shows the number of kilometres of toll roads in Australia.

Table 1. Australian toll roads by state (km)

State/date	6/1999	6/2003
New South Wales	61	91
Victoria	12	20
Queensland	44	44
Total	**117**	**155**

Source: Austroads (2005).

This represents 8.6 per cent of the motorway-standard roads.

Privatized roads in Sydney, in the State of New South Wales, provide most of that city's network of major roads. However, in Melbourne, in the State of Victoria, they represent less than 20 per cent of the network.

Sixty per cent of the schemes are located in outer suburbs as bypasses or radial feeders and the remainder function as inner urban bypasses. Their purpose is to improve traffic movements essential for each city's proper functioning, including with respect to freight transport.

In Australia's federal system, road responsibility is shared between the federal level (national highways), the states (major state roads) and local government. Roads controlled by local government make up about 80 per cent of Australia's roads, although federal and state government funding has always been important in building local government roads. The respective state governments have been the key drivers in commissioning Australia's toll roads.

Australia was a pioneer in road concessioning, with large projects in the states of Victoria and New South Wales beginning

in the early 1990s. New South Wales' first toll road opened in 1992 (the M2 in Sydney). In the same period in the State of Victoria, Melbourne's City Link project was initiated at a time when the state government was in severe financial difficulties and the incoming government was determined to show that more could be achieved with private investment.

At the same time as this restructuring was occurring, there was a move to apply user-pays policies to public utilities. The development of electronic road-tolling systems in the 1990s allowed flexible, simple tolling in cities without the need for the large and inefficient toll plazas associated with manual tolling.[3] Improved tunneling technology late in the twentieth century also gave a major boost to urban concession projects. And a group of infrastructure finance specialists grew up to structure concession projects and arrange the billions of dollars in finance that urban concessions require.

From 2000, the private sector's role in road ownership accelerated and there have been active concessioning programmes in all three cities (table 2).

Road concessions in Peru began later in the 1990s, after a relatively successful privatization programme from 1992 to 1998 in electricity and other areas of infrastructure. After the privatization programme, government attention turned to attracting private investment to build new infrastructure. In 1996, the Law on Promotion of Private Investment in Public Infrastructure and Public Services (the "new concession law") replaced an earlier concession law, which operated from 1991. Promotion of road concessions was initially the responsibility of COPRI, the privatization agency. From 2002, the investment promotion agency Proinversion[4] was made responsible for organizing road concessions and attracting private investment. The *Organismo Supervisor de Inversión en Infraestructura de Transporte de Uso Público*

(Supervisory Agency for Investment in Public Transport Infrastructure, or OSITRAN)[5] has regulated the sector since 1998 and is responsible for contract supervision during project implementation.[6]

Table 2. Road concessions in Australia

Project[a]	Total project cost ($m)	Road length (km)	Concession length (years)
New South Wales			
M4 (Mays Hill–Prospect)	184	40	18
M5 (Prestons–Beverly Hills)	284	22[b]	31
M2	486	21	45
Eastern Distributor	460	6	49
M5E	405	22[b]	31
Cross City Tunnel	500	2	30
M7 Motorway	1200	40	32
Lane Cove Tunnel	1000	4	30
Queensland			
North-South Bypass Tunnel	2600	6	45
Victoria			
City Link	1200	20	34–35
East Link	3200	39	35

Source: Richmond (2005) and UNCTAD.

[a] All concessions are urban roads.
[b] Includes M5 and M5E.

Peru's road concessions so far are trunk roads, aimed at regional development and integration.[7] They are the responsibility of the national government. They were initially identified as part of a road development plan for 1996–2005, although this was later pared back. In 2000, the Presidents of Brazil and Peru met to promote joint projects for the economic integration of South America. They endorsed priority transport infrastructure projects

in what are now termed the North, Southern and Central Inter-ocean corridors (table 3).

Peru's major projects are a combination of rehabilitation, widening, paving and extension of:

- North–south trunk roads – sections of the Pan-American highway north and south of Lima; and

- West–east trunk roads – the inter-ocean roads in the north, centre and south of the country designed to link Peru with neighbouring countries. Sections in the north and south were concessioned quickly in response to strong political pressure.

These projects require significant capital expenditure for a developing country (the total capital expenditure required for concessions identified for 2004–2006 was estimated at approximately $2 billion by the World Bank (2004)).

Peru's road concessions have many features in common with developing countries. Firstly, they improve the quality of existing roads and in part improve access by underserved communities. Secondly, the size of the projects usually exceeds the capacity of the local capital market and the scale of works to which the local construction industry is accustomed. Thus, foreign financing and expertise have been requirements from the outset, unlike in Australia. Thirdly, they serve important developmental purposes and in the majority of cases the Government has provided financial contributions in order to lower toll rates.

Table 3. Major road concessions in Peru

Project	Total project cost ($ million)	Road length (km)	Upgrade / New road[a]	Concession length (years)
Network 5 (Pan-American Highway)	73.1	223	upgrade and new road	25
Network 6 (Pan-American Highway)	228.6	183	upgrade	30
Northern Inter-ocean	218.9	960	upgrade	25
Southern Inter-ocean (sections 2&3)	645	703	upgrade	25
Southern Inter-ocean (section 4)	180	311	upgrade**	25
Southern Inter-ocean (section 1)	99	762	upgrade	25
Southern Inter-ocean (section 5)	184	814	upgrade	25

[a] All roads are rural and trunk roads.
[b] Mainly upgrade and maintenance with construction of a new lane in places.

Source: UNCTAD interviews.

Notes

[1] www.unctad.org/ipr.

[2] In early times in many countries, toll roads built by private entrepreneurs were a principal form of road development. Governments asserted a pre-eminent right to build major public roads funded by taxation only from the twentieth century (Lay, 1992).

[3] These plazas reduce road capacity by about 35 per cent and require five times the width of the rest of the road. Electronic road tolling left capacity untouched, required no extra land, and avoided the corruption endemic in many manual toll systems (Samuels, 1997).

[4] See http://www.proinversion.gob.pe/default.aspx?ARE=1&PFL=0 (English, some documentation Spanish only).

[5] See http://www.ositran.gob.pe/ (Spanish only).

[6] See http://info.worldbank.org/etools/PPPI-Portal/docs/PPPIDays2007 Presentations/5-2ReneCornejoPeru.pdf.

[7] The Lima airport road, an early attempt at an urban concession, is no longer tolled.

I. ISSUES AND CHALLENGES IN ROAD CONCESSIONS

A. Planning and selecting projects for concessioning

Both countries recognize that long-term plans are part of a best practices approach to road concessioning.

Peru prepared a Road Transport Plan for 1996–2005, which conceived a grand design of 11 road networks, subsequently reduced to 6. This provided early identification of key projects that ultimately become concessions. It was succeeded by the Intermodal Transport Plan 2004–2023 (Government of Peru, 2005). The current plan has short-, medium- and long-term outlooks, based on two main strategic themes:

- Latin American integration via the Initiative for the Integration of Regional Infrastructure in South America (IIRSA). This is the inspiration for the extension of three major west-east highway systems to link Peru with Brazil – IIRSA north, central and south. These new highways have given rise to several concession projects;
- Regional development via the National Policy for Decentralization and Land Development.

A good recent example of a long-term plan in Australia is the South-East Queensland Infrastructure Plan and Programme 2005–2026, which includes suggested projects (Queensland State Government, 2005). More recently, the Eddington report for the Victorian State Government (Eddington, 2008) proposed a strategy and identified projects for the eastern and western suburbs of Melbourne.

The value of a transport plan is that it will identify projects that can deliver broad economic and social outcomes and are

compatible with other transport initiatives (such as ports) and regional development programmes. These projects in turn can be subject to a disciplined assessment process, including whether they are suitable for concessioning. The Australian process leading from a plan through to procurement is illustrated in figure I.1 (based on the Queensland model).

These plans are prepared by governments (with due input from stakeholders, including road users) since neither country regards it as the responsibility of a private road investor to deliver socio-economic outcomes. The systems that arose in Australia learnt from earlier Asian experience (ADB, 2000), and ensured that:

- There is a strong policy framework;
- Projects are first identified by government; and
- Project financial models are stringently assessed.

A second important benefit of a long-term plan is that it begins a process that leads to generating a *pipeline* of projects. This is important to provide a flow of work for contractors:

- To resource their current job with expectations of future work for that resource; and
- To plan for commitments beyond their current job.

On the other hand, the absence of a pipeline of well-prepared projects can result in the premature release of road projects for concession in response to political pressures. This may have occurred in some of Peru's Southern Inter-ocean projects, where insufficient or inadequate engineering feasibility work was performed. Such projects inevitably lead to cost overruns, thereby breaking an important principle of road concessions – that construction risk should be transferred to the private investor.

Moving through the stages from preparing a transport plan to achieving a robust set of projects suitable for concession takes several years. Figure I.1 is an example of project planning

based on Australian experience. It follows that governments must allow sufficient lead time and resources to produce well-prepared projects.

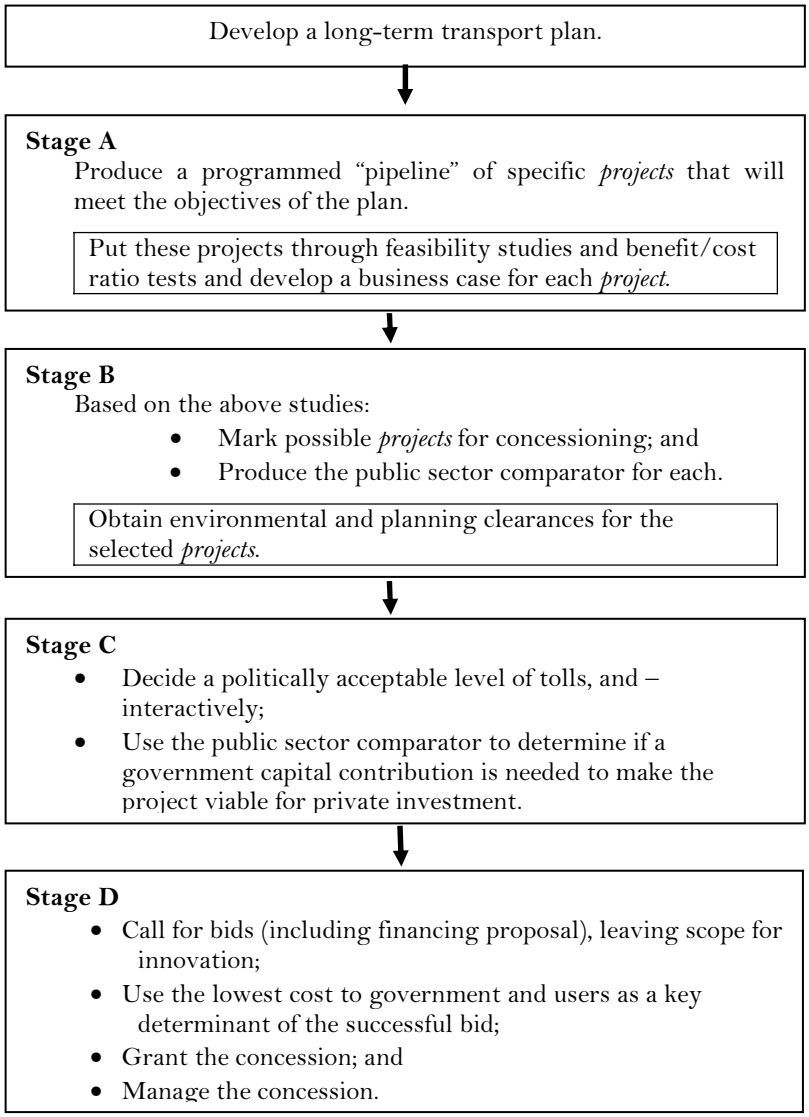
It should be noted from the Australian experience that:

- Only heavily used roads are likely to produce sufficient revenue to justify concessioning. There is also a practical question of whether toll evasion can be controlled;
- Projects in Australia with a value of under $500 million can rarely justify the preparatory costs associated with concessioning.[1] This reflects, among other things, the highly interactive nature of Australia's procurement model and the use of capital markets to raise much of the investment. In Peru, detailed project design is undertaken by the Government in the same manner as for public works contracts and minimum scale is lower. (See section I.E below.)

In Peru's concessions for new highways, scale and complexity were also factors. New highways in difficult terrain (mountains and tropical rainforest) would have been expensive to parcel out in small sections to local contractors under public works conditions. Concessioning enabled foreign contractors to introduce their financial strength and expertise in joint ventures with local contractors in order to bring economies of scale, quicker completion and a significant transfer of the financial burden from government to private investors.

Neither country has ruled out roads for concession on the grounds that they cannot be 100 per cent financed by tolls. Often, a government financial contribution is considered because the project has socio-economic outcomes and would not go ahead without a contribution. (See chapter III for issues involved in setting tolls.)

Figure I.1. Planning by government for road concession projects (Queensland model)



In summary, the governments (not investors) identify road projects based on their socio-economic outcomes as identified in a transport plan. Projects suitable for concessioning are those that are likely to generate value for the user and, especially in Peru, where the scale and complexity of construction make it sensible to offload construction risk to the private sector. Ability of the project to be financed solely from tolls is not a criterion as governments may financially support projects to achieve good socio-economic outcomes. Developing a pipeline of projects is important.

B. Preparing projects for concessioning

Once a road project has been selected for concessioning, the key steps needed in preparing the concession are:

- Obtaining environmental and local planning approvals;
- Acquiring or resuming occupation of land; and
- Deciding on the government financial contribution, if any (see section C.2 below).

Approvals and land acquisition requirements apply whether or not a road is to be a concession project or publicly funded. However, they take on a critical commercial dimension in concessions because delays or missteps will affect the time needed to complete the road and start earning revenue. Practice in Australia has varied as to whether the concession holder or the government will bear the risk of obtaining local government planning approvals. Most recent practice is to place this risk on government, as it is more likely to be in a position to deliver. In Peru, environmental approvals include research on whether cultural artifacts are likely to be unearthed during excavation work. Road routing is checked to reduce the possibility of such finds and there is a quick response system to deal with any finds made during construction.

Land acquisition or resumption is a major challenge. In Peru, the northern and southern sections of the Pan-American Highway were tendered before possession of vacant land was obtained, and significant delays resulted. It was not a question of acquiring land but of relocating occupiers of road reserves, which were already government land. This squatting had not been policed in the past and naturally roads attracted people to set up homes and businesses alongside. Moreover, the government had not budgeted to assist people to relocate. In Australia's urban projects, land acquisition is time-consuming and costly, and to some extent will dictate whether a tunnel is a better solution for some of a proposed urban project.

The implementation timeline varies enormously between projects, depending greatly on local circumstances and issues at a particular time. The Australian experience (table I.1) is that environmental and planning approvals can take one year, although these can be started in parallel with earlier stages of preparing the project pipeline. This may seem like a long time, but project experience in Australia is that time spent seeking approvals and acquiring land in advance (and usually at "greenfield" prices) is never wasted. Many of the now-completed Australian projects have been on the planning lists for 20 or more years.

Table I.1. Time-frames involved in Australian projects

Obtain environmental and planning clearances for the selected projects.	1 year[a]
Government sets various maximum acceptable levels (e.g. for tolls)	3 months[a]
Prepare "request for tenders"	3 months[b]
Call for bids	6 months
Bid assessment and selection	3 months
Construction	3 years
Traffic increase on road	1–3 years

Source: UNCTAD interviews.

[a] Can proceed at the same time as earlier activities

[b] Can proceed at the same time as earlier activities and draws on earlier concessions

C. Deciding on key terms of the concession

Road concession contracts run to many hundreds of pages and thus involve a myriad of terms. Four key terms of interest to investors and policymakers based on Australian and Peruvian experience are considered below:

- What are the risks to be allocated to the parties?
- Should the government make a financial contribution and in what form?
- How should unpredictable outcomes and changed circumstances be handled?
- Will the project transfer to government and when?

1. Risk allocation

Risk allocation is the technical term for deciding which party to the concession contract (investor or government) will be responsible for delivering the various components of the project.

In principle, governments want an investor to bear the key commercial responsibility of constructing the road on time and at the investor's cost, including any cost overrun. It wants the investor to be responsible for running the project, including maintaining the road, and generating revenue. Thus, the investor accepts the risk that traffic forecasts may not be fulfilled. Governments typically take responsibility for land acquisition and for securing major regulatory approvals, e.g. environmental.

The core principle adopted in Australia and Peru is that each risk is assigned to the party best able to manage that risk. That party must then put in place measures to minimize the consequences of the risk, should it occur and given its probability

of occurrence. Table I.2 summarizes key risks typically taken by the parties.

Table I.2. Typical risk assignment in a road concession

Private sector	Public sector
Construction delays	Environmental approval
Planning approval at a local level	Land acquisition
Interfaces with the rest of the road & traffic system	Planning approval at a broad level
	Changes required by government
Pollution	Limits on new requirements by government agencies
Operational effectiveness	
Traffic forecasts	Restricted changes to the adjacen transport system
Toll collection costs	
Toll revenue	
Interest rates	
Other financial risks	
Forces majeures	

An important corollary to risk allocation is that there must be an adequate process by which the parties can achieve a detailed understanding of the risks being taken on. For example, the procurement process in Australia has evolved to the point where preferred bidders are involved in detailed design work. This enables the concessioning authority to fully transfer construction risk to the investor. Recent Australian projects have finished on budget and ahead of time. Melbourne's EastLink project was constructed four months ahead of schedule in June 2008. The project owners paid the construction contractor almost $500,000 for each day gained. Sydney's Lane Cove Tunnel opened two months early, despite a serious collapse of a tunnel section during construction.

There are cases in Peru, for example the Southern Inter-ocean Road sections, where a hasty procurement process led to insufficient preparatory engineering work. The government had to

share responsibility for cost overruns, with the proviso that it could take over a project if cost overruns exceeded a given limit. Substantial overruns have occurred – up to 60 per cent. Most observers believe that the overruns would have been much greater under public works procurement, given the scale and complexity of the projects. Nevertheless, more adequate preparation would have undoubtedly led to a firmer initial cost estimate and greater transfer of construction risk to the private investors.

In both countries, it is important to governments that revenue risks (e.g. traffic forecasts and toll revenue) are borne by the investor. This establishes the commercial imperative to construct the road on time and budget, and to maintain the road to good standard to attract users. In some cases involving the Southern Inter-ocean Road, the Peru Government has provided minimum revenue guarantees due to the uncertainty about traffic generation in areas of new roads.

In Australia, exchange rate and convertibility risk is borne by the investor. This is less problematic because local capital markets can provide much of the project debt and equity in local currency. In Peru, where most of the financing is dollar-sourced, the exchange rate risk is partially mitigated by the indexation of tolls to local inflation. Convertibility risk is reduced by denominating government contributions in dollars (see below) and by availability of political risk insurance policies that include cover for this risk.

2. Toll levels and government contribution

Australian and Peruvian toll-setting practices differ, but neither country allows the toll to be set solely through the competitive bidding process.[2] In both countries, authorities take the view that users should perceive toll rates as providing good value so as to increase community acceptance and support for the project.

They therefore take steps to ensure bidders propose toll rates that take account of these parameters. If necessary, governments make financial contributions to keep the competitive bidding of toll levels within these parameters.

In Australia, toll rates are an important element of the competitive bidding process, although the government will already have set specified minimum acceptable outcomes and key performance indicators. Competition remains a key control over toll levels. The winning bid will be selected after acceptable toll and level of government contribution have been determined. The length of the concession can also be a variable to be taken into account, and together these variables can be assessed by the government's project model to determine the bid that will deliver the best value.

In Peru, tolls are preset at virtually uniform levels throughout the country, irrespective of the terrain and wide variation in the cost of road building. Bidding only sets the least amount of contribution from government needed to make a concession viable (in "co-financed" projects) or the highest amount of toll revenue shared with government from the set toll (in "self-financed" projects). Peruvian tolls rates were set by a 2001 study of the average cost to *maintain* the country's existing roads – $1.50 per axle per 100km.

Both countries provide examples in which governments make a financial contribution to projects in order to ensure that they have successful public outcomes. Peru distinguishes between self-financed projects (relying solely on tolls) and co-financed projects (where a government contribution is made). Most of Peru's projects are in fact such "co-finance" models.

The advantages of a government contribution are that it:

- Allows the government to put in place a better project with better socio-economic outcomes than might otherwise be possible. This includes influencing a toll level that users will perceive as value for money;
- Shows bidders that the government is serious in its support of the project.

In some cases, such as Peru's concessions for sections of the Pan-American Highway north and south of Lima, it was feasible to have no government contribution. These "self-financed" concessions were bid with a fixed toll. They were awarded in part on the basis of the highest proportion of toll revenue that would be shared with the government. Both concessions were existing, heavily used roads, and involved rehabilitation and expansion of existing networks rather than building new roads.

The Cross City Tunnel, which opened in Sydney in 2005, provides a cautionary example of government taking a rigid cost recovery approach at the expense of taking a more balanced view of the public outcomes of the project. The toll was pre-set and the winning bidder agreed to make payments to the public authorities so as to cover all public costs, including land acquisition, project preparation and utilities relocation.[3] Moreover, the public authorities agreed to implement traffic "calming" measures on adjoining free public roads so as to encourage use of the tunnel. As it eventuated, high tolls deterred traffic from using the tunnel and actual use seemingly reached only about one third of forecast levels in the first year of operation. The project went into receivership. Meanwhile, traffic calming measures made congestion worse for vehicles avoiding the tunnel. Eventually, the original investors were bought out for about 20 per cent of their original investment.

The Richmond report for the New South Wales State Government (Richmond, 2005), in reviewing the Sydney Cross City Tunnel and other state concession projects, recommended that the policy of "no cost to government" be abandoned. The report sets out three clear best practice principles on toll levels and government fiscal approach:

> "... the Government should consider capital contributions towards the delivery of any motorway where 'value for money' tolls are not adequate to fully fund the motorway ...;
>
> "... the level of tolls should always represent value for money to the user in comparison to the existing route and should be minimized after allowing an appropriate return for risk ...; and
>
> "(i)n addition, the level of tolls should take into account overall road network objectives."[4]

In Australia, it is generally thought that the government contribution should be less than half the capital cost of the project to leave no doubt where the overall project risks lie. There have been cases in Peru, in particular in the Southern Inter-ocean Road sections, where the government contribution has exceeded 50 per cent.

The government contribution can be made in various ways. The main choice in Australia is between capital contributions and direct toll subsidies. Forms of capital contribution could include:

- Providing specified land and/or government services free of charge;
- Paying for a specific component of the project (e.g. a feeder road or pedestrian bridge);[5]

- Investing equity in the concession (although doing this risks confusing the government's role); and
- Making a payment towards the cost of the project.

The most common form of contribution in Australia is a once-only payment made when construction is completed. This is a low-risk point for a government contribution and keeps the pressure on the investor to complete on time. For example, the city council will make a payment of 17 per cent of the project cost at the end of construction of Brisbane's North–South Bypass Tunnel. Australia's earliest private road concession, the $750 million Sydney Harbour Tunnel, received financial support in the form of a $223 million interest-free loan from the New South Wales Government, repayable upon handover of the concession in 2002. This early approach has some similarities with Peru's approach to its larger road concessions.

Table I.3. Contributions from or payments to government in Sydney's road concessions (million dollars)

Project	Contribution (C) or Payment (P)	Amount	Total
M4 (Mays Hill – Prospect)	No payment	-	184
M5 (Prestons – Beverly Hills)	No payment	-	284
M2	C	50	486
Eastern Distributor	P	6.74	460
M5E	N/A	N/A	405
Cross City Tunnel	P	73.8 + gst[a]	500
M7Motorway	P	147 + gst	1200
Lane Cove Tunnel	P	67 + gst	1000

Source: Richmond (2005): Appendix 2, p.36.

[a] Goods and services tax.

In Peru, government contributions have taken two forms (see box I.1):

- The promise of annual payments (PAO) based on the capital cost of the project and not tied to traffic use. The promised stream of payments can be securitized and provide capital funding to the project. For the Northern Inter-ocean Road, the security – in the form of a bond – was issued on the international market. A bond to finance the Southern Inter-ocean Road (sections 2 and 3) was issued both internationally and domestically. In both cases, the promise of payment and the bond were denominated in United States dollars;
- The promise of supplemental revenue payments which can provide minimum revenue guarantees in the operational phase.

Box I.1. Government financial contributions in Peru

A PAO (Annual Payment for Work) is a periodic payment the concession holder will receive from the government as a contribution to the project cost. This PAO is incorporated in a CRPAO (certificate acknowledging the right to collect annual construction payments), issued by the Ministry of Transportation at defined milestones in the project's construction. The concession holder finances the first milestone, meaning no PAO is received. Each certificate is evidence of an unconditional and irrevocable obligation to make a fixed payment in United States dollars. The concession agreement provides that CRPAOs are freely transferable and that once generated they are not subject to any condition or performance obligation relating to the concession agreement.

A PAMO (Annual Payment for Maintenance and Operation) is a periodic payment to the concession holder from the Government. Its objective is to compensate the concession holder for the operating and maintenance costs and expenses they incur in order to offer the standard of public service stipulated in the concession contract.

The involvement of government contributions in the case of Peru, a developing country, raises the prospect of support through ODA or guarantees from multilateral financial institutions. None of the co-financed Peruvian roads obtained ODA grants or loans. However, the Northern Inter-ocean Road concession obtained a $60 million partial credit guarantee from the Inter-American Development Bank. This facility guaranteed some of the deferred government payments to the concession holder over the first 20 years of the concession and was undoubtedly helpful in arranging the financing of the project.

3. Handling unpredictable events and changed circumstances

Inevitably over the relatively long course of a road concession, unforeseen events (such as *force majeure*) will occur that affect the interests of the investor or the public. The concession contract must therefore contain a mechanism for dealing with these situations.

In the case of *force majeure*, both Australian and Peruvian concessions place these risks on the concession holder on the grounds that it is better placed to manage them. Landslides are an example of such events in Peru. In Australia, part of Sydney's Lane Cove Tunnel collapsed during construction. In that case, the concession holder took decisive action and the tunnel was still completed ahead of schedule. Such risks are substantial and there is clear public interest argument for transferring them to the private sector. Insurance is available for some risks.

It is almost certain that perceptions of project and country risk will change over time and thus affect *financing costs*.[6] In both countries the downside risk (i.e. the risk of higher financing costs) is borne by the investor. In Australia, the upside risk (lower financing costs) is shared between the investor and the government based on an agreed financial model. Sharing of this benefit is

important to developing countries, which improve sovereign creditworthiness over the life of a concession. For example, Peru was awarded investment grade status in May 2008, thereby lowering future borrowing costs for Peruvian projects.

Governments may want to make *transport changes* that could adversely affect a concession, such as improvements in public transport. In Australia, the government retains this right but negotiates an acceptable outcome to the investor by using an agreed transport model to explore the financial effects of the change before it is made. Increasingly, governments and concessions are working together to maintain realistic transport models of their networks so that various long- and short-term proposals can be evaluated in advance. For example, the government and Melbourne's EastLink operator jointly used a traffic simulation model to explore the effect on the concession road of changing traffic light signalling on adjacent public roads. In Peru, the parties negotiate an outcome designed to restore "economic equilibrium".

In practice, a concession contract is likely to be amended many times (the Melbourne City Link contract was amended three times in its first three years) so the concession must provide an equitable way of discussing and implementing changes, and both parties should nurture good relationships, as they have many shared goals. Frequently, both parties have aspects of the contract they wish to be amended, so there is an opportunity for trade-offs to produce a balanced outcome.

4. Transfer to government

All Australian and Peruvian road concessions are BOOT, i.e. ownership of the road is to be transferred to government after a defined period, usually at least 25 years. Peru's concessions to

improve *existing* roads have been transferred sooner (15 years). In Australia, recent practice for new-built roads is for longer concession periods of up to 45 years.

Lengthy concession periods reflect the need for investors to fully amortize and make a return on their investment prior to transfer of ownership. They also reflect the interests of pension funds, the prime institutional investors in infrastructure, to access very long-term revenue streams to match their annuity payment obligations.[7] Moreover, very gradual pay-down of debt is common – at least 20 years – so as to maximize dividends. Several rollovers or refinancing of borrowings would therefore be expected during a project's life.

The duration of the concession can be made a variable in contract negotiations.

D. Setting benchmarks to protect the public interest

1. Value for money

Governments need to be assured that private funding and operation of roads will be at least as efficient as traditional public sector provision.

In Australia, the "public sector comparator" (PSC) is applied to compare the two approaches. The PSC is a financial model of construction and operations based on the most efficient form of public procurement.[8] Private investor bids are compared against this model and in principle the concession is only awarded if the successful private bid has a better life-of-project outcome. The PSC includes a value placed on the government's transfer of

construction and other risks and nets out non-neutral variables such as the private investor's exposure to taxation.

The PSC is made public[9] and cannot normally be changed during the course of a bid. The discipline of applying a PSC is designed to extract efficiencies and keen bidding. Also, and importantly, it encourages bidders to develop innovative solutions – resulting in savings or better technical solutions – in order to improve on the standard public procurement approach.

The Peruvian version of the concept of value for money is the "project comparator". At the time of writing, the methodology has yet to be approved. The most recent draft, entitled "Public–Private Comparator for the Evaluation of Co-Financed Concessions", is dated June 2008. Until the new approach is approved, the decision to use a concession or public works is essentially made at the political level. However, where a government financial contribution is involved, the project is scrutinized under the National System of Public Investment to determine if the yield on the subsidy exceeds the opportunity cost of these resources.

2. Key performance indicators

Attracting road users is key to generating revenue for the concession. This drives private investors to provide good-quality, well-maintained roads. In Australian schemes, the bankers' focus on revenue has ensured close attention to this maxim. This emphasis has also greatly raised the standards and professionalism of road operators. Nevertheless, to ensure that quality is not compromised, Australian authorities have been careful to define:

- Key output-oriented performance indicators for the road throughout its concession period (typical indicators from the recent East Link project are shown in box I.2); and

- The (high) quality required of the road when it is handed back at the end of the concession period.

The Australian Transport Council's National Guidelines (2006) suggest that these indicators should be established at a very early stage in planning, as they will lend substance to the plans being formulated.

Peru adopts a similar approach. Its concession contracts include a mandatory "level of service" provision that is subject to continuous monitoring of the technical aspects of road operation: signaling, traffic jams, safety, availability of emergency services (a communications system, ambulance, tow truck, etc.), and maintenance planning.

Box I.2. Key Performance Indicators (East Link, Melbourne)

Quarterly reporting to precisely defined numerical targets

- Off-road
  - Capacity to quickly take and answer customer telephone calls
  - Customer service centre availability
  - Customer complaint resolution
- Tolling
  - Toll collecting and correct charging
  - Timely and accurate management of customer accounts, statements and invoices
  - Customer privacy
  - Undetected users
  - Fraud management
- Evasion and illegal users
  - Frequency
  - Management of offences
- Traffic
  - Traffic incidents and crashes
  - Incident response times
- Maintenance of the road
  - Maintenance and condition inspections
  - Maintenance activity
- Road space availability
- Environment
  - Air quality
  - Water quality

E. Organizing the procurement process

Arranging road concessions is a form of public procurement, and both countries have procedures that are designed to achieve competitive outcomes within a transparent and accountable process. Both have partly adopted and partly adapted existing public procurement processes to recognize that road concessions entail negotiating a private investment rather that simply a purchase of goods and services by government. Thus, in Peru, much of the expertise in arranging road concessions derived from officials in the investment promotion agency, rather than from officials involved in letting contracts for public works. Australia made an even more radical departure from the public works procurement approach in order to encourage innovative proposals from bidders.

In both cases, dedicated government teams of specialists are set up to arrange each concession.

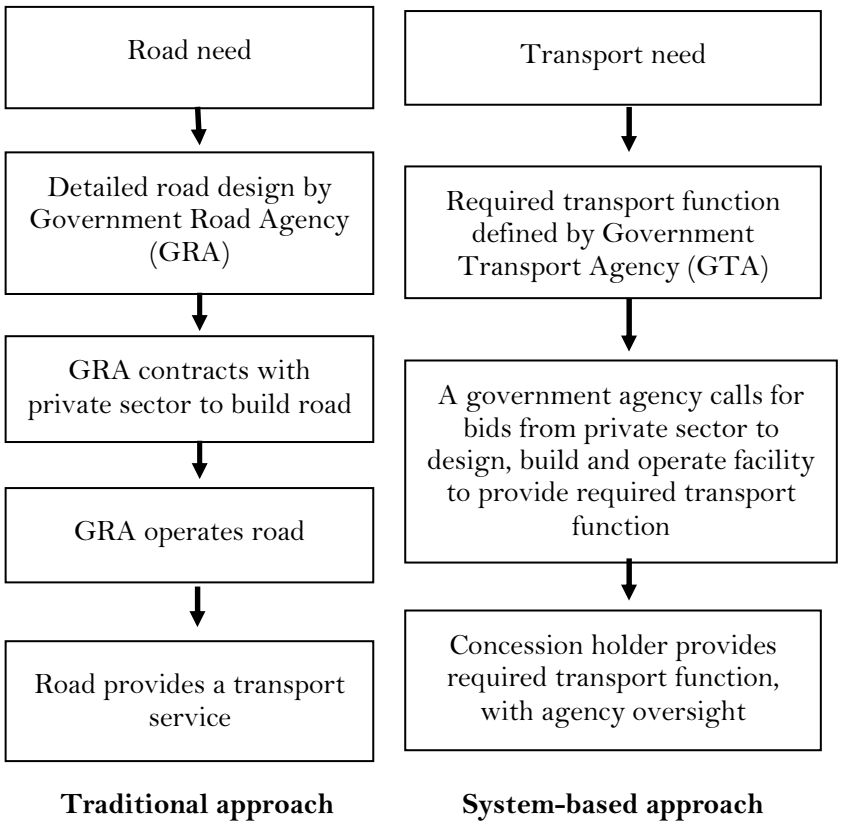
1. The procurement approach

In Australia, the change from the traditional government procurement mindset to a performance-based and holistic approach began in the 1990s. The before-and-after procurement models are shown in figure I.2.

The Australian approach is designed as an interactive process in which at least two preferred bidders are encouraged to put forward design solutions to the transport requirement identified by government. Innovative suggestions are encouraged and taken into account in selecting the successful bidder. Innovation is an important means by which the private sector can demonstrate that it can build and operate roads more effectively than under traditional procurement. Since the investors have the

opportunity to make detailed suggestions on the project, they can have greater confidence in committing to accept construction and operation risks.

Figure I. 2. Government road procurement in Australia: a change in approach



There is a great deal of interchange between the government and bidders. Measures need to be taken to ensure the integrity of the process. Probity advisers, usually drawn from leading law firms, are appointed to participate in all discussions to ensure that no undue advantage is given to either bidder, and that information which is not to be shared among the bidders remains confidential. Australian government agencies believe that this process considerably improves the project design and transport outcomes.

Peru's approach on design issues is more akin to the traditional procurement methods in which contenders are expected to bid to a static project design. There is interaction between interested bidders and the authorities on the draft transaction documentation, but less scope for interaction on project design. Moreover, there have been cases in Peru in which the government's engineering work has been poor (the Southern Inter-ocean Road concessions). When this has been combined with the PAO system of government capital cost contributions there has been a significant shift of construction risk back to government.[10] The government has attempted to limit its exposure by negotiating the right to take over the project (and repay the investment and finance) if accumulated cost overruns exceed 10 per cent. This right has not been exercised in Peru and there must be doubt as to its effectiveness in limiting government exposure to cost overruns.

The institutional setup is very similar in Australia and Peru:

- A special government agency or team dedicated to the project is established to arrange the bidding. This comprises transport, engineering, financial and legal specialists, supported by outside firms with the necessary expertise. In the States of Queensland and

Victoria, each project is run by an agency created by a specific new law. In Peru, a specialist team for each concession project is formed by Proinversion, the investment promotion agency. The Proinversion team is further supported by a standing committee of eminent persons who review transaction documentation for all infrastructure concessions. This committee provides continuity of expertise and consistency of approach across concessions;

- The project team reports directly to a group of key ministers. In Peru, this is the board of Proinversion. In Australian states, apart from New South Wales, this is a cabinet committee. The appointment of a cabinet committee to oversee the procurement (and construction) is a strong feature of the Victorian approach.

In both economies, the procurement process is taken out of the hands of the road or transport authority that is involved in publicly funded works procurement.[11] The formation of a separate project agency or team fundamentally recognizes that road *investment* is different from road *construction* and allows a wider set of skills, and a sharper focus and sense of priority to procuring the investment. One of the strengths of a special purpose agency is that its directors can have a significant private sector background.

In both countries, each concession contract has its own law. This ensures an extra layer of stability as any change to the concession would be very public and forced into normal (lengthy) parliamentary processes.[12]

In Peru, the nucleus of the infrastructure team was retained throughout a series of road concessions. Moreover Proinversion's infrastructure review committee of independent experts was

retained to review terms and draft transaction documentation in roads and other transport concessions. It has become a valuable source of institutional expertise.

F. Facilitating and monitoring road construction and operations

When a project moves from procurement into the construction phase, and ultimately into operations, the institutional setup differs in Australia and Peru.

In Peru, responsibility for implementing government obligations is assumed by the Ministry of Transport and Communications (MTC) which signs the concession contract on the Government's behalf. Oversight of the contract passes to the independent regulator, OSITRAN.

In Australia, the special agency and the cabinet committee continue to be involved through the construction phase, except in New South Wales, where the Road Traffic Authority (RTA) plays a similar role as Peru's MTC.[13] Oversight of the contract in Australia passes to an independent verifier. The special agency usually disbands or restructures once the project is completed and traffic operations have stabilized. Subsequent operations are managed by the State Road Agency and the State Treasury.[14]

As noted above, the appointment of a cabinet committee to oversee the procurement and construction phase is a strong feature of the Victorian approach. It provides for regular and direct government problem-solving over the wide range of government and local government issues that a new road will generate. It gives confidence to investors that speedy action will be taken.

Arrangements to monitor concession contracts vary with the project stage as set out below.

1. Construction phase

Governments have a strong interest in ensuring that concession roads will be built to the agreed standard, completed within the agreed time and opened only when all safety requirements are met.[15] Many of the persons interviewed for this report noted that concession holders have a long-term interest in ensuring that a toll road is built to a high standard to attract users and to reduce future maintenance costs. Owners also have a keen interest in ensuring timely completion to start generating revenue so as to reduce debt costs and return dividends to investors.

Whilst many of the commercial imperatives are complementary to those of government, there is a need for a mechanism to ensure that both parties meet their obligations when issues arise that may conflict the parties. The Australian approach is to appoint a highly qualified independent reviewer (see box I.3). Peru appoints OSITRAN, the transport regulator to this role (see box I.4). OSITRAN is appointed as an independent regulator with safeguards designed to protect its autonomy.

However, its staffing levels and budget do not necessarily rise in line with its responsibilities. Moreover, in co-financed road concessions, its actions are closely scrutinized by the government office of the Controller General. The Controller General can issue "recommendations", including for the prosecution of officials. The Congress also takes a lively interest in concessions and all Peru's road concessions have been the subject to congressional hearings. This process can cause delays in OSITRAN approvals. It also presents a difficult environment where OSITRAN might have to rule against government interests on contractual matters.

Box I.3. Australia: the Independent Reviewer

The role of an Independent Reviewer (IR) was devised in Australia to ensure that adequate auditing of the concession is completed. The appointment of the IR (usually supported by a small team) is done jointly by the project parties for the construction phase and runs until operations have stabilized. The IR works to terms clearly defined in the concession (and thus within the relevant piece of legislation, the parent act). The IR's role includes commenting on:

- Performance of all Parties;
- Design;
- Works;
- Repairs;
- Safety of the site;
- Programme;
- Payment schedules;
- Quality management process;
- Plans for operations and maintenance:
- Whether the project is complete and ready to be opened; and
- Variations and changes.

For example, in Melbourne, the City Link Act required an Independent Reviewer "following general overview and reasonable checking" to advise the State, the Company and the Trustee whether the works were "being executed in accordance with the Construction Documentation" (Victoria 1995, Schedule 1, Part 6). This model has been improved over the last decade. In Melbourne's ConnectEast 2004 project, the IR's role was described as being "to review the progress of construction and act as a certifier to the State and ConnectEast acting in accordance with the Concession Deed, its own Deed of Appointment, and the Project Legislation".

The independent verifier concept is widely regarded as having proved to be highly effective in maintaining the integrity and value of the concession process.

Box I.4. Peru: the role of OSITRAN

In Peru, the Superintendent of Investment in Public Transportation Infrastructure (OSITRAN) regulates all investment in transport infrastructure, including related concessions. Its main functions are:

- **Regulating** access, services and pricing in public transportation in monopolistic markets;
- **Supervising** the execution of the concession contracts; and
- **Mediating disputes** among transportation service providers and users.

2. Operating phase

In the operating phase, the key public interests are to ensure that roads are maintained to the agreed standard, kept available to the users at the agreed toll rates and operated safely. These matters can be set out in Key Performance Indicators (see box I.2). It should be noted that, whilst these are public interest matters, and apply general regulatory standards, they form part of the concession contract. The respective governments cannot act unilaterally. Their actions to monitor and enforce standards are governed by the provisions of the concession contract. Equally, a concession holder that fails to meet standards is exposed to penalties under the contract and may, as a last resort, face termination of the contract and loss of the investment.

In Australia, the independent verifier is disbanded shortly after construction ends and monitoring of operating standards

reverts to the established government agencies such as the Road Traffic Authority (RTA) in New South Wales and VicRoads in Victoria. The monitoring *process* relies less on government inspection than auditing of information and internal quality controls put in place by the concession holder. Governments retain the right to step in if standards are not met despite notice to do so. For example, in New South Wales, failing works contracts can be novated – that is, reassigned – to the RTA.

As mentioned above, in Peru, OSITRAN retains an oversight role into the operations phase (see box I.4) in collaboration with the Ministry of Transport. It relies more on inspections[16] to verify that standards are being observed and build precautionary mechanisms into the contracts. For example, concession holders may be required to set aside a portion of toll revenues to handle major non-routine maintenance tasks on a three-to-five-year cycle. One Peruvian concession holder believes this is an unduly rigid approach and would prefer that the funds be available to undertake improvements.

3. Enforcement measures

If all these processes to ensure successful delivery fail, there are other measures at the government's disposal.

In Australia, under the EastLink project for example, the Victorian State Government may terminate the concession if:

- Construction is not completed on time, and diligent efforts to complete are not in place;
- Lanes are closed without State permission;
- Major laws are not being complied with;
- The project is not being operated in accordance with the concession;

- Major concession obligations are not met;
- The concession holder abandons the project; and
- The concession holder becomes insolvent, bankrupt, etc.

The circumstances under which the government can act are carefully defined and the concession holder will have rights of appeal or legal review of government termination actions.[17] The concession contract will also set out the consequences of termination for the concession owners and lenders.

Enforcement measures applied in the case of Peru are substantially the same as those in Australia.

In the case of those co-financed concessions in Peru, where the government shares some of the construction risk, it has the right to terminate if cost overruns exceed 10 per cent. In this event, the government accepts responsibility for the project debt.

The lending banks have a direct interest in compliant outcomes and in many respects their interests are complementary to those of government. Australian experience suggests that the banks' desire to protect their assets will usually see them act more quickly and decisively than the government. The Cross City Tunnel in Sydney failed to meet its traffic and revenue expectations, and the owners ran out of cash. The receivers and banks stepped in and found new investors. The original investors lost 80 per cent of their investment. Meanwhile, the tunnel remained open and operated normally. Thus, a government could legally terminate a concession in these circumstances, but it would be wise to allow a privately-led resolution, provided that normal operations are maintained.

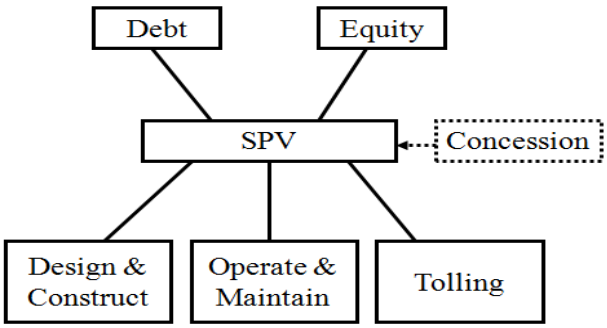
No concession in either country has been terminated by government.

G. Obtaining investment and finance

Road concessions are typically large projects requiring substantial equity and debt finance. Australia's most recent projects are Melbourne's East Link ($3.2 billion project cost) and Brisbane's North–South Bypass Tunnel ($2.6 billion project cost). Peru's project sizes range from $71 million (section 4 of the Pan-American Highway) to an estimated $1.6 billion (sections 1–5 of the Southern Inter-ocean Road).

In both countries, the concession holder is formed as a special purpose vehicle (SPV). Figure I.3 shows a simplified generic form of the relationships. The size of a project relative to the capacity of local equity and debt markets in each country results in different sources of financing.

Figure I. 3. Parties to a concession project



Australia's road concessions are typically funded by a combination of equity raised on the capital market and project debt. There are two approaches. One approach is for an established developer/operator to fund its investment in new projects through the usual corporate vehicles of internal cash flow, public offerings of equity and corporate borrowing. It may then co-invest with

partners in specific projects and also arrange project-specific debt. This is the conventional approach adopted in other sectors in which companies expand by developing new discrete projects (e.g. in mining). The Transurban Group (Australian-owned) exemplifies this approach. Transurban is the controlling owner and the operator of seven projects, five of which are co-owned with Macquarie Capital, an Australian-based infrastructure finance specialist. Transurban is also the contracted operator of two other projects.

The other approach is to form and list publicly a new company solely to develop and operate a specific road concession. Equity funding is raised by a public offering. Limited recourse project debt is arranged with banks. The financing of Brisbane's North–South Bypass Tunnel and Melbourne's recently opened East Link project are examples of this approach (table I.4). In these cases, the operator is not the developer or even a major investor. As well as publicly raised funds, a small portion of the equity is provided by the sponsoring group (the contractors and the financial promoters).

Table I.4. Two examples of Australian concession financing through listed SPVs

Finance source	Brisbane North–South Bypass Tunnel	Melbourne East Link
	Project cost: $2.6 billion	Project cost: $3.2 billion
Initial public offering	25%	39%
Sponsors equity (contractors)	5%	7%
Government[a]	17%	Nil
Debt	49%	54%

Source: UNCTAD interviews.
[a] City Council.

Transurban and Transfield are the only two specialist operators that have emerged in Australia.

Australia has a deep capital market that can supply equity through a listed developer (such as Transurban), by public offering of the SPV, or by a combination of the two. It also has banks that have the sophistication and size to provide limited recourse project debt. The financial promoter and deal maker may contribute some equity and it is customary to require the design and construct (D&C) contractor to take up to 15 per cent of the equity to provide a tangible commitment to successful construction. But the vast majority of equity is provided directly or indirectly through the capital market and not the D&C contractor. Nevertheless, the equity providers and the banks rely heavily on the financial and technical capacity of the D&C contractor for the construction completion guarantees that are essential for bank financing. The contractual relationships between the key construction, operating and tolling service providers, the SPV and the banks are the key to the concession holder accepting construction and operating risks from the government.

In Australia, SPVs may have a small core staff. For example, RiverCity Motorway, the owner of the Brisbane North–South Bypass Tunnel concession, has only six full-time and two part-time staff.

Peru does not have a deep capital market. Several projects have been too large and unfamiliar for the local equity market and for the balance sheets of local firms. The principal investors are the D&C contractors, who are mostly foreign. Local construction contractors take a minor equity role and also participate in construction and operations. Local banks have not so far provided any significant finance, in part because they are unfamiliar with concession projects and with the form of project lending required.

In Peru's larger projects, the government has made substantial capital contributions and the securitization of government capital payments (through CRPAOs) has supplied a large proportion of project funding. The foreign contractors and investors are principally large Brazilian firms, although Chilean and Ecuadorian construction firms are also present (see box I.6). Brazilian firms have formed consortia in several projects under the leadership of one or other of the group.

Two projects described in box I.5 illustrate the project size differences in Peru.

Box I.5. Financing of Peruvian road concessions

Small project: Section 5, Pan-American Highway

Beginning in 2003, this project was to rehabilitate and expand a 223-km section of the Pan-American Highway north of Lima. The project is small, with a capital cost of $73.1 million, and entails rehabilitation and expansion of existing roads rather than a greenfield investment. The SPV is Norvial SA, which is owned equally by two Peruvian construction firms: Graña y Montero and JJC Contratistas, and Besalco of Chile. The International Finance Corporation lent $18 million to the project.

Large project: Section 2 and 3, Southern Inter-ocean Road

Sections 2 & 3 of the Southern Inter-ocean Road were concessioned in 2005 to the Conirsa consortium of construction companies, including Odebrecht of Brazil, who is the contractor. The project is large, with a capital cost of $654 million. The Conirsa consortium appears to have contributed about $34 million of funding; the remainder is provided by the government through the CRPAO mechanism (see box I.1 above). There is no bank lending to the project. The CRPAO has been securitized into a bond to fund construction.

Source: UNCTAD.

H. Attracting foreign investors

Australia's road concessions have attracted little FDI from *developers* compared with domestic and foreign portfolio financing. The main foreign investment source is *contractors* who provide short-term sponsor equity (table I.4). An early project, the Sydney Harbour Tunnel, dating back to the early 1990s, was a joint venture between Transfield Holdings of Australia and Kumagai Gumi of Japan, who also provided construction services. Cheung Kong Infrastructure Holdings (CKI) of Hong Kong (China) was the developer, along with financial investors, of Sydney's Cross City Tunnel, which opened in 2005. CKI was also the developer of Sydney's $1.1 billion Lane Cove Tunnel. Bouygues of France led a consortium that was among three preferred bidders selected for the Brisbane North–South Bypass Tunnel, but the consortium later dropped out of the bidding process.

The most significant source of FDI in Australia's concessions is from the contractors via local affiliates. The Leighton Holdings group of companies (including construction companies John Holland and Thiess) is 55 per cent owned by Hochtief of Germany and is a frequent partner in the sponsoring group. Bilfinger Berger of Germany has an Australian affiliate that acquired local construction companies Abigroup and Baulderstone Hornibrook. These play a similar role in providing short-term sponsor equity of up to 15 per cent of project cost. These construction firms are well entrenched in the domestic Australian market. Leighton Holdings is a listed Australian company. Australian affiliates of Bilfinger Berger have maintained a separate corporate identify.

Construction firms that take a contractor role and not a developer role typically contribute about 15 per cent of the SPV equity and around 7 per cent of project cost. Table I.4 above demonstrates this for Brisbane's North–South Bypass Tunnel and

Melbourne's East Link. The former has Belfinger Berger group contractors and the latter has Leighton group contractors.

Table I.5. Australia's road concessions with FDI (million dollars)

Project	FDI role	Project cost	Foreign developer
New South Wales			
M2	Contractor	486	
M4	Contractor	184	
M5/M5E	Contractor	690	
M7	Contractor	1200	
Eastern Distributor	Contractor	460	
Cross City Tunnel	Developer/ Contractor	500	CKI[a]
Lane Cove Tunnel	Developer/ Contractor	1000	CKI
Victoria			
City Link	Contractor	1200	
East Link	Contractor	3200	
Queensland			
North-South Bypass Tunnel	Contractor	2600	

Source: Richmond (2005) and UNCTAD.

[a] Cheung Kong Infrastructure.

In Australia, there is no concerted government policy to attract FDI in the developer/operator or contractor roles. This is left to the market. But financial promoters are not proactive in seeking foreign investment, either. This reflects two related factors. One, as noted above, is the depth of the domestic capital market, which enables equity and debt finance to be raised locally. The other is the technical and financial capacity of local D&C contractors and operators who are able to shoulder key project

risks to the satisfaction of financial investors (including foreign portfolio investors) and banks.

There is more concern about the degree of competition among the D&C contractors, several of whom are, as mentioned, affiliates of the two German construction groups Hochtief and Bilfinger Berger. The New South Wales Government recently raised competition concerns. On the other hand, the Queensland Government favours continuing the present stance of being open to new entrants but not actively offering inducements.[18] Another emerging issue, which also has relevance in Peru, is that the size of current projects discourages all but the largest contractors from competing.

The immaturity of Peru's capital market and the size limitations of the domestic construction firms mean that Peru's largest road concessions could not have started without FDI (and in most cases, sizeable government-supported debt financing). FDI has not come from foreign developer/operators but from foreign construction companies (box I.6), who have partnered local construction firms such as Graña y Montero and JJC Contratistas Generales. These partnerships have been very fruitful joint ventures for the local firms. Construction operations are genuine partnerships in which each party contributes equipment and staff and thus local firms have been introduced to the disciplines involved in construction on a much larger scale than in traditional public works contracts. The local firms are also likely to manage road operations over the project life and some may emerge as potential developer/operators in due course.

The Peruvian Government did not actively promote the concessions to foreign developer/operators such as Ferrovial of Spain, Bouygues of France or Brisa of Portugal. National budget restrictions hampered proactive marketing and it was believed that they would in any event be unlikely to invest in roads in Peru. Peru

did not offer a strong pipeline of large projects sufficient to justify the establishment costs for potential European investors. Moreover, there are few examples that such firms are yet prepared to invest in roads in developing countries. So far, they have concentrated on developed markets.

Fortunately, neighbouring countries, in particular Brazil, had sizeable and experienced firms that could participate. The participation of Brazilian firms in the inter-ocean roads was no doubt strongly encouraged by their government in view of the geopolitical objective of these projects.

Box I.6. Foreign investors in Peru's road concessions

Odebrecht (Brazil) – A leading construction group and engineering group with interests in Brazil and many parts of the world.

Camargo Correa (Brazil) – Began as a construction company and is now a diversified conglomerate with operations in twenty countries.

Constructora Andrade Guiterrez (Brazil) – One of the largest private groups in Latin America, with diverse construction and engineering interests.

Besalco (Chile) – A construction and engineering group which was the first of its kind to list on the Chilean stock exchange.

Hidalgo & Hidalgo (Ecuador) – A roads, water and power construction company.

Queiroz Galvao (Brazil) – A construction company that has now diversified and has concessions in roads, energy, water treatment and sewage.

There are differences but also common elements between the experiences of Australia and Peru in regard to attracting FDI. These relate both to general governance conditions and issues involving the attraction of construction firms. FDI has entered either in the form of a developer/operator (such as CKI in Australia) or through construction firms (such as the Brazilian companies in Peru) that contribute significant equity as well as engaging as the D&C contractor. The role of the D&C contractor is paramount. Important factors in promoting foreign investor confidence include:

- The existence of a pipeline of well-prepared and large projects. This assists foreign construction firms to gear up a local operation and develop relationships with local sub-contractors. Foreign firms could also enter the market by acquiring a second tier D&C contractor;

- Visible political will to achieve successful project outcomes;

- General quality of governance;

- A good risk-allocation ethos;

- A developed and stable legal system;

- Potential local partners;

- Specific project legislation which gives confidence in commitment and sustainability;

- Availability of project debt finance, including government support;

- Government using high quality advice and processes during the procurement phase;

- Potential for profit;

- Evidence of success with the first project. In a retrospective review Alonso-Conde, Brown and Rojo-Suarez (2007) argued that this is what happened with Melbourne's City Link.

Table I.6. Peru's road concessions with FDI (million dollars)

Project	FDI[a]	Total project cost
Network 5 (Pan-American Highway)	Besalco (Chile)	73.1
Network 6 (Pan-American Highway)	Hidalgo & Hidalgo (Ecuador)	228.6
Northern Inter-ocean	Constructora Andrade Guiterrez (Brazil), Odebrecht (Brazil)	218.9
Southern Inter-ocean (sections 2&3)	Odebrecht (Brazil)	645
Southern Inter-ocean (section 4)	Camargo Correa (Brazil)	180
Southern Inter-ocean (section 5)	Hidalgo & Hidalgo (Ecuador)	184

Source: UNCTAD interviews.

[a] FDI not usually 100% equity. All projects include Peruvian partners who may be toll partners, such as: Graña y Montero, Ingenieros Civiles y Contratistas Generales, and JJC Contratistas.

Both Australia and Peru welcome foreign investment in infrastructure, including roads. Peru facilitated FDI through key contract provisions such as dollar-linked toll pricing, fiscal stability guarantees, assurances of currency convertibility and hard currency debt financing guarantees. For different reasons, neither government actively promoted projects to foreign investors. Infrastructure finance specialists may have a prospective role in promoting FDI in roads. Their drive, expertise and financial resources in putting complex transactions together are valuable. This may especially be so in developing countries, where important contributors to the overall financing – the banks and institutional investors – need to have any doubts or perceptions regarding country risk assuaged. Australia's Macquarie Capital noted that, from its experience, moving into new markets needs a great deal of effort and personal contact on both sides.

Notes

1 Preparatory technical, financial and legal costs for each short-listed bidder on an Australian project can now amount to $28 million. The New South Wales Richmond report (Richmond, 2005) speaks of the essential need for "project scale".

2 The "toll" is likely to be applied at differing rates depending on the type of vehicle. For example, Peru charges on a per-axle basis so that heavy trucks pay more than light vehicles. Melbourne's EastLink road charges different rates for weekdays and weekends. It is possible to foresee urban toll roads moving to systems that charge more at peak times during the day as a form of congestion reduction. Tolls are also indexed to inflation. Typically, they can

rise at a maximum rate of the general consumer price index, although in some Australian cases the inflation indexation is capped.

3 For example moving electricity, water and gas lines or pipes.

4 Richmond (2005): 4.

5 A government might also directly build a project component. In such a case the investor would prefer that the government undertake components that are not critical to project completion – such as a pedestrian overbridge or landscaping.

6 Project loans may need to be rolled over several times during the tenure of a concession.

7 Initial funding of a concession in Australia may also include provision to commence paying a set (or "stapled") dividend, even before the road is open and generating revenue.

8 Public procurement can include contracting out construction and operations to the private sector in traditional forms.

9 The Victorian Government places its public sector comparator model on the web via Partnerships Victoria (www.partnerships.vic.gov.au). This model particularly examines the consequences of risk transfers between government and bidder. Having an open and public model is very important, as it removes some of the most contentious and arguable parts of toll bid assessment.

10 Concession contracts allow for the approval of contract variations arising from changed scope of work but not price changes.

11 The exception is New South Wales, Australia, where the Road and Traffic Authority (RTA) retains control, albeit by use of an internal project team. The Richmond review (2005) of New South Wales practice recommended the inclusion of skilled independent persons in the RTA process.

12 The original Melbourne City Link Act of 1995 was 321 pages plus 22 separate exhibits, and was amended 8 times.

13 New South Wales remains satisfied with its model, although the Richmond review (2005) noted that it must be carefully managed so as not to confuse the policy and management roles of career

officials and that RTA should supplement its own staff to meet the skills required by each specific project.

14 Alternatively, the experience of the State of Victoria to date suggests that there could be an ongoing role for a special agency.

15 The safety issue is especially important with tunnels and bridges, where shortcuts could have major consequences.

16 Often utilizing contracted experts.

17 It is worth recalling that concessions in both countries place *force majeure* risk on the investor.

18 Australian Financial Review (2008). QLD rules out perks for foreign builders. 14 June. The Leighton group companies bid against each other and special probity rules are enforced during concession bidding.

II. OUTCOMES IN AUSTRALIA AND PERU ROAD CONCESSIONS

Road concessioning is a relatively recent phenomenon internationally, including in the countries studied. Most countries have executed no more than a handful of road concessions and there is not a large body of research-based evidence on their impact.[1] In Australia and Peru, the conclusions about outcomes are drawn from interviews and from the small number of studies undertaken.

In both countries, road concession outcomes can be assessed under four categories:

- Public finances – have concessioned roads augmented public funding?
- Have they had a positive economic impact?
- How do the construction and operations compare with public works alternatives?
- What contribution has FDI made?

A. Funding impact

In the last decade, concessioned roads have made a sizeable contribution to the funding of *new* or *improved* roads in both countries. They are still a small part of the overall national networks, which of course are the result of public expenditure over the last century. In Peru and in the eastern states of Australia, road concessions have become established vehicles for accelerating infrastructure development. The State of Victoria pioneered modern concession roads (Melbourne's City Link project) at a time of budget crisis.

Private funding has almost certainly accelerated road development in Australia. Not least, this is because it remains difficult for governments to convince the public to pay for toll

roads unless it is clear that they cannot be afforded using public funds. The City Link project, commissioned at a time of state government budget crisis, is the most visible example. Recently, there has been an increasing emphasis on attracting private investment as a source of innovative and timely solutions to complex urban projects. Nevertheless, the "additionality" principle remains.[2]

Augmenting public funding was an important stimulus in Peru, especially for the early self-financed concessions. In some later concessions, the construction risk was not fully transferred to private investors. Cost overruns, resulting largely from poor project preparation, led to significant calls on the budget. The present value of government commitments (including contingent commitments) has been capped at 7 per cent of gross domestic product (GDP). On the Southern Inter-ocean Road (Sections 2 and 3) the Government contributed 91 per cent of financing by way of a government-backed bond whilst equity (from contractors) was only 9 per cent of project cost. In its latest concession, extension of the Central Inter-ocean Road, the Government has hardened its stance and attempted unsuccessfully to tender the road as a self-financed concession (with the length of new road to be constructed as the key bid variable).

Practice has shown that it can be desirable for a government to make a financial contribution to projects that have good socio-economic outcomes but will not be commercially viable at tolls that present good value to users. Thus, road concessions cannot be judged solely on whether they completely *replace* public funding. Rather, they can *leverage* public funding which can focus specifically on achieving outcomes beyond a purely commercial reach. For example, Sydney's M2 Motorway project received $50 million of public funding towards a total project cost of $486 million. The city council will contribute 17 per cent towards the total project cost of $3 billion of Brisbane's North–South Bypass Tunnel.

B. Economic impact

Interviews in Peru suggested that the strongest motivation for concession roads was their contribution to increasing national competitiveness. Connection of underserved regions of the country was also a high priority. In Australia, with its emphasis on urban roads, a high priority was given to easing urban transport – commuter traffic to city centres, urban bypasses and improved heavy vehicle access from trunk roads to ports. People interviewed for this report generally rated the outcomes of concession roads positively in these respects.

Research in Peru shows evidence of a positive impact in terms of improved travel times and greater economic activity in previously underserved communities:

- The average travel time from Tarapoto to Yurimaguas on the Northern Inter-ocean Road has been cut from 7 hours to 2.5 hours;
- A trip from Madre Dios to Cusco that once took 24 hours has been reduced to 11 hours;
- A University of the Pacific study calculated the economic net present value of the Southern Inter-ocean Road improvements as $1.2 billion. Whilst sections are still under construction, by March 2008 traffic had already exceeded the 2009 projections and in one section already exceeded the 2015 traffic forecasts. These outcomes suggest that the combination of road quality and tolls represent very good value for users and have resulted in a strong return on the government's financial contribution.

Positive results begin with good project selection. The same planning approach and project assessment disciplines should apply irrespective of whether the project is publicly funded or concessioned. The key question is whether private investment leads

to more efficient construction and better operations than can be expected from traditional public funding and execution. This is considered below.

Certain of Peru's projects have the objective of enhancing regional economic integration. See box II.1.

Box II.1. Peru's roads and regional integration

Peru's inter-ocean roads received strong impetus from a regional integration perspective. The Presidents of Brazil and Peru agreed on the importance of road links between their two countries to enhance the West–East integration of the South American continent. This agreement gave strong momentum to the process in Peru. The concessioning process itself was not jointly managed. (Talks at the outset to finance roads through the Brazilian development bank, BNDS, proved unsuccessful.) Nor was it fully coordinated by the two governments in the sense that complementary projects were undertaken on both sides of the national borders. However, the southern inter-ocean sections will form a network that connects directly to the Brazilian road network and the Brazilian Government has paved its part of this road, including the bridge crossing at the border. In addition, the participation of Brazilian contractors – who were critical to undertaking the projects – received strong encouragement from the Brazilian Government.

The prospect of greater cross-border business with Brazil arising from this connection is a key economic benefit. Moreover, it will improve livelihoods of remote communities by opening up much improved access to the markets of both countries. One drawback of the political momentum was rushed project preparation. Nevertheless, traffic is much greater than forecast and benefit–cost ratios suggest there will be net positive economic outcomes.

C. Construction and operational efficiency

The majority of views and evidence suggests that the concession roads in Australia and Peru do exhibit superior performance than obtained under public funding and execution. In particular:

- Concession roads are likely to be completed faster. New South Wales projects have been completed on average about five months early;
- Construction cost is likely to be lower (Australia's roads must be able to outperform the public sector comparator, which makes due allowance for the value to government of the risks transferred and also includes higher private sector borrowing costs);
- Maintenance and road availability is much better (visibly in Peru).

These impressions given in interviews are supported by a study of Australia's concession roads (box II.2).

Box II.2. Study on cost and time performance of Australian concessions

In 2007 Infrastructure Partnerships Australia, an industry association, commissioned a study to compare the cost and time performance in completing concession projects with those undertaken by traditional procurement. It was Australia's first ex-post performance assessment, based upon a sample of 54 projects of both types that were completed or largely completed since the year 2000. The sample included 25 transport projects, of which 6 were concession roads and 13 were roads constructed by traditional procurement.

/…

Box II.2. Study on cost and time performance of Australian concessions (concluded)

The study compared cost and time performance of concessioning versus traditional procurement through four project stages of original approval, final budget approval, contractual commitment, through to actual final result. The results for *transport* projects were:

Project stage	Cost overrun (%)		Time overrun (%)	
	Concession	Traditional	Concession	Traditional
Full period (original to final)	10.8	29.9	3.7	40.0
Contract – final stage	0.1	11.3	-9.5	20.8

Both approaches show *time* overruns over the full cycle. Traditional projects began with a head start since there was much greater specificity of design at the original approval stage. Concession projects also took longer at the contractual commitment stage. However, once contracts were awarded, concession projects were completed much more quickly and clearly outperformed over the full project cycle.

Over the project cycle, concession projects outperformed traditional procurement on *cost* overruns and had statistically insignificant cost overruns between contract amounts and final results.

The study also noted that overruns recorded under traditional procurement tend to increase as projects become larger and more complex.

Source: Allen Consulting Group and University of Melbourne (2007).

These results appear to depend crucially on transferring construction and operations risk to the private investor who will not make money unless a timely and quality service is provided to users. In certain cases, Peru's projects were rushed through without adequate engineering work and resulted in some transfer of risk back to government.

Improved maintenance is a feature, especially in Peru. Tolls provide an assured long-term source of maintenance funding compared with the vagaries of annual budget funding.[3]

Initially, many Australian roads were constructed by private contractors working to government designs. Increasing expenditure on roads saw the rise of skilled design groups in the private sector. From the 1980s, many of these consultants began working directly with the construction industry to produce innovative designs and construction methods via the design and construct process. Australia's interactive approach to concession procurement allowed scope for innovation. Typical design and construct cost-saving innovations to the government's designs have been:

- Adjoining carriageways placed at different levels;
- Creeks re-routed;
- Sewers lowered;
- Bridge piers relocated;
- Underpasses changed to overpasses;
- Precast standardized bridges; and
- Pavements made continuous over bridges.

This new approach led to many bids that were significantly below government estimates.

Notes

1 The ADB study (2000) remains the most comprehensive assessment of infrastructure concessioning in the Asian region.

2 For example, at least one user organization, the Royal Automobile Club of Victoria, has a policy that private funding of roads can *only* be justified for a project that would otherwise not proceed if it relied on public funding. It believes that motorists are already paying for roads through fuel taxes and registration fees and that tolls represent a form of double taxation.

3 The Peruvian Government is now trialing multi-year maintenance contracts on publicly funded roads to try to replicate the success of concessioned roads. This approach still lacks the commercial discipline of concession roads, which rely on tolls – and thus satisfied users – to maintain roads to high standard.

III. Best practices lessons for developing countries in roads concessions

Private investment can contribute positively to improved road networks and FDI has a promising, if still emerging, role to play. So far, as noted in chapter I, road concessions are still a minor feature of overall investment in improving transport infrastructure in most developing countries. In the future, FDI has the potential to raise its contribution alongside traditional public funding and ODA. The experiences of Australia and Peru show that introducing private investment is a challenging but rewarding process.

This chapter highlights the key lessons from the experiences of the two countries in a form that enables lessons to be drawn by developing countries seeking to introduce FDI to augment their road infrastructure. Of course, Australia and Peru differ in their levels of development, transport infrastructure needs and capacity of users to pay tolls. They differ further in these respects from LDCs. Thus, the lessons have to be adapted to circumstances prevailing in individual countries. Nevertheless, there are many common lessons to be drawn for all countries and there is value in understanding the rationale and results, even where some highly advanced practices may not be immediately applicable. The lessons drawn below are intended to be sensitive to these differences.

A. General conclusions

Road concessions are an opportunity for government to shift the construction, operating and financing risks of road development and operations onto private investors. By permitting the concession owner to charge tolls, a government expects commercial disciplines to bring about timely and cost-effective construction and levels of maintenance, safety and other operating

standards that will attract users. The desired outcome should be more and better roads and/or lower user costs and ultimately outcomes such as improved national competitiveness, reduced congestion and pollution or improved market access for communities.

In Peru, most observers believe that the following aspects of road operations work better under concessioning (in some respects particularly involving foreign investors) than under a traditional public works approach:

- Undertaking of very large projects (in Peru's case only foreign concession holders had the expertise required);
- Lower construction cost in large projects (due to the economies of scale achievable). However, in Peru, it has not been tested whether or in what proportion cost savings accrue to the investor, the road users and/or the government;
- Higher maintenance standards;
- Better control of heavy vehicle loading;
- Higher standards of accident and vehicle breakdown response;
- Better policing of encroachment on road reserves.

It is important to note that many of these advantages derive from the internal incentives of concession contracts compared with the public works approach. Road maintenance, which is frequently cited in Peru as a major improvement under concessioning, is a prime example. Concession investors are have an incentive to build to high standards, to undertake preventative maintenance and to control overloading so as to reduce maintenance costs and thus the margins received from fixed tolls and maintenance payments. These disciplines are absent from public works maintenance contracting.

1. Road concessions are a learning process for all stakeholders

This includes not only the public authorities but also the private investors, their advisers and local banks. Everybody is learning at the start, but there is also a need for a centre of excellence to widen and sustain capacity-building among all stakeholders. This should extend to regional and municipal government. In Australia, road concessions are in practice conducted at the state level and there is continuous learning from each other's experiences.

2. A strong transfer of skills and capacity-building occurs from the foreign partner to local partners

In Peru, initially only foreign companies had the expertise to handle the construction phase of large concessions. However, the joint venture format in construction – in which each party contributes staff members who work alongside each other – gives a strong learning effect. There seems little need to mandate such joint venture approaches. Typically, foreign investors will want to partner with local construction companies in order to reduce political risk. They may also look to these companies to operate the road. In the past, Peru applied a 40 per cent local procurement rule, but this was ultimately forbidden under its free trade agreements.

3. Disciplined planning and execution are key

Successful socio-economic outcomes from road concessions require disciplined planning and project selection and expert, dedicated execution under astute political direction. They are very demanding of government time and expertise at the planning and execution stages. But well-conceived road concessions should give the prospect of decades of good user service whilst relieving

governments of the maintenance burden. Foreign investment has an emerging role to play. The specific lessons entailed in planning and executing road concessions and the utilization of FDI in this process are set out below by following the step-by-step tasks involved.

B. Specific lessons

1. How to identify projects

Road projects, however funded, must arise from a transport plan and disciplined project assessment if they are to achieve good socio-economic outcomes. The same process should apply whether the projects are to be publicly funded in the traditional manner or selected for private concessioning. In neither country were private investors able to self-identify projects.[1] It is not the job of investors, much less foreign investors, to decide on what are appropriate socio-economic considerations.

A corollary is that the development of a ***pipeline*** *of well-conceived and well-prepared projects for concessioning has important benefits.* Firstly, it enables key risks – such as construction and revenue generation – to be properly understood by private investors and increases a government's ability to transfer these risks to the private party. Peru's most recent concessions in the southern inter-ocean corridor were not well prepared. This has led to work variations averaging 60 per cent above original cost (compared with an average of 40 per cent in Peru's traditional public works projects).[2] Thus, the government has borne a substantial part of the construction risks arising from cost overruns.

Secondly, the development of a project pipeline encourages a healthy competitive interest by construction contractors in seeing

a flow of work. It could also be an important factor in encouraging new foreign construction companies to enter the market, both as contractors and investors in concessions.

Experience suggests that it is likely to take at least five years to prepare a transport plan, to develop a pipeline of properly assessed road projects from that plan and to apply the necessary tools and judgement to select a set of projects suitable for concessioning. But the experience of both countries is that it is worth taking this time to achieve the best socio-economic outcomes, to enable key risks to be adequately transferred to the private party and to encourage more participants, including foreign investors, in the concessioning process.

Figure I.1 above sets out the major stages of the concessioning process.

2. How to select road projects suitable for concessioning

Selection of projects from the transport plan for concessioning involves political, commercial and practical criteria. The ability to entirely self-finance from tolls is not one of them

It might be thought that only projects capable of generating toll revenue sufficient to cover maintenance, to repay debt and to provide an acceptable return to the concession owner would be suitable for concessions. The prospect of commercial viability is of course required but both countries illustrate cases where government financial support was provided. In these cases, the socio-economic outcomes justified a government contribution to boost the financial returns to the point of commercial viability. (See below for issues pertinent to toll setting.)

In principle, but only in principle, any road project that is suitable for public funding can be a candidate for concessioning. Choosing which projects to concession involves the following considerations:

- Community acceptability: the project must bring visible improvements at acceptable toll rates to users. Two further riders will usually apply:

  - There must be reasonably available free alternatives for road users to provide choice and competition;[3]

  - Governments should not restrict use of competing roads to boost use of the concession road. Measures such as "traffic calming" on adjacent roads can infuriate local communities, a lesson that was learnt the hard way with Sydney's Cross City Tunnel;[4]

- Competitive outcomes: the project should be sufficiently commercially attractive to engender competing bids from technically qualified and adequately financed consortia;

- Size: the project should be large enough to interest bidders (and associated investors and banks) in undertaking the costly preparatory work involved. This has to be judged case by case. Where the procurement process is interactive and the financing involves an initial public offering (as in the more recent Australian concessions), a minimum project size could easily be $500 million. A lower minimum would apply where bidders are responding to a project with full engineering design or to a less

complex project (such as an upgrading or widening project on which the engineering and economics are much better understood). These latter cases are more typical in developing countries such as Peru. Nevertheless, recent Peruvian concessions have project costs of over $200 million. These thresholds should be considered in conjunction with the next bullet point – it is the large and complex projects in the transport plan that will benefit most from concessioning;

- Construction scale and complexity: since concessions enable the government to transfer construction risk to the private sector, it makes sense to do so on the largest or most complex projects. For example, the public works agency may have no experience of tunneling and it could be sensible to allocate construction risk on projects with tunnels to the private sector (Australia). Or, the scale and complexity of projects may exceed the experience of the public works agency and local contractors (Peru);

- Scope for innovation: an advanced procurement process (Australia) will provide scope for innovation in design and thus complex or pioneering projects will benefit most from concessions. This is less applicable in countries (Peru) where a more traditional public procurement process is applied in which there is little scope for innovative design proposals by bidder;

- Identifying a project where there is heavy traffic and low scope for toll evasion;

- Successful first project: the first concession road should be seen as successful by all stakeholders. A poor first project can set back the cause of concessioning for years. The first project may arouse wide opposition: from (a) road users who believe that the road use should be free, since it has already been paid for by taxes especially fuel taxes; (b) the traditional public works execution and procurement agencies, who lose sources of patronage; and (c) those who believe that roads are a public service and should be provided by the state.

In Peru, all significant national road proposals were deemed suitable, in principle, for concessions. The key selection issue was to decide if projects could be self-financed (through tolls alone) or co-financed (through a combination of tolls and supplementary government payments for construction and maintenance). This decision was made by the concessioning authority, but overall government policy on the toll (and the elasticity of demand by users to the toll rate) has a clear influence on this division (see below).

Further selection disciplines are involved for co-financed projects. No project is forwarded for concessioning (or presumably for public works financing) unless it has a positive economic value[5] and the finance ministry has approved a ceiling on the level of public funding to be made available. Thereafter, the concessioning authority structures both kinds of transactions offered in accordance with the revenue sources to be available from tolls and government payments (if available). In the case of self-financed concessions, the tender is won by the qualified bidder who offers the highest share of toll revenue to the government. In the case of co-financed concessions, the tender is won by the qualified bidder that requires the lowest discounted present value of the combined

construction and maintenance payments (with tolls netted off these obligations).

3. How to set the toll rate

In practice, tolls are either pre-set or pre-conditioned prior to a competitive tender process. Issues of value for users and government take or contributions are influential parameters

In principle, the toll can be fixed by government as a pre-set tender condition (Peru) or it can be determined by the competitive process of the tender itself (Australia). Even if the tender sets the toll, it can be influenced by financial contributions provided by government to support public interest outcomes (Australia in several cases). In certain cases, a government may require the concession holder to make payments to government (e.g. Sydney's Cross City Tunnel), although this is rare. The length of the concession is also a factor in influencing the competitive setting of tolls.

It should be noted that tolls on concession roads are set within an overall road pricing system that is not market-based. Road users also pay fuel taxes and vehicle registration charges, whether or not they use tolled roads. Use of non-tolled roads is free of direct user charges apart from proxies such as fuel taxes. These factors distort road pricing, as do the existence of externalities such as vehicle pollution. A fully integrated system would apply an inclusive charge to all users of all roads, depending on travel distance, type of vehicle and time of day, among other factors. The technology exists to do this (electronic tagging, vehicle recognition systems and satellite positioning), but its application is still a long way from political and community acceptance. Initial applications are likely be in the trucking industry.

Toll-setting is thus a calculus of obtaining community acceptance (for a service that has historically been free to the user) and commercial viability, whichever process is used to set tolls. This applies especially to truck tolls.

Peru chose to pre-set a uniform toll for all roads, irrespective of their underlying construction costs or expected traffic volumes. (Construction costs vary widely between the flat coastal strip and the mountains and Amazon region.) It was also set "low" and is based on national average maintenance costs and does not include capital cost recovery.

One outcome of Peru's approach is that, other things being equal, it reduced the pool of projects capable of self-financing. In particular, it tended to self-select projects that are existing roads with high traffic volumes and where the key works were improvements or widening. Thus, only two of Peru's road concessions are self-financing – maintenance and improvement projects on stretches of the Pan-American Highway north and south of the capital, Lima. It is no coincidence either that these were the earliest projects to be concessioned – they promised both road improvements and a substantial gain to the treasury (through removal of maintenance obligations and indeed a share in toll revenue). Such projects could more readily be presented as a win–win to stakeholders.

This approach was a political and policy calculation that successfully avoided most public opposition to paying for a public service that was historically free to the user. It also clearly entailed a form of cross-subsidy to road users in the more remote, mountainous or rainforest areas, as these concessions required government contributions to make them commercially attractive.

In the future, Peru's policy may lift tolls on new projects to above maintenance cost levels, and may set different toll rates on

different projects or in different parts of the country. This is being explored circumspectly.

In Australia, tolls are established by competitive bidding, but the outcome can be pre-conditioned by a number of policy constraints or development outcomes set by government. First, the toll level may not be the only bid variable. Second, the concession holder's ability to charge "what the market will bear" may be constrained. For example, the concession holder may not be permitted to raise charges during peak periods through "time-of-day charging" (as this might redirect traffic to congested non-tolled roads) or to charge trucks their full opportunity cost. Third, in recognition of important public interest outcomes, the government may subsidize the project and thus lower the toll proposals arising from the tender. The federal and state governments both contributed to construction cost of the M7 arterial Sydney bypass to speed journeys of through traffic and avoid it congesting suburban roads.

The lesson from these experiences is that toll setting is not a simple matter of relying on competitive bidding, even if it is a formal bid variable. Tolls result from a calculus of community acceptability, commercial viability and important public interest outcomes. The important issue for governments is to be clear about the development outcomes to be served by any toll road and to inject these considerations into the tender process in the best competitive manner.

4. How to prepare concession projects

Major technical, environmental and social concerns should be addressed before tender despite temptations to "fast-track" the project.

a. A full and competent feasibility study is essential and a pipeline should be developed

One important lesson is the need to plan ahead and have a pipeline of well-engineered projects as a basis for full transfer of construction risk to the investor. This point was elaborated on above. In Peru, in addition to a feasibility study, a final study is required. Australia's procurement process involves greater involvement by bidder s in final design. (See section 5 below.)

b. Environmental, cultural and social impacts should be addressed in advance to reduce investor uncertainties

All these issues should be considered in the feasibility study and be engineered into road design, such as road routing. Cultural issues present a good example. In Peru, about five artefacts are found per year during road construction under concessions. Unique or very important finds could lead to road rerouting or extensive salvage or relocation of cultural treasures. Whilst some finds can be expected, the risk of major unexpected discoveries can be minimized by careful archaeological assessment of the road route. Peru's Institute of National Culture certifies that the road is unlikely to disturb or unearth significant cultural artefacts.

c. Land acquisition should be completed before tender

Land acquisition usually involves delicate, expensive and time-consuming negotiations. The temptation to speed up the tender by dealing with land issues ex-post is high but should be avoided.

It is not a solution to ask concession holders to put acquisition money up front – it is still public money subject to government procedures and the relocations can only be undertaken by government.

Land acquisition can even be problematical in expansions of existing roads if these have attracted squatters along the road reserves. Even if the land is publicly owned, and the occupants have no legal rights, most governments will want to institute a humane programme of assisted resettlement. Road expansions pose the risk of loss of public and user support if the concession holder starts charging tolls on existing lanes, even though no visible improvements have been carried out due to delays in land resumption.

5. How to organize the procurement process

Procurement of private road investment is a complex commercial and public undertaking. Dedicated government expertise should be assembled under close and energetic political direction. An interactive process with bidders during the tender leads to innovation and better risk transfer in Australia, but preserving transparency may be an issue in developing countries.

The awarding of road concessions involves a public procurement process that seeks the best outcomes in the public interest. Thus, the concession procurement process must have the qualities of authority, expertise, transparency and competition. Best practice in procuring roads concessions requires adding a fifth quality to the process – encouraging innovation.

However, concession roads are different from public roads and the public procurement process must be adjusted to this reality. The procurement process must address not only construction but the conditions for operation and maintenance and revenue generation by the investor for many years thereafter. The investor will have a keen and legitimate interest in the design of the road so as to optimize traffic, to efficiently collect tolls and to facilitate maintenance of the facility to a standard that attracts users. These

interests do not apply to the procurement of a construction contract.

In essence, the traditional procurement model is about finding a road construction *contractor* on the best terms whilst concession procurement is about finding a road *investor* on the best terms. (Of course, all concession projects entail construction and typically a contractor is also part of the concession ownership, but the difference nevertheless remains.)

Organizing the procurement of a road concession accordingly requires a different approach and a wider range of skills than traditional procurement. Australia and Peru adopted similar approaches, although Australia has a more developed process of involving bidders in design to encourage innovation.

Based on these experiences, best practice procurement requires:

- *Empowerment of a specialist multi-disciplinary team to conduct the procurement process.* In Australian states, apart from New South Wales, a special project authority was created by legislation for each concession project. The authority was not beholden to the interests of traditional departments (such as those involved in tendering public works contracts). The authority could recruit staff and buy in specialist engineering, financial, legal and other advisers. The special authority typically disbanded after construction and a short ramp-up period. In Peru, Proinversion, the investment promotion agency, fulfilled this function of a special team with statutory powers;

- *Direct access of this team to ministers who are actively involved.* In the Australian state of Victoria, each project reported directly to a cabinet subcommittee of ministers representing the key policy areas in order to give immediate high level attention to the myriad of policy issues that arise. During the City Link project in Melbourne, these ministers met weekly. In Peru, the board of Proinversion is ministerial level;

- *Special legislation to create the institutional authority needed and/or to give legal backing to the concession term and conditions.* In Australian states, this legislation could override specific regulatory powers of other laws; it mandated and funded the special authority and finally incorporated the contractual terms of the concession into law. Peru's Congress issued laws that gave legal force to the concession terms for each project;

- *Bidder involvement in design to encourage innovation and reinforce transfer of construction risk.* Australian concession procurement deliberately encouraged innovation in design from the bidders. It thus differed markedly from traditional roads contracting procurement, which seeks to tightly specify the design so as to improve transparency. Typically, two preferred bidders were selected and then invited to make design proposals to the procurement team and make detailed proposals on toll rates and systems. Stringent measures were taken to maintain a transparent process. Bidders could only meet the designated procurement team (who in turn would consult ministers or other areas of government as required). Further, independent probity advisers –

usually appointed from law firms – attended all meetings with bidders.

Australia's approach became a highly structured negotiation process within a competitive framework that is well beyond the simple bidding procedures of a traditional public procurement. Apart from encouraging innovation, this process reinforced the transfer of full construction risk to the investor. A bidder fully involved in design has no basis to make contract variation claims on government.

Two issues arise, especially for developing countries, with interactive bidder involvement in design: transparency and bidder costs

- Peru's bidding process was more akin to traditional public procurement. Interaction with interested parties was welcomed and extensive on draft terms and transaction documentation. But in the bidding itself, Peru relied more on offering fully designed projects as for a normal roads contract.[6] It did not organize face-to-face meetings on design with preferred bidders. Many developing countries would be concerned that an interactive approach during the tender period would lead to favouritism and corruption;[7]

- Inviting detailed design suggestions from bidders raises their preparatory costs on top of expensive financial and legal services costs. These costs in the latest Australian projects were up to 40 million Australian dollars ($28 million). The Queensland Government recognizes this and in a recent project offered a grant of 4 million Australian dollars ($2.8 million) to each bidder to demonstrate its serious intent and to encourage competition.

6. How to structure key terms to get good public outcomes

Good public outcomes require attention to key elements of the concession terms: risk allocation, catering for unexpected circumstances, setting benchmarks and the provisions of end-of-term transfer to government.

a. Costs and revenue

The investor must be responsible for construction cost and completion and for generating revenue by offering value to users if a project is to achieve a good quality outcome.

If there is adequate transfer of these risks, the commercial motivations of investors to complete a quality project on time and to operate and maintain it to high standard are the best assurances of a satisfactory outcome. If not, concessions dominated by contractors could revert to all-too-common models of public works in which contractors seek extra cost reimbursements through contract variations.

b. Changing circumstances

The concession should cater to changing circumstances over its long life and unexpected events. Important risks can be placed on the investor and some upside benefits shared.

In both countries, *force majeure* risk is placed on the concession holders. They can react much more quickly to events such as landslides and tunnel collapses. Their lenders will reinforce the sense of urgency. This is a very valuable provision for governments, since their annual budget systems and procurement rules can make it difficult to react quickly.

Country risk perceptions of lenders will change over the 25 or more years of a concession and thus *financing costs* will change. Downside risks (higher financing charges) can be placed on the investor, whilst it is possible to devise a sharing mechanism for upside risks (lower financing costs) based on the agreed financial model of the project. Governments that improve economic management and reduce country risk perceptions can engineer lower user tolls into the concession. Perhaps more importantly, high user charges because of poor country risk at the outset of a concession are not completely locked in. For example, Peru has recently been upgraded to investment grade status.

c. Set benchmarks through the public sector comparator and key performance indicators as public interest safeguards

The *public sector comparator* (PSC) determines the best value for money approach that could be expected from traditional publicly funded procurement and operations. Due allowance is made for the value of risks that would otherwise be transferred. In Australia, the selected concession bidder must offer a better outcome than the PSC, which is usually disclosed to the bidders. This mechanism protects the public interest in ensuring that the concession approach delivers value.

Key performance indicators covering operational issues – such as user services, tolling systems, traffic management and safety, air and water quality – and maintenance are set as minimum acceptable standards in the concession contract. They provide an enforceable backup in cases where commercial interests may not align with the public interest (e.g. air quality) or where investors might be inclined to skimp on service levels.

d. Straightforward safeguards should be implemented to ensure that the asset is in good condition on handover

The very long term of concessions is designed to accommodate very slow amortization of debt. (Debt may be refinanced several times in the course of a concession.) Other things being equal, this approach reduces tolls for a given rate of return on investors' equity. The road is likely to be decades old at the time of handover.

Although there is as yet no experience of actual handover (besides an early Australian concession which is due for handover in 2010), generally the concession holder is obliged to return the road to government control free of debt and in defined good condition. Safeguards are put in place in such a requirement to set aside cash or post a bond to ensure handover in the agreed condition.

7. How to facilitate and monitor construction and operations

An independent entity should be appointed to monitor both parties adherence to the concession contract during construction. Australia's independent verifier approach has much to recommend it. Monitoring of operations when construction is finished can be handled by line government agencies. Both parties gain by facilitating speedy construction, and continuation of the special purpose authority during construction is good practice.

A road concession involves a contractual agreement between the government and the investor as equal parties. It differs from the principal–client relationship in a traditional road construction contract. In road concessions, both parties have obligations and an independent entity is needed to ensure that both comply.

a. Monitoring

Peru's concessions are monitored by the government regulator, OSITRAN, which has legal independence and strives to be independent in practice. Australia's independent verifier concept is likely to be more satisfactory. Both parties choose an individual to oversee construction performance and rule on issues between the parties. The verifier is not a civil servant, or beholden to either party, and may hire specialist technical expertise. The job is discontinued once construction is completed and operations have stabilized.

Monitoring of operations reverts to the line agencies once construction is completed.

b. Facilitating

Road construction entails dealing with a myriad of government agencies at all levels in matters such as local planning approvals, disruption to utilities, road closures and the like. In Peru, once the contract is signed, government responsibility passes from the special team in the investment promotion agency back to the Ministry of Transport. Where Australia appoints a special purpose authority to oversee procurement, this body stays in place to facilitate government actions during construction. The ministers overseeing the authority have powers to act on the various government approvals needed. This practice has much to recommend it to ensure rapid and authoritative government responses.

8. How to obtain investment and finance

Concession roads are very large projects, ranging from $500 million to several billion dollars. They rank in scale with mining and oil and gas projects, and are likely to be larger than

other infrastructure projects. They require large amounts of debt (50–75 per cent of project cost) and equity.

Debt to fund construction is usually provided via banks rather than bonds. It is on a limited recourse basis in which the project owners guarantee the loans until a defined completion point (completion of construction and satisfactory start of operations) is achieved. Thereafter, the bank's security is the cash flow of the project. The size and nature of the bank's exposure to the projects means that they have a large influence on the commercial terms of the concession contract. Since they rely on owner's guarantees until the project is generating revenue the quality and substance of the owners is very important. In practice, the completion guarantees are backed, or provided directly by, the project contractor so the technical expertise and financial strength of the contractor is of paramount importance.

Peru's road concessions have been contractor-driven as only large foreign contracting companies have had the expertise and financial capacity to attract debt finance. Moreover, in some cases the debt has been underwritten by government construction and maintenance contributions.

Australia, with its deeper capital market and low risk profile for foreign portfolio investors, was able to raise equity finance in publicly-listed SPVs. Market-credible boards and management were appointed. The SPVs in turn contracted out the key functions – D&C, operations & maintenance, and (sometimes) tolling systems. The debt finance depended crucially on the quality of and undertakings given by these specialist contractors. Roads concessioning in an advanced market such as Australia's is almost as much about financial engineering as it is about road engineering.[8]

In Australia, specialist financial services providers, such as ABN Amro and Macquarie, were the lynchpin in orchestrating these complex arrangements. These banks provided multiple services including:

- Advising on the overall financial and commercial arrangements needed to make a successful bid;
- Soliciting the sponsoring investors;
- Giving financial capacity undertakings as part of the bid requirements;
- Advising on and arranging debt finance; and
- Underwriting and leading the SPV public offering.

Usually, these specialists put together the relevant consortia. Their tasks require high skill, good relationships and a willingness to expend much time and effort in packaging a transaction. They may even pay for some of the preparatory expenses of bids, the cost of which reached around $40 million per short-listed bidder in the most recent Australian project.

Whilst the project promoters will take high risk–high return positions in preparing bids and may take venture capital type positions for minor portions of equity, the funding of Australia's road concessions was principally institutional finance and bank debt, i.e. lower risk money than direct investment, including a low appetite for political risk. There was in fact little *direct* investment and accordingly little *foreign direct investment.* Nevertheless, the comparison with Peru's experiences offers important guidance for developing country policymakers.

To maximize the chance of attracting FDI to road concessions, developing countries must:

- Demonstrate political leadership (an empowered team of ministers);

- Authorize a special authority to undertake the procurement, backed by enabling legislation;
- Staff the authority with the best and brightest and hire well-respected expertise in specialized technical, financial and legal areas;
- Give long-term confidence of stability of the concession by incorporating its terms into legislation;
- Have an early success by selecting and supporting a win–win project for all stakeholders. For the investor, this means a project that meets its financial goals and fast-tracked solutions to community and regulatory matters. For the users, it means visible improvements and value for the toll. For the government, it means value for public money. For the affected community, it means reduced congestion and pollution on existing roads or perhaps roads for the first time. For the country, it means stimulating development and/or improving competitiveness.

Most of these factors central to investors are also essential to the procurement process from the public interest standpoint (see above).

These matters were repeatedly emphasized by investors and lenders to existing projects as being key to their interests and to project success. The overall track record of good governance in treatment of investors and honouring commitments was also stressed. This track record cannot be established quickly and goes well beyond the specific issues of roads. Unlike, say, oil developments, it is not easy to carve out a safe haven zone for foreign investors in roads that is divorced from governance problems in the wider economy. Road are too intimately involved with the day-to-day life of the general public for that.

Lenders are very influential and they are the most risk-averse.

9. How to attract foreign investment

Undertaking good project planning and execution all lay the essential ground for utilizing FDI to support developmental infrastructure. A class of transnational corporation (TNC) developer–operators has yet to develop in the roads sector, unlike in ports and electricity. In developing countries, FDI in road concessions will tend to be contractor-driven. Development of the local capital market and exposure of local companies to road concessions should improve the prospects of attracting foreign construction companies.

The potential foreign investor classes in roads concessions are set out in box III.1.

The differences between Australia and Peru suggest a pathway for the development of road concessioning in developing countries.

A quality D&C contractor is essential to anchor the project. But the higher the long-term investment required the fewer contractors will be available, other things being equal.

Neither country had an active *government* programme to target foreign investment in road concessions. In Peru, budget restrictions on the investment promotion agency made it difficult to conduct active campaigning in Europe or North America. However, intergovernmental contacts almost certainly facilitated the participation of Brazilian contractors in the southern inter-ocean projects, given their geopolitical importance. Little attempt was made to solicit investment from Chile, which already had successful road concessions. In Australia, the local capital market supplemented by foreign institutional investors had sufficient depth to provide the equity investment and no active government campaign was undertaken to solicit foreign contractor

participation. Self-standing owner-operators are set up via special purpose vehicles.

That said, what are the lessons of attracting investment from foreign contractors? Neither Australia nor Peru had investment promotion campaigns targeted at foreign investors – for different reasons, as noted above. Among policymakers in both countries, there is a wish to broaden the pool of D&C contractors and the involvement of foreign D&C contractors would be welcome.

Obtaining FDI revolves around the role of the D&C contractor and thus the conditions that the host government can create to suit the business model of these investors. The following are key:

- Develop a pipeline of projects. This gives prospective D&C entrants the confidence to incur the considerable setup costs involved in setting up in a new country. The most likely form of entry will be an acquisition of a smaller domestic contractor;
- Consider paying some of the bid costs of qualified bidders to demonstrate the government's serious intent to carry through the process;
- Understand that the business model of D&C contractors is not long-term ownership or operatorship (see box III.1). Thus, measures to promote the domestic equity capital market (including pension reforms), to encourage the emergence of specialist owner–operators (e.g. from local contracting or engineering companies) and to reduce political risk perceptions of foreign long-term institutional investors, will all help to attract D&C contractors, other things being equal.

Box III.1. Understanding the different types of foreign investor

D&C contractor – the "reluctant" anchor investor: The D&C contractor's traditional business model is not long-term project ownership, but completion of construction and handover to the client as quickly as possible. In mature concession markets, this traditional role is stretched by requiring the D&C contractor to take equity (up to 15 per cent in Australia) in the project and to hold that equity for up to two years following construction handover. In developing markets, the role of the D&C contractor is stretched much further as the contractor may also be required to be the operator and main long-term owner. Making the contractor comfortable in this role is important in the early stages of road concessioning in developing countries. Nevertheless, this non-traditional role for the contractor reduces the pool of interested contractor–investors. In the long term, the aim should be to bring the other specialized roles into play so that the contractor is not required to have operatorship or long-term ownership roles. This will expand the opportunities to attract contractors in order to anchor projects.

Promoter – the "catalytic" high-risk investor: This investor is a financial specialist who orchestrates the bid consortium and arranges the debt finance and a public offering. The promoter may inject some sponsor equity, contribute to equity underwriting and even pay some of the bid preparatory costs. The promoter may leave its investment in longer than a contractor would, but still wants to exit in the medium term. (Australia's Macquarie group is a leading Australian example. There are no similar specialists in Peru.).

/…

Box III.1. Understanding the different types of foreign investor (concluded)

Developer–operator – the "emerging" investor: The roads sector does not have specialist TNC developer–operators in the same way that other infrastructure sectors have. Developer–operators in roads have emerged recently in developed countries. (Transurban is the prime Australian example.) They are at best "stay-close-to-home" cross-border investors, in part because there are many opportunities domestically or in neighbouring countries. There is no equivalent to AES (a prominent electricity investor) or DP World (a ports operator) in the roads' sector with the size and risk appetite to invest and operate in developing countries.

Specialist fund – the "low-risk, long-term" investor: This type of investor is less likely to be engaged in the early stages as a project sponsor, but can provide a useful exit for those sponsors with short-to-medium-term perspective. Macquarie Capital estimates that there is currently $300 billion in institutional finance worldwide available for infrastructure investment (excluding electricity). Much of the money comes from pension funds; however, institutions and hedge funds have also been seeking long-term income streams. Macquarie believes that there is currently more capital available than there are projects to consume it. It also pointed out that the relatively low risk of infrastructure projects is matched by a correspondingly low internal rate of return of around 12 per cent, compared with the 25 per cent available on (higher risk) mining projects.

What measures can attract long-term foreign investors as developer–operators or specialist institutional investors? Neither country has attracted foreign *developer–operators* in part because, as noted, few TNCs of this type have emerged in the roads sector and fewer still with developing country appetite or expertise. TNCs

such as Ferrovial (Spain), Bouygues (France) and Brisa (Portugal) are perhaps examples of developer–operators. But there are plenty of opportunities for these TNCs in developed markets, especially in the acquisition and operation of existing roads with no construction risk, low political risk and deep supporting equity and debt markets. Nevertheless, developing countries with large projects and a good investment risk profile should be working with financial advisers and/or financial promoters to promote projects to these groups.

As the opportunities for cross-border investment grow and the sector matures as a domain for private investment, then a specialist class of owner–operator TNCs may emerge. This is most likely to occur from either specialist operators in developed countries, which develop an appetite to become developers, or from construction firms that broaden their business models to become owner–operators. But this is some years in the future and is not certain to happen. It is not a feature in either Australia or Peru to date. There is no model for developing countries to follow.

It is unlikely that the financial promoters will become developer–operators, as it is a long stretch from their business model. Nevertheless, they are important catalysts and should be courted by developing countries as allies in promoting FDI. They are experts in understanding and assuaging investor and lender concerns. Macquarie of Australia is currently exploring opportunities, with local partners, in larger emerging markets such as Turkey and the Russian Federation.

Specialist long-term institutional investors are an interesting class of investor – they are part portfolio investor but also have strategic long-term stakes, so in part are also direct investors. In a few cases they have control. Such investors are seeking long-term and stable dividend-paying investments to match their pension payment obligations. Low-risk roads

concessions are a perfect fit in this respect, but they are not likely to participate in, and certainly not lead, cross-border investments in greenfield projects.

10. The role of ODA

There could be a much greater role for ODA in capacity-building and in providing selective support for government contributions.

The experience of Australia, as a developed country, is not directly relevant to the role of ODA and, even in Peru, there has been only donor support (a partial credit guarantee on government contribution obligations). But it is not difficult to see that ODA could play a stronger role in catalysing private investment in roads through supporting at least two elements of the concessioning process:

- **Extended capacity-building:** ODA has often supported governments to prepare transport plans and to identify high-priority road projects. Both countries' experiences show that a high quality of government execution of concession road projects improves their socio-economic outcomes and also encourages investors. Donors should consider extending their capacity-building support in the transport sector to include the diverse and commercially attuned skills needed to execute road concessions;

- **Financial support for government contributions:** The clear experience of both countries is that government financial contributions can be essential to ensure that concession roads meet priority development needs and deliver value to users. ODA could surely assist governments to provide some or

all of these contributions, especially those that provide early support to capital costs. Relatively small amounts of ODA support could facilitate very large improvements in critical transport infrastructure. Aid for Trade can act as a catalyst for building trade-related capacity and infrastructure. ODA could assist governments to invest in the infrastructure needed to link products to global markets and increase export competitiveness.

Notes

1 Of course, private investors can be invited to suggest possible projects based on a plan, as proposed in the Eddington review (Eddington, for State Government of Victoria, 2008).

2 Cost variations have not been approved yet. They are under discussion. It should be noted that cost overruns of 40 per cent are when the cost was compared to definitive projects. In the case of the inter-ocean projects, overruns were compared to costs at the feasibility stage.

3 This does not necessarily apply to new roads that bring road access to communities for the first time.

4 The Daily Telegraph (2005). Tunnel cuts William St. to one lane to trap drivers. 6 October.

5 This was not always applied. The Southern Inter-ocean Road concessions in Peru were exempted by Presidential decision.

6 Peru also found that, in some cases, rushing a project to bidding without preparing a full final study made it impossible to fully transfer construction risk to the concession holder.

7 For example, Chile's procurement process is largely web-based in order to minimize face-to-face contact whilst the tender is open.

8 Indeed, the financial and legal costs to investors are likely to be higher than the engineering costs in a successful road concession bid.

REFERENCES

Allen Consulting Group and University of Melbourne (principal author: M. Lawriwsky) (2007). Performance of PPPs and traditional procurement in Australia. Melbourne: Allen Consulting Group.

Alonso–Conde A, Brown C, and Rojo–Suarez J (2007). Public–private partnerships: incentives, risk transfer and real options. *Review of Financial Economics*, Vol. 16: 335–349.

Asian Development Bank (2000). Developing best practices for promoting private sector investment in infrastructure – roads. Available online at http://www.adb.org/Documents/Books/Developing_Best_Practices/Roads/default.asp.

Australian Financial Review (2008). QLD rules out perks for foreign builders. 14 June.

Australian Transport Council (2006). National Guidelines for Transport System Management in Australia. Available online at http://www.atcouncil.gov.au/ documents/NGTSM.aspx.

Austroads (2005). *RoadFacts 2005*. Sydney: Austroads, publication AP-G18/05.

Eddington R, for Victorian State Government (March 2008). Investing in Transport, East West Link Needs Assessment. Available online at http://www.doi.vic.gov.au/Doi/Internet/planningprojects.nsf/AllDocs/E195C22162760C83CA2571ED0080D1E5 .

Government of Peru (December 2005). Intermodal Transport Plan 2004–2023.

Lay M (1992). Ways of the World. New Brunswick, New Jersey: Rutgers University Press.

Queensland State Government (2005, updated annually). South-east Queensland Infrastructure Plan and Program 2005–2026.

Available online at http://www.dip.qld.gov.au/ regional-planning/south-east-queensland-infrastructure-plan-and-program.html.

Richmond D, for New South Wales State Government (December 2005). Review of Future Provision of Motorways in New South Wales. Available online at http://www.dpc.nsw.gov.au/__data/assets/pdf_file/0012/20406/Review_of_Future_Provision_of_Motorways_in_NSW_-_December_2005.pdf.

Samuels P (1997). New Jersey Pike, Gross Behaviors Alleged. Toll Roads Newsletter, 22 December: 1, 13 and 14.

The Daily Telegraph (2005). Tunnel cuts William St. to one lane to trap drivers. 6 October.

UNCTAD (2006). *Least Developed Countries Report 2006.* UNCTAD/LDC/2006.

UNCTAD (2007). Best practices for creating an environment conducive to development benefits, growth and investment. TD/B/COM.2/EM.22/2.

UNCTAD (2007). *Investment Policy Review: Viet Nam.* UNCTAD/ITE/IPC/2007/10 (www.unctad.org/ipr).

UNCTAD (2008). *World Investment Report 2008: Transnational Corporations and the Infrastructure Challenge.* UNCTAD/WIR/2008.

World Bank, Project Information Document (2004). July.