FINANCEMENT DES INFRASTRUCTURES ROUTIERES
GUIDE SUR LES METHODES DE FINANCEMENT ET PARTENARIAT PUBLIC/PRIVE

FINANCING OF ROAD INFRASTRUCTURES
GUIDE FOR NEW METHODS OF FINANCING AND PUBLIC / PRIVATE PARTNERSHIP

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INTRODUCTION

A historic survey shows that there are various types of road infrastructure financing, from “traditional” public funding through budgetary resource allocation relying on general taxes and duties, to “pure” private funding through limited recourse project financing based on road pricing or toll collection.

Since the start of steep and steady increase of road traffic, provision and operation of public roads, bridges and tunnels have been considered in most countries as a public service. They therefore benefited from "classical" public funding mechanisms, namely budgetary financing and/or sovereign borrowing.

But road investment needs are huge and allocation procedures reflect a fierce “competition” with other fundamental public services like health, education, justice and safety, administration and defence among others for the strictly limited amount of budgetary resources.

Public budgets are constrained by the need to maintain a balanced budget by cutting public spending and capping public debt, aiming to achieve sustainable economic growth (in most transition and developing countries) and/or political objectives. (EU Maastricht treaty’s criteria e.g.)

Road infrastructure remains however a key element for enhancing economic development. Many countries try to set up new forms of extra-budgetary or off-budgetary financing within the framework of an enlarged and renewed co-operation between public bodies and private companies allowing to develop further, or maintain properly their road network.

This document does not pretend to supply an exhaustive overview, description or explanation of the different modes and methods of road infrastructure financing. Summarising the contributions provided by the members of PIARC Committee on Financing and Economic Evaluation (C9) and available publications, its aim is to highlight the main options, and provide some guidance beyond the theory, to select appropriate methods based on international best practice.

1. PUBLIC FUNDING OF ROAD INFRASTRUCTURE

1.1 Financing roads out of public expenditure

This is the traditional way to finance road infrastructure in most countries around the world. In compliance with relevant fiscal policy and legislation, various taxes and duties are collected and paid into and regularly allocated by the public budget, aiming to finance procurement of public assets, goods and services, as well as public administration. Road expenditures (i. e. costs of road planning, design, research, construction, upgrading, maintenance, operation and management) are generally considered as public expenses. The resources allocated by the public budget to road expenditures could be used either to pay actual road expenditures or to service sovereign loans used previously for that same purpose.

Financing of road infrastructure out of public expenditure allows a high degree of flexibility in decision making and could be efficient when budgets are not or only temporarily constrained and sound allocation rules prevail. Public resources' allocation is driven by an analysis of social and economic costs and benefits related or associated to a specific activity, operation or project intended to be implemented to increase social welfare and sustain economic growth. The main objective constraining private finance, i.e. seeking financial return on investment, is nearly irrelevant in this context. Return to the public sector on road investment is anticipated to materialise in form of mainly non-monetary benefits (savings in travel time, vehicle operating costs and in road accidents) to users, beneficiaries and the society and economy as a whole. This approach may be open to political interference, allowing in particular implementation of economically less sound road investments, on the pretext that they will enhance economic growth, land use and regional development. The burden of road expenditures is spread out among all the taxpayers. It is not generally fair and equitable (since it is not directly related to the level of access provided by the road network to the road user, to the use made of the network or to the damage caused by each user). However, since apparently low individual contributions are required, it can be regarded as a means of funding road expenditure which is widely accepted by road users, tax payers and the community.

In the case of a temporary constraint on public resources, some countries might use the option of sovereign borrowing to extend the financing capacity of the budget. The international financial institutions, commercial banks or the financial market provide the supplementary resources in that case.

Repayment of the mobilized capital is guaranteed by the State: therefore low risk and better than average market conditions are associated with the transactions. The guarantee is often accounted as an obligation in the public budget, although at a much lower amount than nominal value.

Financing road investment and maintenance out of public expenditure remains heavily dependent upon the national and global budgetary balance and constraints. These constraints appear as a result of economic slowdown or modification of public spending priorities, in compliance with fiscal and monetary policy objectives. As a consequence of these effects, the share of the public budget allocated to road infrastructure financing decreased dramatically in several countries during recent years.

Furthermore, public expenditure is subject to the regular, yearly resource allocating procedures (including the share of road construction and that of maintenance expenditures), which makes expenditure planning and medium term forecasting highly uncertain. This increases risk of investment cost overruns and completion delays.

1.2 Funding from sources other than general tax revenues

1.2.1 Dedicated taxes and duties

To avoid some of the drawbacks stated above, a specific budget dedicated to finance public road expenditures, based mainly or exclusively on taxes and duties linked to road use could be temporarily or permanently separated from the public budget.

By accepting this approach the policy makers acknowledge:

- an economic policy awarding high priority to road expenditures for a given period;

- the specific resource generation and allocation rules prevailing in the road sector;
- the reduction of the amount of public revenues available for allocation within the general budget and therefore voluntary limitation of the freedom of action in fiscal policy;
- the partial transfer of responsibility and accountability from the body approving the allocation of resources in the public budget to another one (not necessarily elected) entity.

This separated budget can take various forms, for example:

- either a supplementary or escrow account attached to the general budget, or
- an independently managed special fund (Road Fund).

The basic idea supporting this type of extra budgetary financing is that specific taxes, duties, tolls and fees are defined and linked exclusively to road space occupancy and use (so called road user charges). These charges are collected and dedicated to the financing of road expenditure.

In a report prepared by the PIARC Committee on Financing and Economic Evaluation (C9) for the World Road Congress held in Marrakech in 1991, road user charges were defined as specific taxes, duties and fees levied in connection of vehicle purchase and ownership, road occupancy and use, complementary to those generally paid by the taxpayers for goods and services. It was emphasised however that unless they are collected separately, a very precise definition of that part of budget revenues paid in by (actual or potential) users of the road infrastructure, as user charges, is extremely difficult to provide and often arbitrary.

Slovenia provides a good example of extra budgetary financing of a motorway development programme. According to the programme approved by the parliament in 1995, the target is to build 470 km of new toll motorways.

Following an Act approved by the Parliament in 1993, 16 per cent of the retail fuel price is dedicated (for a given period, extended recently up to 2004) exclusively to finance motorway expenditures. Motorways were placed under the management of a State owned special purpose company established in 1993. This high percentage of the fuel price dedicated to a special purpose reflects clearly the strong priority given in the framework of the economic and transport policy to the construction of the major highway network, needed for sustainable economic development.

Together with the toll revenues (yielding about 10%, while toll rates remain moderate), nearly two third of the motorway network expenditure is covered from earmarked taxes, the remaining one third comes from sovereign borrowing. Although the decision might be criticised on the base that ordinary road maintenance and operation expenditures are heavily restricted by that way, the results to date are quite convincing.

Another successful example of the dedication of specific taxes is provided by the United States Highway Trust Fund. This fund was set up in 1956 and continues today.

1.2.2 Access charges

Another method of road financing is the licensing of motorway access for some or all vehicle categories. It has been achieved by introducing a lump sum access charge for using motorways.

A windshield sticker called “vignette” is used in Switzerland, Austria, the Czech Republic and the Slovak Republic while an other document called “Eurovignette”, is mandatory to be carried on board by all heavy goods vehicles above 12 tons using motorways in Germany, Netherlands, Belgium, Luxembourg, Denmark and Sweden.

Introducing access charge is apparently an easy way to raise money, additional to traditional fuel taxation, related to the use of some road sections (e. g. motorways) during a given period. It is an appropriate tool to get foreign registered road users (e. g. transit traffic) involved in the financing of road expenditure of a given country.

In Austria the access charge was introduced with the aim of raising revenue, additional to budgetary resources, dedicated to financing the high debt service on loans borrowed earlier under State guarantee for financing motorway construction.

Despite the diversification of the sticker's validity requested by the European Commission (for annual, semi-annual, one month and even shorter periods) the motorway access charge remains closer to a special motorway tax than to a genuine toll levied in compliance with the "pay as you go" principle. According to the experience gained to date, the more the sticker price is proportional to actual road use, the more the printing, distribution, advertising and especially control costs of the system are increased.

The sticker has to be considered as an intermediary step (and EU regulations allow and accept it as such) towards distance related tolls (and/or congestion related tolls). In countries where only some elements of a motorway network exist, dedicated revenues collected through that system hardly cover the maintenance and operation costs of the existing sections and could not provide appropriate support for further development.

A second category of charging, which provides for the direct dedication of revenues to the financing of road infrastructure is:

Tolling the road user

Even in countries where tolls or access charges are levied for the use of a distinct part of the road network (e. g. motorways), these revenues do not represent the totality of resources allocated to road infrastructure-financing. The public sector generally funds the construction, operation and maintenance costs of the toll-free national and local road networks.

The breakdown by origin of the revenues collected from heavy good vehicles in the European Union in 1995 is the following:

Taxes, tolls and access charges paid in the EU by Hgv's in 1995

Nature of the withholding	Fuel taxes	Vehicle taxes	Tolls	Access charges *	Total
Share of Revenues	77%	15%	6%	2%	100%

* Eurovignette and Austrian sticker system

2. THE PRIVATE SECTOR'S INVOLVEMENT

2.1 Benefits of private funding

Potential benefits of private sector involvement in the provision and/or management of any public infrastructure are widely acknowledged and sought for. Implementation of sound commercial and accounting principles of market economy may lead in particular to more efficient design and construction, cost savings and efficiency gains in road management, maintenance and operation, better evaluation and mitigation of all kinds of risks associated with a road infrastructure project. Part of expected benefits could be achieved under public sector funding as well, especially if implementation or operation is carried out under private sector management.

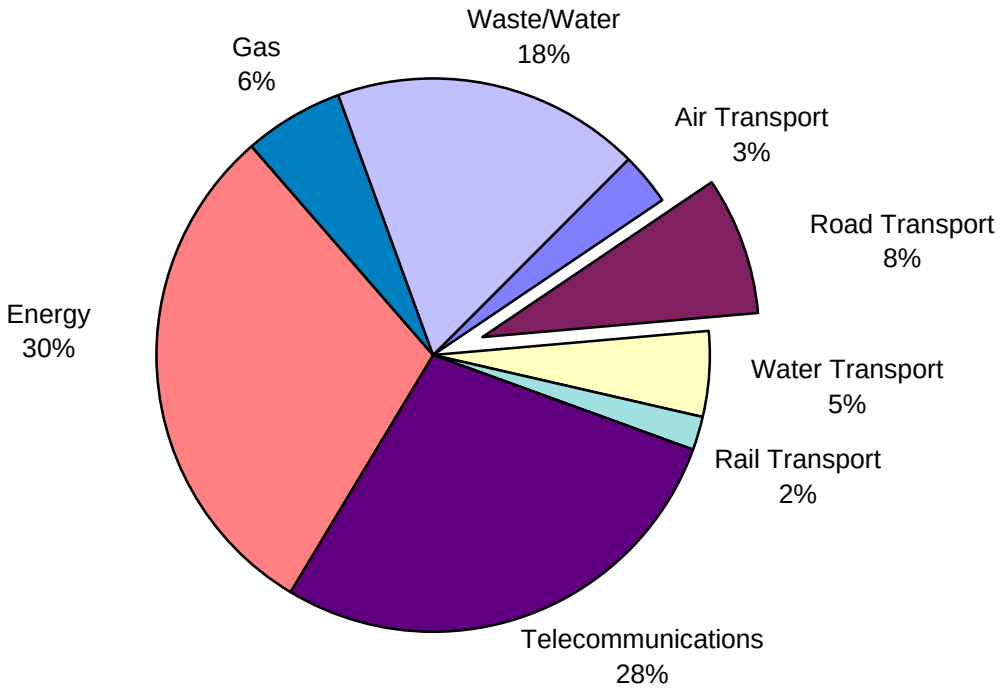
The involvement of the private sector might be extended in certain circumstances, finance provision and/or operation and management of some economically justified and financially viable public infrastructure which otherwise could not be financed from public budgets, because of severe and long lasting constraints, limiting the borrowing capacity of the public sector or because of other priorities for public expenditure.

The funds provided by private investors or raised from the financial market, could either temporarily substitute (i. e. delaying) or genuinely supplement budgetary financing. In the former case, the private capital will be repaid (with appropriate return) and the debt will be serviced entirely from the public budget. In the latter the source of these payments is partially or exclusively the revenue generated by a given road infrastructure, i. e. the toll paid by the users. Rights and undertakings of the parties involved have to be regulated by appropriate agreements.

In circumstances in which private funding of road infrastructure projects is sought, this is competing with financing opportunities offered by any other sector of the economy at the same time.

According to a 1996 survey of the World Bank the distribution of privately financed infrastructure projects by sector of activity is the following:

Actual[1] Private Infrastructure Projects by Sector



[1] Actual includes new investment projects under construction, completed, or operational and privatization/operation and maintenance projects which have been awarded or begun operation

The share of transport infrastructure is relatively low, as road transport represents only 8% of investments. This low value can be explained by:

- the limited appetite of private investors and lenders towards a highly capital-intensive sector, where some financing structures failed recently (among others in Mexico, Thailand, USA and Hungary) and where the parties to the agreement have not conventionally to set up any cash flow guarantees through contractual arrangements such as “take and pay” agreements;

- the long service life of the assets, which makes it necessary to invent and implement expensive and sophisticated measures mitigating political, economic-commercial, legal-regulatory and fiscal-financial risks inherent with the projects;

- the difficulties of financial engineering needed to match the expected toll revenue stream, to be generated by the project, appropriately with the terms and conditions (interest rates, loan tenors, risk premiums etc.) of private finance available on the market.

Nevertheless, there is no apparent risk of technical obsolescence for the roads sector and demand for its services continues to increase steadily.

2.2 The regulatory framework

The legal background and regulatory framework allowing provision of public services by private companies and securing private finance of public infrastructure has to be created before private funding is sought. The most commonly used legal form is the concession arrangement. By means of a special private law or act, the State grants to a special purpose company, in private or mixed (public and private) ownership, all or some of the rights of financing, design, construction, tolling and operating a public road.

This kind of arrangement can also be applied to a mixed economy company with public or semi-public capital.

The contract signed between the State and the special purpose company regulates conditions of the latter's activities and provides appropriate guidance to deal with all foreseeable events.

The road concession period generally extends over a period of 25 to 50 years, reflecting the slow build-up of the traffic volume and revenue stream related to it.

Financing of a concession project is secured by an appropriate equity/debt mix, defined in compliance with the assumed revenue stream generating characteristics (including the expected governmental contribution) of the project and the assessment of the risks associated to it. Under the usually applied scheme of private funding, the exclusive source for repayment of equity and debt is the net toll revenue. This is the revenue collected as toll from actual users, and/or disbursed from the budget in line with observed traffic as "shadow toll" (or following another agreed schedule) remaining after deduction of management, operation and maintenance expenses of the road infrastructure, as well as of taxes and duties.

2.3 Deferred public sector financing

2.3.1 "Shadow toll"

In a "shadow toll" scheme, the authority granting the concession remunerates a private concessionaire's investment (financed either by equity or debt, or both) out of annual public expenditure, in line with the number of vehicles observed on the road within a defined period or some other indicator of the service provided. The "shadow toll" rate might be:

- different according to vehicle categories, (light and heavy goods vehicles, e.g.) and varied in relation to some previously agreed traffic volume benchmarks.

- relate to providing shorter journey times for public transport and improved conditions for pedestrians in urban areas.

Under a shadow toll scheme the users do not pay on the spot for the usage of the infrastructure, therefore eliminating motorist's resistance to paying tolls and the opportunity to divert to alternative routes. This reduces a considerable element of commercial or traffic risk (the "avoidance risk").

Although the cost of recording the traffic performance on the shadow tolled road and auditing these records is not negligible, shadow tolling is substantially less expensive to implement and operate than direct tolling. Selection of concessionaires under a shadow tolling scheme is made through competitive tendering. Among the evaluation criteria, reliability of the financial plan and conditions of shadow toll payment are decisive. Provided the scheme is appropriately managed, main benefits expected from private sector involvement (efficient management, innovative technology, and value for public money, efficient operation and accounting discipline) can be achieved.

Shadow tolls were first suggested and introduced in the UK because actual tolling would cause diversion to less suitable routes and there was no provision for toll barriers on the network. The United Kingdom Department of Transport awarded the first DBFO (Design-Build-Finance-Operate) concession contracts for a "shadow toll" scheme in late 1995. Shadow tolling has been used in the UK to fund the maintenance, management and major reconstruction of roads as well as to fund new sections of an existing route. Most shadow toll arrangements cover routes of 100 km or more, some sections of which will be improved or replaced by new construction under the shadow toll agreement. UK DBFO schemes revert to the public sector after 30 years.

In case of severe constraints on sovereign borrowing (restricting public sector borrowing to a percentage of GDP, among others), the scheme has substantial advantages. Although the money borrowed by the private companies is reimbursed from the budget (therefore it is guaranteed by the State), it does not appear in the budgetary balance sheet as public debt. However, repayments reduce the amount of uncommitted expenditure available to fund new road expenditure in future years.

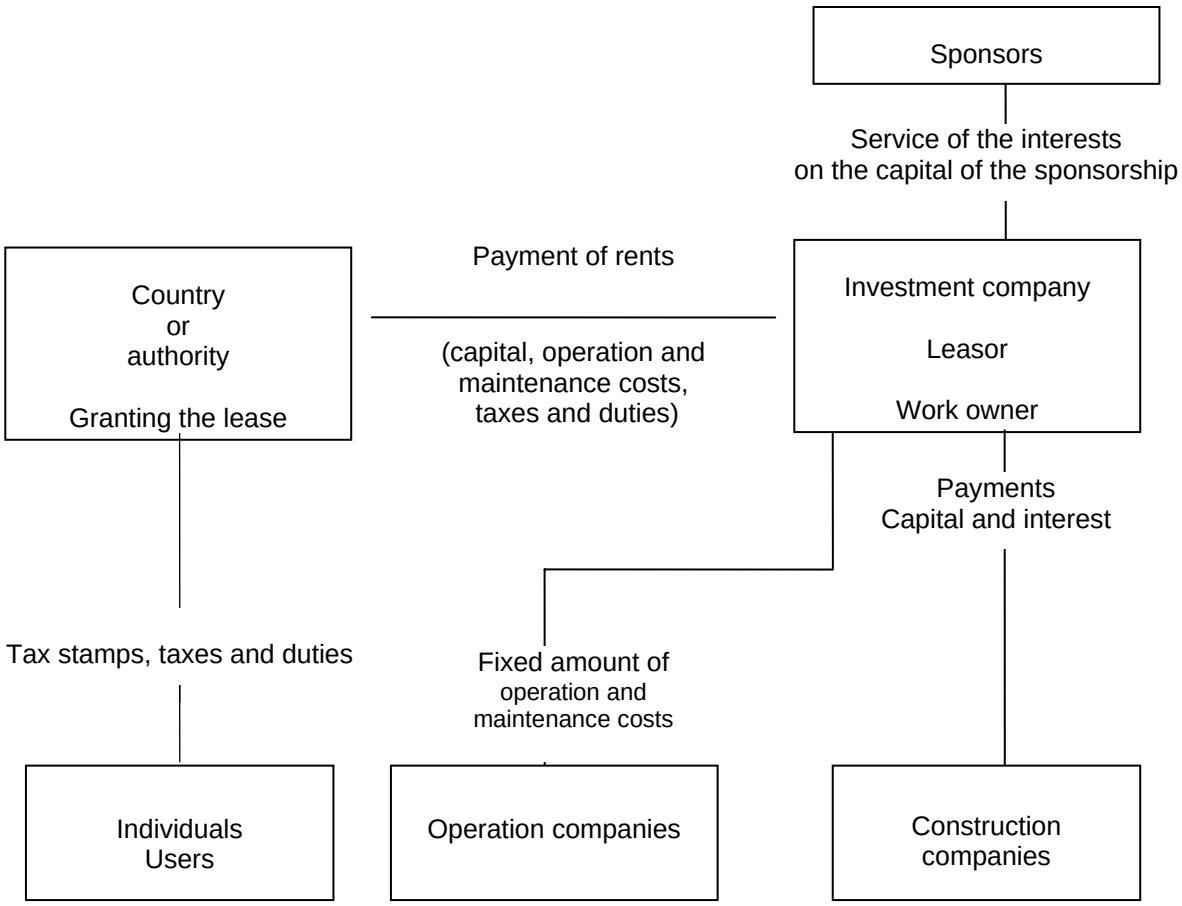
2.3.2 Leasing or other forms of pre-financing

In a leasing scheme the authority granting the concession remunerates a “concessionaire” (lessee) who is responsible for building, operating and financing the project on the basis of a lump sum fee. Under this arrangement incentives are not usually provided for the level of service although such provision could be made. In many cases there is a mechanism for linking the payment to the traffic level to reflect any increase in traffic related operating costs.

Leasing schemes do not therefore usually transfer the main traffic related risks to the concessionaire. On the other hand, all of the financing and technical risks which are directly related to the project are born by the concessionaire. It can be argued that under this arrangement, the risks are allocated to those who are in the best position to deal with them.

A leasing system allows a private company selected through competitive tendering, to finance and build a road. Upon completion the assets are leased back by the State and operated by the road administration. The leasing fee covers all financial obligations and charges of the private company; at the end of the leasing period the State regains ownership on the road.

The following indicative diagram shows the principle of the scheme and illustrates the different payment flows.



Leasing has been used to a limited extent in the Czech Republic in the case of small infrastructure schemes promoted by municipal authorities

2.4 Project finance

Project finance is the funding of a project in which the lender looks principally to the cash flows of the project as the source of funds for repayment, and to the assets of the project as collateral for the loan. The general credit of the project sponsor is usually not a significant factor, either because the entity is a corporation or special purpose company without other assets or because the financing is without direct recourse to the sponsor.

Road construction companies with an interest in extension of their market share in the long run, road operators and institutional investors ready to accept long maturity (e. g. pension funds) are likely to be among the promoters of such a special purpose company.

The outcome of any attempt to attract private capital (either in form of equity or debt) under a project finance scheme to finance a project is heavily influenced by the supply/demand features affecting the market of the services the project will produce, the risk tolerance of the financiers at the relevant point of the economic cycle, expectation of future economic and political developments, and the robustness of the debt coverage ratios exhibited in the project feasibility under a variety of policy scenarios. In case of a road project the traffic volume, growth rate, willingness to pay, competition with (free of charge) alternative routes and other transport modes are the main factors influencing the market.

Project finance allows to achieving most of the expected benefits of private sector involvement. Most motorway concession projects implemented by private companies (in France, Spain, USA, Malaysia, Thailand, Argentina and Hungary among others) were financed using this approach.

In case of project finance, the main sources of funding include:

- equity, raised by promoters, sponsors, institutional investors or from the stock market (eventually grants and subsidies),
- debt of various nature (bank loans, institutional loans, bonds),
- guarantees and other financial facilities (quasi-equity, subordinated loans, non voting shares, convertible bonds, etc.)

Project finance is achieved through financial engineering aiming to match appropriately the proceeds of a combination of these elements with the expected revenue stream of the project. The main objective is to sustain a positive cash flow, with acceptable margins, throughout the project's service life.

The market for project financing is a competitive market. Only projects with fair allocation of the risks considered as acceptable, providing a competitive return on equity (for the sponsors) and maintaining required minimum debt cover ratios (for the lenders) are likely to be considered eligible for funding and classified as "bankable".

2.5 Overview of the different options

2.5.1 Classification in function of resources' and revenues' patterns

Several criteria, which can be used to classify funding options, have been discussed already.

We can distinguish between funding sources generated through:

- the system of taxation (general taxation covering the whole population, or road user charges) and/or
- collection of access charges or tolls.

The source of capital used for funding road expenditures include:

- public (budget, special funds, sovereign borrowing),
- private (investors, lenders, financial markets) or
- mixed.

The implementation of the project could be managed by:

- the public sector (the road administration in most cases),
- a corporate entity of mixed ownership (association of public administration with private investors),
- the private sector.

a - public and mixed management

			Revenues		
			Repayment by the tax system	Repayment by toll	Mixed repayment
Public management	Public Funding	General budget	a	b	c
		Dedicated budget	d	e	f
Mixed management	Mixed funding		g	h	i
	Private funding		j	k	l

b - private management

		Revenues		
		Repayment by the tax system	Repayment by toll	Mixed repayment
Private management	Mixed funding	m	n	o
	Private funding	p	q	r

Each of these categories is in use somewhere around the world. In the same country several categories might be used alongside each other either at the same time or one after the other.

For example, in France, categories “a” and “q” (initially “n”), in the USA categories “a-d” (Federal Highways), “h-i” (toll bridges) and more recently “q” could be found, while South Africa applies categories “a” and “b” and moves toward “q”.

2.5.2 Classification in function of risk allocation

It is also possible to classify the different approaches according to criteria linked to the risk allocation:

		Construction	Operation	Financing	Revenues
Public Funding	Direct government control	100% public**	100% public**	100% public**	N.A.
	Subcontracting of operation	100% public	subcontractor	100% public	N.A.
Private funding	Concession (shadow toll) or leasing	Concession	Concession	Concession*	Allocation defined by the concession contract
	Concession (user toll)	Concession	Concession	Concession*	Allocation defined by the concession contract

* In the case of mixed financing or private financing involving partial State guarantee, the financial risk is shared.

** A fixed price contract can reduce the construction risk.

2.5.3 Classification in function of potential advantages

Private sector involvement in the construction, operation, management and financing of road infrastructures offers in general certain potential advantages for the community, namely:

Potential for Government to benefit for private sector investment

	Construction Efficiency Incentives	Operation Efficiency Incentives	Complementary funding capacity	Governmental control
Traditional method (public procurement of works - operation by road administration)	Weak	Weak	None	Direct
Contracting out of operation	N.A.	Weak or average	None	Direct
Public "concession" (State owned concession company, user's toll)	Weak	Average	Average	Direct
Private concession (shadow toll or lease)	Strong	Strong	Weak	Indirect
Private concession (user's toll)	Strong	Strong	Weak	Indirect

It is not possible to draw any general conclusions from this classification: the potential for benefits will depend upon the circumstances of the particular case.

3. THE SEARCH FOR NEW METHODS OF ROAD FINANCING

The success of any search for new forms or methods of financing and their feasibility depends obviously on several factors related to the country concerned, in particular to the political, administrative, economic, financial, social, legal, cultural and other patterns.

3.1 The political aspect

Public Authorities all around the world are encountering severe difficulties in funding large infrastructures on public funds. These difficulties lead necessarily to two alternatives:

- do nothing (or do it later, accepting social and economic losses),
- do something, on the condition of finding additional resources.

The first option is often politically untenable under the pressure of public opinion and economic development's requirements. Underfunding of infrastructure leads sooner or later to a deterioration in the conditions of sustainable economic growth and hence in the business and commercial environment and therefore to possible tensions. Consequently, an adequately conceived transport policy should seek participation in a global economy and foster regional development by balancing the demand for transport infrastructure and services with appropriate supply.

The second option remains then the only alternative. Introducing tolls for the use of the infrastructure may make it possible to meet demand by reducing it (since part of the potential traffic will be deterred from use) and create additional resources to cover supply extension costs. This policy could rely on successful international experience.

Nevertheless, the choice between the options of maintaining budgetary road financing based on taxes and of introducing tolling is always a sensitive political issue, notably, with regard to the public acceptance to pay tolls for the use of new or already existing roads. In many countries, tolling is considered to be politically correct only if it is limited to new infrastructures.

Geographic conditions can sometimes facilitate recourse for tolling. For example, in countries with high proportion of transit traffic, it could be easier to implement this type of financing, making foreigners participate in funding the country's road expenditures, rather than budgetary financing relying on the resident taxpayers as the main contributors.

Although some successful examples exist, tolling of existing infrastructure is often likely to be a politically sensitive issue. It can be impeded by important technical difficulties as well. In densely populated areas, implementation of direct tolling on road networks built with frequent intersections and interchanges, can be very expensive and/or requires sophisticated equipment and measures (electronic tolling e.g.)

Cultural patterns and traditions heavily influence the acceptance of tolling by the public. Comparing two countries in Scandinavia e.g. it can be demonstrated that in Sweden, (where ferries are traditionally free) the institution of tolling provokes a true debate, while in Norway (where ferries ordinarily charging fees), the urban toll was accepted quite easily (in Oslo, Bergen and Trondheim).

In many countries free access to all public roads constitutes a traditional element of freedom. Tolling is considered therefore as an exceptional and only temporarily acceptable measure. It hampers the freedom of mobility and therefore limits the liberty of the citizens. It has to be emphasised therefore that implementation of road tolling requires acting with extreme precautions and needs appropriate political support.

Some specific features of best practice of tolling are listed as follows:

- road users become customers of a service provider (and they are entitled to receive good quality service against payment),
- toll should be introduced as a price for a new or improved service associated with a newly built or a substantially upgraded infrastructure,
- the toll collection should not start before improvement of the service becomes perceivable,
- the initial general/overall level of service will not be deteriorated for the benefit of the users of the tolled infrastructure,
- the economics of the operation should be properly explained to the public and made understood and accepted.

Some operations have had or currently have difficulties caused by lack of social consensus accompanied by volatility of the political background. This situation sometimes results from insufficient communication between the public and the authorities and/or road operators.

In all circumstances, the search for new methods of road financing is a major policy issue, which has to be accompanied by a strong, clear cut and sustainable political commitment. This is a condition precedent to comfort eventual lenders as well.

3.2 The economic and social aspect

While recourse to private funding of the infrastructure is basically a political decision, its feasibility depends on the socio-economic conditions because, whatever mode of financing is chosen, improvement of the infrastructure inevitably entails an increase in resources allocated to the road network. Whether it is the intention to raise these resources through an increase in taxes or by the introduction of tolls or access fees, the capacity of the motorists' ability and willingness to pay in relation to the service to be provided has to be taken into account. This willingness to pay can be evaluated at an aggregate level, without distinguishing between user categories, or more specifically for each category. The outcome of this study determines the amount of foreseeable revenues. A detailed survey is therefore necessary before defining the most appropriate pricing and toll system.

It is to be noted that this notion is not absolute. The price that an individual is ready to pay for a good or a service is a function not only of the direct requirement, but also of the price of alternative goods and services. A classic case is the construction of a toll motorway, parallel to a freely accessible alternative road undergoing successive improvements, so that finally using the toll motorway appears to offer no benefits.

The socio-economic viability in its widest sense remains a fundamental criterion influencing decisions on tolling either standalone projects or a whole infrastructure network. This means that the capital and operating costs, the direct benefits to the users and the indirect benefits to all other entities and the community as a whole (especially associated to land use and regional development), together with social and environmental costs, have to be taken into account. These costs and benefits for society evaluated in monetary terms, can be converted into a socio-economic rate of return for a given project.

The financial viability of a project is calculated taking account only of the actual costs and the monetary revenues and is expressed as a rate of return on investment or on equity.

The decisions of the policy makers are based on the results of socio-economic cost-benefit analysis, while the financiers consider only the financial viability of an operation.

A wide range of external effects is incorporated into a traditional socio-economic cost-benefit analysis of a project. The project may yield an appropriate economic rate of return to the community while being unable to attract private investors and lenders, due to its weak revenue generating potential and lack of financial viability (low return on equity accompanied with high risk e. g.).

In this case, a public-private partnership type approach (leading to appropriate risk allocation, involving eventual public financial support) is likely to provide the best solution.

3.3 The legal and regulatory aspect

Legal and regulatory changes are necessary for those countries which switch from public funding based on taxes or duties to private financing. Public roads in general are under public jurisdiction and freely accessible. The recourse to a private partner and/or tolling therefore often requires substantial changes in law. Such changes have administrative implications.

Government administrations which have traditionally been in charge of infrastructure provision and operation, may view such changes are depriving then of their established function and reducing their control over the network. For these reasons there may be strong resistance to change within the highway administration.

The commitment to reform must be clear and above all consistent in the sense that decisions affecting the private companies providing public services and their financial partners should always comply with the original agreement between the public and private sectors.

4. THE CONTRACTUAL BACKGROUND OF PRIVATE SECTOR INVOLVEMENT AND FUNDING

From this chapter on, we will focus on concession projects with or without direct tolling, which currently constitute the most frequently applied contractual framework of private sector operations with private or mixed financing (see figure hereafter).

4.1 Project selection and evaluation

Identification and assessment of projects is a decisive stage which comes within the competence of the public administration. In order to identify appropriate projects, feasibility studies have to be carried out including a traditional cost-benefit analysis to define the socio-economic rate of return of each option.

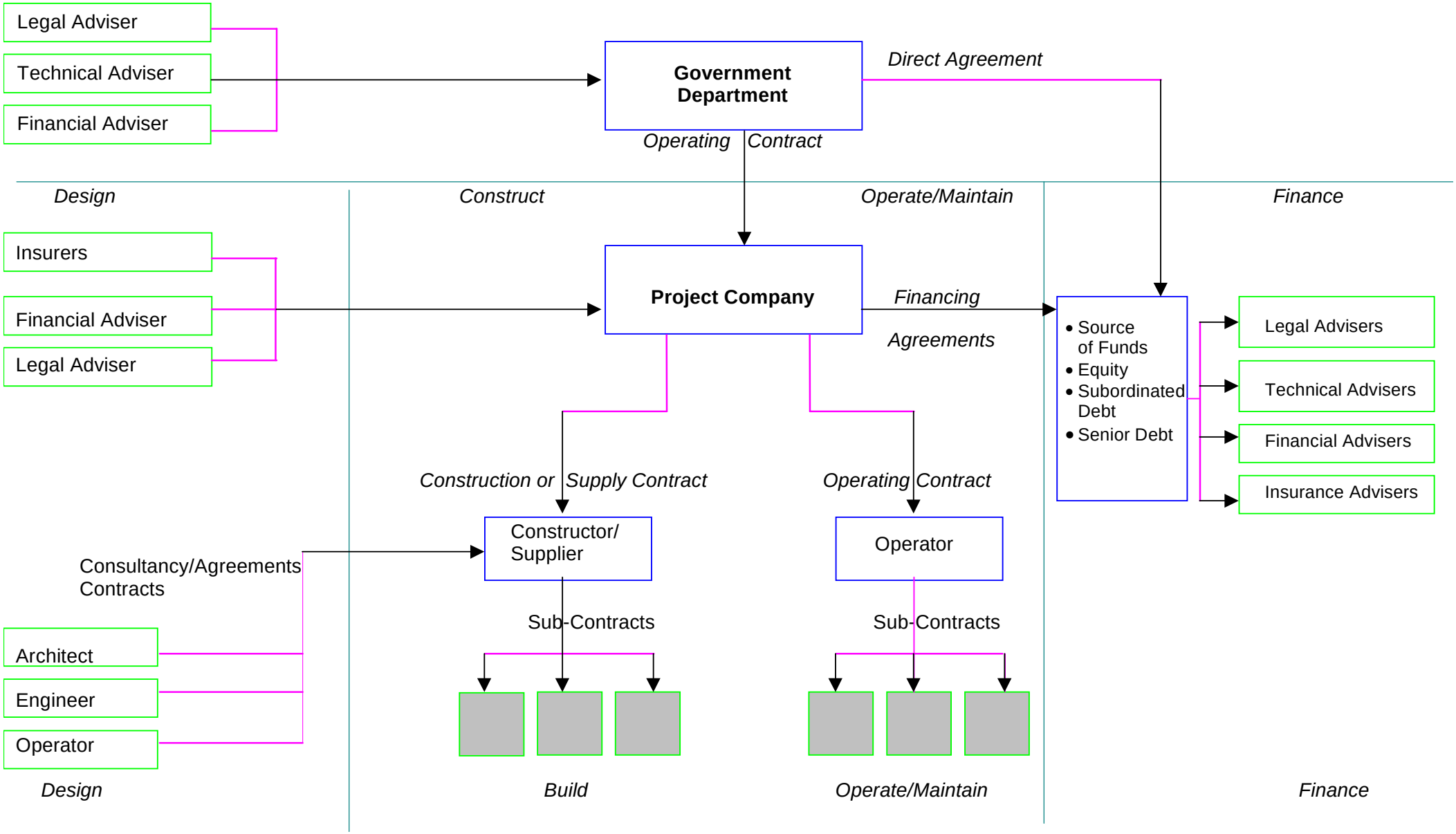
At this stage, it is necessary to carry out for every road project considered:

- a traffic and revenue study based on appropriate forecasts,
- a cost-benefit analysis defining the socio-economic rate of return,
- a financial analysis based on different funding options, defining financial returns, debt cover ratios and conditions of “bankability”.

These analyses can first be relatively brief, then more in depth studies, following an iterative process as the project assessment and selection progresses.

In many cases the most uncertain element of these economic and financial analyses is the traffic and revenue forecast. Forecasts are based on the traffic volumes and growth observed on the existing network. Traffic counts and roadside interviews provide appropriate data to construct origin-destination flows and identify journey purposes (commuting, social-recreation, business, etc). Using Stated preference studies or evidence from other tolled roads the present and future willingness to pay of the road users can be estimated by market segment. Project costs can also be very uncertain. Legal challenges and direct action can delay the start of works on the scheme and its completion.

TYPICAL CONTRACTUAL STRUCTURE



Using an appropriately defined road network and traffic assignment model, validated and extended, if appropriate to cover such responses as trip redistribution and generation, the traffic volume on each road section of a studied network, under different conditions associated to various scenarios (including the users' reaction to tolls and congestion), can be forecast. Impacts of changing input data could be evaluated (sensitivity tests) for the entire period of the concession. The reliability of the study's results justifying any concession projects is highly dependent upon the reliability of the base data, appropriateness of the traffic model, and the correctness of the macro-economic assumptions. Execution of the traffic and revenue study requires therefore a substantial experience, special skills and careful approach. Fairly often there is a lack of reliable base year traffic data and in such cases the potential financiers can be expected to build a large margin of error into their revenue projections.

By comparing "with implementation" and "without implementation" cases, the cost-benefit analysis must take into account:

- all costs incurred,
- user benefits measured by vehicle operating/travel time/and safety cost savings,

and might take into account (carefully double counting):

- benefits to non-users measured by reduction of adverse external effects (air, water and soil pollution, noise, landscape disturbance, etc),
- induced social benefits (improved accessibility, development of the overall economic activities, trade and tourism, land use patterns, employment, etc),

as a condition and consequence of timely implementation of the new infrastructure.

Tolling of an existing or planned road will inevitably divert a part of the expected traffic onto the neighbouring, freely accessible network. This makes necessary to take into account the appropriate reduction of social-economic benefits linked to this diverted traffic volume. The results of the cost-benefit analysis (Net Present Value, economic Internal Rate of Return e.g.) serve as a base for deciding the eligibility of the project for budgetary financing.

The heart of the study of financial viability is a cash flow model, showing the yearly or semi-annual distribution of all project-related expenses and revenues under several funding options. The results of the financial viability study (Return on Equity, Debt Cover Ratios, etc.) serve as a base for decision in respect of eligibility of the project for limited recourse project finance after taking account of the governmental support available. The impact of changes in assumed conditions or input data should be appropriately assessed by a series of sensitivity tests.

In order to improve the financial viability, projects might be postponed or implemented by phases (downsized). It might happen that a project's socio-economic viability is strong enough for direct public sector financing, but its financial viability remains weak without a substantial public contribution. Provided the government contribution requested to make the project "bankable" is substantially smaller than the public spending needed under a hypothetical public sector comparator, and its provision might attract the appropriate amount of private capital allowing timely implementation of the project (i.e. preventing socio-economic losses resulting from deferral), co-financing under a public-private partnership scheme is the right option to choose.

This is referred to as a "leverage effect" that helps the State to raise private funds by means of a limited contribution or of limited contingent liabilities through a fair and equitable risk allocation.

The cost to the State can be reduced and even fall to zero if the standby facility is not entirely disbursed or a loan guarantee is not called. The State has also a decisive say in specifying the toll rates considered as politically and socially affordable, aiming to keep on the toll road a traffic volume yielding the expected socio-economic benefits. If the State requires these "optimal" toll rates to be set significantly lower than the "revenue maximising" rates derived from the financial model, the State has to contribute to maintain the financial feasibility.

The choice of the type of the concession in relation to the expected funding structure and sources is also very important at this stage. It is necessary to define the type of the potential concessionaire, whether it is a special purpose company or not. A special purpose company could be either a fully State owned or a partly or entirely privately owned corporate entity. It is highly recommended that the concessionaire is selected through a fair and transparent competitive procurement (tendering) procedure.

The public concessionaire is a company whose capital is directly or indirectly owned by the State and/or local authorities (e. g. France, Italy, Hungary M3 and Spain). Although this special purpose company performs the same functions as a privately owned one and it apparently functions under competitive market conditions, loans borrowed or bonds issued by the company are in most cases guaranteed by the State. Such a company therefore enjoys better than average market terms and conditions. The totality of the risk however is borne by the State (i. e. the taxpayers) and the management's efficiency and motivation remains questionable therefore.

Such cases might not be considered as genuine public-private partnerships aiming to achieve the benefits of private sector involvement. Nevertheless, the concessionaire is required to contract through competitive tender at least the construction works, and eventually the operation, maintenance and toll collection to private companies.

In conclusion, careful management of the two stage process of identification and selection of economically and financially viable projects and the specification of the terms and conditions for their implementation is a critical factor in establishing and maintaining working road concessions and long lasting partnerships.

4.2 Implementation and contractual framework selection

The most important typical frameworks for the co-operation between the public administration and the private sector were duly described and classified in a Report of the PIARC Committee on Financing and Economic Evaluation (C9) prepared by G. Maring and G. Estermann to the World Road Congress, Montreal 1995.

The following main types of implementation are worthy of note:

- Build, Own and Operate (BOO): a private corporate entity finances and builds an infrastructure project, which is owned, tolled and operated by that company for an unlimited time (e. g. the Ambassador's Bridge, on the border between the United States and Canada).
- Build, Operate, Transfer (BOT): a concession is awarded to a private corporate entity to finance, build and operate a tolled infrastructure during a limited period (usually of 20 to 40 years), at the end of which the infrastructure is transferred free of charge to the public administration. The diagram of the resulting financial flows is given hereafter.
- Design, Build, Finance and Operate (DBFO): a private corporate entity is selected through competitive tender to build, own and operate infrastructure for an unlimited time. Payment is made to the private owner/operator by the public sector in the form of shadow tolls, based on the number of vehicles using the road or on some other formula.

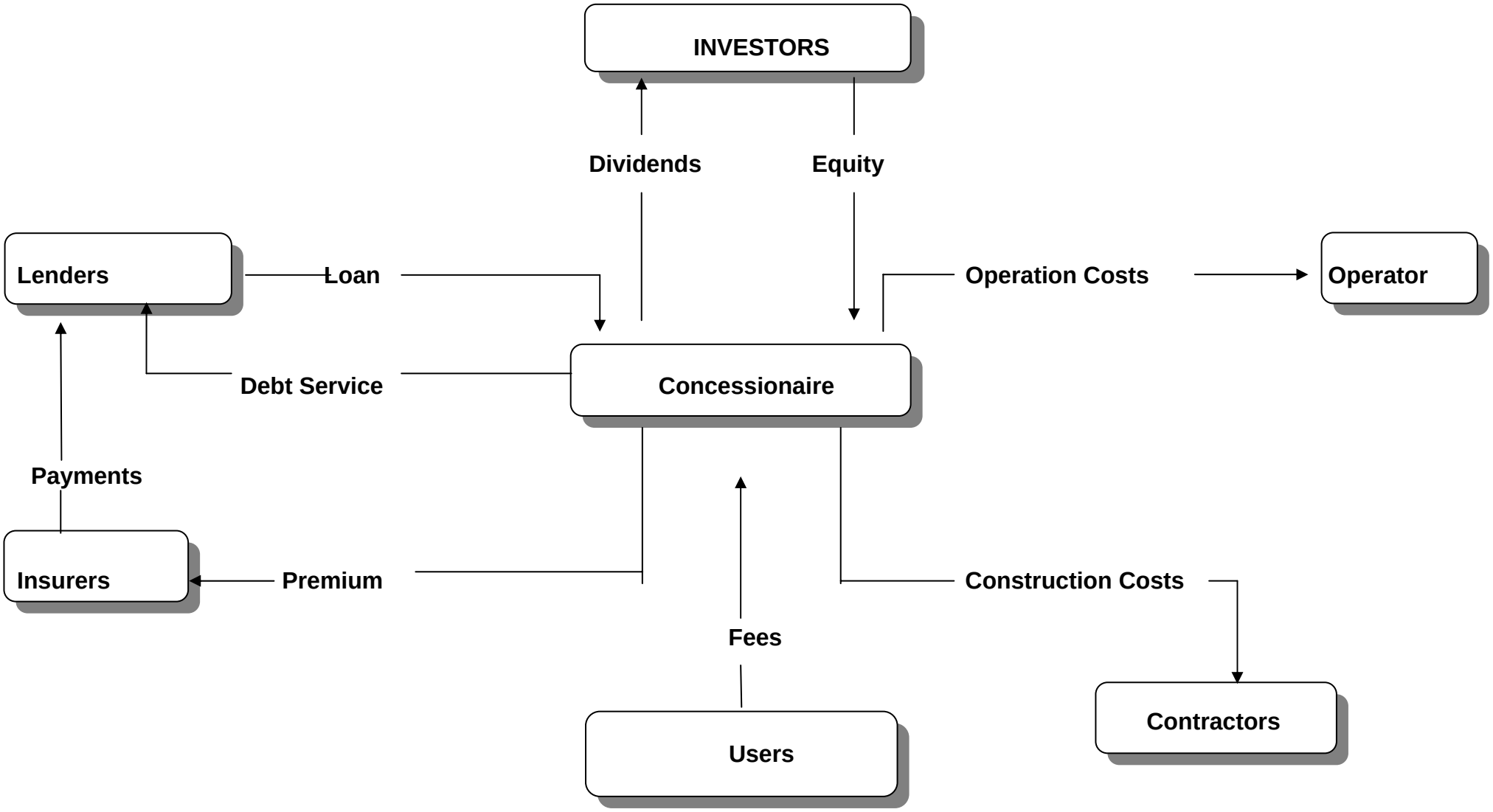
- Build, Transfer and Operate (BTO): a private corporate entity finances and builds the infrastructure, but upon completion transfers its ownership to the State. The infrastructure is then leased from the State, operated and tolled by the same, or another private company during a limited period (usually 20 to 40 years), at the end of which all rights have to be transferred to the State. Although the State can "own" the infrastructure from the first day of operation, the private company often keeps the full financial responsibility, which is not transferred to the State (e. g. in California SR 91). This model has been applied in the UK, based on the Private Finance Initiative setting up the rules of private sector involvement.

- Buy, Build and Operate (BBO): this is a theoretical model, whereby a private corporate entity purchases an existing infrastructure from the State, upgrades or repairs it, then operates it and collects the revenues generated (usually tolls) indefinitely. There are no practical examples of this model as the acquisition of a public road infrastructure is rarely acceptable politically or legally.
- Lease, Improve and Operate (LIO): a private corporate entity leases existing infrastructure, upgrades or repairs it, then operates and collects the revenues generated (usually tolls) over the duration of the lease.

  This model is frequently used in Latin America, notably in Argentina and in Brazil, and has been successful in the rehabilitation of the road network.

  In some cases, an existing, tolled facility is made part of the concession agreement as a condition of building new infrastructure either linking with it or enhancing its capacity. (e.g. - the Dartford Tunnel and the Severn Bridge in the UK or the Tagus Bridge in Portugal).

BOT Financial Flows



4.3 Selection of a concessionaire

4.3.1 The management

The requirement to adapt the legislative and regulatory framework to allow efficient private involvement has already been discussed. The traditional organization and functioning of the public administration has to be reformed in order to manage this type of contracts.

The decisions related to any concession contracts and related agreements have implications for several governmental entities. It is recommended:

- to create an appropriately authorized special entity dealing with road concessions;

- to organize appropriate co-operation among different Ministries and public services aiming to provide officials with the necessary information and understanding to support the award of concessions, selection of the concessionaires, negotiations leading to the signing of concession contracts and related agreements and to contribute to their speedy execution;
- to invite local and foreign legal, financial and technical experts of good market record, to assist the public administration in all these activities.

Once the financing structure and resources are defined and the recourse to a concession decided by the appropriate authorities, an open and transparent process of awarding the concession has to be followed.

4.3.2 To award a concession

The most suitable process for awarding concession contracts is through competitive procurement. The stages of this procurement process are the following:

a. Information
Publication and dissemination of the most pertinent information about the project including its main technical, legal and financial characteristics to all potential bidders having the required expertise.

b. Prequalification
The aim of the prequalification is to shortlist bidders with the required expertise. Taking into consideration the costs of making a bid, it is desirable to limit the number of bidders to encourage them to prepare serious and competitive bids.

c. The bidding

The tender documentation should be set out so as to facilitate:

- a fair assessment and comparison of all elements of the bids;
- presentation of alternative bids aiming to allow innovative solutions;

- unambiguous interpretation of selection criteria (based on compliance with technical and legal requirements, credibility of financial plan, risk allocation, concession period and profit sharing among others) ;
- the understanding of conditions and limits of eventual public contribution.

The establishment of a serious, robust and complete offer by a bidder represents an important expense. It may therefore be desirable to reimburse the unsuccessful bidders for all or part of the costs of their bids. Partial compensation is usually preferable to a full reimbursement to discourage excessive expenditure on the preparation of bids. This indemnity (loosers' fee) might then be provided for out of the project costs paid by the successful bidder.

d. Evaluation of bids

The object of the evaluation of the offers is to select the best partner to carry out the work and to operate the infrastructure during the whole period of the contract.

The evaluation must, as a first step, verify if the offer complies with the conditions of the competitive procurement and call for tenders. Then, it must permit the establishment of a clear contractual framework and a balanced allocation of risks.

The evaluation will be performed according to the different criteria of the call for tenders, taking into account the authorized innovative variants. The lowest price is not the only criteria to consider. Similarly, the definition of the service level criteria, particularly in matters of provision for road users, must be consistent with the expected level of the traffic and with the financing capacity of the concession.

Some additional information may possibly be required from the shortlisted bidders.

In all cases, the evaluation must be made with an analysis based on a large set of criteria. Using a unique criterion or too simple a selection of criteria can have perverse effects.

The typical example is the award of concession on the criterion of the best toll-traffic combination. In the past many contracts were awarded on the basis of unrealistically high traffic forecasts, which led to a re-negotiation or to the forfeit of the concessionaire a few years after the completion of the scheme.

e. Drafting the concession contracts

Once the best offer has been selected, the drawing up of the contract takes the form of a negotiation.

It must formalise the duties and obligations of each party (characteristics of the works, schedule, tariff policy, financing requirements, tax rules, improvement of parallel free ways) as well as the sharing of risks between the parties and the conditions of arbitration in case of dispute.

The characteristics of motorways do not often allow real flexibility, but progressive building of the infrastructure (work phasing by section, making provision for but not constructing additional lanes at the outset, progressive strengthening of the pavement) must not be dismissed a priori. It can improve the financial viability of a project and is based on this obvious statement:

- low traffic = reduced needs
  = low resources

- more traffic = more needs
  = more resources to satisfy these needs.

This obvious statement is very often overlooked. It occurs most frequently when the political context is not sufficiently mature and for spectacular or "show-case" projects, which the promoter hopes will generate revenues in excess of those which a realistic forecast would predict. In many of those cases revenues fail to cover total expenditure.

f. The concession contract

The concession contract must include at least briefly the following elements:

- Technical conditions: technical features; foreseeable phasing; increase in capacity, widening; derogation from norms; etc.

- Financial conditions: authorization of foreign capital transfers abroad (where such controls are in force); fiscal rules, depreciation rules; etc.

- Toll levels and rates: toll structure; toll flexibility (all variants are possible) indexing of tolls, demand management pricing; exemption from payment; etc.

- Legal conditions: possibility of pledge to creditors; conditions of termination; duration of the concession; etc.

- Distribution of risks: definition, allocation, procedures of dispute settlement; etc.

It is very likely that conditions will change over the duration of the concession; this requires some flexibility in the contract to allow for such changes and for changes in the financial and organizational arrangements and in the development of the project.

4.3.3 The concessionaire

The promoters can decide to propose different types of legal, financial or fiscal structures (corporate entity with limited liability, partnership, company, etc.), and flexibility is necessary in this respect, to encourage the setting up of a legal structure adapted to each project. Such a tailor-made structure can be a condition of its feasibility.

On the board of a private concessionaire company, one finds in general two main groups of actors: the entrepreneur (contractor) and the financier (financial entity: bank, stockholder, etc.).

Which must assume the main role?

This question is often raised, and without the debate being definitely closed, it seems nevertheless that the system in which the entrepreneur (contractor) has the majority of shares offers dominating advantages:

- The double role of contractor and shareholder makes the contractor feel more responsible. The incentives provided to the contractor looking for a profit in the execution of the construction works in the short term are balanced by the contractor's financial interest as shareholder in the medium and long-term. Costs overrun and insufficient quality impact the profitability of the contractor's investment;

- Technical innovation and the search of savings are encouraged;

- The entrepreneur generally commits himself on a lump sum turnkey contract vis-à-vis the concessionaire. The financial shareholder feels less exposed to the construction risk.

The financial flow diagram is then modified (see following page).

In all cases, the concessionaire must have the freedom to entrust the construction of the infrastructure to the construction company or companies which have participated in the bid provided that the works contracts are coherent with the financial arrangement of the operation. These contracts must be fixed prices contracts, at least for the main part of the works, and offer the concessionaire sufficient guarantees in matters of work completion, time limit of execution and quality of the works.

The concessionaire company can choose to operate the infrastructure itself, to set up an operation subsidiary, or to subcontract operation. These various possibilities each present advantages and disadvantages.

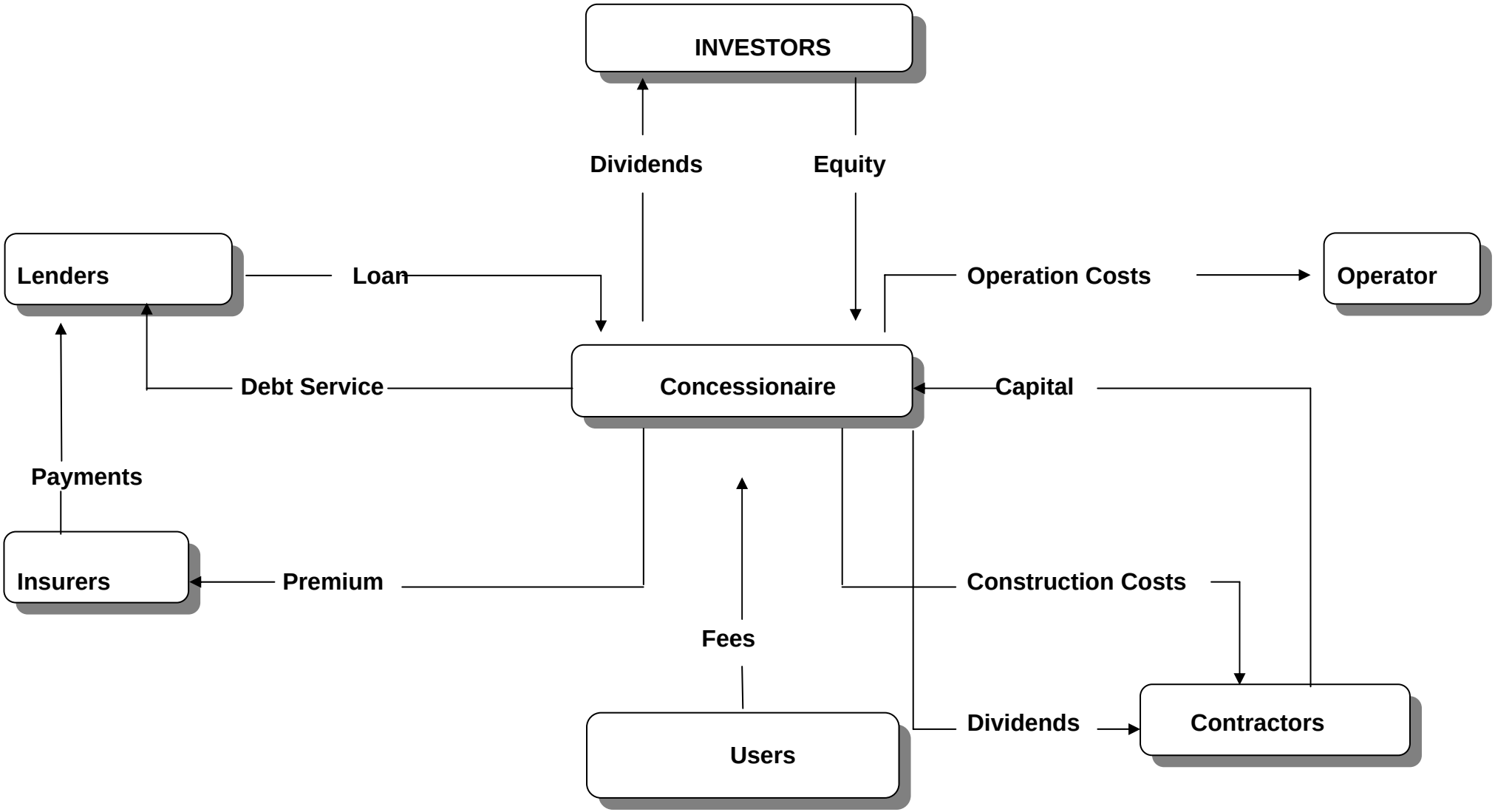
Let us note only that, in the case of a concessionaire that benefits from real expertise in operation, the consistency between the construction design and the future operation constitutes an important factor for the success of the project.

However, the profession of operator is fairly specialized and different enough from those to which the traditional shareholders, contractors or banks are accustomed, and it can be profitable for the concessionaire company to call upon operation specialists as advisor, operator, or shareholder.

4.3.4 The participation of international financial institutions

International financial institutions may also play an important role in public/private financing. The market for funding investment is an international market and these financial institutions can play an important role in countries that lack the experience or have insufficient expertise in this type of operation to achieve successfully the difficult process of bringing together the necessary sources of funding.

BOT Financial Flows



5. ALLOCATION OF THE RISKS ASSOCIATED TO A PROJECT

Under a traditional public sector scheme, the content, terms and conditions of the contracts related to the relatively short duration construction are well defined. However, a concession contract is drawn up with the aim of allocating many risks and regulatory each party's relationship for a very long duration. The definition of these risks and their clear allocation between the concession awarding party and the concessionaire are in the heart of the partnership.

The simplified and far from comprehensive table below summarises the different types of risks associated with a road project and indicates a possible allocation of these risks between the parties. Each of these risks should be studied and analysed. It is of fundamental importance to the successor of the concession that each risk is assessed and, where possible, a range of values put on each risk and on combinations of risks occurring.

	Concession Awarding Party	Concessionaire
1 – Political risks		
Expropriation of the company	x	
General modification of the laws and tax system		x
Specific modification of the laws and tax system	x	
Political events	x	
Termination of the concession by the Government	x	
Limitation of currency convertibility	x	
Materially adverse sovereign action	x	
2 – Risks on completion of the construction		
Land acquisition	x	
Costs overrun (excluding change of project)		x
Costs overrun (change of project)	x	
Increase of the financial costs		x
Risk on schedule and quality of works	x	x
Risk on administrative procedures delay time	x	x
Damages incurred by the works		x
Bankruptcy of the concessionaire company	x	
3 – Operation risks		x
Impact on the environment		x
Force majeure	x	x
Technology risk		x
Costs overrun		x
Changes in specifications	x	
4 – Commercial risks		
Traffic shortfall (to reference case)	x	x
Price Control Policy (tariffs)	x	
Other revenues		x
Construction of competing facilities	x	x
5 – Financial risks		
Inflation	x	x
Interest rate	x	x
Exchange rate		x
6 – Legal risks		
Permits and licences	x	x
Litigation	x	x

The construction (completion, quality and cost overrun) risk is generally assumed by the concessionaire. If substantial changes to the specification of the project are requested by the concession awarding party before or during construction it is more efficient that the latter bear these risks.

For the allocation of financial risk, different approaches exist. In case the concession is considered as an ordinary private commercial operation, and the bulk of the financial risk stems from inflation, interest rate and/or exchange rate risk has to be borne by the concessionaire. Taking into consideration the long duration of the contract and the eventual impact of these unforseeable factors on the revenue to be generated by the project, it is better to reach a binding agreement on certain reference points and forecasts and include price escalation- and a fair profit-sharing formula in the contract.

The legal and certain of the fiscal risks as well must be evaluated with particular care having regard to the fact that one of parties to the contract retains a large discretionary power. Furthermore, in many countries the law is in transformation. The legal framework is not settled. It will therefore be important to consider adopting for contractual purposes other legal systems such as those provided by European continental or the common law.

Both the legal and fiscal risks should be identified and assessed with particular care.

6. PUBLIC/PRIVATE PARTNERSHIP (PPP)

Public-private partnership or PPP is not a precisely defined term. It embraces a range of structures and concepts, which involve the allocation of risks referred to above and responsibilities between public and private sectors.

In the simplest PPPs the private sector provides a service or manages a facility for an agreed period and fee, without taking the financing or commercial risk. It is somehow more complex when the public and private sectors jointly finance, own and operate a facility as a joint venture. In case of a leasing, all or a substantial part of the risks associated with funding, developing, managing and operating the facility are transferred to the private sector. The various types of co-operation enumerated earlier (BOO, BOT, DBFO, etc., the distinction between these terms are not always clear,) should be all considered as PPPs.

In fact, the approaches and techniques involved range from the simple commercialisation of a set of assets that remain under public ownership right through to virtual or actual privatisation. The way in which risks, responsibilities and powers are allocated between the public and private sectors will vary enormously from structure to structure across this spectrum. There is a growing tendency to categorise all these terms together as “Public-Private Partnerships” or PPPs.

In the road sector, financially viable standalone BOT projects, relying solely on the generated revenues, are extremely rare. To achieve bankability of a socio-economically sound, eligible for implementation project, which can potentially be implemented, a partnership has to be set up through public contribution of various kinds. This partnership has to take into account all risks and rewards of both parties, should be based on their fair and equitable allocation and provide incentives to maintain and improve efficiency.

7. GENERAL RECOMMENDATIONS

7.1 Support of private financing for infrastructure

From the previous chapters, the following are among the most important issues. There are reasons for the growth in private road financing and especially for the growth via financing from tolls. Among the more significant are:

- Public expenditure faces severe constraints while the private sector shows its ability to raise raising large amounts of capital for infrastructure projects;
- The trend towards increased privatisation demonstrates the political willingness of numerous States to reduce the role of the public sector in the production of goods and services. The private sector has demonstrated its capacity to manage such companies and services efficiently;
- The “user pay” principle is gaining increasing political acceptance and is being made possible by dramatic advances in electronic tolling.

7.2 The concession scheme: an adequate method for road private financing

The concession option is the most widespread scheme for involving the private sector in the financing and provision of road infrastructure. The design, building, financing and operation are carried out by a private company, which repays the debt and obtains a return on its invested capital (equity) from the toll revenue over a period generally of 25 to 50 years.

When the revenues are large enough to repay the debt and obtain a return on investment over a period of around 20-25 years the project can be funded through project financing. However, a project can provide an important socio-economic benefit without generating an adequate financial return out of toll revenues alone. This socio-economic benefit may justify support from public funds and public guarantees to make the operation financially viable.

Shadow tolling is based on the same principles but the revenue is not directly provided by the users. It is paid by the conceding authority in relation to the traffic recorded as using the infrastructure with the rate of payment per vehicle varying according to the overall level of traffic, as agreed in the concession contract. The financial burden of the reimbursement remains on the side of the authority responsible for granting the concession.

Private concession arrangements for toll motorways benefit from the experience of a large number of successful examples. The “shadow toll” approach is still novel and its success is unproven.

7.3 Factors restricting private road financing

The trend toward private road financing and towards tolling in particular faces a number of constraints on account of:

- The difficulty of attracting adequate capital investment: the long life of the contracts combined with the magnitude of the risks, in particular: political, construction, revenue and financing make infrastructure projects difficult operations to set up. The market for long-term finance is very competitive. A major consideration is the confidence of investors in the conceding authority and in the partners in the concessionaire company. These features explain the small share of the road sector in the private financing and infrastructure. The road concession is in direct competition with other types of project or investment which are often less risky and have a shorter pay back period.

- The financial, legal and contractual complexity of the road concessioning: this complexity means, in most of cases, long and costly procedures and sophisticated arrangement which combines seeking to make concession agreements are not accustomed to making and are often unwilling to consider.

- Public resistance to tolling: resistance to tolling concerns in particular the tolling of existing toll-free roads and also new routes. This opposition may appear at the preliminary traffic modelling and evaluation study stage or when opening or as a consequence of any toll increase.

- Risk of change of political climate: attitudes towards the private ownership of roads and how privately owned infrastructure should be funded vary between countries and between individuals and politicians within countries. Despite growing acceptance of private provision, so long as such differences remain, investors will wish to guard against the risk of changes in political support.

7.4 Implementation of road private financing

Private road financing, if it is to be developed further, needs to overcome these constraints. Some of the main issues are:

To develop political consensus and acceptance of tolling by the public:

The case for the infrastructure and the benefits that it will bring must be explained clearly.

The choice of financing means and especially the decision to toll should be justified in depth.

The method for awarding the concession must be transparent and the choice of the concessionaire clearly stated.

The case of low-income road users should be considered. In some cases this might lead to specific tariff arrangements or to maintaining possible free alternatives to the tolled road.

Implementation of tolling must be carefully prepared. If the existing free infrastructures are to be rehabilitated, it is advisable to start tolling only after improvements to the level of service are noticeable. On new infrastructures, the reason for resorting to tolling should be explained and the service improvements which it offers should be emphasised. Users become clients. They have the right to expect a service corresponding to the price paid. In particular, this service should not be lower than the service of a comparable toll-free infrastructure.

Set up a simple contractual framework in order to reduce delays and costs to the bidders for the concession

The existence of a clear legal, fiscal and administrative framework is an important factor in winning the confidence of investors.

It must specify the relevant legal rules, notably the arbitration procedures, the fiscal and financial rules (tax exemption, convertibility, categories of authorized investors). These conditions must be defined in the very first stages of the concession process. International finance institutions, particularly the World Bank, have issued some reference documents and a number of reports of various experiences.

It must specify the all of the conditions which are relevant to one or to both parties to the concession agreement from the call-for-tender phase (interlocutors, granting process) up to the construction and operation phases (authorization, control).

Define the socio-economic and financial conditions of the partnership

Investors will base their decisions on the financial evaluation of the project. Private investors have the right to expect a reasonable return of their capital in exchange for the risks incurred.

The community must base its decision generally on the public utility of the project, and in particular on its socio-economic evaluation. If the collective interest is important but if the revenues generated by the project do not permit full self-financing of the project, a demand for a partnership between the public sector and the private sector must be considered.

The amount and the form of the financial contribution or of the risks covered by the public sector conceding authority must, as far as possible, be defined as early as possible during the project selection stage. Final agreement on these contributions by the public sector will take place later, immediately before the signature of the contract. Both the public sector officials and the private sector investors should seek the advice of independent experts at all stages during the negotiation.

Think in the long-term

It is unrealistic to expect that reliable forecasts can be made over such long periods and that all eventualities can be foreseen. The contract regulating the rights and responsibilities of the parties should allow for a reasonable amount of flexibility to take account of such uncertainties by making provision for adjustment to the terms under specified circumstances and for arbitration. Priority should be given to the long-term objectives of the project.

APPENDICES

APPENDIX 1 - EXPERIMENTS IN PUBLIC/PRIVATE FINANCING

1. Germany

Until recently, large infrastructure projects in Germany were exclusively financed from public budgets.

Since the reunification, the State has had to cope with an increasing need for public-sector funding, and studies have been carried out to find out to what extent it is possible, useful and necessary to change a policy considered as a real tradition.

Two different models were introduced. First, in 1992, the Federal Government and Parliament authorized the pre-financing of thirteen projects with private-sector capital. This applied to the Munich-Inglostadt-Nuremberg Intercity Express rail link as well as to 12 motorway and federal highway projects with a volume of 12.3 billion euros. This financing model, which provided for repayment by the State over 15 years, had the disadvantage of burdening the budget of the Transport Minister for a long time. But the model has at least made it possible to realize top-priority projects earlier and delay the payment of refinancing instalments to a time when the funding of the German Unity Transport Projects will no longer put such an enormous strain on the budgets.

Then, in 1994, the Private-Sector Funding of Trunk Road Construction Act, accepting private-sector concessions with tolling, was adopted. Due to the European legal framework, however, it has been restricted to engineering structures (bridges, tunnels, mountain passes) and two-lane federal highways. It can be assumed that up to 20% of the construction costs of projects within the sphere of responsibility of the Federal Government will be required as initial financing.

For two projects realized within the sphere of responsibility of local authorities (Rostock and Lübeck) as well as for another twelve projects within the area of competence of the Federal Government, agreement has been reached with the federal States concerned on the carrying out of feasibility studies. The results of three of these studies are already available while the others are ongoing or in preparation. It is expected that the first concession for the twelve projects under this so-called operator model will not be put out to tender until 1999.

As a further step, it is envisaged to introduce a distance-related motorway user charge for lorries from the beginning of the next decade. For this purpose, concessions for a number of federal motorway sections are to be granted to private-sector operators who will then use the corresponding revenue from charges to finance the preservation and maintenance of the individual road sections. In the medium term, the number of these concessions is to be increased.

2. England: The "Shadow Toll" Concessions

After reflections made on the possibility of private financing of infrastructures and in particular on road pricing in Great Britain, in 1992 the Department of Transport launched the principle of DBFO (Design, Build, Finance and Operate) type contracts with a significant transfer of risks toward the private sector and relying on the concept of shadow toll.

The DBFO concept was taken up again in the Green Paper "Paying for better motorways" published in May 1993.

The British Highways Agency has awarded eight projects in 1997. The contract features are the following:

- the contracts specify a duration of 30 years and concern amounts of 10 to 100 m GBP (7 to 70 million euros) ;
- the concessionaire remuneration is a function of the number and type of vehicles using the infrastructure, of the service level (fluidity of traffic) ;
- the remuneration may vary according to substantial bonuses according to the road safety improvement, as well as serious penalties in case of excessive lane closures for maintenance works. Penalties («lane closure charge») or bonuses are defined for closing a lane or for safety improvements ;
- the amount paid to the concessionaire is capped; this puts a ceiling on the risk concerning the cost supported by the Agency;
- the amount paid to the concessionaire may be modulated according to the progress of the works or of the possible opening to partial service of the sections to be created.

The contracts consider the hypothesis of real toll.

The contract awarding process of the different projects lasted an average of 16 months.

The Minister of Transport (Department of the Environment, Transport and the Regions) thinks that, for these eight contracts, the economy achieved globally for the life time of the projects, by comparison with the traditional practice of the public sector, is 15% (in Foreword of “DBFO value in roads” - Highways Agency - March 1997).

This control of costs is due in particular to the transfer of the construction risk toward the concessionaire, because a National Audit Office had estimated at 28% the cost increase between the price of the call for tenders and the cost at the end of the works (in “DBFO value in roads” - Highways Agency - March 1997).

3. Argentina

The total extension of the general highway network is 500,000 kilometres, of which the national network is 38,000 km, (28,000 only are paved). It is an indication of the difficulties for a country of such large dimensions 2.8 million km^2, 36 million inhabitants to face problems of infrastructure.

In this context, the Argentine authorities made three successive steps towards the collection of tolls for the purpose of financing the highway network.

- The first step was to set up a law in 1967 (n° 17520), allowing concessions covering the financing, construction, operation and maintenance of public infrastructures. Two urban motorways were built in Buenos Aires within such framework. They are known as AU1 and AU4 and are still tolled.

- The second step: the possibility to grant concessions was extended to existing infrastructures according to the State Reform n° 23696, and a huge program was launched (in 1990). Approximately 10,000 km of intercity trunk roads (2x1 lanes) were transferred to the private sector, through concession agreements covering the rehabilitation, operation and maintenance with counterpart of tolling implementation on roads previously toll-free. The selection of the concessionaires in 1990 was based on two criteria: the proposed toll fare and the amount of the franchise payment proposed to the State. The toll fares in local currency were equivalent to 1.5 to 2 USD per 100 km for light vehicles with a toll adjustment based on 80% of the PRI (Price Retail Index). The protests of road users oblige to impose an appropriate level of service. After modifications of the concession contracts, the tolling of the network was accepted. Tariffs have been lowered to 1 USD per 100 km, in counterpart of the cancellation of any State fee, or even in some cases with a subsidy and such tariffs shall remain constant, without readjustment.

  The lessons learned on this occasion can be summarised as follows:

  - road users who are obliged to pay a toll must be considered as customers. They are entitled to receive value for money;

  - the more evident the improvement of service is the better will be the acceptance of customers;
  - the toll fare must be set up at an acceptable level;
  - the public must be properly informed by the State and by the concessionaire of the reasons for the concession, the justification of the toll and the advantages offered to the customers, in return for the toll;
  - the State must strictly control the performance of the concessionaire in terms of the quality of the services provided.

- At last, in 1993, the State awarded the three concessions related to the three Buenos Aires accesses, which traffic ranges from 60 to 80,000 v/day. The tolling scheme is open and tariffs average 2 USD for a light vehicle. Loans are guaranteed by the State. The Argentine initiative of granting large concessions on existing roads is certainly the most complete and the most rich regarding experiences. It has transferred to road users the burden of road maintenance costs and it has been well accepted by the public opinion.

4. Australia

Australia is one of the most motorised and sparsely populated countries of the world. A population of approximately 19 million people, or less than three for every square kilometre. The total length of the road network is 810 000 km.

Approximately 35% of the roads have a bitumen or concrete surface. These roads carry 70% of the traffic.

Australia has three levels of Government - National, State and Local Authority. The major roads system linking communities is the responsibility of the State Governments. Within this group, the National Government funds the States for those roads linking the capital cities of the States, approximately 18,000 km in total. The total length of freeways is approximately 1,100 km.

The State Governments have the major ownership role. The National Government has influence by funding preferred projects. The majority of infrastructure is funded publicly.

The State Road Authorities combine through National organizations to reduce duplication in:

- Austroads, for road practices; and
- ARRB Transport Research Ltd for critical research.

At the start of this century and on occasions since, tolls have been used to finance infrastructure in Australia.

Recently, 1980s and 1990s in Queensland and 1990s in New South Wales, new toll roads have been built. Queensland has a major bridge and separately a toll way, operated by a company owned by Government.

New South Wales has a number of privately owned toll roads. Of the 51 km of tolled roads in New South Wales, 4 km are public (Sydney Harbour Bridge). Queensland's toll roads cover a total distance of 44 km.

Recently, Victoria entered into concession operations. The Melbourne City Link is under construction and will be operated with a completely electronic toll system.

5. Belgium

On January 16, 1984, the Belgian Federal Government issued a limited consultation file of enterprises for the concession of the design, construction, management and operation of the Liefkenshoek tunnel in Antwerp. On October 3, 1985, the concession contract was signed between the State, a temporary association of contractors and an international syndicate of banks.

For the realisation of this work an international credit of 13,000,000 BEF (0.3 million euros) was assured by an international syndicate of banks.

The construction activities were finished according to schedule, and tolled operation of the tunnel began July 10, 1991.

At that time, the temporary association of contractors moved out of the concession contract, except for the ten-year guarantee, and the S.A. Tunnel Liefkenshoek Company became concessionaire to assure the management and operation of the work. The shareholders of the operator company were the contractors, builders of the tunnel.

From the beginning of operation, the volume of traffic turned out to be lower than that on which the profitability of the concession had been built. Legal proceedings against the State began in 1991.

In order to terminate all legal proceedings, a transactional arrangement was signed between the concerned parties. The Flemish Region took over the shares of the S.A. Tunnel Liefkenshoek Company owned by the contractors and became the only shareholder of the operator company.

6. Brazil

Brazil is a huge country in which road transportation plays a major role in the economic development of the country. However, the road network is not extremely developed (1.5 million km, only 10% of which are asphalted).

The difficulties encountered for maintaining and keeping-up the network led federal or provincial authorities to resort to tolling in the beginning of the 1970s.

However, recourse to tolling stopped in 1988 for political reasons. But, starting in 1993, the authorities resorted again to tolling for the construction of new infrastructures or the renovation and refurbishment of existing infrastructures, as did their neighbour Argentina.

As an example, the Rio-de-Janeiro / São-Paulo highway, on which tolling had been introduced in the 1970s, then suppressed at the end of the 1980s, was in 1995 granted in concession to a private company, Nova Dutra, which is in charge of renovating the infrastructure and enlarging certain sections.

Similarly, the Rio Niteroi bridge (13 km including 9 km above water) was financed by the federal government and toll-operated from its opening in 1974. Tolling was suppressed in 1988. To finance maintenance work, it was decided to toll the bridge again in 1993. After a call for tenders; the concession was allocated in 1994, the tariff varies according to a formula of indexing on inflation.

The Sao-Paulo State holds an important position in the development of tolled motorways. Five radial motorways giving access to São-Paulo have been granted to DERSA, a public concessionaire belonging to the State of São-Paulo. Tolling on the State's infrastructures was never interrupted but the tariff evolution did not follow the same rhythm as the inflation. Tariff increases to catch-up have been started, and today the State is considering privatisation of the various infrastructures in order to enlarge and extend them.

Concession contracts in Brazil present specific characteristics:

- usually there is no free alternate route,
- the concessionaire must provide a good level of service for road maintenance and upkeep and user assistance (mechanical assistance, vehicle towing, medical assistance),
- tolling is implemented only after the completion of a certain amount of required works.
- Since 1994 a large concession program has progressively been implemented.

7. Denmark

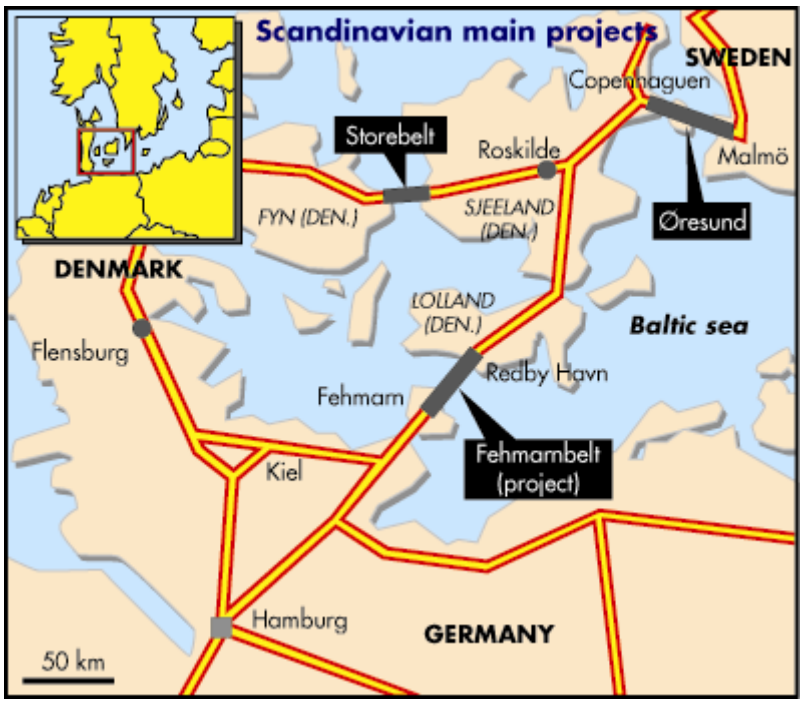
There are approximately 71,000 km public roads in Denmark, 4 500 km are operated by the State including 800 km motorways.

7.1 Methods of financing of Road Infrastructure

- The road infrastructure is financed by general dues and taxes; (income tax, VAT and miscellaneous duties). The vehicles support a duty of 180% when buying a car and a duty depending on the weight. A law is currently under preparation in Parliament which would change the weight duty principle to one which is based on the vehicle fuel consumption.

  Moreover, a survey investigating the possibility and consequences of implementing a vignette system for using the motorways is presently under discussion.

- The sole exceptions to this general principle are the new bridges across the “Great Belt” (or Storebelt) from Sjeeland to the Fyn Island, for which the users have to pay toll fare for passing such bridges to finance their construction and maintenance. The same will apply when the bridges across Öresund between Copenhagen (Denmark) and Malmö (Sweden) will be opened to traffic in year 2000 (refer to map hereafter).



These two connections, consisting of motorway as well as railway, have been established by “private” companies where the Danish State (for Great Belt) and the Danish and Swedish States (for Öresund) are the sole owners. The financing depends on international loans to by repaid by the toll fare.

- The toll fare for passing Great Belt (nearly 18 km) has by Parliament been set at DKK 200 (i.e. ≅ 27 euros), -for cars, DKK 400- for small lorries and DKK 640, -for heavy lorries (price level 1998). For passing Öresund (about 16 km) the toll fare is at present fixed at DKK 160, -for cars, DKK 810 for lorries and DKK 690, -for busses (price level 1990).

- At last, it should be noticed that there are on-going studies about a toll-ring around the centre of Copenhagen. The purpose of this is to reduce traffic in the centre of Copenhagen and to upgrade the traffic facilities and public transport.

7.2 The concessions

- The Great Belt company is 100 per cent owned by the Danish State. The Öresund company is jointly owned with equal share by the Danish and the Swedish States. The tasks of the companies are to build and operate the fixed links. There is no time limit for the operation period. The Great Belt Company has received loans from EIB and private banks on the basis of normal financing market terms. The loans are guaranteed to be repaid by the Danish State if the revenue from the traffic is not sufficient to cover the payment of the debt.

- The fixed link across Öresund will be financed by raising loans on capital markets. These loans will be guaranteed by the Danish and Swedish States. The rate of return asked by the investors in the Great Belt Link is similar to the interest rate on Danish State bonds.

8. Spain

During the sixties, the economic perspectives and the characteristics of the territory and of Spanish roads led the government to study a national motorway plan. Its realization was entrusted to the private sector, under a tolled concession regime (financing, construction and operation). Since 1967, the motorway network has been extended to almost 2 100 km.

From 1984 to 1993, the tolled network did not grow significantly, because the State favored the reinforcement of the principal network by financing 3 500 km of 2 x 2 lanes express roads. On their side, the regional governments of Navarre and Cataloña granted a few tolled motorway concessions during that period.

However, since 1996, tolled motorways are again under consideration. Shortly before the 1996 general elections, the State attributed the concession of 80 km between Malaga and Estepona, and new projects are under study or in the call-for-tender stage within the framework of a new motorway plan.

The legal status of the concession has been defined by Law 8/1972 of 10 May. Some advantages, such as the guarantee of the State or of the exchange rate, were later suppressed. Law 13/1996 of 30 December (on the accompanying measures of the State budgets) extended the maximum duration of a concession from 50 to 75 years, and provides for the possible granting of subventions to the concessionaire companies for the sections with unproven profitability and of subsidiary advantages concerning the exploitation of the immediate surroundings of the motorways. Complex sections, such as those in mountainous areas, are treated specifically.

The application of these provisions concerns the new concessions and is subject to individual negotiations with the companies for the renewal of concessions which have reached or will reach their expiration dates. This possible extension of the concession durations should allow harmonization toward a reduction of toll prices per kilometer to the European average (10 to 11 pesetas/km, ESP/km; i.e. approximately 0.06 euro/km). The State, which, barring exceptions, is in charge of the motorway network, intends to renegotiate all the concessions within two/three years. To our knowledge, negotiations have now been completed with the Autopistas del Mare Nostrum and Autopistas de Navarra companies.

In the case of Autopistas de Navarra (Audenasa), the agreement signed between the local government, Audenasa and Empresa Nacional de Autopistas specifies a reduction of the toll tariff of 25% for light vehicles and 30% for heavy goods vehicles, in exchange for the extension of the concession duration from 41 to 56 years (2029). Regular users will benefit from additional discounts.

One should also remark that the renewal date of most concessions is fairly distant, (at least 2010 except for the Aumar concession which expires in 2006 and for the Europistas concession which expires in 2003).

9. The United States

9.1 Context

The Federal Highway Administration (FHWA), which is part of the Department of Transportation of the United States, finances the construction and rehabilitation of the main urban and interurban roads through the FAHP (Federal Aid Highway Program). The conditions and procedures of funds allocation to the States and local authorities are defined by legislative texts.

The role of the States is on the one hand, to select, plan and design, and on the other, to build, maintain and operate the highway system.

The federal responsibility is to issue standards, to examine and approve the States' proposals, to ensure the conformity of the projects with federal laws, to provide technical assistance, to dispatch federal funds, and to reimburse the States for previously approved expenses.

In order to ensure an efficient and effective implementation of the program in the States, the FHWA maintains offices in each State.

Pluri-annual programming laws such as the "Transportation Equity Act for the 21st Century" (TEA 21) define the global "Surface Transportation Program", which permits the FHWA to provide funds to the States for highway projects or maintenance of the interState links ("InterState System") and for the "National Highway System" concerning the axes of major traffic arteries of national interest.

9.2 Examples of implementation of private concessions for highways

The concession of infrastructures, highways, bridges or tunnels has been used by several States. We shall mention three examples of private concession concerning the States of Virginia, California and Washington.

Tolls are authorized on all subsidized roads except for the interState roads. However, TEA 21 permits – on an exception basis – tolls on three interState roads and authorizes a pilot-program for 15 other projects.

Virginia

In the State of Virginia, the original "Dulles Toll Road" was built by the Virginia Department of Transport (VDOT), in response to development pressures in Fairfax County in Virginia, following the reconstruction of the Washington Dulles International Airport. Because of the fast growth of the region, extension of this road was considered.

After numerous discussions on the compared merits between a State toll road and a private toll road, based mostly on the differences of cost and completion time, it was decided to entrust the construction and operation of the Dulles toll road extension to a private company. This extension ("Dulles Greenway") is a USD 326 million BOT project for a 40-year concession. The project was totally developed with private funds without any Government funds and opened to traffic ahead of schedule in September 1995.

This project has faced some financial difficulties. The acquisition of the land has lasted longer than planned, and the initial cost estimates proved to be too low. Furthermore, the traffic estimates were too optimistic. The financial situation of the project is therefore critical and requires important restructuring of the debt.

California

Under the AB 680 law, the State of California established a contractual environment permitting the development of interesting initiatives for taking charge of the risks through the "Build-Transfer-Operate" mechanism, and four projects were started under these conditions.

The project which progressed the best is State Route 91 (SR 91). The "91 Express lanes" project in Orange County is a USD 126 million Build-Transfer-Operate project with a leading-edge technology installation requiring a "Transponder" (remote transmission badge based on the "ETTM – Electronic Toll and Traffic Management" technology) in each vehicle. It was opened to the public in 1995.

The concessionaire built four lanes, two in each direction, on the central reservation of an existing highway (SR 91) which already included 8 to 11 lanes. Toll tariffs vary according to the time of day (between 0.75 USD and 3.50 USD for a 10-mile – approximately 16 km – journey). HOV's (High Occupancy Vehicles) with three or more occupants fitted with a badge used the " 91 Express Lanes" free of charge during the first two years, and at half price now.

It was decided that the project would be transferred to the State after construction, and granted back by the State by leasing, in order that the State, with its sovereign immunity, act as a “screen” between the private entity and disputes concerning the liability for damages. This reduced the cost of the project for the developer, and will keep ulterior operation costs lower than if the developer had to assume the costs of covering that risk.

The response of the press and of the public to the 91 Express Lanes was very favorable. There has been no safety nor operation problems, and the accident rate is largely inferior to that expected and the users have increased during the first three-year operation. There are few violations, and at a level much lower than the forecasts. The concessionaire indicates that the project fulfills its expectations and that it is satisfied with the present results. The State estimates that it globally saved almost USD 250 million by granting this project to a concessionaire.

Washington

The State of Washington was one of the first States to vote a public-private partnership ("venture") legislation since the voting of ISTEA in 1991. The State of Washington set up a legislation, voted in 1993, with the purpose of implementing a program called: "*The New Partners: Public-Private Initiatives in Transportation*". The law required the Department of Transport of the State of Washington (WSDOT) to ask for proposals from the private sector.

Upon fourteen proposals, the "Washington State Transportation Commission" has preselected and retained six offers, including development facilitating carpooling, toll implementation for congested sections and arrangements of existing infrastructure.

These concerned an improvement of the parking and circulation capacity, of two tolling projects for improvement of road axes, a toll project for solving the congestion problem of Puget Sound, and two projects for tolling improvements on the main bridges in the Puget Sound region.

Shortly after the preselection of these projects, general negative reactions regarding tolling scheme jeopardized the amendments for public-private partnership needed for the achievement of the projects.

The necessary context for public-private initiatives is set and the planning of some projects is feasible in the future.

10. Finland

Finland, who recently joined the fifteen EU States, wished to develop private financing of infrastructures, which it had never tried until then.

As in Great Britain, the Government launched a shadow-toll concession program (according to the English DBFO model: Design, Build, Finance, Operate).

A first project, « Main Road 4 », of 70 km (amount ≅ 160 Million euros) was just made the object of a call for concession tenders (duration of the concession: fifteen years, including the construction phase).

10.1 Choice of the DBFO concession by the Government

In November 1995, the Ministry of Transport and Communications (MTC) appointed a working group to study the implementation of private financing of roads, and to make the necessary proposals to apply it to a section of Main Road 4, between Helsinki and Lahti (70 km to be enlarged to 2 x 2 lanes, with upgrading to motorway norms).

The group notably used a classification of the types of financing in the USA and in Europe (established by J. Sandström, 1996).

	Right to use				**Taxes**		
	Private		**Public Authority**			**Private**	**State**
	Tolled roads	**Tolled roads, tunnels**	**Tolled roads or tunnels**	**Yearly fee : motorway «sticker», right of use for local regions**	**Allocated**	**Shadow tolls**	**State Budget**
United States	x	x	x		x		x
Italy	x	x					x
France	x	x	x				x
Spain	x	x					x
Portugal	x	x					x
Norway		x	x	x	x		x
Switzerland		x		x	x		x
Sweden		x		x			x
United Kingdom		x				x	x
Ireland		x					x
Australia			x				x
Belgium			x	x		x	x
Greece			x				x
Denmark			x	x			x
Netherlands			x	x		x	x
Germany				x		x	x
Finland						x	x

Considering the Finnish particularities, i. e.:

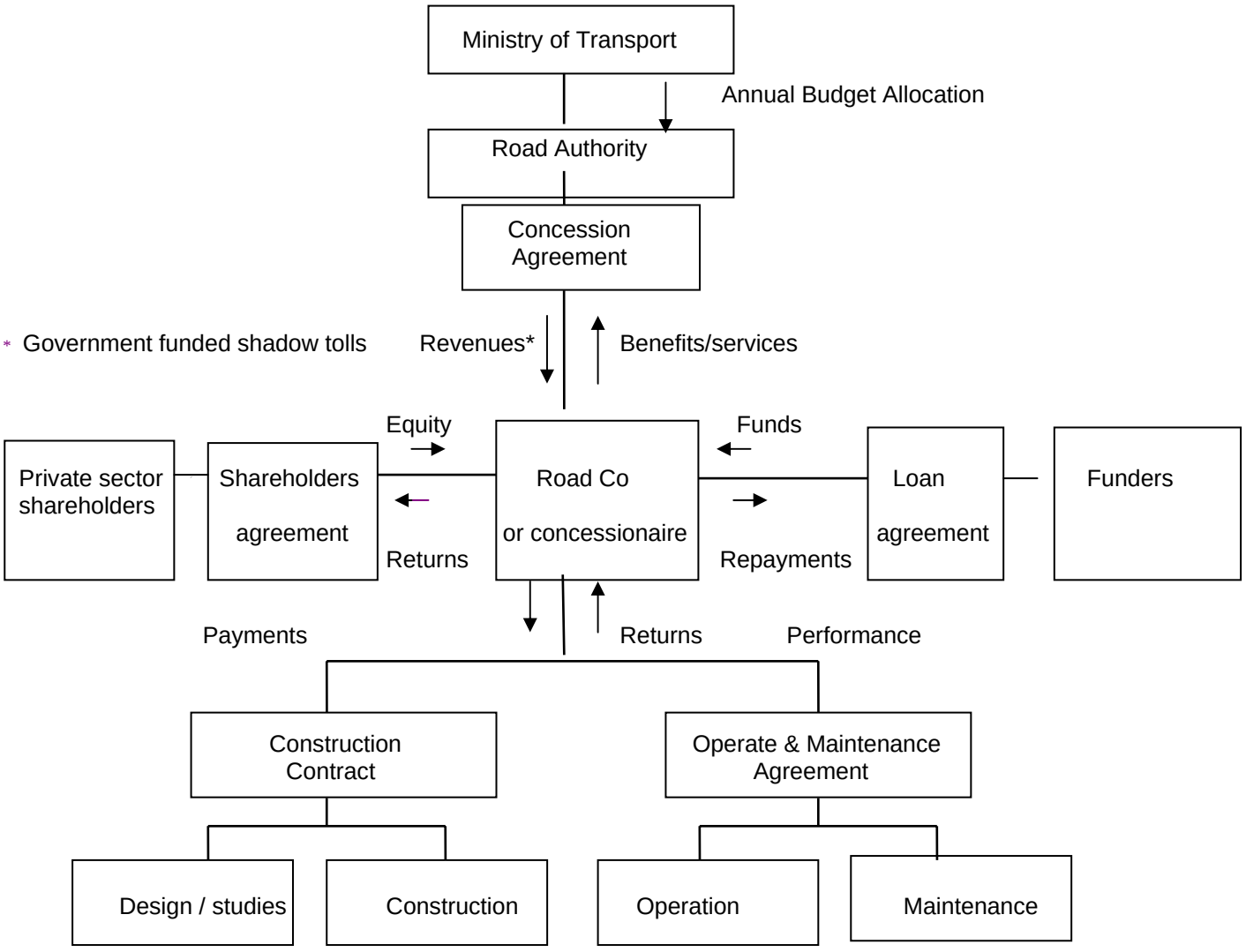
- the already high level of taxes (gas, sticker) and of custom duties,
- an insufficient traffic level to justify the implementation of tolling on road axes, except in the Helsinki region.

This ad-hoc group recommended a DBFO type scheme for Main Road n° 4, after having notably analysed the implementation of the remuneration mechanisms and thresholds (of the DBFO Concessionaire) in Great Britain, and the position of the European Investment Bank (EIB).

10.2 Awarding of the project

- Subject: the object of the concession (Cf. concession diagram below) between the two parties:

  - ♦ Grantor: FinnRA (The Finnish National Road Administration), and
  - ♦ Concessionaire: Road Co (private sector road company)



- Transformation of an express way into a four-lane motorway of the existing road section (70 km) of the Main Road 4 between Järvenpää and Lahti ;

- Construction and maintenance of the section, respecting the standards (defined in a specific endorsement) in matters of: road safety, environment and quality.

10.3 Implementation Model for Main Road 4

The question of private finance for the Main Road 4 brings with it a whole new approach to road management for Finland. On behalf of the State, FinnRA will award a global mission for the road section between Järvenpää and Joutjärvi (with a desired level of service) to a private sector company (RoadCo). To achieve this global mission, the company will design, build, finance and operate the specified section of road *(a DBFO agreement)*, and shall be responsible for maintaining it throughout the concession period of fifteen (to twenty-five) years.

Upon expiration of the concession period, RoadCo will return the road and any equipment to FinnRA in the condition agreed upon, without any compensation. At this point FinnRA will re-establish its role as road manager. The private finance approach will carry with it the responsibilities, as well as the risks, of planning, realising and maintaining the project. The private finance project will not increase government loan-taking.

The Government will pay RoadCo a yearly compensation, as agreed, for providing a certain level of road management service. This compensation will be based on traffic performance[1], using the vehicle-kilometre as the unit of measure. Government compensation will not, however, increase as per traffic performance rise.

Instead, RoadCo will divide traffic performance, based on traffic forecasts, into 2-4 parts and an agreed unit price/vehicle-kilometre is paid for traffic performance in the parts shown. The unit price of the final part is FIM 0 per vehicle-kilometre, whereupon there is practically no compensation once traffic performance surpasses a certain level, in order to provide an upper limit for the compensation paid by the Government. This method of payment will give RoadCo an opportunity to control the risk involved in forecasting traffic performance.

The compensation paid by the Government makes no distinction between the costs of designing, building, financing or operating because it is buying an all-inclusive service. RoadCo is to price the project in such a manner that the compensation received will cover all the expenses.

[1] Traffic performance = number of vehicles x length they drive

The Government will principally begin paying RoadCo once the stretch has been opened to traffic. Separate compensation will be paid to a private company to maintain the existing portion of the carriageway during construction.

RoadCo alone will hold full responsibility for the quality of the investments and maintenance. Any failure to meet the quality requirements must be reported in a deviation report. Quality defects will be corrected by RoadCo at their own expense or the amount of compensation will be decreased (depreciation). A sanction of FIM 50 000 (8,500 euros) will follow any discovered neglect to report a quality defect.

Because the agreement is retroactively financed, the Government will not be faced with excessive repercussions in case of bankruptcy on the part of RoadCo. The Government will not guarantee the project, nor will take part in the company to be founded. If the company goes bankrupt before the start of the construction or during it, the security deposit made by the company (FIM 20 million; 3.4 million euros) can be used re-negotiate the deal with a new bidder. If construction has already been finished, the road is handed back to FinnRA ahead of schedule because of the bankruptcy. In a situation of bankruptcy, the financiers always hold the right to assume the obligations of the agreement or seek out a new company willing to take on the responsibility.

The Finnish government has required that a separate company be founded for the project. This will facilitate the implementation of the project and the transparency of the operations of RoadCo.

The advantages and disadvantages of the approach

- Advantages:

  - The approach is favourable in terms of the State economy. Money is saved by international competition, scale advantages, optimization of the starting point and the construction schedule, and new innovations, among other areas.

  - The approach does not increase State loan-taking.

  - The approach can be used to optimize expenses throughout the duration of the long agreement; the current contract method optimizes the expenses generated during construction.

  - Some basic risks are transferred from the Government to the company (cost overruns, falling behind schedule, traffic volume and production risks and possible reconstruction work).

  - In practice, the government will receive a guarantee period the length of the concession period; a production flow based on traffic performance will motivate a good level of investment and maintenance.

- ♦ In comparison with public finance, the project can get under way an estimated five years earlier with this approach. In this situation, the socio-economic savings brought by this approach will also be moved forward (over a period of 15 years, the benefits will amount to around FIM 2.3 billion (euros 0.4 billion), out of which the net profit is around FIM 400 million (euros 70 million) compared to a public finance plan).

- ♦ Implementation of the project would alleviate the situation on the job market (2070 men-year).

- Disadvantages:

  - ♦ Setting up this kind of operation involves a long-term commitment to carrying out certain projects, which in turn limits the finances available for other projects.

  - ♦ The cost of the project is not apparent at the invitation-to-tender stage, and the final cost is determined over the concession period; neither is known precisely beforehand.

  - ♦ Changes in economic circumstances and society can take place during a long concession period.

11. France

Compared to those of other European countries, the financing mechanisms for road infrastructures in France are relatively complex. Indeed, except for tolled motorways, road infrastructures under the responsibility of the State and of the various territorial communities very often rely on several financing partners for their construction or their modernization. It is also important to remark that France built its motorway network using both budgetary financing and toll financing through concessions, and also relied both on the public and the private sector. This forty-year experience in motorway concessions allowed to derive important lessons on the participation and the role of the public and private sectors in this type of financing.

Hereafter, are briefly described these various financing mechanisms; one should mention however that the financing mechanism of the national road network might undergo significant changes in the near future.

11.1 Motorways in concession

Since the beginning of the sixties, the development of the motorway network has been financed mostly by tolling, within the framework of concessions granted both to the semi-public and to the private sectors. Until the fifties, France, notably because of the quality of its national road network, had not felt the necessity of developing a modern motorway network and had fallen considerably behind its principal neighbours. The 1955 law authorizing the collection of tolls through motorway companies allowed France to provide itself with a dense network, adapted to the transportation demand; the objective was then to fill the gap with its economic partners; at the beginning of the fifties, France had less than 80 km of motorways, compared with over 4 000 km in Germany and over 500 km in Italy.

The concession mechanism for the construction and operation of motorways, with toll collection, did enable France to fill that gap. The history of the motorway sector in concession comprises four steps which should be briefly described here:

- The 1955 to 1970 period saw the beginning of the concession system and the constitution of the first mixed-economy companies ("S.E.M.: *Société d'Economie Mixte*"); between 1956 and 1969, the network grew from 80 to 1 100 km. As the financial equilibrium of motorway concessions could not be reached within time frames compatible with the duration of the loans, the State subsidized the projects up to a level of 30% to 50% of the first links. Budget equilibrium advances were also granted when needed.

- The 1970-1980 period was a period of liberalization of the system and of constitution of private companies; four companies with private capital were created between 1970 and 1973; three of these companies, unable to support their financial charges, called on the guarantee of the State. Only one, Cofiroute, was able to pass the difficult step of the first years and its performances led the State to extend the scope of its concession as it extended the scope of the S.E.M.

- Between 1980 and 1986, a financial restructuration of the system appeared necessary; three private companies in deficit were transformed into public mixed-economy companies, by purchase of their capital, and the *Autoroutes de France* public establishment was created in order to perform a redistribution of resources between the mixed-economy companies.

- In 1993, the government decided to accelerate the realization of the general plan for motorways (2,600 km of motorways to build). In 1994, a reform of the motorway system was set-up, aiming at regrouping the mixed-economy concessionaire companies into three regional poles to ensure the financial viability of each pole and to develop a better geographical consistency of the networks to facilitate the management of traffics.

Motorway concessionaire companies currently spend more money than the State for the construction, maintenance and operation of the national road network. On a total of 29.6 billion FRF (e.g.: 4.5 billion euros; 1 euro = 6.55957 FRF) invested in the national road network in 1998, 63% comes from the concession sector, compared with 20% from the national budget, and 17% from regional contributions. Concessionaire companies invested an average of 17 billion FRF (2.6 billion euros) per year since 1994. Over the same period, they opened to service 326 km of motorways each year. Considering the current construction program (1 047 km were under work on 1st January 1998), this tendency will continue during a few more years.

The motorway network under concession plays a major role in the dynamism of the French economy. In France, the road supports 75% of merchandise traffic and 90% of traveler traffic. The national road network, 33 000 km long, represents only 4% of the whole French road network, but concentrates 40% of the traffic. With average traffic of 25 000 vehicles per day, the interurban motorways, the majority of which are tolled, constitute the frame of the national network. On 1st January 1998, 7 926 km of motorways were in service, 6 700 of which tolled, as well as 1 700 km of 2 x 2 lanes fast roads with almost the same characteristics as motorways. The composition of the French road network is summarized in the following table.

Composition of the French Road Network in 1998

Type of roads	Total length (in km)	Average daily traffic (in vehicle/day)
Inter-city link motorways and urban motorways	8,900	25,000
Including: in concession	6,700 (*)	
National roads	24,000	9,853
Departmental roads	361,200	1,300
Communal roads	579,800	150
Rural roads	625	

(*) Including S.E.Ms 5,900 km, Cofiroute 800 km

Source: Direction des Routes, France, data on 01/01/1998

The regions, an intermediate tier between the Department and the State, do not have their own road network but contribute financially to the national road network improvement works via State-Region contract plans which supplement the national budget allocation.

Nine motorway companies of different sizes, are concessionaires of most part of inter-city-link motorways. One only (Cofiroute) is owned by entirely private interests, the others are companies[2] owned directly or indirectly by the State. They build, maintain and operate their network, on behalf of the State or under its control.

They have their own maintenance and operations personnel but rely on external companies to carry out their equipment operations and ensure their managership. They remunerate themselves entirely via tolling and finance their investments essentially by borrowing. The expiration dates of motorway concessions extend from 2014 to 2030. Most of them are linked to the State by a five-year contract which defines the investment program and sets the rules for the evolution of toll tariffs. Each year, the companies establish the new tariffs according to the provisions of this contract, under control of the State which in this manner ensures some harmonization of toll prices. The average toll prices are approximately 0.40 FRF /km (0.06 euro/km) for light vehicles, and 0.76 FRF/km (0.12 euro/km) for heavy goods vehicles, with some disparities, notably geographical ones (motorways in difficult sites).

Until recently, the new motorway sections for which the State decided to grant a concession were, according to an essentially geographical logic, integrated into the unique concession contract of one or the other concessionaire companies. The contract equilibrium should be maintained as a whole, and this could be reached by various means, and particularly an extension of the contract duration allowing the concessionaire to generate several years of complementary resources for financing the new section. This system is a form of "cross-subsidization", called "cross-subsidization – time extension".

[2] called "*Sociétés d'Economie mixte* (SEM)" – Mixed Economy Companies

Finally, we must mention that there is no general financial redistribution in the motorway sector. However, since the reform of mixed economy companies in 1994, the six most important ones have been regrouped into three “mother-daughter” poles which ensure a role of financial solidarity in favor of the less important ones. The borrowing program of public concessionaire companies is defined annually by the State within the framework of the Committee for Investments with an economic and social character. A public establishment, the “*Caisse nationale des Autoroutes*”, acts as an intermediary between the institutions and the financial markets, and raises loans for these companies. Its excellent rating (AAA) lets it obtain interest rates close to those of Treasury bonds (State loans). The current amount of the medium and long-term debt of the sector was almost 147 billion FRF (22 billion euros) on 31 December 1997, with an amount of tolls of 28.5 billion FRF, i.e. 4.3 billion euros (24.3 billion FRF for the SEM companies and 4.2 billion FRF (0.6 billion euros) for the Cofiroute company). Although it does not benefit from a State guarantee, Cofiroute obtained an AA rating.

It should also be noted that the State collects a National and regional development Tax (“TAT – *Taxe d'Aménagement du Territoire*”) representing approximately 10% of the amount of toll revenues, which is used to feed a special fund called Investment Fund for Terrestrial Transportation and Inland Waterways (“FITTVN – *Fonds d'Investissement pour les Transports Terrestres et les Voies Navigables*”).

The concession associated with tolling permits to reserve funds for road maintenance, a domain often endowed with insufficient means when budgetary financing is used. For example, in 1997, 25% of toll revenues were attributed to maintenance and operations.

11.2 National roads

This network is divided into structuring axes, motorways not in concession and large national and regional development links on one side, and ordinary roads on the other side.

Construction and modernization works concern chiefly the structuring network, as ordinary roads are usually subject to qualitative or security improvements.

Investment operations are for the most part included in State-Region plan contracts with a 5-year duration, the global amount of which, all types of financing included, can be estimated at 63 billion FRF (9.5 billion euros) for the totality of the 1994-1998 contracts.

The shares of the various financing partners are generally 50% for the State and 50% for the Region for inter-city links, and 27.5% State, 27.5% Region and 45% Territorial Communities (Department and directly concerned towns) for peri-urban fast roads. The State share is taken from the investment sections of the budget Ministry of Equipment's budget.

It should be noted that three large investment programs[3] fitting into a national and regional development program logic and aimed at disenclosing the Massif Central were able to obtain 100% State financing. In this case, the financial resources provided by the State come essentially from the FITTVN which was mentioned in section 11.1.

11.3 Special funds attributed to road investments

Several times, in order to complement the strictly budgetary resources allocated to road investments, the State instigated the creation, by the legislative channel, of special funds benefiting from specifically allocated resources, fed, for the first two ones, by taxes on fuel.

The following funds were successively set-up in this way:

- In 1951, a Special Fund for Road Investment ("FSIR – *Fonds Spécial d'Investissement Routier*") which included a national, a regional and a communal share (years 1960 - 1970)
- A Special Fund for Large Works ("FSGT – *Fonds Spécial de Grands Travaux*"), created in August 1982, the road portions of which were attributed to the national road network (1980 years)

In 1989, a Fund for the Development of Ile-de-France ("FARIF-*Fonds pour l'Aménagement de la Région Ile-de-France*") aimed at reducing the specific difficulties to Ile-de-France by the attribution of aids for social lodging, collective transports, urban social development, and to the modernization of the national road network. This fund, fed mostly by the product of the annual tax on premises used for office purposes in Ile-de-France, contributed approximately 2 billion FRF to the financing of investment operations on national roads inscribed in the 1994-1998 contract-plan in that region; the financing was furthermore supplemented by ordinary budgetary credits from the State.

Finally, in 1995, the FITTVN mentioned above was created. It is fed partly by a tax on toll revenues, and partly by a tax on the electrical production of hydraulic power stations with an output power of more than 8,000 KVA installed on navigable waterways.

The amount of annual resources allocated to this new fund can be estimated at 3.1 billion FRF in 1997, with one half attributed to the national road network, and the other half to the modernization of the inland waterways and of the railway network.

[3] namely the construction of the A75 (Clermont-Ferrand/Béziers), A20 (Vierzon/Brive section) motorways, and the transformation into a motorway of the RN7 (between Cosne-sur-Loire and Roanne).

11.4 Evolution of the financing system of the national road network

The "cross-subsidization – time extension" system of the concessions described earlier has now reached its limits. Indeed, the relative ease of financing offered by the practice of backing the network in a concession leads in some cases to the construction of motorways where road projects with smaller characteristics, and therefore less costly, would be sufficient to answer the needs. Furthermore, the bias created in the allocation of the resource, including in matters of maintenance, operation and security, leads to an undesirable difference in the level of service, to the disadvantage of the network not in concession.

The financing system must also adapt to the European community framework. For motorways in concession, the questions raised today (opening to competition, isolated concessions, constructions of links with reduced profitability) cannot be solved within the current framework.

To be able to continue the development of its motorway network at a reasonable pace adapted to the demand of transportation, the French government has therefore decided to reform the motorway system. This evolution must be framed by principles in conformity with the Community Law; the French government in that respect particularly insists on:

- including the financing, construction and operation of its motorway system within the framework of the public-private partnership.
- organizing transparent and non-discriminatory competition for the granting of the concessions of new motorway sections; the public aids necessary to the financial equilibrium of future motorway concessions will be called upon, notably via subsidies. It is important to ensure equality of chance between candidates and to promote the entrance of new competitors in the motorway concession sector.

- ensuring a better neutrality of choices between types of investment and transportation modes.

The indispensable evolution of the current financing system must thus satisfy five major objectives:

1. improve the transparency and rationality of choices in matters of road investment.

2. increase significantly the means for the maintenance, operation and upgrading of the network and for the reduction of harmful effects.

3. implement an ambitious road security policy to contribute to the government objective to reduce the number of mortal casualties by half during the next five years.

4. give priority to the treatment of the problems of Ile-de-France and of built-up areas.

5. taking into account the importance for the national economy of the financial effort of the Nation, maintaining it at a sufficient level, within the framework of an intermodal policy of transports.

11.5 Conclusion

In matters of road infrastructure financing in France, the essential concern was and remains to satisfy not only the needs of the road users, but also those of the tax payers. These thoughts are also consistent with the more general orientations of the transport policy, aiming notably to thinking in terms of services and not only of infrastructure.

The new political and social concerns require an adaptation of our way of thinking about the road. Important progress has already been made (car-pooling policy, completion of "corridor" studies integrating all the modes of transportation, better taking into account of the users through numerous surveys, valorization of road telematics…). These efforts must now be continued. The road remains however the fundamental element of the transport and logistics chain, in complementarity with the other means of transport. Its economic and social importance requires that sufficient resources are allocated to it in order that it can fully play the roles which today society assigns to it.

12. Hungary

12.1 Context

To accompany the modernization of the country toward a free market economy, in 1991, the Government of Hungary approved a long-term motorway development plan intended to extend the existing motorway network to the neighbouring states.

Concerning the extent of the financial needs, the Hungarian State, heavily indebted, made the choice of the concession solution, with notably a law on concessions voted in May 1991, completed by application decrees in 1992.

12.2 The international tendering procedures

The tendering procedures for each project were engaged after the elaboration of Preliminary Feasibility Studies and were carried out in two phases.

The motorways M1/M15 -towards Austria/Slovakia- and M5 -towards Yugoslavia- which today are the object of concessions, are described hereafter. A concession was awarded for the M9 Danube Bridge at Szekszárd but the contract never entered into force because the private concessionaire could not finance it.

The motorways M3/M30 -towards Ukraine- were initially tendered but finally declared as an unsuccessful concession project. Now the project is under the implementation of a State owned and guaranteed toll motorway development company. The motorway M7 -towards Croatia/Slovenia- was initially tendered as a concession project, but the original procedure was annulled. Under the new scheme the State should first reconstruct and toll the existing sections and after the operation, maintenance and new sections construction would be given into concession.

Motorway Development Plan (1991)

12.3 The M1/M15 and the M5 toll motorway concessions

Similarities

The Ministry of Transport successfully issued international calls for tenders. After the three-five months long prequalification followed by six-eight months long tender phases (including evaluation) and four-six months long negotiations, two concession contracts were signed. Between eight-eighteen months both of the projects reached financial closing and the contracts entered into force. The governmental contribution remained limited to: handing over the building permit; land acquisition and site delivery; archaeological excavations; clearing up dangerous dumpsites and explosives; no material adverse government action against the concessionaires. The Government accepted a phased implementation approach in both cases. The capital/debt ratio is 20/80. Construction costs represented 67%, development expenses and company costs 13-18% and financial costs 15-25%.

Differences

The 42+14 kilometres long M1/M15 project works with a toll level of 0.15 euro/km, and has no State support. The 96 kilometre long M5 project works with a toll level of 0.06 euro/km, and it contains an in-kind State contribution in the form of a 56 km formerly existing but now tolled section and a State guaranteed standby operational subsidy. The capture rate on the M1 is 45-50%, on the M5 is 55-60%. The traffic on the M1 (AADT is around 6400 v/d) is only 55% but on the M5 (AADT is around 10000 v/d) is 95% of the originally estimated. The M1/M15 project could not meet the requirements of the credits agreement, but the M5 sponsors have started operation of the 45 km long phase 2 in 1998.

12.4 Lessons of the experience of concessions

Although between 1994 and 1998, private concession companies covered 46% of the spending for motorway construction, the current occurences seem to represent a step back from the entrepreneurial spirit.

Giving up a State administrated economy means a quite a huge cultural gap, which explains the lack of acceptance of the public, facing a new scheme for which it was insufficiently informed and acquainted with. The financial reality can be never ignored. If the feasibility study shows a given percentage is needed for the given project as public participation and though politicians can push a project without this kind of support, the final result can be an unaffordable toll level, while the public opinion can be much more painful and financial consequences on the Government can be much more severe.

Among the most sensitive issues we can mention: the confidentiality of the concession contracts; the estimated concession profit output from the country, instead of reinvesting it into the local road sector; tolling existing publicly financed sections which were already paid by the taxpayers; along with the « automatism » in toll increase (taking CPI and exchange rate differential into account), with no Government right to modify it.

Beyond the communication efforts to be displayed to have such types of concession contract accepted, a progressive implementation of these new financing schemes seems recommendable.

13. Israel

The Israeli Government established in 1992 a specific public entity, « Cross Israel Highway », in order to launch the first project based on the BOT model (Build, Operate, Transfer) for the Trans-Israel road.

The legislative framework of this concession was approved by the Parliament.

The total length of this future tolled motorway is 300 km (1.75 billion euros) and the first phase consists of an electronic toll 90 km section for Tel Aviv bypass.

Three international consortia have bid for the first phase of the project (660 million euros), for a construction duration of 4 to 5 years. At the present time, the project - awarded to a concessionaire in January 1998 - is at financial closing stage.

The State also approved a second project: the Carmel Tunnel (130 million euros) for bypassing Haïfa.

14. Italy

14.1 General comments on the Italian highway system

There are 6,460 km of motorways in service at the end of 1995, which constitute only 2% of the total Italian road network, but carry almost 30% of the traffic. The traffic on toll motorways was 60 billion vehicles.km in 1995, an increase of 3.5% over 1994.

Aside a few kilometres of intra-city motorways around Rome, Bologna, Trieste, Turin and Milan, the network comprises, at the end of 1995, 5566 kilometres of conceded toll motorways in operation, and 35 km under construction.

As a general rule, all conceded motorways are toll motorways; furthermore, all toll motorways are conceded, except for the very specific case of the « Società Autostrade Romane e Abruzzesi » (SARA).

The State operates a non-conceded highway network via the ANAS (*Azienda Nazionale Autonoma delle Strade*), which is in charge of the entire Italian road network; this free highway network has a length of 894 km.

The only non-conceded motorways are located in Southern Italy, built mostly in the 70s.

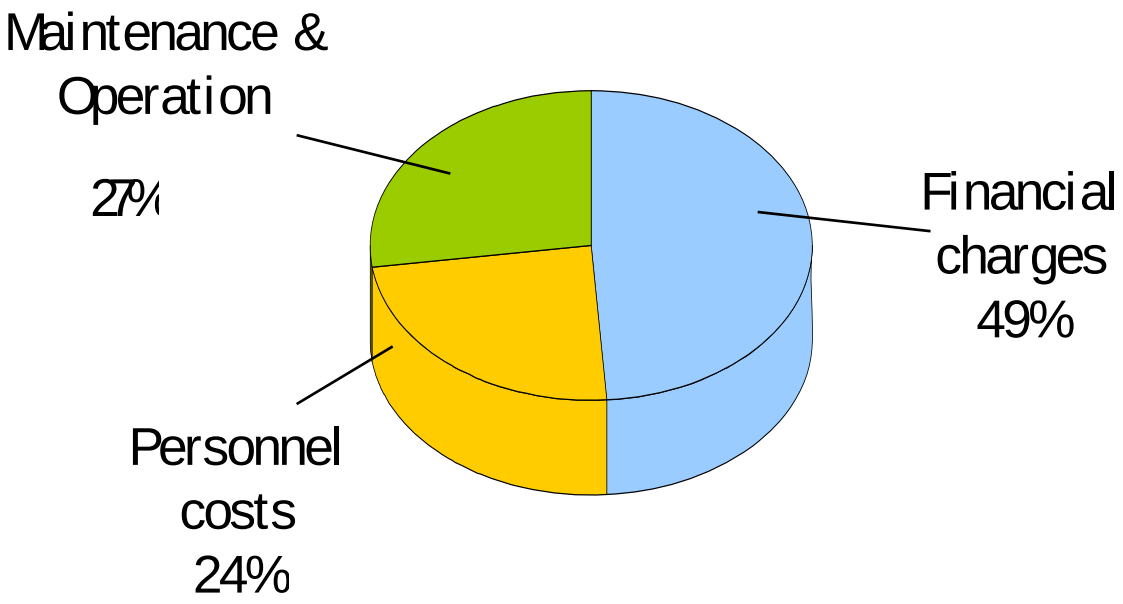
Economic difficulties in this region led the Government to consider that motorways in the South should be free, non conceded, and therefore operated by the ANAS. It must be said that today the conditions of these motorways are especially bad when compared with the conditions of the conceded network.

Generally speaking, the poor conditions of the national network cause some of the traffic to divert to the highway network. There are 45,000 km of national roads, built and operated by the ANAS.

14.2 Toll roads system

a. Existing system: The closed system is predominant: 4,900 km.
b. Use of collected revenues: Financial charges have been increasing constantly since 1988.

Use of toll revenues (for 100 liras) (0.05 euro)



14.3 Conclusion on the Italian experience

More than 80% of the highway network has been conceded to concessionaires which were in charge of building it and which operate it. The State is the majority shareholder of nearly all the concessionaires. These concessionaires operate networks of various lengths (from 20 km to 2800 km).

15. Japan

15.1 Context

Before the second World War, Japan was clearly behind in its road development, because it had started its modernization without going through the horse and carriage age, and because, the Governments had furthermore concentrated their efforts on the railway infrastructure after the Meiji Reform. After the war, the Government started to emphasize the road policy and, in 1954, introduced the "Five-year plan for the development of roads" by introducing two important measures in order to promote the construction and improvement of roads:

- the first one was the creation of a special account in the national budget (1954), in which two taxes collected on items associated with the use of roads – a gas tax and a tax based on the weight of motor vehicles – were assigned to the construction and maintenance of roads. Today, the biggest part of expenses for national highways, as well as part of the expenses for prefectoral and municipal roads, are still covered by taxes paid by the users;

- the second measure was the introduction of toll-based financing. The toll-road system plans for the financing of road construction and maintenance by revenues paid directly by the users.

These two measures largely helped to improve the road conditions in Japan. The 11th plan is presently under way and road transportation plays an important role in inland transportation for goods as well as for passengers.

So, if roads are free in principle, the toll-road system has been used for many categories of different roads. Its application on the widest scale is the network of national interurban expressways managed by the Japan Highway Public Corporation (JHPC). However, it also concerns certain parts of the national highways and of the local roads managed by JHPC or other local public companies, urban expressways managed by public companies (the Honshu-Shikoku Bridges managed by the Honshu-Shikoku Bridge Authority), the Trans-Tokyo Bay Highway managed by the Trans-Tokyo Bay Highway Co Ltd (a special-share company), and the private toll-roads (451 km, i.e. 5% of tolled highways).

15.2 The financing of the interurban network by "Redemption" and pooling of revenues

The construction and operation of national expressways (65% of toll highways) are all managed by JHPC, which reimburses the expenses necessary for the construction and maintenance of roads through a special accounting system called "redemption", which ensures the “pooling” of the revenues of the different tolled sections.

Within the framework of this system, the road construction costs, including the cost of land purchases, initially financed through loans, as well as the costs of road maintenance and of the interests incurred after the opening of the road to the public, are reimbursed with the revenues of tolls and of interests collected over a defined period (generally 40 years).

The JHPC "Redemption" system uses an across-time revenues pool to cover the expenses incurred at the time of construction.

In principle, JHPC applies the same toll rate on all expressways at the national level. As the costs of expressways – including construction costs - vary widely from one to another, some analysts point out that this system necessarily implies some "cross-subsidization” scheme of more recent, more expensive roads by older roads, which cost less with a high traffic density.

In reality, the level of cross subsidizing between expressways is limited by certain criteria, according to a set of recommendations of the Road Consultative Council defined in 1985.

It should also be noted that the purpose of tolling is not to regulate the volume of traffic, which would internalize the effects of external congestion, but mainly to finance the expressways. Nevertheless, the tolling system seems well accepted. The reasons for this can be found in the following considerations:

- they understood the necessity of a rapid development of highways;
- due to the insufficient development of roads, very important time savings are obtained by the use of the expressways.

15.3 Summary

The Japanese road financing system is characterized by the existence of a special account for road development and by toll roads managed by public entities. The special account played an important role in the development of the road network, and, in spite of some critical opinions, is still efficient as a measure to ensure a minimal financing of roads. Toll roads introduce the "redemption", or reimbursement, system, particularly on national expressways, and the pooling of revenues across all links. These measures facilitate the fast extension of expressways without an increase of the budgetary load.

16. Norway

In Norway, since 1970, 4-year road plans, including an increasing part of financing by tolling, are submitted to the Parliament.

During the last ten years, and for thirty-five distinct projects, the share of financing coming from tolling varied from 20 to 40% of the total investment.

The last 1994-97 plan includes fifteen tolled projects with financing limited to a quarter of the investment of which more than 40% is covered by tolling.

The new 1998-2001 plan confirms this will and introduces, with the implementation of the user toll (« road pricing »), the will to reduce traffic in urban areas.

As of today, there are around thirty-five companies which are in charge of:

- 194 km of tolled motorways,
- 50 km of tolled peripheral motorways in the cities of Bergen (since 1986), Oslo (1990) and Trondheim (1991), and
- 25 tunnels and bridges.

In Norway, the system is slightly different from those implemented in countries of South Europe, in the sense that the operator, which in general is a « Limited liability toll company », and could be defined as a mixed economy company, – and whose shareholders are the local communities (counties, cities) and banks – has an essentially financial and toll collection role.

In the setting of a contract passed with the State after approval by the Parliament, the company receives the mission of operating the tolled road or work. On the basis of this mission, it borrows without guarantee of the State but often with the guarantee of the local communities, in order to finance the investment, it installs the toll plazas and collect tolls; but it entrusts the construction to the State (NPRA–Norwegian Public Roads Administration) which is also in charge of the financing and the maintenance.

These mixed economy companies are considered non-profit companies and are dissolved after payment of the project. (Around 50 companies have been abolished during the last 40 years.)

Some interesting examples:

- Oslo contributes to the financing of its road network by its tolled peripheral motorway, comprising 19 toll stations. Toll revenues finance 60% of the road network, the balance being taken over by the budget.

- Most fjord crossings are financed by pre-payment on tariffs of the « ferries », before construction of the work, then by the toll (representing a contribution of 50% or more of the cost of the project) after the opening to service of the work.

- In Tromsø, a special system of financing by a local tax on gas applied in the city of Tromsø (tax of 0.65 NOK or ≅ 0.07 euro per liter in 1995) has been set up.

The way Norway uses tolled projects reflects a desire to realize more rapidly large projects concerning national roads, which would be impossible to realize with only the contribution of public funds. The increase of this type of project lately is the result of the conjuncture of limited budgets for public roads and the liberation of the credit policy in Norway.

Toll companies in Norway traditionally covered the majority of their needs of funds by loans contracted within the country itself. In 1998, their debts amounted to over 8 billion NOK (1 billion euros), and their yearly revenues to approximately 2 billion NOK (0.25 billion euros).

- The two other main cities: Bergen and Trondheim finance their roads with tolls.

17. Portugal

17.1 Introduction

The national road network (10,000 km) comprises 5,200 km of roads classified as main and complementary roads.

The financing of the road network has been assured mainly by the State Budget — an exception made to the construction and improvement of the tolled motorway network (680 km of existing motorways, 150 km under construction and 350 km under study) — that has been assured by a concessionaire company (BRISA) using private and public financial resources.

The use of private financing to make important investments in road infrastructures, which started with the construction of tolled motorways, has increased since the private sector was called for the new road crossing over the Tagus (Vasco de Gama Bridge) in the Lisbon region.

The purpose to fulfil the current National Road Plan, the need to provide the supply of road infrastructures according to the traffic demand, the need to promote national and regional development, led the government to begin in 1997 a process of granting two new regular concessions for 370 km of motorways in the western and northern regions of the country, along with another “concession” scheme for the construction and operation of 730 km of motorways, based on the principles commonly referred as Design, Build, Finance and Operate (DBFO).

17.2 Road infrastructures financing methods

The investment in the national road network has been provided by “Junta Autónoma de Estradas (JAE)” - the Portuguese National Road Administration - a Central Administration Department responsible for the public service investment and by BRISA, at this point the only concessionaire, which has been assuring the construction and operation of tolled motorways, according to private management rules.

Budgetary financing

The financing of the road and non tolled motorway network construction and maintenance has been ensured mainly by the State Budget. Besides the State Budget, other sources of funding have been used such as the European Union's subventions (Cohesion Fund and ERDF) and by some extraordinary monetary contributions quite non-significative supplied by institutional organizations, such as "Instituto de Seguros de Portugal" (the Portuguese Insurance Institute) and "Instituto Nacional das Águas" (the National Water Institute).

In 1997, the road budget of national roads originates from:

- 77% of State budget, completed by,
- 21% of European Union (EU) subventions, and
- 2% of other contributions.

Extra-budgetary financing

Tolled motorways: existing concession

The award of a concession in 1972 for construction, operation and maintenance of tolled motorways in Portugal pretended to draw private finance into road infrastructures' construction.

The contract (signed with BRISA, private company) ensured this company a revenue level, through compensation arrangements, if the real traffic figures did not match the expected traffic.

Elements of financial and political nature changed the juridical form of the concessionaire to a mixed association whose capital was mostly public.

By the end of 1997, BRISA was partially privatized.

The concessionaire and the State are responsible for the concession financing and the main sources are the concessionaire funds, the financial contributions from the State, loans (domestic and international) and European Union's subsidies.

Since 1st July 1997, the financial contribution of the State has changed from 35% to 20% of the motorway construction and complementary works costs (for example, new interchanges).

The present concession contract dates from October 1997 and plans the construction of 1180 km of motorway to be open to the traffic till 2004.

The structure of the toll fare is similar to all concession links and it includes four vehicle categories. The toll fare associated with the last category will be maximum 2.5 times the fare related to the first category.

Every year, the concessionaire can revise the fares. The contract establishes that the tariff increase cannot overwhelm 90% of the consumer price index growth rate.

New concession grants

The Government has considered essential to attract the private initiative into construction and operation of new motorways in the northern (190 km) and western (180 km) regions of the country and two international calls for bids have been launched.

New ways of resource allocation - DBFO "concessions"

The process for concession granting the design, construction or multiplying the number of lanes, funding, maintenance and operation through a “shadow toll” process is now being studied for 730 km, 200 km of which will be restricted to operation and maintenance.

Most of these links are located in the rural areas of the country, in less developed regions with lower levels of traffic. The granting of the DBFO concessions will be made in a progressive manner, further to international tenders.

The tenders are restricted to individual companies or (ad-hoc) “joint ventures” for this purpose with the form of joint stock companies.

Each bid must contain the following elements:

- concession period - 30 years;
- opening dates of the overall project;
- overall cost of the works (without VAT, correction of prices or others);
- financing structure (equity and debt);
- Net Present Value of the State payments;
- alternatives.

Two vehicle classes (passenger vehicles and heavy-goods vehicles) are considered to establish the shadow tolls.

The new Tagus bridge

Considering the need to provide a new road crossing over the Tagus in the Lisbon region and having in mind two similar cases -Dartford and Severn bridges-, an international public tender aiming the construction, financing and operation in private concession terms was undertaken.

The investment, estimated in 186 billion Escudos (PTE, 1996 prices; ~ 1 billion euros), is carried out according to the project finance concept, i.e., with scarce resources, in a self financing scheme. Its financial plan foresees funding through the mixture of the following sources:

- Cohesion Fund
- European Investment Bank
- Commercial Banks
- Equities
- Toll revenues (of existing and new bridges).

The celebrated contract asserts that the concessionaire is to carry out all the risks. Nevertheless, the toll receipts of the existing bridge (“25 April bridge”) over Tagus in Lisbon (included in the concession since the 1st January 1996) are reverted to Lusoponte. These receipts will be considered, for taxation purposes, as a subsidy non attributable to the operation.

Annual income corrections for each year from the traffic opening (on 1st April 1998) until 2024 will take place, compensating the concessionaire for the discounts conceded to the users of the actual crossing (the concessionaire will receive an additional sum related to the total amount received if the discounts had not been conceded).

In the case of toll collection trouble in the two crossings over Tagus, the State will compensate the concessionaire through direct compensation, either toll fares extraordinary increase, or concession period extension through the mixture of the previous measures.

Conclusion

The Portuguese experience is especially diversified, varying from conventional public concessions to private structures, with an on-going experimentation of shadow toll concession.

APPENDIX 2 – COUNTRIES WHICH DID NOT SEEK PRIVATE FINANCING AND FOUND NON-TRADITIONAL FORMS

1. Belgium

In the preceding chapter, we saw an example of a public / private partnership for the realisation of a tunnel in the Flemish Region in 1984.

Since 1989, a new method of operation was defined within the framework of State reform.

The main financial means of the Walloon Region consist of a transfer of the personal income tax from the Ministry of Finance.

The total budget of the Walloon Ministry of Equipment and Transports for 1995 is 33,208 million BEF (~0.8 billion euros) or approximately 20% of the total budget, of which one fourth is dedicated to the General Directorate of Motorways and Roads.

The principal credits inscribed in the budget of this General Directorate are intended for new road investments, ordinary and special maintenance as well as for the winter service.

The investment credits posted annually in the budget of the General Direction of Motorways and Roads are clearly insufficient to permit the realisation of large infrastructure works such as the E 40 - E 25 link or the completion of the E 429 (A8). These two projects represent close to 20 billion BEF (≅ 0.5 billion euros) of investment.

In order to find the necessary means, the Walloon Government decided to establish a complementary financing company. The Walloon company for Complementary financing of infrastructures ("*Société wallonne de Financement Complémentaire des infrastructures*" - SOFICO) was created by a decree of March 10, 1994.

The administration personnel is placed at the disposal of SOFICO for project studies, and works surveillance and control. The company itself has only a secretariat composed of 14 persons.

SOFICO is a public law company; its capital is composed of two types of shares:

- category A shares are registered shares, not transferable, with no voting rights nor rights to profit sharing, which have been subscribed entirely by the Region for an amount of 7,500 MBEF (180 million euros); they are payable in five years by yearly blocks of 20% (in the form of a yearly allocation of 1,500 MBEF (≅ 36 million euros).

- category B shares are registered shares, subscribed for an amount of 275 MBEF (7 million euros) by persons authorized by the Walloon Government. These shares are transferable only with the agreement of the Government, and only to persons authorized by it. A majority of Type B shares is held by the Walloon Region (60%), the *Crédit Communal* (34%) and the Regional Company of Walloon Investments ("*Société Régionale d'Investissements Wallons* – SRIW") (6%)

SOFICO - which also benefits from financial contributions from the European Investment Bank (EIB), European structural funds and from the participation of private or financial partners – is thus an interesting scheme of public financing of infrastructures.

2. Canada: Quebec

Traditionally, aside few rare exceptions, the expenses related to the Quebec road network have been financed by the Ministry of Transport of Quebec (MTQ). The MTQ has a budget which represents 4.1% of the total expenses of the Government of Quebec and it provides 51% to the road budget (1995 figures).

A Fund of improvement of the Quebec network has been set up by the Government of Quebec during financial year 1996-1997. It permits to spread over time certain expenses on the road network according to their life time. However, no source of income has been dedicated to this fund at the present time; the financing is presently obtained by loans.

- Presently, there is no toll on the Quebec road network, whether at the provincial, or at the municipal or federal levels. Tolls were once collected from users of certain major bridges, particularly from users of the federal bridges crossing the Saint-Laurent River next to Montreal. The last tolls disappeared toward 1990.

- From 1957 to 1985, tolls were collected for the utilisation of the some Quebec motorways, under the jurisdiction of the Office of Motorways of Quebec. Several factors have contributed to the disappearance of toll, notably:
  - ♦ as tolling only applied to certain motorways, the situation was perceived as inequitable by users of the tolled motorways;
  - ♦ the technology in use at the time caused significant slowing of the circulation at toll plazas and generated important management costs.

It must be pointed out that during this period, the tariff was reduced during rush hours.

Considering the various experiences of concessions in other Provinces of Canada, studies are currently carried out for a possible modification of the infrastructure financing scheme.

One could plan to take advantage in the future of some kinds of partnership, if analysis would demonstrate their relevance and profitability.

3. New Zealand

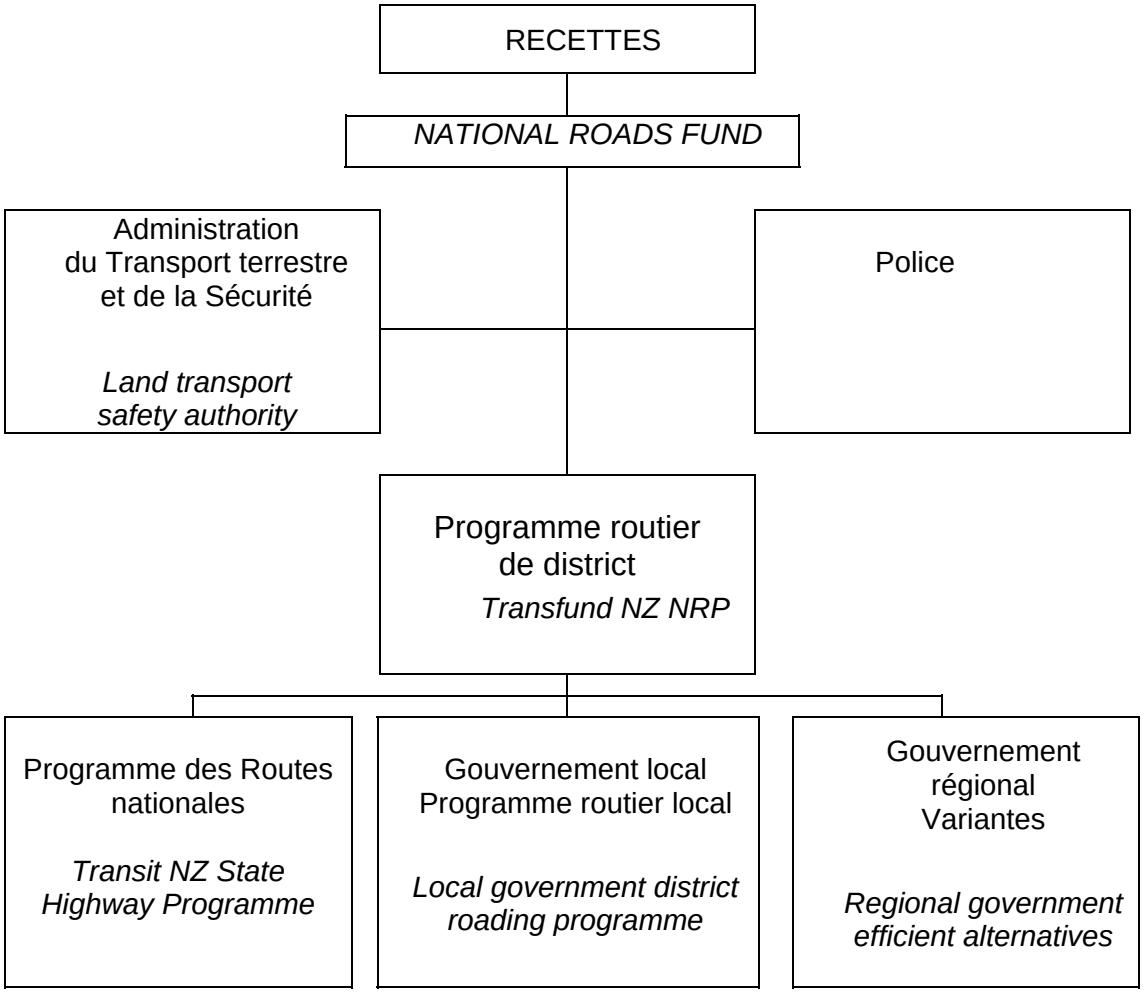
New Zealand is a country of 3.8 million inhabitants. Its road network of 93 000 km includes 10 000 km of national roads, which represent 12% of the network but 45% of the traffic volume. Following the State Sector Act in 1988, New Zealand entered into a deep reform of the organization and of the financing of its transport system.

Concerning roads, the following were created in 1989:

- The "Land Transport Safety Authority", a governmental agency having the responsibility of submitting for approval by the Government the rules and regulations in matters of safety of the various modes of transport,

- "Transit New Zealand" (TNZ), an agency responsible for the management of national roads, and the submittal of the "National Road Programme" (NRP). TNZ, with 150 people for 10 000 km of network, subcontracts almost all of its activities: scheduling, engineering, construction, operation. All its suppliers must have Quality Assurance procedures.

Fonds routier national
National Roads Fund



4. Slovakia

Slovakia, situated at the centre of Europe, has always been a communication crossroads between the East, West, North and South of Europe.

Since its independence in 1993, the infrastructure network is considered a vital means of connection with the neighbouring countries and as one of the keys of Slovakia's integration to the European Community.

The network includes 215 km of motorways and 6,870 km of main and secondary roads, financed and operated by the public authorities.

In view of the ambitious program of motorway development, the following methods were evaluated:

- budgetary financing,
- financing by allocated budget,
- loans from international financial institutions,
- concession and private capital.

An allocated budget is currently the rule, but the dedicated resources decreased strongly these last years.

This is why a road tax sticker has been instituted for motorways and some principal roads.

The resources can be broken down as follows:

	1994	**1995**	**1996**	**1997**
Road tax	44	51	61	66
Tax on oil products	55	55	64	143
Contribution of the State		92	164	275
Rights to use		3	10	14
Heavy vehicles				33
Road tax sticker			11	22
Other	1	2	21	18
E.I.B. loans.				44
Banking loans			115	
Other loans				390
Total	**100**	**203**	**450**	**1005**

Another step has just been taken with the decision to study the participation of the private sector in the financing and construction of the motorway system.

5. Switzerland

The funds allocated to finance building, maintenance and operation of national roads are resulting from the mandatory assignment of fuel taxes and motorway stickers. The form of this kind of funding lay between the Special Road Fund ("*Fonds Spécial Routier*") and the subsidiary budget ("*Budget annexe*"). As far as its function is concerned, we have, financially speaking, rather a fund than a subsidiary budget. We can also speak of a 'budgetary funding on a dedicated budget'.

In Switzerland, the Federal Constitution forbids the collection of tolls or taxes for the use of roads; however, the Parliament can grant special authorisations in this domain. Hitherto the Federal Chambers did it only once, namely for the Grand Saint-Bernard tunnel (passage between Switzerland and Italy). During the last months, three requests were filed for the introduction of such a toll system to finance some important road projects.

The Government designated a workgroup to prepare these files for the Parliament. The most important concerned the crossing of the Rade in Geneva. While the workgroup was studying these questions, the Genevese people were called to pronounce on the financing possibilities for the work. This referendum resulted in a categorical refusal of the project. It seems that one of the predominant factors of this dismissal was the perspective of partial financing by tolling. As for the two other files, the examination procedure is presently interrupted.

Consequently we cannot say whether Switzerland intends to introduce a new toll system which, however, would be limited to some very costly infrastructures located in build-up areas, or even outside of them. Nevertheless, this question will be much discussed during the next few years. As part of a project extending far beyond the limits of the road sector, and concerning the new task repartition between the Confederation and the cantons, it has been decided to give up the existing organization principle of national roads maintenance and operation related activities. From now on, the Confederation will be completely in charge of these activities. To achieve that, it will have the possibility to commission an external (private) organization. So we would have to deal with a special type of public/private partnership in which private companies would manage the State infrastructure with their own capital and know how.

The compensation will have to be defined through a modification of the Constitution. Therefore, we cannot be sure that the introduction of such a toll system is possible. The tendency would rather be the introduction of a lump sum access charge or a shadow toll. The implementation is planned for 2004.

6. Czech Republic

The financing of infrastructures in the Czech Republic was, until a very recent period, a completely traditional financing based on the public, national or local budgets; there was no specific budget allocated to infrastructures.

A study of the recourse to private financing was made on occasion of the realisation of the Pizen–Rosvadov–German border section of the D5 motorway.

- the call for tenders, of the B.O.T type. (Build Operate and Transfer) has been issued, but upon examination of the answers, it was decided to not pursue the project for the time being.

- the main reasons are related to the fact that, in the initial phase of transformation of the national economy, the risks of such an operation appeared too great for all concerned partners, whether public (administration) or private (concessionaires and associated companies).

Therefore, a decision was made to implement a specific tax for the use of approximately 600 km (79% of the network) of motorways and expressways without, however, creating specifically allocated funds (see 2;3.2).

This specific tax is based on the following tariffs: 12 euros for light vehicles, 30 euros for heavy vehicles weighing less than 12 t, and 60 euros for vehicles heavier than 12 t; considering the low level of the collection charges, this tax brings about 30 million euros per year.

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LIST OF ABBREVIATIONS USED

AADT	Average Annual Daily Traffic
BBO	Buy, Build and Operate
BHA	British Highways Agency
BOO	Build, Own and Operate
BOT	Build, Operate and Transfer
DBFO	Design, Build, Finance, Operate
EC	European Commission
ERDF	European Fund of Regional Development
EIB	European Investment Bank
EU	European Union
FARIF	Fund for Regional Development (in the region of Paris (Ile-de-France))
FHWA	Federal HighWay Administration
FITTVN	Investment Fund for Terrestrial Transportation and Inland Waterways
FSIR	Special Fund for Road Investment
FSGT	Special Fund for Large Works
GDMR	General Direction of Motorways and Roads
GDP	Gross Domestic Product
GUTP	German Unity Transport Projects
HOV	High Occupancy Vehicle
JHPC	Japan Highway Public Corporation
LIO	Lease, Improve and Operate
LTSA	Land Transport Safety Authority
MEC	Mixed-Economy Companies
MTC	Ministry of Transport and Communications
MTQ	Ministry of Transport of Quebec

N.R.D.T.	National and Regional Development Tax
N.P.R.A.	Norwegian Public Roads Administration
N.R.P.	National Road Program
N.W.I.	National Water Institute
P.F.S.	Preliminary Faisability Studies
P.I.I.	Portuguese Insurance Institute
P.P.P.	Public-Private Partnership
S.A.R.A.	Romane and Abruzzesi Highways Company
S.R.I.W.	Regional Company of Walloon Investments
R.F.	Road Fund : Independently managed special fund
Road Co	Private sector Road Company
S.F.R.	Special Fund Road
T.E.A.	Transportation Equity Act
T.N.Z.	Transit New Zealand
U.S.H.T.F.	United States Highway Trust Fund
V.A.T.	Value Added Tax