

ROAD INFRASTRUCTURE CONCESSION PRACTICE IN EUROPE

**FRANCK BOUSQUET
ALAIN FAYARD**

September 2001

* THIS REPORT IS BASED ON A DOCUMENT OF 1999 ENTITLED "ANALYSIS OF HIGHWAY CONCESSIONS IN EUROPE", FRENCH HIGHWAY DIRECTORATE. AS WAS THE CASE WITH THE PREVIOUS DOCUMENT, THIS REPORT DOES NOT ENGAGE THE RESPONSIBILITY OF ANY OF THE INSTITUTIONS MENTIONED.

TABLE OF CONTENTS

| | |
|---|----|
| I. ROAD INFRASTRUCTURE CONCESSION PRACTICE IN EUROPE..... | 3 |
| I.1 Toll concessions | 6 |
| <i>I.1.1 Toll system advantages and disadvantages.....</i> | 6 |
| <i>I.1.2 Toll system functions</i> | 10 |
| <i>I.1.3 Acceptability of toll systems in Europe</i> | 10 |
| I.2 Shadow toll concessions | 13 |
| <i>I.2.1 Definition.....</i> | 13 |
| <i>I.2.2 Shadow toll practice in Europe</i> | 14 |
| <i>I.2.3 Advantages and disadvantages of shadow tolls.....</i> | 14 |
| I.3 Initial conclusions concerning Europe's road infrastructure concession approach..... | 16 |
| <i>I.3.1 Concession approach and remuneration of the concession company.....</i> | 16 |
| <i>I.3.2 Widely varying road infrastructure practice in Europe</i> | 17 |
| <i>I.3.3 Concession contracts compared with other infrastructure funding systems.....</i> | 19 |
| <i>I.3.4 Principal merits of concession contracts</i> | 21 |
| <i>I.3.5 Integration of socio-economic and equity return in connection with the decision to set up a concession contract.....</i> | 23 |
| <i>I.3.6 Comparison of state-owned and private concession companies.....</i> | 25 |
| II. KEY COMPONENTS OF A ROAD INFRASTRUCTURE CONCESSION..... | 27 |
| II.1 Concession lot size..... | 27 |
| II.2 Road infrastructure concession period..... | 28 |
| II.3 Definition of toll charges..... | 29 |
| <i>II.3.1 Setting toll charges.....</i> | 29 |
| <i>II.3.2 Remuneration of concession companies on a DBFO type basis – the interesting “traffic band” concept.....</i> | 30 |
| II.4 Concession company selection procedures and criteria | 31 |
| II.5 Concession company freedom | 33 |
| II.6 Sharing of risks between public authority and concession companies | 34 |
| <i>II.6.1 Transfer of risks in the case of a toll concession</i> | 34 |
| <i>II.6.2 Transfer of risks in a shadow toll system.....</i> | 36 |
| II.7 Role of the concession authority..... | 37 |
| <i>II.7.1 Financial support.....</i> | 37 |
| <i>II.7.2 Watchdog for the interests of the community</i> | 38 |
| <i>II.7.3 Risk coverage</i> | 38 |
| III. SUMMARY..... | 39 |
| III.1 Summary of road infrastructure concession practices: Differences and similarities between European countries..... | 39 |
| III.2 Role of concession authorities..... | 41 |
| Appendix. EC Legislation relating to concessions | 43 |

I. ROAD INFRASTRUCTURE CONCESSION PRACTICE IN EUROPE

This part of the report reviews road infrastructure concession practices in Europe. The purpose is not to analyse the subject from a purely legal point of view, but to review the experience with concessions in the road sector in light of examples of public authorities acting as concession authorities.

A concession is generally identified as a system by which a public authority grants specific rights to an organization (whether private or semi-public) to construct, overhaul, maintain and operate an infrastructure for a given period. This corresponds to a contract, under the terms of which a public authority charges a company with making the investments required to create the service at its own cost and operated the service at its own risk. The company is remunerated in the form of a price paid by the users of the service and/or the public authority.

Direct payment by the user (in the form of a toll) is used by one group of countries (Austria, Denmark, Spain, France, Greece, Italy, Norway and Portugal). **Payment by the public authority** is practised in Great Britain, Finland and the Netherlands under the name "**shadow toll**" or DBFO (Design, Build, Finance and Operate), where the Government remunerates the concession company, principally on the basis of the traffic observed on the motorway. Portugal and Greece are also currently considering the utilisation of this system.

Two criteria appear to be intrinsically linked to concessions:

- **transfer of responsibility (risk)** from the concession authority to the **concession company**. The latter must thus be responsible for managing the operation of the motorway;
- **notion of contract globality** Part of a concession relates to the "operation of the infrastructure", which is subject to remuneration. Whereas a work contract merely concerns a construction task, a concession contract consequently involves both responsibility for a construction programme, and a long-term service as indicated in the following table (this does not exclude sub-contracting all or part of the operation of the infrastructure by the concession company).

A second approach to concession arrangements is frequently mentioned. **In this case the concession system is defined as a tool used to set up an autonomous legal vehicle and establish a certain competitive situation where one does not already exist (or is difficult to institute) for the same contract.** In this sense, a concession does not necessarily involve the participation of a private enterprise, and can be accorded to a state-owned entity. We revert to this point in section I.3.4.

Principal differences between a concession and a work contract

| CONCESSION | WORK CONTRACT |
|---|---|
| Multi-purpose: responsible for construction programme and provision of long-term service | Single objective: construction |
| Duration: long (mean = 30 years) | Duration: short |
| Funding: concession company | Funding: no interim funding, co-funding or funding of infrastructure by contractor |
| Concession company investment | No investment by contractor |
| Long-term occupation of public domain | No long-term occupation of public domain |
| Some freedom concerning design of infrastructure | No freedom (or only limited freedom) in design of infrastructure |

Sources: SNBATI report - Summary of prime contractor forum: Global construction contracts in Europe, 1997.

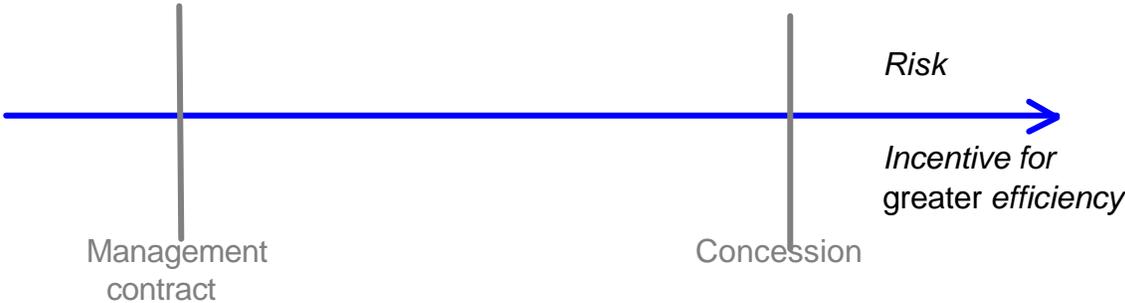
Replies to DERD/WERD questionnaire on concessions

An **infrastructure concession** is defined as a contract under the terms of which a public authority accords specific rights to a company to construct, maintain and/or operate a network for a given period. The following types of contracts are similar in nature to a concession:

- **BOT (Build, Operate and Transfer):** a company funds, constructs, owns and operates an infrastructure for a limited period (approximately 30 years), at the end of which the infrastructure is transferred at no charge to the concession authority.
- **BTO (Build, Transfer and Operate):** a company funds and constructs an infrastructure, but transfers ownership to the concession authority immediately after completion of the construction phase. Then the infrastructure is put at the company's disposal by the government and is operate for a limited period, at the end of which all rights are restored to the concession authority.
- **BOO (Build, Own and Operate):** a company funds and constructs an infrastructure, which it owns and operates for an unlimited period. A variation of this is the BOOT (Build, Own, Operate and Transfer) contract.
- **Lease contract:** this differs from a conventional concession in that the infrastructure necessary for operation of the service is not constructed by the operator (lessee), but made available to the latter by the public authority, who is generally responsible for funding the project. The lessee, who thus has exclusive responsibility for operating the service, obtains remuneration from users, paying a fee to the public authority designed to contribute to the amortisation of that authority's investments.

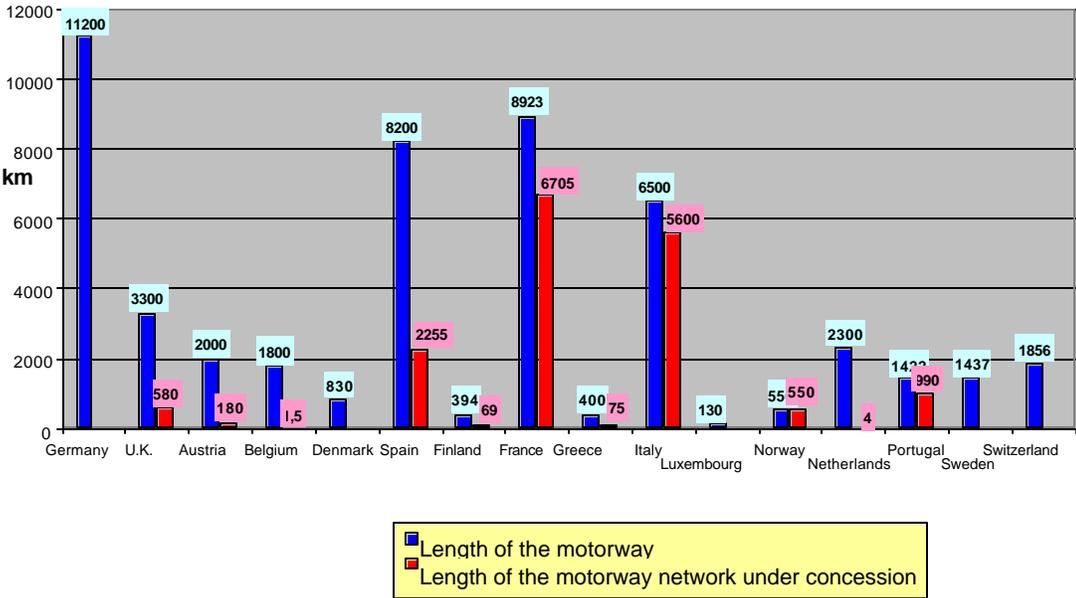
Thus, in the case of a concession, and in contrast to a simple management contract, the concession company selected by the concession authority bears the cost of the investment and some part of the risk. This is discussed in detail in section II.6. The following diagram offers a simplified illustration of the difference between a management contract and a concession.

Management vs. concession contract



The following table illustrates **concession system practices in the road sector in western Europe**. Of a total of 51,242 km of motorways, 17,009 km are concessioned (33%), of which 16,356 km are toll roads and 653 km have shadow tolls.

Practice of Highway Concession in Europe in 1998 (with or without toll)



I.1 TOLL CONCESSIONS

In countries such as **Austria, Spain, France, Greece, Italy and Portugal**, a concession is associated with **direct payment by the user** in the form of a toll. Also in this context, **Denmark** has used toll concessions for two crossings: the "Great Belt", which comprises two bridges with a total length of 18 km, opened on 14 June 1998, and the Oresund crossing, combining a bridge and tunnel with a total length of 16 km, scheduled to enter service in 2000. **There are also 26 toll companies in Norway¹** which are not, however, concession companies in the conventional sense of the term, since they are exclusively responsible for the collection of user payments. The Norwegian road administration is responsible for the design, construction and maintenance of toll projects.

I.1.1 Toll system advantages and disadvantages

Toll systems are in widespread use in eight European countries in inter-urban contexts, whether for roads, bridges or tunnels. These are Austria, Denmark, Spain, France, Greece, Italy, Norway and Portugal. The advantages of toll systems, as reported by European road administrations, can be classed in three categories.

The first advantage of a toll system is that **investments can be augmented.** In numerous European countries, toll systems are increasingly recognised as the most efficient means of replacing taxpayer money with user money. The introduction of a toll system makes it possible to commission earlier than would have been possible with national funding. From 1973 to 1995, state budget contributions to the French national road system dropped from 56% to 22%, while toll revenue increased from 32% to 57% during the same period. **In Norway, toll revenue represents 32% of the state budget for the national road system². The equivalent figure for Spain is around 46%³.**

The second advantage of a toll system is that it serves as an **application of the user-payer principle.** In its recent white paper⁴ entitled "Equitable fees for the utilisation of infrastructures: a staged approach for establishing a common framework for transport infrastructure charges in the European Union", the European Commission indicated that fees should be linked directly to the costs that users impose on infrastructures and on other citizens, including the effects on the environment and other external impacts caused by users. In this document, the Commission sets out its vision of future changes to transport charges in Europe, particularly in the road sector. In the three proposed phases (see box), the EC recommends a move toward distance-based road charges, which will probably become generalised in Europe.

EC proposals regarding the establishment of road infrastructure charges

¹ Over 100 road projects are tolled (mostly bridges and tunnels over and under the Norwegian Fjords).

² 1993 toll revenues totaled Nkr 1,500 million, compared to state budget expenditures of Nkr4,700 million.

³ 1996 toll revenues equaled Pta 144 billion, compared with a state budget figure of Pta 310 billion.

⁴ COM (98)466 final dated 22 July 1998.

During the initial phase (1998-2000), Member States will be encouraged to harmonise or adopt compatible road charge systems for heavy goods vehicles, either by means of existing systems based on tolls, the European road tax ("Eurovignette"), or preferably, by introducing distance-based fees related more closely to costs. The Commission takes the view that a for substantial number of Member States, this type of system will advantageously replace systems involving no user fee or time-related user fees and will contribute to the generalisation of distance-related fees throughout Europe. The Commission will also draft a proposal concerning the environmental classification of heavy goods vehicles, in order to facilitate the introduction of fees that more closely reflect the environmental impacts stemming from their utilisation.

Member States are encouraged to develop urban road charge systems that account for the external costs of urban transport, including those associated with traffic congestion. It would not be appropriate for these systems to be organised at the EC level, but the Commission will continue to fund research and development projects connected with urban road charges. To remove potential obstacles, any EC legislation liable to impede the implementation of these measures should be revised.

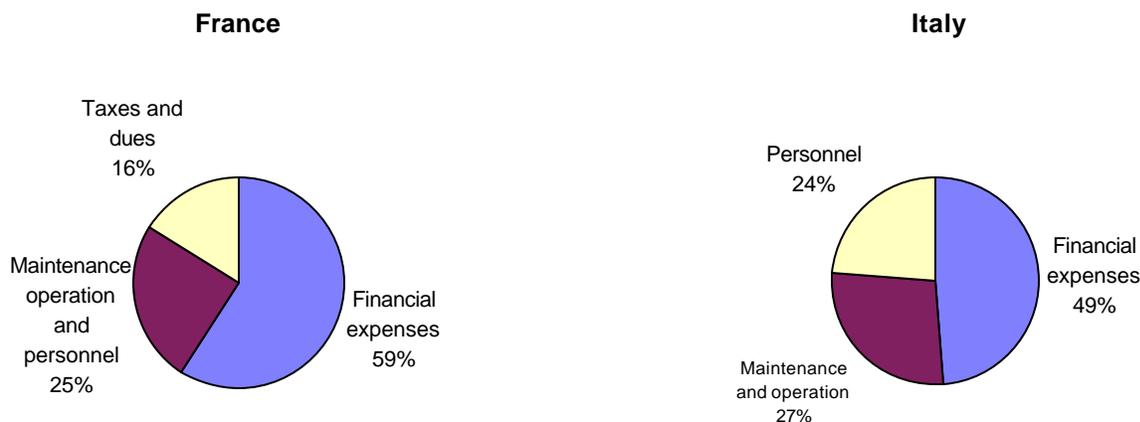
During the second phase (2001-2004), distance-related fees are extended to include external as well as infrastructure-related costs. The application of these fees in new road concessions makes it possible to introduce a charge system that guarantees cost recovery for new investments. Efforts should also be made to promote the implementation of urban road charge systems that are compatible with the charges for to heavy goods vehicles.

During the third phase (after 2004), the common system becomes mandatory. For both heavy goods vehicles and commercial passenger transport, existing charge systems are replaced by harmonised fees based on marginal cost and founded on various instruments including tolls and user fees.

Source: European Commission white paper COM (98)466 final dated 22 July 1998: "Equitable fees for the utilisation of infrastructures: a staged approach for establishing a common framework for transport infrastructure charges in the European Union".

A toll system also makes it possible to arbitrate between maintenance and investment. For example, in Italy and France, 27% and 25% of toll resources are respectively allocated to maintenance and operation, as illustrated in the figure below. **A toll system therefore makes it possible to fund road maintenance, an frequently neglected aspect when conventional funding arrangements are established.**

Application of toll revenue in France and Italy (1996)



In this respect, it is appropriate to emphasise the "Norwegian exception", since the Norwegian road authority delegates responsibility for an infrastructure to an ad hoc company collecting toll revenues from users, where that revenue is not used solely to fund work on the concession section, but also provides funding for adjacent roads or public transport. In Norway **the location where toll revenue is collected can differ from that of the infrastructure to be funded**⁵.

In terms of advantages, it should also be noted that **a toll system complies with the principle of territoriality, since users of the infrastructure pay for its utilisation without differentiation according to nationality**.⁶

Furthermore, **a toll system can serve to optimise utilisation of the transport network (traffic spread, inter-modal sharing of traffic load, etc.)**. In this case however, charge systems must meet a number of different and sometimes contradictory objectives (marginal cost charging, cost recovery, maximised profit, etc.).

Toll system disadvantages

Apart from problems of acceptability (see below), it should also be noted that the **introduction of a toll system generally results in reduced socio-economic return for the project (except when there is a congestion problem) since a certain proportion of users are dissuaded from continued utilisation of the infrastructure**.⁷ Furthermore, the introduction of a toll system for an infrastructure induces additional costs related to the construction, maintenance and operation of toll collection facilities. For example, it is estimated that an average of about 10% of revenue is absorbed by toll collection. The frequently quoted problem of a toll system, which in more general terms raises the question of the application of a revenue source, could also be mentioned. Application of revenue frequently escapes any form of democratic control, and also represents an obstacle to the optimised distribution of funding resources. This can lead to a situation where financial (e.g. through backing by collateral) feasibility is emphasised to the detriment of the public interest.

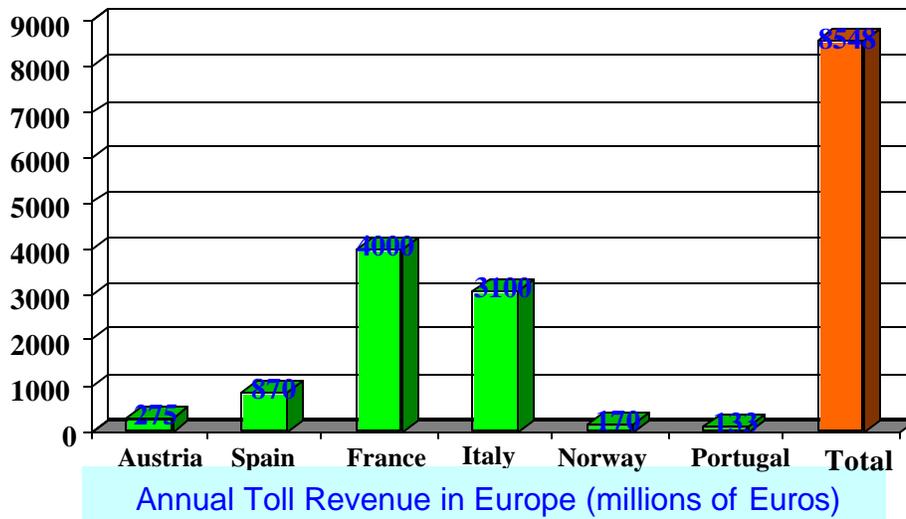
Application of toll revenue in Europe

Toll revenue from European motorway infrastructures is substantial and represented about €8.6 billion in 1996, as shown in the following table.

⁵ For example, in the case of Oslo the toll is collected where the ring-road is crossed and is used to fund adjacent tunnels.

⁶ See Council directive 93-89 of 25/10/1993 which establishes the legal basis for toll collection and utilization rights at the EC level, replaced with directive 99/62 of 17/06/1999

⁷ Under saturated conditions, tolls are used to spread demand and enhance the collective balance.



It is nevertheless necessary to put these amounts in a proper perspective, insofar as they are substantially below actual needs, and only constitute a minority proportion of road investments.

In an EC context, reference should be made to directive 99/62 (previously 93/89), which established a framework for rules concerning vehicle taxes, as well as tolls and fees for heavy goods vehicles exceeding twelve tonnes. Fees (other than tolls) are capped. Article 7.9 of the directive establishes that "**toll rates are linked to the construction, operating and development costs of the infrastructure network concerned.**" However, directive 93/89 merely defines the principle for toll revenue calculation and contains no pointers regarding its eventual application.

I.1.2 Toll system functions

A distinction must be made between the different functions of a toll system. These principally concern funding and channelling of demand, functions which in themselves can be contradictory.

An analysis of the replies to the questionnaire issued to all European road administrations shows **that toll systems in all European countries, apart from the Netherlands, provide funding for the construction and maintenance of the road infrastructure in an inter-urban context, but do not have a traffic regulation function.** In the Netherlands, the toll system is designed to direct road users toward other means of transport. This means that the primary objective in this country is to control road user behaviour, firstly in order to ease road traffic conditions, and secondly to encourage the use of means of transport such as the railways and inland waterways. Norway recently decided to allocate part of toll revenue collected in Oslo and Trondheim to fund public transport and cycle lanes. These experiments are limited to the urban context.

I.1.3 Acceptability of toll systems in Europe

The problem of the social acceptability of toll systems must be examined with care whenever an infrastructure is to be placed under toll. The replies received from the European road administrations indicate that the acceptability of a toll system in an inter-urban context is, in practice, mainly dependent on five factors:

a. Toll charges

Toll charges vary throughout Europe because they are linked to both the socio-economic conditions in the countries concerned, and the extent of construction work required for the concession infrastructure. Toll charges for private vehicles for open country sections vary from about €0.05/km in Italy down to less than €0.02/km in Greece and average about € 0.06/km in France and Spain (since the law of 30/12/1996). Generally, **heavy goods vehicle toll charges are two to three times higher than those for private cars.** We should not consider an identical mean toll level for all segments of transport demand alone, since a toll system can be adopted where charges depend on the degree of usefulness to the user. Furthermore, reasoning along these lines leads to higher toll rates for long distances (for which the degree of elasticity is generally lower than for short distances).

b. Toll collection methods

Toll collection methods have an influence on the degree of acceptability of the toll by the user. Regarding electronic toll collection, the principal technologies under consideration in Europe are either dedicated short-range systems where an on-board unit communicates with equipment installed at the roadside or satellite positioning and navigation systems and GSM, where the on-board unit communicates with a satellite. In both cases, care should be taken to ensure that **the user recognises the service provided by the electronic collection system, and that the cost of the toll and the technology applied do not create additional difficulties compared to manual collection** (particularly with the constraints associated with the protection of privacy).

The progressive introduction of electronic toll collection is also a factor that impacts user acceptability of a toll system. The generalised, simultaneous introduction of a toll system on a complete network represents a major political risk. In this case, any malfunction, whether technical (system failure) or "managerial" (commercial and management errors affecting user accounts) would have an insurmountable negative impact on the acceptability of the network toll system. From this point of view, **progressive introduction**, with the initial selection of certain infrastructures and/or user categories, substantially reduces this risk. It should also be noted that the introduction of a toll system for a road infrastructure can only be considered on the basis of an electronic toll collection system in certain countries. This is the case in Germany, where it is not possible to construct toll stations due to high motorway density and the fact that most motorways transit via densely populated areas, with the consequent necessity of using automatic payment systems for toll collection from the outset.

The recommendations of the European Commission regarding electronic toll collection in Europe is perceived as one of the best solutions to the problems of charging road users. All Member States are encouraged to move toward this, as summarised in the following box.

EC recommendations concerning electronic toll collection in Europe

The main priority for the European Commission is the selection of a charge system for heavy goods vehicles, since this sector is clearly international in nature and its traffic is extremely important to the development of the single market. The establishment of an EC system for heavy goods vehicle charges will represent a major step forward in the implementation of the proposed charging principles. The system should be designed to be compatible with systems for urban road charges established by municipal and regional authorities. The introduction of an electronic toll collection system for trucks can thus be regarded as the entirely logical sequel to the current system based on the "Eurovignette". To promote this change, it will be necessary for EC legislation to include a standard electronic toll collection option, which will require an in-depth analysis of technical and harmonisation aspects, as well as administrative questions.

Source: European Commission white paper COM (98)466 final dated 22 July 1998

c. [The toll system: the necessary counterpart of a user service which must be recognised by the user](#)

A toll system is only accepted insofar as it is associated with a satisfactory advantage to the user. In this sense, the acceptability of a funding source toll system in an inter-urban context is globally greater than that for decongestion and traffic management type toll systems, the usefulness of which is less easily perceptible by road users, and is even regarded as paradoxical since charges are inversely proportional to the quality of service. **Information, and its communication to users, naturally has a direct impact on the acceptability of a toll system**, as illustrated by France's experience, described in the box below.

Experience with modulation of motorway toll charges in France

Various types of toll charge modulation have been tried on the French motorways, with the goal of regulating traffic flow by means of the toll system. Results have generally been encouraging. Distinction can be made between two categories of modulation:

Time modulation, where the principle is to adjust toll rates by time segment, in order to cap peak traffic levels and spread returning weekend traffic. SANEF introduced two "green" periods (tolls reduced by 25%) and one "red" period (tolls increased by 25%) on motorway A1 in April 1992. With a toll difference of 50% between peak and off-peak periods, approximately 10% of motorists who previously used the motorway in the peak periods have altered their travel times (corresponding to an average of 2,000 vehicles per day for the "red" toll period). Other experiments are being conducted by AREA in the Rhône-Alpes region, and COFIROUTE on motorways A10 and A11. The results of these experiments are regarded as positive (8% to 10% of peak traffic has been shifted, on the basis of a 60% peak/off-peak toll variance).

Space modulation is also aimed at capping peak traffic levels on certain motorways, by re-routing outward and returning holiday and weekend traffic onto alternative roads subject to toll reductions, and increasing the toll on the saturated motorway. This type of space modulation has been applied by SANEF and SAPRR on motorways A1-A26 and A5-A6, and has produced satisfactory results (approximately 10% shift).

Conclusion: The aim of these experiments was to achieve a neutral net impact on revenue (offsetting toll reductions by increases). **It was found that the most decisive factor in the modification of road user behaviour was communication, followed by toll charge modulation.**

Source: French Directorate of Roads, 1998.

d. [Eventual presence of toll-free itineraries](#)

The presence of a toll-free itinerary parallel to a section under toll has a significant modifying impact on toll system acceptability. A number of countries have opted for DBFO (Design, Build, Finance and Operate) type systems with "shadow" tolls, particularly in cases where there is no alternative toll-free route. **Where such a toll-free route exists, it is important for the public authority to ensure that the tolled sections present a genuine advantage for the user (time savings, increased comfort and safety, etc.). Any modification or improvement of alternative routes must be examined in such a way that the toll acceptance of the user is not placed in doubt.** The increasing mesh density of motorway systems in countries with toll systems also induces difficulties in this context.

e. [The existence of taxes associated with the road sector has a major impact on the acceptability of a toll system](#)

The acceptability of toll systems on the Great Belt and Orensud links in Denmark is satisfactory, since both of these road sections provide alternatives to ferries. Nevertheless, there are no current plans to place other road sections under toll in Denmark. Given the high level of vehicle and motor spirit taxes, the acceptability of toll systems is generally low. **The acceptance of toll systems in Finland is generally low for the same reasons.** This argument also predominates in the US, where road users are fully aware that motor spirit taxes are allocated to the Highway Trust Fund.

Inter-urban tolls in Norway are relatively well accepted, since they significantly contribute to reducing transit time for private vehicles and for road carriers. The situation is substantially different in the urban context, where tolls are regarded as a new tax, identical to those collected for the national budget. Recent studies in Norway indicate that while a majority of users are currently opposed to toll collection on the periphery of towns, this proportion is tending to diminish with the passage of time.⁸

In Spain, the acceptability of toll systems is poor at the present time, due to the development of a 5,000 km toll-free motorway network ("autovias"), and the intention to extend the toll-free motorway construction programme in the future.

In the Netherlands, tolls are accepted where applied to clearly-defined, limited road sections (bridges and tunnels). A toll system would probably not be accepted for the complete road network.

In France, toll systems are generally well accepted in the inter-urban context, being regarded as a source of revenue for the construction, maintenance and

⁸ Road toll systems have been introduced in Bergen (1986), Oslo (1990) and Trondheim (1991).

operation of a good-quality motorway infrastructure network. On the other hand, the social acceptability of toll systems in the urban context has induced a number of difficulties in the last few years (in Lyon and Toulouse in particular). It also appears that the nature of the concession company (state-owned or private) can have an impact on toll system acceptability.

I.2 SHADOW TOLL CONCESSION

I.2.1 Definition

A shadow toll contract enables the public authority to delegate the construction and funding of an infrastructure to a concession company. In this case, the concession company collects no toll from the users, for whom the infrastructure is free. The public authority remunerates the concession company, which is principally based on the degree of utilisation of the infrastructure. This type of system consequently involves counting the number of users and paying the concession company on a pro rata basis according to this number, applying a pre-established scale. Payment by the public authority takes account of not only the traffic levels measured, but also the performance of the concession company. This performance can be gauged in different ways, for example, according to the number of lanes closed to traffic (and time taken to execute repair work), or measures taken by the concession holder to increase road safety.

I.2.2 Shadow toll practice in Europe

The DBFO method was first introduced in the **United Kingdom**, but is now also applied in **Finland**, where the Parliament has authorised the application of a shadow toll system for a 70 km section between Jarvenpaa and Lahti. A shadow toll system is also being examined in **Portugal** (where toll motorways are already in operation) for 800 km road projects. It was decided to adopt the shadow toll method in Finland due to the existing high motor spirit and road tax and customs duties and the level of traffic using the infrastructure (regarded as too low to justify the introduction of a toll system).

The Netherlands has adopted a special private project funding scheme for the construction of tunnels in the western part of the country. The objective is to construct a larger number of tunnels than would be possible using budget sources alone. The "Noord" tunnel was the first for which private funding was adopted. This tunnel has extended an existing bridge link on the second main route from Rotterdam to the Ruhr in Germany. Preparation for the "Noord" tunnel was completed by the Dutch State Public Works Department prior to the government decision. Construction and maintenance are covered by the government departments on the basis of a lump-sum of € 1.4 million for maintenance and operation over 30 years. This means that any increase in construction, maintenance and operating costs is borne by the government. The concession company provided the funds, **and as owner of the tunnel for thirty years, will continue receiving remuneration for the investment according to the number of vehicles using the**

tunnel and the agreed tunnel fee. The "Noord" tunnel has been in service since 1992. It should also be noted that concession systems are currently under review in the Netherlands following this experiment, which has been criticised mainly because of the excessively high transaction costs involved.

In Spain, certain regional authorities have expressed interest in this solution.

1.2.3 Advantages and disadvantages of shadow tolls

The advantages and disadvantages of the DBFO/shadow toll method can be gauged in comparison with other types of funding, namely budgetary and toll concession funding.

The advantages of road funding by means of a shadow toll system, compared with toll concession funding are as follows:

- **there is no tendency to shift traffic onto other roads.** In the case of a motorway infrastructure under toll, a certain number of users avoid the motorway both because of the toll cost, and the distance between access points (the mean distance between access points in France is 11 km, although this rises to 20 km in open country and even more on certain new links that carry limited traffic);
- **no expenses associated with toll collection are incurred** (it is estimated that between 10% and 15%⁹ of revenue are absorbed by toll collection costs, while approximately 10% of the initial cost of the infrastructure represents construction of the toll stations).

The main advantages of a conventional toll concession contract, namely optimisation of the infrastructure with the risks and interim funding carried by the concession company, are maintained with a shadow toll system. Furthermore, the latter type of system ensures that provision is made for road maintenance, both in financial and personnel terms. **The spreading of financial charges over a period of time makes it possible to attenuate the constraints of annual programming.**

Nevertheless, a shadow toll system does not solve the funding problem, since the concession authority must pay shadow toll remuneration to the concession company in due course. A shadow toll contract does not therefore generate new funding sources. Such an arrangement shifts responsibility for the financial package onto the concession company (so that the debt is non-public), but the final cost must be borne by the taxpayer ("delayed" budgetary funding) and not the user. The financial and legal costs of this type of arrangement can be high, and should not be underestimated. By comparison with budgetary funding, the shadow toll method also highlights an apparent increase in financial expenses (principally due to the required return on invested capital).

⁹ For example, toll collection costs in Norway represent an average of 17% of toll revenue.

In a recent evaluation report on the first DBFO project phase in the UK¹⁰, , the National Audit Office emphasised the following points:

- **compared with conventional contract placement methods (budgetary funding), two out of four DBFO projects produced major savings** (30% for the M1-A1 project, and 25% for A1(M)). **These two projects include a substantial construction component** (the other two principally involve maintenance work);
- **the advantage of the DBFO method is found principally in the freedom in design, which is left to the concession company, the transfer of risks to the latter, and the enhanced efficiency resulting from private management. Without these three conditions, the DBFO method would have no advantage over budgetary funding, and would cost more (more substantial financial expenses, stemming in particular from the required return on invested capital);**
- in comparison with a conventional contract placement method, the DBFO process requires more time and involves much higher transaction costs.

British DBFO practice

The British road system has a total length of 280,136 km, classified in four categories. These are motorways, other trunk roads (10,384 km), other principal roads and other roads. The motorways and other trunk roads are placed under the direct responsibility of the Ministry (Transport Department), and are managed by the British Highway Agency, created in April 1994. Other roads are placed under county council and municipal authority.

The government is partially disengaging from its role as transport infrastructure investment promoter, in favour of the private sector, which is regarded as more efficient in this context. Government disengagement is being implemented within the framework of the Private Finance Initiative (PFI), which provides for DBFO concessions in the road sector. The aim is to shift total project responsibility (studies, funding, construction and operation) to the private sector.

Three work phases, representing fourteen projects (forty operations), estimated at £1.1 billion involve shadow toll arrangements. **Eight projects have already been initiated (580 km).** The A13-Thames Gateway project is being prepared (having reached the pre-qualification stage in April 1998). **The initial phases for these projects were awarded in 1996, and were priced by the British National Audit Office in January 1998.**

¹⁰ National Audit Office. *The Private Finance Initiative : The First Four Design, Build, Finance and Operate Roads Contracts*, January 28, 1998.

The logic behind this policy is not essentially financial. The goal is not to shift the weight of investment to the user, but rather to oblige contractors to carry certain risks normally assumed by the government, based on the assumption that a contractor must be able to construct more efficiently and at a lower cost than the public administration, and the fact that a toll system would not be well received by the general public (there are no road tolls in the United Kingdom, apart from a number of tunnels and bridges). The government remunerates the concession company, in place of the user, on a commercial basis according to a vehicle/mile rate, which assumes the existence of a sophisticated metering system.

Also worth mentioning is the first urban project for which a shadow toll contract is planned: the extension of highway A13 to the east of London. This project amounts to € 220 million (30 year concession with work scheduled to commence in August 1999).

I.3 INITIAL CONCLUSIONS CONCERNING EUROPE'S ROAD INFRASTRUCTURE CONCESSION APPROACH

I.3.1 Concession approach and remuneration of the concession company

The first point that emerges when examining the various motorway concession contracts set up in Europe is that **the toll system is not intrinsically linked to the concession approach.** The concession company can be remunerated under the terms of a lease while also applying incentive measures. In this case the concession company collects tolls on behalf of the government, paying more than the total toll revenue collected. This system involves a different form of risk sharing, especially regarding the commercial risk associated with toll charges and traffic levels. **On the other hand, a toll system can be operated without a concession,** demonstrated by the above-mentioned Norwegian examples where the operators are not concession companies but commercial companies that operate toll systems through a principally financial role (construction, maintenance and operation are the responsibility of the government¹¹).

I.3.2 Widely varying road infrastructure practice in Europe

The following table summarises the various concession methods applied in the road sector in Europe, indicating the following for each country:

- experience in terms of road concessions at both local and national levels,
- type of concession contract used (user-based or shadow toll remuneration),
- legal form of the concession companies (state-owned or private),
- national legislation relating to concessions (where this exists), and
- mean concession periods.

¹¹ The Norwegian toll companies are set up by local authorities, which then guarantee loans to these companies.

European highway concessions (km in operation, 01-01-98)

| | Motorway network | Motorway network under concession | Concessionaire companies | | | |
|--------------|-------------------|-----------------------------------|--------------------------|--------------|----------------------------|----------------|
| | | | public (km) ^d | private (km) | No. of public ^d | No. of private |
| Germany | 11200 | 0 | 0 | 0 | 0 | 0 |
| U.K. | 3300 | 580 | 0 | 580 | 0 | 3 |
| Austria | 2000 | 180 | 180 | 0 | 1 | 0 |
| Belgium | 1800 | 1,5 | 1,5 | 0 | 1 | 0 |
| Denmark | 830 | 0 | 0 | 0 | 0 | 0 |
| Spain | 8200 | 2255 | 405 | 1850 | 3 ^c | 14 |
| Finland | 394 | 69 | 0 | 69 | 0 | 1 |
| France | 8923 ^a | 6705 | 5905 | 800 | 8 ^b | 1 |
| Greece | 400 | 75 | 0 | 75 | 0 | 1 |
| Italy | 6500 | 5600 | 5420 ^g | 180 | 26 ^b | 1 |
| Luxembourg | 130 | 0 | 0 | 0 | 0 | 0 |
| Norway | 550 | 550 ^e | 550 | 0 | 26 | 0 |
| Netherlands | 2300 | 4 | 0 | 4 | 0 | 2 |
| Portugal | 1422 | 990 | 0 | 990 | 0 | 2 ^f |
| Sweden | 1437 | 0 | 0 | 0 | 0 | 0 |
| Switzerland | 1856 | 0 | 0 | 0 | 0 | 0 |
| TOTAL | 51242 | 17009,5 | 12461,5 | 4548 | 63 | 25 |

Notes .a. Including 997 km of urban motorways.

b. Figures include two international tunnel companies.

c. The three public companies (AUCALSA, AUDASA et AUDENASA) merged into a holding : ENAUSA.

d. Public means : "company held at more than 50% by the State and/or local collectivities".

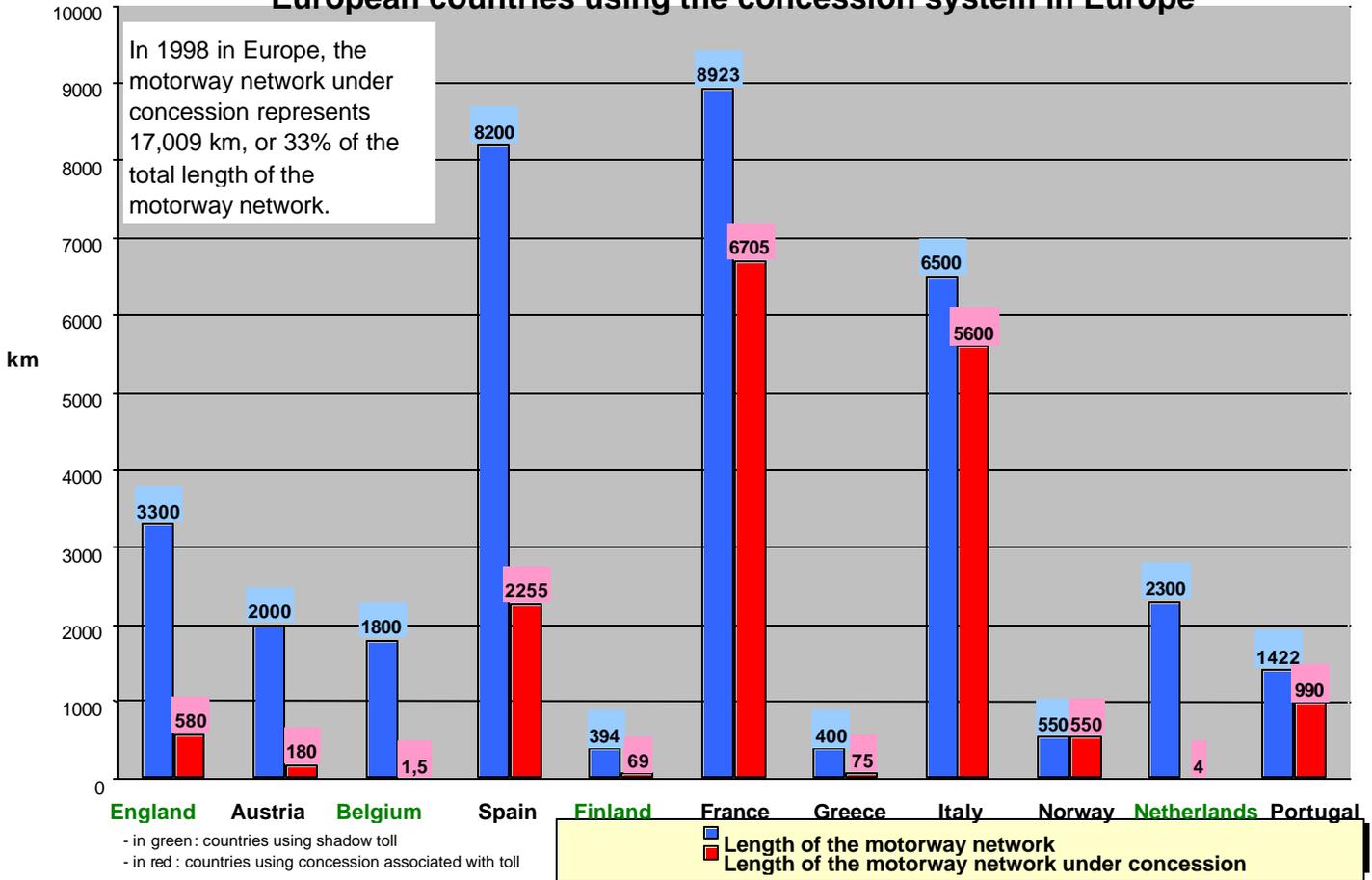
e. Norway has 26 concessionaire companies (35 toll roads, 50 km of tolled road belts, 70 km of bridges and 73 km of tunnels). The term "concession" is used although the main role of the companies is to collect tolls from road users.

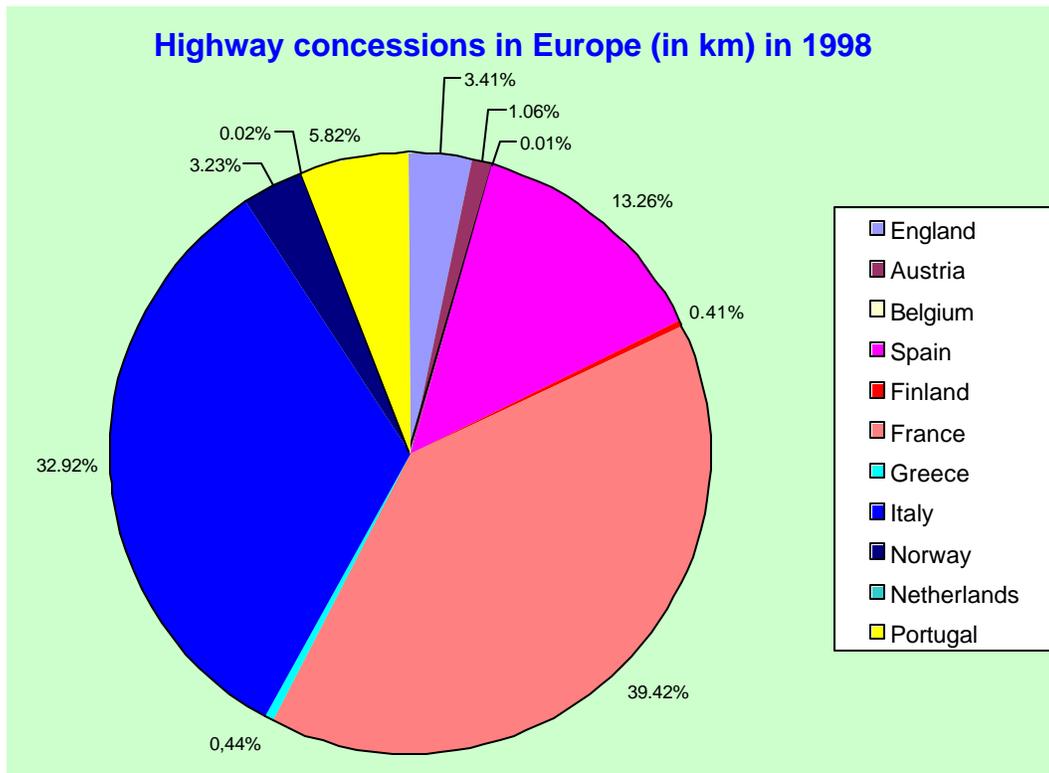
f. The two concessionaire companies are the result of the privatization of BRISA (966km) and Lusoponte (operating two 24 km long bridges).

g. Autostrade, the major Italian concessionaire, has been privatized in 2000.

The above table indicates the total length of the concessioned motorway system in each country, indicating whether the concession companies are private or state-owned. The ownership will be more closely examined in section I.3.5, but the following figures are noteworthy: **out of 51,242 km of motorway in Europe, one-third of the total network, 17,009 km, is under concession, with France, Italy and Spain accounting for 86% of the total length of motorway under concession (as seen in the following graphs).**

European countries using the concession system in Europe

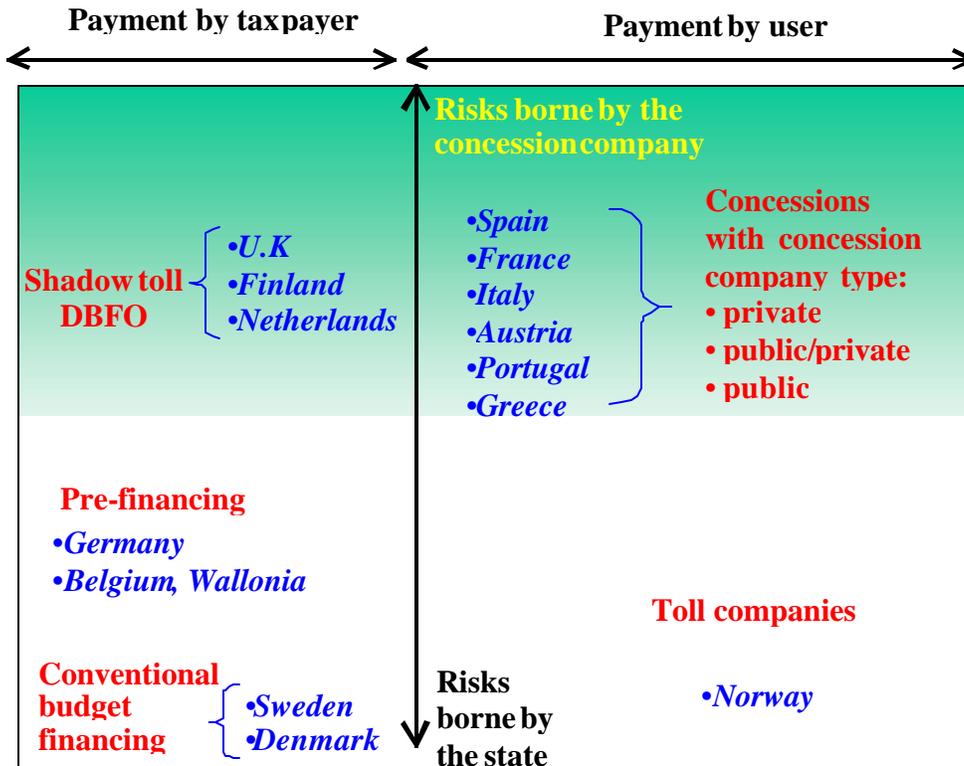




1.3.3 Concession contracts compared with other infrastructure funding systems

The following diagram compares the position of a concession contract with the other types of funding used in Europe (national budget, private interim funding, etc.), on the basis of two criteria, payment by the user or taxpayer, and the sharing of commercial risks. The diagram also indicates the solution adopted in each country. Three conclusions can be drawn from this diagram:

- the main criteria for an approach to a road infrastructure concession are the globality of the contract and the sharing of risks between the concession authority and concession company;
- payment by the user is not a decisive criterion for qualifying a concession contract as such;
- there is a borderline zone (displayed in pale green) where no genuine unanimity exists concerning the nature of a concession contract (example: shadow toll arrangement where the concession company's risks are substantially limited).



Private Pre-financing. Private interim funding has the advantage of bringing forward the completion date for the project. However, only 10% of the budget can be devoted to repayment of interim funding, in order to avoid overloading future operating periods. At the present time, twelve pilot projects in Germany, totalling €2.4 billion, are due to be funded in this way.¹²

Move toward the introduction of private toll concession systems in Germany

The law of 30/08/1994 concerning the private funding of federal highways instituted the legal framework for private toll concessions for national highways and bridges. This law creates the possibility of transferring responsibility for the work (including studies), maintenance, operation and funding of projects relating to motorways and major national highways to private investors. Repayment of the cost of borrowing and operating and maintenance expenses are then borne directly by the user. The law only provides for this type of private funding for bridges, tunnels and mountain passes used by motorways and federal highways, and federal highways possessing motorway characteristics (dual carriageways), a limitation resulting from directive 93/89 that prohibits the simultaneous application of road taxes and tolls on a road section.

The first projects to be implemented under concession contracts following the promulgation of this law concern the Warnow crossing¹³ in Rostock and the Trave tunnel in Lubeck. A total of **seventeen priority projects that represent a total length of 283 km and an estimated amount of €3.5 billion could be funded under the terms of private sector concession contracts.** There are no plans to place the German motorways under toll for private cars, although this is planned for heavy goods vehicles at the beginning of the 2000-2010 period.

¹² The German Parliament authorized this method for an additional fifteen projects on 25 March 1998.

¹³ The contract was signed with the Rostock municipal authority during the summer of 1996.

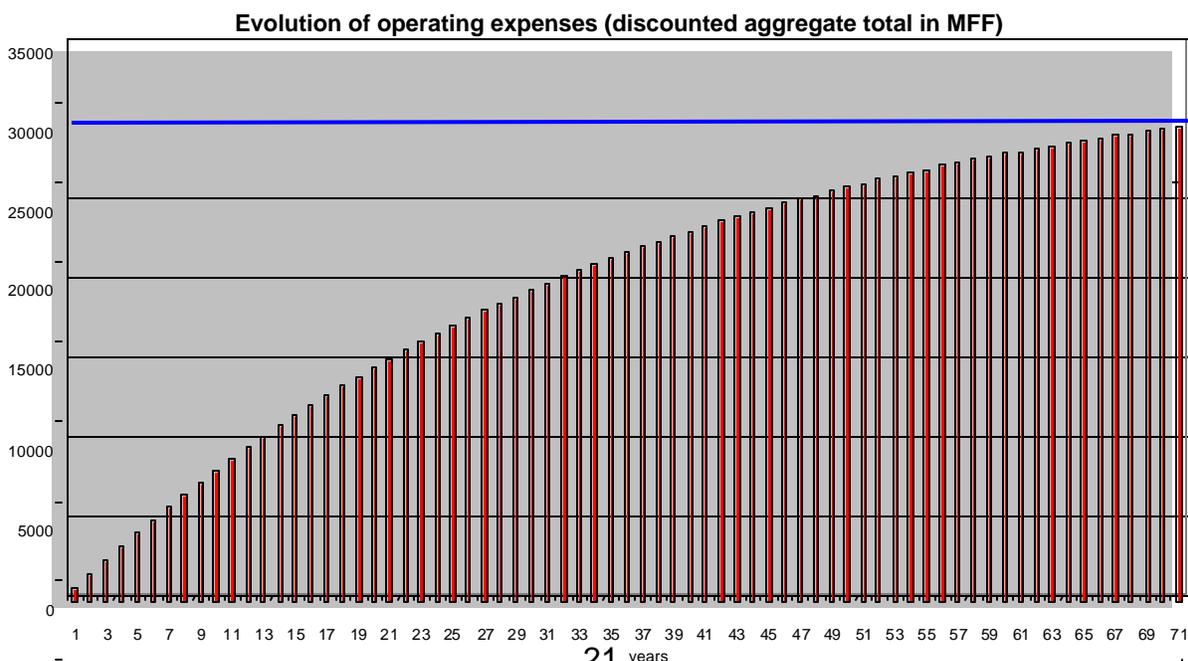
1.3.4 Principal merits of concession contracts

Projects for which foreseeable revenue is insufficient to guarantee the remuneration of credits can only be implemented by means of public subsidies. Furthermore, governments can borrow at more favourable terms than the private sector since there is less risk. A private company must possess substantial equity to undertake a road infrastructure concession project. **However, equity funding is costly due to the risks involved. It should be remembered that these risks also exist in a case where the government decides to fund infrastructure projects from tax revenue.** Public money also has a cost, even if this cost is usually hidden.

The advantage of selecting a private company to construct and manage a road infrastructure under the terms of a concession contract is based on three factors:

i) Allocation of the funding source and the globality of the concession contract

Allocation of the funding source represented by the toll system is an advantage frequently quoted by the Italian, Spanish, Portuguese and French road administrations. By setting up a concession contract, the government avoids having to bear the construction, maintenance and operating costs of the infrastructure. Allocation of funding sources is made possible by the **particularly stable organisational framework of a concession.** The following graph showing the evolution of operating expenses (aggregate figures and per kilometre) over time indicates that operating expenses (namely maintenance expenses for pavements and shoulders, personnel expenses – including toll station staff – and the various taxes associated with operation) are equal to construction costs after 70 years. Expressed in different terms, operating expenses represent about 75% of construction costs after 35 years (usual motorway concession contract duration). This figure is even more important since the concession company bears only part of the construction cost due to the need for a government subsidy to ensure the financial balance of the concession (this subsidy applies to construction costs).



Source: French Directorate of Roads, 1998

Assumptions: Open country motorway: mean construction cost excluding taxes: 35 MFF/km (blue line); traffic: 10.000 vehicles/day

ii) [Management efficiency](#)

When a concession system is set up, it normally **introduces an efficient management method**. The concession company is generally capable of designing, constructing and operating the motorway more efficiently since it is not subject to public administration management constraints.

iii) [Non-public character of the debt](#)

Furthermore, the **government may wish to avoid increasing the public debt**. In the case of a toll concession, the concession company's debt does not form part of the public debt. According to Eurostat, this is for a number of reasons (see box).

Funding and operation of "state-owned infrastructures" by the private sector

Eurostat has decided to adopt a statistical accounting procedure for investment (capital expenditure) by the private sector in state-owned infrastructures (fixed assets). Two cases can be identified:

Case 1: public authorities call on a private company to construct and fund a fixed asset, acquiring ownership of as it is constructed. The capital expenditure is recorded in the public administration sector. The investment increases the government deficit, but in fact it has no impact on the public debt as defined in European Council Rule No. 3605/93. In order to meet convergence criteria, public administration commitments to the private sector in the form of medium- and long-term commercial credits recorded in the public administration account are excluded for measurement of public debt.

Case 2: public authorities call on a private company to construct and operate a fixed asset during its lifetime, acquiring ownership. The capital expenditure is then be recorded in the private sector, since it has no effect on the government deficit or public debt.

Case 1 applies particularly to private sector construction and interim funding of roads in Germany. At least twelve projects have been initiated at the federal level since 1995/1996, along with a number of projects at the Land and commune levels. Funding for the construction of a high-speed rail system is similarly planned. The government deficit includes payments due as the work is completed. The amounts involved, estimated at DM 4 to 5 billion in 1997, represent only a small percentage of GNP. The Öresund bridge between Denmark and Sweden is an example of case 2. Construction by a consortium of state enterprises owned by the Danish and Swedish Governments commenced in 1996. The consortium is funding the operation by borrowing on the money market, under state guarantee. After its scheduled completion in the year 2000, the consortium will have a concession for operating the bridge and toll revenue will be allocated to the operator. It is estimated that the debt will be repaid by 2026, at which time the consortium will continue to operate the bridge for an unlimited time. Capital expenditure is recorded in the business sector, with no impact on government deficit.

Some of the private finance initiative contracts in the United Kingdom represent another example of case 2. Instead of acquiring and operating an asset, the government acquires the services of a private sector operator. The operator then acquires the asset in order to supply the services required. Capital expenditure is recorded in the business sector, and has no impact on the government deficit. The public administration accounts record the purchase of services supplied by the operator, thus contributing annually to the increase in the government deficit.

Eurostat confirms that these accounting procedures, recorded in the public administration accounts in Germany, Denmark, Sweden and the U.K., are correct. In the returns submitted twice yearly by the Member States to the EC in the framework of the procedure relating to

excessive government deficits, these amounts are considered in accordance with the above accounting practice.

Source: Eurostat press release No. 1697, dated 21 February 1997: "Accounting operations. Latest Eurostat decisions concerning deficit and debt".

1.3.5 Integration of socio-economic and equity return in connection with the decision to set up a concession contract

A number of different types of socio-economic road project analyses can be identified in the European countries, the two main families **being conventional cost-benefit analyses** on the one hand, and **cost-benefit analyses combined with multicriterion analysis** on the other. **Values differ substantially from one country to another** for the monetary measurement of external effects (pollution, greenhouse effect, noise, etc.). This also applies to the valuation of time, an essential element of socio-economic analysis, estimated at 5 Euros/vehicle hour in Germany, compared with 23 Euros/vehicle hour in Norway.¹⁴

The establishment of a road infrastructure concession effectively follows a logic involving the socio-economic return on the project upstream (thus measuring the advantage for the community) and the return on equity from the operation downstream. **It is important to remember that the benefit of an investment for the community is regarded solely from the economic return point of view. Return on equity defines the conditions for project feasibility, where the latter can be funded by collecting a toll from all or some users. However, return on equity cannot serve as a basis for selecting a state-owned infrastructure since:**

- this indicator is from the viewpoint of a possible concession company or authority examining the conditions under which this option could be adopted, and
- it is based on terms of revenue and expenditure for the concession company.

The following graph summarises this problem, identifying various decisions that road administrations are required to take when selecting and funding a project (budget, toll concession, shadow toll, etc.). Furthermore, not only investment measures, but also in situ development, traffic, and other transport management measures are taken into account.¹⁵ It thus appears that **the feasibility of a concession comes down to a compromise between various sub-optima:**

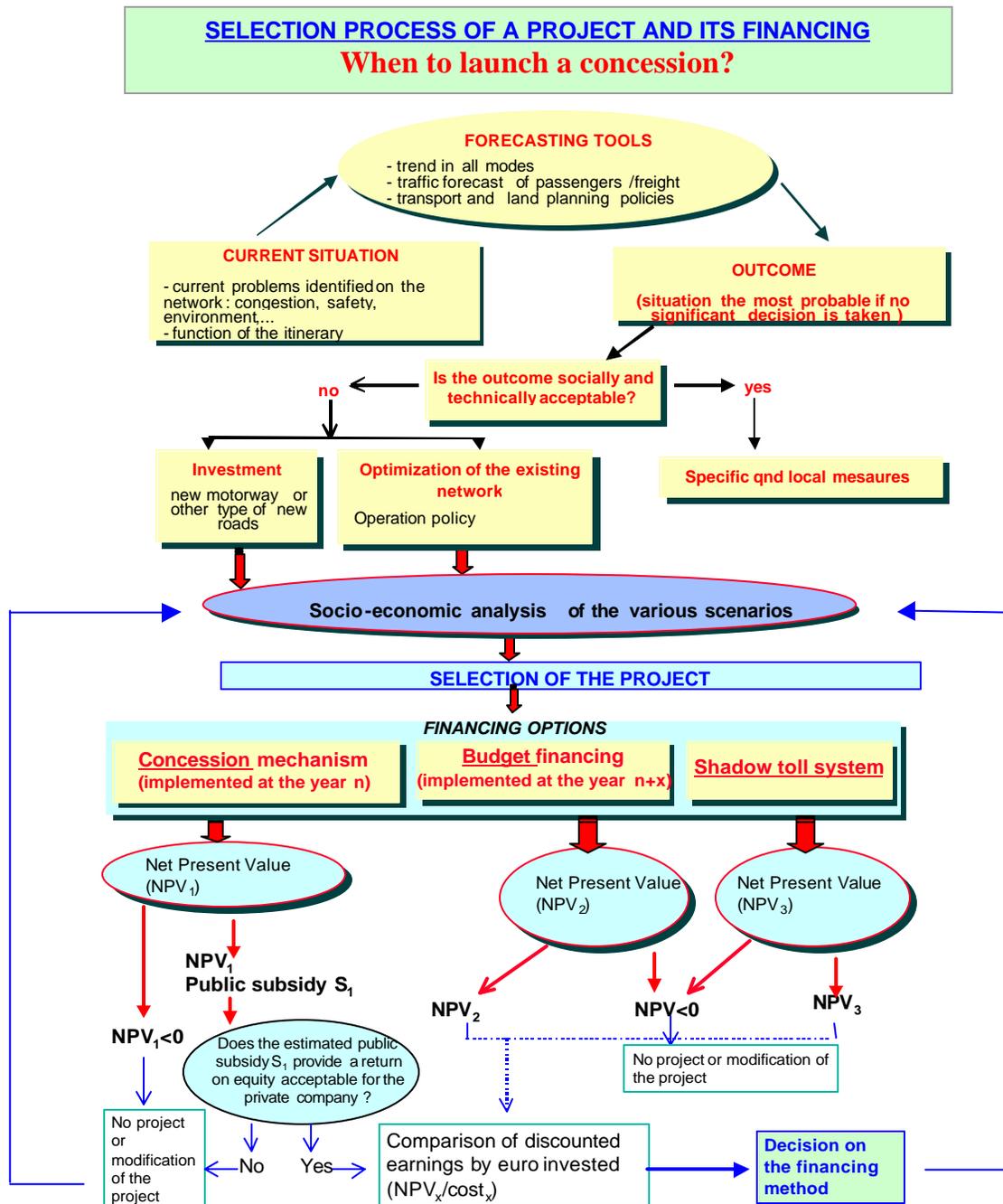
- funding constraints limiting the possibility of economically profitable investments;
- toll dissuasion effect, which reduces the economic advantage of the project; and

¹⁴ Source: Norwegian study mentioned above, entitled "Compiling methods for measuring impacts of road projects in member countries". Kjell Bjorvig, Norwegian Public Roads Administration. DERD, National Working Group on Economic Assessment of Road Projects, 1998.

¹⁵ For further details, refer to the French Directorate of roads circular, dated 20-10-98, on methods for economic evaluation of open country road investment programmes.

- allocation of sources, collected from the user rather than the taxpayer, leading to a preference for investments that can be funded to the detriment of other solutions, which are nevertheless more advantageous for the community in terms of economic balance, but which ensures their feasibility.

As shown in the graph below, any decision relating to the methods of financing a road project (toll concession, shadow toll concession, etc.) is based on calculation of **discounted earnings**, which is the difference between net global benefit and investment cost. This indicator measures the variation in public utility associated with the development scenario, making it possible to judge its intrinsic interest. This selection criterion leads to the adoption of development scenarios for which discounted earnings are positive.



Notes: x represents the number of additional years corresponding to the possibility of Government and local collectivities' financing.

NPV = Net Present Value

The discounted earnings by Euro invested is the ration between the discounted earnings and the investment cost. This ration enables the prioritization of the various investment scenarios, taking into account the financial

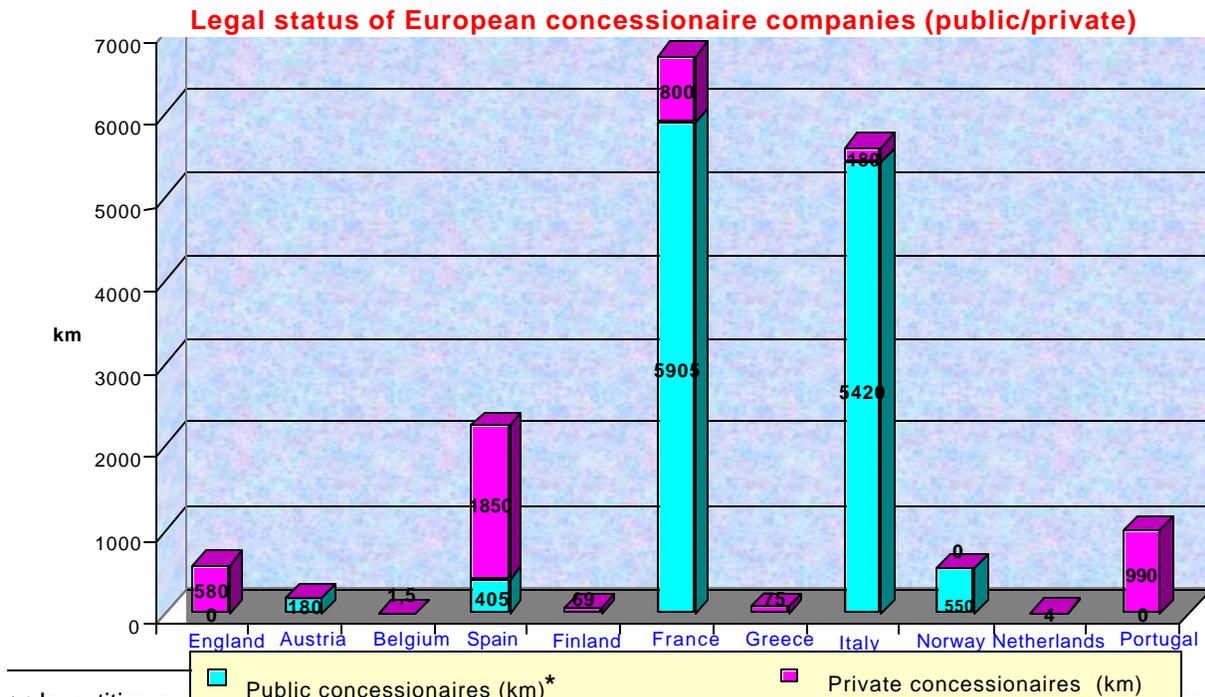
1.3.6 Comparison of state-owned and private concession companies

In 1999, there were 63 state-owned and 28 private concession companies in Europe. However, numerous companies have merged recently (including ASFINAG in Austria, who acquired control of two state-owned concession companies, Osterreichischen Autobahnen und Schnellstrassen AG (Ossag), and Alpenstrassen AG, and similar operations in Spain, Italy and France). It is consequently more significant to argue in terms of network size concessioned to state-owned and private companies. We then find **that out of 17,009 km of motorway under concession, 12,461 km are managed by the public sector (73%), and 4,548 km by private companies (27%).** The following table summarises this for each European country with concessions, both toll and shadow toll (note that all shadow tolls are private).

The choice of a state-owned¹⁶ or private company for a motorway concession involves numerous factors, including return on equity and socio-economic return, as well as criteria that account for "market realities", of which return on equity is a component (a private company will only consider a project under certain conditions).

The following arguments frequently conflict:

- Firstly, **a concession company needs not be private to be efficient.** The government can create a separate entity with the status of a state-owned company, keeping its own accounts and applying management discipline similar to that of a private company. This entity borrows funds, repaying them with income from the revenue source. This solution makes it possible to circumvent state-owned status



¹⁶ In entities managed as companies, capital can be held by the public or private sector, where other entities (state-owned establishments, agencies, etc.) fundamentally are units of the public authority.

*Autostrade, the major Italian concessionaire has been privatized in 2000

constraints (see section I.3.4 for details) and achieve a certain degree of efficiency in the management of the infrastructure. A major difference between this solution and that involving a concession contract with a private company, is that the government does not generally abandon a state-owned company that is having difficulties, similar to how it tends to dip into the coffers of a state-owned company that generates a surplus. The support of the Government is also an important factor taken into account by the rating agencies when assessing the risks of the project for the bondholders; as a result, most of the concessions in the US involve direct participation of public authorities. However, stand-alone projects start to emerge and a new set of tools to assess their credit risk has been developed.

- Secondly, it is frequently suggested that the management methods of private investors (particularly regarding wages and salaries, and staff recruitment in financial and legal sectors) are more likely to achieve efficiency than those practised in the public sector. Moreover, the obligation to use bank credit lines subjects the investment project to rigorous audits by the banks themselves. This meticulous evaluation of projects, based exclusively on financial criteria, contributes to the enhanced efficiency of the private sector.

In schematic terms, we can use two "extreme" examples to address the question of concession contracts with state-owned or private companies:

1. The first example concerns **an operation conducted at a "low" return on equity** (around 2% to 4%), which could reflect modest forecast traffic levels and/or high construction costs. The choice of a state-owned or private concession company is frequently replaced by a choice made at an earlier stage relating to the relevance of adopting a concession contract and to the need to apply a toll system to the section concerned. We therefore must refer to the three main advantages of a concession contract over a simple work contract in the concrete case of the project (section I.3.3).
2. On the other hand, we can consider a case where **the return on equity anticipated from a motorway concession contract is high**. Two points must be examined. The first concerns the social acceptability of a toll system. **The nature of the concession company (state-owned or private) has an impact on this factor. The second point is linked to the possible existence of an undue benefit that is disproportionate to the risks borne by the concession company.** In this case, if the concession is awarded to a private company, it is important to limit payments to this company (while naturally allowing the latter a level of profit in proportion to the risks that it bears). This limitation can be imposed by **capping the toll revenue collected by the company or by restricting the rate of return for the company** (a good example of this practice is the situation of public utilities in the UK). Both methods are described in detail in the second part of this report. Generally, the objective is to be **to identify a state of equilibrium or fair distribution of risks between the concession authority and the company.**

II. KEY COMPONENTS OF A ROAD INFRASTRUCTURE CONCESSION

The main components of a concession contract are:

- lot size,
- concession period,
- toll charges,
- concession award criteria,
- potential for development of new ideas by the concession company,
- sharing of risks between the concession authority and concession company.

II.1 CONCESSION LOT SIZE

The definition of the "exact" size of the concession lot is the responsibility of the government. This is a delicate task, as emphasised by the Portuguese and French directorates of roads in their replies to the questionnaire. The composition of each lot depends, among other aspects, on the degree of competition expected. **Grouping a number of motorway sections together to offer a substantial size lot has the advantage of reducing management costs**, which are customarily high for a concession. **Management and transaction costs must be monitored with care.** Private sector involvement in the funding of infrastructures generally increases this type of cost. Furthermore, an adequate size can lead to enhanced productivity on the part of the construction contractors, resulting from optimised utilisation of the plant and equipment.

The size of the concession lot is also linked directly to the backing mechanism. If the facility placed under concession is sufficiently large, it is then possible to achieve a balance between profitable and less profitable sections. **One of the difficulties that is frequently encountered during the preparation of an infrastructure concession contract is making the package sufficiently interesting for the private sector from a financial point of view.** This difficulty was mentioned by the British Highway Agency and the Spanish Directorate of Roads.

Another question frequently linked to this problem of defining the optimum size for concession lots regards **land purchase** prices buyers. While it is obviously necessary to address this problem case by case, it can be said that the **provision of land to the concession company spares the latter the difficulties of expropriation, while constituting a financial support that is fairly well accepted by the public.** Intervention by the concession company nevertheless induces additional flexibility during land purchase negotiations. In Spain, for example, the land is expropriated by the government. The concession company that will use the land is responsible for paying the cost of expropriation, although the government retains ownership of the land. Likewise, in France, the government is the owner of the infrastructure under concession and the concession company acts in its name throughout the concession period, thus being able to acquire land under the terms of enforceability attached to the declaration of a public utility. At the end of the concession period, the complete infrastructure (including operating buildings) reverts to the government.

II.2 ROAD INFRASTRUCTURE CONCESSION PERIOD

The period for an infrastructure concession (covering construction and operation) is lengthy, normally 30 years or more (the mean figure is 30 years in the UK, Portugal, Italy and the Netherlands, 75 years in Spain (since the law of 30/12/96), and a minimum of 15 years in Finland). The concession period for state-owned companies in France has been based on the loan repayment period. The period for concession contracts with private companies is substantially longer.

It is important to emphasise **that a long concession period secures the position of the concession company, but involves an annual payment risk (see section on methods of annual payment limitation). A balance must therefore be found and phases for "renegotiation" between the concession authority and the concession company must be incorporated** into the concession framework.

A **problem** frequently associated with defining the concession period relates to **the exclusivity attributed to the concession company**. As a general rule, the concession contract accords exclusive rights to the concession company for the execution of work, and the supply of services throughout the period of the concession. There can, however, be exceptions to this "rule" insofar as the public authorities can prefer to grant exclusivity to the concession company for a given period which is less than the total period of the concession, and allow other companies to enter the market and compete with the first concession company for the supply of services. The aim of the public authorities is then clear: to guard against any excessively monopolistic practices on the part of the concession company. This practice is frequently based on other business sectors, such as gas, electricity and telecommunications (where the concession primarily covers the provision of services), and also rail transport. Lessons on the subject of "non-exclusivity" can nevertheless be applicable to the road sector, particularly the area of road operating concessions.

Problems of long-term traffic prediction are difficult for both the public and private sectors, and may favour reducing the length of motorway concessions to around 20 years. However, a shorter concession period requires a higher rate of remuneration for the concession company, resulting in an increase in tolls or a larger government subsidy, to reduce the socio-economic return of the project and the benefit for the community.¹⁷

Although not yet practised by the road sector in Europe, mention should be made of **endogenous period concessions**, where the period of the concession is not pre-established, but depends on the *a posteriori* profitability of the project. The public authorities set the amount of the toll charge and each candidate concession company responds with an estimated discounted revenue amount for the project in question. The selected concession company implements the project and is conventionally remunerated by the users. **The concession period ends when the discounted revenue amount**

¹⁷ With the additional assumption that an increase in toll charges is socially acceptable, which is far from always being the case, especially in urban environments as pointed out in section I.1.3.

collected reaches the amount quoted by the concession company in its bid. This method has been applied for motorway concessions in Latin America. The concession company does not have to carry the sometimes difficult to predict traffic risk and the **concession company is strongly encouraged to reduce its costs**, since it has no possibility of increasing the toll charges. It should be pointed out that the government has no prior indication of the termination date for the concession (with the normal system, the end of the concession period is always defined in the initial contract, but this is frequently subject to numerous extension amendments).

II.3 DEFINITION OF TOLL CHARGES

European experience demonstrates that two cases can be considered, depending on whether the road infrastructure is under toll or not (shadow toll method).

II.3.1 Setting toll charges¹⁸

The European countries operating toll systems are Austria, Spain, France, Greece, Italy, Norway and Portugal. Currently, in Portugal and Spain, a maximum toll charge is specified in the concession contract, but the concession company is free to reduce this if necessary. In France, toll charges are set under five-year contracts. Despite this lack of real uniformity, we can consider that the most frequently followed rule links the global evolution of toll charges to the general rise in retail prices (excluding tobacco). Charges are revised annually, within $\pm 15\%$ of this evolution rate. **This rule's legitimacy is of primary importance where toll charge definition is concerned.**

Two methods for limiting concession company annual revenue

Capping the amount of toll revenue. This method has been applied increasingly over the last ten years, due to the incentive it gives to the concession company to achieve greater efficiency. The price practised by the concession company is revised and adjusted at approximately 5-year intervals, according to the rate of inflation plus or minus a predetermined amount. An interesting comparison can be made to public utilities in the U.K., where the price escalation and regulation rule is expressed as RPI-X, where RPI is the retail price index and X represents the estimated future efficiency gain of the concession company. This method is also applied in New Zealand (telecommunications), Argentina and a number of developing countries including Malaysia, Mexico and Peru. One of its drawbacks is linked to asymmetric information between the concession authority and concession company since price regulation is based on the estimated internal efficiency of the company, data which is not generally disclosed by the concession company.

Rate of return regulation. This method is used particularly in Canada, the U.S. and Japan. Public authorities set the rate of return for the concession, which determines the price applied by the concession company. The price is revised when the rate return is different than anticipated. Consequently, this embodies a much weaker incentive factor for the concession company.

It should be kept in mind that these methods of limiting concession company revenue induce different risk sharing between concession authority and concession company. In particular, capping the toll charges means that the latter has to bear greater risks. If production or

¹⁸ Toll charges practiced in Europe are examined in section I.I.3.a.

construction prices rise, the concession company cannot pass on this increase. The additional risk increases the cost of capital, necessitating a higher rate of return (to satisfy investors).

Source: "Price Caps, Rate of Return Regulation and the Cost of Capital", Ian Alexander and Timothy Irwin, *Public Policy for the Private Sector, World Bank.*, September 1996.

In Italy, toll regulations have changed substantially over the last few years. The main change dates back to 1992 when it adopted (law 498) a **"price cap" type formula for the adaptation of motorway charges, accounting for variations in inflation, traffic levels, productivity indicators and the content of the business plans of the various concession companies.**¹⁹ The formula established at the meeting of the CIPE (Interministerial Committee for Economic Programming) on 20/12/1996 was written into the new agreement stipulation between ANAS and Autostrade in August 1997, and will be incorporated in new contracts with the other concession companies. The formula is:

$$\Delta T \leq \Delta P - X + \beta \Delta Q$$

where

- ΔT : applicable toll charge adaptation.
- ΔP : programmed inflation for the year of application of the change.
- X : expected productivity factor (to be determined for each concession company, taking account of a fair return on capital, future investment projects, expected modification of productivity and traffic growth forecasts).
- β : positive coefficient.
- ΔQ : quality of service indicator variation.

Mention should also be made of "intermediate" methods, involving concession fees, tax-related measures, and the combination of the two methods described above. It should also be emphasised that recourse to concession fees should be "moderate", particularly during the early part of the concession period, in order to avoid unnecessarily over-burdening the concession company during this phase. Other means of limiting concession company revenue also exist.

II.3.2 Remuneration of concession companies on a DBFO type basis – the interesting "traffic band" concept

In the case of shadow toll concessions, **the concession companies are remunerated principally on the basis of recorded traffic levels.** Taking the British example, four **"traffic bands"** have been defined (see graph below), each with a specific concession company remuneration rate, as follows:

- 0 to 70 million vehicle km: 9 pence/vehicle km,
- 70 to 100 million vehicle km: 6 p/vehicle km,
- 100 to 130 million vehicle km: 3 p/vehicle km, and
- over 130 million vehicle km: zero remuneration.

¹⁹ Extract from the AISCAT document: "Motorway toll charges and price capping in Italy", ASFA, September 1998.

Remuneration of the concession company is thus capped, as there is no further payment ("**price cap system**") above a certain traffic level (130 million veh.km in the example examined). It should be noted that the concession companies were free to establish their own traffic bands, and their own remuneration rates. These parameters were then negotiated with the Transport Department. Candidate concession companies had access to traffic data recorded on the section in question, or traffic predictions established by the British Highway Agency in the case of new motorways.

The contract (established for a period of 30 years) is such that the concession company is encouraged to carry out motorway repairs efficiently. Payment by the public authority accounts for the traffic levels recorded, as well as the performance of the concession company. Performance can be measured, for example, on the basis of the number of lanes closed to traffic (and the time taken for the repair work), or the measures introduced by the concession company to improve road safety.

II.4 CONCESSION COMPANY SELECTION PROCEDURES AND CRITERIA

Analysis of the replies to the questionnaire issued to the European road administrations reveals that **numerous different approaches are currently employed for the awarding of motorway concessions. The differences between the approaches lie in the criteria adopted for the assessment of bids and the weighing factors applied.** The following table summarises the methods used for the award of concessions in the four countries where the approaches appear to be the most highly formalised.

Concession company selection criteria weighting in four European countries (%)

| | Shadow toll | | Toll | |
|--|--|-----------------------------|-------|----------|
| | United Kingdom | Finland | Spain | Portugal |
| State subsidy | | | 35 | |
| Coherence of concession company financial plan | Criterion: lowest NPV ¹ of payments to a concession company | 90 (for NPV) | 30 | 70 |
| Investment, toll charges, operating costs | | | 25 | |
| Completion dates for execution of work | Technical minimum required (best non-enhanced solution) | 10 (for technical criteria) | | |
| Design | | | 10 | 30 |
| Quality of service/maintenance | | | | |

Source: Table based on replies to the questionnaire issued to the European road administrations

Note: NPV: Net present value for scheduled payments by the highway agency to the concession company.

EC legislation in the contract award domain (see Appendix) **currently makes the award of motorway concessions subject to prior publication obligations. Once these obligations have been met in accordance with the prescribed procedures, submitted bids can be freely negotiated.**

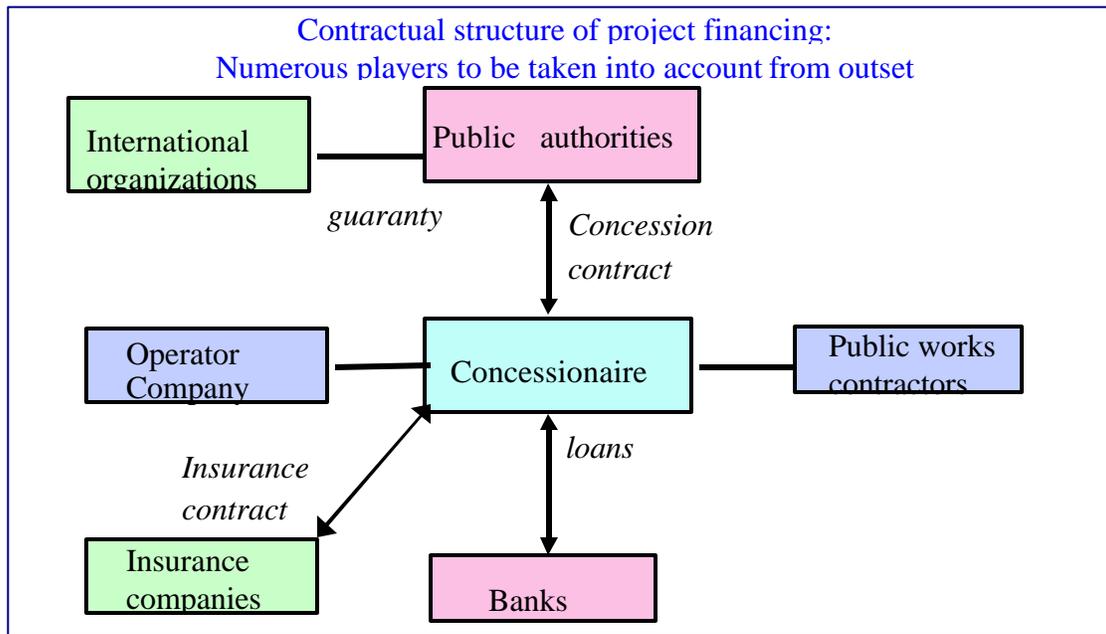
Among the most important criteria adopted by the road administrations are **the amount of subsidy required, the credibility of the financial package, the technical quantity of the project and the operating toll charge policy.**

Criteria are not always quantified or quantifiable. Thus, in many countries, the award of a concession is the result of a compromise between the amount of the subsidy required and the dissuasion effect of a toll on the one hand, and examination of the reputation of the concession company (experience in the domain, references, membership of a large public works engineering group, etc.) on the other. This particularly corresponds to the case in France. **Public authorities consequently attach particular importance to the financial feasibility of the operation proposed by the concession company, also taking account of the dissuasion effect in favour of non-paying infrastructures (but which are also less safe and more highly pollutive) over an excessively high toll charge.**

Selection criteria must be clearly established wherever possible. Furthermore, a renegotiation between the government and the concession company must be planned when signing the contract, in order to reassess environmental, political and traffic-related constraints. The basis for this reappraisal must be agreed at the outset.

At this point, a substantial difference should be noted between the award of conventional work contracts and concession contracts: negotiation is particularly important in the latter. **It should also be noted that the key players involved must be taken into account when setting up a concession arrangement.** Compared to a simple work contract where the employer basically only needs to concern itself with the public works contractor, **a concession contract is a complex mechanism where commercial banking institutions and sometimes international organisations must be brought into the picture as much as possible, from the commencement of negotiations (or even the upstream studies) between the concession authority and concession company, as indicated in the following diagram.**

It is also important to obtain an adequate commitment from the future concession company, for example, in the form of a letter of agreement specifying an initial bond, followed by a "first request guarantee" so that the candidate is genuinely committed (when the actual project has progressed sufficiently far, the guarantee becomes intrinsic and equates to the funds committed to the operation itself).



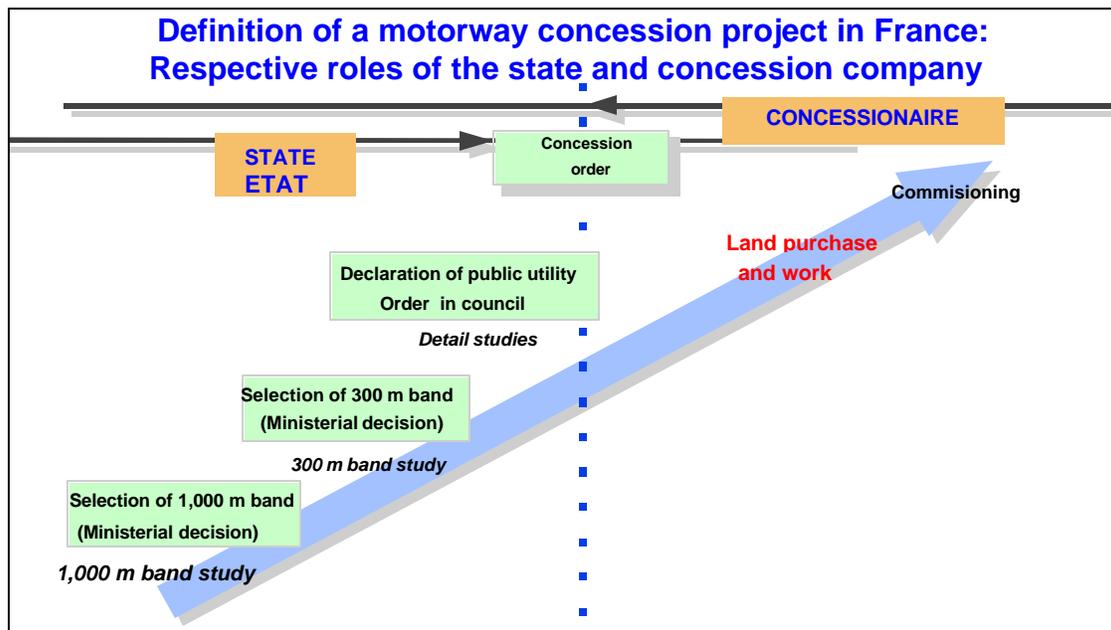
II.5 CONCESSION COMPANY FREEDOM

An analysis of the questionnaire replies shows that **in contrast to a work contract, that the concession company is customarily allowed a certain degree of freedom in the areas of design, execution of the work, toll charge policy and level of service.**

Regarding design, the degree of freedom allowed to the concession company varies from one country to another and depends on the project itself. For example, **in Spain**, the concession company is responsible for feasibility studies, on the basis of a 1/5,000 scale preliminary study provided by the road administration. Award of the concession is based on the preliminary design, after public inquiry and assessment of environmental impact, and it is finally the concession company who defines the construction project. France has a relatively decentralised procedure. At the preliminary design stage (precise motorway route study), the concession company is responsible for the geometrical definition of the total land requirement, interchanges, repair and reopening of existing roads and bridge studies, in collaboration with elected representatives, residents, local associations and administrations. **In the U.K.**, the concept of concession company freedom is particularly important. The advantage of DBFO methods stems from the degree of innovative freedom allowed to the concession company, the transfer of risks to the latter, and the greater efficiency resulting from private management. **In Greece**, the government hands over the project to the concession company upon completion of the preliminary design study and land expropriation, passing on the requisite environmental and archaeological authorisation documents.

Companies generally work on the basis of a preliminary design supplied by the road administration. For the project's execution, **the contract between the government and the concession company is frequently drafted to allow the concession company to introduce innovative ideas. A motorway concession project is necessarily evolutive.** The final characteristics (such as pavement thickness)

can be achieved progressively in order to reduce initial investment, as demonstrated by the concession company Cofiroute in France.



II. 6. SHARING OF RISKS BETWEEN PUBLIC AUTHORITIES AND CONCESSION COMPANIES

II.6.1 *Transfer of risks in the case of a toll concession*

The risk-sharing structure is clearly identified by national road administrations as being essential to the concession contract. But here again, the notion of risk and the actual risk sharing practised between concession companies and public authorities vary significantly from one country to another.

Based on the national road administrations' replies to the questionnaire, we generally observe that **not all risks are the same and therefore must not be borne by the same entity**. This theory is relatively clear: a risk should be carried by the entity best suited to do so. **The ability to control a risk signifies the possession of adequate structural tools for reducing the costs associated with carrying this risk**. Care must be taken to ensure that an entity carrying a given risk possesses the incentive to do so. If the public authority seeks to persuade concession companies to take certain risks which they are unable to control, this will prolong negotiations and increase the level of remuneration demanded by the investors. If, on the other hand, the concession company seeks to disengage itself from purely technical or principally commercial or financial risks at the expense of the government, the utility of the concession should then be re-examined. The transfer of risk from the public authority to the concession company enhances productive efficiency.

In practice, the sharing of risks raises a number of difficulties. It is not always easy to determine to what extent an entity is capable of controlling the risks concerned. In general, the entity should not bear exogenous costs (those over which it does not have genuine control).

It is appropriate at this point to **note the problem of the growing mesh of motorway networks, which is making it difficult to attribute commercial risk.** The growing interrelationship between motorway sections under concession with the same network makes it increasingly difficult for the commercial risk to be borne by the concession companies alone, due to the fact that traffic levels can vary substantially according to commercial policies. Consequently, **the public authorities are increasingly having to play a regulatory role, in particular by providing coordination between the various concession companies.**

Finally, risks are shared not only between the public authorities and concession companies, but also with the public works contractors, operating companies, financiers and insurers (this illustrates the complexity of a concession package where a number of players are concerned). Four categories of risk can be encountered in a concession system:

- **Political and legal risks.** These risks are borne by the government (with guarantees where necessary) and particularly concern three domains: i) natural phenomena, force majeure, war or civil disturbance; (ii) legislative changes; and (iii) changes in government policy, namely changes in regulatory conditions, or the inability of the government to meet its contractual obligations. Even though it is not applied to the western European countries, it should be mentioned that there is a guarantee programme set up by the World Bank to cover both the risks that the financial market cannot bear (except by increasing the project costs substantially) and the government's obligations as expressed in the concession contract. The main characteristics of this guarantee are described in the box below.

World Bank partial risk guarantee programme

This guarantee programme, which is appropriate for the funding of projects such as those involving a concession contract, covers the obligations of the government as expressed in its agreement with the private investor (such as a concession company). This guarantee makes it possible to ensure payment of the debt to lenders, in the event that payment default results from the government's non-compliance with its obligations. **In the concession domain, the government's obligations in question typically include maintenance of the toll charges mentioned in the concession contract, obligations relating to a minimum traffic threshold, and risks associated with monetary conversion (time scale, degradation of macro-economic conditions, legislative changes linked to exchange rates, etc.).** It should be noted that this programme does not aim to cover the commercial risk, but merely to ensure compliance with the obligations of the public authorities as set out in the contract. This guarantee programme has already been introduced for a number of power station projects in Pakistan and there is apparently discussion of extending them to projects in Columbia and Poland.

- **Technical risks.** These are construction-related risks (completion and completion dates, quality, cost of postponement and modification). These risks are borne by the concession company and/or the construction and/or operating companies.

- **Commercial risks.** Commercial risks occur due to uncertainties regarding traffic levels. Commercial risks, defined as the product of toll charge x traffic, are usually regarded as the responsibility of the concession company. However, experience shows that these risks, particularly for new motorways, can be too great to be borne by the concession company alone. Traffic levels must be analysed with care and predictions must be realistic. There is a clear relationship between the establishment of toll charges, the degree of competition (which can be set by the government), and risks associated with concession company revenue.
- **Economic and financial risks.** These risks emanate from uncertainties concerning economic growth, inflation rates, the convertibility of currencies and exchange rates. They are carried by the concession company and the banks.

The following table illustrates the typology of risk sharing in Europe's motorway concessions. This table is restrictive in that it only takes one type of risk sharing into account per country, where in reality the situation can change for each concession project. However, this table demonstrates the **particular risk sharing position involved with a shadow toll system** (which is addressed in detail in section II.6.2), emphasising the **specific cases of Norway and the Netherlands, insofar as technical risks in these countries are borne by the concession authority, not the concession company.**

Analysis of risk sharing for road concession contracts in Europe

| | Force majeure | Technical Risk | Commercial risk | Financial risk* | Concession company remuneration |
|----------|---------------|------------------------|---|-----------------|---------------------------------|
| | | construction operation | (tariff x traffic risk in the case of tolled section or (traffic risk in the case of shadow toll) | | |
| UK | | | | | shadow toll |
| Austria | | | | | toll |
| Belgium | | | | | toll |
| Spain | | | | | toll |
| Finland | | | | | shadow toll |
| France | | | | | toll |
| Greece | | | | | toll |
| Italy | | | | | toll |
| Norway | | | | | toll |
| Pays-Bas | | | | | shadow toll |
| Portugal | | | | | toll |

Source: Questionnaire issued to DERD in May 1998

Note *: not taking account of any state guarantees

Legend: ■ Risks borne by the governmental concession authority

■ Risks borne by the concession company, but substantially supported/limited

■ Risks taken by the concession company

II.6.2 Transfer of risks in a shadow toll system

The logic upon which DBFO systems are based is not essentially financial. The primary objective is to transfer certain risks normally borne by the government to the concession company, so that they are borne by the entity (concession authority or company) best fitted to bear each particular risk. **A direct consequence of this is that construction, maintenance and operating risks are borne exclusively by the concession company.** For example, penalties are automatically applied for defective maintenance or if lanes are closed for an excessive length of time during the execution of

repair work. On the other hand, **the commercial risk (toll income x traffic) is shared.** If the traffic level observed is greater than estimated by the concession company, the latter receives a remuneration (paid by the concession authority) in excess of what was planned, subject to a capping threshold.

Example of public/private partnership for the construction of tunnels in the Netherlands

The Dutch Government has set up private project funding schemes for the construction of two tunnels, with the goal of building more tunnels than possible through budget funding only. In service since 1992, the "Noord" tunnel replaced an existing bridge on a main highway between Rotterdam and the Ruhr in Germany and was the first for which a private funding was planned.

Much attention was paid to relations between the private investor and the Rijkswaterstaat (public works department of the Dutch Ministry for Transport and Public Works), who managed the project and is now responsible for maintaining and operating the tunnel on behalf of the private investor, ensuring compliance with national infrastructure quality standards. The risk sharing between the investor and the government was essential because the Dutch private sector had no previous experience with public/private partnerships. It was therefore necessary to establish a risk profile to enable the investor to assess its commitments. **The objective was to limit the risk relating to total cost for the investor by setting a maximum amount for maintenance and operation over a thirty year period, which means that increases in construction, maintenance and operating costs will be borne by the government and the investor's remuneration depends on the tunnel utilization which is the investor's main risk.**

Source: Netherlands contribution to DERD/WERD, May 1996, for the report on "Road Funding and Organisation of European Road Administrations".

II.7 ROLE OF THE CONCESSION AUTHORITY

The advantage of a toll concession arrangement is that it constitutes one of the best ways to raise and allocate funding sources, not only for motorway construction work, but also for maintenance and operation. This allocation of sources to the highway system generates a debudgetisation effect, which **does not mean that the public authorities have no part to play. Their task is to safeguard the interests of the community (environment, safety, etc.), provide any additional funding as required, and carry certain risks which cannot be borne by the private sector.**

II.7.1 Financial support

Mixed project financing is extremely frequent, since the traffic level required to fund both operation and construction is high. An analysis of the replies to the European motorway concession practice questionnaire clearly indicates that the governments provide **strong financial support for concession arrangements.**

Government assistance for a concession is legitimate insofar as the economic utility of a project is generally greater than its return on equity. The development of infrastructures is a positive source of external benefits (time saving, stimulation of growth, etc.), which create a disparity between return on equity and socio-economic return. A concession contract involves two periods. During the first period, the concession company incurs losses and can pay no dividend, but the second period can be profitable. **Support from the public sector is consequently important, particularly during the start-up phase,**

when it is sometimes difficult to survive cash-flow crises, making it a particularly fragile period.

Financial support from the public authorities can take various forms:

- **financial guarantees;**
- **provision of land or equipment;**
- **repayable advances** (enable concession company to cope with the financial expense of borrowing during construction period until start of operational period and the early operational phase as well);
- **allocation of revenue from an already operational concessioned infrastructure;**
- **participating capital loans (as in Spain, see box below);**
- execution of improvements to facilitate access to the concessioned facility.

Public authority financial support for the concession sector in Spain

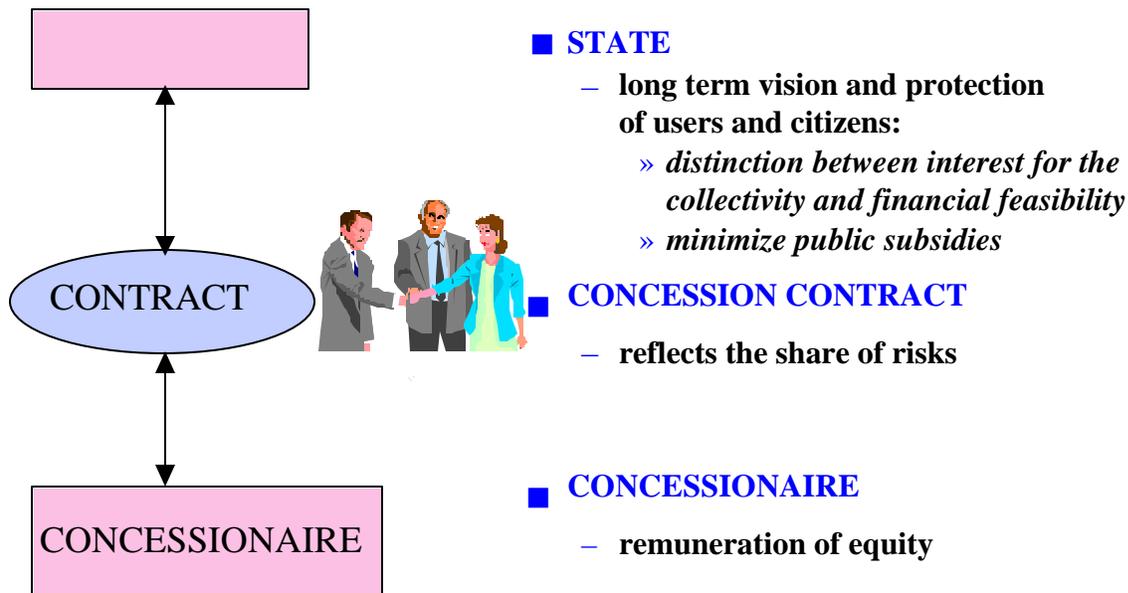
Government aid procedures in force at the present time in Spain are as follows:

- **Repayable advances:** the state advances a given sum which must be subsequently reimbursed by the concession company.
- **Participating capital loans:** sums advanced by the government for the construction of the motorway that must be reimbursed by the concession company in accordance with a pre-established schedule (defined in the specifications, or covered by a bid and consequently stipulated in the contract). This schedule indicates details of government reimbursement by the concession company on the basis of specific traffic conditions (for example, payment of a given sum according to the traffic level, provided this exceeds a certain threshold).

II.7.2 Watchdog for the interests of the community

The public authorities also have a role to play in terms of **protecting the environment and the safety and services provided for road users**. This is only achieved if it is **clearly set out in the specifications** and if the concession is **regularly monitored by the concession authority**. The government must also **carefully integrate the motorway concession system in the global national road network, taking account of priorities in terms of national development and improvements**.

The following graph identifies the main objectives of the concession authority and concession company that are linked by a concession contract.



II.7.3 Risk coverage

The role of the public authorities must be to reduce risk by 1) introducing clear, stable regulatory and tax frameworks and 2) balancing the contract to avoid imposing excessive charges on the concession company (tax, exorbitant concession fee, etc.).

III. SUMMARY

III.1 SUMMARY OF ROAD INFRASTRUCTURE CONCESSION PRACTICES: DIFFERENCES AND SIMILARITIES BETWEEN EUROPEAN COUNTRIES

The first point is that a wealth of experience exists in Europe in the area of motorway concessions: In 1999, **out of a total of 51,242 km of motorway, 17,009 km were concessioned (33%), of which 16,356 km were tolled and 653 km were under shadow toll.** European experience in motorway concessions is recognised world-wide.

This wealth of experience should not hide the diversity of the systems introduced by the various countries. Concession systems differ in terms of the respective roles of the concession company and the public authorities. For example, we have shown that concession companies in Norway and the Netherlands have terms of reference which differ substantially from those in other European countries. Differences from one country to another are also encountered, to a lesser degree, in the **sharing of risks between the concession authority and the concession company.** **This question of risk sharing represents one of the major difficulties for road administrations when setting up concession projects.** **The increasingly dense motorway network is also generating difficulties in commercial risk attribution.** The increasing degree of interrelationship between motorway sections under concession within

the same network is making it more and more difficult for the concession companies alone to carry the commercial risk, since traffic levels can vary considerably according to commercial policies that are defined on an individual basis. Consequently, **the public authorities will progressively be required to play a greater regulatory role. Moreover some bad experiences make the private sector reluctant to bear the commercial risk.**

Formulas for determining toll charges also differ throughout Europe ("price cap" method in Italy, traffic band method in the United Kingdom, etc.). Each of these formulas corresponds to a particular level of risk sharing, and is consequently of genuine interest for all concession authorities.

There are also differences with respect to **concession company selection criteria. In 1999, the main criteria used were: the amount of the public subsidy required, the credibility of the financial arrangement, the technical quality of the project, operating strategy and price policy, and the reputation of the concession company** (inclusion of a construction company amongst its shareholders, etc.).

It also appears that **out of a total of 17,009 km of motorway under concession, 12,461 km are managed by the public sector (73%)²⁰ and 4,548 km by private companies (27%).** There are currently 63 state-owned and 28 private concession companies in Europe. **This prominent position occupied by state-owned companies in motorway concessions in Europe should be kept in mind.**

While the functions of toll systems are both numerous and diverse (channelling of demand, regulation, funding, internalisation of external effects, etc.) it appears that road administrations are increasingly confronted with **the problem of the social acceptability of road tolls.** This depends on five main factors, namely the amount of the toll, collection method, enhancement of user service, presence of free alternative routes, and the possible existence of taxes already allocated to the road sector.

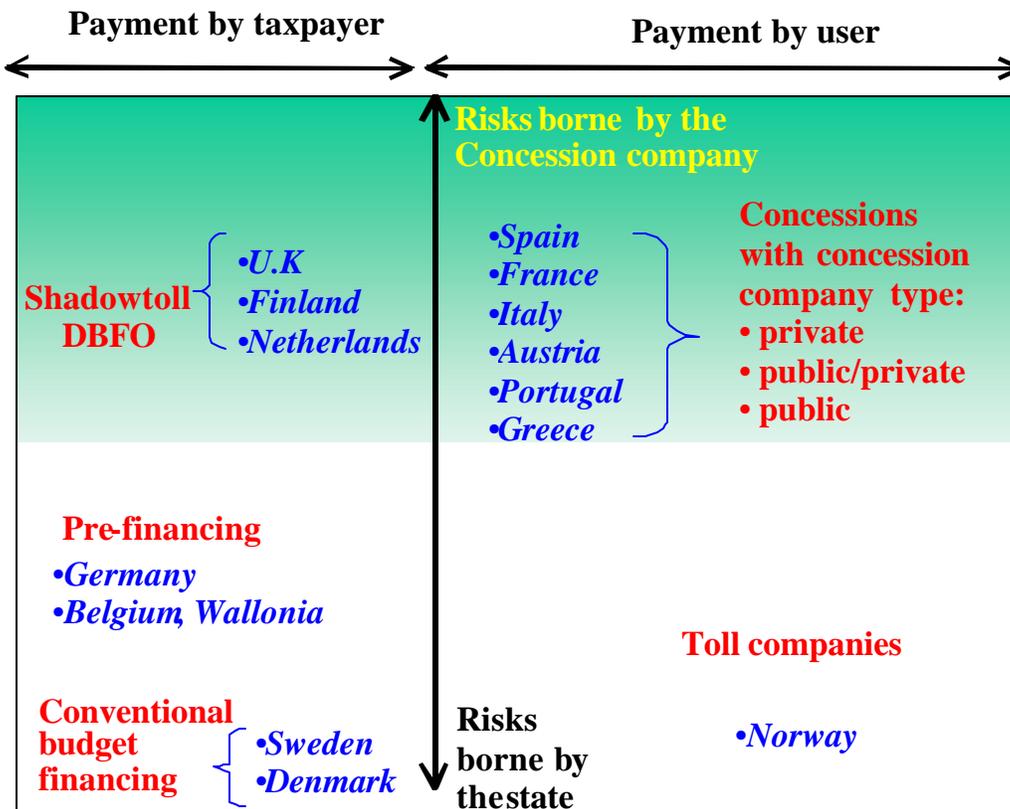
The following graph situates concessions with respect to other types of funding used in Europe (budget, private interim funding, etc.) according to two criteria: payment by the user or taxpayer and the sharing of commercial risks. Two principal conclusions can be drawn:

- **the main criteria used to characterise a road infrastructure concession are the globality of the contract, and the sharing of risks between the concession authority and the concession company. A concession is of interest to the public authorities insofar as the concession company assumes global responsibility for the investment and its subsequent management, and a genuine transfer of risks to the concession company occurs. Indeed, the fact that operating expenses are just as substantial as construction costs is frequently overlooked. On average, operating costs reach about 75% of construction costs after a normal 35 year concession period);**

²⁰ Autostrade, the major Italian concessionaire has been privatized in 2000.

- **there is a borderline zone in the definition of a concession** (shown pale-green in the following diagram) **where there is no real consensus concerning the nature of contracts** (for example, a shadow toll contract involving substantial limitation of the risks carried by the concession company).

Furthermore, it is important to draw attention to the problem of the assumption of commercial risk (toll charge x traffic) in a concession context. In contrast to a simple work contract, the concession company selected by the government bears the financial cost of the investment and carries the greater part of the commercial risk. **Nevertheless, this commercial risk is too great in certain instances to be carried by the concession company alone.** This is the case in particular where the project is integrated in a meshed motorway network. In this situation, any change in price policy for any part of the network, no matter how remote from the project under concession, can have major consequences on the traffic levels recorded in the later stages. The level of uncertainty concerning traffic predictions for new toll infrastructures is generally high, increasing with the length of the concession period (usually around 30 years). **It is therefore advisable**, as suggested in Chapter II, **to control the commercial risk by means of mechanisms incorporated in the contract between the concession authority and concession company (capping the amount of toll revenue collected by the concession company, controlling the rate of return of the concession company, etc.), or to apply a variable concession period. Control of the commercial risk must not, however, lead to the elimination of any incentive in this field.**



III.2 ROLE OF CONCESSION AUTHORITIES

Concession authorities essentially safeguard the interests of the general public, while introducing incentive mechanisms for the concession companies.

The increasingly frequent recourse to private funding for the execution of motorway concession projects must not lead to government withdrawal from the management of road systems. **This study has demonstrated the importance of the role of concession authorities in the successful implementation of concession projects**, whether upstream (project identification, socio-economic studies to measure the interest of the project for the community) or downstream (drafting specifications, negotiating with the candidate concession company, and monitoring the concession up to its termination). It is also important to remember that **it is only the socio-economic return of a project that provides a relevant indicator of the advantage of an investment for the community.**

The feasibility of a concession can be quantified on the basis of the following three factors:

- **the funding constraint** that restrict the possibility for achieving economically profitable investments;
- **the allocation of resources** collected from the user rather than the taxpayer, which leads to a preference for investments that can be funded to the detriment of other solutions that are more advantageous in terms of the economic results for the community, but which ensure their feasibility:
- **the toll dissuasion effect**, which reduces the economic advantage of the development programme.

The increasingly frequent use of private funding must be taken into account when defining the training required by the personnel responsible for monitoring the concessions. **The financial and legal aspects** have now taken on enough importance that they must form a genuine part of the basic knowledge of concession authority personnel.

Finally, it should not be forgotten that in addition to its task of safeguarding the interests of the community, the concession authority (government) must also concern itself with increasing the awareness of citizens, whether or not they are users. In order to ensure the social acceptability of their decisions, it is of primary importance (both for implementation of the "user-payer" principle and for the conclusion of a concession contract for a project with the private sector) that authorities take great care to inform the public beforehand of the reasons for their choice. This has the added advantage of establishing a transparent environment while associating the public with government decisions to a significant degree.

APPENDIX*

EC LEGISLATION RELATING TO CONCESSIONS

Before examining EC legislation applicable to concessions, it is important to note the EC definition of a concession in terms of public works concessions and service concessions.

EC APPROACH TO INFRASTRUCTURE CONCESSIONS (WORK AND SERVICES)

Public works concessions

The European Commission defines a public works concession in article 1d of **directive 93/37/EC**: "a public works concession is a contract having the same characteristics as a public works contract, except that the **consideration for the work comprises the right to exploit the facility only, or this right accompanied by a price**". In this way, the directive defines a concession, to some extent, as a variation of a government contract rather than a separate type of contract, with the distinguishing element being the substitution of the right to exploit the facility constructed or developed by the contractor for the price set by the award procedure and payable by the adjudicating authority to the contractor.²¹

Two criteria are intrinsically linked to the notion of public works concession:

- **the consideration for execution of the work is the right to exploit the facility concerned.** This is the equivalent of saying that a concession contract must include an "operation of the facility" part which is subject to remuneration;
- a concession contract implies the need for a transfer of responsibility (namely the transfer of risk) from the concession authority to the concession company. The latter must be responsible for management of the service concerned, which in this case is the operation of a motorway.

Service concessions

The decisive criterion adopted by the European Commission to distinguish public works concessions from service concessions is whether or not the contract covers the construction of a facility for and on behalf of the concession authority. Thus, any contract covering the operation of an existing infrastructure corresponds to a service concession.

EC REGULATIONS APPLICABLE TO INFRASTRUCTURE CONCESSIONS

The award of a concession is mainly subject to the rules and **principles of the EC Treaty and directive 93/37/EC**. Neither directive 92/50/EC relating to public service

* This appendix is based on EU legislation as of 1999.

²¹ See "Point of view of EC authorities regarding delegated management", J.L. Dewost, Director General of the EC Legal Department, Conference on "Delegated public service management", 14-15 November 1996.

contracts, nor directive 93/38/EC relating to contracts issued by entities operating in the water, energy, transport and telecommunications sectors, contains any specific measures relating to the award of concessions. **The EC white paper on public procurement in European Union (COM 98 (143) of 11/03/1998) and the Commission interpretative communication on concessions under Community law dated 29/04/2000**, throw further light on the applicable regulations by clarifying the European Commission's recommendations for the application of rules of fair competition to projects covering new transport infrastructures, as well as **EC jurisprudence** on this subject.

Rules and principles of the EC Treaty

The following articles of the EC Treaty must be known to public administrations awarding infrastructure concessions:

- **article 12 (paragraph 1) prohibits any discrimination on the basis of nationality;**
- articles 39, 40, 43 and 49 relate to discrimination based on nationality. **Any regional or national preference is prohibited by these articles. The principle of equal opportunity for all candidates with respect to the award of a concession must be followed under all circumstances;**
- article 82 relates to the behaviour of a company holding a dominant position;
- article 86 relates to undertakings entrusted with the operation of services of general economic interest;
- articles 87 and 88 relate to government aid. Subsidies granted by public authorities to concession companies, whether the latter are state-controlled or private, are liable to fall foul of the principle of incompatibility of such aid with the Common Market insofar as they affect intra-community trade and are liable to distort competition.²²

Council directive 93/37/EC of 14 June 1993 ("public works directive")

This directive makes **the award of motorway concessions subject to the obligation of prior publication. Once this obligation has been met, in accordance with prescribed procedures, the bids submitted can be freely negotiated.**

The contracts targeted by the "public works directive" are those with the following characteristics:

²² See "Point of view of EC authorities regarding delegated management", J.L. Dewost, Director General of the EC Legal Department, Conference on "Delegated public service management" 14-15 November 1996.

- **the amount of the contract must be 5 million ECU or more** (excluding VAT). The equivalent value of the this amount in national currencies is revised every 24 months from 1 January 1993 (article 3 of directive 93/37),
- **the purpose of the contract is the execution and/or design of work involving the following professional activities: building, civil engineering, installation, improvement and completion, namely the construction of a facility, by whatever means that meets the needs stipulated by the adjudicating authority** (article 1, paragraph a of directive 93/37),
- **the contract is one which the state or its government departments, other than those of an industrial or commercial character, proposes to conclude, where the remuneration of the contractor consists, in all or in part, of the right to operate the facility** (article 1, paragraph d of directive 93/37).

The obligation is to make the intention to award a concession known by means of an announcement. The adjudicating authorities are obliged to open the contract to competition at the European level by publishing a concession announcement in the form specified in the Official Journal of the European Communities (OJEC), directive 93/37/EC. This announcement must not exceed one page of the OJEC, or approximately 650 words. The model public works concession announcement provided in Appendix 5 to directive 93/37/EC is reproduced in the following box. Publication expenses are borne by the European Community. **The time allowed for submission of bid applications may not be less than 52 days from the date of transmission of the announcement to the OPOEC** (Official Publications Office of the European Communities). This measure applies whether the potential concession company is state-owned or private.

The selection procedure for the concession company is free (with the concession authority engaging in a negotiated procedure).

Model public works concession announcement

1. Name, address, telephone, telex and fax numbers of the adjudicating authority.
2. a) Place of execution.
b) Purpose of the concession: nature and extent of the services.
3. a) Deadline date for submission of bid applications.
b) Address to which applications are to be sent.
c) Language(s) in which applications are to be drafted.
4. Personal, technical and financial conditions to be met by applicants.
5. Criteria to be used for award of the contract.
- ~~3-6.~~ Minimum percentage of sub-contracted work, where appropriate.
- ~~4-7.~~ Other information.
- ~~5-8.~~ Date of issue of the announcement.
- ~~6-9.~~ Date of reception of the announcement by the OPOEC.

The types of contract concerned are those "where the remuneration of the contractor comprises, in all or in part, the right to operate the facility", namely **concessions, lease and similar contracts**, even if part of the remuneration is represented by a price paid by the state-owned or semi-public entity. This only applies to contracts concerning the execution of "any building or civil engineering work", although these rules are not applicable to the excluded sectors.

Contracts issued in turn by concession companies are therefore subject, to advance announcement prior to their issue. Exceptions to this rule of mandatory announcement are made for contracts signed between a consortium formed to obtain the concession and members of the consortium or affiliate companies. The expression "affiliate companies" covers companies under the dominant influence of another company, this influence being assumed in the case of majority voting or capital control, or clauses providing for appointment of more than half of the management, supervisory or governing body. There is no prior announcement obligation in four cases:

- 1) where the work can only be contracted out to a single sub-contractor, for technical or artistic reasons, or reasons relating to protection of exclusivity rights,
- 2) in the event of absolute urgency that is incompatible with the time required for prior announcement and is outside of the control of the entity intending to conclude the contract,
- 3) in the case of additional work, where aggregate contracts for additional work may not exceed 50% of the amount of the main contract,
- 4) in the case of work involving the repetition of similar work already executed. The new work in this case must nevertheless conform to the basic project, and the contract procedure must be initiated within three years. The first contract must also have been issued following an open or restricted procedure, and the possibility of an extension must have been indicated in the initial call for tenders.

The specific problem of backing by collateral. It is not always possible to cover the construction and operating costs of a motorway from toll revenue when traffic levels are low or costs are abnormally high. Furthermore, in all European countries where toll systems are used to fund road projects, initial public support has been necessary for the development of the motorway system. This support has frequently taken the form of equalisation between the resources of existing and new motorway sections. **This raises the problem, at the EC level, of backing by collateral (frequently confused with the extension of concession periods)**, namely the utilisation of toll revenue from amortised motorways to fund new sections. This backing method is used in a number of European countries. However, **this method should be employed with caution. Backing**, which can be envisaged where projects are not financially profitable during the period of the concession, **must be made compatible with certain EC principles, such as equal opportunities for all candidates in a call for tenders.** Finally, backing by extension of a

concession contract may constitute a hidden subsidy, and as such, is a practice that may be incompatible with **rules concerning governmental aid**.

The issue of a European legislation in the area of concession is currently the subject of numerous discussions in Europe

Subsidised concessions

As we have seen, the funding scheme for an infrastructure concession generally involves government aid.²³ A concession involves two phases: during the first, the concession company experiences losses, and cannot pay any dividend, whereas profit can be generated during the second phase. **Government aid to a private concession is legitimate, insofar as the economic utility of a project is generally greater than its return on equity. This type of mixed funding**, namely in the form of a public-private partnership, is extremely frequent because the traffic levels required to fund both construction and operation are high.

Backing and backing-extension: funding road infrastructures which are profitable in socio-economic terms but not financially balanced

In numerous European countries that use toll concession systems, backing and backing-extension methods have been used in the past for the extension of existing motorway networks.

For example, in France, until year 2000, backing a new motorway section with an existing concession has been accompanied by extending the global concession period in order to achieve a financially balanced situation for the new, combined entity.

In Spain, concessions have been extended in exchange for new motorway construction, and on occasion, to offset reduced toll charges as well. The maximum concession period was extended from 50 to 75 years by the law of 30/12/1996, in exchange for a reduction in toll charges to the "European mean" of about €0.06/km.

²³ Funding without recourse to such aid is very rarely observed in road infrastructure project funding.