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INSURANCE OF BOT PROJECTS
a challenge and an opportunity

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Management Summary
This paper deals with the new trend in Infra Structure Projects where Private Companies are formed in order to Build, Own and Operate such projects and later on hand them over to Public Interests, if at all. The paper gives an example of the structure and arrangements made in respect of the development of a Power Plant Project. Furthermore it describes "new" insurance risks accentuated as a consequence of such projects and lists a number of ongoing or completed BOT projects.

Introduction

BOT is the terminology for a model or structure that uses private investment to undertake the infrastructure development that has historically been the preserve of the public sector. There is a growing demand for privately financed investment (PFI) capital for different developments, as the public sector is surrendering more and more of its responsibility and financing of long term investments. "Project finance" is the cornerstone of the BOT approach. It means essentially that lenders look to the project's assets and revenue stream for repayment rather than to other sources of security such as government guarantees or the assets of the project sponsors.

The acronym BOT stands for "build, operate and transfer" or "build, own and transfer" (the terms are used interchangeably). There are a number of variants, please see below. However for the purpose of this paper, the acronym BOT will include all these variations.

In a BOT project, a private company is given a concession to build and operate a facility that would normally be built and operated by the government. The facility might be a hospital, power plant, airport, bridge, toll road, tunnel, water treatment plant, communication systems to name a few. The company is also responsible for financing and designing the project. The shortage of public funds and lack of efficiency in the economic areas hitherto managed by the public sector has caused the latter to privatise state, regional and municipal areas and to limit its activities to licensing and controlling these areas. Since the public sector is also refusing to take over financial risks and private investors must limit their commercial risk, this trend towards easing the burden on the state has made it necessary to provide comprehensive insurance cover.

In the usual structure of a BOT project, the government decides on the need for the project and its scope, requires that the design, performance and maintenance of the project be tailored to the objectives and selects the private sponsors by means of an appropriate bidding or evaluation process in order to arrive at a price that is fair to both the government and the sponsors.

So called operator models have acquired outstanding importance in the realisation of privately financed infrastructure projects. These projects are financed, built and operated by private companies which, where applicable, deliver the product at a predetermined price and in predetermined volumes to a public customer; in certain cases, they finally transfer the plant to the public authority at the end of the agreed period of operation and following amortisation of the borrowed capital.

A number of BOT projects have already been successfully completed and put into operation, and many others are in the "pipeline".

Variants include BOO (build, own and operate, i. e. without any obligation to transfer); BOR (build, operate and renewal of concession); BOOT (build, own, operate and transfer); BLT or BRT (build, lease or rent and transfer); BT (build and transfer immediately); BTO (build, transfer and operate); possibly subject to instalment payments of the purchase price); DBFO (design, build, finance and operate); DCMF (design, construct, manage and finance); MOT (Modernise, own/operate and transfer); ROO (rehabilitate, own and operate); ROT (rehabilitate, own and transfer).

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Summary -Key points

- BOT is the terminology for a model or structure that uses private investment to undertake the infrastructure development that has historically been the preserve of the public sector.
- Since the public sector is also refusing to take over financial risks and private investors must limit their commercial risk, this trend towards easing the burden on the state has made it necessary to provide comprehensive insurance cover.
- It is a typical feature of these projects that the sponsors invest relatively little equity capital in setting up a project company which then borrows funds for the specific purpose of the project without the sponsors being liable for repayment of the loan (non recourse financing).

- Due to the different interests of the various parties involved, this seemingly simple concept results in a convolution of complex contractual agreements in practice, all of which are variously interlinked and designed to ensure that the banks financing the project are prepared to accept the credit risk although the borrower is only a project company with relatively little equity capital and the sponsors assume little or no liability for its debts.

- The art of financing BOT projects lies first and foremost in drawing up a complete and realistic analysis of the risks associated with the project minimising these risks, appropriately sharing the residual risks between the parties concerned (sponsors, lenders, suppliers, purchaser, host country) or, if this proves impossible, passing them on to the insurers. The construction phase is particularly critical. § It is a particular feature of BOT schemes that the project company must bear the risks associated with the project for a very long time despite the slight financial resources available to it. It therefore requires correspondingly long term and comprehensive insurance cover which can only be offered on the basis of a careful risk appraisal:

- No recovery can normally be taken against the consultant as he is employed by the contractor and therefore included as an insured party. The risk relating to faulty design is therefore normally higher in a BOT project.

- In a BOT project the principal and contractor are normally the same party or are to be found within the same project company. Therefore there may not be a formalised hand over procedure and problems can therefore occur if a loss happens during this "risk transfer phase", and in particular if partial hand over occurs. This problem can be further amplified for erection projects where the definition of commissioning and operational phases is not clear.

- In a BOT project major manufacturers are normally also contractors and therefore an insured party, passing the manufacturers risk to the project company. Recovery action is therefore not readily applicable in respect of manufacturers warranties.

- As the BOT project progresses, the viability may be in doubt due to changes in technology, economical or political environment which could provide incentive for collusion to "construct" a major loss, particularly as the set up of the project company have limited financial obligations.

- Inclusion of financiers amongst insured parties are frequently asked for. This should not be agreed as this provides risk increase to the insurer. However if they are to be included, the underwriter should request a copy of the risk assessment performed by the financiers.

- Not only is the complex nature of the construction risk an issue, but also the significant exposures, often in the hundreds of millions of dollars, which has to be addressed. However a number of BOT projects have already been successfully completed and put into operation, and many others are in the "pipeline".

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Example - Development of a power plant project

Rapidly growing population levels in developing countries have created a large demand for new power plants and the modernisation of existing plants. This in turn demands immense capital expenditure which is increasingly being provided by private investors. It is estimated that independent power projects (IPP) will account for around 40% of the total power plant investments in the year 2000

We will explain details of the procedure using the example of power plant projects. in the case of an operator model, a public utility which is unable or unwilling to invest in building its own power plant, invites private investors to finance, build and operate the power plant from which it simply buys the electricity. The private operator uses the income earned from the sale of electricity to the utility to cover his own costs, including repayment of the loans.

Operator models now come in a number of different versions. One thing common to all is that they concern individual projects which are to be operated on a private scale. If the main sponsor is a private power plant operator, they will primarily be interested in long term ownership of the plant. Such sponsors will prefer the BOO version in which the transfer of ownership to the public utility, for example, remains open and the period of independent utilisation depends on the service life of the power plant. In the case of a BOT project, it is contractually agreed from the outset that the power plant will be transferred to the public utility after 15 or 20 years, for example. Depending on the national legislation governing privatisation of the power generation industry, privately financed projects may also have to take the form of BLT, where the company that has financed and erected the power plant does not own it, but leases it back from a public utility.

Once a potential project has been identified, the developer searches for partners with whom to share the risk and development costs. Together with these partners, he sets up a sponsoring group which then investigates the proposed project in detail: its feasibility is analysed in financial, technical, legal and ecological terms. If the project is found to be viable, an offer will be made to the regional utility, in fierce market competition. The most important item in the offer and the subject of negotiations will be the price at which the sponsoring group offers to supply electricity for the public grid operated by the utility. If the group is chosen as the preferred partner for the subsequent phases or if it already holds a power generating licence, then work can go ahead on actually developing the project. This stage does not yet constitute an award of contract in the classical meaning of the word, for a customer ordering construction of the power plant still does not formally exist. The traditional relationship between customer and contractor recedes into the background when a BOT project is conceived and is instead replaced by a comprehensive system of contractual agreements at the heart of which lies the project company to be founded by the sponsors independently of the public utility.

When the project company is set up, the group of sponsors normally becomes an association of shareholders who must agree on their respective capital contributions with which to finance the company. The latter's liability will normally be limited. The shareholders' rights and duties with regard to erection and administration of the project company are set out in the Articles of Association, together with the specifications concerning its management. It is an essential security principle here that the capital contributions to be paid are in principle limited to the sums specified in the Articles of Association.

In traditional financing schemes, the lenders insist that the project's sponsors retain permanent and unlimited liability for the borrower's liabilities. This does not apply to the financing of BOT projects. It is a typical feature of these projects that the sponsors invest relatively little equity capital in setting up a project company which then borrows funds for the specific purpose of the project without the sponsors being liable for repayment of the loan (non recourse financing). This means that the sponsors do not have to report the project company's liabilities in their own balance sheets. The interest rates and repayment instalments for the loans are taken from the project company's cash flow. In **many cases, however, the banks providing** the capital insist on interim models, particularly on the sponsors' liability until completion of the project.

Due to the different interests of the various parties involved, this seemingly simple concept results in a convolution of complex contractual agreements in practice, all of which are variously interlinked and designed to ensure that the banks financing the project are prepared to accept the credit risk although the borrower is only a project company with relatively little equity capital and the sponsors assume little or no liability for its debts.

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Parties concerned and their interests

The **project company** lies at the heart of the financing for a project. It represents the legal instrument allowing the shareholders to realise their project with a very much lower risk of being called on themselves. In other words, the project company pursues the common interests of the shareholders. However, the banks are also interested in its ability to survive so that repayment of the loans and the interest payments can be guaranteed. In this respect, the banks also counteract any instrumentalisation of the project company for particular interests.

This is a common risk because the **shareholders** in the project company are normally identical

with the contractual partners of importance, except in the case of sponsors with a purely financial interest. In the case of an IPP, this applies in particular to the plant suppliers, as well as the fuel suppliers, the operator and sometimes also the energy purchaser. Although they are all interested in the project company's ability to survive, they all pursue their own personal interests when concluding the respective performance contracts.

The project company's shareholders have a number of objectives. First of all, they want to develop new potential sales for their products and acquire additional experience for their own business. As shareholders, they may be able to influence the terms of the contractual agreements. They will make every effort to keep the associated risks at a manageable level, particularly in developing and threshold countries. Their own balance sheet must also remain free from notifiable risks. They also hope to receive an attractive return on equity.

States, regional governments or public authorities often initiate privately financed implementation of an infrastructure project when it becomes clear that they themselves lack the competence and funds required. Their primary interest is to assure the project's realisation without surrendering their interests. Developing countries must import know how in the long term, and the employment of national forces is normally also a basic condition for precisely this reason. In many cases, the state or the authority can additionally insist on being granted the option to purchase or take over the project free of charge at the end of the time required to repay the loans. That is the concept underlying the BOT projects proper.

The **banks** do not usually hold shares in the project company. They provide tailor made financing for the project in question. Interest payment and repayment commence when the plant is commissioned. What the banks are interested in is obtaining attractive interest rates with calculable risks. The more difficult it becomes for the banks to seek financial recourse from the sponsors and the project company, which can normally only be held liable to a very slight extent, the more important it becomes for the banks to ensure that the project company passes the existing risks on to its suppliers and customers or obtains insurance cover for these risks and that the project is implemented on schedule, otherwise the regular cash flow from which the loans are to be serviced cannot be assured.

The companies doing business with the project company all wish to obtain the best possible financial conditions and assume as few risks as possible. The same also applies to the **plant suppliers**, the **suppliers of raw materials**, **auxiliaries and fuel**, the **operator** and the **energy purchaser.**

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Project risks

The art of financing such projects lies first and foremost in drawing up a complete and realistic analysis of the risks associated with the project minimising these risks, appropriately sharing the residual risks between the parties concerned (sponsors, lenders, suppliers, purchaser, host country) or, if this proves impossible, passing them on to the insurers.

The construction phase is particularly critical. This is a phase in which considerable own and borrowed funds are spent without the project generating any cash flow and in which its technical and economic viability have not yet been ascertained. The borrowed funds are not yet serviced during this time. As a rule, the sponsors assume direct or indirect liability in the form of a completion guarantee until the project has been implemented completely. The **construction risk** routinely constitutes the biggest uncertainty in project financing. In particular, it includes delays in completion, for instance due to intervention by licensing authorities, and non conforming execution of the construction work, non compliance with performance characteristics of the power plant and exceeding the budgeted investment costs. So that they can give the banks a completion guarantee, the sponsors demand corresponding warranties from the plant suppliers with whom incentives are agreed in the form of penalties or a system of credits and debits to ensure compliance.

The **operating risk** essentially includes technical faults and operating defects resulting in non delivery or non performance to the purchaser. The operating risk commences with completion of the commissioning phase and must be precisely distinguished from the completion risk in a contractual agreement.

Both these risks are also influenced by the **development risk** The growing competitive pressure means that more and more technological solutions are appearing on the market which have not yet been fully developed and tested thus aggravating the completion and operating risks. The development of gas turbines is a striking topical example.

Commercial risks primarily involve the risk of supply and sales, as well as the associated price and currency risks. Inadequately secured buying and selling prices, as well as disparities arising between the financing currency and the currency making up the revenues from the sale of electricity are typical sources of deficits.

Political risks are particularly difficult to quantify. They need not always take the form of direct state intervention, including expropriation in extreme cases. Such problems as political strikes and temporary civil commotion usually remain manageable and can be compensated. Several years of civil war or an overthrow of government in the host country, on the other hand, are almost impossible to control.

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Contractual agreements

The **Power Purchase Agreement** between the project company and the energy purchaser, normally the regional public utility, lies at the heart of the contractual system in our BOT example of an IPP. This agreement governs reliable payment for the electricity, preferably in hard currency, at least until the bank loans have been repaid. Normally earnings from the sale of electricity (and through infrastructure projects in general) are only in local currency. In many cases, however, loans for external financing and the investors' capital contributions are paid in foreign currency. The host country is consequently expected to give certain assurances with regard to conversion and transfer of the revenues.

In addition, the agreement also ensures payment for as much electricity as the plant is contractually scheduled to supply and is actually available, even if it is de facto not claimed in full for some reason this is known as the pay if tendered principle. It is not uncommon, however, to find that the payment is made up of two components. A so -called energy charge is owed for the electrical work actually claimed: this charge must cover the variable costs, ie. the operational payments associated with the operation and maintenance agreement, as well as the fuel costs. In addition, the purchaser undertakes to pay a so called capacity charge for the power plant's availability. This charge must cover the debt service, the fixed costs under the management agreement, other non-variable costs and, if possible, a return on equity. The capacity charge is frequently defined on the basis of an agreed minimum power production below the plants nominal capacity.

The power purchase price is one of the most delicate parameters in a BOT model. It constitutes the sole source of income for the project company and cannot, unlike in the case of a large traditional utility, be balanced out in the compensatory pricing of a large network of power plants. The electricity price must not only cover all the costs, but should also yield a profit for the shareholders in the long term. At the same time, it must be sufficiently attractive for the power purchaser to pose a viable alternative to own investments. The situation becomes even more critical for both creditors and owner if the electricity rating system into which the project is to be integrated is subsidised by the state. It cannot always be guaranteed in such a situation that the purchase agreement will survive for the required length of time.

Credit agreements are concluded between the project company and the banks. In addition to the subscribed equity capital, the project company must borrow sufficient funds to discharge its payment obligations (e.g. towards plant suppliers) and to ensure that the power plant can be completed within the scheduled period of time. As a rule, equity capital accounts for between 15 and 25 percent of the total investment capital, i.e. between 75 and 85 percent are externally financed.

Very few generally applicable statements can be made with regard to the prerequisites to be met for financing BOT projects. The risk profile of the project, the safety concept and insurance programme proposed by the sponsors, as well as the political willingness of the country to support and possibly give guarantees (e.g. with regard to foreign currency transfers) for privately financed power projects, are just a few of the aspects which a lender must consider very closely before providing funds.

The **Operation and Maintenance Agreement** concluded between the project company and a power plant operator governs the plant's day to day running. Choosing an experienced partner and contractual rulings will help to assure the warranted availability of the power plant. As a rule, the operator will also be a shareholder in the project company and in some cases a member of the main contractor's group.

The **Fuel Supply Agreement** is essentially concluded between the project company and the fuel supplier. It is normally concluded on a long term basis in order to ensure regular fuel deliveries and constant prices. Fuels include oil, gas and coal. In the case of hydroelectric power plants, the agreement will also include specific water utilisation rights.

In many cases, this agreement also constitutes a strict purchase obligation. For example, if the output of a natural gas field is intended for the long term supply to a power plant but the plant cannot operate on account of technical problems, then the agreement may oblige the operator to pay for the scheduled delivery volume even if it cannot be claimed the "buy or pay" principle.

The **plant delivery contract** is the real objective of the construction companies' efforts. It is concluded between the construction consortium and the project company and normally takes the form of a turnkey contract with fixed price (including index clause).

All these contractual agreements as a whole reflect the complexity of the project financing discussed here. The same terms and conditions cannot always be agreed with all the various contracting partners and one contract may consequently give rise to payment obligations while another lacks the corresponding form of remuneration.

All the above agreements must be submitted to the banks before coming into force. One of the most commonly used phrases in the negotiations preceding conclusion of the agreements is that they must be acceptable to the lenders.

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Insurance

1. General Aspects

It is a particular feature of BOT schemes that the project company must bear the risks associated with the project for a very long time despite the slight financial resources available to it. It therefore requires correspondingly long term and comprehensive insurance cover which can only be offered on the basis of a careful risk appraisal, expert control by means of inspections during the term of the contract and highly specialised risk based know how for determining the direct insurer's and reinsurer's prices and terms and for handling losses.

The insurance scheme extends, in chronological order, to the following covers, as well as to a number of conventional insurances which are frequently taken out directly by the project company's shareholders or customers.

- Professional liability insurance to cover the risks of the independent project developer. This insurance does not normally refer to individual projects, but is concluded in the form of annual policies covering all the developers business. For this reason alone, it must be treated separately from the covers provided for erection and operation

Required by the project company during the erection phase:

- Marine insurance for delivery of the plant parts from the manufacturers, plus

- Marine consequential loss insurance in the event that plant completion is delayed due to loss or damage of plant parts in transport.

- CAR and EAR material damage insurance, to cover all risks during construction and commissioning of the plant, plus

- CAR and EAR liability insurance, as well as

- CAR and EAR loss of profits insurance, for financial losses suffered due to delays in completion as a result of insured material damage during construction or commissioning of the plant.

The loss of profit covers mentioned above are internationally known as "Advance Loss of Profit (ALoP)", "Advance Consequential Loss (ACL", "Delay in Completion" or "Delay in Start up".

- Credit insurance is required by the suppliers of plant parts in order to assure payment for the deliveries made. This is consequently a form of insurance against insolvency of the project company.

Required from the start of commercial operations:

- Fire material damage insurance plus

- Fire loss of profits and

- Machinery insurance (possibly with guarantee cover, see also 7.2.3 below) plus

- Machinery loss of profits insurance, as well as

- Comprehensive general liability insurance and possibly also

- Environmental liability insurance.

As these covers have to be precisely matched to each other, it would undoubtedly be desirable for the project company to obtain as much as possible of this insurance scheme from a single source. That would ensure a smooth transition from one risk phase to the next without interfacing problems between them. The financing banks also insist that comprehensive insurance cover is at least planned from the beginning of the project right through to the operating phase. What speaks against insurance from a single source is that these forms of cover are traditionally underwritten by different markets and company departments and that manufacturers, carriers and operators may engage their own brokers or company insurers. Moreover, local insurers normally play a larger part in operational covers than in the covers provided for the construction phase. Nevertheless, the parties bearing the main risk will always attempt to obtain their insurance cover for such BOT projects from a single source where possible.

In line with the BOT concept, the classical transfer of risk to the purchaser or licensee does not take place to the full extent when changing over from the construction to the operating phase. The full risk remains with the project company, which is responsible for both the construction and operating phase, even if the contractors responsible for construction and the plant operator give the project company certain guarantees. In other words, the project company remains the primary insured throughout, with varying subcontractors co insured during the construction and operation phases.

The scope of the various covers required is normally very wide and must be reviewed with regard to its feasibility. Even if the projects concerned are not very large, attention must be paid to the accumulation of risks from the individual covers, particularly as regards property and loss of profits insurance, but above all if inclusion of natural hazards (windstorm, flood and earthquake) has also been requested for the loss of profits covers.

The **insurance costs**, including insurance through the period of operation required for

amortisation, are usually required before the project is launched so that the overall costs and income for the project can be estimated.

As regards the insurance of transport and erection, a firm offer is normally made and agreed by negotiation when all the requisite information has been compiled. In the case of the subsequent operational covers, however, only an indication should be given at this early stage. The ongoing operational cover should then be assessed based on normal U/W principals before inception of cover and should remain subject to annual renewal.

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2. Special risk considerations

2.1 Professional indemnity

In a normal project organisation for a construction/erection project the consultants are engaged by the principal but generally are not included as insured parties under the construction/erection policy. If any loss caused by faulty design occurs, the insurer or principal can attempt to seek recovery from the consultant and the professional indemnity insurance cover would normally respond.

In a BOT project however the project organisation is different in that a consultant is normally employed by the contractor or is part of the project company and therefore included as an insured party under the construction/erection policy. No recovery can therefore be taken against the consultant. This means therefore that the risk relating to faulty design is normally higher in a BOT project.

Different alternatives exist in order to handle this risk:

1. Strengthening the design exclusion not only to exclude the faulty design but also the resultant damage.
2. Increase the deductible for faulty design and related losses.
3. Increase the Premium.
4. Combination of 1, 2 or 3.

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2.2 Hand over (Risk transfer from construction to operation)

In a normal project organisation the principal will take over the responsibility of a project from the contractor after certain contractual conditions have been fulfilled. A formal procedure is normally in place where acceptance of the project is acknowledged in writing.

In a BOT project the principal and contractor are normally the same party or are to be found within the same project company. Therefore there may not be a formalised hand over procedure. Problems can therefore occur if a loss happens during this "risk transfer phase", and in particular if partial hand over occurs. This problem can be further amplified for erection projects where the definition of commissioning and operational phases is not clear. If a loss happens it can be difficult to establish which cover, deductible and time excess to apply to the loss. The "principal/contractor will select the most favourable option and claim under this. It is therefore important that there is agreement between the insured parties in order to establish the requirements for hand over before a loss occurs and this agreement is reflected in the policy.

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2.3 Manufacturers warranty

For erection type projects the contractor and the manufacturer are often the same. If a machine fails during the operational phase, the principal or his insurer can normally seek recovery from the manufacturers warranty. In a BOT project however, the manufacturer can also appear as an insured party passing the manufacturers risk to the project company. Recovery action is therefore not as readily applicable.

Different alternatives exist in order to handle this risk:

1. Exclude damage due to faulty manufacturing.
2. Increase the deductible for faulty manufacture.
3. Increase the premium.
4. Combination of 1, 2 or 3.

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2.4 Moral exposure

As the full risk remains with the project company and is not "handed over" in the traditional sense from contractor to principal, the potential for collusion to "construct" a serious loss may be increased. As the project progresses, the viability may be in doubt due to changes in technology, economical or political environment which could provide incentive for such collusion, particularly as the set up of the project company have limited financial obligations.

In order to off set this exposure, it is essential to study the financial model and pay major attention to the political climate, in the country in which the project is developed.

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3. Financiers

The banks perform their own risk analysis on the project concerned in order to secure their loans. As a rule, they also insist on obtaining a completion guarantee from the project company or the latter's contractors and in some cases even demand direct payment guarantees from the sponsors until the plant is completed.

Assessment of the risk by insurance underwriters would be assisted by a copy of the risk analysis performed by the banks.

The assignment of claims associated with the project contracts constitutes another major form of security for the banks. In some cases, this is also demanded by the banks in conjunction with the insurance contracts, for instance in the form that indemnities exceeding a certain amount must be paid directly to the banks by the insurers (Assignment Clause, Loss Payee Clause). This basically does not represent a complication for the insurer in connection with a multiple insureds policy.

It is not unusual that the banks request to be included as co insureds in the policy. This is not welcomed by the insurers, since the banks are not directly involved in the implementation of the insured project, therefore do not bear any execution risk and cannot exert any influence on the measures taken to avert or minimise losses. In other words, they generally cannot provide direct support for the common interests of insurers and insureds.

If the banks are listed among the insureds nevertheless, this gives rise to a particular problem if one of the insured parties violates its obligations under the policy. In the case of a multiple insured insureds policy (or composite insureds policy, as it is also known), such a breach of contract (vitiating act) by one of the insureds can lead to the following result:

- The insurer is exempted from obligation to indemnify losses suffered by that party;
- The breach of contract does not affect the insurer's obligation to indemnify the other insureds who have not committed any such vitiating act; and

- The insurer can seek recourse against the party responsible.

In the event of such a vitiating act, however, the insurer should not accept that the obligation to indemnify also includes the banks. The Multiple Insureds Clause introduced on the market by the London Engineering Group has been worded accordingly: "In the event of any vitiating act committed by any one or more insured parties, the lenders shall not be entitled to any indemnity under this policy for or arising from loss or damage in respect of which insurers are otherwise no longer liable to indemnify...".

Nevertheless, the banks occasionally demand indemnification by the insurers in such cases, even when they are not co insured, if the party primarily liable for the loss or damage cannot meet the financial consequences. Clauses such as the Non invalidation Clause or Non vitiation Clause have been formulated for this purpose. These clauses or corresponding formulations, as found in bankers or lenders clauses, as well as in some broker policies, should not be agreed as they provide risk increase to insurers.

The London market offers a separate "Lenders Non vitiation Insurance" providing special protection of the banks' interests in the event of vitiating acts.

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4. LoP insurance

Loss of profits insurance is a matter of particular importance for the banks and for the project company due to the normally high proportion of external financing of BOT projects and the scarce financial resources of the project company. These policies always only apply to interruptions or delays in operation due to an indemnifiable material damage loss.

One of the problems associated with these policies is that delays in different stages of the project, sometimes in very early stages, can have a full impact, a partial impact or no impact at all on completion of the project. It is not easy to say how, for example, a transport loss at the beginning of the project will ultimately affect the commencement of commercial operations if the event is separated from the start of operation by long construction and commissioning phases, some of which entail their own loss of time or time gain in relation to the original project timetable.

Such covers consequently require particularly close monitoring of the project's development by the insurer. This can only be achieved with the aid of the detailed project timetable and its regular updates. Projects can be monitored more easily if at least the insurance for the transport and construction phases comes from a single source.

The problem is intensified if a Suppliers Extension is included in the ALoP policy. This is occasionally requested for the main plant components so that delays due to material damage during production by the manufacturer are also insured. Such an extension is unfavourable to the Construction insurer, as he is normally not the component manufacturer's insurer and can therefore only assess the manufacturer's facility with difficulty and can rarely exercise any influence following an insured event.

To adequately manage this added exposure, restriction of cover to fire and perils would be desirable, as significant accumulation of hazards maybe present, such as earthquake, flood, windstorm, etc. In any event specific enquires in respect of these natural hazards are recommended.

The Suppliers Extension is sometimes also requested with regard to the delivery of fuels. This can be taken into account in individual instances, but the feasibility of accumulation control must be verified here in particular. In the case of natural gas, for example, only fire and allied perils should be covered, without granting Extended Coverage.

Since the majority of complex plants are completed at least slightly later than scheduled, it is not uncommon to find correspondingly long time excesses of around 60 days for LoP covers for construction. For operational LoP covers, a time excess of 7 to 30 days is more typical, but apply to each event rather than cumulatively as is customary for the construction phase.

The project company's direct interest in LoP covers is often nothing more than to assure the interest payments and repayment instalments agreed when taking out the loans. If these are the only fixed costs to be insured, they are preferably expressed as a percentage of the gross profit. In many cases, the full gross profit is insured. Security for the capital repayment to the sponsors is sometimes also insured. When adjusting claims, the insured must always prove that these sums would indeed have been earned, if the loss had not occurred, for a valid claim to exist.

The cost of consumables, such as fuel, is sometimes also to be included in the LoP cover, and this only in so far as they are fixed costs, i.e. in the case of the above mentioned Buy or Pay. These costs would then have to be added to the LoP sum insured.

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Examples from the field of construction/erection insurance

1. Linking of existing freeways by tunnels and bridges, Australia

Australia's largest private sector infrastructure project is currently underway in Melbourne.

Linking three major freeways, upgrading a further two, construction of tunnels and bridges under and over the Yarra River, it will improve access to the seaport, airport, rail terminals and the central business district.

Commenced in 1996 and to complete in 2001, the A$1.8 billion (US$1.4 billion) project will be designed, built, financed and operated by Transurban City Link Limited, a consortium formed for the project.

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2. Combined - cycle power plant with integrated asphalt gasification, Italy

The shareholders in this joint venture (Fig. 3) are an Italian refinery, the Swiss general contractor and other manufacturers. The interest of the refinery in this project is to set up a profitable system of disposing of asphalt, which is the residue from the refinery process.

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3. Steam power plant, Indonesia

The project company formed by manufacturers, contractors and future operators obtained loans totalling approx. US$ 1,900 million with a term of 10 years from various banks.

The project company has concluded a 30 years power purchase agreement with the state-owned utility.

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4. Water supply project, Turkey

The Izmit water supply project is the first BOT project in Turkey. Its objective is to supply water to 1.5 million households and industrial companies in the town of Izmit and its surroundings, 100 km Southeast of Istanbul on the Sea of Marmara.

The project was launched in 1987 when the state owned water company found itself unable to continue financing construction of the dam which forms part of the project. Purely private financing of the project, for which the investment costs are estimated at US$ 860 million plus US$ 60 million reserve, was completed in April 1996. US$ 130 million was contributed by the project company itself.

Commencement of the project had been severely delayed by problems relating to the financing, the agreement of repayment guarantees, and major legal problems with this first BOT project in Turkey.

Izmit Su will sell the water to the city of Izmit. The Turkish Finance Ministry has guaranteed both the city's payment obligations, if it fails to purchase the agreed volumes of water, and servicing of the loans if Izmit Su proves unable to do so.

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5. Channel Tunnel, UK and France

The largest BOT project to have been realised to date was for construction and operation of the tunnel under the Channel linking England and France. The project company Eurotunnel was set up as a stock company by the two licensees The Channel Tunnel Group Ltd. and France Manche SA. The Eurotunnel shares are traded on the stock market. In January 1986, Eurotunnel was commissioned by the British and French governments to design, finance, build and operate the tunnel with a licence until the year 2042.

The tunnel's construction and operation were financed by share capital totalling £ 1,600 million plus external financing to the sum of £ 6,800 million provided under a credit agreement backed by 208 banks. Public sector financing is prohibited by law; Eurotunnel is a purely private company.

The construction work was scheduled for 1987 to 1992, but was delayed by two years. Commercial operations commenced in April 1994.

The insurance concept comprises two separate policies for construction and operation. The main insureds are made up of all the named companies, the two governments and the banks.

The construction phase, with a sum insured equal to the contract value was insured under a single policy with CAR and Delay in completion cover as the main elements. Despite the delay, the Delay in completion cover was not utilised, since the delays were not due to indemnifiable material damage. The direct insurance for the construction phase was shared equally between British and French insurers with one French and one British leader.

Due to the difficult financial situation resulting from the tunnel's belated completion and the unexpectedly slow pace at which the tunnel was utilised, the banks granted Eurotunnel a moratorium on its interest payments. This moratorium was maintained by the banks following a major loss, since this loss is essentially being borne by the insurers.

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6. 2000 Olympic Stadium, Australia

A complex contractual arrangement has been formulated whereby the finance, design, construct, operate and maintenance of the main stadium for the Millennium Olympic games in Sydney is to be carried out by non-government funds. Stadium Australia Group Ltd (comprising the Trust and Stadium Australia Management) is to build Stadium Australia and operate it for 30 years. It will seat 110,000 spectators during the Olympic games and Para Olympic games, then be re-configured to seat 80,000 for football, other sports and special events.

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Sources: 7, BOT Guidelines, 1996 H.D. Bott Siemens Zeitschrift 3 4 (1992) 22. K Bohlhoff, M. Hentzen, Energiewirtachaftliche Tageafragen AA, No. 12 (1995) 751. Fig. 1: Fichtner, Forum Institut, 14 15.11.1996, Berlin. Fig. 2: Lome Parker. Bechtel Corp. Risk Management Conference 1996, Barcelona.

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