Risks in construction and how to deal with them

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Function, new technology – and related risks

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A. It is a truism to say that society benefits from new technology. This is of course also true for new technology relating to construction projects. At the same time, there is often a reluctance to introduce new technology because of uncertainties about benefits and risks associated with a new technology. In construction projects like in many other situations, the wisdom is not to introduce new technology which is not proven. But how can technology be proven in a true sense if it has not been used in a full scale project? And in reality, new technology is accepted in many cases.

My task is to discuss risks resulting from the introduction of new technology in construction projects and how to deal with them. In the context of this conference, I have de-localized the presentation in the sense that I will discuss the topic without reference to any applicable law or to any contract forms.

B. In my discussion, I am using the term "construction" in a broad sense. In construction projects, new technology could relate to methods of construction and to the functioning of the end product. I will primarily look at aspects of function rather than methods of construction, although of course new methods of construction can have effects on function and vice versa.

New technology introduced into construction projects can be anything relating to design, materials and, as mentioned, methods of construction, and combinations. Just one example, which perhaps is a fairly extreme example, but which illustrates what we are dealing with. In order to cater for the stresses that could arise from an earthquake, buildings could be constructed with a certain resilience. However, a new technology which has been developed is to put the building on some kind of ball bearings. This new technology involves a new design, new materials and new construction methods.

C. Which are then, from a theoretical point of view, risks that are associated with the introduction of new technology?

1. The desired function is not achieved.

2. The new technology results in property damage and/or personal injury.

3. The new technology results in unforeseen costs either directly in implementing the new technology or indirectly because of its impact on other aspects of the construction or the project use (operation or maintenance).

4. The new technology results in unforeseen delays.

5. The new technology is not insurable.

6. As a result of the new technology the project is not bankable.

7. Required approvals of authorities are not obtained.

And probably others.

As with all other risks, risks associated with new technology have to be:

(a) identified to the extent possible;

(b) communicated to and understood by the relevant players (the contractor, the employer, the designer, subcontractors, project engineers and managers, etc.);

(d) mitigated by subjecting the new technology to special attention in quality assurance and quality control programmes, including subjecting it to tests along project implementation;

(e) allocated by clear rules of risk allocation among the various interested parties, primarily the employer and the contractor.

D. As a lawyer, I will address here aspects of risk allocation.

Apart from normal criteria for allocating risks, a special factor is who will eventually benefit from the introduction of the new technology. To simplify the presentation, I base my comments on a situation where the contractor, apart form the specific aspects that flow from the new technology, is responsible for a fixed price and a fixed completion time.

E. One case is where the employer introduces the new technology.

In this situation, the employer typically takes the advantages of the new technology and therefore will have to bear the major responsibility for it.

As to function of the new technology, the responsibility should vest with the employer. That includes such things as "fitness for purpose" and approvals by authorities, but also risks as to property damage and/or personal injury.

However, the contractor will have to have the responsibility for a proper management of the risks associated with the new technology, which includes adequate quality assurance and quality control programmes, including tests, in a close cooperation with the employer, whose approval should be needed at various stages of the implementation of the project. Failures by the contractor in these respects can make the contractor having to assume the costs and delays associated with the failures.

The construction costs associated with the new technology could be treated like any other construction costs, unless the new technology is such that a contractor cannot reasonably make an adequate estimation of the costs. In such instance, the related costs may be separated from the rest of the costs and be subject to some kind of cost-reimbursable or cost sharing scheme. It is important that one also analyses the impact that the new technology may have on costs for related construction activities.

As to the time for the performance of the contract, the same considerations as those with respect to costs are relevant. Here, it is important that the time schedule(s) for the project clearly identifies the activities relating to the new technology and their relation to other activities so that it will be possible to determine the impact possible delays resulting from the new technology may have.

F. Where the contractor wishes to introduce the new technology, it can be assumed that the employer will not accept the new technology, unless there are obvious benefits for the employer. This of course should have consequences for the risk allocation. No doubt, the contractor, as a starting point, will have to accept the responsibility for the new technology. This includes "fitness for purpose", costs, time, etc, and also a responsibility to implement special quality assurance and quality control programmes with tests to verify successively the new technology. However, where there are clearly identifiable benefits for the employer, the employer may be ready to accept some of the risks associated with the new technology. Such risk sharing may be a sharing of certain costs and some relief from liability for defects and delays.

As an example, I can mention that in a particular case, which involved a power plant with new technology, in stead of a usual right of termination if the project did not function properly, in the contract, the employer accepted to allow the contractor a pre-determined extra time to solve technical problems during which the contractor had to cover all capital and other expenses of the project but at the same time the contractor was entitled to receive whatever revenues that could be generated by the project.

Sometimes, the new technology could be treated as a joint development project, where the employer and the contractor shares the costs which are considered as development costs and the two parties share the risks. This could be the case where for example the employer is repeatedly involved in construction projects as often is the case for public entities.

As an extra incentive to the employer, the contractor could offer the employer a royalty when the contractor uses the new technology in the future. The benefit of the contractor of

having been allowed to use the new technology would often be the fact that the contractor could use the project as a reference project in the future.

G. The risks related to failure to obtain insurance or financing are by their nature risks of the employer, which must be sorted out before contracting.

H. Much more could be said about the specific problems arising when new technology is used but I stop here, and I am interested to here your views.

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Mr. Tore Wiwen-Nilsson is a partner of the Swedish law firm Mannheimer Swartling. Mannheimer Swartling has offices in Stockholm, Gothenburg, Malmö, Helsingborg, New York, Brussels, Frankfurt, Berlin and St Petersburg.

Mr. Wiwen-Nilsson has had and has many international assignments. For example, he was the Chairman of the United Nations Commission on International Trade Law (UNCITRAL) in 2003/2004, and he has represented Sweden at three sessions of UNCITRAL and at a number of UNCITRAL Working Group meetings. He is chairman of the United Nations and Other World Organisations Committee of the International Bar Association (IBA) and of the Power Law Committee of IBA. He has also been chairman of various sub-committees of Committee (Construction) of the IBA.

Mr. Wiwen-Nilsson has extensive experience in the field of international arbitration. He has experience from arbitration under the rules of the International Chamber of Commerce, the Stockholm Chamber of Commerce, and UNCITRAL, and has also been arbitrator and counsel in ad hoc arbitrations. The cases include disputes on price revision of gas supplies, the termination of a contract for the design and construction of a 700 MW power plant, the revamp of a large refinery, a large World Bank financed tunnel project in China, a large World Bank financed tunnel project in Southern Africa, a nuclear waste treatment plant in the U.S.A., licenses for chemical products, etc. He has also been counsel in investment protection litigation for and against governments.

Mr. Wiwen-Nilsson is also listed in expert guides in the field of energy law, project finance, construction and commercial arbitration.

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