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Engineering, Procurement and Construction Contracts for Large Scale Projects

A Practical Guide to EPC Contracting and Claim Management

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Essen/Germany, 2013

Dear Reader,

Deutsche Gesellschaft für Internationale Zusammenarbeit (GIZ), on behalf of Bundesministerium für wirtschaftliche Zusammenarbeit und Entwicklung (BMZ), supports a broad range of public and private stakeholders in developing their capacities for enabling sustainable development. GIZ Mongolia is committed to contribute to sustainable social and economic development by facilitating fact-based decision-making as well as smart project planning and project management.

Mongolia experiences impressive growth rates that go hand in hand with enormous challenges. In order to stimulate labour-intensive value-addition within the country and to keep up with the demand for improved infrastructure, a significant number of large-scale projects are under way. Observers expect roughly 200 projects of different priority to be realized within the coming years. This includes housing projects, power plants and transmission lines, bridges, roads and railroad lines, a new capital airport, as well as industrial projects such as iron and copper ore processing plants, the development of mines, oil refineries, and coal-to-liquid plants.

Through a number of government bonds, state authorities have mobilized billions of US Dollars for upcoming investments. Yet, the capacities to plan and manage large-scale projects remain insufficient in relevant institutions. Even in private sector entities employees struggle to appropriately conduct cost-benefit analyses or to draft legal provisions for contractors. Especially when foreign companies are involved in project implementation, such deficiencies have proven to lead to conflict and less than ideal results.

The Integrated Mineral Resource Initiative, implemented by GIZ Mongolia, supports its partners in improving project planning and contract management. “Engineering, Procurement, Construction” (EPC) contracting is an issue of key importance to public and private stakeholders in Mongolia. In a series of workshops over the course of 2012/2013 more than 150 decision-makers were trained by GIZ in cost-benefit analyses, project-planning, EPC contract management, and legal negotiations.

This guide provides in-depth information on how to negotiate and manage contracts for large-scale projects. It was written by Mr. Márton Hagner, Head of General Civil Law and Construction Law at Business Partner E.ON New Build and Technology GmbH. E.ON is one of Europe’s largest electric utility providers. Mr. Márton Hagner is one of four trainers that facilitated the EPC workshops in Mongolia. He visited Mongolia several times and has been in contact with many Mongolian colleagues working on large-scale projects. Other trainers were Mr. Norbert Kiene, Mr. Luis Villalobos and Mr. Klaus Bernard, all of them from Linde AG Germany.

I would like to thank all four gentlemen for their professional support and the excellent trainings they conducted in Ulaanbaatar. It is my firm believe that Mongolian decision-makers in state authorities as well as private companies will greatly benefit from the very practical information provided in this guide. My colleagues and I will be happy to further work with our Mongolian partners on better project planning and project management in this highly dynamic country.

Dr. Dr. h.c. Stefan Hanselmann,
Programme Director, Integrated Mineral Resource Initiative.

Ulaanbaatar, April 2014

Acknowledgements

This manual is the result of a series of workshops on EPC contracting in Ulaanbaatar, Mongolia during 2012.

I would like to thank especially the GIZ and Dr. Stefan Hanselmann. His idea to further the training sessions by detailing their content in the framework of a manual, gives not only detailed drafting examples, but also reflects the experience made in the execution of EPC projects.

Further, I would like to thank Mr. Jochem Theis, from GIZ, for his kind support of this book project throughout its execution. Finally, I have to admit that this manual would not have been come to existence if it was not for the patience and love of my wife Gabriela. Thank you!

Table of Contents

List of Abbreviations

CCS	Carbon Capture Storage
ENAA	Engineering Advancement Association of Japan
EPC	Engineering, Procurement, Construction
EPCM	Engineering, Procurement, Construction Management
f.	and the following pages
FIDIC	Fédération Internationale des Ingénieurs-Conseils
fig.	figure
FNTP	Full Notice to Proceed
HSE	Health Safety Environment
ICE	Institution of Civil Engineers
i.e.	id est / that is
lit.	litera
LNTP	Limited Notice to Proceed
NEC	New Engineering Contract
no.	number
NTP	Notice to Proceed
Orgalime	Organisme de Liaison des Industries Métalliques Européennes (now: European Engineering Industries Association)
PAC	Provisional Acceptance
p.	page
p.p.	pages
QA	Quality Assurance
QC	Quality Control

List of Illustrations

A. About this Guideline

1. The Addressees

This EPC Guideline is intended to be a practical manual for state authorities, state owned companies and privately owned companies working in the EPC sector. It is based on workshops held in Ulaanbaatar, Mongolia during 2012, which were organized by the *Deutsche Gesellschaft für Internationale Zusammenarbeit* (GIZ), who is also the publisher of this manual. It provides a comprehensive summary of the workshops, and shall help to find practical solutions for some common problems that often arise in projecting large scale industrial projects. This guideline is not exclusively designed for the above described circle of addressees who have taken part in the workshops, but hopefully finds its way to other users as well.

One of the challenges to be tackled when executing large scale projects is managing the complexity of parallel activities and processes. This guideline can serve as a "compass" to guide the reader through the different project stages, helping him stay oriented in the process. While the manual looks at all stages of an EPC project, from its planning and procurement to the operational claim management, its' primary focus lies on the EPC contract itself. As the author believes that abstract explanations of the issues arising in an EPC environment are neither helpful nor offer the reader a good learning experience, a different approach has been chosen. The main part of the book is based on EPC clauses that are used in EPC contracts. The reader will then find explanations about the underlying idea and the resulting risks etc. including practical tips for the user of such document.

2. The Concept

According to the purpose of this guideline as a "practical manual for the daily project work" the didactic concept is aligned with the typical process steps of a large scale industrial project.

At the outset, chapter B ("Large Scale Infrastructure Projects and EPC Contracts") illuminates the "broad picture" of the use of EPC contracts in large scale projects. This includes the nature, purpose and fields of use of an EPC contract, as well as the different process phases for planning, developing, tendering and executing a large scale project under an EPC contract.

Chapter C ("The Project Tender Process: Tender Preparation") deals with the drafting process of an EPC contract which is – for both the commercial as well as the technical project team – the most important task to complete in the tender preparation phase. In order to offer some advice for that phase, this chapter provides detailed explanations as to the contents of an EPC contract, and the interrelations and interactions between the different subject matters that should be covered by the EPC contract. It also describes associated risks for and interests of the involved parties. In order to manage the transfer between theoretical explanation and specific contract drafting, each sub-chapter of chapter C contains a theoretical part in which the relevant subject matter and its implications on the project are explained. This is followed by a practical part stating and explaining an example contract wording. Whenever convenient, illustrating examples from the authors' practical experience are stated in order to enhance the practical value of this guideline.

After the EPC contract is drafted and placed with the potential contractors, the next project step usually consists of the evaluation and negotiation of the Contractors' quotations. Chapter D ("Evaluation and Negotiation of the Tender") deals with this phase and provides some practical hints for the evaluation of the bids and the negotiation of the EPC contract provisions with the contractors.

The next phase of project execution is summarized in chapter E ("The Project Execution Process"). Readers will find some guidelines for organizing the project execution and for resolving disputes that are likely to occur in any large scale project.

Finally, chapter F ("Commercial Operation and Maintenance") concentrates on the period in time when all construction works have been completed and the project result has been handed over to the Employer. The purpose of this chapter is to flag implications between EPC defect liability provisions, commercial operation and maintenance of the fully constructed and commissioned industrial plant.

3. The Terminology

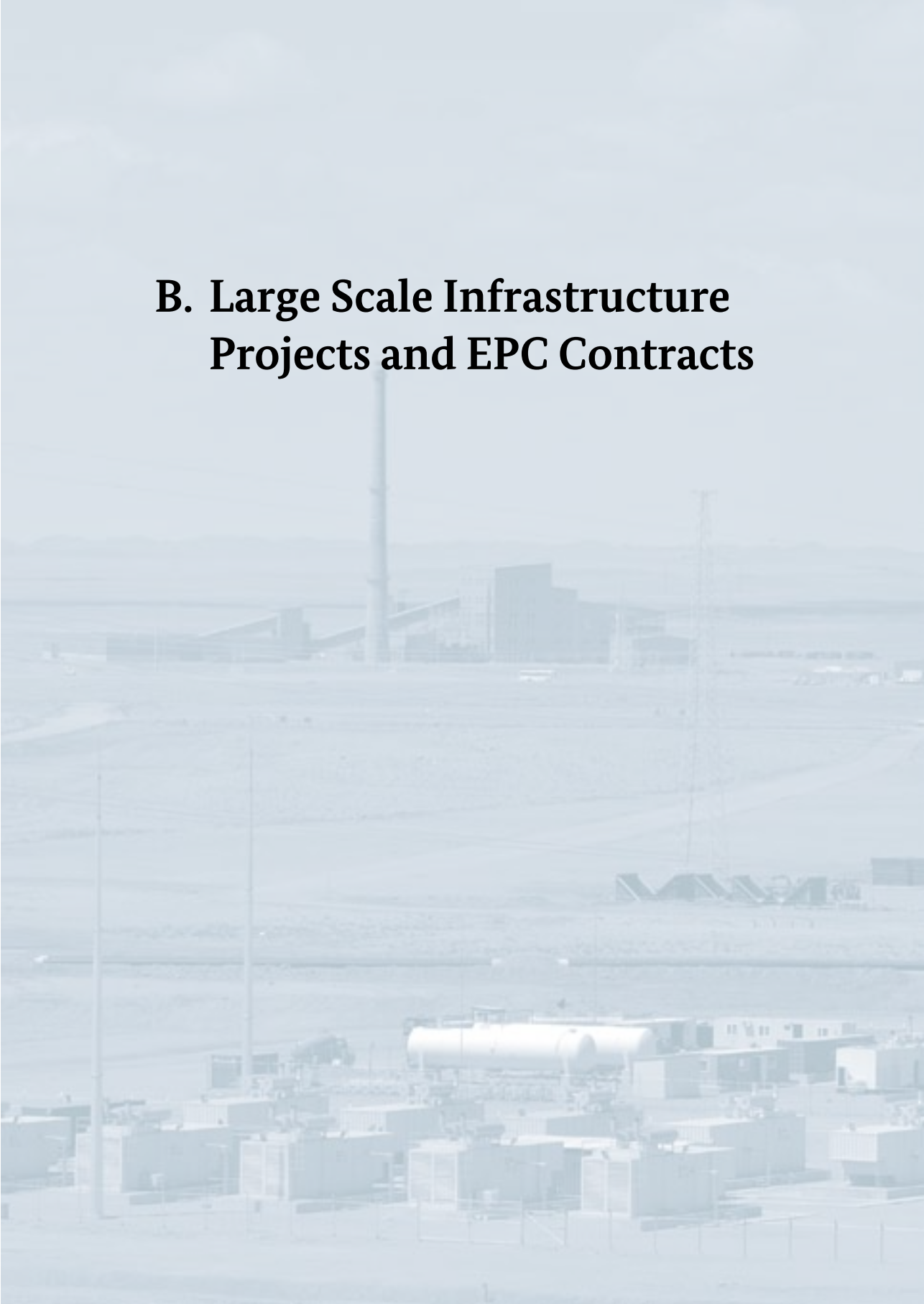
There are some fixed terms used in this guideline that shall be explained at the outset in order to avoid misunderstandings:

The term “Employer” means the relevant institution (be it a public, private corporation or an administrative body or institution), which is the owner of the infrastructure project intending to sign the EPC contract.

The term “Contractor” means the relevant company that is party to the EPC contract and executes the project.

Whenever this guideline refers to “terms and conditions”, the *commercial* terms and conditions of an EPC contract without any appendices are meant.

B. Large Scale Infrastructure Projects and EPC Contracts



1. The Setting of Large Scale Infrastructure Projects

Large scale infrastructure projects are generally comparable with other projects. The investing party aims at realizing a project within certain limits with regard to costs, time and quality with a designated team.

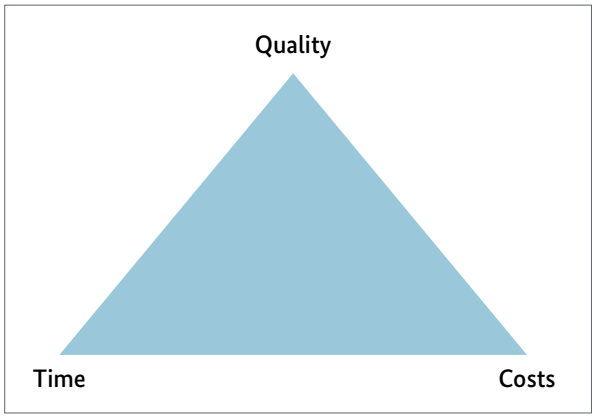


Illustration 1:
Project Triangle

The major difference, in comparison to other projects, is the stakeholder structure. This is mainly due to the fact that infrastructure projects usually have interfaces into the existing infrastructure (e.g. grid connection, fuel supply, etc.). In addition, infrastructure projects require various types of permits and authorizations. When preparing the permit applications, usually many expert reports need to be prepared and different authorities on several levels are involved in such a project.

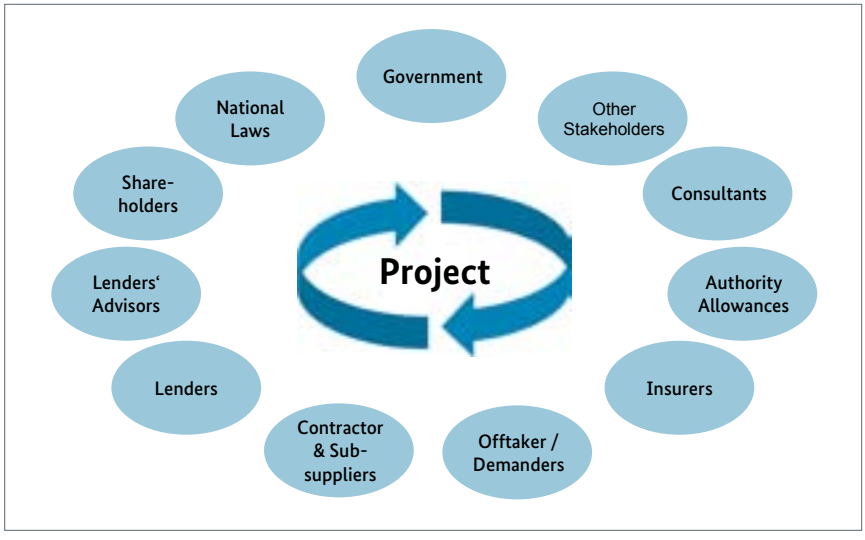


Illustration 2: Typical Stakeholders of Large Scale Infrastructure Projects

Stakeholders of large scale infrastructure projects can be clustered into:

- Employer's / investors representatives (e.g. shareholders, steering committee, operations)
- Governmental organizations (e.g. authorities)
- Contractors (e.g. equipment suppliers)
- Consultants (e.g. tax advisors, environmental specialists)
- Non-governmental organizations
- Customers (industrial or residential customers for direct or indirect products)
- Operators of supply and off-take infrastructures

To realize the project within the framework set for costs, time and quality, it is indispensable to analyze the interests of the different stakeholders and to know their drivers. These can change during the project life cycle and need to be continuously surveyed. For each type of stakeholder an appropriate strategy has to be defined in order to ensure their support. If one of the stakeholders does not support the project, the entire project may be at risk.

The stakeholder structure gives a good impression of the complexity of projects. All stakeholders have some influence on the project. Therefore, it is important to consider their interests in the EPC contract, for example environmental requirements (i.e. influencing quality requirements) issued by authorities commitments to deliver the products at a certain date (time) to the customer, or clear budget restrictions from the investing parties (costs).

2. Project Life Cycle: From Origination to Hand-over

The project life cycle consists of different phases:

- Project origination
- Project development
- Project tendering
- Project execution
- Warranty period

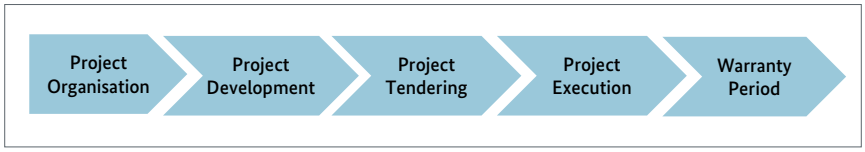


Illustration 3: Project Phases within the Project Life Cycle

The project team must be responsible to ensure a certain project maturity prior to stepping into the next phase. *A useful tool to control the project progress is a gate/stage process, which is a milestone at the end of each phase. The Employer should therefore define clear targets which form the deliverables for each of the phases.* Examples for appropriate targets are given in the introduction of each phase. In the gate/stage approval various questions should be answered:

- Is the project viable?
- Are all targets of this phase met?
- Have any deal breakers been identified?
- How much budget/resources are required to com plete the project?
- How much budget/resources are required for the next phase?
- What is the time line for the next phase / project?

The stage/gate should be approved by an independent board, which is formed from the most important stakeholders on the investors' side. This significantly *helps reducing risks for the upcoming phases and ensures that the project is mature enough to enter the next phase.* With the approval of the stage/gate, the budget for the next phase is released. Otherwise, the Employer has the opportunity to take corrective actions in case the project does not meet the requirements. These requirements should be defined on corporate level, equal for all types of projects and transparent to all project team members.

The Employer's influence on the project success decreases from phase to phase. The project objectives in terms of costs, quality and time can be determined specifically during project origination and development. In the tendering phase, the objectives are transformed into contracts. During project execution, the major

task of the project team is to ensure that the project is realized as specified in the contract (commercially and technically). The project execution phase ends with the hand-over of the works to the Employer/investor. In the warranty period, the Employer checks operations to see whether the specified performance criteria are continuously met or not.

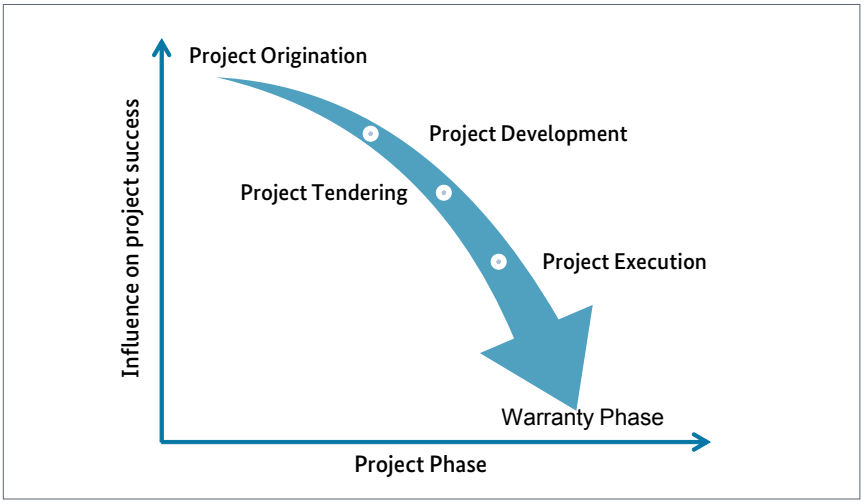


Illustration 4: Influence on Project Success in Relation to Project Progress

Generally, each discipline is responsible for ensuring that the project reaches a pre-defined maturity at the end of each phase of the project, prior to stepping into the next phase. The objective *of* this maturity check is to reduce risks significantly at an early stage rather than carrying them through the project progress. Overall, governance should be established to control the maturity based on pre-defined criteria. At the same time, each of the disciplines should establish tools and functions to control the discipline related maturity. This is also known as front-end-loading.

The contribution of procurement to the overall project success focuses on the phases prior to awarding the contract. Typical tools and functions are described below to provide an overview whereas details are described in the paragraphs of the respective phases.

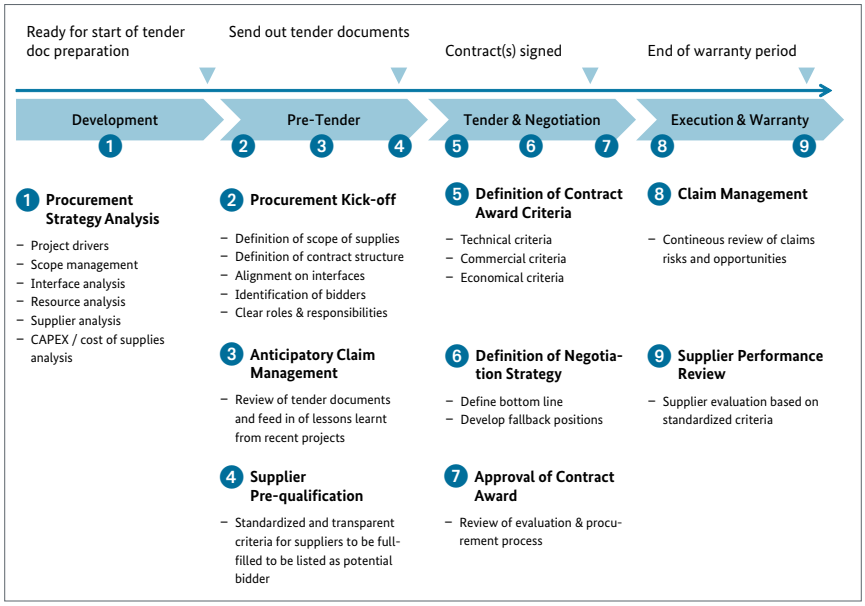


Illustration 5: Project Procurement Governance Tools

Besides implementing specific governance tools (e.g. Procurement Strategy Analysis, Supplier Pre-qualification, etc.), the Employer/Investor should consider to include a representative of its procurement organization in the steering committee. A steering committee is a body accountable and responsible for taking decisions in the project and usually involves the major internal stakeholders. The project team regularly reports to the steering committee. The involvement of procurement in the steering committee is especially recommended until the date of signature of the contracts for the major equipment. Procurement drives the tendering process from the start of tender document preparation until the contract award, whereas the responsibility during the execution phase lies with the technical disciplines.

Depending on the complexity of the project (e.g. first of its kind project, high risk project, project strategy, etc.) the number of governance tools can be increased or reduced. For the overall project success, it is essential that procurement is involved from the very beginning. The early involvement enables procurement to establish appropriate governance tools, in relation to the project complexity in mutual agreement with the project team. At the same time, the governance tools should form part of the procurement related criteria which are pre-condition to pass a gate/stage. Procurement should ensure that the overall project schedule reflects the project governance tools and sufficient time for the implementation, respectively. Project strategy analysis is especially time consuming but essential for delivering the project within the agreed objectives.

The governance tools and proper documentation of the results of the different governance activities help to support a fully transparent procurement process. The different tools are described in detail in the following chapters.

2.1. Phase I: Project Origination

The project origination phase consists mainly of a desktop based survey and analysis to identify and define business opportunities in a market. In this phase, different technologies are assessed, products screened, first sales-strategies identified as to their applicability, and various locations pre-screened.

With regard to site selection the following considerations should be taken into account:

- Is sufficient logistics available?
- Is raw material supply secured?
- Are other factors, e.g. cooling possibilities, available?
- What is the landowner structure?
- Are there other projects currently developed which might jeopardize the business model?
- Are customers (e.g. industrial customers) located nearby?
- How is the accessibility of the site?
- How complex is the authorization process?

To substantiate the suitability of technology and site, it is recommended to perform a feasibility study which must prove the technical feasibility at the selected sites. Based on the site characteristics and the chosen technology a first cost estimation should be calculated. Different software tools are available for such an analysis (e.g. Thermoflow in the Power Plant Sector). In addition, it is important to consider the site specifics for the cost estimate. Furthermore, the Employer needs to define the operating regime of the project.

The result of this phase should be a rough business case considering a technology, a site and a sales model. If the business case is positive and fits into the corporate strategy, the gate/stage can be approved in order to enter into the next phase. The evaluation of different business cases can be done by a simple net present value analysis.

As described in chapter 2, this phase significantly pre-determines the later project success.

2.2 Phase II: Project Development Phase

The project development phase lays the basis for the tendering phase. In this phase, the project team grows significantly. Ideally, the following issues should be addressed:

- Identify project drivers
- Conduct site studies
- Define technical plant features
- Define project strategy
- Identify investors (if project finance is planned)
- Discuss and agree sales model with stakeholders
- Apply for permits and approvals
- Agree procurement strategy

2.2.1 Project drivers

Each project has specific project drivers which need to be carefully evaluated and determined, because *all decisions will be optimized in the light of the project drivers.* Project drivers can be either technical or commercial, e.g.:

- CAPEX optimization
- OPEX optimization
- Plant availability
- Plant efficiency
- Plant flexibility

Project drivers can be manifold, however, there is always one major driver exceeding the others in importance. For the identification of project drivers, a risk and opportunity analysis can be prepared, which influence the project success in a qualitative or quantified way. Such an analysis typically starts with a qualitative brainstorming involving all project members.

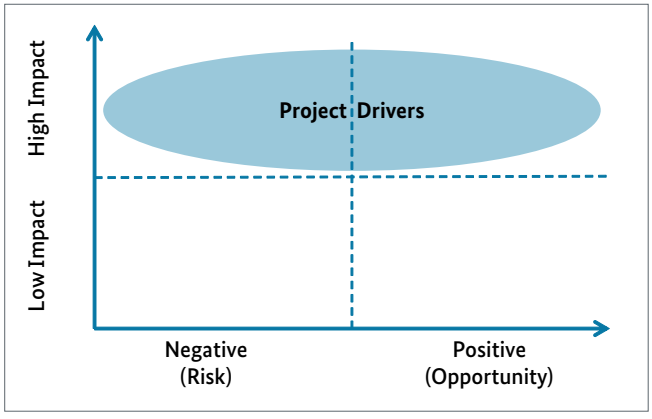


Illustration 6: Risk and Opportunity Matrix

The identified risks and opportunities with high impact should be considered to be the relevant project drivers. For the next step, the project team should try to quantify the identified risks and opportunities with regard to their impact on the project realization and the likelihood of their occurrence. Responsibility for each of these risks and opportunities should be assigned to specific persons or groups of persons within the team, to develop mitigation measures to reduce the respective risks, or to develop measures increasing the materialization chance of identified opportunities.

2.2.2 Site studies

During the project development phase, different types of studies need to be performed as pre-requisites for making decisions on technical features or as input for permit application. Depending on the capabilities and capacities of the employer/investor, the studies can be prepared in-house or need to be contracted. Typical studies to be performed are:

- Soil investigation
- Noise study
- Flora and fauna
- Archaeological studies
- Water studies
- Transport studies

Some of the studies are required to substantiate the technical concept further, others are required as input for permit applications. The quality of these studies significantly influences the technical specification and contract price. During this phase, the Employer needs to ensure that he has all relevant information at hand to reduce risks in the later project execution. For the specification and tendering of studies the Employer should involve the relevant experts. This is essential to reach the desired quality and level of detail in the studies. Needs identified later for detailing or refining a study or investigation often lead to higher development costs and in most cases to unnecessary delays. Another advantage of sufficiently detailed studies and investigations is that the Employer can easily take more site related risks, which would otherwise be borne and priced in by the contractors. In addition, the Employer is in a better position to specify the plan considering the boundary conditions given by the site chosen.

Suitable and sufficient studies and site investigations significantly influence the project targets in terms of cost, time and quality.

2.2.3 Definition of technical plant features

In the project origination phase, a feasibility study is carried out to provide recommendations on basic technical features. During project development, the basic technical concept is optimized with regard to the project drivers. For example,

different layout options, foundations concept, boiler types, etc. are compared and recommendations are proposed to the project management. *It is strongly recommended to document all decisions and the underlying reasoning in detail.* The set of approved plant features will be the basis for the technical specification. The decisions on the technical plant features must always consider the project drivers.

After the technical plant features have been defined a "design freeze" should be implemented. *The "design freeze" serves the purpose of determining, fixing and documenting the final desired design features.* All following design and engineering activities will then be based on these determinations. The defined plant features should not be questioned or changed in the latter project stages because such later changes will inevitably lead to increased project costs and a delay in time.

Major inputs for the definition of plant features are the project drivers, the feasibility study, site related studies and permit and legal boundaries. In the course of project development, the definition of technical plant features follows a top-down approach – starting from more general decisions to detailed ones, e.g. starting with layout works and ending with the selection of materials, e.g. for piping.

However, the Employer should always keep in mind the chosen type of specification strategy. If the Employer aims for a functional specification, he should apply a very rough specification, focusing on the input and output parameters at the battery limits, i.e. the interfaces from the industrial plant to its surroundings. On the other hand, if the Employer has specific requirements as to materials, features, etc., he should specify his requirements in detail. Both strategies have their risks and advantages (please see chapter C.2), but need to be aligned with the project drivers. If CAPEX is the major project driver, the specification should be rather functional, because the contractor can apply his standards. If the major project driver is, for example, supplying the surrounding industrial complex with electricity, such criteria should be specified in detail. This will ensure the plant meets the Employers' targeted requirements.

To sum up: the more influence the Employer wants on the technical design, the more *detailed he should specify his requirements* and vice versa.

Another factor influencing the specification strategy is the project strategy itself. There may be reasons for the Employer to plan one EPC or a strategy with multiple lots (see *chapter C.2)*. If the Employer aims for an EPC Contract, the specification is usually carried out in a functional way with clear definition of boundaries. In the case of a project strategy with multiple lots, it is important to specify details. For each lot all battery limits need to be described in detail (e.g. mass flows, materials, physical location etc.). The Employer should also provide clear stipulations for the layout of the plant. If the stipulations on battery limits, layout, time schedule, etc. are not clearly defined and harmonized between the lots, the Employer will face a flood

of claims and additional work orders to solve inconsistencies between specifications and the actual works.

The more lots the Employer plans, the more details need to be defined to mitigate claims and additional works orders.

2.2.4 Project Strategy

The definition of the project strategy has the most significant influence on the project execution succes. The Employer should carefully assess the most appropriate approach. There is not one best practice project strategy. The decision which strategy to follow is always based on a combination of different external and internal influence factors, which may vary from project to project. For the definition of the project strategy, different items should be taken into account:

- Project driver
- Key success factors
- Scope of supplies and services
- Supplier market structure
- Required and available skills and resources
- CAPEX

The decision on the project strategy is primarily the decision whether to conduct a project as EPC or in lots (see *chapter C.2*). Typical differences between both strategies are

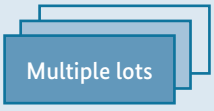
		
Duration of project development	Only basic engineering, therefore shorter project development time	Detail engineering required and sequential tendering due to interdependencies
Specification philosophy	functional	detailed
Risk profile	Contractor takes integration risk	Employer takes overall integraion risk
Owner‘s Engineering	Slim owner’s engineering to survey Contractor’s works towards project target	Extended owner’s engineering to steer different contractors
Cost of supplies	Higher, because risks and supplier coordination is shifted to Contractor	Lower, because scope of Contractors is focused on their key competencies and integration is taken over by Employer

Illustration 7: Basic Comparison of Different Project Strategies

Generally, the decision should not be based on one analysis only, but on the combined analyses of the above mentioned criteria. In addition, it is important to have all project disciplines involved including project management, technical project management, procurement, HSE, site management and commissioning.

a) Project Driver Analysis

For the selection of the most appropriate project strategy, the Employer should consider the project drivers and analyze which strategy is most suitable to realize the drivers. A simple scoring model comparing the different project drivers is sufficient to identify the most suitable project strategy. If, for example, a new technology is applied of which the Employer/Investor has little knowledge, he should strive to outsource the technology risk to the Contractor and apply an EPC strategy. On the other hand, if the Employer/Investor wants to take detailed influence on the selection of components and materials, a lots strategy should be favored.

b) Scope of Supplies Analysis

The intended scope of works needs to be fully understood prior to deciding on the project strategy. In this context, the following questions have to be answered:

- Is there an existing plant or infrastructure which is intended to be (re-)used or to be revamped?
- Are there critical interfaces to which the new plant is to be connected?
- What are the critical components?
- What influence does the Employer want to have on technology?
- Will established technology be used, or technology that is new to the Employer/investor?

A comprehensive view on the required scope of works is the basis for the supplier market analysis.

c) Supplier Market Analysis

Based on the scope of supplies, the supplier market can be screened for potential contractors, e.g. starting from EPC and breaking the scope of supplies down into lots. The lots can be of different kind, e.g. by discipline (e.g. civil, mechanical, electrical and construction), or by components (e.g. turbine island, transformer, civil works etc.).

Additionally, a local supplier analysis should be conducted in order to identify what kind of supplies can be sourced at which quality and price in the local market. It should be kept in mind that, especially in developing countries, often protective legislation exists in order to support local businesses. In the case of a lot strategy, choosing local suppliers also helps to ensure local support (and compliance with the law!) and is likely to realize lower cost of supplies (e.g. shorter transport, tax implications, etc.). Furthermore, the local supplier market analysis also helps to prepare for price negotiations with international contracts. This applies for both the EPC or lot strategy. Usually, under both strategies, each project has supplies

that can be sourced locally. The Employer may use his knowledge about the local supplier market in negotiations with international suppliers to realize lower prices by increasing the local share of supplies in international supplies contracts (e.g. ask the suppliers to procure as many supplies as possible locally). On the other hand, it must be ensured that the quality of local supplies sufficiently meets the Employer's requirements. Otherwise, the Employer risks forcing the Contractor(s) to source part of the supplies at the local market.

For the identification of a supplier pool the Employer should also consider the suppliers' knowledge about the local market (e.g. by asking for project references on the respective market) towards hard (local codes and standards, permits and approvals) and soft (cultural specifics) facts.

The suppliers identified for each strategy should be clustered in A-, B- and C-suppliers, based on the Employer's evaluation. One criterion for the evaluation is suitability of the suppliers to perform the works in accordance with the defined project targets.

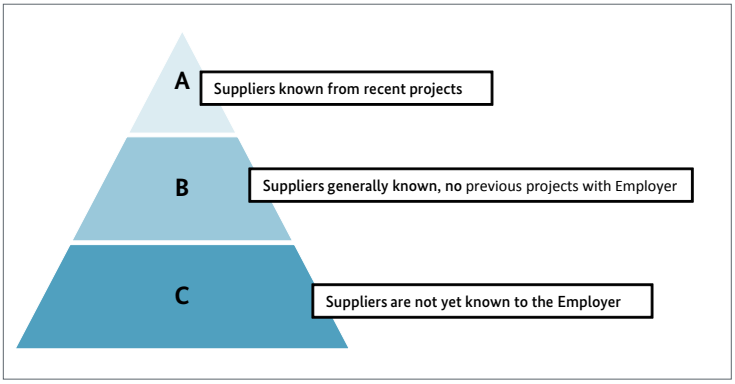


Illustration 8: Supplier Cluster

A-suppliers are identified as being able to perform the works without any restrictions. They are already known to the Employer (e.g. based on former projects or supplies). B-suppliers are suppliers not known well to the Employer or not known with regard to the expected works. C-suppliers are newly identified and can be seen as back-up pool in case not enough A- and B-suppliers have been identified.

The Employer needs to decide on the cluster criteria for the specific project. This cluster should be set up for all considered project strategies. The more suppliers are available, the lower the prices that can be expected. If there are no suppliers for one project strategy available, the project strategy should be considered not feasible. As a consequence, the packages within the scope of suppliers need to be further split to have enough suppliers and, therefore, competition.

After having selected a project strategy, the identified suppliers need to be pre-qualified with regard to financial, commercial, quality, resource, capability and HSE criteria. The process for the pre-qualification is as follows:

Step 1: Define criteria that are important with regard to the scope of supplies and services.
Step 2: Prepare a questionnaire with the criteria and submit it to the identified suppliers.
Step 3: Define deal breakers and an evaluation scheme before receiving suppliers' replies.
Step 4: Evaluate suppliers' replies based on previously defined evaluation criteria.
Step 5: Inform suppliers about the evaluation result.

The result of the pre-qualification can already be a ranking of suppliers (e.g. based on a scoring system) or a "black or white" evaluation (fulfilled or not fulfilled). Generally, the "black or white" evaluation is sufficient, because the pre-qualification is only required to underline the suppliers' capabilities to perform the job. For the ranking of suppliers their offers are the relevant information.

d) Resource Analysis

To identify whether the different project strategies are feasible for the Employer, a check of the Employer's organizational capabilities should be performed first. For each of the different project strategies, a project specific organizational chart should be drawn up to identify the resources and qualifications required. The more lots that exist, the more staff for the project team is needed to ensure the project execution in cost, time and quality. Depending on experience and available number of staff, the Employer can either go for an EPC or for lots.

The analysis should include:
- Qualifications
- Tools
- Processes
- Availability of resources

Part of the project organization can also be staffed by externals. However, to ensure that the Employer is able to influence key topics, he should have at least the 1st and 2nd level in the organogram staffed by its own personnel. Usually, hiring temporary personnel is more expensive than permanent personnel. However, it can be a good interim solution to overcome shortages to buy in expertise, which is not available within the own organization. With the completion of the project or respective task, the personnel can be released again. On the other hand, if the Employer has a continuous project pipeline, it is recommended to have the resources in-house to learn from the projects and to build up its own expertise. Otherwise, the Employer pays for the learning curve of externals and is left with limited own experience in the long run. For the lots project strategy, additional personnel is required that is

not needed in an EPC project. For each lot, an engineer who is in charge is required, i.e. a manager or management team who is accountable for this lot (or several lots, if the respective lots are too small to fill out this position in full). In addition, it is recommendable to have an interface manager to manage the technical and commercial interfaces between the lots. These two specialized areas must be staffed in addition to the standard functions in a project (e.g. procurement manager, claims manager, time scheduler, etc.). Depending on the size of the project and the project strategy, the number of people needed varies typically between approx. 30 (pure EPC) to more than 100 (multi lot with 10 lots or more).

If the Employer is able to provide the necessary personnel for the required time, in sufficient quantity and sufficiently qualified (be it its own personnel or external personnel hired for the project only), either project strategy can generally be regarded as feasible.

However, the Employer must also consider the question who is the ideal risk owner. The answer to this question can be found in the CAPEX analysis.

e) CAPEX Analysis

The CAPEX analysis is the *main* driver for the decision on project strategy. The other analyses performed are of a preparatory nature, to examine the feasibility of the different project strategies. If these analyses confirm the feasibility of several strategies, comparison of required CAPEX should drive the decision.

The CAPEX consists of the items listed below. For the assessment of different project strategies all scenarios considered feasible need to be compared.

Item	EPC	Lots
Cost of Supplies		
Owner's Engineering		
Land Purchase / Lease		
Preparatory works		
Studies		
Permits / Approvals / Fees		
Risks		
Contingencies		
CAPEX		

Illustration 9: CAPEX Composition

(i) Costs of Supplies:

The costs of supplies are defined as all expenditures directly linked to the project. These contain civil, mechanical and electrical supplies as well as Contractor's engineering, construction and project execution works. The costs of supplies form the biggest part of the CAPEX. A significant influence factor on the costs of supplies is the share of supplies which the suppliers manufactures and produces in-house. The suppliers need to externally procure the supplies, which are not part of their portfolio and will charge a handling fee on them. Therefore, it is important to identify suppliers with a significant share of own production. On the other hand, the Employer should consider potential supplier market restrictions if he divides the project into large procurement packages, because the larger the procurement packages are, the less suppliers are able to cover the entire scope. This may lead to a situation close to monopolies with negative impact on the costs of supplies. Therefore the Employer should always consider the number of bidders who are able to provide the scope. An advantage of large procurement packages is the limited number of contractual interfaces. The cost of supplies be estimated with the help of software tools, market studies, publications or request for budgetary quotes.

(ii) Costs for Owner's Engineering

The costs of the owner's engineering vary depending on the number of lots. The more lots are allotted, the more resources are required for project development and project execution. Due to the nature of the EPC contract, less personnel is required for the project development and project execution. The specification strategy is usually functional. During project execution, the owner's engineering focuses on surveying that the EPC Contractor delivers the project in the agreed frame for cost, time and quality. Compared to an EPC strategy, allocation of the supplies and services to multiple lots requires significantly more personnel for several reasons, e.g.:

Project Development & Project Tendering:

- More studies need to be performed (including specification, tendering and surveying)
- Definition of technical features must be extremely detailed
- Interfaces between different lots must be defined and planned
- Specifications for the different lots must be detailed
- More suppliers need to be qualified
- Each of the lots needs to be tendered, analyzed and negotiated separately

Project Execution:

- Interfaces between different suppliers and lots need to be continuously managed by the Employer
- Each lot requires a designated team comprising different disciplines (commercial, technical, HSE) to survey the works on site and to ensure their delivery in cost, time and quality

- The more suppliers and the more interfaces there are, the more claims are likely to be expected
- The overall commissioning management needs to be done by the Employer, because the different lot contractors only commission their own scope of supplies and services
- Each lot has its own and unique acceptance criteria. The fulfilment of the acceptance criteria needs to be assessed by an expert team
- There is no final acceptance of the overall plant as this is in the risk sphere of the Employer.

In order to calculate the respective costs for the owner's engineering project strategy, specific organizational charts should be drafted and costs for the different disciplines should be calculated considering the project execution time.

(iii) Land Purchase/Lease/Easement

Another part of the CAPEX is the costs for the site. During project development the structure of land owners should be investigated. To realize a good price for the land, the transaction process needs to be carefully prepared. *For a first cost estimation public information on costs for land in that area may be used.*

Besides the costs for the designated project, there might be additional costs for leasing land during project execution (e.g. for storage, pre-construction, office containers or parking lots).

(iv) Preparatory works

The Employer will most probably need to do some preparatory works on the construction site prior to handing it over to the Contractor. These could, be

- The realization of access possibilities (e.g. roads)
- Removal of underground structures
- Provision of lay down areas (e.g. for storage of supplies, or office containers during construction)

(v) Studies

For the project development but also throughout the following project phases, various studies might be required. *The need for studies should be identified in the early project phases and respective costs should be considered in the CAPEX.* Again, depending on the project strategy, different types of studies at diverse levels of detail will be required. It is recommended here to receive project specific expert advice in order to identify the studies necessary to cover all risk areas.

(vi) Costs for permits, authorizations and fees

Costs for the preparation and application of local permits, authorizations and accompanying fees should be *included* in the CAPEX. This also includes costs for the preparation of documents and expert opinions, which is usually the most expensive part. Information on required permits, authorization and connected fees will *usually*

be publicly available. External experts usually need to be consulted in order to identify the costs of required studies, their consolidation and their handling.

(vii) Risks

Based on the project drivers the project team should conduct a risk assessment (risk workshop) to identify the project related risks and to quantify the impact, the likelihood and the contingencies necessary to cover the risks. Based on this assessment, the means of risk mitigation should be considered. The risks identified should be ranked based on their impact. Mitigation measures and contingencies need to be developed, quantified and considered in the CAPEX calculation. However, the costs for mitigation measures should not exceed the costs accruing if the risk actualizes.

The assessment and evaluation of risks should be performed regularly throughout the entire project lifecycle. Funds set aside for risks should decrease from project phase to project phase. Some risks will no longer exist in later project phases. Other risks will be only identified during the upcoming project phases. However, uncertainties should decrease as the project is going through its phases with the result of a decrease in the overall risks and the related need to keep contingencies.

(viii) Contingencies

In addition to the matters of expense mentioned above, the Employer should also provide means for so called "known unknowns". The contingencies should cover additional risks not yet identified at a certain point of time:

- EPC project strategy: 2 to 8 per cent of the total CAPEX
- Lot project strategy: 2 to 10 per cent of the total CAPEX

The amount of contingencies to be considered also depends on the maturity of project development, the chosen suppliers, the capabilities, tools and resources of the Employer. Over time, from the first estimation of the CAPEX until the investment approval, the contingencies may decrease, because the available information will improve and the project will mature. The contingencies should be part of the budget approved *in the investment decision.*

f) Recommendations for the project strategy

The CAPEX analysis should be the main focus *when defining* the project strategy. The other analyses prove that the respective strategies are generally feasible.

	Strategy 1	Strategy 2
Project Driver Analysis	No go for strategy 1?	No go for strategy 2?
Scope of Supplies Analysis	No go for strategy 1?	No go for strategy 2?
Supplier Market Analysis	No go for strategy 1?	No go for strategy 2?
Resource Analysis	No go for strategy 1?	No go for strategy 2?
CAPEX Analysis		
Result		

Illustration 10: Comparison of Project Strategies

If the project team considers one of the aspects to be more relevant than the other, a weighting tool may be introduced. *All the different analyses should be considered with respect to the different strategies prior to deciding on the optimum strategy.* On the other hand, there also might be the risk that one or the other strategy is not feasible for the Employer. For example, a capacity analysis shows that no capacities are available for a lot strategy. This would then result in a "no go" decision although all other results of the analysis might be in favor of this strategy. If there are no "no go's" identified, the CAPEX analysis should be the decision driver. With the definition of the project strategy the largest part of preparing the procurement strategy is accomplished.

2.2.5 Definition of Procurement Strategies

On the basis of the project strategy the procurement strategy can be determined. The scope of works as well as the supplier basis is defined. *The determination of the procurement strategy is mainly depending on the supplier market complexity and the impact of the supplies on the overall project success (see illustration below).* The supplier market complexity is an indicator for the number of potential suppliers, who are able to supply the scope of works. The more suppliers are available, the less complex is the supplier market. In such a case the Employer is able to tender the works in full competition targeting for an advantageous share of risks from the Employer's point of view.

If, on the other hand, there are only few or even only one supplier available, the Employer should treat the potential supplier(s) very carefully, because if the supplier(s) do not submit an offer, the overall project strategy is at risk to fail. This would consequently lead to more costs and delays in the tendering phase, because the project strategy needs to be adjusted. Therefore, the Employer should try to establish a close relationship to these rare supplier(s) and strive for a reasonable and fair share of risks, which is acceptable for the supplier(s).

The other dimension for the identification of the procurement strategy considers the impact of the supplies on the project and business success. The Employer should focus his capacities on the supplies with high impact. These could e.g. be new type technologies (essential to ensure that the plant provides the specified performance) or time critical supplies (e.g. supplies with long lead times or with little time window for construction/installation).

Obviously, the supplies which are the most difficult to be procured are the ones with high impact on the project and business success. EPC tenders are usually of such type, because the impact on project success and the supplier market complexity are high at the same time. This cluster contains the so called strategic supplies.

Supplies with little impact on the project, but high market complexity, are usually characterized by long lead times. In this case the Employer should ensure that the supplies are tendered and ordered in time.

Standard supplies do not have high impact on the business and project success. In addition, their market complexity is low. Suppliers who provide such supplies can easily be substituted. Therefore, the negotiation power of the Employer is very high and he should focus the offer evaluation mainly on the prices.

For supplies with high impact on the project and business success (e.g. civil works) the Employer should base his offer evaluation on the capabilities of the bidders as poor performance of the chosen Contractor can jeopardize the project objectives.

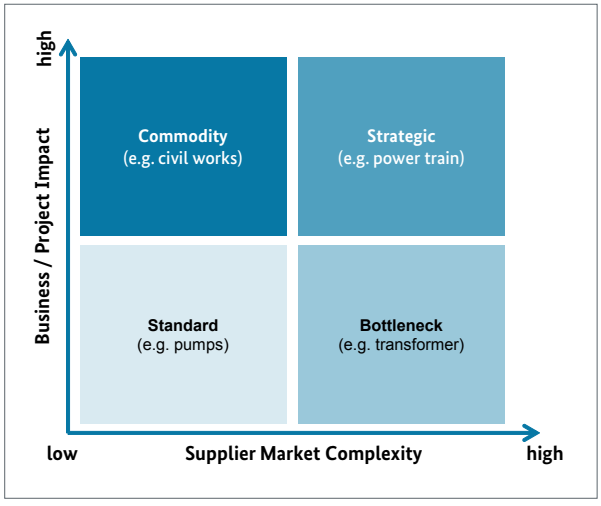


Illustration 11: Influence Factors on Procurement Strategies .

2.3 Phase III: Project Tendering Phase

The project tendering phase is divided into 6 steps:

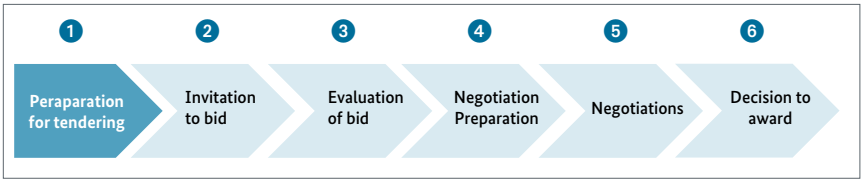


Illustration 12: Project Tendering Phases

In this paragraph the planning, coordination and realization of a project tender will be described based on an EPC tender. The legal context and considerations are described in detail in chapter C. The objective of this chapter is to present the methodologies of preparing high quality and consistent tender documents.

2.3.1 Preparations for Tendering

a) The role of the procurement manager

Besides the preparation of the Terms and Conditions, the procurement manager is accountable and responsible for the coordination of the preparation of the tender documents and their compilation. Therefore, he should regularly follow up and track the status of preparation. This can be done by following up individuals or by having workshops. Workshops are also a recommended forum for discussing interdependencies between the different documents. The procurement manager should ensure that the appendices are properly linked to the Contract Draft.
The contract should have a clear structure. Each of the Contract Draft appendices should only reference vertically and not horizontally to other appendices. This significantly helps to ensure consistency of the tender documents and to reduce the claim risks.

Parallel to the preparation of tender documents, the procurement manager should substantiate the supplier basis, e.g. by pre-qualification or qualification of suppliers. The procurement manager is responsible for identifying a robust supplier basis. In this activity he is supported by other disciplines.

b) Kick-off Workshop

To start the tender preparation together with the project team, the procurement manager conducts a kick-off with the responsible disciplines. *The Kick-Off Workshop defines the essential cornerstones for the preparation of the tender document and the subsequent tender and negotiation phase.* Roles and responsibilities for the preparation of tender documents, the procurement time schedule, the procurement

strategy and rules for evaluation are agreed. The procurement manager should prepare the kick-off workshop carefully:

- Identify and define required resources
- Prepare a draft tender preparation schedule
- Prepare a short project presentation

The following contents will be presented, discussed and agreed in the kick-off workshop:

- Formation of tender preparation team
- Determination of scope of supplies and services including battery limits and interfaces
- Presentation of the supplier portfolios and classification in A, B and C suppliers (including determination of the definition of A, B and C suppliers)
- Presentation and alignment of the procurement strategy
- Definition of cost, time and quality targets
- Determination of the evaluation criteria (might be communicated to the bidders; to be decided by project team)
- Definition of absolute performance criteria and guarantee values
- Determination of weighting in the uppermost dimensions of the evaluation model (technical quality of the bid, commercial quality of the bid and economic analysis)
- Presentation of tender preparation schedule and overall project schedule
- Determination of accountabilities and responsibilities for the preparation of tender documents
- Identification of outstanding information required to prepare the tender documents
- Agreement on working mode (e.g. regular meetings, tools, reporting)
- Definition of the next steps including responsibilities and due dates

The results of the kick-off workshop are documented. In addition, the procurement manager transfers the agreed accountabilities, responsibilities and due dates in the contract structure table (please refer to the next section).

The procurement manager should amend the contract structure table with information on the document owner, status of preparation and the deadline. This is important to gain a clear understanding of who is responsible for which tasks and their deadlines. The procurement manager controls the tender document preparation. In addition, the procurement manager ensures regular reporting on status and open issues in order to take immediate actions and ensure that all obstacles are cleared. The different disciplines should be enabled to focus on their part of the contract only (of course respecting the interfaces).

c) Overview on recommended tender documents

The preparation of tender documents starts with the definition of the structure of the tendering documents. Considering the project, procurement strategy and

the available resources, the responsible purchasing manager and the project management develop the structure which covers the different disciplines. The procurement manager develops the contract structure prior to the kick-off workshop.

Appendix	Title	Accountable	Responsible	Due Date	Status
	Cover Letter				
	Technical Data Book				
0	Contract Draft				
1	Technical Specification				
2	HSE Requirements				
3	Schedules				
4	Reporting Requirements				
5	Quality Requirements				
6	Commissioning Requirements				
7	Project Documentation Requirements				
8	Training Requirements				
9	Maintenance Requirements				
10	Construction Site Infra-structure Requirements				
11	Permits & Approvals				
12	List of Sub-Providers				
13	List of Spare Parts				
14	Insurance Requirements				
15	Variations Procedure & Templates				
16	Performance Guarantees				
17	Bill of articles and conditions				
18	Forms & Templates for Securities				
19	Forms of Certificates				

´Illustration 13: Contract Structure

In the following part the different documents and specifics for the preparation are explained.

(i) Cover Letter and Data Book

a. Cover Letter:

The Cover Letter gives a short introduction of the requested scope of works, defines the deadline for the submission of bids, and names commercial and technical contacts for any queries. *The Employer should always provide the Contract draft and other documents that will be part of the contractual agreements*. This is important due to various reasons:

- The Employer drafts the share of risks according to his needs rather than receiving a share of risks favorable for the Contractor.
- The Employer is in the position to point out special requirements on the scope of works.
- The Contractor needs to argue and negotiate his position against the stipulations and requirements defined by the Employer. This puts the Employer in a stronger position during negotiations.
- The Employer's personnel is familiar with the requirements and stipulations in the tender documents, if there are recurrent projects.

In addition, the cover letter defines how deviations from the tender documents must be documented in the offer (e.g. in form of deviation lists or directly commented in the tender documents). This significantly simplifies the evaluation of different bids. The Cover Letter does *not* form part of the contract.

b. Technical Data Book:

The Technical Data Book serves the purpose to request technical data in an aggregated form. The advantage of such a book is that it enables the Employer to gain an overview of the technical key facts. The Employer's Requirements are usually quite extensive and need proper analysis for the comparison of bids. Although the Technical Data Book is a *summary of the essential requirements* (e.g. Performance Guarantees) of the Employer's Requirements, it does not form part of the contract.

(ii) EPC Terms & Conditions DRAFT

The Terms & Conditions, i.e. the EPC contract, are the commercial heart of the tender, presenting the legal and commercial requirements envisaged by the Employer.

(iii) Attachments to the EPC Terms & Conditions

Attachments (also called: appendices, annexes, exhibits, supplements) are an integral part of the EPC contract and should be expressly referenced in the EPC terms and conditions (see below chapter 3.2.6). EPC contracts usually have commercial and technical appendices attached, though sometimes a precise categorization of each attachment is hard to do. Attachments supplement the terms and conditions of the EPC. They specify the scope of work and services and are designed to detail or to "explain" distinct obligations set forth in the EPC contract. If, for example, the EPC contract obliges the Contractor to comply with the Employer's Health and Safety rules, it still remains unclear what these rules say exactly and which specific

obligations result from them. Hence, the EPC health and safety provisions will reference to an attachment setting out the applicable health and safety rules.

The attachments relieve the EPC terms and conditions that focus on the parties' main obligations and the allocation of risks. Describing the parties' rights, obligations and remedies does not mean that all issues which have to be agreed upon necessarily need to be stated in the terms and conditions. For example, in the terms and conditions it is sufficient to describe that (i) the Contractor is obliged to comply with the health and safety rules, that (ii) the Employer may notify the Contractor of any violation of these rules and that the Contractor has to remedy any health and safety misconduct, that (iii) the Employer may stop the unsafe execution of works and that (iv) the Contractor has to reimburse any amount incurred on the Employer due to a health and safety misconduct of the Contractor. If the EPC terms and conditions detailed the particular health and safety rules on twenty-five pages, the EPC contract would be inflated and would be difficult to handle in the project execution process. Furthermore, it is easier to exchange an appendix if the parties should agree on something new in the course of the project, than to adjust the EPC terms and conditions each time something changes.

There is no standard as to the number and the quality of attachments that supplement EPC terms and conditions. However, careful attention to the attachments and their content should be given in any case.

Subsequent chapters provide some typical examples of commercial and technical attachments. Their objects and potential contents are described in more detail. An example of a structure of the EPC terms and conditions and the attachments is shown in the illustration below:

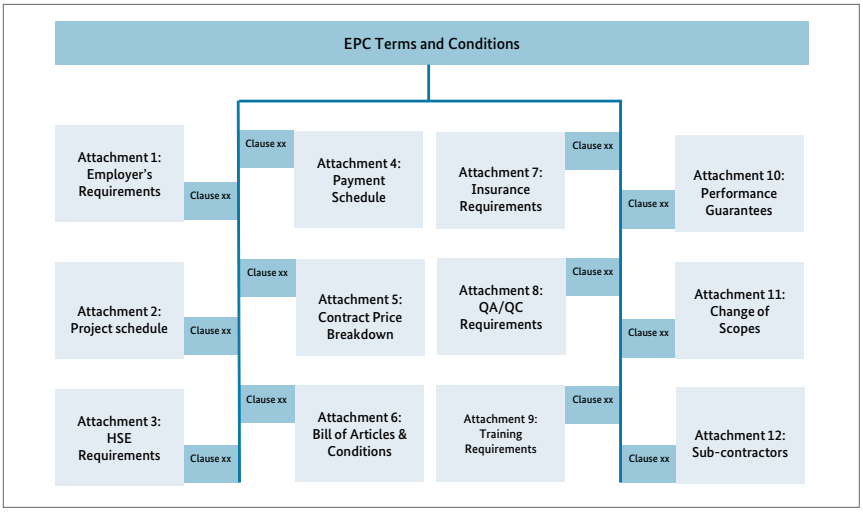


Illustration 14: Structure of EPC Attachment

a. Contract Price

One would assume that in an EPC contract there is only one price that is stated in the contract. However, while that is true for small and mid-size projects, in large scale industrial projects with a period of project execution of several years in a country with a volatile currency, the calculation of the contract price may be more complicated.

The contract price may be split up into a fixed price component and a variable price component that is subject to a price escalation. The price escalation formula, then, is also stated in the attachment so that a foreseeable and calculable development of the variable price portion is part of the EPC agreement.

The attachment "Contract Price" is usually referred to in the clauses on the contract price.[1]

b. Employer's Requirements

The Employer's Requirements (also called "Scope of Works and Services") are the most important technical attachment to the EPC contract. The Employer's Requirements summarize the technical requirements and follow the appropriate specification philosophy (functional vs. detailed). They are an important part of the contract and include all requirements that the requested works have to meet, including battery limits and interfaces. Attachments to the Employer's Requirements are for example, site related studies (e.g. soil investigation). This attachment is usually prepared by the Employer as a basis for the Contractors to prepare their quotations in the tender process.

It is important to note that the Employer's Requirements should only contain technical descriptions. This attachment should not contain commercial provisions on penalties, liquidated damages or due dates, for instance. The "scope" of the technical and commercial documents must remain "clean" in order to preclude potential claims and confusion.

This attachment is typically referenced in the EPC provisions on the scope of works.[2]

c. HSE Requirements

In this appendix the requirements on HSE during design, manufacturing, construction and commissioning are defined. The specific content of the Health and Safety attachment strongly depends on the legal health and safety requirements resulting from the applicable law and the Employer's own HSE policy. The EPC Contractor is then responsible for transferring the requirements into site regulations and cascading them down to his sub-suppliers.

1 See the drafting example in below chapter 3.6.1c).

2 See the drafting example in below chapter 3.3c).

Shortly after contract signature, the Contractor is required to provide an HSE plan on the basis of the stipulations made in this appendix. The Employer should reserve the right to approve or reject the HSE plan.

The Contractor should be obligated to communicate as early as possible during the tendering phase, the sub-contractors it intends to engage throughout the project execution, in order to allow the Employer to approve or reject sub-contractors. Additionally, this enables the Employer to qualify *sub-suppliers* unknown *to the Contractor, if the Employer deems this necessary*.

This attachment is typically referenced in the EPC provisions on Contractor's obligations.[3]

d. Schedules

For the tender, at least three draft schedules should be provided and agreed during negotiations:

e. Project Schedule

The Overall Project Schedule shows main processes, payment milestones and penalized milestones. In preparation of negotiations a Project Schedule should be formulated demanding to ensure that the time targets of the stakeholders are met.

f. Payment Schedule

The Payment Schedule is a table which lists the different payment milestones, i.e. the events on the occurrence of which the Employer has to pay a portion of the contract price. The Payment Schedule contains a clear definition of the conditions that must be met to fulfill the respective payment milestones. It also mentions the percentage of payment linked to the fulfilment of a certain milestone. The payment schedule reflects the sequence of activities in the project. The first payment milestone event usually is the advance payment, whereas the last payment milestone often is the handover of the final documentation to the Employer.

Contractors will always strive to agree on a cash-neutral payment schedule, which means, they receive payments from the Employer on or shortly before the date on which the Contractors themselves have to pay their sub-contractors on site or the vendors of equipment or material. However, the Employer seeks to shift as many payments as possible to the end of the project. The farther the project advances, the more payments will be made to the Contractor and the less influence the Employer will have on the Contractor by e.g. retention of payments or set-offs. The Employer should link at least 5 per cent of the payments to the submittal of the final customer documentation.

3 See the drafting example in below chapter 3.5.10c).

The attachment "Payment Schedule" is usually referred to in the provisions on the contract price.[4]

g. Document (Review) Schedule

In addition, a Document Schedule should be agreed on. This schedule contains a list of all project related planning and documentation documents and the associated actions (e.g. for information or approval) as well as the settlement dates.

h. Reporting Requirements

The Reporting Requirements define the type, way and frequency of reporting. Depending on the project strategy and the complexity of the project the level of detail as well as the frequency of reporting are presented. The project reporting should include:

- An overview of recent and upcoming activities
- Detailed information on the critical path
- Changes (towards time and quality) agreed within the reporting period
- HSE statistics
- A detailed time schedule for the next phase *including a critical path analysis*
- Site activities jeopardizing the overall time schedule
- Forecast on personnel at site

The Employer must ensure that he is able to manage the requested reporting within his organization. Otherwise, he risks receiving important information without being able to review it and to take appropriate actions.

i. Quality Requirements

In the Quality Requirements the minimum level of Contractor's quality planning and assurance activities is defined. Based on the defined requirements the Contractor provides shortly after awarded the contract, he submits a quality plan. This describes his activities to ensure the requested quality of materials and components. This quality plan then needs approval by the Employer. In addition, so called ITPs (Inspections, Tests and Protocols) *should be requested with the bid*. The ITPs outline the tests required for each component (e.g. factory tests). The Employer insists on the right to participate in the tests. Therefore, it is important that the Contractor announces any tests in advance to allow the Employer to be able to attend.

Next to the quality assurance of components the Quality Requirements should also contain the process for handling non-conformities. Most quality related issues occur at the sub-contractor level. To cope with this fact, the Employer ensures the right to reject subcontractors. With contract signature, a list of sub-contractors should be agreed. The Contractor should ensure that the stipulations relevant for him are cascaded down to the sub-contractors.

4 See the drafting example in below chapter 3.6.1c).

This attachment is typically referenced in the EPC provisions on quality assurance.[5]

j. Commissioning Requirements

The commissioning phase of a project is characterized by high risks with regard to the works, but also with regard to safety. During the commissioning phase the components and systems go live for the first time. *To minimize risks associated with the commissioning*, it is important to *define in the tender documents* clear processes with roles, responsibilities and approvals. This is even more evident if there are manifold interfaces to other suppliers or existing infrastructures. The commissioning should be thoroughly planned in the development phase and transferred into the tender documents to define clearly the interfaces between the Employer and the Contractor. Below, you see an example of a commissioning sequence, assuming a combined cycle power plant as EPC:

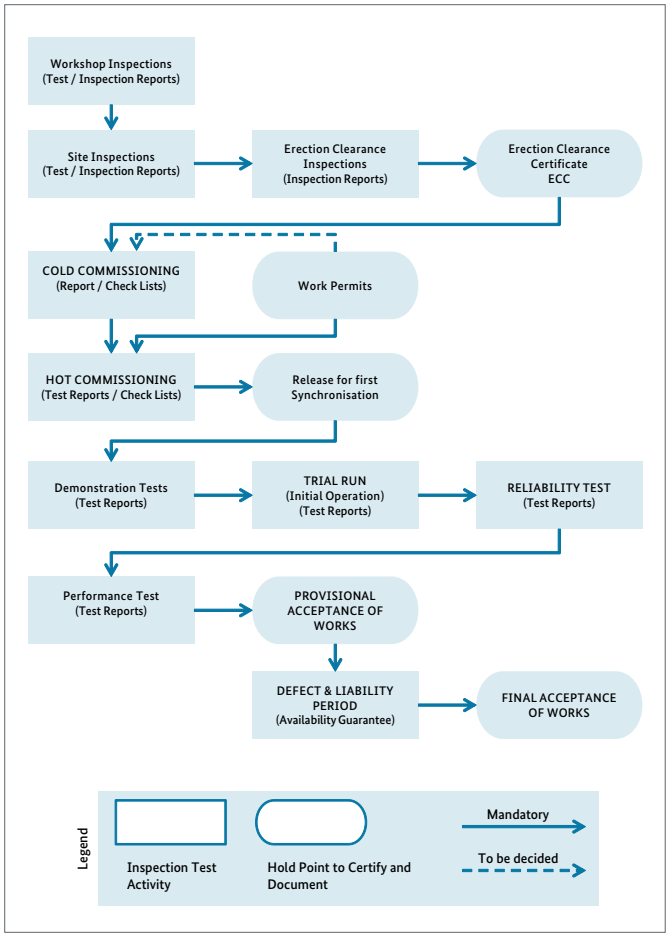


Illustration 15: Commissioning & Acceptance Sequence

5 See the drafting example in above chapter 3.5.9.

The illustration above reflects the complexity of the commissioning sequence, resulting in the Final *Acceptance of Works*. In order to ensure that all works are properly completed, it is important to prove the different steps by releasing certificates. Such caution is required not to damage any of the equipment.

All the different commissioning steps form important milestones and can be used as triggering events for payments, because the preconditions to reach such a milestone are clearly defined and refer to the progress in the entire plant.

k. Project Documentation Requirements

In most projects, the Project Documentation is not sufficiently observed during tendering and project execution. Project Documentation is very important for operating the plant and applying modifications during the plant life cycle. If documentation is incomplete or not available at all, the Employer needs to undertake studies and surveys in the later plant life cycle, to be able to do any works on the existing plant. The Project Documentation Requirement's provide regulations on type, content and level of detail of the Project documentation. Besides the Final Customer Documentation, there are also planning documents required during project execution. The Employer should define what kind of documents he requires and what kind of planning documents he *wishes to receive for approval before they are applied. Therefore, a document schedule should be introduced* which clearly defines the type of document, content and purpose (e.g. for information, for review, for approval) and *submission date.* In addition, the Project Documentation Requirements should define the means of communication for exchanging documents as well as other official communication. This includes for example IT-tools to be used, document mmeta-data, etc.

This attachment is typically referred to in the provisions on project documentation and / or quality[6].

l. Training Requirements

Prior to the hand-over of the plant to the Employer, the Contractor should train the Employer's operating personnel. Within the tender preparation, the Employer needs to analyze what training is needed within its organization, in order to draft the training requirement documentation.

m. Maintenance Requirements

The appendix Maintenance Requirements defines the Employer's envisaged maintenance strategy. It refers to maintenance frequencies, but also contains requirements referring to the accessibility of components for maintenance.

6 See the drafting example in below chapter 3.5.6c).

n. Construction Site Infrastructure Requirements

Usually the Employer provides some supplies to the Contractor during project execution and commissioning, e.g. electricity, water, gas or instrument air, On the other hand the Employer might request the Contractor to provide some office space. In this appendix the requirements from both sides and the manner of remuneration are defined.

o. Permits and Approvals

For each type of plant different permits and approvals are required, which influence technical features and design. If the permits and approvals are already available prior to awarding the contract, then these documents should be part of the Tender Documents. This secures that the Contractor is aware of all relevant information and with the signature of the contract is obliged to fulfill those, independently of what is stated in the Employer's Requirements.

p. List of Sub-Contractors (also called "sub-providers")

The list of sub-providers is the Employer's governance tool to control what kind of sub-providers will be contracted by the Contractor. The Employer should reserve the right to approve or reject proposals on sub-providers from the Contractor without justification. Reasons could, for example be:

- Quality related concerns
- HSE related concerns
- Fleet philosophy (e.g. same pump suppliers in all plants)

The list of sub-providers is basically a template to be filled out by the Contractor. In order to receive relevant and useful information, the Employer should think about components and materials for which he is especially interested to know the pre-selected providers. Such a list could, for example, be clustered in mechanical, electrical, civil and construction, but also on component level. The more detailed the list is the better the information. If the Employer can arrange the list based on components, he can gather information on further sub-providers in the supply chain which are not necessarily direct providers of the Contractor but further down in the line. *For example, this could be information on suppliers for electronic equipment, pumps or valves, which would be contracted by sub-contractors of the Contractor.*

The list of suppliers also allows the Employer to pre-qualify and audit the providers of supplies, which is of high importance (e.g. due to quality or reliability reasons) as well as to extend his own supplier base.

q. List of Spare Parts

The Employer requests a list of spare parts together with the offers. This list also becomes an appendix to the contract. If the Employer knows which spare parts he requires he should specify those. If the knowledge about required parts is limited, the Employer should leave the proposal for spare parts with the Contractor. But the Employer should at least pre-define a template with required information (e.g. type,

serial number, quantities, supplier, etc.). Operations personnel from similar plants could lend support in defining the spare parts or the information needs.

The initial spare parts package is relevant with regard to a possibly requested availability guarantee. The Contractor claims certain spare parts to be able to fulfill the availability guarantee. On the other hand, the Employer should use his strong negotiation position to realize the spare parts for a good price by combining the procurement of the EPC package with the spare parts procurement.

If the Employer operates various plants of similar size he could for example use a spare parts pool. If this is the case, the Employer checks what kind of spare parts are already available in this pool, and how operations estimate the risk of parts failures to further extend the stock. To prioritize the spare parts need, a simple matrix can help combining "risk of failure" with "actual costs" of the respective spare part. Other criteria could be "risk of failure" and "lead time for substitution" or "impact on operation". The Employer should carefully check the proposed spare part list to ensure he receives the spare parts he really needs. For the tender, the Employer should provide a template with the respective categories and information requirements related to the spare parts (e.g. type, ID, label, size, weight, etc.). This information is also relevant in order to size the storage facilities.

r. Insurance Requirements

The EPC contract usually stipulates which party has to acquire and maintain which insurance.[7] The attachment on insurance requirements sets out the details of each insurance policy to be effected. For example the term of validity of the insurance policy, the maximum amounts of deductibles and the minimum insured sum would be detailed. In general, the Employer requests a projection of all in-insurance from the Contractor, which also covers all levels of sub-providers and sub-contractors, to prevent costs from damages and losses. Another possibility could be that the Employer provides this insurance. For EPC projects, it is recommended to shift the responsibility to the EPC contractor. For projects contracted in lots, it is more likely that the Employer provides the insurance.

The attachment "Insurance Requirements" is usually referred to in the provisions on insurances.[8]

s. Change Order Procedure and Other Templates

In order to have streamlined processes during the project execution, the use of templates for standard processes has proven to be of advantage.

Change Order Procedure: To build the basis for future changes in the contract scope, the contract should provide for regulations with regard to the process, as well as

7 See chapter 3.20.

8 See the drafting example in below chapter 3.21c).

templates for the handling of scope changes and claims. Process, response times, etc. need to be aligned with the project team. In addition, it is essential to ensure that the templates contain all information required for the Employer to evaluate the impact of the changes with regard to costs, time and quality. Therefore, it is *strongly recommended to clarify the process, deadlines for responses and the level of information required in the Contract Draft.* This appendix should contain the process for claims/scope changes from and to the Employer as well as templates for Technical clarifications, Change orders (scope changes) by Contractor & Employer, Claims and Nonconformities.

In this context, technical clarifications detail the specified scope, e.g. the paint colour. The specification stipulates that the paint on the walls should be light, which is not precise enough. This could, for example, be white or yellow. *In such case the Contractor should request a clarification with the Employer to detail the Employer's expectation. The result of such clarification meetings should be documented* in the technical clarification. Usually, technical clarifications are cost neutral.

Changes can be requested by the Employer or proposed by the Contractor. Change orders are defined as scope changes (e.g. quantities, functions, materials, time, etc.). Change orders can, for example, be changes in the technical scope which the Employer has not specified in his Employer's Requirements. Change orders can also be proposed by the Contractor, if he identifies possibilities to decrease costs, working time or optimizations towards the technical design.

Nonconformities are deviations between the Contract and the actual works. Claims can be raised based on identified and communicated nonconformities. Nonconformities can be addressed by both sides as soon as they are observed. For example, the Contractor could claim that terminal points are not available in due time or in sufficient amount, whereas the Employer's claims are mostly related to the technical execution or contractually agreed milestones.

If a mutual agreement is not possible, the contract must provide for a mutually agreed upon mediator, who acts as a third party at an intermediate escalation level. If the decision on this level is not accepted by one or both parties, there is still the last resort to negotiate the claim at court.

Other Templates: The parties of an EPC contract often agree on further standard forms, such as templates for a limited and full notice to proceed and the takeover (acceptance) certificate. Here, the same rationale as for the change order templates applies: The parties want to avoid confusion and thus, create standards that – when issued by the Employer and received by the Contractor – do not leave room for interpretation and carry a clear message. The issuing of the Take-Over Certificate will, for example, entail the legal consequences, which are triggered by the acceptance of the works. Consequently, the Contractor could not argue that a signed performance test report constitutes the acceptance of the works.

t. Performance Guarantees

The performance guarantees are the technical parameters against which the performance of the scope of works is measured. In this appendix, only the parameters should be stipulated, not the testing method. The reason for this is to have this appendix as slim and as precise as possible. *The performance guarantees should be developed together with the future operation personnel and the engineering team, who are responsible for the specification of the Employer's Requirements. It is crucial that the performance criteria are clearly measureable, because the Acceptance of Works depends on achieving the performance guarantees.* The testing method to verify the achievement of the performance guarantees should be described in detail in the Employer's Requirements.

u. Bill of Articles and Conditions

The attachment "Bill of Articles and Conditions" usually contains a table that reads like a price list. Specific costs for concrete, foundation pillars, steel or labor costs are stipulated in this list. If a change of scope occurs and the Contractor has to issue a "Change Request", then it will calculate the additional price on the rates set out in the Bill of Articles and Conditions.[9]

v. Forms and Templates for Securities

The Employer usually requests several securities, which are to be provided by the Contractor. The Employer generally includes templates for such securities in the tender documentation, in order to make sure that the terms and conditions of each security serve the Employer's needs. For an EPC project, the following securities could be requested[10]:

- Advance Payment Guarantee
- Performance Security
- Parent Company Guarantee
- Defect Liability Period Security

The desirable securities should be applied in relation to the capabilities (technical & financial) of the Contractor and the scope of works. The Parent Company Guarantee may be dispensed with, if the Contractor is robust. If the scope of works bears a technology risk, the Employer should lay special emphasis on the Performance Security. The Advance Payment Guarantee should cover the costs for a clearly defined package of the scope of works, which is to be covered by the advance payment. The Defect Liability Period Security covers the risk that the Contractor does not sufficiently remedy defects in the guarantee phase. The Employer should carefully analyze the potential suppliers as well as the scope of works to be able to specify his requirements towards securities. The Employer should bear in mind, that each security is linked to financing costs on the Contractor's side, which the Employer needs to bear.

9 See also the explanations in above chapter 3.4.

10 For a detailed description 3.7.2

d) Review of compiled tender documents

Prior to releasing the request for quotation, the compiled tender documents should be reviewed as a whole, with the aim of identifying and mitigating claim sources, such as inconsistencies. It is also essential to have a content based check – ideally by experts who have not been involved in the preparation of the tender documents.

Their findings and proposals for improvements should be presented to the project team and incorporated carefully by the responsible disciplines.

Before the request for quotation is released, the procurement manager must ensure that all tender documents have been approved by signature by the respective discipline.

In addition, the management is to be informed about the intended release of the request for quotation, as well as about the supplier basis.

e) Supplier pre-qualification & qualification

(i) Essentials for the Pre-qualification of Potential Suppliers

The procurement manager cross-checks the identified suppliers with the corporate supplier basis to define the need of pre-qualification and qualification actions. Supplier pre-qualifications are usually paper based and should consider different dimensions such as financial, HSE, quality, organization, capabilities, etc. The procurement manager for example requests a financial statement and studies the business reports (if publicly available). In addition, together with the project team, he prepares a request for information on project relevant items, which will be sent to the potential suppliers. This request, as a minimum, should include:

- General company information (turnover, number of employees, subsidiaries, etc.)
- Special capabilities required for the intended scope of supplies
- HSE qualifications and information related to their HSE management system *(e.g. statistics from recent project)*
- QA/QC qualifications and information related to the supplier's quality management system *(e.g. ISO 9001)*
- Relevant references
- Other project related information (depending on the scope of supplies)

(ii) Essentials for the Qualification of Potential Suppliers

If the paper based analysis leaves doubts on a supplier's capabilities and the supplier base is rather limited or a specific supplier is especially interesting for the Employer for strategic reasons, the Employer should conduct an audit. Audits can be divided into product, process or system audits and are carried out at suppliers' shops or sites. During an audit, a team of the Employer´s (consisting of members of different disciplines) visits the supplier and benchmarks the supplier's performance. Each type of audit has a different focus. *The objective of an audit is to prove the robustness of a system, process or product. A system audit is the most complex type of audit,*

because during a system audit the entire organization of a supplier is scrutinized. The process audit focuses on one or more processes which the Employer regards as important with regard to the project success (e.g. a production process or welding technologies). In a product audit the Employer assesses the quality (e.g. materials, functions, availability or reliability) of a product. The process for all three types of audits is similar. The Employer prepares an audit plan, which defines and describes the following:

- Supplier to be audited
- Objective of the audit
- Time & location of the audit
- Codes, standards or certifications against which the supplier will be audited
- Employer's audit team
- Supplier's audit team
- Audit scope (e.g. product, process or system)

The audit plan needs to be agreed upon by the supplier. The Employer's audit team should internally define their area of interest or, even better, provide detailed questions to be answered during the audit. The supplier should provide the relevant information in advance (e.g. process descriptions, roles and responsibilities, etc.). When the audit takes place the Employer's audit team should strive to get as much information as possible for the area of interest. At the end of the audit the Employer should share its findings with the supplier. Findings could be:

- Deviations: non-adherence of one or several requirements to meet required results
- Recommendations: room for improvement although the results are already acceptable
- Positive findings: good practice

The results of the audit should be documented in an audit report. The audit report may be shared with the supplier. Based on the audit results, the Employer can decide if the audited supplier is robust enough to perform the works or not. Consequently, the results influence the decision whether or not to involve the supplier in the tender process. If the supplier market is restricted or the Employer intends to promote new suppliers, the Employer could also involve the supplier in the tender process with the condition, that the deviations are eliminated with contract signature.

2.3.2 Invitation to bid and bidding period

The procurement manager submits the full package of tender documents to the potential bidders (e.g. a digital copy or a hard copy). The Employer defines deadlines for the suppliers' confirmation on reception of the tender documents (e.g. one week after submittal) as well as for the supplier's confirmation to participate in the tender (e.g. two weeks after submittal).

During the bidding period the main purpose of communication between the Employer and bidders is the clarification of requirements stipulated in the request

for quotation. During this phase, a clear definition of communication channels is essential to ensure that all bidders have the same level of relevant information. In order to provide this, it is recommended to implement a single point of contact towards the bidders. This role is ideally taken by procurement. Additionally, the Employer establishes a document management system in which all correspondence is filed (this could be a simple Excel sheet or a sophisticated IT tool). To keep track of the correspondence, the Employer should insist on the written form for **all** communication.

Aside from the direct communication, it usually helps to offer the bidders the possibility to visit the site (especially for Brownfield projects). This gives the bidders the possibility to assess the boundary conditions and envisaged interfaces. The site visit is also used as a formal technical clarification meeting. Depending on the number of bidders this meeting could be held with all bidders concurrently or with each bidder individually. There are pros and cons for both and a decision which way to follow depends on the available capacities, the project complexity as well as the number of bidders. In this phase it is essential to treat all bidders equally regarding information provided and also regarding the possibilities to visit the site.

2.3.3 Bid Evaluation Period

The bid evaluation period starts with the reception of bids.

The procurement manager should prepare the bid evaluation period in advance by securing in-house resources for the *respective disciplines, which are required for* the *evaluation and developing evaluation criteria.* Additionally, a short listing strategy or target should be available prior receiving the bids.

The bids should be opened by the responsible individuals in the project (e.g. Project Manager, Financial Project Manager, Technical Project Manager) and the procurement manager following the (at least) four eyes principle. Prior to opening the bids, a confidentiality agreement should be signed by the persons involved. For the success of the negotiations, it is essential that only a very limited number of individuals knows the evaluation results. Otherwise, someone might share information with the bidders. Since the price is obviously a main driver, this information should be kept top secret.

The procurement manager is responsible for the planning, steering and controlling of the bid evaluation process. The Employer should aim to receive the offers based on his specifications, rather than having replaced his documents by the bidders' documents. For steering and controlling of the offer evaluation, the procurement manager should set-up a list with the different bid documents and define responsibilities and deadlines for the evaluation. The evaluation of each bid document and appendix should be covered by a single person or small, confidential group.

To simplify the process for a first short-listing (to the extent allowed by the applicable national procurement laws, if any), the Employer can provide for different levels of details for the evaluation. The general pillars as well as the weighting of the pillars should be the same for both types of evaluations, the rough (for short-listing) and the detailed (contract award proposal).

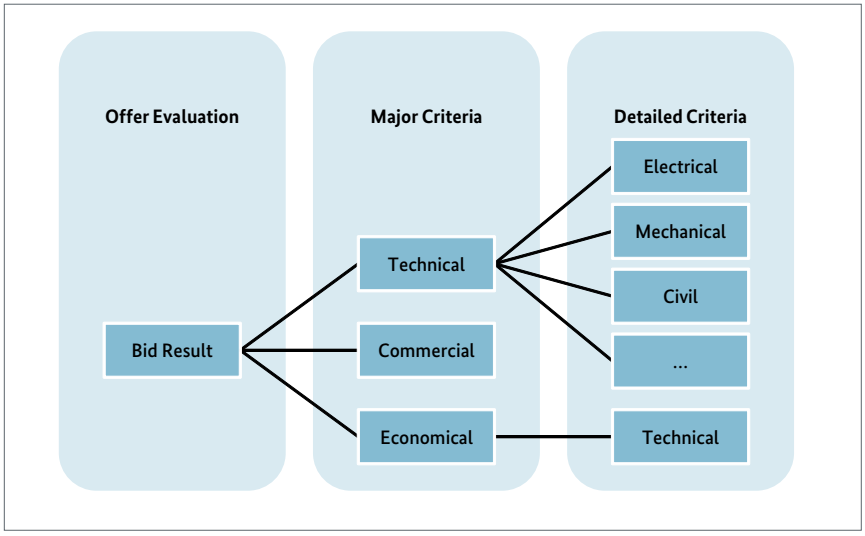


Illustration 16: Offer Evaluation Criteria

The procurement manager is then responsible for compiling the different evaluation results. Based on the objective and transparent evaluation criteria, he will provide proposals for the short-listing.

Although general short-listing targets have been defined prior to receiving the bids, the procurement manager should consider the quality of the offers received. If for example the initial strategy has foreseen a short-listing to 3 bidders, but the actual evaluation shows 4 bids on the same level, the Employer should consider the 4 bids for a first negotiation round.

2.3.4 Preparation for Negotiations and Negotiation Phase

After having assessed and evaluated the bids received, the procurement manager informs all bidders regarding the next steps. The procurement manager invites the shortlisted bidders to negotiations. The bidders who were not shortlisted should be informed in a short letter that they are not considered for contract negotiations. The procurement manager is also responsible for planning, steering and controlling the negotiation phase.

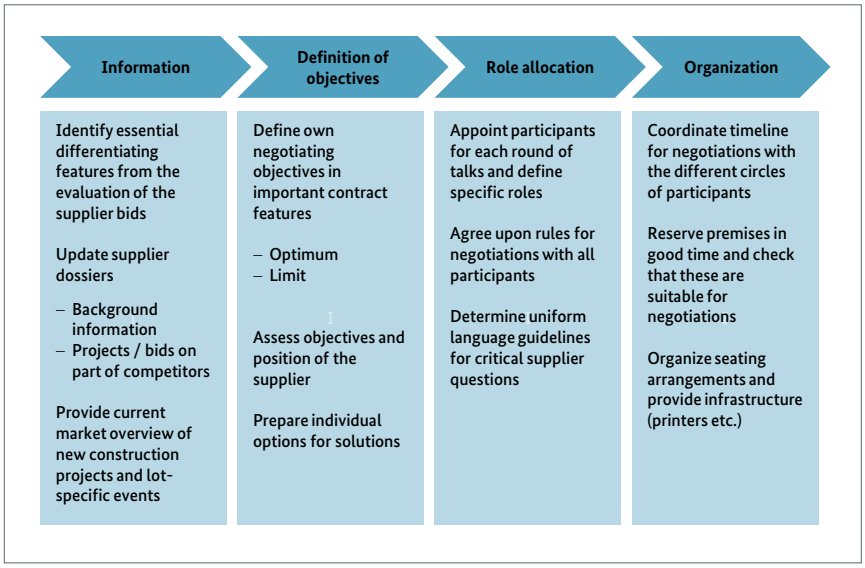


Illustration 17: Negotiation Preparation

A successful negotiation phase must have a defined negotiation strategy, clear targets, and should be documented in writing. The negotiation strategy and targets should be aligned with the project team and known by all project team members involved in the negotiation phase. Depending on the state of negotiations, the strategy and targets may be subject to adjustments.

In addition, it is important to clarify roles within the negotiations with a clearly defined mandate. This especially refers to critical issues related to the project.

Although the offer evaluation usually indicates the supplier who will most probably be awarded, the project team should treat all bidders equally, because revised offers might be requested during negotiations which may lead to a different ranking.

As explained earlier, the Employer should aim to include the clarification and negotiation results directly in the Employer's documents, which finally form the contract. To avoid the risk of misunderstandings, the revised documents are shared with the bidders after each negotiation round.

The sequence of negotiations usually follows the contract structure. The Terms and Conditions as well as the Employer's Requirements, which form the largest and most discussable part, should be negotiated at the very beginning, whereas other appendices can follow in the later negotiation phases. To reduce required resources for negotiation and to increase the pressure on the bidders, the Employer announces short-listings on a regular basis to which the bidders are asked to provide

revised bids. *The Employer ensures that there remain suppliers in the negotiation until contract signature to make sure that there is always a fall back scenario possible to other suppliers.* Besides, this enhances the Employer's negotiation power.

2.3.5 Decision to award

After having reached the necessary clarification and negotiation results, the Employer requests a final bid from the shortlisted bidders, which reflects all negotiated changes compared to the initial bid. The information provided in the final bid is to be transferred into the evaluation tool and the result becomes the basis for the contract award proposal. The results are documented and the contract award proposal must then be approved by competent and authorized managers within the Employer's Organization.

The negotiation phase ends with the contract award documented by signatures of both parties, the Employer and the Contractor. Besides this formal act, the procurement manager should document the negotiation phase (applicable to all bids) including the following:

- Bids (first & final)
- Signed confidentiality agreements and bid opening protocols
- Negotiation protocols
- Offer evaluation (for all stages of short-listing)
- List of participants in clarifications and negotiations
- All official communication between the Employer and the bidder

A copy of the contract (with the price information deleted) is made available to the entire project team for the upcoming project execution phase.

2.4 Phase IV: Project Execution Phase

In the project execution phase the role of procurement shifts from procurement to contract and claim management, and is usually covered by two functionaries: the contract manager and the claim manager. Ideally both managers are fully delegated to the project and located at site together with the project team. This ensures close distance to the works performed and the ability to perform the assigned tasks effectively. Depending on his skills, both functions can be covered by the same employee.

2.4.1 The Claim Manager

The claim manager is responsible for preventing the project from harm in terms of unjustified claims and detecting contract breaches by the Contractor[11].The role and responsibilities of the claim manager are mainly defined by the processes related to variations. During the handling of claims and variations he works closely together with the contract manager. The main tasks are:

- Assistance in technical clarification meetings
- Assistance in evaluation and negotiation of variations
- Identification and registration of nonconformities
- Claims handling

2.4.2 The Contract Manager

The contract manager is responsible for any communication with the supplier as well as any type of commercial negotiations. To be able to realize optimum results for the project, he regularly interacts with the technical disciplines and must be aware of all ongoing activities. The contract manager is responsible for the following tasks:

- Single point of contact for official communication to and from the Contractor
- Alignment of claim strategies with other projects
- Handling of bonds and securities
- Review of Contractor's procurement schedule
- Continuous supplier evaluation
- Variations management
- Check of invoices
- Procurement of smaller procurement packages not covered in the main contract(s)

2.4.3 Handling of Change Orders

If the Employer intends to change the contractual scope, a change order needs to be prepared, negotiated and issued. The process starts with a request by the Employer describing the requested changes, which is then submitted to the Contractor. Based on the request, the Contractor prepares a proposal with information on the impact of the variations on cost, time and quality. In return the Employer is asked to check the proposal. The Employer has different tools to assess if the requested compensation is reasonable. On the one hand, he has information on specific costs in the appendix "Bill of Articles and Conditions", which enable the Employer to perform a clean sheet analysis. On the other hand, it could request offers from the external market for a comparison. However, generally Contractors try to increase the margin of projects based on variations and claims. Therefore, the Employer should thoroughly assess the quotes received and intensively negotiate the scope

11 See also: Chapter F: Operational Claim management

as well as the costs. If the Change Order is agreed between the Employer and the Contractor, it is transferred into an amendment to the contract. The entire process is managed by the contract manager with assistance of the relevant project team members. In addition, the claim manager supports the process to mitigate potential claim sources.

2.4.4 Contract Related Communication

The contract manager is usually responsible for collecting and documenting all contract related documents. The document management system [DMS] itself is established and maintained by other disciplines, but the contract manager assists in the conception works with regard to communication with the Contractor and with regard to the documentation of Contractor related documents. *All documents in the DMS should be available to all the Employer's project members during project execution.* The documentation in the DMS will also be the basis for the hand-over to operations after the Commercial Operation Date. To ensure that all relevant documents are in the DMS, the contract manager has to start with the proper documentation at the very beginning.

2.4.5 Check of incoming invoices

Another essential task of the procurement manager is checking incoming invoices. He was involved in the tendering phase and subsequently verifies that all pre-conditions defined in the payment schedule are fulfilled by the Contractor. In addition, he verifies that the invoice is in proper shape and contains all legally required and contractually agreed information.

2.4.6 Contractor Evaluation Process

Prior to releasing the request for quotation, the procurement manager performed a pre-qualification as pre-requisite for the suppliers to enter the list of potential bidders. To verify and document the performance of the Contractor, the contract manager performs a Contractor Evaluation during and after the project execution and feeds the results into a supplier data base available to all persons involved. The Contractor Evaluation covers all important disciplines and phases of the project and the evaluation is done by the respective disciplines. The results may also be discussed with the supplier. This is especially helpful during the project execution to improve co-operation.

The Contractor Evaluation provides a quantified result underlined with explanations and examples for the quantification. The evaluation can be done by the criteria (quantified 1-5) shown below:

	Criterion	Rating	Weighting	Scoring
1	Design / Planning / Engineering		10,7%	0,0
2	Procurement, logistics and subcontractor management		7,7%	0,0
3	Construction		7,7%	0,0
4	Quality of Product and Service		10,7%	0,0
5	Schedules & Reporting		7,7%	0,0
6	Documentation		7,7%	0,0
7	Commercial		7,7%	0,0
8	Health, Safety & Environment		7,7%	0,0
9	Specialist Skills of Personnel		2,7%	0,0
10	Behavior in Case of Endorsements		2,7%	0,0
11	Collaboration and Flexibility		7,7%	0,0
12	Commissioning		7,7%	0,0
13	Other		7,7%	0,0
	total	**0,0**	**100%**	**0,0**

Illustration 18: Criteria for Contractor Evaluation

To further substantiate the different evaluation criteria it is recommended to define sub-criteria that will be evaluated. The average of the sub-criteria forms the rating for the respective criterion. Depending on the project, it can also make sense to introduce a different weighting for the different criteria. Finally, the Contractor Evaluation is aligned and approved by the project management.

2.5 Phase V: Commercial Operation and Maintenance

This chapter casts a brief spotlight on the situation after Acceptance of Works / Take Over, when the EPC Contractor has left the site and the Employer is responsible for the site, the plant and its proper operation.

2.5.1 Commercial Operation

Commercial operation means the use of the result of the works by the Employer for commercial purposes.

a) Commercial Operation prior to expiry of the EPC Defect Liability Period

Depending on the duration of the EPC defect liability period (also called "Warranty Period") the initial years of commercial operation run parallel with the EPC defect liability period on the mechanics and parts of the industrial plant. In order not to deprive itself of any defect liability claim against the Contractor, the Employer should operate the industrial plant strictly in accordance with the operation manual that the EPC Contractor has provided as part of the EPC scope of works and services. Any deviation from the technical limits set out in the operation manual will put the Employer's defect liability claim at risk if a malfunctioning of the plant occurs.

Furthermore, the Employer should refrain from having defective parts repaired by its own personnel or by third parties as this will often jeopardize potential defect liability claims, too. Any defect detected during the EPC defect liability period should promptly be reported to the Contractor together with the demand to repair the defect. Here, the EPC provisions on defects and defect liability on spare parts are still "in force" and applicable and should be abided by the Employer in order to protect its own legal position.

b) Final Acceptance of Works

In most cases final acceptance of works does not constitute an acceptance in the legal sense (see chapter D 3.6.2 e)), because the Employer has already accepted the plant. Final acceptance of works indicates the point in time when the defect liability period ends. At this point in time the EPC contract's scope of works and services, including Contractor's defect liability obligations, has been entirely completed and the Contractor is released from all obligations towards the Employer. Usually, the Employer issues a "Certificate of Final Release" or "Certificate of Final Acceptance of Works" to the Contractor in order to document that point in time. If there are no defects and/or defect liability claims pending, the Employer is obliged to return the original deed of the Defects Liability Bond to the Contractor.

c) Commercial Operation after expiry of the EPC Defect Liability Period

Upon expiry of the EPC defect liability period there is no defect liability claim that can be lost any more, so that the Employer may operate the industrial plant at its discretion. If, despite proper operation in accordance with the operation manual, a part of the plant should become defective, then the Employer must have this part fixed at its' own cost – there is no warranty claim against any EPC Contractor any more.

2.5.2 Maintenance

Any industrial plant needs to be technically maintained in order to secure its long term, safe and stable operation.

a) Maintenance during EPC Defect Liability Period

Depending on the project type and the used technology, the Employer may want to conclude a maintenance contract and the EPC contract with the same Contractor in order to reduce the interface risks between EPC defect liability claims and maintenance. There are a few issues that the Employer should consider when planning its maintenance concept: Firstly, the legal entity that performs the EPC scope of works and the legal entity that will take over the maintenance scope of works need not necessarily be the same, even though the companies' names may sound similar.

Example:

The Employer who is going to award an EPC contract for a petro-chemical plant to a company called "EPC Contractor Ltd" wishes to have the same Contractor for the maintenance of the plant during the 3-years EPC defect liability period. EPC Contractor Ltd explains that they are specialized in construction, but within its group of companies the "EPC Contractor SpA" would perform the maintenance services as maintenance Contractor.

Since both companies belong to the same group of companies, the Employer concludes the EPC contract with EPC Contractor Ltd and the maintenance contract for the commercial operation during the defect liability period with EPC Contractor SpA.

About one year after plant acceptance and shortly after EPC Contractor SpA has carried out some maintenance works on a generator, this generator overheats and breaks down.

The Employer calls EPC Contractor Ltd and requests to repair the generator, as the breakdown appears to be a defect that is covered by the EPC defect liability. EPC Contractor Ltd investigates the generator and refuses to repair the machine, because the breakdown was probably caused by an improper maintenance inspection carried out by EPC Contractor SpA. EPC Contractor SpA refuses liability alleging that the maintenance works have been carried out with due care and diligence.

The Employer argues that the question of who is responsible for that defect is an inter-group problem which should not be resolved to the detriment of the client.

EPC Contractor Ltd explains that EPC Contractor SpA was sold off the group half a year earlier and – irrespective of that change in the group structure – EPC Contractor SpA has always been a separate legal entity for whose defaults EPC Contractor Ltd could not accept liability.

The example above illustrates that the Employer may, to his surprise, end up in an uncomfortable sandwich position between EPC und Maintenance Contractors, both denying liability for the defect. In order to avoid a similar situation, the Employer must ensure that the EPC Contractor and the maintenance Contractor are the same legal entity. If that is not feasible, the Employer can at least mitigate the situation by inserting provisions into the EPC and the Maintenance contracts, stipulating that both Contractors are restricted in refusing liability for a defect which occurred. They are jointly and separately liable for fixing defects regardless of whether the defect is be attributable to the EPC contract defect liability scope or the maintenance contract defect liability scope.

If the Employer selects a different maintenance strategy and hires a third party maintenance Contractor for the maintenance works during the EPC defect liability period, the Employer will have to manage and bear the inherent risk resulting from that situation.

b) Maintenance after EPC Defect Liability Period

For the time after final acceptance, when there are no EPC defect liability claims that could be endangered, the Employer may choose whatever maintenance Contractor it wishes to have. However, there may be restrictions resulting from the technology used for the plant. If, for example, there is a cutting edge technology installed, then probably only the EPC Contractor will be able to perform the maintenance works due to its special know-how.

Sometimes Employers try to lower their initial investment expenditures by leveling out the costs for the construction of the plant over the period of a long term service agreement ("LTSA") for the maintenance of the plant that it concludes with the EPC Contractor. When applying this strategy, the Employer should take into account the following considerations: (i) the LTSA should have clear provisions on (the costs of) termination (for the Employer's convenience). As nobody can predict how the situation will be in 5 to 10 years, a clear "exit option" is favorable (ii) the payment structure should be aligned with the major maintenance events. In this way payments are linked to the necessity of performing maintenance work on the plant rather than consisting of a system of fixed, periodical installments; (iii) the LTSA should have a definite expiry date ("sunset date"), if applicable. Such a defined expiry date may also be mandatory according to the applicable anti-trust legislation; (iv) ideally the Employer should have the right to require a postponement of the sunset date. If the original expiry date occurred e.g. six months prior to the scheduled major revision or inspection of the plant, such an inspection would then still be performed prior to the expiry of the LTSA.

2.5.3 Items to remember

a) Document hand-over to operations

All procurement and Contractor related documents need to be transferred to operations. These include:

- Contracts
- Official communications
- Initial bids (also from suppliers which were not awarded)
- List of open issues
- Securities (if any)

The contract manager also ensures that all documents are available within the DMS.

b) Lessons learned review

Procurement is in charge of setting up the contract structure as well as preparing the commercial terms and conditions. Therefore, it should be procurement's desire to collect lessons learned referring to the suitability of the contract. Information resulting from the lessons learned review can be considered for future projects and implemented in the contract documents.

For the lessons learned review, representatives of all project disciplines should be invited and interviewed. The contract manager documents findings and also good practice. He especially checks for:

- Recurrent claim sources
- Effectiveness of mechanisms concerning Contractor handling
- Areas of over specification
- General suitability of the contract

All different appendices as well as the commercial terms and conditions should be reviewed. The contract manager coordinates the lessons learned review. But the author of the respective appendix should be responsible for the documentation as well as the implementation of findings.

C. The Project Tender Process: Tender Preparation

Chapter C deals with the tender preparation process and concentrates on basic aspects that tenders are likely to have in common, independent of the type of project and technology to be installed. Special focus is set on the drafting process for an EPC Contract. This focus explainsvarious risk scenarios and potential ways of coping with those risks in the respective contractual provisions.

1 Compliance with National Public Procurement Law

In many countries, public entities (often understood as state owned or state governed corporations) have to comply with national public procurement law when tendering works and services for the realization of infrastructure projects. Non-compliance with public procurement regulations may give legal grounds to some non-elected bidder companies to contest the result of the tender process which – down the road – is likely to cause the first delay in the project. Hence, state institutions and public corporations are well advised to clarify the relevant public procurement legislation prior to starting with the tender.

2 Commercial Tender Strategy

One of the first decisions in the tender preparation process is the decision on the suitable tender strategy, i.e. EPC, EPCM or Multi-Lot. This decision will shape the whole tender process and influence the subsequent project execution.

2.1 Principle Contract Types and Risk Allocation

Depending on the available (in-house) resources, staff experience and the market situation, the Employer may choose either to have only one Contractor or to conclude several (lot) contracts with different (lot) Contractors. Basically, the risk allocation gradually shifts from an EPC lump sum turnkey contract, which confers almost all execution risks to the Contractor, to a reimbursable lot contract imposing minimum risks on the Contractors. The correlation between the various contracting and pricing strategies, and the shift of the allocation of risks and flexibility between the Employer and the Contractor are illustrated by illustration 1 below:

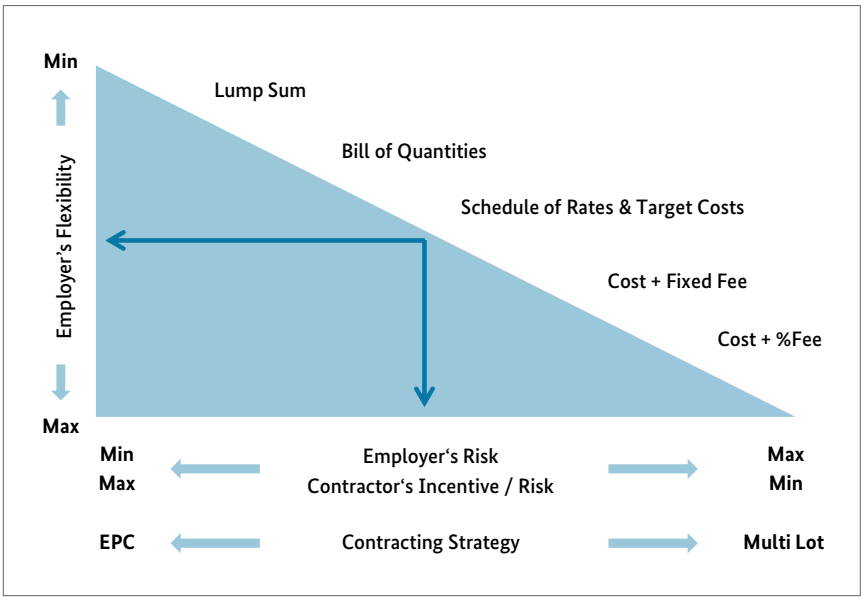


Illustration 19: Allocation of Risks in Engineering and Construction Contracts

2.2 EPC(M) Contracting

Employers planning to execute a large scale project should be familiar with both EPC and EPCM models. Knowing the differences between the two models will enable the Employer to chose the one best suited for his needs.

2.2.1 EPC Contract Model

Under an EPC model the Employers only have to deal with a single principal Contractor. But this single principal Contractor may comprise a consortium of companies acting towards the Employer as "one Entity". The EPC lump sum turnkey contract reduces the Employers' obligations to a minimum, such as granting site access and paying the agreed price. All other obligations and all risks associated with the project execution (design, procurement, erection, commissioning) and the associated interface risks are transferred to the Contractor. Naturally the Contractor will price its risk exposure in its final offer so that the cost of supplies for EPC lump sum turnkey projects generally are more expensive than if the same project had been realized with a lot strategy, leaving the interface and coordination risks with the Employer. Furthermore, the Employer has limited flexibility. Any additional requirement that deviates from the Contractor's pre-determined design will cause additional costs for the Employer. However, such type of contract can score with an increased budget planning security, as the Contractor only has limited chances to claim payments beyond the agreed lump sum price. Because of this price security, the EPC model is the preferred tender strategy when the project is not equity financed but project financed with the help of banks. The EPC contract structure can be visualized as follows:

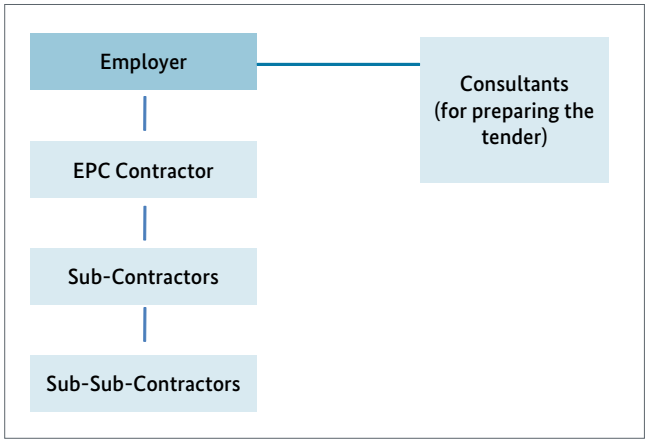


Illustration 20: EPC Contract Structure

2.2.2 EPCM Contract Model

Alternatively, Employers contemplating the execution of a large scale industrial project with EPC contracts will most likely come across the term "EPCM" as acronym for "Engineering, Procurement and **C**onstruction **M**anagement". *An important difference between the EPCM and the EPC form of contract is that in the EPCM model, the EPCM Contractor is providing, usually, only professional services (including design) and is not the principal construction contractor,* i.e. does not deliver any hardware. Instead, the EPCM contractor coordinates and manages only the execution of the project once the planning phase is over. Hence, the EPCM model might be described as being primarily a professional service contract under which the EPCM Contractor performs design works and "Construction Management" (the "CM" in EPCM) services. The EPCM Contractor often acts as the Employer's agent and concludes contracts (e.g. with construction companies) directly binding the Employer. In contrast to an EPC Contractor, the EPCM Contractor does not necessarily take responsibility for delivering the fully completed project by the scheduled completion date. The EPCM Contractor's scope of services rather encompasses (and is limited to): the performance of the design work, the preparation of the budget cost estimate, the preparation of the initial project schedule, managing the procurement and administration of the contracts and finally the co-ordination of the design and construction between the different Contractors.

Therefore, Employers desiring to have to deal with only one principal Contractor and wishing to "contract away" as many risks and as much responsibility as possible, should choose the EPC model instead of an EPCM contract model for their respective project.

The EPCM contract structure is displayed in the illustration below:

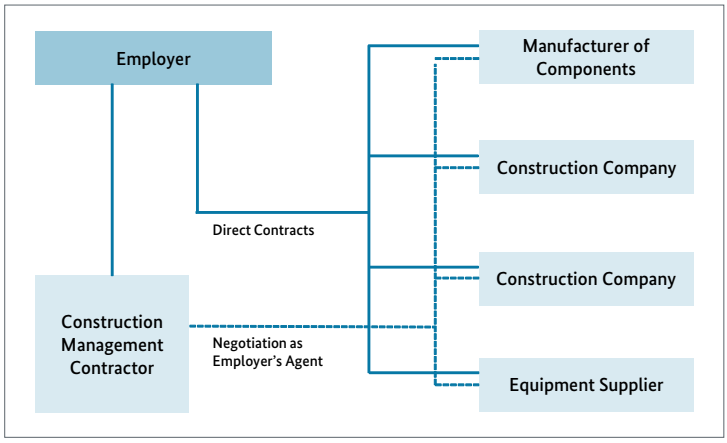


Illustration 21: EPCM Contract Structure

2.2.3 Standard Contract Forms for EPC

The construction industry, respectively engineer and construction business associations, have developed a variety of standard contract forms. Some of these have become business standard in the construction industry. It is important to note, however, that any standard contract form may be a perfect framework to generally cover the most important issues that need to be addressed in an EPC contract. However, in order to properly reflect the specifics of each project in the contractual provisions, any standard form will *always* need to be adjusted to the respective project. A standard contract – and that goes for all standard contracts – can never substitute a carefully drafted and individualized EPC agreement. Thus, it is no more than a suitable starting point for developing the final project EPC contract. Furthermore, it is important to note that standard contract forms need to be adjusted to the applicable law and to compulsory local law.

Example:

TIf e.g. German law applies to a FIDIC EPC model contract, the German Civil Code and, in there, the special provisions on standard terms and conditions will apply to the FIDIC standard contract. These legal rules intend to protect the party which is confronted with standard terms and conditions. In order to avoid restrictions that might result from these statutory provisions, the Employer would have to demonstrate that the FIDIC based construction contract constituted an individual contract. That would necessitate the Employer to provide evidence that each provision of the FIDIC based construction contract was individually negotiated, which can be quite difficult.

a) The FIDIC EPC Contract Forms

The FIDIC was founded in 1913 and due to the long history of this institution FIDIC contract forms (so-called "Books") are likely to be the most commonly used standard conditions in international construction business. Each of the different FIDIC books has been named according to the individual colour of its front cover. For those who have to work with the FIDIC books for the first time, the differences between the books may be difficult to figure out. Therefore, the figure below can help to get acquainted with the FIDIC book structure more easily:

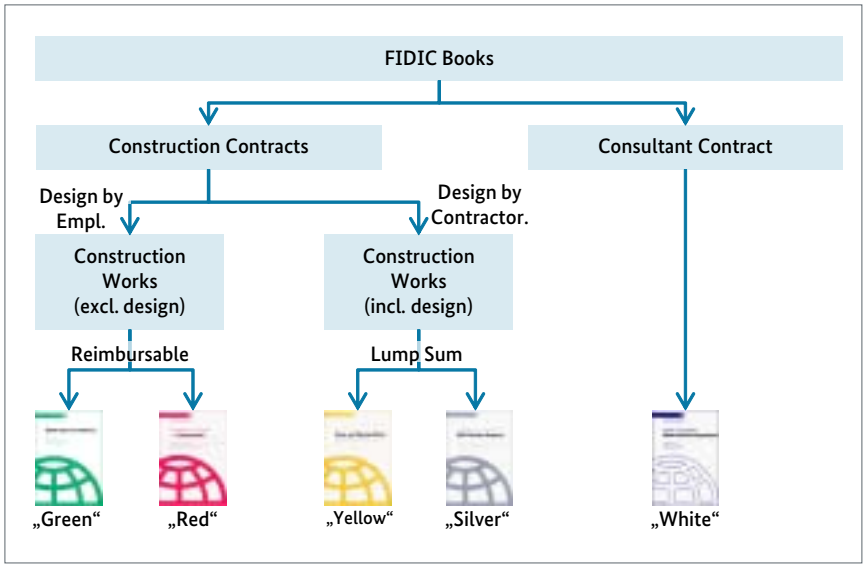


Illustration 22: Structure of FIDIC Books

(i) Silver Book

The FIDIC Silver Book is a standard contract form for an EPC lump sum turnkey contract, which shifts the maximum possible amount of risks from the Employer to the Contractor. It represents the pure form of a turnkey contract in the sense that the Employer can stay away from the project until the Contractor has performed all works and services, so that the Employer only needs to "turn the key" in order to use the result of the works and services performed.

(ii) Yellow Book

The FIDIC Yellow Book is a standard form for a lump sum EPC contract similar to the FIDIC Silver Book. It differs from the FIDIC Silver book by involving an "Owner's Engineer" and allocating more risks back to the Employer. The Engineer has been assigned a strong role in the FIDIC model. The Engineer is the first instance "institution" to address to in the event of disputes and problems occurring during project execution. The Engineer may give instructions and can issue certificates, such as the certificate of acceptance, and has the right to inspect the works[12].

(iii) The FIDIC Red Book

The FIDIC Red Book is a standard form for construction lot contracts. It is based on unit prices. The FIDIC Red book also contains a detailed description of the scope of works to be performed by the Contractor, whereas the design planning remains with the Employer.

12 As to the role and the tasks of the Owner's Engineer, see also 3.1.2.

(iv) The FIDIC Green Book

The FIDIC Green Book is a lot contract designed for small size construction projects whose values do not exceed 500.000 US$.

(v) The FIDIC White Book

The FIDIC White Book provides a template for consultant services.

(vi) Other FIDIC contracts

For the purpose of this manual, the author has focused on these FIDIC contracts. The FIDIC Pink Book is a modified version of the red book, satisfies some of the requirements of the World Bank. It has been disregarded as has the FIDIC Gold Book which constitutes a Design, Build and Operate Contract. Therefore, it goes far beyond the scope of a pure EPC contract.

b) Other Contract Forms suitable for industrial projects

There are other standard forms of contracts that are partly applied in certain industries or in certain (local) markets.

(i) ENAA Model Contract

The Engineering Advancement Association of Japan (ENAA) is a relatively young organization, established with the support of the Japanese Ministry of International Trade & Industry in 1978. ENAA first published its International Contract for Power Plant Construction (Turnkey Lump-sum Basis) in 1996, to meet the growing needs of an international contract model form for the construction of power plants. Preparing the revised model form in 2010, the Committee took into consideration the comments, recommendations, advice and suggestions of various sources such as the World Bank and other major financing institutions, potential customers and Contractors and other relevant organizations in the US and Europe. Hence, this model form contract may be considered particularly for (bank) financed projects. According to the official statements of ENAA the model form also received a thorough check by UK law firms and a certified quantity surveyor.

(ii) NEC Model Contracts

The Institution of Civil Engineers (ICE) has issued a whole set of standard contract forms which are aligned among each other. On the one hand, this cross-contract adjustment may be regarded as a great advantage of these contract forms, as it offers a consistent set of rules. On the other hand, it may be regarded as a disadvantage, as it requires more diligence in drafting if changes to the pre-defined set of rules are to be made. NEC model contracts are most suitable when the applicable law is based on a common law system. As an example, the ICE is based in the United Kingdom where extensive legal advice is available to ensure that the negotiated documents still work properly together.

(iii) Orgalime Contract Form

In Central Europe the European Engineering Industries Association has developed an EPC turnkey contract for industrial projects. The Orgalime EPC standard form claims to be more balanced than the FIDIC Silver Book, thus, trying to equally serve both the Employer's and the EPC Contractor's interests. In contrast to the FIDIC Yellow Book and other standard contracts based on Anglo-Saxon contract traditions, there is no Engineer to act as project manager and first instance arbitrator.

2.3 Multi Lot Contracting

Far to the other end of the risk allocation scale is where the lot contract strategy can be positioned. Experienced Employers with sufficient (in-house) project knowledge, respective human resources and financial capacities may choose to realize infrastructure projects with several Contractors, thereby negotiating with each contractor one or more lots. Depending on the project, it can happen that the entire plant is simply not available at the world market as EPC. Or else, there is such a limited market that there is no competition and the Employer would not receive competing offers if tendering the entire plant.

Example:

Instead of contracting a complete cement plant to a single contractor, the Employer bundles several lots and tenders them separately to different contractors: Lot1: Civil structural work, Lot2: Control & Communication Technology; Lot3: Power Facilities, Lot 4: Mechanical Parts, etc.

This strategy puts the Employer into a comparable place with an EPC lump sum turnkey Contractor, as in multi-lot projects it is the Employers' responsibility to plan and (technically) design the project. (That might however, be different for mega-lots, which effectively are small EPC contracts). Works and services necessary for the project must be executed either with in-house resources or must be contracted to lot Contractors, while the complete management and interface responsibility remains with the Employer. This means that the Employer has to design carefully the scope of each lot contract and has to manage the different lot Contractors and the interfaces between them on site. In major infrastructure projects, where the number of lot contracts may go beyond a hundred lots, the Employer is required to have a powerful project management team and an efficient claim management at hand. Sometimes Employers considering a multi lot approach without having the necessary resources in-house would rather contract with an engineering company who takes over this role. This procedure is then very close to an EPCM model.

3 Drafting an EPC Contract for Industrial Projects

So far we have gained an overview on basic contract types and model contract forms. Chapter 3 focuses on the drafting of an EPC contract. Potential pitfalls are flagged and chances and risks associated with various subjects explained.

3.1 The Parties and the Owner's Engineer

The correct statement of the parties' names seems to be a natural procedure. But experience has shown that it is worth investing some diligence in something that comes as natural as that.

3.1.1 The Employer / Owner

Sometimes the processes of tendering the project to the market, setting up the necessary corporate structures for financing and executing the project proceed in parallel due to time-constraints. In this case it may remain unclear up until the moment of signature if a subsidiary of a large corporation, a special purpose company, a state department or even a ministry itself signs the contract as "Employer". In such case it is better to make the situation transparent as early as possible to the respective other party. In this way order resentments with the other party can be avoided, which may not understand why it is so difficult to name the institution that acts as Employer.

From the legal point of view it is essential, particularly when public institutions are involved, that the relevant public institution is correctly named and that the potential chain of agency is stated correctly in the contract.

Example:

The Federal Republic of Country X, represented by the State Ministry of Infrastructure, represented by the State Minster of Infrastructure, Mr. Name Surname.

Public institutions often need to have certain approvals from superior departments, or have to follow certain formal rules (stamps, seal of the department, etc.) in order to enter into a binding agreement. In order to avoid ending up with a non-binding contract or at least – in order to avoid hectic and stress upon signature – these formalities should be considered prior to scheduling the signing meeting with the Contractor.

3.1.2 The Owner's Engineer

Some EPC contracts implement the institution of an Owner's Engineer, also known as Client's Engineer or Independent Engineer.

a) EPC with Owner's Engineer

In general, an *Owner's Engineer is an independent third party* that the Employer has subcontracted. This party is *responsible for supervising that the EPC Contractor and its sub-contractors perform their works in compliance with the specifications of the EPC contract.* Employers who lack own experience in construction, engage one or several Engineers to fill gaps in resources and expertise for a project.

The Engineer must not be confused with the "Project Manager". Whereas the project manager's job is to manage and coordinate the various project activities, the Engineer's role often involves overseeing the financial and commercial due diligence aspects of the works. Owner's Engineers' tasks typically comprise: management and monitoring of the construction process including quality issues, schedule analysis and optimization, equipment commission and test, cost/benefit analysis and evaluation of variation. However, the most significant role of the owner engineer is its decision -making function in the case of disputes arising during the project execution. In this case the Owner's Engineer is the first claim resolution institution to revert to, prior to adjudication or arbitration.

Typically, an entire engineering firm, rather than an individual engineer, provides the services of an Owner's Engineer. The institution of an Engineer usually comprises a team of people from different engineering faculties as well as support staff. The Engineer team starts work on the project as early as possible, usually during the design and development phase. Especially for Employers lacking own project experience, the Engineer is very useful in its consulting function in the planning stage of the project. The scope and goals of the project are discussed with the Employer, the needs that are to be met defined and the tender process is supported accordingly.

Important:

It is important to note that the Engineer – despite its strong position in the project – is not a party to the EPC contract!

b) EPC without Owner's Engineer

The Owner's Engineer concept that has been an "institution" particularly in the FIDIC yellow book for decades, has recently been disputed in expert circles. Even FIDIC shows a tendency to slightly move away from the original concept. The reason for that is that the Engineer – in practice – seldom is as impartial and neutral

as it is meant to be. As in most cases the Engineer is paid by the Employer, the contract between the Engineer and the Employer ties the Engineer´s decisions to the prior approval of the Employer. However, if the Engineer is no longer impartial, its decisions are regarded as decisions on behalf and to the benefit of the Employer, which renders the whole concept redundant. It may even be detrimental for the Employer and the Contractor, taking into account that the Engineer adds an additional communication "hub" between the Employer and the Contractor.

Hence, experienced Employer's often go without an Engineer and try to establish a strong project and claim management instead. The advantage of this solution is that the Employer can take decisions without having to consult with an Engineer first and is able to purchase experienced construction management on the engineering market. Moreover, there is a direct communication between the Employer and the Contractor without the Engineer functioning as "relay". Should the Employer feel insecure in the one or the other circumstance, there is sufficient knowledge and expertise on the market for engineering services that the Employer may acquire.

Of course, the Employer will have to play a much more active role in the construction management process as there is no Engineer taking away the obligation to make certain decisions.

3.1.3 The Contractor

For the Employer, it is essential to know who will be its partner for the future, and who will claim millions for the contractually detailed promise to design and construct a fully operational industrial facility. Therefore, the Employer should carefully ask questions regarding the entity that will sign as EPC Contractor. It should be clear about corporate structures of the Contractor and should check the financial settings of the company or the consortium of companies the Employer is negotiating with. It is worth noting, that the risk of financial loss shifts more and more over to the Employer the closer a project comes to the scheduled date for acceptance. The reason for this is that most contractors are likely to insist on a cash-neutral payment schedule. This means that at the time when the new unit is at the brink of being commissioned, approximately ninety per cent of the agreed price will already have been paid to the Contractor. If the vehicle the Contractor has used for the project execution has to file for insolvency at that point in time or if some major defects occur, the Employer will end up in a double trouble situation in most cases: First, the money already spent will hardly be recovered from the (bankrupt) vehicle or the Contractor itself. Second, the Employer will have to engage (and to pay!) other Contractors to complete the unfinished work. For these reasons the Employer should inform itself to the greatest extent possible about the EPC Contractor and should thoroughly check its contract partner's financial viability prior to signing. In principle, the following two contracting constellations are most common for EPC projects.

a) Single Entity Contractor

If the EPC Contractor comprises a single corporation, the Employer should ensure that the contracting entity either constitutes the parent company of a group of companies or – at least – is sufficiently financed. This means that the authorized capital should not merely fulfill the legal minimum requirements. In any event, if the contracting entity is not a parent company, the Employer should ask for a strict parent company guarantee[13]. This means, that in the case of dissolution or insolvency of the contracting entity the parent company will fulfill the EPC Contractor's obligations as if as its own. Ideally, this should not only refer to any financial obligations but also to the works and services to be rendered under the EPC contract.

The Employer should be even more alert, if the (parent) company intending to enter into an EPC contract as EPC Contractor is mainly owned or governed by a single private person. Ideally, the private owner would sign a guarantee letter in order to demonstrate his or her personal commitment to the project. In practice, however, that will practically never take place as private owners usually stay in the background and do not take an active role in the day-to-day business of their companies. Needless to say that in these cases a very careful compliance check is necessary to avoid money laundry issues.

b) Consortium

A consortium (or syndicate) is an association of two or more companies with the objective of commonly participating in a project and pooling their resources and knowledge for the execution of the infrastructure project.

The internal relationship between the syndicate partners will most likely not be disclosed to the Employer. The Employer should, however, clarify which parts of the works are executed by which consortium in order to evaluate the capacity of the consortium. When dealing with syndicates the Employer should remember to draft a provision in the EPC Contract determining the joint and separate liability of each of the syndicate companies for the completion of the project.

3.2 General Clauses

Any EPC contract contains some general provisions that define basic rules. For example, the interpretation of certain recurring terms in the contract which have relevance for all other contract clauses. Although these are often so called boiler plate (i.e. standardized) clauses it is worth spending time on the diligent drafting of these clauses instead of relying on standard wordings. It needs to be kept in mind that the general clauses will be applied to the whole contract. The meaning of a remote clause at the end of the contract can often be correctly understood only by

13 As to the parent company guarantee, see also 3.7.3.

taking recourse to provisions contained in the general clauses. Its meaning might change significantly if not properly aligned with the definition.

3.2.1 Definitions

Most of the EPC contracts start with a long set of definitions. Any term that is used in the later contract provisions is defined there. If, for example, the term "day" is not defined, later disputes on the interpretation of the term "day" will most likely occur when there are deadlines to be kept or the project is already delayed. The Contractor will probably claim, that Sundays and public holidays do not count as "days". The Employer will probably argue, that a "day" is meant as a "day" according to the calendar. This simple dispute (which comes up every once in a while!) demonstrates the importance of a clear and precise set of definitions.

When drafting the definitions it is important to check the appendices to the EPC contract, too. Experience shows that the set of contract documents becomes inconsistent when several sources (i.e. several engineering companies or even different departments within one entity HSE) add their respective appendices, which sometimes even may contain their own sets of definitions. Quality Assurance Documents (QA/QC documents), for example, often define the term "defect" which is a typical term to be defined in the definitions section of the EPC contract. Ideally, the EPC contract defines each term that is applied in the commercial conditions **and** in the appendices. However, pure technical definitions, which are relevant for the Employer's Requirements only and do not have an importance beyond that document, can also stay in the specific document they refer to. Otherwise, the EPC definition part becomes overloaded and – even more risky –incorrect if technical definitions are adjusted during the negotiations with the bidder companies. This happens because in the hectic times of contract negotiations the fine tuning and alignment between all involved negotiation teams (technical and commercial) is prone to suffer.

Negotiation Alert:

The interaction between definitions and the wording of the contract is absolutely crucial. In some cases contractors have tried to modify the definitions at a very late stage in the negotiations. This must be avoided because otherwise the complete document has to be revised as to the effects of the definition change.

3.2.2 Interpretations

Usually EPC contracts foresee a provision on the interpretation of the contract.

a) Subject Matter

As with definitions, the rules on the interpretation of specific contract terms are applicable for the whole EPC contract. Usually the chapter on interpretation covers remaining gaps left by the definitions. If, for example, the term "day" has been defined (see above 3.2.1), the question remaining to be answered is whether the term "day" refers to the daytime in Mongolia or in Central Europe. The Contractor gains or loses a complete work day on a deliverable depending on the chosen time zone.

b) Associated Risks and Interests

As soon as a dispute on a specific right or an obligation of the Contractor or the Employer arises between the parties, the provisions of the EPC contract are the first source for seeking a resolution. Experience has shown that in many cases the same wording will be interpreted in two different ways by the parties, according to their respective interests in the case. In order to create as much clarity as possible, the section on interpretation provides guidelines for potential interpretation problems that can already be anticipated at the time when the contract is drafted and negotiated. Standard contract forms are a very helpful tool in this respect as they provide a solution for a lot of potential interpretation disputes that are hard to be imagined and anticipated.

c) Drafting Example

A typical EPC clause on the interpretation of terms could go as follows:

> In this Contract, unless the contrary intention appears:
> (a) a reference to this Contract or another instrument includes any variation or replacement of either of them;
> (b) a reference to any Law, or to any Codes and Standards includes any consolidations, amendments, re-enactments or replacements of any of them;
> (c) a reference applicable in the context of a Law or Authority Approval includes where it affects the Employer but not the Contractor and vice versa;
> (d) the singular includes the plural and vice versa;
> (e) if a period of time is specified and dates from a given Day or the Day of an actual event, it is to be calculated exclusive of that Day;
> (f) references to any date or time of Day are to Mongolian time;
> (g) a reference to a Day is to be interpreted as the period of time commencing at midnight and ending 24 hours later;
> (h) a reference to an Appendix includes all sub-appendices or annexes to such Appendix and shall not limit the Contractor's obligation to perform all of the Works as described in this Contract;
> (i) where an expression is defined, another part of speech or grammatical form of that expression has a corresponding meaning;

(j) words and abbreviations not otherwise defined in this Contract which have well-known meanings in the energy industry of Mongolia shall be interpreted in accordance with those meanings;
(k) headings are for reference only, shall not serve as a basis for interpretation and do not form part of this Contract;
(l) references to the word including means including, but not limited to;
(m) references to the word Parties means the Employer and the Contractor and the word Party means one of them;
(n) references to the word approve and approval means approved in writing;
(o) a period for approval by the Employer shall only elapse, if the Contractor has given at least 5 Days prior written warning to that effect (which warning shall not be given right away with the submission of the pertaining Project Documentation to be approved);
(p) References to the word agree, agreed or agreement, require the agreement to be recorded in writing.

d) Drafting Example Explanation

This drafting proposal picks up some typical issues that may give reason for disputes under the contract. Letter "h", for example, clarifies that if the EPC terms and conditions reference a specific appendix, the sub-annexes to the referenced appendix are also within the scope of the reference. Although one would think that such understanding should go without saying, this clarification is the first step for a successful claim management and helps to avoid later disputes.

Furthermore, a very important clarification can be found in letter "l" where it says that the term "including" shall mean "including, but not limited to". If that interpretation rule were missing, any example enumeration in the contract could potentially be understood as concise, encompassing and exclusive. The interpretation given in letter "o" is Employer biased and would probably be addressed by the Contractors in the negotiations. Particularly for Employers that have no in-house contract management department it is of course advantageous if a deadline does not elapse without prior warning by the Contractor. An Employer wanting to introduce such clause should be aware of the fact that Contractors will tend to delete this clause or at least to draft it in a mutually applicable way.

3.2.3 Contract Documents

The EPC contract should contain a provision naming the various contract documents and – most important – *the order of precedence* among these documents.

a) Subject Matter

The clause on contract documents is essential in an EPC contract as it determines which single document shall be part of the EPC agreement. This is important because the scope of works and services to be performed is determined by the contract documents. If, for example, the EPC lacks an appendix containing the desired wording for the bank guarantees, the Employer may be at risk to receive a bank guarantee that is less stringent than the Employer expects. The chances of the Employer to successfully demand a more favorable bank guarantee wording will be very limited then, as the wording for bank guarantees has not been made part of the EPC agreement.

b) Associated Risks and Interests

The Employer always runs the risk that, even though a lump sum turnkey EPC contract has been concluded, the scope is not fully defined. The above example of bank guarantees perfectly illustrates this dilemma. As bank guarantees are not part of the main scope of works and services, the specific content of such financial collaterals usually is not defined anywhere, unless a special appendix on collaterals is drafted. A clause on contract documents is a tool for the Employer to check the entirety of the contract and its single parts. The best way of doing this check is to go through the headings and sub-headings of the terms and conditions in order to make sure that any relevant subject matter is backed by a corresponding appendix setting out the details. Consequently, each item from the list of appendices mentioned in the EPC contract should be matched by a clause in the terms and conditions[14].

c) Drafting Example

(1) The following documents and their attachments and annexes, if any, together constitute the Contract Documents:
  (a) These Terms and Conditions;
  (b) All Appendices to these Terms and Conditions, which are:
  Appendix_1 (Contract Price and Breakdown)
  Appendix_2 (Employer's Requirements)
  Appendix_3 (HSE-Requirements)
  Appendix_4 (...)
  Etc. ...

(2) Subject to Clause (1), the Contract Documents are intended to be complementary and mutually explanatory of one another. This Contract shall be read as a whole.

(3) If an ambiguity or discrepancy between the Contract Documents is discovered by the Employer, or brought to its attention by the Contractor, these Terms and Conditions shall prevail over the Appendices.

(4) If, within the Terms and Conditions or within any individual Appendix or between the different Appendices of this Contract (but not between the Terms and Conditions and/or any individual Appendix) differing standards of product or

14 As to the importance of attachments see chapter 2.3.1.

workmanship are provided for, the Contractor shall provide those of the highest standard. If, within the provisions of any individual Appendix or between the provisions of two or more Appendices equal standards are provided for, the more specific provision (within the same Appendix) respectively the more specific Appendix (in the case of two or more competing Appendices) shall prevail over the more general provision or Appendix. The Employer shall then direct the Contractor as to the interpretation to be followed by the Contractor in performing the Works.

(5) If the Contractor discovers any ambiguity, omission or discrepancy in or between any Contract Document and/or any document prepared for the purpose of performing the Works, the Contractor shall immediately notify the Employer in writing of the ambiguity or discrepancy. The Contractor shall not be entitled to any extension of time or additional payments due to the Contractor's failure to comply with this Clause.

d) Drafting Example Explanation

The above clause has been drafted according to the following logic: No. (1) lists the appendices forming the contract documents. No. (2) stipulates the basic rule, that all contract documents shall not be understood as "stand alone" documents, but shall be read and understood as interrelating and vice versa supplementing documents. No. (3), then, determines that the terms and conditions shall prevail over the appendices in the event of contradicting provisions. This provision is essential as the terms and conditions have been negotiated and reflect the parties' intention more precisely than any appendix that may have been only partly negotiated and discussed. Furthermore, the commercial and legal consequences of events described in the appendices, are usually to be found in the terms and conditions, so that the latter should prevail. No. (4) regulates the scenario that there are contradictions or discrepancies within the same appendix, or between two different appendixes. In such event, the higher standard shall prevail over the lower standard. If two different appendices request the same standard then the more specific appendix shall take precedence over the more general one.

Example:

The Employer's Requirements (Appendix 2) contain a chapter on HSE aspects. The HSE Requirements (Appendix 3) provide detail process descriptions etc. of the same HSE aspects. In such case and with the above provision the Contractor could not argue that the minimum provisions in Appendix 2 are exclusive and fully describe the HSE requirements to be complied with. The Contractor would be obliged to apply the more specific Appendix 3.

Finally, no. (5) imposes the obligation on the Contractor to flag immediately any inconsistencies discovered in the contract documents. In order to prevent the Contractor from "saving" a discovered inconsistency until a later point in time,

when it suits the Contractor's interests best (e.g. when a dispute has arisen), the provisions bar the Contractor from an extension of time in the event that the Contractor has failed to comply with its notification obligation.

3.2.4 Conditions Precedent

Conditions precedents may be agreed in an EPC contract depending on the specific project circumstances.

a) Subject Matter

Conditions precedents delay the effectiveness of the EPC contract. Typical conditions precedents are linked to the submission of collaterals, which the Employer requires from the Contractor. In specific circumstances, for example when a necessary authority approval must be in place or when a state institution has concluded the EPC contract and needs to get approval by a superior administrative body, these circumstances may constitute further conditions precedents to be implemented into the EPC contract.

b) Associated Risks and Interests

Usually it is in the Contractors' interest to have the EPC contract in full force and effect upon signature. However, it is in both parties' interest to wait with the effectiveness of the contract until circumstances, which may impact the whole project as such, have been clarified. Both parties are likely to suffer, if – for example – shortly upon signature the Employer has to terminate the EPC contract for reason of lacking formalities such as the approval by a superior administrative body. Hence, conditions precedents are designed to secure the project rather than to delay its start.

c) Drafting Example

(1) The Parties agree it is a condition precedent to the effectiveness of this Contract that the following conditions are satisfied or waived in accordance with Clause (2) (the date that all such conditions have been satisfied or waived being the Effective Date):
   a. the Contractor has delivered the Performance Security to the Employer in accordance with Clause XX;
   b. the Contractor has delivered the Parent Company Guarantee(s) to the Employer in accordance with Clause XX;
   c. the Contractor has submitted the Advance Payment Security in accordance with Clause XX.

(2) The Employer may waive any of the conditions precedent in Clause (1).

(3) If the conditions precedent in Clause (1) are not satisfied or waived in accordance with Clause (2) by the date which is 30 Days after the date of signing of this Contract, then this Contract may be terminated by the Employer by providing notice to the Contractor that it is terminating this Contract pursuant to this

Clause (3). Neither Party shall have any liability under this Contract to the other and each Party shall each bear its own costs in relation to this Contract upon termination of this Contract in accordance with this Clause (3).

(4) Notwithstanding Clause (1), the obligations of the Parties under Clauses (1) [Conditions Precedent], XX [Securities], XX [Confidentiality], XX [Financing], XX [Dispute Resolution], XX [Corrupt Practices], XX [Contractor Rights and Remedies], shall commence on the date that this Contract is signed by the Parties.

d) Drafting Example Explanation

No. (1) of the above drafting example lists the relevant conditions precedents. Typically, the Employer wants to receive the agreed collaterals before the contract, as with it the Employer's obligation to pay the agreed price enters in full force and effect.

No. (2) provides for some flexibility in the Employer's favor stipulating that the Employer may waive the conditions precedents in order to "start" the contract right away. The most important provision is then to be found in no. (3).

No. (3) stipulates a special termination right for the Employer in the event the Contractor has not managed to fulfill the conditions precedents (here: to submit the relevant collaterals) within a certain period of time upon signature. In such termination event, no party shall be liable under the contract. This special termination right is important to have, as otherwise the Employer would have to terminate for Employer's discretion and hence would be liable towards the Contractor[15].

No. (4), finally, stipulates that certain obligations of the parties shall be directly binding, despite the fact that the EPC contract is not yet effective due to the non-fulfilled conditions precedents. This is important, as according to legal logic, the obligations laid down in the various contractual provisions cannot be binding as long as the contract as such is not effective. In any event, the provision in no. (4) should always be carefully revised as there may be other provisions in the specific EPC contract that shall enter into immediate effect upon signature.

3.2.5 Notice To Proceed

Notice to proceed concepts are frequently encountered in contracts for industrial projects.

a) Subject Matter

The specific circumstances of the project may require to start with some works prior to the EPC contract entering into full force and effect. Drafting praxis has

15 As to the consequences of a termination for convenience see chapter 3.18.2.

accommodated such project environment by introducing LNTP and FNTP concepts into EPC contracts.

b) Associated Risks and Interests

Depending on the circumstances, particularly when there is time pressure to start some works in order to stay within the overall time schedule, the parties may end up in a situation where the EPC contract is not yet effective due to outstanding conditions precedents. But at least some works need to commence upfront as it is more profitable to risk some money than losing time and thereby negatively impacting the project NPV (so called "no regret payment"). In such circumstances the Employer is interested in getting the Contractor started with a limited scope of works in order to stay within the project schedule. At the same time, the Employer wants to avoid the whole contract to start and hence, to become fully liable for the payment of the agreed remuneration. Furthermore, the Employer has a vital interest to include the pre-performed works into the EPC (defect liability) scheme once all conditions precedents are fulfilled and the EPC contract has become effective.

The Contractor desires to make sure that – if the Employer instructs the Contractor to start performance despite an effective EPC contract not being in place – the remuneration for the portion of works that is carried out without a fully effective EPC contract is paid.

c) Drafting Example

(1) Prior to the Effective Date, the Employer may deliver to the Contractor one or more notices Limited Notice(s) to Proceed instructing the Contractor to commence performance of only those Works specified in that notice on the terms set out therein (the LNTP Works).

(2) The Contractor shall commence performance of and complete the LNTP Works by the dates set out in the corresponding Limited Notice to Proceed. Notwithstanding that this Contract may not be in effect, and to the extent not provided otherwise in the relevant LNTP the terms of this Contract shall govern the Contractor's performance of the LNTP Works.

(3) Upon completion of the LNTP Works, the Contractor may submit a request for payment of the amounts as set out in the relevant Limited Notice to Proceed (the LNTP Payment Amount) .

(4) Any portion of the Work performed under LNTP(s) prior to the Effective Date shall be considered part of the Work performed pursuant to this Contract and the LNTP Payment Amounts paid to the Contractor will be credited against the Contract Price.

(5) The Employer's issuance of one or more Limited Notices to Proceed shall not oblige the Employer to issue a Full Notice to Proceed and shall not of itself constitute a waiver of any of the conditions precedent listed in Clauses XX.

d) Drafting Example Explanation

No. (1) in the above example confers the basic right to issue one or several limited notices to proceed to the Employer. It is a "limited" notice to proceed, as it defines a specific scope of works to be executed. For example, a typical notice to proceed would instruct the Contractor to start with site soil investigations for the soil report or to start working on documents necessary for authority approvals. A template of such LNTP should be developed in advance and should be attached to the EPC contract as appendix. The LNTP should clearly define the scope of works, should refer to pre-agreed unit prices[16] and should contain a standard provision to the extent that all works and services to be performed under this LNTP shall be deemed to be performed under the EPC contract and shall be exclusively treated in accordance with the EPC contract upon the latter entering into effect.

Praxis Alert:

It has frequently been argued by contractors in the past that instead of using such LNTP process, any preliminary work shall be conducted under a separate agreement. It is strongly suggested not to accept such proposal as it will inevitably bring discussions about the cap of liability later on, if at the very end of the project it turns out that some of the preliminary (design) works have caused a large damage to the project. In this case the contractor may argue that such works were covered by a small contract and that the limitations of liability agreed in that contract apply. As a bottom line, such preliminary works contracts must have a clause saying that any liability arising out of this contract shall be transferred to the EPC contract automatically once Notice to proceed has been given.

No. (2) provides the necessary link between LNTP works and the later EPC contract. No. (3) takes up the Contractor's interest to receive separate payment for all performed LNTP works. No. (4) links the LNTP payments to the later EPC payments and determines that all LNTP payments shall be credited against the agreed price. This provision prevents the Employer from paying twice for the same works. No. (5) is designed to shield the Employer from issuing an "implicit" FNTP just by issuing several LNTPs.

If the drafting example in chapter 3.2.4 above (conditions precedent) is read in conjunction with the drafting example given here, the system works as follows: Within 30 days upon signature the Employer may issue LNTPs to the Contractor. If within this period all conditions precedents were fulfilled, the EPC would be effective and all LNTPs would "merge into" the EPC scope of works. If, however, the conditions precedent were not fulfilled within the indicated period of 30 days and the Employer would chose to terminate the EPC contract, then Contractor and

16 See chapter 3.4.

Employer would have to agree on or dispute over the portion of remuneration to be paid for all commenced LNTP works.

3.2.6 Commencement and Completion

It is advisable to state the originally envisaged period for the project completion in the terms and conditions, although a respective provision sometimes is missing in standard contracts.

a) Subject Matter

As it has already been shown in Part A, Project Management claims four determinants are essential for a project to be successful: Time, Scope, Cost and Quality. A variation in one of these determinants automatically impacts the other determinants. If, for example, the quality shall be improved, that will only be possible by granting an extension of time for the project execution and investing more money in the project. A variation in the scope of works will necessarily have an impact on the completion time and the project costs.

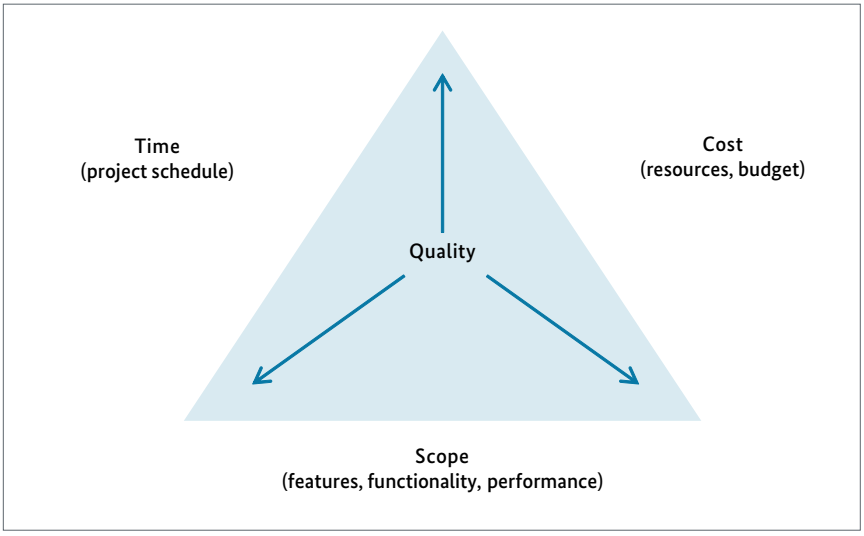


Illustration 23: Project Management Triangle

The EPC contract provision on commencement and completion picks this knowledge up and determines the agreed period within which the Contractor shall be obliged to bring the project to a successful end. Furthermore, from a claim management point of view, it is essential to have the completion period fixed in the EPC contract as reference period for determining potential delays.

b) Associated Risks and Interests

The Employer is clearly interested in being able to start the commercial operation of the plant at the agreed point in time, as the Employer has calculated with such date in its commercial model and may even be contractually obliged to deliver the product to clients or off-takers and is facing penalties, in addition to the losses accumulating by not selling the product. So, for the Employer each day of delay bites away a bit of the projects´ economics. On the other hand, the Contractor generally has a vital interest to complete the project within the agreed time, too. For the Contractor seeks to avoid paying liquidated damages for delay to the Employer and still being obliged to complete the EPC works, which binds respective resources that the Contractor cannot allocate to other projects. To some extent this can also result in a double loss for the Contractor. However, in praxis, the loss is always bigger for the Employer as the Contractor limits its liability, something the Employer cannot do. So, in order to be clear on what the agreed time for completion is – and in order to be clear on this important issue even after three years of project execution – the EPC contract should clearly state a specific period for completion.

c) Drafting Example

The Contractor shall commence the Works on the Effective Date and shall perform the Works with due expedition and without delay within [Number of] Days in accordance with the Project Schedule.

e) Drafting Example Explanation

The above clause simply obliges the Contractor to complete the project within a certain period of time upon the effective date. The reference to the Project Schedule is necessary in order to indicate, that the completion time of the project may shift due to extensions of time or suspensions, all of which will be indicated in the project schedule.

3.3 Scope of Works

Chapter 3.3 sketches the most relevant issues to be observed when describing the scope of works.

a) Subject Matter

The scope of work description is one of the most important parts of an EPC contract. The scope of work description has the following functions:

(i) Determination of Work Result

The description of the scope of works determines the result that the Contractor has to deliver. At the end of the project execution phase the result of the Contractor's performed works and services will be compared with the scope of works described in the contract. If there is a mismatch, the Employer will likely retain payments

or – in severe cases – refuse plant acceptance. It is noteworthy that the time for completion is also part of the scope, as the Contractor is not obliged to complete the project earlier without additional remuneration and has to pay delay liquidated damages if it should not be able to complete the project within the agreed time.

(ii) Reference Point for Determination of Changes

The description of the scope of works furthermore serves as reference point for determining whether changes in Contractor's scope have occurred[17]. In almost all cases changes of scope have an impact on the project costs and the time for completion[18].

(iii) Reference Point for the Consideration

Finally, the scope of works serves as justification for the payment of the agreed price. Or even shorter: Full payment requires full performance of the agreed scope of works.

b) Associated Risks and Interests

The Employer of an EPC contract has to carefully balance the level of details that shall be agreed upon, in order to determine the scope of works. On the one hand, a detailed description of the Contractor's scope of works ensures that the Employer will get a tailor-made plant according to the Employer's specifications. Such detailed description reduces room for interpretation and facilitates controlling the progress of the works and the work result. On the other hand, a detailed description of the scope of works offers chances to the Contractor to claim changes in the scope.

Example:

The Employer's requirements specify a certain type of steel gratings with wide perforation for the outside stairways of the boiler house. Later on the Employer decides to change the originally designed gratings to steel gratings with narrower perforation.

The Contractor checks the prices and the availability of gratings with a narrow perforation and issues a change request claiming an extension of time and extra costs as the new gratings are more expensive and take longer to be produced.

Generally, Contractors are keen on defining the scope of works as precisely as possible in order to avoid the risk to be obliged to perform beyond what they have originally calculated.

17 As to changes of scope, see also chapter 3.4.

18 See above Illustration 23: Project Management Triangle, p. 27.

In EPC lump sum turnkey contracts, the Employer usually provides a functional description of the desired plant. The functional description then describes the purpose of the plant, commercially relevant features and legally relevant features (such as emissions). Normally, the Employer will not specify a certain type of main equipment or the materials to be used for specific parts of a plant as e.g. the boiler insulation. This would constitute a too high level of detail which the Employer should leave for the Contractor to decide on. As "planning" usually goes hand in hand with "liability", the Employer of an EPC contract should avoid nourishing the impression of having handed over to the Contractor a complete and sophistically detailed plant design and work description.

c) Drafting Example

(1) The Contractor shall perform the Scope of Works as described in this Contract.

(2) The Contractor shall perform all works and provide all services, labor, equipment necessary to carry out and complete the Works in accordance with this Contract and the Project Schedule, including design, engineering, procurement, fabrication, construction, installation, commissioning preparation, commissioning, testing and training of the Employer's personnel.

(3) The Contractor shall upon completion of the Works provide a complete, functional and operational Unit which will be fit for the purposes described in the Employer's Requirements and meets the Absolute Performance Guarantees and Minimum Performance Guarantees.

(4) The Contractor agrees that the Contractor's obligations under this Contract include the performance of all works and services not specifically mentioned in this Contract but which are necessary for the proper performance and completion of the Works in accordance with this Contract.

(5) The Contractor warrants:

a. the requirements of the Scope of Work are consistent with the Works achieving the construction of a Unit which is robust and capable of being operated in a safe, reliable, stable, environmentally responsible and cost effective manner;

b. the Works will comprise only equipment that is new and unused, of a certified quality in the construction business, fit for the purpose and free from any encumbrance or lien;

c. it has the skills, resources, expertise and capacity to fully perform all of its obligations (both express and implied) in accordance with this Contract; and

d. it has scrutinized and made itself familiar with the Construction Site, the surroundings of the Construction Site and transportation routes to and from the Construction Site.

(6) The Contractor acknowledges that all information, regardless of its form, contents or the medium in which it is contained, pertaining to the Project and the Works supplied by or on behalf of the Employer to the Contractor prior to the Effective Date, (Employer Supplied Information) is for the convenience of the Contractor only. The Contractor enters into this Contract based on its own investigations and determinations as to the completeness, accuracy and adequacy of that information.

(7) The Contractor shall review and, to the extent practicable, verify the Employer Supplied Information and notify the Employer of any actual or suspected error or omission in any Employer Supplied Information immediately upon the Contractor's discovery of the same.

(8) The Employer shall have no liability whatsoever for, and the Contractor shall not be entitled to any extension of time, extra costs or other relief from its obligations under this Contract arising out of or in connection with, any errors or omissions in any Employer Supplied Information.

d) Drafting Example Explanation

In the above draft clause no. (1) stipulates the basic rule, that the Contractor has to perform the works as per the contract. This clause makes sure that the scope of works is not limited to what is said in the Employer's requirements, but is also described in other contract documents and, most importantly by the nature of the project and its functional scope of works. No. (2) describes the single steps of the project execution and imposes an obligation on the Contractor to perform all relevant works and services necessary for the design, engineering, procurement, fabrication, construction, installation, commissioning preparation, commissioning, testing etc. of the Works. Additionally, clause no. (3) clearly states the expected result, which shall be – in that specific project - a complete, functional and operational unit that will be fit for the purposes described in the Employer's Requirements. The "fit for purpose" – principle originates from the common law and (European) continental law sale of goods legislations and constitutes an "implied warranty". As this legal principle is not limited to sale of goods and products only, but expresses a general rule, the "fit for purpose" principle is suitable to be expanded to contract for works and services, as well as EPC contracts. In essence, "fit for purpose" means that products (goods or services) must be fit for the 'ordinary' use for which they are intended. But where the seller (or here: the Contractor) knows the buyer's (i.e. the Employer's) particular use (and the Employer relies on the Contractor's expertise or judgment) then an 'implied warranty for fitness for a particular purpose' is created. In other words, the Contractor warrants that the product will be fit for the Employer's specific use. However, if an Employer submits detailed specifications, the Employer may be precluded from claiming to have relied on the Contractor's expertise and judgment. Hence, Employer's requirements should describe the project purpose rather than detailing the methods, processes and technical solutions of how to achieve that purpose.

A very important provision is stipulated in no. (4). There, it is said that the Contractor has to perform all works and services necessary to achieve the result (as described in no. (2) and (3)) *even if the relevant works and services are not expressly mentioned in the contract documents* (so-called "contract immanent works"). This provision goes hand in hand with the "fit for purpose" requirement. The result of the works and services must be suitable for a certain use and purpose, and any work which needs to be done – though not expressly addressed in the EPC contract – has to be performed by the Contractor. Hence, the "fit for purpose" and "contract immanent works"

provisions, both provide the Employer with a "parachute" in case the description of the scope of works should be incomplete.

Clause no. (5) confirms to the Employer that its specifications are generally fit for purpose, so that the Contractor is barred from claiming later on that it could not have designed a proper plant because of insufficient or wrong tender specifications. Furthermore, this clause defines basic quality requirements, such as the equipment being new and unused. Of course, any other standard may be chosen here, depending on the wishes (and the budget) of the Employer. If the project is to be executed in a remote place, or if the construction site shows particularities (e.g. very narrow access routes between existing plant facilities), part (d) of clause no. (5) may save the Employer from later claims. The rationale behind this clause is to prevent the Contractor from claiming that some local circumstances could not have been reasonably expected so that his claim for change of scope is justified.

Clause (6) and (7) shall protect the Employer from being held liable for data errors in the tender documents. This clause shifts the responsibility for checking and scrutinizing the supplied data to the Contractor. This might be regarded as an unfair treatment. In fact it is not, because the Contractors are usually highly specialized companies with superior expertise and knowledge allowing them to detect inconsistencies and errors in the tender documents, which requires a high degree of experience. Leaving this risk with the Contractor allocates the risk to where it belongs. However, this will be difficult to argue if the level of detail of the scope of work description is extremely high. In that case, it is sometimes assumed that the engineering risks falls back into the sphere of the Employer. The obligation to check all documents supplied by the Employer is backed by a ban on claims based on data errors in clause no. (8).

3.4 Change of Scope ("Variation")

Chapter3.4 deals with "changes" of the scope of works.

a) Subject Matter

A change of scope occurs, if either the scope of works is reduced or enhanced or the time period for the completion of the project is to be shortened or prolonged. The consequence of a change of scope is a Contractor's claim for an extension of time (for project completion) and/or additional costs. It is important to understand that in an EPC contract, the volume of all works and services comprises the scope, and the Contractor has calculated with certain quantities etc. and has based its pricing upon this calculation. This means that reducing the scope of works (e.g. only one plant shall be erected instead of two) may be considered as discretionary (partial) termination of the EPC contract! In order to avoid the disadvantageous consequences of a termination for the Employer's convenience[19], the Employer

19 As to the consequences of a termination for convenience, see 3.18.2

should seek to make sure that a reduction of scope is drafted as a "change of scope". If the Employer does so, the Contractor is prevented from taking the Employer's order to reduce the scope of works as reason to treat the EPC contract in its entirety as "repudiated" by the Employer. The Contractor will still be obliged to perform the remaining scope of works under the EPC contract. Of course, the Contractor will calculate the cost and time impact of such reduction of scope on the sequence of works and will forward a respective claim.

b) Associated Risks and Interests

The agreed project schedule and the agreed scope of works define the setting of any infrastructure project. The Employer may face the situation that must to or wishes to alter the scope of works due to e.g. changed market circumstances. This may also be the case if a new, improved technology is available on the market and the Employer wants the Contractor to utilize this instead of the originally foreseen technology. It may also occur that the Employer decides to equip the new administrative buildings of an industrial unit with additional elevators in addition to those foreseen originally to improve productivity. Accordingly, the Employer needs to have the chance to adopt the scope of works. The provisions on "Change of Scope" (also called "Variations") in an EPC contract entitle the Employer to do so. If provisions on change of scope did not exist, the Employer would have to order any addition by a new contract with new conditions and potentially without the necessary links to the main EPC contract, thereby putting the agreed guarantees and liquidated damages at risk.

In order to avoid this, it makes pertaining provisions on change of scope an essential flexibility tool for an EPC contract. As it is the Employer's project, only the Employer has the right to demand changes to the scope of works. The Contractor may propose changes (e.g. the Contractor proposes to use improved materials), but is not entitled to demand the scope be changed. However, the Contractor will send change requests any time it is of the opinion that an Employer's instruction varies the original scope of works. If the parties cannot agree on the justification of such change request, the issue will have to be resolved in the applicable dispute resolution process[20]. The simple rule here is: "The one who has to pay, the one who has the say!"

The Contractor has based its economic calculation on the scope of works as well as its time planning. Any change in the scope of works and services means that the Contractor must calculate the cost impact of the change, calculate the impact on the project schedule and evaluate the impacts of the change on the performance and availability guarantees for the facility that the Contractor has to meet. This has to be done, because the Contractor wants to avoid delivering performance beyond the agreed scope. Over-performance would impair its profit margin and, due to the additional works and services, would put the Contractor at risk of not completing the project in time. Finally, depending on the design impact of the desired changes,

20 To learn more about dispute resolution, see chapter C.3.23.

the Contractor has to make sure that the performance guarantees can still be achieved despite the changes.

Considering both parties' stake in a "change scenario" it is clear that the parties have to agree on the price and the time impact of any change of scope. Agreeing on a change of scope may boil down to extensive, time consuming negotiations. The risk here is that, due to the progress of works on site, the desired change may become impossible to be realized, or at least become much more expensive than if the change had been implemented right away. In order to cover that risk, the Employer seeks to reserve the contractual right to unilaterally instruct a change in the scope of works and services, and the Contractor shall be obliged to perform the changes prior to / without having an agreement on the change related cost and time impact in place. The Contractors, of course, seek to draft the change of scope clause such as to allow them to retain the performance of the change order works, until a respective agreement has been reached with the Employer.

c) Drafting Example

(1) Any Change of Scope shall be treated and be dealt with exclusively in accordance with this Clause XX [Change of Scope] and the standard forms as set forth in Appendix XX (Change of Scope) shall exclusively be applied.

(2) The Contractor shall not perform a Change of Scope except as directed by the Employer.

(3) No Change of Scope shall invalidate this Contract. The Contractor hereby agrees that a Change of Scope may involve the removal of any part or parts of the Works which the Employer may be free to assign to other contractors. The Contractor further acknowledges that any removal or removals will not constitute a basis to allege that the Employer has repudiated or (partially) terminated this Contract no matter the extent or timing of the removal.

(4) The Employer may, subject to this Clause XX [Change of Scope], direct a Change of Scope by providing the Contractor with a written notice thereof in the form set out in XX (Change of Scopes) and the Contractor shall perform and be bound by such Change of Scope.

(5) The Contractor may propose to the Employer any Change of Scope which the Contractor considers desirable to improve the quality, efficiency or safety of the Works or the Unit to levels greater than those stated or reasonably inferred from this Contract.

(6) A Change of Scope made necessary due to any act, omission or default of the Contractor in the performance of its obligations under this Contract shall not entitle the Contractor to any extension of time, extra costs or other relief from its obligations under this Contract.

(7) In the event the Contractor proposes a Change of Scope according to Clause (5) or within 14 Days following receipt of the direction referred to in Clause (4) the Contractor shall prepare and submit to the Employer a statement setting out detailed particulars of the Change of Scope, including:

a. the work required or no longer required;

b. a valuation of the increase or decrease in the Contract Price, pursuant to Clause XX [Contract Price];
c. any requisite adjustment to the Date for Provisional Acceptance of Works;
d. any proposed modifications to this Contract; and
e. a risk analysis as to the impacts of the Change of Scope on safety, health and environment;
f. any effect such Change of Scope would have on the Works and/or on any other provisions of this Contract, in particular any effects on the Absolute Performance Guarantees and the Performance Guarantees.

(8) The Contractor shall be bound by the information provided by it on the basis that it constitutes an offer, irrevocable for the period specified in the offer (such period to be no less than 3 Months) to undertake the Change of Scope on the terms of the information provided.

(9) The Contractor shall execute any Change of Scope on a fixed lump sum price basis.

(10) The valuation of the Change of Scope to be submitted to the Employer shall be competitive, comprehensible and calculated on market prices and on the rates set forth in Appendix XX (Bill of Articles and Conditions). For Works of Sub-contractors the Contractor shall be entitled to a mark-up of [●]%. The valuation of the fixed lump sum price Change of Scope shall contain not less than the following items:
a. the sum of the labor costs, including project management, engineering and construction;
b. the costs for Materials split up in a reviewable and verifiable manner;
c. the costs for additional construction and assembling costs;
d. the transportation costs;
e. a copy of all Sub-contractor offers;
f. the mark up on Works of Sub-contractors.

(11) In determining the deduction to the Contract Price to be made for work or services which are removed from this Contract, or for a Change of Scope which results in a saving to the Contractor, the deduction shall include a reasonable amount for home office and corporate overhead and profit which is assumed to be in the aggregate [•]%.

(12) Any reasonable extra costs necessarily incurred by the Contractor for delay or disruption as a consequence of a Change of Scope (if any) may include reasonable and proven involvement of home office and corporate overhead and profit, which is assumed to be in the aggregate [•]%.

(13) All costs associated with preparing a valuation and a Change of Scope are to be borne by the Contractor, including Change of Scopes that is not executed.

(14) If a Change of Scope results in a reduction of the time required to completing the Works, the Contractor shall determine a reasonable reduction of time and notify the Employer of the revised Date for Provisional Acceptance of Works. The Contractor shall demonstrate the calculation of the reduction of time. Clause XX [Determinations] shall apply.

(15) The adjustment to the Date for Provisional Acceptance of Works and the increase in the Contract Price (where the Variation increases it) shall be the Contractor's sole and exclusive remedies as a result of the relevant Change of Scope.

d) Drafting Example Explanation

The above example clause is drafted in the Employer's favor. Such a clause may be taken as a starting point in the negotiations with the bidder companies, but the Employer should not expect that the Contractor will accept the clause in its entirety.

No. (1) determines that any changes shall be exclusively dealt with the provisions on the variation of scope. In order to facilitate the contract management, this clause references an appendix that contains templates for the variation process (variation proposal by the Contractor, variation order by the Employer). It is advisable to use standardized documents during project execution in order to always be clear on the intention and the legal relevance of certain information.

Example:

During project execution the Employer notifies the Contractor, that there is new insulation material available on the market. The Contractor may understand this notice as (i) mere information, (ii) request to propose a variation offering the new material, (iii) instruction to procure the new insulation material or (iv) as technical clarification that the term "insulation" in the Employer requirements is meant as "insulation according to latest standard".

Potential misunderstandings and misinterpretations should be reduced, by using standard forms such as: Information Note, Request / Proposal for Change of Scope, Change of Scope Order and Change of Scope Instruction and Technical Clarification Note.

No (2) obliges the Contractor to wait with the performance of a scope change until the respective scope variation has finally been instructed by the Employer. Furthermore, the provision clarifies that any variation works and services shall be performed according the EPC contract, meaning, according to the same standards, quality requirements and rules as all the other works and services.

No. (3) ensures that no change order may be interpreted as invalidating the contract. The provision also states that parts of the works (= parts of the scope) can be removed (see above a) and can be assigned to other Contractors. This provision will most likely be challenged by the Contractors. For reaching a compromise on this subject, the argument of being allowed as Employer to reduce the scope up to a certain percentage value of the agreed price may be discussed.

No. (4) allows the Employer to instruct a scope change, that is, to impose the performance of the pertaining change works on the Contractor without prior agreement on the related costs and the schedule impact. Contractors are likely to challenge this provision as well. Experience has shown that the parties often settle on provisions that entitle the Employer to unilaterally instruct a change

not exceeding a certain amount. If the value of the desired changes is above the agreed limit the parties need to agree on the consequences of the variation and the Contractor is not obliged to start performance prior to such agreement.

No. (5) indicates that the Contractor shall be allowed to propose changes to the benefit of the project. Systematically correct, this provision also stipulates that the Employer has to direct / instruct the scope change (by change order) if the Employer decides to accept the Contractor's change proposal.

No. (6) stipulates the basic rule that a Contractor's failure to comply with its obligations under the EPC contract will not entitle it to a change order which the Employer has to pay for. As the Contractor is likely to "sell" its own failure as one the Employer's, this clause is very often in the focus of potential disputes.

No. (7) must be read in conjunction with No. (10). Clause no. (7) requires the Contractor to explain the impact of a change of the scope of works, on the schedule and the contract price. Clause no. (10) aims at the change order proposal as such, and obliges the Contractor to make the basis of the change order proposal transparent. The obligations to substantiate the change order proposal (no. 10) and the change order consequences (no. 7) shall enable the Employer to check the change order proposal properly. Claim management experience has shown that, for the Contractors, change order proposals are suitable tools to improve the profit margin of the project to the disadvantage of the Employer. Transparency is important to avoid misunderstandings, resentments and disputes.

No. (8) reserves sufficient time for the Employer to check the variation proposal, thus stipulating that the Contractor's variation proposal shall be binding at least three months. The period of such proposal being binding may be discussed in the negotiations, but the Employer should not consent to a complete deletion of such binding period. It should also be kept in mind that, depending on the length of the time period to be agreed here, the Contractor might have an additional claim as the construction is going on during negotiations about certain changes of scope. It might become more and more difficult over the time to implement the respective change of scope without additional work owed to the fact that the time windows for implementing the changes cost neutrally are shut already. Therefore, even if the three month period is agreed upon by the parties, the Employer should in any case seek to get an internal decision about the change of scope as quickly as possible.

No. (9) stipulates that variation works and services shall be performed on a lump sum basis. Whether this is the preferred way, is of course, left for the Employer to decide prior to tendering out the contract. In any case, it remains at the discretion of the parties to agree on a cost plus fee scheme under specific circumstances.

As to no. (10) see also explanations in the context of no. (7). Again, transparency in the variation process is the best way to reduce cost and time consuming disputes and hence, serves both parties' interests.

Nos. (11) to (13) deal with cost issues and are self-explanatory.

No. (14) obliges the Contractor to disclose the calculation of the new completion time in case the scope of works has been reduced. The preparation of particulars outlining the method the Contractor has applied to compute the new time needed for completing the works is essential for the Employer. Reasons: (i) if the Project is in delay, the Contractor may have calculated a too long completion time in order to make good for delays or in order to reserve some buffer times; (ii) each day of project execution time is to be paid for by the Employer and in times of construction market downturns, the Contractor might feel tempted to spend some time longer on the project than actually necessary; (iii) the Contractor may try to decrease its risk to have to pay delay liquidated damages by calculating the new project execution time too generously; (iv) in a worst case scenario, the Contractor has calculated plenty of time and finishes earlier in order to receive bonus payments for an early completion.

No. (15) is a sole and exclusive remedy clause to the extent that the legal consequences set out in the provisions on variation are conclusive. It is important to note, that any ordered variation (and its additional price) increases the Contract price as a whole. This is important because the contract prize usually serves as reference point for the cap on liquidated damages[21] and the adjustment of the amount of financial collaterals[22].

3.5 Contractor's Obligations

EPC contracts usually contain provisions on the Contractor's obligations. These provisions are designed to cover scope related areas that are not covered by the Employer's requirements (which contain technical descriptions) or which deal with the manner in which the works and services shall be conducted.

3.5.1 General Obligation to Comply

Many EPC contracts list the key influential factors, which the Contractor has to comply with, at the beginning of the section on Contractor's obligations.

21 As to liquidated damages, see 3.16.

22 As to the adjustment mechanism for collaterals, see 3.7.

a) Subject Matter

The general clause, on the obligation to comply with all relevant laws and the contractual obligations, defines the program for the project. The degree of detail is low and such provision serves the purpose of a "general reminder" than allocating specific rights and obligations among the parties.

b) Associated Risks and Interests

Even if the general obligation to comply with legal and contractual requirements seems to be of a rather general nature, there is one specific risk worth mentioning. Experience has shown that it is not always clear what actually has to be seen by the parties. While it is evident for legislation, sometimes the question comes up, whether e.g. regulations published by private companies who are certified to test and examine plants need to be seen as a kind of law. This is often the case, if such companies have a monopoly on conducting certain safety tests needed in order to receive the operational license, and stipulate the requirements for their tests. For this reason it is suggested here, that the Employer should in its own interest clarify whether such case might be applicable in Mongolia for its specific project and business.

c) Drafting Example

The Contractor shall perform the Works and manage and control the Construction Site in a professional, quality compliant, timely, safe, cost effective and environmentally responsible manner and in accordance with:

a. this Contract;
b. all applicable Authority Approvals;
c. all applicable Laws;
d. the Project Schedule;
e. the requirements of [name of the grid operator];
f. the terms and conditions of the relevant insurance contracts;
g. Best Industry Practice or [good industry practise];
h. the Employer's Requirements; and
i. a reference plant concept [name of reference plant].

d) Drafting Example Explanation

It is worth mentioning the obligation to comply with the insurance contracts (above f.) which often foresee notification deadlines which must be complied with, in order to preserve insurance coverage for a specific damage occurred[23]. For a power plant project, it is also necessary to ask the contractor to comply with the national grid code, respectively the requirements of a potential local grid operator (above e.). The term "best industry practice" (above g.) is often subject of long discussions with Contractors. They argue that they have to perform according to the latest scientific findings if "best industry practice" is the defined standard. Depending on how narrow one interprets this phrase "best practice" can be understood as a method or

23 For learning more about insurance and indemnification, see 3.20 and 3.20.

technique that has consistently shown results superior to those achieved with other means, and which is used as a benchmark.

Practice Alert:

If taken seriously, the term "best practice" can have significant financial impact, as the contractor then needs to design the project with the most expensive and technologically advanced materials.

This is why it is suggested here to carefully analyze whether "best practice" is necessary.

Instead, the term "good industry practice" has been proven to be what most employers are seeking for and what can be readily accepted by contractors.

The "reference plant concept" is important to note. If, for example, the Employer has constructed a plant with a certain Contractor in the past and the Employer is satisfied with the plant and its performance, such plant may serve as "reference plant". Whenever there is a doubt about how a specific (technical) problem should be resolved, it shall be resolved as it has previously been done for the reference plant, if the parties do not agree otherwise.

Obviously, the reference plant concept should be deleted prior to tendering out the contract, if there is no plant to be referred to.

3.5.2 Conduct of Works

a) Subject Matter

Conduct of works describes the manner in which the Contractor shall perform the works. The contents and the level of detail of the relevant provisions heavily depend on the local circumstances and the specifics of the project. For example, a provision on unexploded ordnances is necessary in most parts of Western Europe as two world wars have left their lethal heritage in many places. However, a corresponding provision may be dispensable in remote areas in Mongolia.

b) Associated Risks and Interests

The Employer, particularly if the Employer is a state institution, often has a special interest that the Contractor complies with local rules and respects social norms. This is because it is the Employer the press and public awareness focus on if – for example – it should turn out that illegal workers are employed on site, or wages below the minimum wages are paid. As the specific provisions of a "conduct of

works" clause have to be drafted along with the project particularities, the following example is limited to general items that will apply in any circumstances.

c) Drafting Example

(1) The Contractor shall be responsible for the true and proper layout of the Works including benchmarks, reference marks and lines. The Contractor shall at its sole cost provide to the Employer a copy of each document showing the layout of the Works. If, at any time during the progress of the Works, any error appears in the position, level or alignment of the Works, the Contractor shall notify the Employer of the error and, at its sole cost and expense, immediately rectify the error in accordance with the contract and to the satisfaction of the Employer.

(2) The Contractor shall ensure that appropriate Key Personnel are constantly on the Construction Site to provide full-time supervision of the Works. The supervision shall be performed in an active manner such as that the supervisor has to be continuously present at the place where the Works to be supervised are executed.

(3) The Contractor shall be solely responsible for its employees, consultants and other workers. As between the Contractor and the Employer, the Contractor shall be solely responsible for its Sub-contractors' Personnel and shall ensure that its Sub-contractors comply at all times with all applicable Law relating to their Personnel. The Contractor will be liable for and will defend, indemnify and hold the Employer harmless from and against any Losses and Liabilities arising out of or connected with any failure of the Contractor or any of its Sub-contractors to comply with any applicable Law relating to their Personnel.

(4) The Contractor shall be solely responsible for the remuneration, annual sick leave, long service leave, public holidays, redundancy payments or any other similar benefits under any Law which apply in respect of Contractor's Personnel and shall ensure that any Sub-contractor is similarly responsible in respect of the Sub-contractor's Personnel.

(5) The Contractor shall, at all times during the progress of the Works, use its best endeavours to prevent any unlawful, riotous or disorderly conduct or behaviour by or amongst its Personnel and the Personnel of its Sub-contractors.

(6) The Contractor shall, in all dealings with its Personnel and the Personnel of its Sub-contractors employed on or in connection with the Works, pay due regard to all applicable statutory holidays in [Country] and other relevant countries.

d) Drafting Example Explanation

No. (1) transfers the responsibility for the proper layout of the works to the Contractor and makes sure that the Employer has the chance to inform itself about the layout plans.

No. (2) covers a health and safety aspect by obliging the Contractor to have sufficient supervisors in place.

Nos. (3) to (6) cover the labor aspect of the works. The Contractor shall procure that all foreign workers have the necessary visa and that applicable social standards (sick

leave, public holidays, remuneration, etc.) are complied with. Although compliance with (local) labor laws is an obligation that the Contractors are subjected to anyway, - the law imposes pertaining obligations on the Contractors without respective contractual provisions -, it is important to have such contractual obligations in addition. Much legislation predict a (secondary) legal obligation of the owner of a site, in respect of sub-contractor payments and compliance with social (security) standards. If the Contractor should be at fault in this regard and the Employer should be held liable by e.g. social security authorities, respective provisions in the EPC contract serve as legal grounds for the Employer claiming indemnification from the Contractor or terminating the EPC contract for Contractor's default.

Depending on the specifics of the project, the clause on the conduct of works may also contain provisions on: the construction equipment, the coordination with the work of other Contractors employed by the Employer, emergency work, unexploded ordnances, and of value and heritage, as well as on topics of nature conservation.

3.5.3 Authority Approvals

Any EPC contract must pick up the subject of authority approvals.

a) Subject Matter

Depending on the national legislation, an industrial plant needs to have the relevant authority approvals in place for construction and operation in accordance with the law. Usually, the Employers depend on their Contractors' expertise in preparing the necessary documents for the authorities in due format. Apart from the plant relevant authority approvals, there may also be governmental approvals necessary for the Contractor conducting certain works etc.

b) Associated Risks and Interests

Irrespective of the addressee of an authority approval, be it the Contractor or the Employer, a denial of an authority approval or the omission to apply for a necessary authority approval will inevitably cause delay in the project execution. Depending on the national legislation, there may be authority approvals that need to be obtained by the Contractors first, in order to enable them to perform their works on site. These authority approvals potentially need to be transferred and assigned to the Employer upon acceptance of the works. The following drafting example stipulates a typical clause which must be adjusted to the particularities of the relevant local legislation.

c) Drafting Example

(1) The Contractor shall in respect of Authority Approvals:
   a. acquire and maintain Authority Approvals which are assigned to the Contractor's responsibility in Appendix XX (Permits & Approvals); or

b. acquire and maintain Authority Approvals which are necessary for the performance of the Contractor's obligations under this Contract and the operation of the Unit up to Provisional Acceptance of Works and are not assigned to the Employer's responsibility in Appendix XX (Permits & Approvals);
c. provide to the Employer all reasonable assistance necessary to enable the Employer to acquire and maintain all Authority Approvals which are as assigned to the Employer's responsibility in responsibility in Appendix XX (Permits & Approvals);
d. as and when requested by the Employer, transfer to the Employer at no additional cost such Authority Approvals as have been obtained by the Contractor in its name; and
e. complete all registrations which are necessary for the Contractor and its Representatives to work in [Country] and in such other jurisdictions which are relevant to the performance of the Works in accordance with this Contract.

(2) Whenever the Contractor is not able to apply for a permit and/or any Authority will reject an approval, the Contractor shall inform the Employer immediately.

d) Drafting Example Explanation

No. (1) deals with the responsibility of the Contractor and the Employer for applying for and maintaining the relevant authority approvals.

No. (2) obligates on the Contractor to immediately notify the Employer about any problems with authority approvals, and excludes any entitlement of the Contractor to an extension of time or delay costs, in the event of a failure to comply with this notification obligation. This strict regime is justified considering the impact a missing authority approval may have on the project. The Employer must be enabled to react quickly if the Contractor should be stuck in discussions with authorities or in the event of any other problems in the administrative process.

3.5.4 Labor and Industrial Relations

Provisions on labor and industrial relations may be advisable depending on the local circumstances.

a) Subject Matter

Particularly when used in countries having strong trade unions and a high degree of labor protection, EPC contracts often contain special rules on labor and industrial relations going beyond what is otherwise stipulated in conduct of works provisions.

b) Associated Risks and Interests

Employers usually have a vital interest in avoiding negative press reports. They want to maintain a cooperative and positive relationship with the relevant trade unions.

Furthermore, the owner of a project can be held liable in some jurisdictions if the workers on site are not properly paid or socially insured.

c) Drafting Example

(1) The Contractor shall:
   a. comply at all times with all applicable Laws relating to the employment of personnel;
   b. keep the Employer informed of any disputes with or demands by the workforce; and
   c. allow labor union representatives reasonable access to the Construction Site.

(2) The Contractor shall indemnify the Employer for any Losses and Liabilities arising out of any failure by the Contractor or any Sub-contractors to comply fully with the requirements of Clause (1).

(3) If the Contractor or any Sub-contractor fails to pay any wages, overtime pay, taxes, social security contributions, insurance payments, union dues or other amounts due to any third party in relation to the employment by them of personnel involved in the performance of the Works, the Employer may to avoid any disruption to the performance of any works on the Project, pay such amounts directly to the relevant party. Any amount paid by the Employer in accordance with the foregoing sentence shall be reimbursed by the Contractor to the Employer as a debt due and payable by the Contractor to the Employer on demand.

d) Drafting Example Explanation

No. (1) defines the Contractor's program of obligations with regard to labor and labor laws. Particularly, lit. (1.b.) shall ensure that the Employer is kept informed about what is happening on site in regard to the workforce. Although handling the workforce is within the Contractor's scope of works, delays resulting from disputes with the workforce on site will always negatively impact the progress quality of the works. Hence, the Employer should have a contractual right to ask for respective information so that the Employer is able to take action if required.

No. (2) stipulates the legal consequences if the Contractor should fail to comply with its obligations pertaining labor, and entitles the Employer to claim indemnification from the Contractor.

No. (3) is an instrument of dispute prevention as it combines the Employer's entitlement to avoid workforce stress on site by paying outstanding wages etc. directly to the relevant workers or institutions with the entitlement to get reimbursed by the Contractor.

3.5.5 Utilities

Provisions on utilities and consumables can be found in many EPC contracts.

a) Subject Matter

Respective provisions generally say that the Contractor shall be obliged to procure and pay for any utilities (telecommunications, etc.) and consumables (water, electricity, etc.) needed for the performance of the works and services.

b) Associated Risks and Interests

The most prominent risk here is that the parties simply forget to find an agreement on the responsibilities for utilities. This will cause discussions later on, as costs for water and electricity can amount to great sums, depending on the remoteness of the site in Mongolia.

c) Drafting Example

Apart from the consumables and utilities to be provided and/or paid by the Employer according to Clause XX, the Contractor shall at its sole cost and expense:

a. obtain and maintain all utilities at or in the vicinity of the Construction Site, which are necessary for the performance of the Works; and
b. provide all operating supplies and consumables, including all lubricants and control fluids, chemicals, and industrial gases, water and electricity needed for construction of the Works;
c. use free supplies, utilities and consumables in an economical, efficient and non-abusive manner in a way not exceeding the quantities and amounts necessary for carrying out the pertaining part of the Works and without wasting resources.

d) Drafting Example Explanation

The provisions are self-explanatory to the greatest extent. In times of growing environmental awareness the last provision (in above c)) is meant as a general commitment to a restrictive use of natural resources.

3.5.6 Project Documentation

Any EPC contract should set rules for the handling of the documents produced in the course of the project.

a) Subject Matter

Project Documentation comprises any document that is produced and exchanged in the course of the project execution.

b) Associated Risks and Interests

The Employer has a vital interest in receiving relevant documents in time and in proper quality. Particularly HSE plans, commissioning plans, the commissioning program and the final as-built drawings should be submitted in due time so that the Employer has a chance to review (and potentially to approve) the documents and to discuss any potential concerns. The risk for the Employer is that – in absence of clear contract provisions – it will receive documents too late or not at all.

c) Drafting Example

(1) The Contractor shall prepare the following Project Documentation for review according to Clause (2):
   a. within 30 Days following the Effective Date and in any event at least 15 Days prior to the commencement of Works on the Construction Site submit to the Employer the special safety and health-protection plans required under the applicable Law;
   b. not later than 3 Months after Commencement Date the overall Commissioning Plan and Commissioning Program of the Unit shall be submitted to the Employer as required in Appendix XX (Commissioning Requirements) and Appendix XX (Project Documentation);

(2) Each Project Documentation prepared by the Contractor shall be prepared:
   a. to facilitate (as applicable) the Commissioning Tests of the Works, the Initial Start-Up of the Unit and the operation and maintenance of the completed Unit at the performance, reliability, safety and maintainability levels that the Unit is required to achieve under this Contract;
   b. in full consideration of the number, experience level and technical background of the Employer's operating personnel and the Contractor's training-related obligations under Clause XX;
   c. in a manner that is consistent with the recommendations of the designers, manufacturers and Sub-contractors of the equipment;
   d. in compliance with the requirements as set forth in Appendix XX (Project Documentation) and Appendix XX (QA/QC Requirements);
   e. in compliance with the applicable Law.

(3) The proposed Project Documentation shall be reviewed and approved as set forth in this Contract, including Appendix XX (Project Documentation). If any amendments to a proposed Project Documentation are required as a result of the review process, those amendments shall be completed and the affected Project Documentation resubmitted to the Employer.

(4) Notwithstanding that the Employer may have reviewed and approved any Project Documentation, the Employer shall have the right to request further revisions to any Project Documentation. If so requested, the Contractor shall, at its sole cost and expense, immediately furnish the Employer with such further revisions in the format required under Clause (3) above.

(5) The Contractor shall continuously update the Project Documentation.

(6) The Employer shall own all copies of the Project Documentation and the Contractor shall only be entitled to use the Project Documentation for the purpose of performing its obligations under this Contract. The Contractor shall provide to the Employer upon the Employer's request necessary sets of Project Documentation and, if requested by the Employer, one additional set each for any relevant Authority.

d) Drafting Example Explanation

No. (1) lists the most important documents that are often required for industrial projects. For each document, a specific latest submission date is specified in order to

make sure the documents are produced and exchanged over a certain time period. This is to prevent the documents are not dumped in a huge package at the latest possible date, so that the Employer cannot handle the volume in the agreed time (a method sometimes applied by contractors). The clause references an appendix on "Project Documentation". Such appendix should be set up outlining a document review process and detailing the contents and the layout of the documents prepared by the Contractor[24].

No. (2) stipulates general requirements to be fulfilled by the project documentation.

No. (3) links the enumeration contained in no. (1) to the document review process detailed in the respective appendix on Project Documentation.

No. (4) ensures that the Employer – despite having previously approved a document – still shall have the chance to request changes. Contractors will most likely seek to link such late changes to the clauses on the change of scope in order to claim schedule relief or additional payment.

No. (5) secures a continuous updating of the relevant documents.

No. (6) guarantees that the Employer becomes the owner of the delivered project documentation, and that the Contractor provides the owner with sufficient copies. In the absence of such provision, the Contractor would only be obliged to deliver one copy of each document. If the Employer requires more copies, this could give grounds for a claim for additional payment due to a change of scope.

3.5.7 Spare Parts

Depending on the nature of the project it is advisable to have provisions on spare parts.

a) Subject Matter

The global term "spare parts or spares" can be further categorized into "commissioning spare parts" and "(maintenance) spare parts". The commissioning spare parts are intended to be immediately "at hand" during the whole plant commissioning and testing phase. Parts included would be e.g. bearings and seals for major rotating equipment. The supply of commissioning spares usually is an EPC Contractor's obligation.

The maintenance spare parts for the later operation and maintenance of the unit should also be supplied by the EPC Contractor for the duration of the defect liability period.

24 As to the mentioned appendix on project documentation, see also chapter B.2.3.1.

b) Associated Risks and Interests

The Employer generally seeks to achieve that (i) commissioning spares are immediately on hand during the commissioning phase, in order to ensure that certain tests can be undertaken without major outages, (ii) maintenance spares are delivered to the site prior to the start of commercial operation and (iii) that there is an ongoing availability of (at least the most important) spares. The latter may also have a vital interest in having sufficient spare parts available, especially if O&M contracts have also been concluded, and/or the contractor has to guarantee certain availabilities and is potentially facing claims for liquidated damages. With respect to the quality of the spares, the Employer usually should be provided with a separate spare part warranty by the EPC Contractor.

Experience has shown that the Employer may generate considerable savings by carefully scrutinizing the spare part lists offered by the Contractor in order to make sure that only relevant spare parts in the relevant quantities are delivered (and paid for!).

Example:

In a project for construction of an industrial site the Employer has paid for a set of spare parts which are included in the EPC price. There are no further specifications as to what parts exactly shall be delivered. The contractor delivers twenty spare windows and twenty spare doors. The Employer is surprised as spare windows and spare doors are of no use and the Employer had expected to receive relevant parts for the main equipment that was installed. The Contractor argues that windows and doors are also parts of the plant and if the Employer had wished to receive some specific parts, the Employer should have specified them. Extra spare parts for the main equipment of the plant could be delivered for extra payment only.

If the Employer operates several sites, the spare part administration can be optimized by a spare part pooling system, so that spare parts can be exchanged between the units. If there is already a spare part pooling system in place, the Employer should make sure that the spare parts to be supplied under the EPC are correctly labeled and – eventually – delivered directly to a central spare part depot.

c) Drafting Example

(1) As a precondition to start Cold Commissioning of the first Unit system or functional group of Unit system, the Contractor shall have:
   a. delivered all Commissioning Spares in accordance with the Employer's Requirements; and
   b. provided the Employer with documentary evidence that it has placed purchase orders for those Spare Parts which the Employer may have directed the Contractor to purchase in accordance with Clause (4).

(2) All costs associated with the Commissioning Spares to be provided by the Contractor under this Contract are included in the Contract Price.

(3) The price list for those Spare Parts identified as of the date of this Contract is contained in Appendix XX (Spare Parts List). The Contractor may not, without the prior approval of the Employer, increase the pricing of any Spares once they have been included in the list in Appendix XX (Spare Parts List).

(4) The Contractor shall notify the Employer at least 60 Days prior to the date upon which the Contractor intends to place purchase orders for Equipment to which the Spares relate.

(5) Notwithstanding that it may not have placed any order within the time period set forth in Clause (4), the Employer may place orders for Spares from time to time during the term of this Contract, and in those circumstances the Contractor will order the Spares selected by the Employer for purchase on the terms set forth herein.

(6) The price for the Spares shall be invoiced separately by the Contractor and shall not form part of the Contract Price. Existing and future frame contracts between Employer and Contractor on the delivery of Spare Parts shall be applied.

(7) In addition to the Commissioning Spares, the Contractor may utilise other Spares provided that the Contractor shall, at its sole cost and expense, immediately replace.

(8) If at Provisional Acceptance of Works any unused Commissioning Spares should remain and title to those items has not vested in the Employer pursuant to this Contract or the operation of Law, title to such spares shall automatically vest in the Employer.

(9) The Contractor shall ensure that spare parts for the Unit shall remain available to be purchased by the Employer at market prices for a period of twenty years following the Date of Provisional Acceptance of Works, and shall provide the Employer with such information and Intellectual Property Rights and other rights as may be necessary to enable the Employer to manufacture (itself or through third parties) any Spare Parts after such time as they are no longer available from the Contractor.

(10) The Contractor shall indemnify the Employer against any Losses and Liabilities incurred by Employer as a result of any failure by the Contractor to comply with Clause (10).

(11) Without prejudice to the Contractor's obligations under Clause (10) and the Employer's rights should the Contractor breach any of those obligations, if the Contractor or any Sub-contractors intends to discontinue the manufacture of any Spare Parts applicable to the Unit, the Contractor shall immediately notify the Employer and:

   a. the Employer shall be entitled to order those quantities of Spare Parts which the Employer considers necessary as a result of the discontinuation; and

   b. the Contractor shall provide the Employer with such information and Intellectual Property Rights and other rights as may be necessary to enable the Employer to manufacture such spare parts.

(12) If the Contractor commits or suffers an Act of Insolvency, then the Contractor shall on the Employer's request provide the Employer with such information and Intellectual Property Rights and other rights as may be necessary to enable the Employer to manufacture (itself or through third parties) any Spare Parts.
(13) Nothing in this Contract obliges the Employer to purchase Spare Parts from the Contractor.

d) Drafting Example Explanation

No. (1) obliges the Contractor to have delivered the necessary commissioning spares to the storage facilities prior to the start of any commissioning activities. In lit. b. the provision refers to purchase orders that the Contractor shall have placed. In this example, the Employer has chosen not to rely on the Contractor to purchase the right spare parts, but selects the spare parts it may deem necessary from a list. The selected spare parts will then be provided by the Contractor.

No. (2) makes sure that the Employer does not receive variation proposals claiming additional payments just because the Contractor needed to replace a couple of seals during commissioning.

No. (3) provides that a spare part price list will be kept updated by the Contractor, as soon as new equipment manufacturers have been identified and approved by the Employer. The fact that the provision requires the Employer's approval for updating the spare part list shows that the Employer here has a rigid spare part management, probably a spare part pooling system. A further important aspect of this clause is that the prices for the listed spare parts must not be unilaterally increased by the Contractor.

No. (4) deals with the ordering process of spare parts. For example, in case the Contractor wants to place a purchase order for a turbine, it needs to inform the Employer 60 days ahead of placing the relevant purchase order with the turbine manufacturer. The Employer then has to select the turbine related spares that shall be acquired by the Contractor together with the turbine. Such clauses allows for a cost and time efficient procurement, and takes into account that the Employer usually has more operating experience and knowledge about the spares likely to be needed under the specific operating conditions and operating regime of that plant than the contractor.

No. (5) relates to the preceding no. (4) by stipulating that the Employer shall not be restricted to the periods set forth in no. (4) with ordering spare parts, but may approach the Contractor from time to time in order to place purchase orders for spare parts. This provision is necessary in order to prevent a too narrow interpretation of no. (4), which then would limit the Employer's contractual rights to purchase spares during the tight time windows set forth in clause (4).

No. (6) regulates the accounting of the spare part orders. These are separately invoiced and not credited against the EPC price. This is correct, as the Employer's decision to buy spare parts in excess quantities of what would actually be necessary to properly maintain the unit, should not impact the EPC price (and – for example – force the Contractor to increase the collaterals due to that price increase[25]). Furthermore, with regard to the project financing, it may be advantageous not to increase the CAPEX costs by increasing the EPC price by spare part orders, and rather than having them accounted to the OPEX, thereby potentially optimising tax issues. The provision lays the foundation for later spare part supply frame contracts. This is wise in order to profit from cheaper prices, if such frame contracts should be concluded at a later stage.

No. (7) stipulates an obligation for the Contractor to replace all spare parts that it has used, in addition to the commissioning spares in the commissioning and testing phase. This is necessary as the maintenance spares are not intended to be used at the early stage of commissioning, but shall be in stock for the later maintenance and repair of the unit. In order to keep an overview on the spare part exchange in the depot, the Contractor is further obliged to keep an updated record on the spare part flow.

No. (8) assigns the ownership of all unused commissioning spares to the Employer. Although there is probably not much financial value related to this clause, it is correct as the Contractor is likely to have priced in all commissioning spares it will bring to the site. Hence, the Contractor should not take equipment back to its offices already paid for by the Employer.

No. (9) is particularly worrying to contractors, as it obliges them to ensure that spare parts are available for *twenty years* following plant acceptance (in lit. a.). Furthermore, it secures that the Employer is enabled to manufacture or have manufactured relevant spare parts by itself if such spare parts should no longer be available on the market. Apart from that, the Contractor shall manage its sub-contractors in a way that facilitates the later procurement of spare parts. This provision construes a "best case scenario" for the Employer and should be regarded as a heavy burden for Contractors, which is likely to be hotly negotiated. It may be considered to reduce the obligation of the Contractor to ensure spare part availability for the defect liability period only. The Employer will check the market anyway for spare parts by itself, as no Employer will rely completely on the Contractor, particularly when the defect liability period has expired, and the chances to buy spare parts somewhere else for better conditions are often good.

No. (10) stipulates the legal consequences linked to the spare part obligations. The Contractor shall indemnify the Employer against any losses and liabilities incurring

25 For further details on the adjustment mechanism of the EPC price and collaterals, see 3.7.

on the Employer due to a failure of the Contractor to comply with the above described spare part obligations.

No. (11) can be considered as a special provision within the scope of above clause (9). No. (11) takes the short-term view covering the situation that either the Contractor or one of its sub-contractors, (during the project execution phase) ceases to produce any spare parts. In that event, the contractor is even more obliged to secure the spare part availability / production capability. In contrast to above no. (9) this obligation does not constitute too heavy a burden, as the Contractor (due to its defect liability period obligations) would have to procure alternative spare part manufacturers anyway.

No. (12) shall cover the Employer against the risk of a shortage of spare parts due to Contractor's insolvency. The power of this provision to "shield" the Employer against Contractor insolvency related risks is probably limited, as the applicable law will most likely provide special insolvency rules which cannot be "contracted out".

No. (13) clarifies, that while the Employer has the option to purchase spare parts from the Contractor, the Employer does not have the obligation to do so. This provision should be kept as it protects the Employer from being overcharged with spare part prices due to a Contractor which has an exclusive right to supply the Employer. Depending on the applicable law, national laws may forbid public institutions to be bound to only one supplier of goods so that this provision no. (13) may have an increased importance for Employers being state institutions or public corporations.

3.5.8 Training

The EPC contract should set out basic requirements for the training of the Employer's personnel.

a) Subject Matter

The EPC Contractor shall not only construct and commission the project, but shall also train the Employer's personnel for the operation of the unit. Especially in scenarios where the Employer does not have a long history of operational experience or the plant type is new, the importance of sufficient training cannot be stressed enough. Compared to the other costs of large EPC projects the costs for training are marginal and it is strongly recommended for Mongolian entities contracting for EPC projects, to secure as much training as they can receive. If possible, such training should already start by having teams of Engineers from the Employer visiting regularly the factories of the suppliers from a very early stage onwards. In any case, all training should have taken place before commissioning.

b) Associated Risks and Interests

Even if it is sometimes regarded by the contractors as being a mere side issue of the EPC package, training should be taken seriously. At the end, it is the Employer's personnel being responsible for the proper operation of the unit. There is an inherent risk that, for example, defects caused by improper operation due to insufficiently educated and trained personnel will result in a loss of defect liability claims against the Contractor[26]. Hence, the Employer should ensure rigidly that the Contractor will train the Employer's personnel at all and that the lectures satisfy minimum quality standards.

c) Drafting Example

(1) The Contractor shall prepare and submit to the Employer for review not later than 12 Months prior to Hot Commissioning a Training Plan.

(2) The Training Plan shall comply with the Employer's Requirements and will at all times be designed:
   a. in full consideration of the number, experience level and technical background of the Employer's operating personnel;
   b. to satisfy the requirements of the relevant Authority;
   c. to ensure that the Employer's personnel, once trained, will be able to efficiently, prudently, safely and professionally operate and maintain the Unit;

(3) Apart from the on-the-job training, the Contractor shall complete the theoretical class room training of the personnel by no later than 6 Months prior to the scheduled date for Hot Commissioning of the unit systems. The on-the-job training shall be completed before the Date of Provisional Acceptance.

(4) Whenever the Employer's personnel are absent from the training without permission or a valid excuse, the Contractor shall inform the Employer immediately.

d) Drafting Example Explanation

No. (1) requires the first draft of a training plan to be submitted one year prior to the point in time when the unit is approximately half-way commissioned and tested. The provision ensures that the Contractor considers the training lectures that it wants to offer in due time. Apart from that, the provision further procures that the Employer has sufficient time to discuss the proposed training concept with the EPC Contractor.

No. (2) sets out the gross quality features that shall be met by the training plan. The training plan shall satisfy any authority requirements (lit. b)[27], shall take the level of experience and education of the Employer's personnel in due consideration (lit. a), and shall enable the Employer's personnel to operate the unit safely and professionally (lit. c.).

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26 For further information on warranty issues incurring while commercial operation and maintenance, see chapter G.

27 For special technologies, such as nuclear power plants, the relevant authorities may have requirements with regard to how nuclear power plant personnel should be trained.

No. (4) gives some guidelines for the training schedule.

No. (5) obliges the Contractor to inform the Employer about non-excused absences of persons who shall take part in the training. This provision also aims to discipline the Contractor´s own personnel, and ensures that the Contractor does not accept a "laissez-faire" approach in the lectures as the training is paid for irrespective of any person taking part in it. It is potentially attractive for Contractors just to drop lessons if people should stay away. However, at the end of the day, it remains the Employer´s obligation to ensure that people show up for the training.

3.5.9 Quality Assurance and Quality Control (QA/QC)

EPC contracts usually contain provisions outlining a quality management system. However, the level of detail of clauses stipulating QA/QC strongly depends on the Employer´s capabilities to use the rights laid down in this section. The more rigid and detailed such control rights are, the more the Employer needs to be capable in terms of experience and resources to make use of it. Should the Employer utilize an Owner's Engineer, then this clause needs to be aligned with the Owner's Engineer in order to have a common understanding of what forms part of the scope of works for the Owner's Engineer in this respect.

a) Subject Matter

The Employer can expect the works and services to be performed in a quality that correlates to the contract price being paid. The contents of provisions on quality management will vary depending on the quality standards desired by the Employer, and the QA/QC systems in place in the Employer's organization.

b) Associated Risks and Interests

Clearly the risk associated with quality issues is that the Employer may pay the agreed price without receiving a unit that is worth the price, due to poor quality. Even worse, poor quality is likely to result in project delays and later unavailability of the unit due to unplanned outages[28].

c) Drafting Example

(1) The Contractor shall have and shall implement during the term of this Contract a Quality Management System which at all times complies with all applicable Laws and with the requirements as set forth in Appendix XX (QA/QC Requirements).

(2) The Parties have agreed prior to the Effective Date all Quality Documents as required in Appendix XX (QA/QC Requirements).

(3) In any event, the Contractor shall prepare and submit to the Employer for review the Quality Documents as required in Appendix XX (QA/QC Requirements) prior to commencement of the portion of the Works to which the requested documents

28 See also Illustration 23: Project Management Triangle, p. 27.

relate. The Contractor shall not be entitled to any extension of time or adjustment of the Contract Price if it fails to comply with this Clause (3).

(4) Notwithstanding that the Employer may have reviewed and approved the initial Quality Documents or any subsequent Quality Document, the Employer shall have the right to request further revisions to the Quality Documents.

(5) The Contractor shall procure that each relevant Sub-contractor shall, at all times:

a. allow, and procure that each Sub-contractor allows, the Employer's Representatives unrestricted access to inspect the Construction Site, the workshops onsite and offsite or the Works or audit its compliance with the Quality Documents;

b. admit additional tests and investigations which the Employer requires in its reasonable discretion. Any costs resulting from such additional tests and investigations shall be dealt with in accordance with Clause XX [Change of Scope]. If such additional tests and investigations reveal a Defect in the quality of the Works or Materials any consequences on the Progress Schedule and any costs are to be borne by the Contractor.

d) Drafting Example Explanation

No. (1) generally forces the Contractor to implement a quality management system which complies with all legal and contractual requirements. The appendix that is referenced here will set out the details on the quality management system[29]. Either there are national codes and standards in place describing what a quality management system shall look like[30], or the Employer has its own (evidently higher) quality standards which are defined in the referenced appendix. If the Employer has implemented a quality control system in its organization, the appendix will describe related requirements so that the project documentation will fit into the quality control system in place.

No. (2) states that the parties have or will have agreed on the relevant quality documents. This compels the QA/QC departments to discuss which documents – e.g. which reports – the Employer wishes to receive and the format these documents shall have.

No. (3) secures that the Employer receives the relevant quality documents in due time. In order to back this obligation with a legal consequence, the provision prohibits starting with any part of the works for which the relevant quality documentation has not yet been submitted. In such event the con-tractor is not entitled to claim an extension of time.

29 As to the quality management appendix, see also chapter B.2.3.1.

30 In Europe, for example, ISO9001 defines standards with regard to handling of documentation, the set- up of company internal quality control systems and the management of quality problems.

No. (4) ensures that the Employer may require amendments to the quality documents at any time, despite the fact that the relevant quality document has already been revised in the standardized document review process. It should, however, be kept in mind that such change is likely to constitute a variation and comes with additional costs.

No. (5) is an important provision as it clears the way for the Employer to inspect the works onsite and offsite in the workshops of the Contractor and its sub-contractors. In addition to this right to inspect, the Employer shall be entitled to require additional tests if it deems the quality of some work to be below the required standard. Related costs are distributed in a fair manner between Employer and Contractor, according to the result of such tests.

3.5.10 Health and Safety

Health and safety provisions are common standard in EPC contracts.

a) Subject Matter

Health and safety describes the totality of laws and internal rules regarding the protection of the workers health and the safety of the works.

b) Associated Risks and Interests

Basically, any company sending its workers to a large construction site is responsible for the health and safety of its workforce. Despite this generic responsibility imposed on each company, the Employer, as owner of the site, usually is interested in a high health and safety standard on site. This is for various reasons: Firstly, fatalities or other health and safety incidents on site result in project delays and negative press. Secondly, unsafe workplaces demoralize workers and incidents on site may lead to indemnity claims by the injured worker – or, in the worst case, by the relatives of the deceased worker – against the Employer, too. Thirdly, in many countries, site owners are legally liable if health and safety regulations are neglected. For all these reasons any Employer should seek to get a strong (contractual) commitment from its Contractor as to health and safety aspects.

It goes without saying that any health and safety provision needs to be individually drafted according to the local HSE rules. The below example can only demonstrate potential areas that could be covered by an HSE clause.

c) Drafting Example

(1) The Employer has provided the Contractor with the [• name local HSE requirements] in the request for tender. The Employer may change the requirements set forth in the [• name local HSE requirements] upon prior consultation with the Contractor.

(2) The Contractor shall, within 60 Days following the Effective Date and in any event at least 30 Days prior to the commencement of Works on the Construction Site:
   a. submit to the Employer and the Safety Coordinator, for any activity on the Construction Site, the special safety and health-protection plans required under the applicable Law;
   b. develop an health and safety management system;
   c. submit to the Employer the Project Documentation according to Appendix XX (HSE-Requirements).

(3) The Project Documentation as per Clause (2) and the Contractor's health and safety management system shall at all times comply with:
   a. all applicable Laws, and
   d. the health and safety requirements set out in Appendix XX (HSE-Requirements).

(4) The Contractor shall at all times:
   a. comply with and implement the approved Project Documentation as per Clause (2);
   b. exercise all necessary precautions to protect the health and safety of all persons;
   c. allow the Employer's Representative unrestricted access to inspect the Construction Site or the Works or audit the Contractor's health and safety management system.

(5) The Contractor shall during the performance of the Works appoint a responsible HSE manager as one of the Key Personnel set out in Appendix XX (Project Management Organization).

(6) The Employer may by notice to the Contractor issue instructions in relation to any health and safety issues and the Contractor shall promptly comply with those instructions.

(7) If the Contractor does not comply with any notice provided pursuant to Clause (6), the Employer may employ others to perform the instruction in that notice. The Employer may instruct the Contractor to wholly or partially stop the Works in the event of violations of the safety requirements set forth in the [name of the local HSE requirements] or in Appendix XX (HSE-Requirements). Any consequences resulting from such disruption are to be borne by the Contractor, un-less the Contractor evidences that the Employer's instruction to stop the Works was unreasonable and no danger has occurred for the workers on Construction Site.

d) Drafting Example Explanation

Keeping within the system, which is already known from the quality provisions, the provisions in no. (1) through no. (3) are designed to make sure the Employer will receive the relevant health and safety related documents in due course. The provisions also ensure that these documents will not be altered without the Employer's participation and will always comply with the relevant laws and regulations.

No. (4) establishes a whole set of tasks and obligations pertaining to health and safety. Of course the specific contents depend to the greatest extent on the local health and safety rules.

No. (5) obliges the Contractor to appoint a health and safety manager which is a mandatory legal requirement in many countries.

No. (6) and no. (7) entitle the Employer to interfere with the performance of the works and services, if health and safety standards are neglected. Related costs are to be borne by the Contractor, unless the Contractor demonstrates that the Employer's interference was unreasonable and a danger for the workers never occurred. Usually, Contractors, which have their own rigid health and safety standards (as almost all of the internationally operating western EPC contractors do) will not argue against these provisions.

3.5.11 Environment

Provisions dealing with environmental management are commonly found in EPC contracts, in most of the cases in close vicinity to the health and safety provisions.

a) Subject Matter

In times of growing public awareness about the protection of the environment, and the sensible use of natural resources, any Employer should try to get a strong "environmental commitment" from its Contractor.

b) Associated Risks and Interests

Risks associated with a poor handling of environmental issues are comparable with health and safety related risks. The Employer, as owner of the site, is doomed to be the prime target for negative press and public objections against the realization of the whole unit project, if an environmental misconduct should be committed on site. In addition, contaminations of soil, for example, that occur throughout the project execution may endanger the time schedule or, worse, imperil any existing permits and licenses related to the construction and/or the Contractor's work. So, it is in the Employer's interest to contractually impose strict obligations on the Contractor pertaining environmental matters. The contents of such provisions strongly depend on the local rules and the example below shall only convey an impression of what can potentially be stipulated in an EPC contract.

c) Drafting Example

(1) The Contractor shall prepare and submit to the Employer the environmental Project Documentation as set forth in Appendix XX (HSE-Requirements) for review.

(2) The environmental Project Documentation shall at all times comply with:

a. all applicable Laws;

b. the requirements of [local law requirements to be supplemented];

c. the environmental requirements set out in Appendix XX (HSE-Requirements).

(3) The proposed environmental Project Documentation shall be re-viewed and amended in accordance with and as part of the document review process set forth in Appendix XX [Project Documentation].

(4) Notwithstanding that the Employer may have reviewed and approved the initial environmental Project Documentation or any subsequent submission of it, the Employer shall have the right to request further revisions to the environmental Project Documentation.

(5) The Contractor shall at all times:

a. comply with and implement the approved environmental Project Documentation;

b. exercise all necessary precautions to protect the environment;

c. allow, the Employer's Representative unrestricted access to inspect the Construction Site or the Works or audit the Contractor's compliance with the environmental Project Documentation and all related requirements under this Contract.

(6) The Contractor shall during the performance of the Works employ as one of the Key Personnel set out in Appendix XX (Project Management Organization) a coordinator (the Environmental Coordinator) who will be responsible for developing and implementing the environmental Project Documentation and managing cooperation with the Employer and the fulfillment of all of the Contractor's other obligations under the Contract in relation to the environment.

(7) The Employer, may by notice to the Contractor, issue instructions in relation to any environmental issues which arise in connection with this Contract and the Contractor shall promptly comply with those instructions. The Employer may instruct the Contractor to wholly or partially stop the Works in the event of violations of the environmental requirements set forth in Appendix XX (HSE-Requirements). Any consequences resulting from such disruption are to be borne by the Contractor, unless the Contractor evidences that the Employer's instruction to stop the Works was unreasonable and no danger for the environment has occurred.

(8) If the Contractor does not comply with any notice provided pursuant to Clause (7), the Employer may employ others to perform the instruction in that notice.

(9) Any costs incurred by the Employer under Clause (8) shall be deter-mined by the Employer in accordance with Clause XX [Determinations] and reimbursed to the Employer as a debt due and payable by the Contractor to the Employer on demand.

d) Drafting Example Explanation

No. (1) and no. (2) are designed to make sure the Employer will receive the relevant documents in due course. The provisions also ensure that these documents will not be altered without the Employer's participation and will always comply with the relevant environmental laws and regulations.

No. (3) and no. (4) ensure that the relevant quality documents go through the agreed document review process. Furthermore, the Employer is entitled to require

amendments to the environment related documents at any time, despite the fact that the relevant documents have already passed the standardized document review process.

No. (5) creates a whole set of tasks and obligations pertaining environmental issues, and allows the Employer to audit the compliance of the project documentation with the contractual / legal requirements. The specific obligations to be stipulated, of course, depend to a great extent on the local environmental regulations. Contractors are usually not happy with Audit Rights, so it should be decided before tendering whether they are needed for internal purposes or not.

No. (6) obliges the Contractor to appoint an environmental coordinator which is a mandatory legal requirement in many countries.

No. (7) and no. (8) entitle the Employer to interfere with the performance of the works and services if environmental standards are neglected. Related costs are to be borne by the Contractor, unless the Contractor demonstrates that the Employer's interference was unreasonable and a danger for the environment never occurred. Usually, Contractors have own rigid environmental standards will not argue against these provisions.

No. (9) contains the final clause transferring all disputes arising out of the provisions on environmental matters to the contractual dispute resolution system.

3.5.12 Import and Export

It is strongly recommended to include provisions on import and export. The level of detail of this clause depends very much on the regulatory framework for imports, and the practical experience both parties have with the actual clearing of imports. Depending on the situation it should be considered whether a different risk allocation is more advantageous.

a) Subject Matter

In most events, the materials and equipment needed for the realization of an industrial project are not exclusively produced in the country where the unit is to be built. Hence, it is worth picking up the subject of import and export obligations in an EPC contract.

b) Associated Risks and Interests

Depending on the strictness of respective local import and export legislation, import and export requirements may bear an inherent risk of delaying the project execution. It is annoying for both parties when a piece of major equipment or other materials cannot be cleared in the customs due to some omissions pertaining to customs formalities. Contractors, particularly contractors with an office in the

country where the project shall be realized or which at least have done business in that country before, usually have experience in the relevant import and export regulations. For that reason the Employer usually imposes the obligation to deal with any import and export matters onto the Contractor. If that is not the case and the Contractors depend on local agencies, it should be considered whether the Employer agrees to a less rigid system and takes over some support functions in order to facilitate the import process.

c) Drafting Example

(1) The Contractor shall:
   a. be responsible for complying at all times with all applicable Laws and procedures for the exportation from the country of export, transportation through other countries, importation into [Country] of all equipment and material needed to complete the Works (Imported Materials);
   b. be responsible for the proper unloading and handling of as well as transportation of Imported Materials to the Construction Site;
   c. be responsible for obtaining at its cost all export, transportation and import licenses for Imported Materials;
   d. be responsible at its cost for all export or import duties or tariffs on Imported Materials exported or imported by the Contractor in connection with or for the purposes of this Contract; and
   e. if requested to do so, provide to the Employer free of charge a copy of any document issued or received by the Contractor in connection with the exportation, transportation or importation of Imported Materials.

(2) The Contractor shall, at its sole cost and expense, handle all Imported Materials at the point(s) of import and any formalities for customs clearance. Delays in obtaining customs or other clearances in respect of Imported Materials and any associated costs are the exclusive responsibility of the Contractor.

(3) Without derogating from any of the Contractor's responsibilities under this Contract or imposing any liability or responsibility on the part of the Employer, the Employer may by notice to the Contractor require that such Imported Materials be imported in the name of the Employer, in which case:
   a. all bills of lading and other documents relating to the ship-ping and importation of such Imported Materials shall stipulate that the Imported Materials are being imported in the name of the Employer; and
   b. the Employer shall direct a corresponding Change of Scope in accordance with Clause XX [Change of Scopes].

d) Drafting Example Explanation

No. (1) defines the task program that the Contractor has to fulfill with regard to import and export matters. In essence, the Contractor is obliged to take care of any import, export and customs formalities and bears all related costs.

No. (2) deals with the situation that assistance by the Employer becomes necessary in order to enable the Contractor to handle the relevant import and export formalities.

No. (3) reserves an option for the Employer to have the materials and equipment imported in the name of the Employer, in the case that due to existing local regulations this approach is more advantageous for the Employer. From the drafting point of view, the link to the change of scope provisions is essential, as it makes clear that a reduction of the agreed price may result.

3.5.13 Transportation

Transportation of materials and equipment is another typical obligation that Contractors take over in EPC contracts. Especially in Mongolia, where many projects are executed in rather remote areas of the country and the transportation system is not as mature as in other parts of the world, the careful drafting of this clause is essential for projects.

a) Subject Matter

Any large infrastructure project involves transportation of materials and equipment to the site. Depending on the location of the site, the Employer must contemplate potential implications that should be addressed in the EPC contract.

b) Associated Risks and Interests

Risks resulting from the transport of material and equipment should always be evaluated and discussed between the Employer and the Contractor. It is recommendable (and often asked for by the Contractors) to have a transportation study developed before the tender process begins. Neither the Employer nor the Contractor benefit from a situation when a piece of (major) equipment is stuck half way on the road and the respective works on site have to be rescheduled and delayed. Later disputes about the costs arising out of such circumstances are likely to occur in such situation. Sites in remote places and often rough climate conditions require careful contemplation. But also sites in or around large cities as e.g. Ulaanbaatar, which is known for its traffic collapses, require some thoughts on how transportation and routing should be dealt with in an EPC contract. Apart from the risks with regard to the project execution, the Employer should also be aware of the fact that - particularly when heavy weight equipment is shipped – there is a probability that third party property (roads, bridges, etc.) may be damaged or even need to be reinforced beforehand. The Employer has to make sure that it can take recourse on the Contractor in the event the Employer should be faced with related third party claims.

c) Drafting Example

(1) The Contractor shall, at its sole liability, cost and expense, arrange transportation of all personnel, materials and equipment to and accommodation and storage at the Construction Site.

(2) In selecting the mode of transport to be used to ship material and equipment, the Contractor shall comply with applicable Law and Authority Approvals and

the requirements of insurers. The Contractor shall provide to the Employer a transportation concept, showing all routes and means of transportation of the main equipment. Such transportation concept shall be provided latest 2 Months prior to commencement of the pertaining transport.

(3) The relationship between the Contractor and the Employer in respect of the Project and the Works is not and shall never be that of carrier and receiver/sender.

(4) Upon dispatch of each shipment or transportation of main equipment, materials or other equipment, the Contractor shall submit to the Employer without delay all relevant shipping and transportation documents.

(5) The Contractor shall be responsible for obtaining, if necessary, all Authority Approvals required for the transportation of the Equipment and the Construction Equipment to the Construction Site.

(6) The Contractor will be responsible at its own cost for the cleaning, repair, replacement or re-instatement of any vessel, vehicle, facility, road, area, place or structure that is damaged or polluted in connection with the Works. The Contractor shall defend, indemnify and hold harmless the Employer from and against all Losses and Liabilities arising due to damage to any vessel, vehicle, facility, road or other structure caused by the Contractor transporting the Equipment or the Construction Equipment to the Construction Site.

d) Drafting Example Explanation

No. (1) and no. (5) put a general obligation on the Contractor to handle all matters related to the transportation to the site and storage of materials and equipment on site. Furthermore, the related costs shall be borne by the contractor. The costs of different means of transportation (road, train, ship or aircraft) may vary considerably, so that it is to the benefit of the Employer to generally shift the transportation "as such" to the Contractor without further specifying.

Example:

The Employer and the Contractor negotiate about the transport of a heavy weight piece of equipment. They discuss different means of transportation and conclude with the common understanding that transport by truck would be feasible. Nevertheless, it is still the Employer's intention that the Contractor shall owe the transportation as such without narrowing this down to a transport by truck. Despite this agreement the purchase department orders that the Contractor shall be responsible for the transport and shall procure trucking the equipment.

Later on the responsible road traffic authorities deny the necessary heavy weight transport permit as the bridges on the planned route are too weak and would need to be reinforced prior to trucking the goods.

The Contractor decides to transport the piece of equipment by train which costs four times the price of the truck. The Contractor issues a respective change request for the extra costs.

The Employer is annoyed and refuses to pay as "transport by truck" had not been agreed.

The above example stresses the importance of being "vague" about the means of transportation. The Employer is wrong in the above example and would probably be sentenced to pay for the extra costs in case the issue went to court. The discussions that have been led, and the order that has been issued, clearly hint at an ascertainment of a transport by truck, so that the Contractor's obligation has been limited down to this means of transportation.

No. (2) requires the Contractor to submit a transportation concept for the main equipment prior to shipment of the same. From a QA/QC point of view this is worth demanding as such provision ensures that the Contractor thoroughly considers how to perform the transportation and the Employer is allowed to check the transportation concept on plausibility and (eventually) feasibility.

Example:

In Germany, the river Rhine is one of the main navigable waterways. The local water and shipping authorities have information available about the average water levels at each season in the year. It has occurred that a Contractor scheduled a piece of main equipment to be shipped on the river Rhine in mid-summer when the water levels are always the lowest of the year. When planning the transportation, the Contractor had involved neither the Employer nor the shipping authority. It turned out that the vessel could not navigate the Rhine due to insufficient water levels. Several weeks` delay in the project execution occurred as the necessary piece of main equipment could not be transported otherwise. There is a fair chance that this incident could have been avoided if the Contractor had outlined a transportation concept and had discussed it with the Employer which – in that specific case – had some experience with shipping equipment by vessels on the river Rhine.

No. (3) declares that the relationship between the Employer and the Contractor shall not be construed as being a relationship between sender and receiver. This provision is important as some international conventions on transport provide special rules on the limitation of liability of the sender and on the allocation of obligations between sender and receiver. If nothing to this extent is stipulated in the EPC contract, there is a risk that with regard to a transportation incident those rules might be judged to be applicable to the Employer and the Contractor.

No. (4) secures that the Employer is always kept informed about when and what kind of shipments arrive at site. The Employer needs to have this information in order to check and inspect the consignments at the date they arrive. Employer's representatives should always be present when shipments arrive at site as unloading and storing processes of heavy main equipment are known to be critical process steps in the project execution.

No. (6) is a very important provision that the Employer should defend in negotiations with the bidder companies. The provision imposes an obligation on the Contractor to clean, repair and re-instate any infrastructure (such as roads, bridges, tunnels, railway tracks, etc.) that suffers from the transport.

3.6 Employer's Obligations

The following chapter 3.6 provides an overview of the typical Employer's obligations under an EPC contract.

3.6.1 Payment of the Contract Price

Paying the agreed price as consideration for the performance of the works and services is the most prominent obligation of the Employer. A breach of this obligation usually triggers a termination right for Employer's default[31]. Below, the different ways to shape the agreed price shall be explained (see below a)), followed by a presentation of the different methods to stretch out payments over the entire project execution phase (see below b)) and a proposal for a payment clause (see below c)).

a) Pricing Models

Construction practice has developed various pricing models, each of which has specific strengths and weaknesses. The Employer should be aware of these different models in order to select a pricing model that best fits the project[32].

(i) Lump Sum

The lump sum fixed price model, where the Contractor offers one fixed price for performing the whole scope of works and services, is the most common and traditional pricing model in EPC contracts. Particularly if the project is not equity financed by the Employer but project financed by banks and other lenders, the lump sum fixed price often is a requirement for the "bankability" of the EPC contract.

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31 As to the Contractor's right to terminate the EPC contract for default of the Employer, see chapter 3.18.4.

32 As to the different pricing models, see also above Illustration 19: Allocation of Risks in Engineering and Construction Contracts, p. 5.

For the avoidance of doubt, it should be noted that the name "lump sum fixed price" does not necessarily mean that the price can never change in the course of the project. "Fixed Price" in this context is meant as a fixed price in relation to the agreed scope of works and services. Hence, if the scope changes, the fixed price most probably changes, too[33].

The Contractors have a high risk in this model to properly price the project, in order to avoid financial losses. Hence, the Contractors are keen on wrapping the scope of works as tightly and clearly as possible and will – which is more detrimental to the project's economics – have a relatively high markup for risk contingency. Due to this risk on the Contractor's side, every Employer is well advised to be careful if a Contractor offers a significantly low lump sum fixed price compared to others. Experience has shown that such tempting offers often turn out to be "lemons" during the execution process. No Contractor company is able to deliver an industrial facility in proper quality, if the project is uneconomical and loss-generating. The Contractor's management will often seek ways to abandon the project. If there is no "cheap" way out of the EPC contract, the number of claims (i.e. change requests that are in dispute between the parties) is likely to rise as the Contractor will seek to improve the project´s return by change orders[34]. In essence, experience has shown that each project has its specific minimum price below which the Contractor suffers losses and/or the quality of the deliverables is below expectations. Therefore, attempts by the Employer to "make a cheap shot" by accepting low budget offers, will often generate effects to the contrary: Increasing project expenditures!

For the Employer the lump sum fixed price model has the advantage that is easy to administer, for it does not have to check and approve countless invoices.

(ii) Target Price

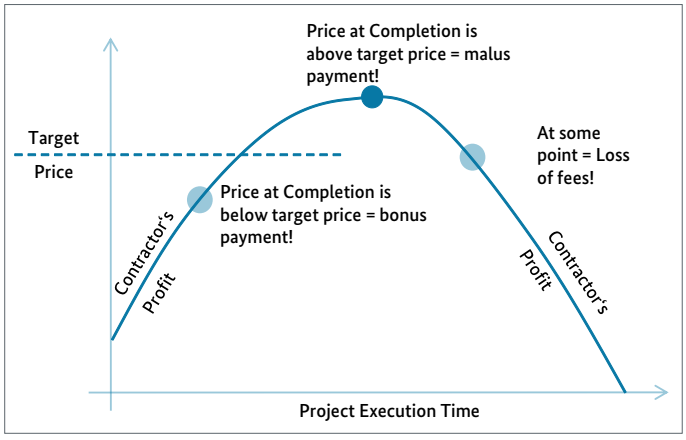

Illustration 24: Target Price Model

33 See above chapter 3.4.

34 For more details on change of scope, see 3.4.

In a target price model the Contractor is reimbursed for all costs it incurs and receives a fee (his profit). If the final project costs stay below the previously agreed target price, the Contractor will receive a bonus payment in addition to his fee. However, if the final project costs exceed the agreed target price, the Contractor will have to pay malus payments or will have to accept a reduction of his fee. If the final project costs exceed an absolute limit (such limit to be agreed at the outset of the project) the Contractor's fee may even be cancelled completely. The agreed target price will likely be subject to variations due to change orders just like the lump sum fixed price. Within the boundaries of the applicable laws, the parties are free to negotiate any cost-sharing mechanism they deem to fit their needs. Target pricing often includes an absolute limit on the Contractor's exposure to project cost overruns regardless of fault. In this situation the Contractor is willing to put its entire fee at risk, while the Employer will reimburse the Contractor for all cost overruns exceeding the Contractor's fee (even if such cost overruns are due to reasons within the Contractor's control).

Target pricing is often applied when the scope of works is unclear because no engineering works (e.g. Front End Engineering and Design Studies – FEED studies) have been conducted prior to tendering the project. In that case the Contractors are not able to properly calculate a lump sum fixed price, so that the target price is a suitable risk-sharing instrument.

As the target price approach involves higher calculation risks also for the Employer, the Employer should evaluate its project experience, its in-house engineering capabilities and its financial strengths prior to committing to such approach.

(iii) Unit Price or Bill of Quantities

Under this model, the parties agree on separate unit prices expressed in a list of quantities (or list of articles and conditions), which will then become an appendix to the EPC contract. The term unit in this context is understood as being a quantity of material, time construction completed or a unit of certain works.

Example:

The parties might agree on the following list of quantities for a project:

Unit	Price per unit
Excavation works	
Sand removed:	IXX USD per cbm
Rock removed:	XX USD per cbm
Hourly rates	
Senior engineer	XX USD per hour
Engineer	XX USD per hour
Office assistance	XX USD per hour
Etc.	Etc.

The unit prices usually include an amount for the Contractor's profit margin already. In this model, the risk that the project costs will be increased due to an increased number of quantities used for executing the works and services rests with the Employer (quantity risk). The risk that the unit prices are below the actual market prices, however, is borne by the Contractor (unit price risk).

Example:

The Parties agree on the following unit price:
Rock removed from Site: 100 USD / 1.000 Kilogram (ton).
The Employer assesses that 250 tons of rock have to be removed from site.
Later it turns out that the cheapest price for the removal of the rock is 125 USD/ 1.000 Kilogram and 400 tons of rock had to be removed.
Employer's (quantity) risk:
250 tons x 100 USD (agreed unit price) = 25.000 USD
400 tons x 100 USD (agreed unit price) = 40.000 USD
= 15.000 USD extra costs.
Contractor's (unit price risk):
400 tons x 100 USD (agreed unit price) = 40.000 USD
400 tons x 125 USD (actual price) = 50.000 USD
= 10.000 USD extra costs.

Unit prices should be applied for specific works, e.g. ground works, where the risk cannot be finally assessed by the parties in advance. It is not a recommended model for the entire execution of the project, but can be very useful to significantly lower the risk contingencies of the Contractor.

(iv) Cost-plus Fee / Cost Reimbursable

Under a cost-reimbursable contract, the Employer pays to the Contractor an amount covering the Contractor's actual costs (reimbursement). In addition, the Employer will pay a fee that typically represents the Contractor's profit. The cost-reimbursable model resembles the unit price model. However, in contrast to the latter, the Employer and the Contractor do not agree on unit prices upfront. Instead, the Contractor starts to execute the project and presents the costs for engineering, procurement and construction in an open book approach to the Employer.

When costs are analyzed, they are typically broken down into direct costs and indirect costs. Direct costs are defined as the costs that have been incurred only for the purpose of the project. One example of this type of costs can be the salaries of the full time staff members (who are exclusively assigned to the project), or equipment purchased exclusively for use in the project. Indirect costs represent costs that refer to more general types of costs, such as administrative costs and general overhead costs. A cost-reimbursable pricing system can easily be combined with target price elements or other incentive schemes.

On the one hand, the cost-plus fee model creates transparency on prices for each portion of the works and services. It may also lead to a lower contract price as the Contractor does not need to add amounts for risks and contingencies to the contract price. On the other hand, this pricing model requires a lot more involvement on the Employer's side and is likely to bind vast capacities in the Employer's organization. The Employer has to check and verify continuously the costs for which the Contractor claims to be reimbursed. Furthermore, the risk of cost overruns lies with the Employer, which makes project financing difficult.

(v) Incentive Systems

If the Employer seeks to reduce project costs, this can be achieved in the easiest way by setting respective incentives for the Contractor to save costs. The Employers, therefore, often let their Contractors participate to a certain percentage in any savings yielded by the Contractor. In that event, the Employer should ensure during the project execution that the Contractor does not start generating savings to the detriment of the quality of the works.

Sometimes, the Employer also promises bonus payments for each day of earlier completion. Such bonus payments for earlier completion create a win-win situation as the Contractor can expect payments on top of the agreed price and the Employer can start the commercial operation of the unit earlier than scheduled. If the Employer offers rewards for early completion, it should diligently check the project schedule proposed by the Contractor in order to prevent the Contractor from calculating too many "buffer times" within the sequence of the works, which would make it too easy to achieve earlier completion dates.

Praxis Alert:

Experience has shown that the willingness of the Employer to discuss any incentives for earlier completion or better performance should not be discussed within the framework of the EPC negotiations, or even worse – in the tender. In this case an experienced contractor will automatically adopt e.g. the time schedule and prolong it by some weeks in order to achieve completion "earlier". In competitive tenders, where the negotiations with all the bidders are led in parallel, this might not have any real impact due to the competition. But if negotiations are conducted only with the bidder who has offered the best price, this might lead to dramatic changes in the time schedule and the price.

b) Payment Models

After elaborating the basic pricing models, we will now look at the different payment models.

(i) Lump sum Payment

A lump sum payment in the pure sense means that the Contractor starts performing and finances the project, but receives the total agreed price upon completion of the project. Such pure lump sum payment method is only of an abstract nature as probably no contracting company is able, or at least willing, to pre-finance a whole infrastructure project. If at all, the respective EPC price would be exorbitant as the Contractor is likely to charge high interest fees, risk and contingency.

(ii) Progress Payment

Progress payment means that the Contractor is paid in accordance with the progress of works on site. Often, the Contractor will prepare monthly reports stating in a pre-agreed format the works completed within the previous month and the remuneration linked to the progress (calculated for example on a unit price basis). The progress payment model requires an exact evaluation of the completed portion of the works in order to avoid being overcharged. If the Employer does not have the necessary know-how, it should employ an engineering company for checking and tracking the progress of works.

(iii) Milestone Payment

The most common payment method is the milestone payment scheme. In the tender phase, the Employer and the Contractor will agree on specific payment milestones (milestone events) triggering the payment of certain amounts of the contract price. When defining the milestone events, the Employer should make sure that (i) the sequence of payment milestones corresponds with the sequence of the works and services, that (ii) each milestone event is described as precisely as possible, that (iii) the relevant project documentation is described as part of the milestones, that (iv) the milestone events describe a work result or end rather than its beginning and finally that (v) there is a last milestone after acceptance of works for delivery of the final documentation. Ideally, there will also be a minor payment milestone defined for the completion of all outstanding punch list[35] works.

Example:

The parties define a payment milestone as "piling commenced". The Contractor excavates a single hole in the ground, puts a pile in it (without concrete) and claims the full milestone payment. The Employer is outraged and argues that "piling commenced" should mean proper (large scale) piling works to have begun.

The Contractor is in a good position as the milestone event is poorly described and does not describe a specific result, but a mere activity (commencement of piling works).

35 As to the Punch List, see below chapter 3.6.3.

Example:

The parties define a payment milestone as "turbine ex works" and link a payment of several millions to it. As soon as the turbine leaves the manufacturers workshops, the Employer pays the milestone amount to the Contractor. When the turbine is shipped at site, the Employer discovers severe corrosion due to poor packaging allowing seawater to enter the transport box.

Therefore, the Employer should have insisted on a milestone "turbine on site as foreseen in the contract"

Example:

Upon completion and acceptance of works the Employer effects the final payment to the Contractor, who is still preparing the final documentation. Despite many reminders the Contractor - meanwhile busy in other projects - does not deliver the final documentation.

It is obvious that the Contractor`s interest in performing works for a project rapidly declines as soon as the final payment has been effected. Experience has shown that it can be a cumbersome process for the Employer to receive the final documentation. The Employer's position would have been better if there had been a final payment milestone for delivery of the "final documentation in the quantity and quality as per contract requirements".

(iv) Payment Schedule

A schedule of payments defines certain amounts that are paid at given intervals. For example, a lump sum fixed price for a project with 20-month construction period could be paid in monthly installments. An obvious disadvantage of this method is that the Contractor has no incentive for an expedite progress as the time interval payments are not "performance linked". Sometimes, EPC contracts combine time-based with performance-based payments in order to protect the Employer from making payments that do not correlate with results on site.

c) Payment Procedure

Irrespective of the pricing model or the payment model, any EPC contract must have provisions detailing the payment process as such. As an example and in order to exemplify the details to be considered, when drafting a clause on payment procedures, an extensive clause is introduced and explained below:

(i) Drafting Example

(1) The Employer shall, subject to Clauses (7), (8) and (14), pay the Contractor the Contract Price in accordance with Appendix XX (Contract Price), and this Clause

(1). The Payment Milestones listed in Appendix XX (Payment Schedule) depend on each other and structurally interrelate with each other. The achievement of each Payment Milestone requires that the progress of Works has fulfilled all of the requirements of the preceding Payment Milestones.

(2) Unless otherwise agreed by the Parties, all payments by the Employer to the Contractor will be by electronic funds transfer.

(3) Subject to the Contractor providing the Advance Payment Security in accordance with Clause XX and to the Effective Date having occurred, the Employer will pay to the Contractor the advance payment specified in Appendix XX (Payment Schedule) within 30 Days following receipt of an invoice from the Contractor for such advance payment.

(4) As soon as the Contractor is satisfied that the progress of Works has fulfilled all requirements of a Payment Milestone, the Contractor shall submit to the Employer a detailed statement describing the Payment Milestone which the Contractor considers to have completed. The Contractor shall not conserve completed Payment Milestones for later billing, but shall be obliged to enter into the payment procedure as described in this Clause (4) immediately upon completion of each individual Payment Milestone.

(5) If the Employer when having received the Contractor's statement under Clause (4) above is satisfied that a Payment Milestone proposed by the Contractor was completed, the Employer shall identify such Payment Milestone in a notice issued to the Contractor. If the Employer approves a Payment Milestone in accordance with the preceding sentence, or if the Employer fails to respond to a proposed Payment Milestone within 30 Days following receipt of the Contractor's proposal under Clause (4), the Contractor shall be entitled to include the Payment Milestone in a Request for Payment issued in accordance with Clause (7).

(6) If the Employer is not satisfied that a Payment Milestone proposed by the Contractor was completed, the Employer shall notify the Contractor in writing of the reasons why the proposed Payment Milestone was not satisfactorily completed.

(7) If the Employer has approved the Payment Milestone or is deemed to have approved it according to Clause (6), the Contractor shall submit to the Employer a fully supported invoice that meets all of the requirements of this Clause (7) (a Request for Payment) covering those Payment Milestones completed as confirmed by the Employer. Each Request for Payment shall set out the sum of all prior payments made to that date by the Employer to the Contractor.

(8) Each Request for Payment must be accompanied by a detailed statement describing the completion of the Payment Milestone to which the Request for Payment relates as well as a short description of the previously completed Payment Milestones.

(9) Within 15 Days following its receipt of a Request for Payment, the Employer shall approve the Request for Payment, partially approve and partially reject the Request for Payment or reject the Request for Payment. Any rejection or partial rejection of a Request for Payment shall be accompanied by reasons for that rejection or partial rejection.

(10) The Employer shall within 30 Days following its approval, or partial approval of a Request for Payment and not more than once a month, pay to the Contractor the amount so approved less any amounts retained, withheld or set off pursuant to Clauses (13) or (18).

(11) Notwithstanding the Employer's discretion to partially approve a Request for Payment, the Contractor shall not be entitled to any payment whatsoever for any partially completed Payment Milestones.

(12) The Employer shall have no obligation to pay any amount under this Contract, unless the Performance Security and the Parent Company Guarantee have been received.

(13) The Employer may withhold from any payment due to the Contractor amounts which the Employer deems reasonably necessary or appropriate to protect it from liability or loss because of any failure by the Contractor with its obligations under this contract.

(14) Within 30 Days after receipt of the Certificate of Provisional Acceptance of Works ("PAC") and later the Certificate of Final Acceptance of Works ("FAC"), the Contractor shall submit a detailed PAC, respectively FAC Payment Claim.

(15) Subject to Clause (7) and (17), within 30 Days after receipt of the PAC, respectively FAC Payment Claim, the Employer shall pay to the Contractor the outstanding balance of the Contract Price less any disputed amounts, subject to the Employer's right to set-off under Clause (18).

(16) After the expiry of the 30 Day period referred to in Clause (14), any claim which the Contractor was entitled to make, but has not made in a final payment claim, shall be deemed to have been irrevocably waived by the Contractor.

(17) The PAC Payment Claim shall not become due until the Contractor submits to the Employer a certificate of release by the Authority in the form set out in Appendix XX (Certificate of Release).

(18) Where this Contract provides for the payment of any amounts by the Contractor to the Employer, including liquidated damages, the Employer may settle such amounts via a reduction of the outstanding balance of the Contract Price. Any such reductions shall be made without affecting the determination of any amounts, including the value of the Performance Security under Clause XX and the limitations on liability under Clause XX [Limitation of Contractor's Liability], which are calculated as a percentage of the Contract Price.

(19) No execution or delivery by the Employer of any certificate – except for the Certificate of Provisional Acceptance of Works and the Certificate of Final Acceptance of Works – nor the making of any payment to the Contractor nor the use of the Works or any part thereof by the Employer shall constitute or be interpreted as acceptance of the Works or any part thereof and shall not relieve the Contractor of any of its obligations or liabilities with respect to the Works.

(20) If the Employer fails to pay to the Contractor any undisputed sum due under this Contract or the Contractor fails to make any payment to the Employer on the date such payment becomes due or within the period set forth in this Contract, the Contractor or the Employer (as the case may be) shall pay to the other interest on the amount of such delayed payment at a per annum rate that is [•]%, which rate

shall be applied to the delayed amount for the period commencing from the date the payment was due until the date when payment is made in full (including the period during and after any award of an arbitral tribunal). Any payment by either the Contractor or the Employer shall be credited first against any interest which has accrued pursuant to Clause (14) with the balance of the payment, if any, to be applied to reduce the outstanding balance.

(ii) Drafting Example Explanation

No. (1) stipulates that the Employer is obliged to pay the agreed price to the Contractor. The value of this provision, however, is hidden in its second part where it says the payment milestones are structurally interrelated. This wording shall shield the Employer against the Contractor's ambition to quickly achieve the next payment milestone, thus, neglecting the quality of the works.

Example:

The parties have defined one payment milestone as "welding cooling tower works completed" and another one as "cooling tower insulation completed". The Contractor commences insulating the cooling tower walls. The Employer wants the contractor to stop the insulation works as an inspection of the weld seams has shown that the membrane weld seams are of a poor quality. Furthermore wide spread corrosion has been detected. The Contractor raises objections against the results of the inspections, finishes the insulation works and claims the milestone payment. The Employer denies to pay as the works "beneath" the insulation are of poor quality and do not meet the contractual requirements. The Contractor argues that it has achieved the milestone "cooling tower insulation completed" and the insulation works are without any defects.

The Employer in this example is in a detrimental situation. The insulation works comply with the required quality standard and due to the covering by the insulation, the Employer practically has no chance to prove its case with regard to the weld seams at this stage without facing (at least for the time being) delay claims when de-insulating the cooling tower wall plus potentially the costs for a new insulation.

The provisions stipulated in no. (1) aim at improving the Employer's position in the above example by saying that the achievement of each payment milestone requires that the progress of works fulfills all of the requirements of the preceding payment milestones. The Contractor will probably raise objections against these provisions and there is room for discussion and compromise. For example, the parties may define certain milestones that are interrelated so that the Employer is protected to some extent. The Contractor does not need to fear that the Employer denies payment for main equipment having arrived at site just because the Contractor has not handed in an update of the project management plan in due time.

No. (2) clarifies that the Employer will effect payments via electronic bank transfer.

No. (3) provides the link between the effectiveness of the EPC contract, the receipt of an advance payment security and the payment of the agreed advance payment. It is strongly recommended that the Employer insists that the advance payment is only due (that can amount up to 10% of the agreed contract price!) after the Contractor has handed over the corresponding advance payment security[36] and when the contract has entered into effect[37]. Otherwise, even if only for a short period of time, the Employer would bear the Contractor's insolvency risk as its payment would have no coverage.

Under no. (4), the Contractor shall hand in a detailed description of the works that have fulfilled the requirements of a payment milestone. The clause furthermore prohibits deferring the invoicing of a payment milestone, which the Contractor sometimes does for tactical reasons. The description of the payment milestone (the "payment statement" so to speak) may not be confused with the invoice to be sent in a later step! The statement serves as a notification that the works have achieved the requirements of a payment milestone. This statement enables the Employer to check and verify the achievement of the relevant payment milestone.

No. (5) picks up the thread already knitted in no. (4) saying that the Employer shall approve the achievement of a certain payment milestone within thirty days upon receipt of the above mentioned statement. As soon as the Employer has approved or failed to approve in due time the payment milestone, the Contractor is allowed to send a request for payment, which is the invoice.

No. (6) deals with the situation that the Employer is dissatisfied with the progress of the works and therefore negates the achievement of the payment milestone.

No. (7) and no. (8) stipulate documentation requirements for the Contractor's request for payments. The provisions aim at enabling the Employer to verify the request for payment (= the invoice).

No. (9) is very similar to no. (5). Whereas no. (5) deals with the approval of the works upon receipt of the payment statement which involves the inspection of the works on site, no. (9) shall procure a check of the formalities of the invoices as set forth in no. (8).

No. (10) materially says that the Employer shall only be obliged to pay once in a month in order to spare the Employers project office from being "flooded" with requests for payments.

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36 As to the advance payment security, see chapter 3.7.

37 As to the effectiveness of an EPC Contract, see above chapter 3.2.7.

No. (11) is very important as it excludes partial payment claims by the Contractor.

No. (12) confers to the Employer a right to withhold payments as long as the necessary securities have not been submitted by the Contractor, and in the event that the required invoice documents have not been handed in.

No. (13) is a crucial provision entitling the Employer to withhold payments.

No. (14) and no. (15) set out details for the Contractor's final payment claims when PAC and FAC have been achieved.

No. (16) will probably be challenged by the Contractors in the negotiations as this provision bars the Contractor from any claim that has not been addressed by the Contractor in its final request for payment. In any case, there should be a deadline for the Contractor's right to file claims after acceptance of the works in order to prevent the Contractor from "saving claims" until the end of the project. This is sometimes done by Contractors in order to improve the project's economics by filing claims if – at the time of completion of the works – they find out that the project was loss-making.

According to no. (17) the final payment shall not become due if the contractor has not handed over the final documentation. This provision may be dropped if there is a payment milestone defined for the final documentation[38].

No. (18) is a sophisticated clause saying in its first part, that amounts which have to be paid by the Contractor (e.g. contractual fines for repeated violations of health and safety rules, etc.) may be settled by deducting these amounts from the contract price. The trick here is that the provision pays attention to the fact that the contract price is the base reference point for collaterals and limitations on the Contractor's liability. With regard to that, the provision says that any reduction of the contract price due to settling the Contractor's debts under the contract shall not impact the levels of securities and limitations of liability which are usually expressed as a certain percentage of the agreed price[39].

No. (19) ensures that a payment by the Employer cannot be construed or interpreted as "implied acceptance" of the works or Employer's waiver of rights[40].

No. (20), finally, determines a default interest rate for payments that have been retained without *legal justification* either by the Employer or the Contractor.

38 See above chapter 3.5.6.

39 For learning more about bonds and securities, see chapter 3.7.

40 For the consequence of „deemed acceptance", see chapter 3.6.3.

3.6.2 Employer's Other Obligations

Apart from the obligation to pay the agreed price, there are miscellaneous obligations that the Employer has to fulfill. If the Employer fails to do so, the Contractor will probably file claims for delay costs and schedule relief.

a) Site Access

Notwithstanding any local rules to the contrary, the Employer usually is the possessor of the site. Hence, the Employer is obliged to hand the site over to the Contractor so that the Contractor is able to start performing under the EPC contract.

Although site handover seems to be a natural and easy thing to do, experience has shown that the first delays and respective Contractor claims occur even at that early stage of project execution. A typical reason for such delays is that the Employer has to prepare the site (e.g. remove asbestos from certain areas etc.) and Employers sometimes fail to conclude those works in time when focusing on the EPC tender preparation and negotiation.

Practice Alert:

It is advantageous to set up and mandate a second in-house team with the task to prepare the site for handover, in order to reduce the workload of the project team and to avoid delay costs at the very beginning of the project execution.

b) Authority Approvals

Very often the Employer reserves the right to exclusively maintain the contact to relevant authorities. Furthermore, many local laws require the Employer, as owner of the project, to apply for the necessary authority approvals. For these reasons, the Employer *will have to become involved actively* in the application process for the relevant authority approvals. Normally, the details of the Employer's responsibilities with regard to authority approvals are set out in an appendix to the EPC[41].

c) Employer's Personnel

A further typical obligation of the Employer in large scale infrastructure projects is to select and provide personnel for training for plant operation by the Contractor[42].

d) Provision of Material, Equipment and Utilities

Sometimes the Employer agrees to provide equipment (e.g. heavy hoisting equipment already installed on site), facilities (e.g. containers for accommodation of

41 As to the importance of appendices, see chapter B.2.3.1.

42 As to the corresponding obligation of the Contractor to train Employer's personnel, see chapter 3.5.8.

the workers or container offices), or consumables (e.g. water, electricity, gas, etc.) at pre-defined terminal points on site. If that is the case, the Employer must be aware of the associated risks of delay, in the event that the provision of equipment etc. is interrupted or disturbed by reasons the Employer is responsible for.

3.6.3 Plant Acceptance

Apart from the obligation to pay the agreed price, the obligation to formally accept the result of the works and service (i.e. the industrial facility) is the second most important obligation imposed on the Employer.

Depending on the size of the project and the Employer's project execution strategy, several terms dealing with "acceptance" are commonly used in EPC contracts:

a) Forms of Acceptances

There are three terms, related to specific points in time, when the Employer takes the result of the works and services over from the Contractor. Each has different legal and commercial effects:

(i) Provisional Acceptance

"Provisional acceptance", "provisional acceptance of works and services", "acceptance of works", "acceptance", "taking-over" or "substantial completion" all mean the same, i.e. the acceptance of the totality of the Contractor's performance. At the point in time when the Employer accepts the works, the consequences described in below b) occur.

(ii) Final Acceptance

"Final acceptance", "second acceptance" or "deferred acceptance" takes place at the end of the EPC defect liability period[43]. It is - despite its terminology – no acceptance in the legal sense because a unit that has been accepted and put into commercial operation by the Employer cannot be accepted a second time. Final acceptance therefore, is the mere description of the point in time when the defects liability period (also called "warranty period") ends and the consequences as described in below b) occur.

(iii) Section Acceptance

"Unit acceptance" or "section acceptance" may occur when a large scale infrastructure project consisting of several, technically independent and standalone sections is constructed.

43 To learn more about the EPC warranty period and Contractor's liability for defects, see chapter 3.17.

Example:

The Employer plans to have constructed a harbour, a seawater intake laid out for five coal fired power plant units, five power plant units, a carbon capture storage unit ("CCS") for one of the power plant units and a pipeline and offshore facilities to store the captured carbon in an exploited, underwater gas field. The Employer selects one Contractor to erect all these facilities.

For the avoidance of doubt: In practice, such a mega project as described in the example above would most likely be split up in several stand-alone EPC contracts. The size of such project would probably be too big for one contractor and the associated risks would be intolerable for the Employer if such mega Contractor failed. Nevertheless, the mega Contractor in the above example would require to have "sectional acceptances" and the Employer would agree to this approach, as otherwise the Employer would not be able to operate one of the plants or the harbor until all other units would be completed. In the example above, the Employer would probably accept the harbor as a separate unit, each coal fired power block, the seawater intake, the CCS plant (onshore) and the pipeline together with the CCS plant (off-shore). The parties would have to find a commercial agreement, particularly with regard to the huge seawater intake, because this would be a "common facility" which is technically designed for all five power plants. The Employer should not deem to have accepted this facility, just by operating the first power plant unit. Ideally, the seawater intake should be accepted once all five power plants are in operation, in order to secure that the capacity of the seawater intake is sufficient to serve all five units.

Unit acceptance, particularly when the respective unit is operated by the Employer, has the same legal consequences - with regard to each unit – as provisional acceptance. As a consequence, different defect liability periods are running and, consequently, there will be different dates of final acceptance. The Employer, of course, will seek to agree on an "overall plant acceptance" of all the units that were completed and subject to "unit acceptance". But experience has shown that Contractors seldom accept an overall plant acceptance in the true sense of an "overall provisional acceptance". More likely there will be an overall plant acceptance in the sense that all units and common facilities are operated, and the parties check whether the units function in concert, and whether there are any technical disruptions or malfunctions between the separate units. It is unlikely that a Contractor will consent to an "overall plant performance test" (e.g. noise, emissions, etc.) as that would expose it to too much risk.

Imagine that in the above example the Employer operated the harbor and all five power plants. Because there is a problem with the CCS technology the Contractor would not be able to achieve "overall plant acceptance". The Contractor would be exposed to vast amounts of delay liquidated damages and would be denied the

final payment. For that reason, in multi-unit industrial plant projects the "overall plant acceptance" often does not go beyond a mere functional test. *Such functional test shall demonstrate that the facility – i.e. all plant units – is properly adjusted and thereby, can be operated as a whole. In contrast to the test runs prior to acceptance of works of a single unit a functional test does not require the demonstration of certain minimum or maximum performance values.*

(iv) Deemed Acceptance

Deemed Acceptance is a provisional acceptance of the project or of a project's individual unit, without the Employer having expressly confirmed the acceptance. Deemed acceptance occurs if the Employer uses the plant as if he were the owner, for example taking over the control and starting production. The following example is to show the Employer's dilemma:

Example:

The Contractor shall construct two plant units in parallel on the same site. As the parties originally envisaged that both units and the common facilities (administrative buildings, etc.) would be completed more or less at the same point in time, an overall plant performance test and a provisional acceptance of the whole plant are stipulated in the EPC contract. The common facilities and unit one are completed in time. Unit two lags behind schedule for various reasons and is still under construction. Delay liquidated damages accrue each day. The Employer, who incurs losses of profits each day of delay, does not want to wait until the second unit has been completed and starts operating unit one and the common facilities in order to "earn money with the plant" while waiting for the second unit to be completed. The Contractor notices that the Employer operates the plant and requests that: the delay liquidated damages stop accruing: the final payment is paid, less some amounts for the uncompleted second unit, the defect liability period starts. The Contractor argues that by putting the plant into commercial operation "deemed acceptance" of the plant unit one and the common facilities has occurred. The Employer argues that it never intended to accept the plant and just intended to reduce its losses resulting from the delay of power unit two. *In many jurisdictions there is at least an implied obligation imposed on all parties to a contract to mitigate losses.*

In the above example the Employer made a decisive mistake. Although the EPC contract did not stipulate for a commercial operation prior to the completion of both units, the Employer wanted to avail itself of the benefits of a commercial operation without considering the legal consequences. Indeed, the Contractor has a strong argument here saying that the Employer behaves ambiguously and against bona fide when operating the plant in order to produce revenues with the Contractor's work while simultaneously refusing to grant provisional acceptance. In order to avoid such a dispute, Employer and Contractor should always address

the issue of an early operation in the case that a multi-unit project should partly lag behind and should seek to reach an agreement on how to share risk and revenues in such situation.

b) Consequences of Provisional and Final Acceptance

Provisional acceptance of works entails several legal consequences. These include: the Contractor is entitled to file the final request for payment[44], the defect liability period commences[45], the Employer assumes total control over the unit and commercial operation may start, collaterals (e.g. the performance security) have to be returned to the Contractor[46], the risk of incidental loss and damage passes over to the Employer, and delay liquidated damages stop accruing[47].

Final acceptance of works entails the following: the end of the defects liability period and the release of the Contractor from all EPC obligations (the EPC, including defect liability obligations has been "completely finished") and the return of all collaterals, above all the defects liability security.

c) Acceptance Procedure

In order to certify that provisional acceptance has occurred, the Employer usually issues a certificate of provisional acceptance, the date of which is considered to be the actual take over date.

Of course, the Employer is only obliged to issue the certificate of acceptance, if the acceptance criteria that are defined in the EPC contract have been fulfilled. Typical acceptance criteria are the successful passing of all tests, particularly the performance tests, the handover of necessary plant documentation and – if required by law – the issuance of pertaining approvals by the authorities. Usually, the parties set up an acceptance checklist that displays the contractual requirements for provisional acceptance, which the parties will jointly check and confirm on the take-over date. This checklist is signed by both parties and constitutes the acceptance protocol, a copy of which is handed over to the Contractor as attachment to the certificate of acceptance.

It is important to note that minor defects which do not prevent the plant from a safe, reliable and stable operation, do not entitle the Employer to deny provisional acceptance. For example, an incomplete landscaping of the surroundings of the plant cannot be taken as justification for denying provisional acceptance of works. These minor defects are recorded on the so called "punch list", and the Contractor is still obliged to perform the relevant works associated with each punch list item,

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44 For the final payment, see also chapter 3.6.1.

45 For the obligation to make good any defects during the defects liability period (= warranty period), see chapter 3.17.

46 As to bonds and guarantees, see chapter 3.7.

47 See chapter 3.16 to learn more about liquidated damages.

despite the fact that provisional acceptance has been granted. If there is no special payment milestone linked to the completion of the punch list works, the Employer will probably retain an amount from the final payment, in order to motivate the Contractor to execute the last (sometimes bothersome) outstanding works.

d) Drafting Example

(1) The Works shall be accepted and taken over by the Employer when they have:
   a. been completed in accordance with this Contract, except in minor respects that do not affect the use of the Works for their intended purpose and being matters which in any event do not render the Works in breach of the fit for purpose obligation and any defect that does not represent a health and safety risk; and
   b. passed the Performance Guarantee Tests to the extent that they have met the Absolute and the Minimum Performance Guarantees as stated in clause XX. All minor defects shall be included on a punch list to be provided to the Contractor by the Employer and shall be rectified by the Contractor within one month of the issue of the Acceptance Certificate or at a later time if agreed in advance with the Engineer ("Punch List").

(2) The Contractor shall immediately apply for an Acceptance Certificate as soon as all the sections of the Works have been completed and are ready for taking over under clause (1).

(3) The Contractor shall not apply for an Acceptance Certificate before the Performance Guarantee Tests report has been issued. On completion of the Performance Guarantee Tests and pending the issue of the Performance Guarantee Tests report and the issue of the Acceptance Certificate, the Contractor shall continue to operate the Works at the maximum output as agreed with the Employer unless the provisions of clause XX [Retesting] apply. Such operation of the Works shall not constitute "use" before Acceptance.

(4) The Employer shall within 20 days after the receipt of the Contractor's application either:
   a. issue the Acceptance Certificate to the Contractor with a copy to the Employer stating the date on which the Works successfully passed the relevant Performance Guarantee Tests; or
   b. reject the application giving his reasons and specifying the work required to be done by the Contractor to enable the Employer to issue the Acceptance Certificate.

(5) If the Employer fails either to issue the Acceptance Certificate or to reject the Contractor's application within the period of 20 days, the Acceptance Certificate is deemed to be issued.

(6) Operation of the Works during the commissioning period including effecting Tests on Completion shall be under the direction of the Contractor and shall not constitute "use" by the Employer of the Works or entitle the Contractor to the issue of the Acceptance Certificate.

(7) Without prejudice to clause (6), the engagement of the Employer's personnel for the operation of the Works prior to Acceptance under the control of the Contractor shall in no event constitute "use" by the Employer of the Works.

(8) Any revenues derived from the operation of the Works during the Tests for Completion shall belong to the Employer.

(9) In the event of any unresolved disputes between the Employer and the Contractor, the Employer shall only be obliged to issue the Acceptance Certificate if the Contractor has submitted a Litigation Bond covering 110% of the value of the unresolved disputes. The provisions of clause XX on the required rating for bonds shall apply accordingly.

e) Drafting Example Explanation

No. (1) defines the requirements for plant acceptance and mentions the punch list for minor defects and minor outstanding works.

No. (2) obliges the Contractor to give immediate notice of the plant's readiness for acceptance. Subsequently, no. (4) stipulates a period for the Employer to either issue the certificate of acceptance or to reject it stating the reasons for such rejection. No. (5) closes the drafting cycle saying that the acceptance certificate shall be deemed issued (deemed acceptance of the unit), if the Employer fails to react on the Contractor's application.

No. (3) is carefully drafted and covers the time between the end of the performance tests, the issuing of the performance test report, and the issuing of the acceptance certificate. As the Employer has not yet taken full possession of the unit within this period, the Contractor is obliged to operate the plant. Such operation shall not constitute a deemed acceptance, as clause no. (3) expressly points out. Of course, all benefits from the plant operation shall belong to the Employer, which is explicitly mentioned in clause no. (8).

No. (6) and no. (7) contain parallel provisions to no. (3) directing that any plant operation during the commissioning and testing phase shall not constitute a use of the works by the Employer.

Finally, no. (9) ensures that the Employer does not have to issue the Acceptance Certificate – and consequently, to return the Performance Bond to the Contractor – if there are unresolved claims at the time when the progress of the works would justify an acceptance by the Employer. At that point in time, the Employer may still claim the performance of outstanding change of scope works, or there may be sums due for payment (e.g. liquidated damages) to the Employer that the Contractor refuses to pay. The indicated amount of "110%" of the claim value shall cover the amounts of the claims as such, as well as the costs (e.g. attorneys' fees) for litigation. The distinct value of the dispute bond needs to be discussed in consideration of the potential costs of litigation under the applicable jurisdiction, but also taking into account potential legal limitations that may cap the bond value at a certain stage.

Should the Contractor refuse to submit a litigation bond, the Employer should reserve the right to retain the performance bond (which then must be extended!) as security.

3.7 Bonds and Guarantees

What happens if the Contractor is not able to fulfill the contract any further (e.g. due to an economic crisis)? This situation will put the Employer into a critical position and expose him to significant financial risks. Accordingly, it is essential that the Employer limits the respective risks by requesting sufficient bonds and guarantees.

3.7.1 Bank Bonds

A bond is a promise by deed, whereby the issuer (in most cases a bank or a large insurance company), undertakes to pay the beneficiary a sum of money when pre-defined conditions are met. Keep in mind, however, that a (bank) bond will always result in a payment of a sum of money. It will never result in an actual performance on site! That means, that by bonds the Employer is able to secure its "financial interests", but not its "performance interests". It is important to note that the legislation and jurisdiction pertaining bonds may vary considerably depending on the applicable law.

Various types of bank bonds may be distinguished:

a) On-demand Bonds

One characteristic of an on-demand bond is that the issuer has to pay a sum of money upon the first written demand made by the beneficiary. It is irrelevant why the beneficiary draws on the bond. The on-demand bond constitutes a primary obligation of the bank (being a third party) to pay, which is completely independent of the underlying EPC contract between the Employer and Contractor. The EPC contract is the reason why the Contractor delivers a bank bond whereas – independent on the latter – the Employer's written demand addressed to the relevant bank is the reason to pay! The on-demand bond is the most common security instrument, as this type of bond allows the beneficiary to draw cash without lengthy (legal) proceedings.

Although the Employer may have received an on-demand bond, such bond should not be called upon without due regard to the EPC contract and the notification and warning provisions, which shall be illustrated by the example below:

Example:

The EPC contract stipulates that the Employer shall - prior to exercising any other rights under the EPC contract - grant the Contractor a period of at least 30 days to remedy any defect upon receipt of a respective notification from the Employer. Being dissatisfied with the progress of the works in general, and having detected a defect in the works, the Employer sends a written demand for payment to the bank without notifying the Contractor.

The bank informs the Contractor about the receipt of the call on the bond and the Contractor raises objections against the payment, arguing that the Employer's demand is illegitimate and against the EPC contract provisions.

Nevertheless, the bank is obliged to pay under the bond, irrespective of the breach of contract committed by the Employer. However, an unjustified drawing of a bond by the Employer will entitle the Contractor to claim damages *(the amount that the Contractor has to refund to the bank + interest + bank fees + fees for legal attorneys, etc.)* from the Employer. Therefore, any drawing of bonds by the Employer should be carefully considered, in respect of whether the contractual requirements allowing him to draw the bond are fulfilled.

The Contractor is probably right in the above example, and the Employer is not (yet) entitled to draw on the bond. The Employer should have notified the Contractor first, in order to give the Contractor the chance to remedy the defect.

b) Proven Default Bonds

A proven default bond means that the issuing bank (or insurance company) is only obliged to make a payment when a default occurs in the performance of the EPC contract, and the claim is agreed or proven in dispute resolution proceedings. The disadvantages of this type of bond in comparison to the on-demand bonds are obvious. Whereas an on-demand bond secures immediate cash, a proven default bond requires an agreement on the relevant claim (that will hardly ever be reached) or a litigated award as a precondition for the Employer's right to draw on the bond. Proven default bonds are, therefore, unpopular with employers and with third party lenders.

3.7.2 Guarantees

A guarantee consists of an undertaking by one person (the "guarantor") to another person (the "beneficiary"), to answer for the debt or the default of a third person (the "principal debtor"). The principal debtor remains primarily liable for payment or performance of the relevant obligation.

Example:

The Employer ("beneficiary") demands a parent company guarantee from the Contractor's ("principal debtor") parent company ("guarantor"), in which the parent company declares to be jointly and severally liable for the performance of the works and services under the EPC contract.

In contrast to bonds that only constitute a financial obligation, guarantees oblige the guarantor to perform the scope of works.

It is important to note that the legislation and jurisdiction pertaining guarantees may vary considerably depending on the applicable law. Therefore, the Employer is well advised to either persist on its country law to apply or to engage a law firm for checking the wording of and the formalities for the respective guarantee.

3.7.3 Purposes of Bank Bonds and Guarantees

Usually, there is not only one bank bond and one parent company guarantee to be submitted by the Contractor, but rather a whole system of collaterals. This is commonly agreed as a "security package" in an EPC project, with each bond or guarantee to secure a specific risk, as shown in the figure below:

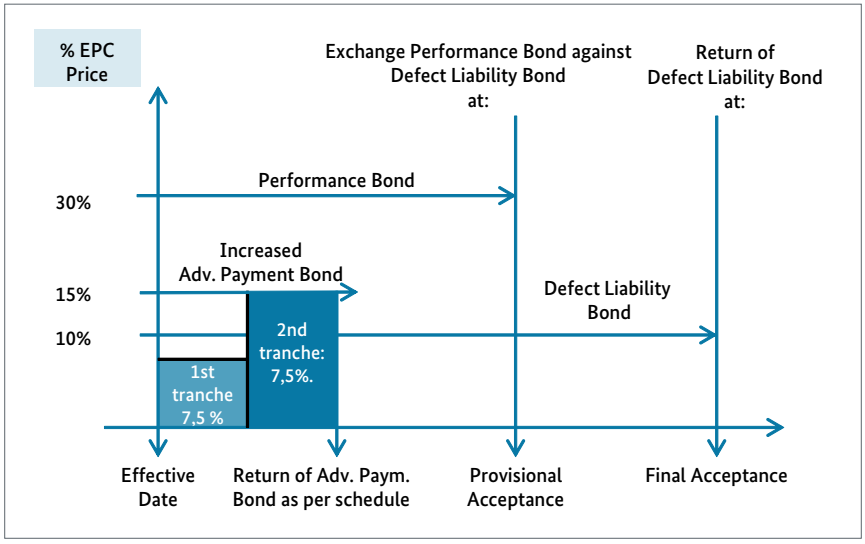


Illustration 25: Bank Bond Mechanism

a) Advance Payment Bond

Usually, the Contractor will demand an advance payment (about 5 to 15 percent of the contract price) at the beginning of the project to cover its initial costs of bringing equipment and personnel on site and placing the purchase orders for long lead items. If the Contractor filed for insolvency right upon having received the advance payment, the money would be lost for the Employer. Thus, the advance payment bond provides security in relation to the repayment of any advance payment made to the Contractor.

In practice, the advance payment bond may not necessarily be "one" bond. The Contractor may ask for several advance payments, up to the limit stipulated in the EPC contract, and deliver a separate advance payment bond for each amount received.

As the progress of the works on site delivers value to the Employer and balances the advance payment, the parties usually agree that the advance payment bond(s) shall reduce to zero and shall be returned to the Contractor when the works have reached a certain milestone.

b) Performance Bond

If the Contractor stops performing at a certain stage of the project, or if serious quality deficiencies occur which the Contractor is unable to remedy, the Employer will need to employ a third party Contractor to remedy the works. The costs that result from the engagement of a replacement Contractor which the Employer would have to bear should be secured by a performance bond. Depending on the market conditions and local customs, performance bonds are agreed in the amounts varying between 15 and 50 per cent of the contract price.

Performance bonds often expire on the date of provisional acceptance or continue at a reduced level as defect liability bond.

c) Defects Liability Bond

The defects liability bond covers the Employer's risk in case the Contractor does not fulfill its defect liability obligations during the EPC defect liability period. Sometimes, this is a separate bond exchanged concurrently against the performance bond upon the date of plant acceptance. At times, the performance bond that the Employer already holds is reduced and continues as defect liability bond. The defects liability bond reduces to zero and must be returned to the Contractor upon the date of final acceptance (= expiry of the defect liability period)[48].

d) Litigation Bond / Dispute Bond

When the works have been completed and the plant has successfully passed all tests, and the Contractor requests to receive provisional acceptance, arbitrational

48 As to the further consequences of (final) acceptance, see chapter 3.6.3.

proceedings and dispute negotiations may be pending (with regard to delays, quality issues etc.). If the Employer issued the certificate of provisional acceptance in this situation, it would lose the performance bond, which until then secured the claims in dispute. This is resolved by a litigation bond, submitted by the Contractor. This bond covers all amounts in dispute plus a certain percentage for litigation costs etc. On the date of provisional acceptance, the Employer hands over the acceptance certificate and the deed of the performance bond, while concurrently, the Contractor hands over the litigation bond and the defect liability bond.

Example:

The works on site are close to achieving provisional acceptance of works. There are several delay and quality claims in dispute between the parties. The Employer asks for a litigation bond as condition for issuing the acceptance certificate. The Contractor argues that a litigation bond is not necessary as the performance bond (30%) will continue at a reduced but still sufficient amount (of 10%), as defect liability bond. The Employer wants to avoid further disputes and agrees to renounce of a litigation bond.

The Employer in the above example has made a detrimental decision. In the worst case, the risk of financial losses resulting from the ongoing disputes will not be covered at all by any bond. This is because the performance bond ceases to exist when the acceptance certificate has been issued. The new defect liability bond usually covers "defect liability claims". The existing claims, however, do not result from a non-fulfilled defect liability obligation but result from a non-fulfilled performance obligation. Even if the defect liability bond covered disputes remaining from the execution phase, a defect liability bond should be new upon acceptance of works without being partly burdened by disputes resulting from the execution phase. The reason for that is that if the Employer in the above example successfully drew the defect liability bond for the disputes, the defect liability bond would be used up to the same extent. If serious defect liability issues occurred later on, the Employer might lack in the long run, i.e. at the end of the defect liability period, those amounts already drawn from the bond for securing disputes that have occurred right at the beginning of the defect liability period.

e) Parent Company Guarantee

The Employer is well advised to demand a strong parent company guarantee from the Contractor, if the contracting company should not itself be the highest ranking company of a group of companies. The parent guarantor should guarantee that, in the event of the Contractor failing to fulfill its obligations and liabilities under the EPC contract, the parent company will fulfill the obligations and liabilities under the EPC contract between the Employer and the Contractor as if these obligations and liabilities had incurred on the guarantor itself.

Often, the Contractor will demand a parent company guarantee from the Employer, too, in order to secure its payment claim for remuneration.

3.7.4 Important Considerations for Bonds and Guarantees

In general, the Employer should take care of the following aspects with regard to bonds and guarantees:

a) Permanent Validity

Sometimes, bonds have a fixed expiry date. If the performance bond, for example, is due to expire at the scheduled date for provisional acceptance or at a certain date thereafter and the project is delayed, then the Employer must assure that the performance bond continues to be valid until the actual date of provisional acceptance. This can be secured by imposing an obligation on the Contractor to replace any bond at the latest thirty days prior to the respective expiry date and – if the Contractor fails to do so – entitling the Employer to draw the full amount of the bond.

b) Timely Submission

The Employer should also ensure that the Contractor has an incentive to submit the necessary bonds in due time. *Therefore, a typical condition precedent in an EPC contract requires the Contractor to submit the advance payment bond and the performance bond before the EPC contract will take effect*[49]*. In addition to that, the Employer can reserve the right to withhold payments until the bonds have been submitted*[50].

c) Required Credit Rating

The Employer should not accept bonds from any bank or insurance company, but should define a minimum rating for the institutions from which it accepts bonds. If the rating declines below the minimum rating, the Contractor is obliged to immediately serve a new bond issued by an institution fulfilling the minimum rating. Again, the Employer is entitled to draw the full amount of the bond, if the Contractor fails to comply. However, the requirements for the rating should not be too strict (e.g. AAA), as otherwise the Contractor might end up in a situation where it either is not able to find a bank that does have an AAA ranking, or such bank will not cooperate with the Contractor.

d) Adjustment of Bonds

The value of a bond is usually expressed as certain percentage of the contract price. As the contract price is likely to go up and (though less likely) down due to variations, the EPC contract should ensure that the bonds have to be re-adjusted

49 See above chapter 3.2.7.

50 Cf. drafting example in chapter 3.7.5 a) (2).

in order to correlate with the contract price. Of course, the bonds should not be reduced due to the fact that the Employer executes its retention rights[51].

e) Clear Wording

The wording of the bonds should be as clear as possible as any vagueness or uncertainty exposes the bond to the potential risk of being held void under the applicable law, or being challenged by the Contractor or the issuing bank when called upon. Furthermore, the Employer should make sure that there are no "cumbersome, formal" conditions in the wording of a bond.

Example:

The Employer wants to draw an amount under a performance bond that is worded as follows:

"This is an unconditional on-demand bond and the issuer shall be obliged to pay any amount up to the maximum amount of XX USD upon receipt of a written demand from the Employer stating that the Contractor has not fulfilled its obligations under the EPC contract within 30 days upon notification by the Employer. The demand shall be signed by the legal representatives of the Employer as testified by an international bank."

The Employer's project representative files a written demand to the bank saying that the Contractor has not fulfilled its obligation despite being instructed to do so with a 45 days notification.

The bank refuses to pay as there is no document stating that the Employer really has instructed the Contractor and there is no reason to believe that the Contractor has not complied with the Employer's instruction in due time and finally, the demand has not been testified by an international bank.

The Employer would have been better off in the above example if the bond had been worded in a way saying: that the pure assertion of the Employer in its written demand that the Contractor has failed to fulfill its obligations is sufficient to trigger the obligation of the bank to pay without any further evidence or documentation necessary. It often happens that the Contractor produces documents demonstrating that it has complied with its obligations yet – contrary to the Employer's statement – the Employer is in default of its obligations. In such circumstances the bank will closely scrutinize the bond wording and might be inclined to refuse to pay as the Employer – from the bank's point of view – has not sufficiently "stated that the Contractor has not fulfilled its obligations" (c.f. the wording of the bond in the example above).

51 See above chapter 3.6.1c).

f) No Divergence of applicable Law

Taking legal actions with regard to bonds is difficult in situations where each bond is governed by a different national law and where none of the bonds is governed by the same national law as the EPC contract. Hence, the Employer should secure that the same legal system applies to the EPC and to the bonds (and guarantees).

g) Multiple Calls allowed

The wording of the bond should allow for multiple calls. Otherwise, it might happen that the Employer calls a small amount under a bond once and is prohibited to call on the same bond for a second time.

3.7.5 Example EPC Clause on Bonds and Guarantees

a) Drafting Example

(1) Within 28 days upon signing, the Contractor shall deliver to the Employer:
   a. a Performance Bond issued directly by, and to be maintained by a first class European Bank having a S&P Rating of "AA" ("the Rating") or equivalent entity acceptable to the Employer and determined in advance by the Contractor to be acceptable to the Employer with a face value of 20% of the Contract Price of this Agreement substantially in the form attached at Appendix XX [Templates for Bonds and Guarantees]. The Performance Bond shall remain in effect until the issue of the Defects Liability Certificate. With effect from the date of Provisional Acceptance of the Works, the amount of the Performance Bond shall be reduced to 5% of the Contract Price of this Contract;
   b. a Parent Company Guarantee to guarantee the Contractor's obligations under this Agreement substantially in the form attached at Appendix XX [Templates for Bonds and Guarantees]. The Parent Company Guarantee shall remain in effect until 12 (twelve) years after the date of issue of the Defects Liability Certificate, together with the certificate certifying that the Contractor has discharged all its obligations in respect of the correction of any outstanding defects and any Tests after Completion in accordance with the Contract; and
   c. an Advance Payment Bond issued directly by, and to be maintained by a first class European Bank having the Rating or equivalent entity acceptable to the Employer and determined in advance by the Contractor to be acceptable to the Employer with a face value of 100% of the envisaged advance payment substantially in the form attached at Appendix XX [Templates for Bonds and Guarantees].

(2) Provision of the Performance Bond, Advance Payment Bond and Parent Company Guarantee are conditions precedent to the Employer's obligation to make payment of the Contract Price pursuant to clause XX [Contract Price].

(3) The Contractor shall provide the Performance Bond, Parent Company Guarantee and Advance Payment Bond specified in clause (1) in the forms set out in Appendix XX [Templates for Bonds and Guarantees] to this Agreement. If either

the Performance Bond, the Parent Company Guarantee or the Advance Payment Bond expires prior to the date/event referred to in clause (1), or in the case of the Performance Bond and Advance Payment Bond the S&P Rating falls below the Rating, the Contractor shall ensure that a replacement Performance Bond or Advance Payment Bond meeting the Rating and/or Parent Company Guarantee as applicable shall be issued by the respective issuing bank and/or parent company and delivered to the Employer not later than

(i) 28 days prior to the stated expiry date of the Performance Bond, Advance Payment Bond and/or Parent Company Guarantee, or

(ii) *28 days upon* the date on which the S&P rating falls below the Rating.

(4) If the Employer does not duly receive such replacement Performance Bond, Advance Payment Bond and/or Parent Company Guarantee, the Employer shall be entitled to draw the full amount of the Performance Bond, Advance Payment Bond and/or Parent Company Guarantee then available for drawing and retain the same by way of security for the performance by the Contractor of its obligations under this Agreement, until such time as the Employer shall receive a replacement Performance Bond, Advance Payment Bond and/or Parent Company Guarantee, whereupon, subject to the terms of this Contract, the Employer shall refund to the Contractor any balance of the proceeds of drawing then remaining. The Employer shall return each Performance Bond, Advance Payment Bond and/or Parent Company Guarantee to the Contractor for cancellation promptly upon receipt of any replacement therefore. No further payment shall be due to the Contractor until it has complied with its obligations pursuant to (3) and (4).

(5) In every case the Employer shall, when making the claim, send a copy to the Contractor.

(6) Such claim under the Performance Bond, Advance Payment Bond and/or Parent Company Guarantee may be made by the Employer once or multiple times notwithstanding objection by the Contractor.

(7) The Employer shall surrender the Performance Bond, Parent Company Guarantee and Advance Payment Bond to the issuing bank or parent company as applicable for cancellation within 28 days of the date on which the obligation of the issuing bank or parent company under the Performance Bond, Parent Company Guarantee and Advance Payment Bond is due to expire.

b) Drafting Example Explanation

No. (1) stipulates the basic obligation of the Contractor to deliver an advance payment bond, a performance bond (with the required credit rating of AA of Standard & Poors), and a parent company guarantee.

No. (2) reinforces the obligation resulting from no. (1) saying that the Employer shall not be obliged to make payments to the Contractor, if the required securities are not in place.

No. (3) takes up the issue of expiry of bonds and obliges the Contractor to replace any bond 28 days prior to the date on which that bond is due to expire.

Subsequently, no. (4) stipulates the consequences of failing to replace a security in due time, thus, entitling the Employer to call on the full amount of the bond in question.

No. (5) is a fair play provision, making sure that the Employer does not call on a bond without telling the Contractor of the same, respectively giving the Contractor a last warning.

No. (6) clarifies that the Employer may call one time or several times on each bond. Furthermore, any objections raised by the Contractor shall not prevent the Employer from calling on the bonds.

Finally, no. (7) is an administrative provision regulating the return of the bonds no longer valid (and needed).

3.8 Project Schedule and Progress Control

Any employer-friendly EPC contract should provide rules concerning project schedule and progress control.

a) Subject Matter

One of the first documents that an EPC Contractor has to produce and submit to the Employer for discussion and approval is the project schedule (also called time schedule, project completion schedule, program, etc.). The project schedule is the "roadmap" of the project, indicating the start and the completion of the various site activities, and the interdependences of different construction work actions. The project schedule does not only display all activities needed in order to complete the project, but ost importantly it also shows the critical path of the project.

The critical path is a sequence of activities that can only be executed sequentially, as the completion of one milestone is a condition for being able to start the next activity. These milestones have very limited time buffers and need to be started and completed in time, as otherwise the entire project completion is likely to be delayed. The only chance to catch up for a delayed critical path activity is by "fast tracking" (= trying to do more activities in parallel) or "critical path crashing" (= trying to employ more resources to speed up the processes). Both mitigation measures will work only if the Contractor has added some buffer times in its critical path calculations. If the critical path has already been "tuned" to the maximum extent, no mitigation measure will set the project back on time track once a critical path activity has been delayed.

Example:

Landscaping activities normally do not impact the project completion date as the related works can be shifted about during project execution as deemed appropriate. In contrast to that, long lead items (= major equipment) impact the project completion date significantly. If, for example, the purchase order for a turbine is placed too late, or if the special machine for tunnel drilling could not be chartered in time, these inadequacies are likely to cause a delay as there would be no production slot for the turbine or replacement machine available at short notice. These are critical path activities.

b) Associated Risks and Interests

The Employer usually has commercial interests in finishing a project until a certain date. Each day of later completion will most likely result in a financial loss for the Employer, which is unlikely to be recoverable from the Contractor in full or even not at all! Thus, it is vital for the Employer to ensure that the project is "on track"[52]. The Contractor, however, is also interested in completing the project within the envisaged time period, as otherwise he is likely to face claims for (liquidated) damages and will have to employ resources that it cannot allocate otherwise. The Contractor also fears a negative reputation in the industry if the information should spread that it was not capable to complete a large scale project in time.

For this reason, Contractors tend to attempt to ensure that they are granted an extension of completion time when scope variations occur, or when they see themselves kept from the expedient execution of the project due to the Employer´s acts and omissions (e.g. the Employer could not hand over the site to the Contractor on the site hand-over date because works for the removal of contamination were not completed in time).

c) Drafting Example

(1) The first Project Program is attached as Appendix XX. On the Effective Date, the Contractor shall up-date the Project Program and provide the updated version to the Employer.

(2) The Contractor shall keep the Project Program under constant review in the light of the actual progress of the Works. If it appears that the progress of the Works does not conform to the Project Program, it shall amend the Project Program to ensure Provisional Acceptance of Works of each Unit and Final Acceptance in accordance with the Contract and inform the Employer of such amendment by sending the Employer a copy of such revised Project Program.

(3) If at any time it should appear to the Employer that the actual progress of the Works does not conform with the Milestones in the Project Program, the Contractor shall produce, at the written request of the Employer, a revised Project

52 See Illustration 23: Project Management Triangle, p. 27.

Program showing the modification necessary to ensure Provisional Acceptance of Works of each Unit and Final Acceptance in accordance with the Contract.

(4) Nothing in this Clause XX shall relieve the Contractor from its obligation to complete the Works within the time specified by the Contract, nor shall it release the Contractor from its liability under Clause XX [Liquidated Damages].

(5) The Contractor shall carry out the Works so as to meet the Milestones in the Project Program. The Contractor shall be responsible for ordering and scheduling the Works so as to comply with its obligations within the time specified by the Contract and shall adjust or re-schedule its conduct of the Works and provide any additional resources as may be necessary to achieve compliance with the Milestones in the Project Program save only insofar as any contingencies, delays or difficulties which arise entitle it to an extension of time under Clause XX [Extension of Time].

d) Drafting Example Explanation

Clause no. (1) stipulates the basic obligation to provide an up-dated version of the project schedule to the Employer on the effective date of the EPC contract. In this example clause, the parties already discussed the project schedule in the preceding negotiations as a first version of the project schedule was attached to the contract as appendix. In order to ensure that (after signing!) the Contractor does not calculate a much longer completion period than it has promised in its quotation for the tender, it is wise to include the original project schedule in the EPC agreement as appendix and to state the respective time for completion in the EPC contract[53].

No. (2) forces the Contractor to continuously update the project schedule and – important (!) – to inform the Employer of any schedule updates.

No. (3) entitles the Employer to request an update of the project schedule at any time when it appears to the Employer that the works lack behind. Furthermore, the Contractor has to show and to explain which activities need to be shifted or speeded up in order to meet the completion date.

No. (4) assures that no change in the schedule will be interpreted or construed to relieve the Contractor from its other obligations and liabilities under the EPC contract.

Finally, no. (5) imposes the obligation on the Contractor to ensure schedule compliance by employing more resources or reorganizing the sequence of activities so that the progress of the works will meet the scheduled date for completion.

53 As to the statement of the time for completion, see chapter 3.2.9.

3.9 Delay in the Progress of Works

This chapter 3.9 on delay in the progress of works should be read in conjunction with the preceding chapter on project schedule and progress control.

In order to determine which party has to bear the consequences of a delay in the progress of works, it must be determined if a delay occurred at all, the causes for the delay and who has to take responsibility for the particular cause of delay.

3.9.1 Occurrence of Delay

The time for completion constitutes the third pillar of the project success along with the costs and the scope of works[54]. Therefore, it is crucial to be aware of delays in the progress of works that may come suddenly caused by an exceptional event (e.g. the construction site is flooded due to unusually strong rain). Or delays may creep into the construction cycle when several short and hard to detect delays in various activities pile up to an overall backlog.

A delay occurs when the actual progress of the works ("as-is" status) lags behind the planned status of the works, as displayed in the project schedule ("should-be" status). The methods of calculating a delay in the works in a specific number of days are difficult and require the special knowledge of a time scheduling expert. In order to determine a delay, it is necessary to examine the cause of each individual disruption and its impact on the construction process. For this purpose, a diligent documentation of the construction activities is essential for both parties: For the claiming party to demonstrate the grounds of its claim, for the defending party to ward off such claim.

If the Employer does not have the necessary in-house experience and/or resources, the Employer will be well advised to engage an Owner's Engineer consulting team for the preparation of the tender with the task to set-up an appendix[55], detailing time schedule and progress report requirements for the Employer, which the Contractor has to meet. In doing so, the Employer can ensure that the Contractor submits updated project schedules and progress reports that are sufficiently detailed to check the progress and calculate delays itself without having to rely on the sometimes insufficient information otherwise received from the Contractor.

3.9.2 Causes and Responsibilities for Delay

In case a delay has occurred, Employer and Contractor will have to investigate the causes of that delay and establish the responsibility for that delay. Unsurprisingly, this is a situation from which many disputes and arbitration proceedings evolve.

54 See above chapter 3.3 and Illustration 23: Project Management Triangle, p. 27.

55 As to that appendix, see also chapter B.2.3.1.

a) Causes of Delay within Employer's Responsibility

There are several causes of delay for which the Employer typically has to assume responsibility. Note that the Employer may be responsible for a cause of a delay because of default (below (i)), because of the EPC contract assigns a special risk to the Employer (below (ii)) or because of discretionary acts (below (iii) and (iv)):

(i) Failure to fulfill Contractual Obligations

As shown above, the EPC contract imposes some important obligations on the Employer. If the Employer fails to fulfill these obligations, this failure may result in a delay in the progress of works for which the Employer is responsible.

Example:

The Parties agree that the Employer shall remove asbestos residues on site before May 1st, 2014, on which date the site shall be handed over to the Contractor. Furthermore, the Employer shall deliver a water connection at a certain terminal point by September 30th, 2014 as the water is needed for preparing the concrete that will be used for the foundations.

The third party company that the Employer engaged to remove the asbestos residues on site filed for insolvency and stopped performance while in the middle of the works, so that the site is handed over to the Contractor on July 1st, 2014. Furthermore, the water source on site has dried out so that the Employer cannot supply water before October 1st, 2014.

The Contractor claims an extension of time and wants to be reimbursed for the delay costs. The Employer has to accept both claims because the delays resulted from the Employer being in default with the fulfillment of its obligations.

(ii) Site Soil Conditions / Ground Risk

Whenever the project execution requires ground works on site, there is the immanent risk that the actual soil conditions deviate from the expected soil conditions. The ground risk usually rests with the Employer; in some jurisdictions it is even prohibited to shift the ground risk to the Contractor. However, even if it might be tempting to transfer the ground risk to the Contractor, if that is possible under the law chosen for the EPC contract, it should be kept in mind that this will inevitably lead to a significant increase in the EPC price as the Contractor has to build up risk contingencies in order to cover the respective risk exposure.

Example:

The Employer has provided a site soil report showing that the ground which needs to be excavated and removed consists of clay and sand.

If now the soil does not consist of sand and clay as expected, but consists of granite and other rock, the longer duration to remove the rock layers may cause a delay, for which the Employer is responsible according to the contractual risk allocation.

The Contractor will probably prepare a request for Change of Scope claiming reimbursement for the extra costs and an extension of time.

Note that the only way to escape this situation is to ask the contractors in the tender process to do their own soil studies. However, it is likely that they will be rather unhappy doing so because of the related costs.

(iii) Change of Scope of Works

It goes without saying that the Employer is responsible for a delay that is caused because the Employer wishes to change the scope of works.

Example:

Employer and Contractor in a large motorway construction project have agreed in the scope of works that a mountain on the planned route of the motorway should be bypassed with the motorway.

Later on, the Employer wants to drive a tunnel through the mountain instead of bypassing it as originally planned. The resulting delay from that change of scope will rest with the Employer and the Contractor will ask for a variation.

(iv) Suspension of the Performance of Works

In order to give the Employer maximum flexibility throughout the execution of an EPC project, a right to suspend the project at the Employer's discretion for a certain time period should be negotiated with the Contractor[56]. The consequences of such suspension of the project must be borne by the Employer.

b) Causes of Delay within Contractor's Responsibility

Also, with regard to the Contractor there are several causes of delay for which the Contractor typically has to assume responsibility. The Contractor – like the

56 See below chapter 3.10.

Employer – may be responsible for a cause of delay because of default (below (i) to (iii)), or because the EPC contract assigns a special risk to the Contractor (below (iv)):

(i) Inadequate Project Management

One of the major issues, especially with Contractors doing specific work for the first time, is lack of experience with regard to project management. Even if the contract foresees perfect project management mechanisms and respective control and even emergency management rights for the Employer, if the Contractor does not know how to do the job and when to do it, the project schedule is deemed to fail.

Practice Alert:

It is for this reason that the Employer is very *well advised to do a thorough due diligence* in the tender phase on the bidders. References should be checked in detail and ideally some members of the Employer's core project management team visit some sites of the Contractor in the execution phase at that time and have some bilateral talks with the respective employer, without the Contractor being present, in order to gain as much insight into the Contractor`s execution practice as possible before signing the contract. The time and travel costs spent on such activities are very well invested money!

Keep in mind that the EPC contract stipulates that the consequences of delays resulting from inadequate project management activities are borne by the Contractor, but at the end of the day, it is the Employer who faces the consequence.

(ii) Inadequate Resources

If the Contractor employs insufficient resources on site and that is why the progress of the works lags behind schedule, then the Contractor is responsible for related delays.

Practice Alert:

It should be kept in mind that the allocation of resources lies in the sphere of the contractor and it is difficult to interfere with it. Only if it is evident that the resources are insufficient, does the Employer has a right to step in and ask for additional workforce. But even if additional people are requested in order to accelerate the execution, an old proverb describes the situation best: "You can't paint a loo with 40 people". In essence, that means that it is not possible to speed up some works in a linear way by simply putting more resources on it, as there is a natural limit on how many people can actually do work on the respective part of the project.

(iii) Defective Works

If the quality of the works does not comply with the agreed quality (= a defect) and the Contractor has to redo some works and order some new material etc., then the resulting delays fall into the responsibility of the Contractor.

(iv) Damage to the Works

Until the date of acceptance of works the Contractor bears the risk that the works might be damaged in the course of the project execution. If, for example, a heavy hoisting crane accidently crashes into an already constructed building, the EPC Contractor has to repair the damage to the building and has to bear the consequences of the potential delay caused by the repair measures.

c) Causes of Delay outside the Parties' sphere of influence

(i) Force Majeure Events

Force majeure events hit both parties without either party being responsible. EPC contracts contain Force Majeure clauses[57], balancing the consequences resulting from such event between the Contractor and the Employer.

(ii) Acts of Authorities and Governments

Usually unforeseeable acts of authorities or governments are covered by Force Majeure clauses.

(iii) Change in Law

A change in law can sometimes be categorized as a sub-category of above item (ii). The difference is that issuing laws and decrees is the normal business of a government, and laws impacting the execution of a construction project are not "unusual", and therefore, do not constitute a Force Majeure event. EPC contracts usually allocate the delay risk resulting from a change in law to the Employer, unless the forthcoming of a new legal act has been foreseeable for an experienced Contractor. A new law is "foreseeable" when it has already passed all relevant state institutions but enters into effect at a later point in time.

3.9.3 Consequences of Delay

The consequences of delays depend on who is responsible for a specific delay.

a) Delay within Employer's Responsibility

Employer caused delays end up with the Contractor's entitlement to claim an extension of time for completion (schedule adjustment) and additional payments covering the costs incurred due to the delays.

57 See below chapter 3.11.

b) Delay within Contractor's Responsibility

If the Contractor is responsible for a delay, the Contractor has to speed up the works or reorganize the sequence of works and has to bear all related costs. If these recovery measures do not bring the project back on track, and the scheduled date for completion is not kept, the Contractor usually has to pay delay liquidated damages for each day of delay.

c) Delay within neither Party's Responsibility

Delays resulting from a Force Majeure event are often borne jointly by the Employer and the Contractor. From the drafting point of view, the consequences of a Force Majeure Event are usually stipulated in the respective Force Majeure provisions[58].

d) Concurrent Delays

Delays in the progress of the works very often do not have only one single cause but can be traced back to several causes, which may fall partly within the Contractor's responsibility, partly within the Employer's responsibility and partly within neither party's responsibility. The EPC contract should address this situation and the parties should discuss the question of concurrent delays in the negotiations. Experience has shown that in many cases, the solution for this problem is best found on the commercial side of the project, i.e. the parties agree in (sometimes lengthy and hostile) negotiations on a certain percentage. Letting those cases go to court or arbitration often leaves both parties dissatisfied, as in terms of available information, the judges or arbitrators are not better off than the parties and have a certain tendency to "split the baby into half", i.e. allocate equal shares of responsibility (and costs) to the parties.

3.9.4 Example EPC Contract Wording

The following example clause may give a first idea on the complexity of the issue.

a) Drafting Example

(1) If by reason of:
   a. delay or negligence in the performance and/or breach of its obligations on the part of the Employer hereunder (including any failure to give the Contractor possession of the Site), or;
   b. suspension as defined in Clause XX [Suspension] otherwise than as a result of any act, omission, default or neglect on the part of the Contractor or its Sub-contractors, or,
   c. the occurrence of any loss or damage to the Works due to the occurrence of any Employer's Risks, or;
   d. additional testing ordered by the Employer where the Works were in accordance with the Contract, or,

58 See below chapter 3.11.

e. the occurrence of a Force Majeure event, or;

f. a Change in Law.

The Contractor should be delayed or impeded in achieving Provisional Acceptance of Works of a Unit by the Scheduled Provisional Acceptance of Works Date for that Unit, and then the Contractor shall give to the Employer notice in writing of its claim for an extension of time and delay costs.

(2) Any entitlement of the Contractor to an extension of time or to delay costs pursuant to this Clause XX is subject to the following provisions:

a. the Contractor's entitlement to an extension of time and/or delay cost shall be reduced proportionately to the extent that the act of neglect of the Contractor, its Sub-contractor, servants or agents may have caused or contributed to the delay and/or Cost;

b. the Contractor shall have notified Employer not later than 10 Business Days after becoming aware that circumstances have given rise to any such claim;

c. the Contractor shall submit to the Employer its full and detailed claim for extension of time and/or Delay costs within 30 Business Days of the cessation of the circumstances giving rise to such claim;

d. in determining what extension of time the Contractor is entitled to, the Employer shall take into account the effect of any authorized Change of Scope of the Works; and

e. the Contractor shall use its best efforts to adjust the order and sequence in which it proposes to execute the Works and use all reasonable efforts to overcome the events giving rise to an entitlement to an extension of time and to mitigate the effects of delay and the entitlement to an extension of time shall be assessed accordingly; and

f. the Contractor shall provide the Employer with full details of all events as they progress, with the first such report to be provided within 20 days of the Contractor's knowledge of the event, and then at reasonable intervals thereafter, and shall maintain and allow the Employer and its representatives to inspect, all records applicable thereto.

(3) With regard to the delay costs, the Contractor shall keep (and shall procure that its Sub-contractors shall keep) comprehensive documentation and other records of the nature, extent and effects of the said occurrence. The Contractor shall provide the Employer with all such supporting documentation and information.

(4) Any extension of time, compensation and other relief provided for in the Contract shall be deemed to be full compensation for the consequence of the matter in respect of which such extension of time, compensation and other relief was made.

(5) In the event of the occurrence of any circumstances or event which would entitle the Contractor to an extension of time, the Employer:

(a) may instruct the Contractor to submit written proposals to the Employer stating:

(i) to what extent the extension of time to which the Contractor would be entitled can be avoided or reduced and the shift of the date for Provisional Acceptance of Works for the affected Unit or Units that would result, and

(ii) the sum which the Contractor will reasonably require to be added to the Contract Price if the acceleration is to be implemented under this paragraph (a) . Such proposal shall give details showing the manner of calculation of the lump sum and proposals for the term of payment thereof.

(b) shall, if the Contractor sustains a reasonable objection to such instruction, either withdraw the instruction or vary the instruction to meet the objection and reissue the instruction; and

(c) may, following receipt of the Contractor's written proposals and if the Employer accepts such proposals, issue a further written instruction confirming the instruction issued under paragraph (a) and confirming in accordance with the Contractor's proposals:

(i) the amount by which the Contract Price is to be increased to take account of the Sum quoted by the Contractor;

(ii) the resulting Scheduled Provisional Acceptance of Works Date for the affected Unit or Units, and

(iii) the details of the acceleration and the alteration of sequence or timing required.

(6) The costs of preparing any proposals required under this Clause XX shall be borne by the Contractor. Any dispute as to acceleration instructions and resulting Contract Price increases and Scheduled Provisional Acceptance of Works Date adjustments shall be dealt with in accordance with Clause XX [Dispute Resolution].

(7) If, for any reason that does not entitle the Contractor to an extension of time, the rate of progress of any activities comprising the Works is too slow to ensure Provisional Acceptance of Works of either Unit by the relevant Scheduled Provisional Acceptance of Works Date or Final Acceptance by the Scheduled Final Acceptance Date, the Contractor is obligated to take such steps as are necessary to expedite progress so as to achieve such Provisional Acceptance of Works by the relevant Scheduled Provisional Acceptance of Works Date and Final Acceptance by the Scheduled Final Acceptance Date. The Contractor shall not be entitled to any additional payment for taking such steps.

b) Drafting Example Explanation

No. (1) of the above drafting example stipulates the Contractor's right to claim an extension of time for delay and the relevant delay costs if an event or events described in no. (1) has occurred. Typical delay situations such as Force Majeure, suspension, and change in law are addressed.

No. (2) is important as it reveals some conditions that must be fulfilled, as otherwise the claim for extension of time or delay costs is only partly justified or ceases to exist completely. Lit. a., for example, covers the situation of concurrent delays and rules that any contributions to the delay by the Contractor will be "discounted" from the claim. Lit. e. obliges the Contractor to take mitigation actions in order to keep the impacts of a delay as moderate as possible. Lit. f. shall secure the proper

documentation of delays, stipulating that the Contractor has to record all delay related activities. No. (3) creates the same obligation with regard to the delay costs.

No. (4) is a "sole and exclusive remedy" clause and puts a cap on the potential delay, in order to prevent the Contractor from producing additional delay related rights out of the statutory law. The EPC contract should provide exclusive remedies for delay, so that both parties can rely on a set of agreed rules without worrying that case law or statutory laws will deprive them of rights, or vest the respective other party with more rights or other rights than foreseen in the EPC contract.

Example:

Pursuant to the German Civil Code, the Employer would have the right to rescind the EPC Contract if the result of the works should not fully comply with the agreed quality. This would mean that the Contractor would have to pay all received amounts back to the Employer and would have to remove the previously constructed facilities.

This harsh legal consequence cannot be borne by any Contractor in the business. Therefore, parties exclude such unwanted legal consequences by sole and exclusive remedy clauses.

No. (5) is a procedural rule describing a communication process between the parties, which ideally results in an agreement on the extension of time and on the delay costs. *For that purpose, this clause establishes a staggered process:* First, sub-section (a) of clause no. (5) ensures that the Employer gains a detailed overview over the delays that have occurred in the works on site. The Contractor has to submit particulars on the situation outlining the specific time delays and the costs that would incur if acceleration measures were instructed by the Employer.

Sub-section (b) then deals with the situation that the Contractor objects to an Employer's instruction to carry out acceleration measures, for example. The Employer shall consider the reasons put forward by the Contractor and shall either vary or withdraw the former instruction. If the Employer sustains the former instruction and the Contractor still objects to it, the matter has to be preliminarily decided by an Owner's Engineer, if any, or must be brought to the dispute resolution process.

Finally, sub-section (c) rules that the Employer – provided that it agrees with the Contractor's proposal –confirms the price, the shift of the date of provisional acceptance and the details of the sequence of the works and acceleration measures. This precise confirmation requirement intends to make sure that the parties have found a solution and have come to a common understanding of all the implications that a delay situation in a large scale project generally entails.

No. (6) ensures that all documentation produced in relation to a delay will not be charged extra to the Employer. *Furthermore, this clause provides a link to the dispute resolution mechanism* in the case the parties cannot agree on acceleration measures or fail to reach a common understanding of the cost and time impacts resulting from the delay situation.

No. (7) compels the Contractor to expedite the works if the progress should be too slow for reasons that the Contractor is responsible for and thus, is not entitled to an extension of time or payment of additional delay costs.

3.10 Suspension

Suspension is a right that allows the Employer to unilaterally instruct the Contractor to wholly or partly stop executing the performance of works. This may be the case if the permitting process (which is sometimes going on parallel to the works) becomes problematic or the Employer needs some time to reassess the financial viability of the project due to unexpected new legislation.

a) Subject Matter

The right to instruct the suspension of all or parts of the works shall give the Employer more flexibility in terms of time. Without this right, the Employer would have to terminate the EPC contract if it proved necessary to stop executing the works for a while or, at least, force the Contractor to stop works (by e.g. not paying for a while), thereby risking that the Contractor itself terminates the contract and claims damages.

b) Associated Risks and Interests

The Employer's interest to have some flexibility with regard to the time schedule is contrasted by the Contractor's interest to perform the works in accordance with the project schedule. For this reason, provisions on suspension always foresee a right to claim extension of time and the reimbursement of all necessary suspension related (delay) costs. However, the Contractor will always seek to have clarity on the point in time when the suspension period ultimately ends, and when the Contractor is either allowed to resume the works on site, or to terminate the contract, in order to allocate its resources otherwise. When discussing the suspension provisions during the contract negotiations, the parties will always discuss the maximum duration of a suspension period after expiry of which the Contractor can either continue working on site or is allowed to quit the project.

c) Drafting Example

(1) The Employer may at any time instruct the Contractor in writing to:
   a. suspend progress of the Works, or any part thereof; or
   b. suspend any delivery to the Site; or

(2) If the Employer issues an instruction to suspend in accordance with clause (1) above, the Contractor shall be entitled to an extension of the Scheduled Provisional Acceptance of Works Date and the Scheduled Final Acceptance Date.

(3) The Contractor shall during suspension protect and secure the Works or equipment affected at the Contractor's place of manufacture or fabrication or elsewhere or at the Site, as the case may be, against any deterioration, loss or damage.

(4) The additional cost incurred by the Contractor following the Employer's instructions under Clause (1) and in the resumption of the Work, shall be ascertained by the Contractor who shall inform the Employer of the amount thereof. The Employer shall review such statement of Cost and the Costs stated by the Contractor, or such part thereof as approved by the Employer, shall be added to the Contract Price.

(5) The Contractor shall not be entitled to be paid any additional Costs if such suspension is rendered necessary by reason of any negligence, omission, act or default on its part.

(6) Payments for Costs incurred in accordance with this Clause XX shall be invoiced monthly as incurred.

(7) If the progress of the Works or any part thereof is suspended on the written instructions of the Employer and if permission to resume work is not given by the Employer within a cumulative period of eighteen (18) months or a consecutive period of six (6) months, then the Contractor may give notice to the Employer requiring permission to proceed with the Works or the part thereof in regard to which progress is suspended.

(8) After receipt of permission or an order to proceed, the Contractor shall, after due notice to the Employer, examine the Works and the equipment affected by the suspension. The Contractor shall make good any deterioration or defect in or loss of the Works or Equipment that may have occurred during the suspension. The Costs incurred by the Contractor in making good any deterioration or defect in or loss of the Works which would not have been incurred but for the suspension shall be subject to Clause (9) below, be added to the Contract Price.

(9) The Contractor shall not be entitled to payment for costs incurred in making good any deterioration, defect or loss caused by faulty design, workmanship or materials or by the Contractor's failure to take the measures specified in Clause (3) or any costs incurred as a result of a suspension caused by any act, omission, negligence or default on the part of the Contractor.

d) Drafting Example Explanation

The drafting example outlines a typical wording covering the entire situation of suspension, from the notice to suspend until the notice to resume the works.

Nos. (1) to (4) stipulate the basic mechanism that the Employer has the right to suspend, and the Contractor is entitled to the suspension related extension of time and delay costs. Resulting from the basic legal principle, that each party shall reasonably try to mitigate losses and damages that might incur on the other party,

the Contractor has the obligation to take adequate measures to protect the works from damage during the time of suspension.

No. (5) stipulates that the Contractor shall not be granted additional suspension costs if the suspension has become necessary due to a Contractor's default in complying with its obligations.

No. (6) briefly outlines the invoicing process.

No. (7) specifies a Contractor's right to claim to require the resumption of works when a certain period of suspension has elapsed.

Nos. (8) and (9) deal with the resumption of work. The Contractor has to check the state of the works and has to repair any damage to the works. The Contractor is entitled to claim the additional costs related to the resumption of works, provided that these costs do not result from a failure to take adequate protection measures at the time the suspension was ordered.

3.11 Force Majeure

Every EPC contract must have a provision allocating risks resulting from a Force Majeure event.

a) Subject Matter

Force Majeure events are unforeseeable events that are not within the reasonable control of one of either party, to the EPC contract. Typical examples are natural catastrophes, such as freak waves and volcanic eruptions, or man-made disasters like wars and nuclear incidents. Such events may have severe impacts on a project, ranging from damages to existing structures, to the devastation of the entire construction site and surrounding landscapes.

b) Associated Risks and Interests

It would be against the notion of fair play and good faith if only one party should bear the consequences of a Force Majeure event, as both parties have complied with their contractual obligations and no party is to blame for the Force Majeure event. Usually, the contract grants a termination right to each party, if the Force Majeure event should last longer than a certain period specified in the contract[59].

59 See below chapter 3.18.5.

c) Drafting Example

(1) Force Majeure means the occurrence of any event or circumstance, beyond the reasonable control of and not reasonably foreseeable and avoidable by the affected Party which materially and adversely affects the ability of the affected Party to perform its obligations under the Contract; provided that, where the affected Party is the Contractor, such material and adverse effect shall not have occurred due to the Contractor's failure to design and construct the Works in accordance with the Employer's Requirements or the requirements of this Contract.

(2) Events and circumstances constituting Force Majeure include the following events and circumstances to the extent they satisfy the requirements of Clause (1):

a. Acts of war, hostilities (whether war be declared or not), invasion, act of foreign enemies;

b. ionizing radiation, or contamination by radio-activity,

c. pressure waves caused by aircraft or other aerial devices traveling at sonic or supersonic speeds;

d. rebellion, revolution, insurrection, military or usurped power or civil war;

e. riot, civil commotion or disorder;

f. epidemic or plague;

g. any material effect of the natural elements, including lightning, fire, earthquake, tsunami, flood, cyclone, typhoon, blizzards or tornado,

h. strikes, labor disputes, lockouts or labor shortages, (other than those occurring on the Site unless part of a nationwide strike),

(3) Neither Party shall be considered to be in default or in breach of its obligations under the Contract, to the extent that performance of such obligations is delayed or prevented by any circumstances of Force Majeure or, as the case may be, Foreign Force Majeure that arises after the Effective Date of the Contract, provided that the provisions of this Clause (3):

a. shall not apply with respect to the Employer's obligations under the Contract to make payments to the Contractor, except for that part of the payments which relate to any part of the Works which cannot be performed by the Contractor because of circumstances of Force Majeure;

b. shall not affect the rights of the Contractor under the Contract to Costs and/or an extension of time of the Scheduled Provisional Acceptance of Works Dates in the event of the occurrence of Force Majeure.

(4) lf either Party considers that any circumstances of Force Majeure have occurred which may affect performance of its obligations, it shall notify the other Party thereof as soon as practicable, but not Iater than seven (7) Business Days after the date on which the Party claiming Force Majeure knew of the commencement of circumstances of Force Majeure.

(5) Upon the occurrence of any circumstances of Force Majeure, the Party affected by the circumstances of Force Majeure shall take all reasonable steps to mitigate the effects of such circumstances of Force Majeure and shall endeavor to continue to perform its obligations under the Contract as far as reasonably

practicable. If the continuance is rendered impossible (or commercially unreasonable) by Force Majeure, the Contractor shall take, on the Employer's written direction, all steps that it can to protect the Works during the continuance of such circumstances of Force Majeure.

(6) If the Contractor would incur additional Costs in complying with the Employer's directions under Clause (5), then the matter shall be treated as an Employer's Change of Scope under Clause XX [Change of Scopes].

(7) If circumstances of Force Majeure have occurred and continue for a period of twelve (12) successive or twenty-four (24) cumulative months then, notwithstanding that the Contractor may by reason thereof have been granted an extension of time for Provisional Acceptance of Works , either Party shall be entitled to serve a notice to terminate the Contract. If, at the expiry of a period of 28 Days upon receipt of the notice of termination, the Force Majeure shall still continue, the Contract shall terminate.

(8) If the Contract is terminated under Clause (7), the Contractor shall be paid the value of the work done.

d) Drafting Example Explanation

No. (1) defines the Force Majeure event in an abstract way as an event "beyond the reasonable control of and not reasonably foreseeable and avoidable by the affected Party". Furthermore, this provision clarifies that a Force Majeure event cannot result from a failure of the Contractor to comply with its obligations, which shall be illustrated by the example below:

Example:

For a large scale industrial project the Contractor has taken the obligation to select a material to be used in covering the inner walls of a huge boiler, which enables the later plant operator to quickly heat up the boiler. In the course of technical discussions with the Employer, the Contractor proposes to use a relatively new material with a special alloying that is supposed to be more durable than materials used so far in the construction business. The Contractor decides to use that new material, but at the time when the industrial plant is close to enter into the commissioning phase, the Contractor informs the Employer that costly welding measures have to be taken in order to prepare the boiler for commissioning.
The reason why these extra measures are necessary is, that the new material has turned out be durable, indeed, but due to its durability lacks flexibility and hence is inclined to crack due to temperature differences in a quick heating-up process.

The Employer is of the opinion that the Contractor has to carry out the extra measures at its own expense, whereas the Contractor claims that the surprising features (i.e. inclination to crack) of the new material constitute a "Force Majeure Event" which excuses the Contractor from implementing the necessary measures at its own costs.

In this situation the Employer is probably right demanding the extra welding works to be carried out at the Contractor's expense. The selection of a suitable material is part of the Contractor's scope of works, and by proposing to use the new material, the Contractor has taken the risks associated with new materials in respect of which the Contractor lacks sufficient experience. The weakness in the new material must be regarded as defect that the Contractor has to rectify.

No. (2) supplements the abstract definition given in no. (1) by specific examples for Force Majeure events.

No. (3) stipulates that a Force Majeure event does not put a party into default, if the Force Majeure event impedes the fulfillment of obligations. The provision also stipulates that the Employer is not able to invoke a Force Majeure event in order to avoid payments to the Contractor for the part of the works that is not affected by the Force Majeure event. Furthermore, the provisions grant the Contractor an extension of time and delay costs.

No. (4) obliges both parties to quickly inform each other of a Force Majeure event having taken place and subsequently no. (5) obliges the Contractor to commence reasonable mitigation measures in accordance with the directions given by the Employer. The costs resulting from these mitigation measures are reimbursed and treated as a variation[60], no. (6).

Finally no. (7) stipulates a termination right in the event of a prolonged Force Majeure event and no. (8) determines the final payments that the Employer has to make to the Contractor in the case of such termination.

3.12 Subcontracting

Every EPC Contractor will employ sub-contractors for the performance of individual packages of the scope of works. Hence, EPC contracts should contain provisions on subcontracting in order to ensure that the Employer remains in control of the project.

a) Subject Matter

Any person or company that the Contractor hires to perform works or services related to the EPC scope of works and services is a sub-contractor. Depending on the amount of works that are performed by the Contractor itself, it might even be that the greatest part of the scope of works and services is performed by companies that

60 As to variations, see chapter 3.4.

the Employer might not even know. Particularly, Employers who have high quality standards in their own organization, try to establish transparency with regard to the sub-contractors involved in the project execution. If there were no provisions in the EPC contract concerning sub-contractors, all the sub-contractors involved by the Contractor would be a "black box" for the Employer. That would circumvent the Employer's efforts in analyzing the Contractor's abilities in the tender phase. For this reason, the clauses regarding subcontracting should be given sufficient attention in the drafting and negotiation process.

b) Associated Risks and Interests

It is a commonly accepted rule that preventing problems from arising is generally more advantageous than solving problems that have already arisen. Therefore, the Employer seeks to ensure, that sub-contractor companies fulfill some minimum quality standards before these companies enter the construction site. Particularly, sub-contractor companies that do not have implemented basic health and safety standards represent a potential risk for the Employer, as any incident on site causing injury and death to workers will delay the project and is likely to produce negative press. So, Employers usually wish to have as much information on the sub-contractors as possible and – preferably – would wish to give prior consent to any sub-contractor that the Contractor intends to engage.

The Contractors on the other hand, usually dislike interference with their sub-contractor sourcing by the Employer for mainly two reasons. First, Contractors often employ sub-contractors they have worked with before. This is a quality issue, as the Contractor has contractually committed to fulfill certain quality standards and hence, wishes to employ only sub-contractors that the Contractor can trust to deliver the required quality standard. The reason for this is that the Contractor might be exposed to Employer's defect liability claims. If now, the Employer refuses a specific sub-contractor, the Contractor has to engage another sub-contractor the Contractor has, potentially, no experience with. Second, the Contractor runs the risk of delaying the project if it would have to consult with the Employer each time the Contractor wants to engage a sub-contractor.

In the negotiation phase the Contractor often proposes, and the parties later on agree on a list of sub-contractors from which the Contractor may freely choose throughout the project execution. In this list, the parties sometimes (depending on the strictness of the Health & Safety Regulations in place) distinguish between sub-contractors that need to enter the construction site in order to perform their scope of works and (more remote) sub-contractors who perform their works without entering the construction site (i.e. suppliers). The reason for this distinction is that the Employer might want to check sub-contractors entering the site more diligently (health and safety!) than those who never turn up on site.

Very often, the Contractor wants to extend any limitations of liability that the EPC provisions grant the Contractor also to its sub-contractors. The reason for this is that

the Employer is entitled to sue sub-contractors for damages in tort without being restricted by any limitation of liability, because there is no contractual relationship between the sub-contractors and the Employer. In particular, small sized sub-contracting companies often do not want to be fully liable for damages they cause on site, as a potential recourse of the Employer would force these companies to file for insolvency. Before consenting to such extension of protection against liability, the Employer should discuss the issue with the Contractor. If, for example, the Contractor intends to subcontract with a huge, financially strong company taking over 75 per cent of the whole scope of works from the Contractor, then there is little reason for the Employer to give away the chance to get "full grasp" of the sub-contractor, if that sub-contractor should become liable for a major damage.

The Employer often does not only wish to have transparency on the sub-contractors, but sometimes Employers even limit the level of sub-contracting in order to prevent a potentially endless chain of sub-contracting. The logic behind such restriction is that the risk of failures and defects is likely to increase the more sub-contractors and sub-sub-contractors are involved.

It is recommended here to limit the level of sub-contractors. Depending on the capability of the Employer to oversee the connected risks, a maximum of 3 levels of subcontracting (i.e. Contractor plus three levels of subcontractors) should be sufficient.

c) Drafting Example

(1) In respect of *those items or parts of the works and services* listed in Appendix XX [List of Sub-Contractors] the Contractor is free to place orders, at its discretion, on any *item of equipment, works or services* listed in Appendix XX [List of Sub-Contractors] with any of the *sub-contractors* listed thereon for that item. If the Contractor intends to select, for any of those items *or parts of the works and services*, a *sub-contractor* not indicated in Appendix XX [List of Sub-Contractors], the prior agreement of the Employer shall be obtained, which agreement shall not be unreasonably withheld or delayed. The Contractor is free to sub-contract at its discretion for any Equipment which is not listed in Appendix XX [List of Sub-Contractors].

(2) The Contractor shall also ensure that the unexpired term of any warranty given by any Sub-Contractor shall be assigned by the Contractor to the Employer at the end of the Defect Liability Period.

(3) The Contractor shall ensure that all its sub-contracts relating to the Works are freely assignable by the Contractor to the Employer upon termination of the Contract or the Contractor's employment thereunder.

(4) It is expressly agreed that, save as provided in any warranty provided by a Sub-Contractor to the Employer, no Sub-Contractor in any circumstances whatsoever (with the exception of liability for death or personal injury or property damage caused by willful or negligent acts or omissions) shall be under any obligation, responsibility or liability to the Employer for or in respect of any loss, damage

or injury of whatsoever kind and howsoever arising. Without prejudice to the generality of the foregoing, every limitation and exclusion of liability of the Contractor contained in the Contract shall also extend to protect every such Sub-contractor. Notwithstanding this Clause (4), the Contractor shall be liable to the Employer for the acts, omissions, and work of its Sub-Contractors as fully as if they were the Contractor's own, and the fact that any member of the Contractor consortium also serves as a Sub-Contractor to the Contractor consortium or any other member shall not limit its liability as a member of the Contractor consortium.

d) Drafting Example Explanation

No. (1) refers to a list of sub-contractors where the parties have specified sub-contractors for specific pieces of equipment and specific works and services. For all works and services not listed the Contractor is free to subcontract with any sub-contractor, without prior consent of the Employer. If the Contractor wants to choose a sub-contractor for a listed item upon which the parties have not previously agreed, the Contractor needs the Employer's approval prior to engaging the new vendor in question.

No. (2) creates additional value for the Employer, as the Contractor has to ensure that warranties given to it by its sub-contractors are assigned to the Employer, in the case that these sub-contractor warranties are valid beyond the defect liability period that has been agreed upon in the EPC contract.

No. (3) is an important provision that secures the progress of the project even in case the Contractor leaves the works due to termination. As the Employer is only tied to the Contractor and has no separate "contractual strings" to the sub-contractors, both the Contractor and the sub-contractors would abandon the project if the EPC contract, as the only "legal bond", were terminated.

At this point, the Employer would have to contract with the sub-contractors directly in a very bad negotiation position. In order to secure the future of the project even if the EPC contract is terminated or the Contractor is incapable to fulfill its obligations (e.g. due to insolvency proceedings) no. (3) ensures that any subcontracts shall be freely assignable to the Employer. This gives the Employer the peace of mind that even in this worst case scenario, the sub-contractors will remain available for the project.

Finally, no. (4) deals with the issue of the sub-contractors' limitation of liability. Apart from that, this provision clearly states that the Contractor assumes full liability for the acts and omissions of its sub-contractors. Furthermore – if the Contractor is a consortium of several companies – those companies forming the consortium are prohibited from circumventing liability just because such companies are acting as sub-contractors in parallel.

3.13 Inspections of the Works

Provisions on the "inspection of works" serve the quality interest of the Employer.

a) Subject Matter

In addition to the functional and performance tests at the end of the commissioning phase of an industrial project, the Employer usually wants to secure that it has the contractual right to inspect the quality of the works at any time during project execution.

b) Associated Risks and Interests

For the Employer, interim tests and inspections ensure that the Employer receives what it pays for. Further, it minimizes delay risks as the early detection of quality issues (ideally in the factory of the supplier and not on the remote site) avoids double work. For the Contractor, however, any Employer's request to conduct an inspection bears the risk of a disruption of the progress of the works. Furthermore, quality checks are also perceived as a risk, as such inspections might reveal findings that prove quality nonconformities. Even if there are no negative findings, each inspection causes costs, which the Contractor does not want to bear. With that in mind, Contractors seek to keep the Employer's entitlement to demand additional tests and inspections at a minimum. These contrasting interests often result in carefully balanced provisions on inspections and testing.

c) Drafting Example

(1) The Employer may require the Contractor to carry out any test or inspection not described in this Contract. The Contractor's reasonable extra costs necessarily incurred in the carrying out of the test or inspection shall be added to the Contract Price and the Contractor will be entitled to additional time for performance of the Works in accordance with Clause XX [Extension of Time], only if the test shows that the relevant Works conform with the requirements of the Contract, but otherwise all costs will be borne by the Contractor.

(2) If any Equipment or any part of the Works fails to pass any test or inspection, the Contractor shall either rectify or replace such Equipment or part of the Works to the Employer's satisfaction and shall repeat the test or inspection upon giving a notice to the Employer. The Contractor shall not be entitled to any extension of time, extra costs or other relief from its obligations under this Contract as a result of any repeat testing or inspection, including any additional testing that may be required by the Employer or any relevant Authority as a result of any rework performed under this Clause (2).

(3) The Contractor agrees that neither:

   a. the execution of a test or inspection of the Equipment or any other part of the Works; or
   b. the attendance or non-attendance by the Employer's nominated inspector(s) at any such test or inspection; nor
   c. the issue of any test report; nor

d. any other monitoring or inspection of any kind,

shall release the Contractor from any obligations or liabilities under this Contract.

d) Drafting Example Explanation

No. (1) entitles the Employer to request an inspection or a test of a piece of equipment, even if that specific inspection or test is not expressly anticipated in the EPC contract. In order to balance the above described interests of the Contractor, the provision determines that the Contractor shall be granted an extension of time and related delay costs if the inspection or test should demonstrate the proper quality of the works. If the quality is below the agreed standard, however, the Contractor has to bear all costs of the tests and inspections and has to rectify the non-conforming parts of the works. Of course, the Contractor is not granted an extension of time for performing the remedial works under these circumstances.

No. (2) provides a set of rules similar to no. (1) but dealing with repeated tests and inspections (for checking the quality of any previously done remedial works).

No. (3) is a general clause for clarification that no test, inspection, test report, etc. can be construed as to alleviate the Contractor from any of its obligations under the EPC contract. This is important as contractors argued in the past that the responsibility shifts back to the Employer because of having tested and accepted parts of the works.

3.14 Commissioning and Testing

Provisions on commissioning and testing are very common in EPC contracts for industrial facilities.

3.14.1 The Commissioning and Testing Phase

The commissioning and testing phase constitutes the "showdown" phase of the project. Usually, expert commissioning teams will be sent to the site by the Contractor in order to perform the commissioning works. The tension is almost "tangible" at that point in time as the project is close to the scheduled completion date (and the Contractor is threatened with delay liquidated damages if a major defect or failure in the plant systems should occur) and the systems of the new industrial plant will be started up for the first time.

3.14.2 The Commissioning and Testing Sequence

The illustration below shows a typical commissioning and testing procedure for an industrial plant:

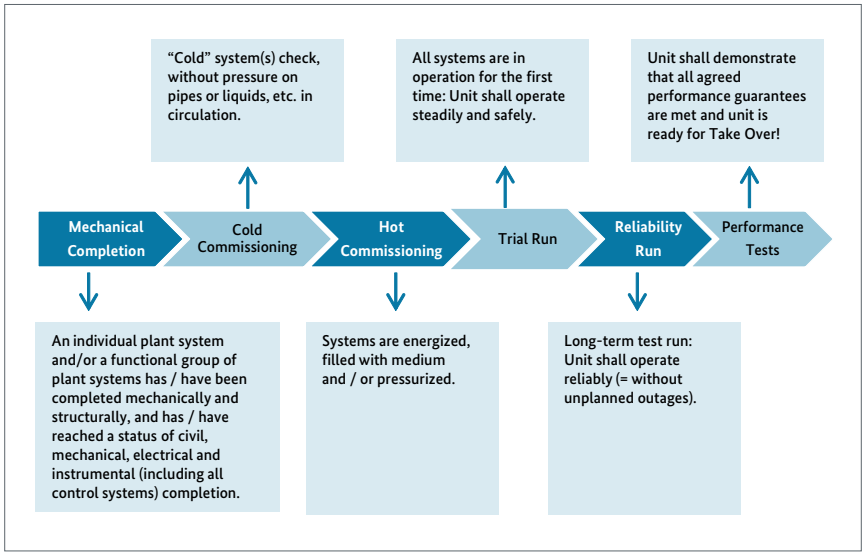


Illustration 26: Typical Commissioning and Testing Sequence

a) Mechanical Completion

Mechanical completion does not describe a distinct point of the progress of works, but there may be several "mechanical completions" of individual plant systems or sub-systems. A common description of mechanical completion is, when an individual plant system and/or functional group of plant systems have been completed mechanically and structurally, and have reached a status of civil, mechanical, electrical and instrumental (including all control systems) completion and have been put into a tight and clean condition. So, there are no fluids in the systems or pressure on the pipes yet, but the mere mechanical assembly and construction process has been completed. Often, the Employer conducts a joint inspection with the Contractor of the relevant systems that have reached the status of mechanical completion.

b) Cold Commissioning

Cold commissioning means that a system that is mechanically completed is checked without putting the system in operation. Cold commissioning tests are, for example, insulation tests of the electrical equipment (electrical motors, cables), off-load tests (pumps, fans, valves, etc.) or the calibration of all measuring devices (switches, transmitters, etc.).

c) Hot Commissioning

As soon as the cold commissioning checks have successfully been completed, hot commissioning will start. Hot commissioning means that the plant systems are energized, filled with media and/or pressurized for the first time.

d) Trial Run

Trial run is the period where the plant is being put into operation and optimized to meet the contractually agreed performance. The trial run shall demonstrate that the plant can be operated in stable and safe condition and is fit for its purpose and so, can be operated in the defined operating modes.

e) Reliability Run

The reliability (test) run is performed to demonstrate that the plant is able to work and produce in a reliable, stable manner and operates as per design intent near its process limits. The test should start within short period after the satisfactory completion of the trial run. The time after the trial run is usually used by the Contractor for checks, examinations and investigations in order to secure that the plant is ready for the reliability (test) run.

f) Performance Test(s) / Guarantee Test(s)

The performance tests shall demonstrate that the industrial plant meets the agreed Absolute and Minimum Performance Guarantees, as well as the Performance Guarantees. If the performance tests have successfully been completed and all other acceptance conditions as defined in the EPC contract have been fulfilled, then the Employer has to accept the works and to take over the plant[61].

3.14.3 Example EPC Contract Wording

Experience has shown that the commercial terms and conditions of an EPC contract should not penetrate too deeply into the (technical) details of the commissioning process. Usually, Contractors have their own commissioning procedures, particularly when the Contractor is also the manufacturer of the main equipment (e.g. for the power train of a gas power station). It should be sufficient to outline basic commissioning requirements in the EPC contract and to discuss the commissioning guidelines that the Contractor submits in respect of hold points and witness points within the commissioning procedure.

a) Drafting Example

(1) The Contractor shall, in order to achieve Provisional Acceptance of the Works, proceed with the Works in the following sequence whereat the successive process step requires the successful completion of the preceding process step:
   a. carry out all Construction Works and Commissioning Preparation of the Unit systems; and then
   b. achieve Mechanical Completion of the Unit systems; and then
   c. execute all cold and hot commissioning Works necessary for the individual systems and components; in order to

61 As to the acceptance of works, see chapter 3.6.3.

d. start the 72 hours Trial Run of the plant as detailed in Appendix XX [Commissioning and Testing] and following the successful completion of the Trial Run,
e. perform the 30 Days Reliability Run as detailed in Appendix XX [Commissioning and Testing] and then,
f. conduct the Performance Test as detailed in Appendix XX [Commissioning and Testing].

(2) The Employer and the Contractor are each entitled to order the cessation of any commissioning Works if there are indications for Defects [such as high vibrations or other abnormal parameters] and the continuation of the Works is likely to:
a. result in damage to the Works or other property or personal injury; or
b. breach any condition specified in any applicable Laws or Authority Approvals.

(3) If a plant system should fail to pass a test during the commissioning activities, the Contractor shall as a precondition for a repeated test:
a. search for the root cause for the failure, and
b. inform the Employer about the root cause of the Defect and demonstrate the rectification of such Defect.

(4) *Notwithstanding* Clauses (1) to (3), the Trial Run shall not commence without the Works having successfully passed all prior tests and inspections in accordance with this Contract. The same shall apply with respect to all tests and inspections required by any Authority to be performed as condition for the Trial Run.

(5) The Unit shall not be operated during any Trial Run in excess of:
a. the limits allowed by any manufacturer as a condition of any Equipment;
b. the limits imposed by applicable Law and Authority Approvals; and
c. the limits stated in the Employer's Requirements.

(6) Notwithstanding any other provision of this Contract, the Employer shall be entitled to all products and revenues generated or earned at or by the Power Plant, including as a result of the Trial Run.

(7) The Employer and any of its' respective Representatives may monitor the conduct of the Trial Run including to ensure compliance with the terms and conditions of this Contract and applicable Laws and Authority Approvals.

(8) The Trial Run has been successfully completed, if all the requirements of Appendix XX [Commissioning and Testing] have been fulfilled. If the plant fails to pass the Trial Run successfully, or if a Trial Run is stopped before its completion due to a Defect or other causes the Contractor has taken responsibility for in the Contract, that Trial Run shall, be repeated as soon as practicable. All appropriate adjustments and modifications are to be made by the Contractor to the plant with all reasonable speed and at its sole cost and expense before the repetition of any Trial Run. The Contractor shall have the right to perform up to two repeated Trial Runs within a remedy period of 3 Months from the start of the initial Trial Run. Without limitation of the Employer's other rights according to this Contract, the Employer may

terminate this Contract for Contractor's default, if the plant fails in two repeated Trial Runs or the remedy period of 3 Months has expired.

(9) The Reliability Run shall be conducted by Employer's personnel under the supervision and sole responsibility of the Contractor and as detailed in Appendix XX [Commissioning and Testing]. Clauses (1) to (8) shall apply accordingly.

(10) The Performance Test shall be conducted as detailed in Appendix XX [Commissioning and Testing] and Clauses (1) to (8) shall apply accordingly with the exception that the applicable remedy period shall be one month. The Performance Test has been successful, if

a. the Plant has met the Absolute Performance Guarantees and the Minimum Performance Guarantees; and
b. during the Reliability and Performance Tests the Plant operated continuously without any shutdowns or outages due to any Defect, the absence of such Defect to be proven by the Contractor; and
c. all requirements by Law or Authority, in particular the requirements set forth in the relevant Permits, have been fulfilled; and
d. all Project Documentation as requested in Appendix XX [Project Documentation] to be submitted by the Contractor until end of the Reliability and Performance Tests have been submitted; and
e. all other requirements as set forth in this Contract have been fulfilled.

b) Drafting Example Explanation

No. (1) outlines the sequence of commissioning steps to be followed. The technical details of the different test runs are described in an Appendix so that the terms and conditions can refer to this Appendix to a great extent [62].

Nos. (2) and (3) set rules for the whole commissioning and testing phase. According to no. (2), both parties may stop the pertaining commissioning activity if the plant's integrity or health of the personnel is at stake. No. (3) ensures that in the event of a failed test the Contractor diligently investigates the cause of the failure and takes remedial actions prior to repeating the test.

Nos. (4) to (8) further detail the Trial Run procedure and constitute model provisions that are applicable also to the Reliability Run and to the Performance Tests. It is important to stipulate that the revenues earned by the industrial plant during the testing phase belong to the Employer, as stated in no. (6). It is also important to limit the number of allowable repeat trial and reliability runs, in order to prevent the Contractor from starting the tests again and again, hoping to pass the test by coincidence (as delay liquidated damages may already "press" on the Contractor). Note that any remedy period granted for a repetition of a final test should be calculated so as to fall into the time scope of delay liquidated damages. In the drafting example, the remedy periods add up to a maximum period of seven months

62 As to the relevance of appendices, see chapter B.2.3.1.

[3 months for the trial run (clause 8) + 3 months for the reliability run (by reference in clause 9) + 1 month for the performance test (clause 10)]. If such a maximum remedy period were agreed in an EPC, then the clause on liquidated damages would have to be aligned with that period. For the purpose of this guideline the maximum period for delay liquidated damages in the drafting example below in chapter 3.16.5 has been determined to be 270 days (= 9 months), so that there would be sufficient coverage (and hence, sufficient pressure on the Contractor) by delay liquidated damages. If the preparation for a repeated test shifted the completion outside the time frame of delay liquidated damages, the Contractor might feel relaxed and might not accelerate the works, as no delay liquidated damages would no longer fall due.

No. (9) states that the Employer's personnel shall operate the plant during the reliability run, under the supervision of the Contractor, so that the Employer's personnel is able to gather first experience with the new plant while the Contractor's specialized staff still is on site.

No. (10) finally lists the conditions that have to be fulfilled in order to successfully pass the performance test and to arrive at the plant take over. *This list has to must be individually drafted, taking into account the project specifics and applicable legal requirements.*

3.15 Performance Guarantees

In industrial projects, the Employer and the Contractor agree on a set of technical and commercial values constituting the performance guarantees the plant has to meet. The EPC contract has to secure that all values relevant for the Employer are stated and that the legal consequences of a failure to meet one or more of these values are clearly defined and correctly linked to the clauses on performance liquidated damages and delay liquidated damages.

3.15.1 The System of Performance Guarantees

There is no fixed system of performance guarantees. It depends on the type of project and technology that is used as to what kind of performance guarantees the Employer needs. However, industrial projects very often show a threefold system of performances guarantees including Absolute Performance Guarantees, Performance Guarantees and Minimum Performance Guarantees, which are a sub-category of the Performance Guarantees. This basic system is shown in below illustration:

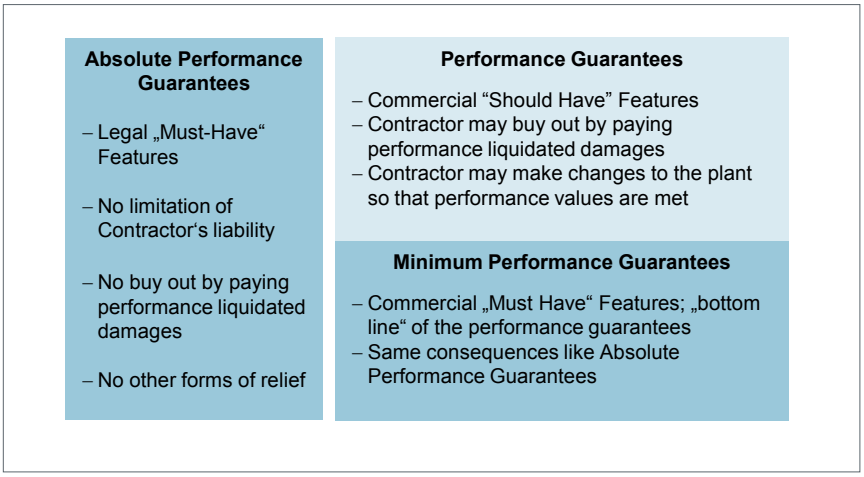


Illustration 27: System of (Absolute/Minimum) Performance Guarantees

3.15.2 Absolute Performance Guarantees

Regarding the profitable business that the Employer intends to expand with a new industrial plant, the new plant will have to satisfy certain “must haves”, i.e. performance features which are indispensable for the Employer: otherwise the business case would collapse. Without these most important quality and performance features the plant would simply be unacceptable for the Employer. For example, if a newly built power plant exceeded legal limitations on noise emissions, the Employer could not operate the plan. If he did so, he would risk having to pay administrative fines or – even worse –being ordered to stop operation by an administrative decision. For that reason, the Employer demands from the Contractor to grant contractual guarantees, or “contractual promises”. that the plant will fulfill certain performance features in any event. These guarantees are often called “Absolute Performance Guarantees” and trigger harsh legal consequences if the Contractor should not be able to deliver a product that shows the guaranteed features.

a) The Nature of Absolute Performance Guarantees

The requirements secured by Absolute Performance Guarantees are usually technical values which are required by law and/or the responsible authorities. This means that, failure to meet one or more requirements secured by Absolute Performance Guarantees would make the operation of the plant illegal and authorities would stop the plant’s operation. Very often, the relevant values are stated in the operating permit of the relevant plant as a condition for the permission to commercially operate the plant.

Example:

Power plants usually have to meet legal requirements with regard to emissions such as the maximum noise levels, maximum allowed flue gas values and maximum heat output in the cooling water. These values are tested by the relevant authorities, or the plant operator has to measure the values and to transmit the values to the responsible authority. The legal limits of allowed emissions are secured by Absolute Performance Guarantees.

b) Consequences of Not Fulfilling Absolute Performance Guarantees

As the compliance with legally required maximum or minimum values is crucial for the commercial operation, a plant that does not meet these requirements is of no value for the Employer. Therefore, the Employer will reserve the right to refuse plant acceptance if the performance tests at the end of the commissioning phase demonstrate that the values are not met (and the Contractor has breached its contractual promise, the Absolute Performance Guarantee). The Contractor has to remedy the works and adjust the mechanics of the plant to the extent necessary and has to demonstrate in a repeated performance test that the plant can be operated in accordance with the applicable law. Usually, there are no other contractual remedies and the Contractor is not entitled to buy its way out of the problem by paying performance liquidated damages. In a worst case scenario neither the Contractor nor any other replacement Contractor is able to adequately fix the plant. This means that the Employer will have to terminate the contract for Contractor's default. Due to the limitation of liability included in every EPC contract, the Employer will not be able to fully recover its financial losses from the Contractor.

3.15.3 Performance and Minimum Performance Guarantees

Performance Guarantees and Minimum Performance Guarantees often secure commercially important quality features.

a) The Nature of (Minimum) Performance Guarantees

Performance Guarantees secure commercially relevant values influencing the economics of the plant. Minimum Performance Guarantees are the "bottom line" of the Performance Guarantees, representing the minimum value of a commercially relevant figure that needs to be met as otherwise the economics of the plant operation would significantly suffer[63]. So, while the Minimum Performance Guarantees constitute the "must have", the Performance Guarantees constitute the "should have".

63 See Illustration 27: System of (Absolute/Minimum) Performance Guarantees, p. 136.

Example:

For power plants, the Employer usually requests to receive Performance Guarantees and Minimum Performance Guarantees for features such as electrical and heat efficiency, electrical and heat output, ramp-up times and – very importantly – availability (which means a guaranteed undisturbed operation time without unplanned outages) of the power plant. Most of these values consist of a range of values, so that for electrical output, for example, the Minimum Performance Guarantee (a 'must have'!) might be 1.000 Megawatt and the Performance Guarantee (should have!) might be 1.100 Megawatt.

b) Consequences of Not Fulfilling (Minimum) Performance Guarantees

The legal consequences of a failure to meet a Performance Guarantee and / or a Minimum Performance Guarantee differ significantly. If the plant performance is better than the value of the Minimum Performance Guarantee, but worse than the value of the Performance Guarantee, then many EPC contracts leave it to the Contractor to select whether it will remedy the works so that the plant will meet the Performance Guarantee or pay performance liquidated damages instead of repairing the plant. If, however, the plant performs below the value of the Minimum Performance Guarantee, then the Employer is entitled to refuse plant acceptance. Hence, the legal consequences for not meeting the Minimum Performance Guarantees are the same as for not meeting the Absolute Performance Guarantees.

Example:

In the previous example, the parties have agreed that the Minimum Performance Guarantee for electrical output must be 1.000 Megawatt and the Performance Guarantee shall be 1.100 Megawatt. If the performance test demonstrates that the power plant is able to produce only 950 Megawatt electrical output (below the Minimum Performance Guarantee) then the Employer will reject the plant and not issue the certificate of acceptance.

If the plant is capable of producing 1.050 Megawatt, the power plant may be fixed and re-tested or the Contractor will pay the agreed amount of performance liquidated damages for the missing 50 Megawatt of electrical output.

If the power plant produces 1.200 Megawatt, then of course, the Contractor will have performed even better than it was obliged to do, and the Employer will be more than satisfied with the plant performance.

3.15.4 Example EPC Contract Wording

A typical wording might look as this:

a) Drafting Example

(1) The Contractor acknowledges and agrees that its obligation to achieve the Absolute Performance Guarantees and the Minimum Performance Guarantees are:
   a. absolute obligations under this Contract which are not subject to any liquidated damages or other forms of relief or acceptance; and
   b. not subject to the limitations of liability according to Clause XX [Limitation of Contractor's Liability].

(2) If the Absolute Performance Guarantees or the Minimum Performance Guarantees are not met, the Contractor shall, at its cost and expense, make changes, modifications and/or additions to the Unit or any part as may be necessary to meet the Absolute Performance Guarantees and Minimum Performance Guarantees.

(3) If the Performance Guarantees are not met, but the Absolute Performance Guarantees and the Minimum Performance Guarantees are met the Employer may, at its option, choose to either request from the Contractor to make changes, modifications and/or additions to the Unit or any part as may be necessary to meet the Performance Guarantees or to demand payment of the Performance Liquidated Damages specified in Appendix XX (Absolute Performance Guarantees & Performance Guarantees).

(4) If the Employer decides to request changes, modifications and/or additions to the Unit in order to meet the Performance Guarantees, the Contractor shall notify the Employer upon completion of the necessary changes, modifications and/or additions and repeat the Power and Reliability Test until the Performance Guarantees have been met.

(5) If the Contractor does not meet the Performance Guarantees within 90 Days after the date that the Unit first achieves the Minimum Performance Guarantees, or such other date as may be agreed by the Parties, the Employer shall not be obliged to accept any further remedial and/or modification measures and the Contractor shall pay the relevant Performance Liquidated Damages.

(6) The Parties agree that the Performance Liquidated Damages are a fair and reasonable pre-estimate of the damages likely to be sustained by the Employer as a result of the Contractor's failure to meet the Performance Guarantees. The Performance Liquidated Damages are not meant and shall not be construed as a penalty.

(7) The payment of Performance Liquidated Damages is in complete satisfaction of the Contractor's obligation to achieve the Performance Guarantees. Upon the payment of the Performance Liquidated Damages by the Contractor, the Employer shall, subject to all other conditions for achieving Provisional Acceptance of Works having been satisfied, issue the Certificate of Provisional Acceptance of Works.

(8) The Contractor's obligation with respect to the payment of Performance Liquidated Damages is in addition to the Contractor's liability for Delay Liquidated Damages under Clause XX [Delay Liquidated Damages], provided that the overall

liability for delay liquidated damages and performance liquidated damages shall not exceed XX% of the Contract Price.

b) Drafting Example Explanation

No. (1) describes the system stating that the Absolute and Minimum Performance Guarantees constitute absolute obligations that the Contractor must fulfill without any other form of relief.

Nos. (2) to (4) outline the different consequences of a failure to fulfill the Absolute or the Minimum Performance Guarantees, respectively. Here, the Employer shall have the right to decide whether the plant shall be adjusted or whether the Contractor shall be obliged to pay performance liquidated damages, if the plant performs better than the minimum criteria but below the Performance Guarantees. In this context, no. (5) sets a deadline for the Contractor to achieve. Also the Performance Guarantees as upon expiry of that deadline, the Employer is not obliged to accept further modifications to the plant but can request to be paid performance liquidated damages.

No. (6) is a descriptive declaration of "fairness" rather than a stipulation of legal consequences. The reason for this provision is that under some jurisdictions, the agreed amounts of liquidated damages are subject to court revision. This provision shall prevent that a court might rule that the amount of liquidated damages as agreed in the EPC contract does not properly reflect the Employer's potential losses, and thus could be declared void.

No. (7) stipulates that the Employer is not entitled to claim higher amounts or other remedies than the performance liquidated damages, which is a sole and exclusive remedy clause to the benefit of the Contractor.

Finally, no. (8) is a valuable provision as it points out that performance liquidated damages are to be paid and are to be treated separately from the delay liquidated damages. At the same time, the provision refers to the overall cap on liabilities, thus limiting the Contractor's obligation to pay liquidated damages (be it for delay, or be it for performance) to an amount not exceeding 35% of the agreed contract price[64].

64 See also the drafting example for delay liquidated damages in chapter 3.16.5.

3.16 Liquidated Damages

The rights and remedy system of an EPC contract always comprises liquidated damages as a legal consequence.

3.16.1 Liquidated Damages vs. Penalties

While in practice, penalties and liquidated damages are often perceived in their economic effect as being the same, it is of utmost importance to realize the difference as the effects can be very different. For example, in contracts under English law, penalties are prohibited by law and the agreement of penalties would render the pertaining contract clauses invalid.

As the term *liquidated damages* reveals, they are compensations for a loss incurred by one party. In fact, liquidated damages are payments from one party to the other as lump sum compensation for losses caused by one party. The parties agreed on the lump sum payment before the actual losses accumulated.

It is important to note that liquidated damages will not compensate the actual loss that a party incurs. The EPC contract will always have provisions on limitations of the Contractor's liability, which will put a cap on the amounts payable as liquidated damages. Hence, in many cases, the Employer will – as a first step – request the Contractor to modify and fix the plant so that the performance guarantees are met. Only if these repair measures fail, will the Employer claim to be paid liquidated damages.

In contrast to liquidated damages, a *penalty* shall not primarily compensate for a loss that one party incurred. It shall "punish" a party for a misconduct or violation of contractual obligations, and motivate that party right from the outset to comply with its contractual obligations.

If the Employer contemplates implementing penalties into the EPC contract, it must ensure that contractual penalties are valid under the applicable law. For that reason most of the EPC contracts renounce penalty systems completely and rely on liquidated damages instead.

3.16.2 Performance Liquidated Damages

Performance liquidated damages are for payment if the constructed plant or facility does not meet certain performance criteria which were agreed to in advance and which are clearly stated as "Performance Guarantees" in the EPC contract[65].

65 See above chapter 3.15.

Performance liquidated damages partly compensate for the loss that the owner of an industrial plant will incur due to the lack of performance of the plant in question. The calculation of the appropriate amount of liquidated damages is usually prepared by the specialists working on the financial model of the project. As liquidated damages shall compensate for a loss, there should be some reasoning behind the payable amounts. Therefore, the Employer's commercial specialists should calculate the loss that is likely to incur if – for example – the installed new production line is only capable of producing 500 units instead of the promised 550 units.

3.16.3 Delay Liquidated Damages

Delay liquidated damages compensate for delays in the project execution process. In that situation, the Employer will be able to commercially operate its new facility later than expected.

a) Delay Liquidated Damages for Internal Milestones

Sometimes, EPC contracts fortify certain project milestones with liquidated damages for delay. The reason is that there may be some time-critical milestones (on the critical path[66]) prior to the completion date, which must be met by the progress of works to avoid severe delays of the entire project.

Example:

A mine operator wishes to have installed strong diesel engines and new conveyor belts. The site (the mine) is surrounded by swamplands and the roads leading to the mine can only be used for transporting heavy equipment in January and February, when temperatures are usually below freezing point. The dusty and partly muddy roads and the surrounding swamplands are frozen at that time of the year and are solid enough to bear the weights to be transported. The payment milestone "delivery of diesel engine at site" is scheduled for 28th February at the latest. The Employer has put delay liquidated damages on that latest date for delivery, because a later delivery will hardly be feasible due to the road conditions and the project is likely to be delayed until the next winter.

It is fair – and the Contractor will address this in the negotiations – to stipulate in the relevant EPC provisions that the amounts of project milestone delay liquidated damages are reimbursed to the Contractor, if the Contractor should be able to meet the scheduled date for completion and acceptance, e.g. by means of acceleration measures. In such event, the grounds for liquidated damages vanish as – at the end – the final date for take-over is not delayed.

66 See above chapter 3.8.

b) Delay Liquidated Damages for Completion Date

The scheduled date for completion of works and acceptance is the most important date of the whole project and the Employer will see to it that this date is sufficiently "backed" by delay liquidated damages. Usually, the delay liquidated damages are expressed in an amount to be paid by the Contractor to the Employer per each day of delay.

As, for example, a delay of four months can be rather "expensive" for the Contractor, the Contractor will often argue that at least a part of the delay, e.g. two months out of the four months, result from delay causes that the Employer has to take responsibility for. That is why the Employer should diligently record the processes and progress on site in order to refute this type of claims[67].

3.16.4 Limitation of Liability

Contractors will always seek to limit their exposure to liability to the maximum extent possible. The respective caps on liability are often a bargain in the negotiations for balancing the Employer's interest in compensating its potential losses, and the Contractors' interests to minimize their risk exposure. Experience has shown that Contractors calculate "buffers" in their figures for the caps on liability in their first quotations so that there is "room for improvement" in the negotiations.

3.16.5 Example EPC Contract Wording

Below, an example is given on how the theoretical explanations above can be transformed into a typical contract wording with regard to delay and performance liquidated damages[68]:

a) Drafting Example

(1) If the Contractor fails to achieve the Provisional Acceptance of Works by the Scheduled Provisional Acceptance of Works Date for the Unit, the Employer shall be entitled to payment by the Contractor of liquidated damages as set out in Clause (3) for such period as the delay shall continue.

(2) Payment according to this Clause shall be to the exclusion of any other remedy of the Employer in respect of the Contractor's failure to timely achieve Provisional Acceptance of Works, but shall not relieve the Contractor of the obligation to complete the Works or from any of its other obligations, risks or liabilities under the Contract. Liquidated damages under this Clause shall be payable within twenty (20) Days after the end of the month in which they accrue.

67 See above chapter 3.9.

68 For a wording of a clause regulating performance liquidated damages, see also the drafting example in above 0.

(3) In the event that the Provisional Acceptance of Works has not been achieved by the Scheduled Provisional Acceptance of Works Date, then for each Day from and including the Scheduled Provisional Acceptance of Works Date to the actual Provisional Acceptance of Works Date the Contractor shall pay to the Employer liquidated damages. Such damages shall be calculated and paid at the indicated rate per Day:
Late Completion:
a. For the first 90 Days upon the Scheduled Provisional Acceptance of Works Date: $$$.$$$,00 per Day;
b. For the period including the 91st Day until the 270th Day upon Scheduled Provisional Acceptance of Works Date: $$$.$$$,00 per Day, provided that the total liquidated damages so levied under this Clause shall not exceed 30 percent (30 %) of the Contract Price and the overall liability for delay liquidated damages and performance liquidated damages shall not exceed 35% of the Contract Price.

b) Drafting Example Explanation

No. (1) sets out the Employer's basic entitlement to collect delay liquidated damages.

No. (2) is a sole and exclusive remedy clause to the benefit of the Contractor. Furthermore, it stipulates the payment date for delay liquidated damages.

No. (3), finally, displays the specific rates for each day of delay and, important for the Contractor, specifies the limits of the Contractor's liability, which in this example is capped by 30 per cent of the contract price for delay liquidated damages and by 35 per cent of the contract price for both, performance and delay liquidated damages. This means that if the plant fails to be completed in time (so that delay liquidated damages accrue) and, in addition, does not perform as it should perform (so that performance liquidated damages accrue) the sum of the added up performance and delay liquidated damages is capped at 35 per cent of the contract price. If the Employer's losses go beyond that amount, the Employer will have to bear the exceeding losses itself.

3.17 Defect Liability

The Contractor's liability and the Employer's rights with regard to potential defects in the works *always* have to be addressed in an EPC contract.

3.17.1 Subject Matter

A defect is any non-conformity of the works and services within the quality requirements of the EPC contract.

a) The Contractor's Defect Liability and Performance Obligations

EPC contracts usually provide a whole system of rights and obligations as to defects.

(i) Prior Acceptance

If a defect is detected by the Employer prior to acceptance, it is often very difficult for it to force the Contractor to remedy that defect immediately without respective contractual regulations. The reason for this is the turnkey nature of EPC, meaning that the Employer concludes the EPC contract and will then take over the plant after its completion without playing an active role in the process. What happens on site, in the meantime, is left completely to the Contractor.

So if the Contractor notices a defect, it is his decision whether such defect is remedied instantly or at a later point in time. However, Employers usually seek to install a continuous quality control system throughout the project execution and wish to limit the freedom of the Contractor in this regard. EPC contracts therefore contain not only provisions on additional inspections and tests in order to enable the Employer to detect defects in the works at any time[69], but also stipulate the Employer's right to demand remedial works before acceptance. Once a defect has been detected, the Employer therefore is entitled to require remedial works to be carried out by the Contractor and (as a last resort if the Contractor should fail to rectify the works) to engage a third party Contractor to do the remedial works. The Contractor has to bear all costs related to the remedy works or costs incurred due to the engagement of another Contractor. Furthermore, the Contractor is not entitled to claim an extension of time for the period it takes to re-do some parts of the works, or to make good any defects.

(ii) After Acceptance / Defect Liability Period

As soon as the Employer issues the certificate of acceptance to the Contractor the "project world turns around": The Contractor hands over the site to the Employer, the risk of loss and random damages passes to the Employer, and the Contractor leaves the construction site. The Employer is responsible for proper operation and maintenance of the facilities now. What is left from the EPC program of mutual rights and obligations of Employer and Contractor is the defect liability period (also called "defect liability period"). During the defect liability period, the Contractor has to return to the site in order to remedy any defect in the works, meaning any quality non-conformity of the works. Conversely, the Contractor is not obliged to make good any defect or damage to the facilities that is caused by improper operation and maintenance by unlawful acts and omissions of third parties, by the Employer's personnel, or *is caused* by coincidence, provided that the risk in the works has already been shifted to the Employer.

Depending on the kind of defect (see below), there may be different defect liability periods, with different expiry dates.

69 See above 3.13.

(iii) Legal Particularities

There are two important legal particularities that the Employer should be aware of when dealing with defect liability issues:

a. Defect Liability prior to and after Acceptance

Some jurisdictions distinguish between the Employer's rights pertaining defects prior to and after acceptance of the works. In some continental European jurisdictions, the Contractor has the primary obligation to deliver a result that is free of defects. Before the Employer has accepted the result, the Contractor is in charge of rectifying all defects and the Employer has no direct defect liability rights. Only after acceptance does the Contractor's primary obligation to perform turn into the secondary obligation to remedy defects. The Employer is then entitled to claim the remedy of the defect, damages or reduction of the contract price. In other jurisdictions, however, the Employer's defect liability rights do not depend on the acceptance of the works, but on the fact that the Employer may claim defect remedies during the execution of the project and prior to the scheduled completion date.

Example:

The Contractor has completed a chemical plant and acceptance has taken place. The Contractor has installed some electrical switches that shall automatically switch off the engines when a certain temperature in the system with chemical fluids is reached. Due to a defect in one of the switches (each of which has a value of 20 USD), the chemical fluids catch fire and the production facility is partly destroyed. The damage amounts to 100.000 USD.

The Employer requests from the Contractor to fulfill its defect liability obligations and to repair the destroyed part of the production facility. The Contractor argues that it will deliver a new electrical switch, but that the damage to the production facilities due to the fire does not fall within the scope of remedying defects, but rather constitutes an indirect damage.

In order to clarify the system of rights and remedies pertaining todefective works, the EPC contract should always stipulate that the Employer is entitled to execute its defect liability rights against the Contractor at any time.

b. Defect, Direct Damage and Indirect Damage

Some jurisdictions also distinguish between the defect as such, and the further direct and indirect damages caused by that defect.

In order to prevent such potential pitfalls of the applicable law, and to avoid disputes on the interfaces between the specific defect and the damages that might be considered as being part of the defect (direct damages) or as being excluded from

the defect liability (indirect damages), EPC contracts usually stipulate an obligation to make good any defects and any damages resulting from such defects.

b) Different Types of Defects

There are several different "kinds of defects" that should be addressed in the EPC contract:

(i) Defects in the Works

A defect with respect to the works generally means that the works do not comply with the requirements of the contract, are not free of defects in material, workmanship and title or are not designed to be fit for their purpose.

(ii) Latent Defects in the Works

Latent defects in the works are any non-visible defects that cannot be identified during the periodic inspections for maintenance with ordinary care and without profound testing and examinations prior to the expiry of the defects liability period. These are hidden defects or structural defects that may impact on the performance of the industrial plant or facility only after some years of operation.

(iii) Spare Part Defects

As to spare part defects, the definition for defects above applies mutatis mutandis (with the necessary adaptations).

(iv) Latent Spare Part Defects

Pertaining latent spare part defects, the definition above can be applied mutatis mutandis (with the necessary adaptations).

3.17.2 Example EPC Contract Wording

A typical contract wording covering the issue of defect liability might read as follows:

a) Drafting Example

(1) If:

a. during the execution of the Works prior to the Date of Provisional Acceptance of Works any Defect is found, or

b. during the Defects Liability Period of XX Months *upon Provisional Acceptance of Works*, any Defect is found, or

c. during the Latent Defects Liability Period of XX Months *upon Provisional Acceptance of Works*, any Latent Defect is found;

d. during a Spare Part Defect Liability Period of XX Months *upon delivery to the Employer's storage facilities*, any Spare Part Defect is found; or

e. during a Latent Spare Part Defect Liability Period of XX Months *upon delivery to the Employer's storage facilities*, any Latent Spare Part Defect is found

the Contractor shall, at the times that the Employer reasonably requires and in a manner which does not interfere with the commercial operation of the Unit, promptly and at the Contractor's sole cost and expense, repair, replace or otherwise make good (as the Employer shall reasonably determine) the Defect, Latent Defect, Spare Part Defect or Latent Spare Part Defect (the "Defect" or "Defects"), as the case may be, as well as any damage to the Unit caused by the Defects.

(2) If the repair of a defective part of the Works fails to be successful after the second attempt of repair, the Contractor shall fulfill its obligation to make good by supplying and installing a new, unused and un-repaired Material.

(3) The Contractor shall investigate and, in the case of a Defect make good, all parts of the Works that are of the same kind as the ones that had to be exchanged in accordance with the preceding sentence in order to prevent future Defects.

(4) The Contractor shall bear all incidental costs associated with any repair, replacement or making good performed. The Defects Liability Period and/or the Spare Parts Defects Liability Period (but not the Latent Defects Liability Period) will recommence from the date of completion of such repair, replacement or other making good in respect of the part(s) of the Unit or Spare Part so repaired, replaced or otherwise made good.

(5) The Contractor shall at its sole cost and expense and if required by the Employer, search for the cause of any Defect under the direction of the Employer. The Employer may at any time require the Contractor to investigate any part of the Works or Materials, which the Employer in its reasonable judgment finds defective.

(6) If the Contractor fails to commence the remedial work necessary to remedy a Defect or any damage to the Unit caused by a Defect within a reasonable time, the Employer may proceed to do or cause to be done, such remedial work, and all costs incurred by the Employer shall be reimbursed to the Employer by the Contractor as a debt due and payable on Employer's demand. The performance of any remedial work by or on behalf of the Employer in accordance with this Clause (6) shall not relieve the Contractor of any obligations or liabilities under this Contract.

(7) In respect of the periods set forth in Clause (1) which may be extended in accordance with Clause (4),

a. no Defects Liability Period shall extend beyond the date XX Months after the Date of Provisional Acceptance of Works; and

b. no Spare Part Defects Liability Period shall extend beyond the date XX Months after such Spare Part is delivered to the Employer's storage facilities; and

c. the Latent Defects Liability Period and the Latent Spare parts Defects Liability Period shall end XX Months after the Date of Provisional Acceptance of Works.

b) Drafting Example Explanation

No. (1) lists the different types of potential defects of the works, and obligates the Contractor to remedy any defects prior to and after the date of provisional acceptance of works. This encompassing obligation to make good does not only comprise the defect as such, but also any damage that is caused by the defect.

No. (2) stipulates the obligation to deliver a new part if the repair of the defective part should not be successful.

Nos. (3) and (5) are important, as they require the Contractor actively searches for similar defects and the cause of the defect. Without such provision, the Employer would have to notify the Contractor to come and remedy a serial defect that is "embedded" in many alike (standard) parts (see example below), each time such defect became obvious. That would be a cumbersome procedure. Furthermore, no. (3) picks up the case of a series of damages and obliges the Contractor to check and repair any parts that might be flawed with such series damage.

Example:

The owner of a new building discovers that the window handles often come loose, so that the windows cannot be opened any more. Each time that defect occurs, the owner calls the Contractor and requests the Contractor to repair the pertaining window. Now the owner wants the Contractor to check all windows of the building, as the loose handles seem to be a series defect in a certain production line of the windows in question. The Contractor rejects this request arguing that its liability for defects does not comprise the inspection of all parts that might potentially be affected by a defect. Instead, the defect liability obligation would be targeted exclusively to a specific defect.

No. (4) shifts all costs for remedial works to the Contractor and determines that the defect liability period for any repaired part or replacement part that is installed shall re-commence. In order to prevent a perpetuated loop of defect liability periods no. (7) stipulates limitations on the liability periods.

No. (6) allows the Employer to engage a replacement Contractor at the expense of the Contractor, if the Contractor does not comply with its defect liability obligations.

3.18 Termination

If the circumstances in a large scale project necessitate a termination of the EPC contract, then this is probably the worst situation a project can face. Any EPC contract will have to provide some guidelines for that worst case scenario.

3.18.1 General System: Grounds and Consequences of Termination

Usually, EPC contracts distinguish between different termination scenarios and provide a different set of rules for each scenario. Hence, it is worth clarifying the basic structures prior to scrutinizing details of the various termination scenarios. The basic termination scenarios can be visualized as follows:

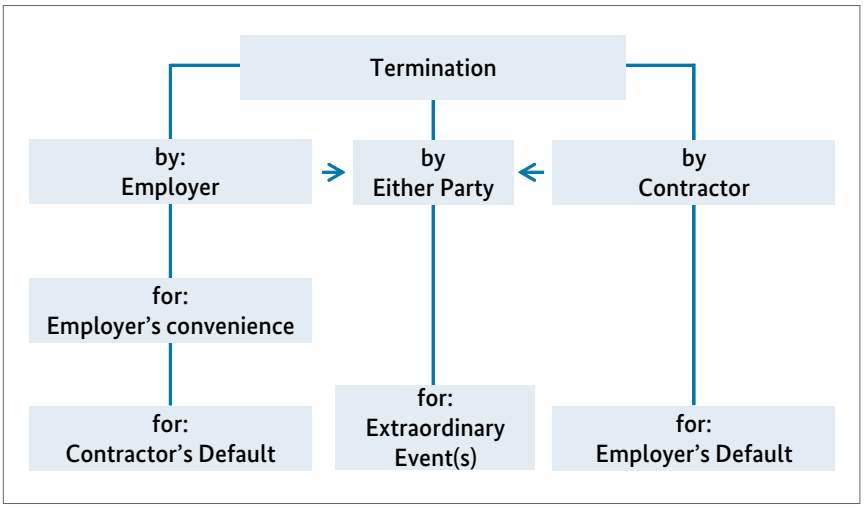


Illustration 28: Termination Scenarios

a) Grounds for Termination

Basically, both, the Employer and the Contractor, have termination rights under an EPC contract. The Employer usually has the right to terminate at any point in time and for no reason (Termination for Employer's Discretion (or Convenience)), and the right to terminate the EPC contract if the Contractor is in default of its obligations (Termination for Contractor's Default). Both grounds for termination entail specific consequences. The reason why the Employer is granted a termination right for discretion, is that no Employer shall be forced to execute a project that for some reason, has become unattractive for the Employer just because the EPC contract ties the Employer to the Contractor. In short, no investor (employer) shall be forced to complete an investment (project) that is no longer economically, or for some other reason, in the investor's (employer's) interest any more. However, it needs to be kept in mind that a discretionary termination comes with high costs for the Employer. The contract will be terminated, but the Employer will have to pay the Contractor's profits included in the contract price plus accrued costs, e.g. payments made by the Contractor for material ordered etc.

The Contractor is bound more strictly by the EPC contract: He is not entitled to a discretionary termination! The Contractor's sole right to terminate the EPC contract

is when the Employer is in default of its obligations, which is mainly the obligation to pay the agreed amount of money in accordance with the agreed payment schedule. Contractors are not granted a discretionary termination right, because Contractors are not "investors", so it is not their equity that is at stake. Moreover, there would be no satisfactory or measurable compensation for the Employer if the Contractor had the possibility to leave the project at its discretion, e.g. because more money can be earned with the available resources elsewhere. In this case the Employer would face serious difficulties to have the project completed at all.

b) Consequences of Termination

In the event of a termination of an EPC contract for a large scale infrastructure project, many consequences have to be considered. The Employer will usually have a high interest in the Contractor finishing some specific works and protecting the "as is" works prior to leaving the site. Furthermore, the Employer usually is interested in receiving all rights and titles to the works, as well as the relevant documentation, in order to complete the project with another Contractor. There might also be unresolved claims that the parties still have to settle.

The Contractor usually wants to have a fair remuneration for all works and services completed, and wishes to be reimbursed for all costs it has incurred due to the termination (e.g. cancellation costs for terminating sub-contractor agreements; repatriation and re-employment of personnel, etc.). Furthermore, the Contractor wants the Employer to return the bank bonds as well as any other guarantee for performance that it previously submitted to the Employer.

When dealing with the consequences of termination, the grounds for termination play a decisive role. Surely it makes a difference whether the Employer terminates the contract for its discretion (e.g. because it has decided to abandon the project and to invest elsewhere) or whether the Employer terminates the contract because of the Contractor being in default (e.g. the Contractor has stopped works on site due to a mismanagement in its planning for resources).

So, all of the above stated concerns, interests and considerations have to be cast into specific provisions in order to provide the parties with as much guidance as possible, in a situation where tension between the project teams will be highest and when it is hardest for the parties to deal with each other in a fair manner.

3.18.2 Termination for Convenience by Employer

a) Subject Matter

Termination for Employer's discretion (or convenience) means that the Employer does not need a specific ground or a valid reason for terminating the project. In fact, the Employer can just stop the project because it is not interested any more

in executing the project for whatever may be the internal (e.g. change in corporate strategy) or external (e.g. bank crisis) drivers for such decision.

b) Associated Risks and Interests

For the Employer a discretionary termination is probably the most expensive form of separation from the Contractor. So, other ways to separate from each other, such as a jointly agreed dissolution contract, should be thoroughly considered prior to issuing the notice of termination.

c) Drafting Example

(1) The Employer may, at any time by written notice to the Contractor, terminate the Contract and upon receipt of such order the Contractor shall cease the execution of the Contract.

(2) Upon receipt of such notice, the Contractor shall prepare and submit to the Employer a fully detailed statement of account of the Works completed, and shall to the extent that such matters are verified and approved by the Engineer, be entitled to the following payments to be made by the Employer:
   a. the amounts payable in respect of any completed works or services and a proper proportion for any partially completed works or services;
   b. the cost of materials or goods reasonably ordered for the Works or for use in connection with the Works, provided these materials or goods have been or will be delivered to the Site and provided the Employer receives title to these materials and goods;
   c. any amounts reasonably occurred for cancelling sub-orders;
   d. a mark-up of XX per cent on all payments due to the Contractor according to this Clause (2) covering overhead and profit.

(3) If the total amount required by the Contractor in accordance with Clause (2) is more than the amount paid or payable by the Employer to the Contractor under the Contract up to the date of termination of the Contract, then the Employer shall pay to the Contractor the difference within 90 Days of receipt of a pertaining invoice. If such total amount is less than the amount paid or payable by the Employer to the Contractor under the Contract up to the date of termination of the Contract, then the Contractor shall pay to the Employer the difference within 90 Days upon the Engineer's approval pursuant to Clause (1).

(4) Clause (1) to (3) shall constitute the sole and exclusive rights and remedies to which the Contractor is entitled in the event of a termination pursuant to Clause (1).

d) Drafting Example Explanation

No. (1) stipulates the Employer's right to terminate the EPC contract at any time, when it appears convenient to the Employer.

No. (2) obliges the Contractor to record the "as is" status of the works in a report that the Owner's Engineer then has to approve. The report is the basis for the payments that the Contractor may claim. Lit d., which stipulates an additional payment of 15 per cent of all payments due in respect of the termination for convenience, as

compensation for loss of profit and overhead costs, is important in order to avoid cumbersome litigations on the amount of Contractor's margin and appropriate rates for overhead in Contractor's home offices.

No. (3) contains a mere description of the applicable payment procedure upon termination for convenience.

No. (4) is important as it limits the Contractor's rights to those contained in the respective provisions on discretionary termination. This sole and exclusive remedy clause is important, as experience has shown that Contractors – particularly those which have an effective claim management – often tend to be "innovative" in finding justifications for all kinds of claims in the context of such a termination scenario.

3.18.3 Termination by Employer for Contractor's Default

a) Subject Matter

EPC contracts usually provide a comprehensive and exclusive list of grounds that shall constitute a material breach of the contract by the Contractor and hence, entitle the Employer to terminate the EPC contract for Contractor's default.

b) Associated Risks and Interests

As the consequences of a termination for Contractor's default are generally more convenient to the Employer than the consequences of a termination for Employer's discretion, Employers sometimes label their termination as termination for Contractor's default, though the true nature of the termination is that of a discretionary termination. Usually, Contractors claim (rightly) such termination as being a termination for the Employer's convenience and will reject the termination. If the Contractor in such a situation should be interested in abandoning the project himself, the Contractor might avail itself of the Employer's alleged termination for cause. It might base a termination for Employer's default on it, in order to sneak out of the project in an effective and economic manner! Therefore, the Employer is well advised to "prepare the (legal) grounds" for its termination by issuing clear and precise notifications of non-conformity of works to the Contractor in order to build a case for a termination for Contractor's default. The Employer should carefully avoid that a termination for Contractor's default lacks legal justification, and may be exposed to the risk of being interpreted by a court or arbitrators as actually a termination for the Employer's convenience.

c) Drafting Example

(1) In the event that
   a. the Contractor assigns the Contract or sub-contracts the Works in their entirety, or

b. the Contractor fails to pay liquidated damages when due, or
c. any bond required to be in effect under Clause XX expires without being duly replaced, or
d. the Contractor fails to achieve Provisional Acceptance of Works on or before the earlier of the Scheduled Date for Completion or the date upon which maximum liquidated damages have accrued under Clause XX; or
e. subsequent to the Effective Date, and without reasonable excuse the Contractor has failed to commence the Works or has suspended the progress of the Works for twenty (20) or more Days; or
f. despite a previous warning in writing from the Employer, the Contractor has not fulfilled its obligations under Clause [Health and Safety];
g. the Contractor has failed to make good any defect notified to it by the Employer; or
h. the Contractor has breached any other material obligation under the Contract and the Contractor has not cured or commenced cure/made substantial progress towards the cure of such breach within 30 Business Days after notice of breach is given by Employer to the Contractor; or
i. if any member of the Contractor becomes bankrupt or insolvent or goes into liquidation, or has a receiving order made against it, or being a corporation commences to be wound up; or
j. if the Trial Run, the Reliability Run and/or the Performance Test have finally failed in accordance with Clause XX,

then the Employer may give twenty (20) Business Days' notice in writing to the Contractor of its intention to proceed in accordance with the provisions of this Clause (1). Upon the expiry of such notice the Employer may, without prejudice to any other remedy under the Contract forthwith, terminate the Contractor's employment under the Contract and enter the Site and expel the Contractor therefrom, but without thereby releasing the Contractor from any of its obligations or liabilities which have accrued under the Contract and without affecting the rights and powers conferred by the Contract on the Employer.

(2) Upon such termination the Employer may itself complete the Works, or may employ any other Contractor so to do, and the Employer shall have the free use of any Temporary Works and Construction Equipment for the time being on the Site without being responsible to the Contractor for fair wear and tear thereof and to the exclusion of any right of the Contractor over the same and may, at any time, sell any of the said Temporary Works and/or unused Equipment and apply the proceeds of sale in or towards the satisfaction of any amounts due or which may become due and payable by Contractor under the Contract.

(3) On the date of taking possession of the site, delay liquidated damages shall immediately cease with respect to future periods, without prejudice to any such liability that may at that time already be recoverable from the Contractor by the Employer.

(4) Upon termination the Contractor shall deliver to the Employer copies of all Contractors Drawings, schedules, reports, books, manuals, plans, designs, models, specifications, calculations, records and inventories relating to the Project.

(5) The Engineer shall, as soon as possible after such termination, certify the value of the Works and all sums then due to the Contractor at the date of termination in accordance with Clause (1).

(6) The Employer shall not be liable to make any further payments to the Contractor until the Works have been completed or the Employer has, for all material purposes, permanently discontinued the Works. When the Works are so complete, the *Employer shall be entitled to set off any extra costs, if any, of completing the Works against any amounts due to the Contractor under Clause (5).* If there is no such extra cost, the Employer shall pay any balance due to the Contractor without undue delay.

d) Drafting Example Explanation

No. (1) enumerates the events of Contractor's default that shall entitle the Employer to terminate. The requirement to notify the Contractor of the intention to terminate is essential, as in many jurisdictions there is a mandatory obligation to give a last warning to the respective other contract party prior to cancelling an agreement. By that notice, the Contractor shall be given a last chance to comply with its obligations under the EPC contract and shall become aware of the seriousness of the situation. Lit j. is important as it provides the link to the commissioning and testing procedure, thereby closing the loop of the rights and remedy system with regard to the testing phase[70].

No. (2) secures the right to finish the project using the results of the works and services that the Contractor has delivered prior to the termination. The right to use the construction equipment on site is also important for the Employer, especially if there are special tools, like heavy hoisting equipment, that the Employer needs to have in order to progress with the works.

No. (3) stipulates that delay liquidated damages stop accruing as soon as the site has been handed back to the Employer.

No. (4) ensures that the Employer receives the complete project documentation. This provision is of particular importance, as the Employer will face difficulties in continuing with the works if he does not have all design plans, manuals etc. at hand.

Nos. (5) and (6) deal with payments upon termination for Contractor's default. The value of the "as is" works at the moment of termination is evaluated by the Owner's Engineer. The evaluation of the as-is value often boils down to a difficult evaluation and calculation of many individual cost positions and hence, is difficult to do. If, for example, milestone payments are agreed, then in an ideal case, the value of the as-is works is reflected by the payment milestones that have already been reached. The value of the as-is works constitutes an Employer's payment obligation towards the Contractor, provided that the Employer decides to finish the project (in that case

70 For learning more about testing, see chapter 3.14.

with another contractor). If the Employer has valid reasons to decide to discontinue with the works after the termination of the EPC Contract then the Contractor is not entitled to the payment of the as-is value of the works, as the as-is works are of no value for the Employer. This harsh consequence is fair, as the Contractor has set the cause for the termination by being in default of its obligations. If the Employer decides to continue with the project, but incurs additional costs, as for example steel prices have increased and the replacement contractor demands higher rates, the (former) Contractor is liable for any (reasonable) extra costs which might incur on the Employer for completing the project. If there is no Engineer, the parties have to negotiate and agree on the value of the works or have to resolve this issue in accordance with the contractually agreed dispute resolution system[71]. In order to reduce the Employer's risk of losses in the event of the Contractor's bankruptcy, the provisions rule that the Employer is not obliged to pay any amount to the Contractor prior to the completion of the works or the final abandonment from the project. This allows the offset of payments. The offset is more beneficial to the Employer than fully paying the Contractor for the works done upon termination. Then, when the project has been completed by the Employer itself, reclaim the amounts exceeding the agreed EPC price from the ex-Contractor.

3.18.4 Termination by Contractor for Employer's Default

a) Subject Matter

The Employer may also be in default of its obligations under the EPC contract. Particularly, the most important obligation of the Employer, i.e. the obligation to pay the agreed price, may not be violated without giving reason for the Contractor to terminate.

b) Associated Risks and Interests

The situation here is comparable with the situation described in above 3.18.3, but with reversed roles. The Contractor should carefully check whether the conditions for a termination for Employer's default are really fulfilled. Should the termination for Employer's default lack the legal grounds, then this might entail several negative consequences: the Employer might terminate for Contractor's default, the Employer might claim damages if the project fails due to an unjustified termination by the Contractor and the Contractor's reputation in the construction business will severely suffer, thus, impairing future business.

c) Drafting Example

(1) In the event of the Employer:
   a. failing to pay to the Contractor any undisputed amounts due as part of the Contract Price payable under the terms and conditions of the Contract,

71 As to dispute resolution, see chapter 3.23.

subject to any deduction that the Employer is entitled to make under the Contract; or

b. without good reason refusing to issue or accept any certificate, which the Employer is obliged to issue or accept under the Contract, or

c. becoming bankrupt or going into liquidation; or

d. giving formal written notice to the Contractor that it is unable to continue to meet its contractual obligations, or

e. suspending the Works pursuant to Clause XX for a cumulative period exceeding 18 months or a consecutive period exceeding 6 months unless due to any act, omission, negligence or default on the part of the Contractor,

the Contractor shall be entitled without prejudice to any other rights or remedies, to give notice in writing to the Employer of its intention to terminate the Contract (an "Intention Notice"). The Contractor may terminate the Contract by giving a further notice in writing to the Employer (a "Termination Notice") not less than 28 Days after service of the Intention Notice, provided the grounds for termination as indicated in the Intention Notice have not been remedied or commenced to be remedied.

(2) Upon termination, the Contractor shall remove all Construction Equipment from Site, clear the Site of any waste material and debris and shall hand over the Site to the Employer.

(3) In the event of such termination the Employer shall be under the same obligations as the Contractor with regard to payment as if the Contract had been terminated for Employer's Convenience, but in addition to the payments specified in that Clause, the Employer shall pay to the Contractor the amount of any other reasonable Cost in connection with or as a consequence of such termination.

(4) Nothing in this Clause shall prejudice the right of the Contractor to exercise any other rights or remedies to which the Contractor may be entitled under the Contract.

d) Drafting Example Explanation

No. (1) follows the typical drafting logic and enumerates the reasons that entitle the Contractor to terminate the EPC contract for Employer's default. Here, again, a last warning must be given to the Employer.

No. (2) obliges the Contractor to clean the site.

No. (3) entitles the Contractor to all payments that it would be entitled to if the Employer had terminated the EPC for convenience. Additionally, the Contractor can claim any costs that accumulate due to the termination.

No. (4) is a further improvement (apart from above no. (3)) for the Contractor, as it is not limited to the remedy system set forth in the relevant provisions on termination, but may invoke any right against the Employer conferred by the EPC contract.

3.18.4 Termination by either Party for Extraordinary Reasons

a) Subject Matter

A typical example for an extraordinary reason that allows both parties to terminate the EPC contract is a prolonged Force Majeure event. EPC contracts usually contain provisions on that, too.

b) Associated Risks and Interests

Neither party can be blamed for the consequences a Force Majeure event may entail. The parties will cope with the Force Majeure impacts on the project by trying to "reinstate" the project as well as possible, and sharing the consequences in respect of costs and schedule. But the parties may arrive at a point at which there is no sense in continuing with the project any longer. In order to avoid disputes on the question when this "point of surrender" has been reached, EPC contracts provide respective provisions on prolonged Force Majeure events.

c) Drafting Example

(1) If an occurrence of a Force Majeure event causes the suspension of the Works in their entirety for a period *exceeding the number of Days set forth in Clause XX (Force Majeure),* then either Party may give to the other Party 30 Days advance notice of its intention to terminate this Contract. If, at the end of that notice period the Force Majeure event is continuing, this Contract shall terminate.

(2) Upon termination pursuant to Clause (1), the Contractor shall

a. cease all further work, except for any work the Employer may specify in a notice of termination;

b. deliver to the Employer the parts of the Works performed by the Contractor up to the date of termination;

c. deliver to the Employer all documents prepared by the Contractor in connection with the Works as of the date of termination.

(3) Upon termination according to Clause (1), the Contractor shall be entitled to payments for:

a. the portion of the Contract Price attributable to the Works performed as at the date of termination;

b. the reasonable costs of any additional Works required by the Employer in its notice of termination which have been completed,

less the aggregate of all previous payments made to the Contractor by the Employer in respect of the Works.

d) Drafting Example Explanation

The clause provides a fair approach for resolving the extreme situation of a prolonged Force Majeure event.

No. (1) sets forth a clear term upon which the termination right may be executed by each party. Nos. (2) and (3) stipulate that the Contractor shall deliver all results of the project to the Employer and in return, the Employer shall pay the Contractor for all

works done and not yet paid for. *In any case, when drafting a termination clause for a Force Majeure event, both the Force Majeure clause and the termination clause should be carefully adjusted to each other in order to avoid gaps and/or contradictions.*

3.19 Intellectual Property Rights

EPC clauses on intellectual property rights (IPR) may be more or less extensively drafted depending on the technology involved and the degree of innovation and development to be applied. EPC contracts for demonstration plants with "cutting edge" technology which serve research purposes more than commercial purposes, often do without provisions on IPR completely, as the parties agree on a separate comprehensive license agreement.

a) Subject Matter

IPR comprise amongst others patent rights, design rights, utility models, copyright rights, etc.

b) Associated Risks and Interests

The Technology providers' biggest assets are their IPR on their technologies. Therefore, technology providers are always concerned about financial losses due to re-engineering activities by their clients and unlawful use of their technologies.

However, Employers, being mere operators of industrial plants, are probably only interested in being provided with the necessary rights to lawfully operate, maintain and repair the plant.

EPC clauses on IPR have to balance these interests and risks reasonably.

c) Drafting Example

(1) All intellectual and other property rights (including but not limited to patent rights and copyrights) developed or used in connection with the Works by the Contractor, including but not limited to any rights in any documents, drawings, patterns, designs, specifications, plans and other information prepared for the purposes of the Contract or the Works shall remain the property of the Contractor, but the Employer shall have an irrevocable, royalty-free, non-exclusive license to use the above mentioned property for the purposes of operating, maintaining, repairing, renewing and rebuilding the Works. Such license shall be transferable by the Employer to any transferee of the Works or any interest therein and / or to persons or institutions providing funding, (whether by way of debt or equity contribution) to the Employer.

(2) Upon and notwithstanding any termination of the Contract the Employer shall continue to have the benefit of the licenses and rights referred to in Clause (1) insofar as applicable to the portion of the Works executed before the termination occurs, and in the event of termination due to Contractor Default, the licenses and

rights under Clause (1) shall include the right to use all documents and other items referred to in Clause (1) to complete the Works and use the Works as per Clause (1).

d) Drafting Example Explanation

No. (1) describes the kind of license that the Employer expects to receive from the Contractor. It is important that the license is irrevocable so that the Employer can be certain about the continuing validity of the license once granted. It is also important that the license can be transferred, as otherwise the Employer could never sell the industrial facility (in the case of business re-organizations or in the course of divestment strategies), because the industrial facility could hardly be operated by a potential buyer without licenses for the use of the technology implemented in the various systems of the facility.

No. (2) is important in order to secure the "survival" of the license in the event of termination of the EPC contract, or else the Employer would run the risk that the license ceases to exist as soon as the EPC contract is terminated.

3.20 Indemnifications

EPC contracts usually provide provisions on mutual or unilateral indemnifications.

a) Subject Matter

Indemnity and insurance provisions should go hand in hand in EPC contracts (see above chapter 3.20 on Insurance). Indemnities determine which party has to bear the relevant insurance deductible. Moreover, indemnities clarify in which cases the Employer may take recourse to the Contractor if the Employer is sued by a third party (e.g. for reason of a patent infringement committed by the Contractor).

The drafting of an indemnity clause will depend on the type of project and the level of insurances in place. For example, EPC Contractors tendering in a petro-chemical project or an oil pipeline project will most likely seek to get an indemnity for environmental claims which exceed the maximum amounts to be paid by the environmental damage insurance taken out by the Employer for the project. In that case, the Employer would have to pay any amounts for environmental damages that go beyond the maximum amount that is paid by the insurance. The Contractor would be fully protected in that situation.

Indemnity clauses also deal with the allocation of responsibilities with regard to third party claims. Usually, the fair compromise reached in this context provides that each party is responsible for third party claims that arise out of its own willful or negligent behavior.

b) Associated Risks and Interests

Indemnity provisions determine who, ultimately, will bear the consequences of a specific event that is only partly covered by insurance coverage. Ideally, the Employer has conducted an internal risk assessment and is aware of the foreseeable risks (environmental damages, third party claims, etc.) inherent in the project. The Employer should also have checked prior to talking to its bidders which risks are covered by insurance policies already in place and whether it will be necessary to increase the insurance coverage for the project. If an uninsured risk remains, the Employer may discuss with the bidders whether they (the bidders) or the Employer shall take out an additional insurance for a special risk. The parties then have to discuss which party shall bear the risk of a damage exceeding the insurance cover. The Employer will have to weigh the probability of risk occurrence and the probable impact of such risk against the increase in the contract price that the Contractor will calculate if the Contractor should bear the risk and indemnify the Employer.

c) Drafting Example

(1) Contractor shall indemnify and hold harmless the Employer from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, defects and costs and expenses of any nature, including legal fees and expenses, in respect of:

a. the death or bodily injury, sickness or disease of any person;
b. loss or damage to any property (other than the Work or portions thereof following transfer of risk to Employer or due to Employer's Risk);
c. failure of Contractor and/or its Sub-contractors to comply with any applicable legal requirements in connection with the performance of this Contract;
d. any defect in title or an encumbrance or charge, upon any portion of the Works;
e. any claims for payment by a Sub-contractor or personnel of Contractor or of any Sub-contractor is asserted against the Employer in relation to any Equipment and Materials or services supplied hereunder;
f. any third party claims arising from Contractor's failure to perform its obligations with respect to environmental contamination in breach of Contractor's obligations under this Contract;
g. not getting insurance required *to be taken out* by Contractor as provided in Clause [Insurance],

in each case arising out of, resulting from or in connection with the performance (or lack of performance) of the Work by Contractor, and except to the extent resulting from the negligence or willful misconduct of the Employer or any Person employed by Employer in connection with this Contract.

(2) The Employer shall indemnify and hold harmless the Contractor from and against any and all suits, actions or administrative proceedings, claims, demands, losses, damages, defects and costs and expenses of any nature, including legal fees and expenses, in respect of:

a. the death or bodily injury, sickness or disease of any person;

b. loss or damage to any property (other than the Work or portions thereof); or
c. not getting insurance required to *be taken out* by Employer as provided in Clause XX [Insurance],

in each case arising out of or resulting from negligence or willful misconduct of Employer or any person employed by Employer in connection with this Contract.

d) Drafting Example Explanation

No. (1) provides a list of events that may have a cost impact on the Employer, but which shall be borne by the Contractor. Any listed event has to be read in conjunction with the last sentence so that the Contractor shall be liable for these events except to the extent resulting from the negligence or willful misconduct of the Employer.

Example (c.f. chapter 3.20 b):

The EPC Contractor engages a sub-contractor company for cleaning and staining a huge storage tank. The sub-contractor company negligently installs a scaffold inside that huge tank and does not put up signs outside the tank informing of the use of acid chemicals (for staining) at that workplace. The scaffold topples over and the employee working on top of the scaffold is badly injured. The injured person is rescued out of the tank and taken to the hospital by emergency responders. Later that day the emergency responders feel sick, start coughing and have problems with breathing. It is revealed that the chemicals used for staining the tank walls have affected their lungs. The injured responders sue the Employer for damages for bodily injury and compensation for personal suffering.

If, for the sake of an example, the Employer were liable against theemergency responders under the applicable statutory law, and the amounts at stake would surmount an insurance coverage, the Employer could base a claim for indemnification against the EPC Contractor on above no. (1) lit. f., because the EPC Contractor assumes liability for its sub-contractors (see above chapter). The negligent behavior of the sub-contractor regarding the insecure and instable scaffolding and the omitted erection of danger signs outside the storage tank, *are imputed* to the EPC Contractor under the EPC contract *so the EPC Contractor is liable for resulting consequences*. The EPC Contractor will have to pay any amounts to the Employer that the Employer has to pay to the responders according to the verdict of the court. Of course, the EPC Contractor would then check the provisions of the relevant subcontract, in order to take recourse to the sub-contractor company which has caused the incident. Furthermore, the Contractor would check the absolute limit of its liability as stipulated in the EPC terms and conditions.

No. (2) describes the reverse situation listing of events for which the Employer shall indemnify the Contractor, if the Employer or persons for whom the Employer

assumes responsibility act negligently. No. (2) lit. c. thereby is a good example of the interaction between obligations and liability in EPC provisions. Lit. c. "punishes" the Employer with the obligation to indemnify the Contractor, in the case that the Employer failed to take out and maintain the insurances that it has agreed to.

3.21 Insurances

The chapter on insurance should be read in the context of the chapter on indemnities[72].

a) Subject Matter

Insurance is a vital part of the risk allocation system of an EPC contract as insurances remove (insurable) risks from the parties. Sometimes, depending on the size of the project the chance to "hedge" risks, by taking out respective insurances, may make the project work feasible in the first place.

Insurances commonly taken out in EPC projects are:

(i) Third Party Insurance

Third party insurance is generally needed during industrial (construction) projects irrespective of the project's scale. The insurance usually covers the liability of the insured party against a third party (any person who is not a party to the EPC contract) whose body or property has been damaged by an act or omission for which the insured party is legally liable pursuant to the applicable statutory laws.[73]

It is important to note that *there is no standard insurance cover.* The events covered by third party insurance differ from country to country and depend on the program of the relevant insurance company. It is worth comparing different insurance programs and checking particularly the exclusions from the coverage.

In large scale industrial projects, very often the Employer will take out a third party insurance that names the EPC Contractor as co-insured party. If there are several co-insured parties (e.g. the Owner's Engineer, consultants, etc.), the insurance policy should provide a cross-liability provision, so that liabilities towards each other among the co-insured entities are covered, too.

(ii) Construction All Risks / Erection All Risk Insurance (CAR/EAR)

From project inception through completion and beyond, Construction All Risk and Erection All Risk provide comprehensive coverage for numerous risks of damage

72 See chapter 3.20 above.

73 Cf. the example in 3.21d): There the Employer was legally liable towards the emergency responders and transferred the case to its third party insurance for adjustment of the claims.

to the works that are inherent in construction projects. CAR Insurance covers all types of civil construction risks and includes permanent works carried out, as well as temporary works erected or constructed off-site. EAR Insurance covers plant and machinery construction risks and can be extended to include third-party liability related to work conducted on-site.

It is important to note that "All Risk" does not mean any risk that might potentially realize, but CAR/EAR insurance policies will also stipulate events and circumstances causing damage to the works, which are excluded from the insurance coverage. Therefore, the insurance policy should be carefully analyzed, particularly the exemptions to the general cover.

The answer to the question, whether the Employer or the EPC Contractor should take out the CAR/EAR insurance will mostly depend on the answer to the question, for which of them it is more cost efficient to do so.

b) Associated Risks and Interests

Both, the Employer and the Contractor, are interested in balancing their risks by utilizing insurances. Therefore, both parties seek to secure that the party who has taken out an insurance for the project will inform the other party about the conditions of that insurance and will pay the insurance premiums in due time, so that a continuing insurance coverage is secured. The party which has taken out the insurance wants to ensure that the co-insured party complies with the conditions of the insurance policy, so that the insurance cover will not be jeopardized.

Example:

The EPC Contractor engages a sub-contractor company for cleaning and staining a huge storage tank. The sub-contractor company negligently installs a scaffold inside that huge tank and does not put up signs outside the tank informing of the use of acid chemicals (for staining) at that workplace. The scaffold topples over and the employee working on top of the scaffold is badly injured. The injured person is rescued out of the tank and brought to the hospital by emergency responders. Later that day the emergency responders feel sick, start coughing and have problems with breathing. It is revealed that the chemicals used for staining the tank walls have affected the responders` lungs. The injured ambulance men sue the Employer for damages for bodily injury and compensation for personal suffering.

The EPC Contractor did not notify the Employer of the health and safety incident at the storage tank. Four weeks after the incident occurred, the Employer is surprised when it is served a writ of the lawsuit that the injured men filed. The Employer contacts the insurance company from which the Employer took out the third party insurance (at the outset of the project) and asks for adjustment of the case. The insurance company rejects any payments as the incident was not notified

to the insurance company within 3 business days as required in the applicable insurance policy.

The Employer in the above example will not receive any payments from the insurance, due to the failure of the EPC Contractor to inform it about the incident. The Employer will charge the pertaining amounts to the Contractor for breach of the contract.

c) Drafting Example

(1) Without limiting the Contractor's obligations, responsibilities and liabilities under the Contract, the Employer shall effect and maintain in force, from the Commencement Date through to Provisional Acceptance of Works, the following insurances:

a. Contractor's All Risks Insurance covering, subject to the conditions, warranties and exclusions set out in *Appendix XX [Insurance Requirements*], loss of or damage to the Works and any plant, materials and equipment for incorporation therein; and

b. Third Party Liability Insurance covering, subject to the conditions, warranties, and exclusions set out *Appendix XX [Insurance Requirements*], for injury or illness to any person or loss of or damage to any property arising out of the execution of the Works; and

c. Any other insurance(s) which the Employer is required by law to maintain in connection with the Works.

The Insurances shall be for the benefit of, and shall name as insured Parties, the Employer, the Contractor, Sub-contractors of any tier, the other Contractors, the Engineer, the Engineer's Representative the Technical Adviser and any other such parties that the Employer may elect.

(2) Without limiting the Contractor's obligations, responsibilities and liabilities under the Contract, the Contractor shall effect and maintain in force at its own expense, the following insurances:

a. professional indemnity insurance, which the Contractor shall maintain with well-established insurers of good repute, to cover any negligence, omission or default in the design of the Works for which the Contractor is responsible under this Agreement with a limit of indemnity of not less [AMOUNT] for each and every claim to be maintained by the Contractor from the date of this Agreement (or commencement of performance of the Works if earlier) until the expiry of [Number] years from Take Over of the Works;

b. any other insurances that the Contractor is required by law to maintain.

(3) The Contractor shall strictly adhere to the procedures detailed in the policy conditions. Should the Contractor fail to comply with the procedures which results in any loss to the Employer, then the Employer will be entitled to recover such losses from the Contractor.

(4) The Contractor and the Employer shall:
   a. whenever required by the other, produce the policies or certificates of any insurance which the Party is required to effect under this Agreement;
   b. make no material alterations to the terms of any insurance without the other's approval and shall notify the other forthwith if an insurer makes any material alteration to the terms; and
   c. in all respects comply with all conditions stipulated in the insurance policies which the Contractor or Employer is required to place under this Agreement.

(5) If the Contractor or the Employer fails to produce evidence of insurance cover, then the other may effect and keep in force such insurance. Premiums paid by the Contractor or the Employer for this purpose shall be deducted from or added to the Contract Price as appropriate.

d) Drafting Example Explanation

No. (1) obligates the Employer to effect and maintain a CAR and a Third Party Liability Insurance, as well as any insurance required by the applicable law. If there are any special requirements with regard to the insurance conditions resulting from the specific project, then these particularities should be described. The provision mentions also that the EPC Contractor, sub-contractors etc. shall be named as co-insured persons.

No. (2) obliges the Contractor to take out a professional indemnity insurance. The coverage of such insurance usually focuses on alleged failure to perform on the part of, financial loss caused by, and error or omission in the service or product sold by the policyholder (the Contractor). These are potential causes for legal action that would not be covered by a more general liability insurance policy which addresses more direct forms of harm.

No. (3) clears the way for the Employer to take recourse on the Contractor, if the Employer suffers losses because of the Contractor's violation of the insurance requirements[74].

Nos. (4) and (5) are "fair play" clauses that address both parties and impose obligations to produce the policies or certificates of any insurance to the respective other party. Furthermore, the provision obliges both parties to comply with the insurance policy requirements, and to refrain from making alterations to insurance policies without consulting with the respective other party. No. (5) provides the (claim) back-up for the obligations laid down in no. (4) as the party which does not demonstrate that it has affected the relevant insurances has to pay the premiums of the replacement insurance, that the respective other party may take out in such circumstances.

74 See above example in chapter 3.21b).

3.22 Taxes

a) Subject Matter

The obligation to pay taxes may have a severe impact on the economics of the project, particularly for the party on which the tax obligation is imposed. Thus, the understanding of the term "taxes", in EPC contracts, usually is an extensive interpretation comprising all financial duties towards public authorities, notified bodies or other persons or entities who have been vested with the right to collect levies, fines, etc.

b) Associated Risks and Interests

The Employer is usually interested in avoiding delays off its project, because the Contractor neglected to fulfill its payment obligations towards (tax) authorities. The Employer may also be interested in co-operating in tax issues with the Contractor, in order to obtain tax reductions or credits.

c) Drafting Example

(1) All taxes levied on the Contractor and on the shareholders and personnel of the Contractor in connection with and in the performance of the Contract, shall be paid by the Contractor or by the Contractor's personnel *and not be added* to the Contract Price. The value added tax (VAT) and all other taxes levied in connection with any payment to or income of the Contractor are included in the Contract Price, and the Contractor shall be responsible for paying the same to the relevant authorities and the Employer shall have no liability in connection therewith.

(2) The Contractor will be the importer of all Equipment brought into [country]. Customs and other import duties, import VAT or any other taxes, fees, or charges attributable to the import of the Equipment to be imported under the Contract will be paid by the Contractor directly to the relevant Government Authorities. Contractor shall indemnify the Employer for any incremental import duties, taxes, fees or charges attributable to the import of the equipment incurred by the Employer as a result of Contractor failing to comply with its import and export obligations under this Contract.

(3) The tax amounts calculated and included in the prices are based on the taxes and tax rates applicable at the signing date of the Contract under the laws and conditions of [country]. Should taxes of the [country] increase or decrease, the Contract Price is increased or decreased correspondingly or the incremental taxes are paid and borne by the Employer. There shall be no Change in Law relief under the Contract for change in taxes and fees.

(4) The Contractor shall co-operate with the Employer in order to optimize the Employer's tax obligation. The Contractor shall be liable for any loss of tax relief, deduction or credit that incurs on the Employer due to the Contractor failing to co-operate. The Contractor shall reimburse to the Employer any amount that the Employer has been obliged to pay to authorities due to a failure of the Contractor to comply with its obligations under the Clauses (1) to (4).

d) Drafting Example Explanation

In general, tax clauses should *always* be drafted by tax advisors who have knowledge about the particular tax regulations in the country where the construction site is located. Considering this, the above clause is meant as pure example of what such a tax clause could look like. In no event would it be appropriate to simply copy and paste that clause into a contract, without prior consultation of a local tax specialist.

As to the clause:

No. (1) transfers the obligation to pay all taxes to the Contractor. Tax payments shall not increase the EPC price, so the Contractor must carefully investigate and calculate which taxes and levies will fall due for bringing equipment and labor to the site. The provision further says that VAT shall be included in the contract price. Often, parties agree to the opposite, so that the contract price is stated without VAT which will be added on top. The decision on the ideal way of modeling the contract price pertaining applicable VAT should be left for the Employer's and Contractor's tax departments to make during the negotiation phase.

No. (2) transfers all import obligations and related tax and cost implications to the Contractor and is a common clause in EPC contracts.

No. (3) addresses the situation of a change in the applicable tax rates during the execution phase. As the applicable tax rates result from tax legislation, a change in the tax rates is likely to be traced back to a change in the underlying tax law. As the problem of changing tax rates has particularly been picked up in the tax clause, the provision correctly stipulates that provisions on "Change in Law" shall not apply in that context.

No. (4) finally obligates the Contractor to team up with the Employer for sorting out tax issues that may arise, for the benefit of both parties. The provision shall shield the Employer against tax optimizations that the Contractor will yield for itself and which may have negative, reverse effects on the Employer's tax obligations. As usual, the obligation to co-operate is backed by an obligation to make good all damages that may arise out of a failure to comply with that obligation.

3.23 Applicable Law and Dispute Resolution

Provisions on the applicable law and dispute resolution are usually to be found in remote places at the end of the terms and conditions. In fact, in former times, this "remote location" of the relevant provisions somehow reflected the importance that these provisions were given by the contracting parties. This has changed significantly! As an increasing number of large scale construction projects have failed in the recent past, particularly in Central Europe, and almost all projects suffer from

significant budget overruns. This has been causing disputes between Employer and Contractor: therefore, parties nowadays invest more efforts in dispute resolution systems and spend more thoughts on the substantive law they want to have applied to their disputes and the procedure they want to follow in order to resolve them.

3.23.1 The Applicable Law

The question of which law should be applied to the conclusion, execution and termination of the EPC contract, and to all potential disputes that may arise in connection with this contract, aims at the substantive law that shall govern the relationship between the parties. The substantive law only determines the legal consequences of those facts to which it is applied. In other words, the substantive law decides "what is right and what is wrong". The dispute resolution procedure, i.e. the process to be followed by the parties in order to settle a dispute in a controlled and well-regulated process, is determined separately (see next chapter 3.23.2).

If the parties fail to choose a substantive law they want to apply to their relationship, national conflict of law rules apply and determine the applicable law. As it is often difficult to predict which substantive law one ends up with when applying national conflict of law rules, the parties will always include an express choice of law provision in the EPC contract. The following example shall illustrate the (legal) difficulty, if no substantive law has been agreed upon:

Example:

A German investor has acquired real estates in Russia and has leased the land to a special purpose vehicle ("project company"), which is a joint venture between the German investor and a US American company, registered in California. The Joint Venture contract is governed by Swiss law due to an express choice of law provision. The project company intends to erect a petro-chemical plant on the premises and concludes an EPC contract with a construction company from Korea. The Korean contractor wants to secure that the contract price is paid and insists that the German investor and the US American company sign the EPC; in addition to the project company; in order to benefit from a joint liability of the three signees.

When disputes arise later in the project execution phase, the parties go to court. The court has to make a decision on the following laws that might potentially be applicable: Russian, German, Swiss, US (Federal and State) or Korean law?

It is always a risk for both parties to settle claims and disputes under substantive laws they are not familiar with. It is more difficult to assess the chances and risks of taking legal action when the applicable legal rules are unknown. In such a situation

the parties will have to fully trust their legal advisors and attorneys. The following examples shall illustrate potential pitfalls lurking when the legal rules are unknown:

Example:

A German Employer who wants to invest in Britain has agreed to an EPC contract with a French construction company as Contractor. The parties have agreed that neither party should have an advantage by applying the respective "home rules" (French or German law). Hence, the parties agree on English law to apply which they think appropriate, as the construction site is located in Britain. They agree on "schedule penalties" in case the Contractor is delayed and does not meet certain milestones with the progress of works. The parties know that such contractual penalties can be agreed upon, both under German and under French substantive law.

When serious disputes arise about delays and outstanding penalty payments, the parties take the dispute to court in Britain. The judge applies English law according to the choice of law provisions the parties have agreed in the EPC, and his verdict surprises both the Employer and the Contractor: The German Employer is disappointed being told that contractual penalties cannot be validly agreed under English law and it cannot claim any penalty payments from the Contractor. The French Contractor is delighted about the result of the court proceedings as it believed to be liable for at least "some penalty payments" – but is not.

Example:

A German Employer who wants to invest in Russia has agreed an EPC contract with a Russian construction company as Contractor. The parties agree on Russian law to apply.

In the course of project execution, to the Contractor claims considerable amounts due to him from the Employer because of several delay periods caused by the Employer. The parties negotiate and agree in a meeting in January that the Employer shall pay 50% of the amounts previously claimed.

Some months later, serious disputes arise about delays which the Contractor has caused, and the Employer claims to be paid delay liquidated damages. The Contractor argues that it is entitled to set off the Employer's payment claim against the outstanding 50% payment claim for the Employer's former delay. The Employer argues that the Contractor has waived that claim and accepted to be paid only 50% of the original claim.

As the parties fail to reach an agreement, they take the dispute to court in Russia. The judge applies Russian law according to the choice of law provision the parties

have agreed in the EPC and his verdict surprises the German Employer: The court rules that the German Employer is not entitled to the alleged payments for Contractor's delay. The reason is that the Contractor has correctly set off the Employer's claim against the outstanding 50% of the Contractor's claim resulting from a preceding Employer's delay. The Contractor has not renounced that claim in the meeting in January, as a waiver of rights under Russian law requires an express contractual agreement, which the court rules has not been concluded in the given circumstances.

The German Employer is disappointed, as it was not aware of such a legal particularity that deviates from legal rules in Germany.

In many cases, the parties agree on the substantive law that is applicable in the country where the site is located. One of the probable reasons for this is, that almost any legal system in a country stipulates mandatory rules that the parties cannot bypass by choosing another set of rules. Hence, if an alien substantive law shall be chosen, the parties have to check the *mandatory local (site) law that still is applicable,* so it is easier to take the local law in the first place. Particularly, if one of the parties is located in the country where the site is, this party will seek to get the local law agreed to anyway.

3.23.2 Dispute Resolution

Once they have agreed on the substantive law, the parties need to decide which dispute resolution system they want to implement for their project. The dispute resolution procedures to be applied, be it state courts, arbitration proceedings or others, should be carefully selected. It is worth discussing with the Contractor how disputes (and there will be some!) in the course of the project shall be resolved, while time pressure and unforeseen obstacles require full attention and concentration. It is also worth figuring out one's own requirements for an effective dispute resolution procedure. For example, the Employer usually wants to avoid that, due to long lasting dispute resolution procedures on a scope variation, the Contractor does not perform the design changes the Employer desires. The Contractor wants not to be obliged to perform works which are in dispute, prior to having clarity on whether it will be granted an extension of time and delay costs for these works. Hence, dispute resolution systems in construction projects need to find the right balance between effective and quick problem solving, and securing fair, reliable and "just" legal protection.

The following sub-chapters briefly introduce the most common dispute resolution systems and outline their basic characteristics, advantages and detriments.

a) State Court Litigation

Disputes that the parties are unable to resolve amicably are resolved in state courts, either if the parties have expressly chosen to use the state courts or if the parties have failed to agree on a specific dispute resolution procedure in the EPC contract.

Whether a state court system is suitable to solve disputes arising in large scale projects cannot be generally answered. Consequently, any Employer should consult its legal advisors and discuss the pros and cons of the state court system. Some key aspects to be checked with the court system in a specific country should be:

(i) Time

Disputes in construction projects need to be resolved quickly in order to keep the impact on the ongoing project as low as possible. Hence, long court proceedings in sometimes overloaded and under-equipped state courts must be avoided.

(ii) Cost

Court fees and fees for specialized attorneys who are admitted to act in the state courts vary significantly from country to country. Therefore, the parties should check how much litigation in state courts would cost.

(iii) Experience

In some countries there are specialized courts dealing exclusively with construction disputes, such as the Technology and Construction Court ("TCC") in the United Kingdom. The experience that judges in those courts have, surely is an advantage compared to legal systems that direct construction disputes to general civil courts. Here, too, legal consultation is necessary.

(iv) Impartiality

Depending on the legal system and political circumstances in some countries, foreign investors should carefully check whether the relevant state court system guarantees uninfluenced, impartial and neutral decision making. If there are doubts, the dispute resolution process should be taken away from state courts.

b) Alternative Dispute Resolution

Alternative Dispute Resolution ("ADR") refers to any means of settling disputes outside of the state courtroom. ADR typically includes early negotiation, mediation, arbitration and – particularly for construction - adjudication. The various ADR means can be combined with each other and even if the parties agree on a certain dispute resolution method in the EPC contract, they are always free to agree to another method for the specific dispute at stake.

(i) Negotiation

While the two most common forms of ADR are arbitration and mediation, negotiation is almost always attempted first to resolve a dispute. It is the preeminent mode of dispute resolution. Negotiation allows the parties to meet, in order to

settle a dispute by discussions, always being aware of the fact that an amicable solution serves all interests best. The main advantage of this form of dispute settlement is that it allows the parties themselves to control the process and the solution. Moreover, as long as the parties negotiate and talk with each other, the dispute still is on a low escalation level. As soon as external persons or panels are addressed for resolving the dispute, the conflict is lifted to the next escalation level, which may – but not necessarily – spoil the relationship between Employer and Contractor. Particularly when engaging in a large scale project with a several year time schedule for execution, the parties should seek to maintain a good working relationship (the "psychological" aspect of the collaboration in a project is often underestimated, particularly when huge organizations or even state institutions are involved. Therefore, one should always be aware of the fact that down the road and irrespective of the institutions involved, there are always people interacting with each other).

It goes without saying that settling a dispute by negotiating is by far the fastest and most cost effective way of resolving conflicts.

(ii) Mediation

Mediation is a structured and voluntary process aiming at creating transparency of the disputing parties' underlying interests thus seeking a sustainable resolution of conflicts. Mediators are individuals trained in negotiations that bring opposing parties together and attempt to help the parties to work out a settlement or agreement that both parties can agree to. Core elements of a mediation process are the structured way of working on the root causes of a conflict, together with the parties, as well as the attempt to uncover each party's "real interest" behind a conflict. The underlying idea of the mediation concept is to assist the parties to move away from their (formal) positions (i.e. claim) towards a mutual understanding of the other party's interests.

The following example shall illustrate the concept "from position towards interest":

Example:

In a famous restaurant, two cooks argue about the last kilo of oranges, that both cooks need for creating a delicious menu. They shout at each other and fight as neither of them has the time and the necessary ingredients to just cook another meal. Moreover, guests have already ordered their menu and the credo of the restaurant is that the guests always get served what they have ordered.

Personnel working in the kitchen have already proposed to just share the kilo of oranges, but this "fair solution" would not help either of the cooks, because both of them need to have exactly one kilo for the meal.

The owner of the restaurant, who is fortunately trained as a mediator, hears the shouting and orders the two cooks into his office. Both cooks explain to the boss why they both need the kilo of oranges and why each of them is entitled to take the oranges (position). The boss asks more questions about what the cooks intend to use the oranges for.

It turns out that one of the cooks needs the parings in order to garnish the desserts, (interest 1) and the other cook needs the pulp as ingredient for a soup (interest 2).

And so, the solution of the conflict which serves the interests best is that one of the cooks gets the parings and the other one the pulp.

Although mediation is generally a suitable tool for resolving conflicts in many areas, it is most advantageous when applied to inter-personal conflicts. If pure financial claims and interests are at stake – which is most likely the case in construction conflicts – it should be checked on a case by case basis whether mediation is the right method for resolving the dispute.

(iii) Adjudication

Adjudication or "Dispute Adjudication" is a method of dispute resolution that has been developed specifically for the construction business. It allows for construction contract disputes to be resolved on an interim basis more quickly and cost effectively, than resolution through arbitration or litigation. It is often applied in complex international construction projects. The basic idea is that the adjudication process shall not be executed away from the construction site, but the dispute shall be settled "close to the site" while personnel, equipment and material are still on site. For that purpose, the parties agree to set up either a standing or an ad-hoc dispute adjudication board (the "DAB"). The DAB is staffed with (external) expert personnel, often experienced engineers, in order to guarantee a high level of construction expertise and project experience. Ideally, one of the adjudicators is trained as a lawyer or judge, enabling him to contribute the legal aspects of the construction dispute. The timelines granted to the disputing parties for fact finding and for the presentation of positions to the DAB are short. The DAB usually makes a decision upon a hearing during which the parties present the case.

The adjudicators' decision is binding, unless or until the dispute is finally determined by court proceedings, arbitration or by agreement of the parties via negotiation or mediation. Its objective is to provide a fast working solution to an issue (pending the outcome of, or without the need for, a more formal dispute resolution procedure), so the parties can quickly resume or continue work under the contract. Experience shows that the rate of DAB decisions that are carried forward to courts or arbitration for a second decision is quite low. However, if the parties select

adjudication, then the parties should see to it that the DAB issues a written decision outlining the merits of the case, and the supporting grounds for the decision. This is necessary in order to evaluate potential chances for a revision of the decision by a court or arbitration tribunal.

In some jurisdictions (see for example the UK Housing Grants, Construction and Regeneration Act), the parties to a construction contract mandatorily have to adjudicate their disputes prior to being admitted to state courts. In order to avoid procedural mistakes the legal situation should always be checked with regard to that.

(iv) Arbitration

Arbitration is a simplified version of a trial involving limited discovery and simplified rules of evidence. The arbitration is headed and decided by an arbitral tribunal (or "panel"). To comprise a tribunal, either both sides agree on one arbitrator, or each side selects one arbitrator and the two arbitrators elect the third. Arbitration hearings usually last between a few days to a week, and the tribunal only meets a few hours per day. The tribunal then discusses and issues a written decision, or arbitral award. Opinions are not publicly recorded. Arbitration has long been used in labor, construction, and securities regulation, but is now gaining popularity in other business disputes, too.

Disputing parties often select chartered surveyors as arbitrators. Chartered surveyors are highly trained and experienced professionals, who are typically employed throughout the Construction, Land and Property sectors and often have specialized in one of those areas. Apart from taking over the role as arbitrators, chartered surveyors may also be employed by the parties as expert witnesses or as advocates presenting a party's case. The legal system that governs the procedure for arbitration is referred to as the 'seat' of the arbitration. The applicable law at the seat of the arbitrations often provides for mandatory and discretionary regulations, which allow the parties to agree how the dispute is to be resolved, whilst also providing a fallback position if a respective agreement cannot be reached. The agreement to arbitrate is commonly referred to as the 'arbitration agreement'. It can be entered into after the dispute has arisen or, as is more often the case, included in the contract or other legal agreement.

The arbitrator can be chosen by agreement between the parties, or appointed by a nominating body identified in the contract. Very popular in this respect are the "ICC Arbitration Rules" issued by the International Chamber of Commerce in Paris. The arbitrator must act fairly and impartially, and avoid unnecessary delay and expense whilst conducting the arbitration. Once the parties have made their submissions and usually after an oral hearing has been held, the arbitrator will produce his or her award. The arbitrator's award is final and binding on the parties, unless they agree otherwise. The enforcement of such an award depends on the national procedural laws of the country in which the enforcement shall take place.

However, arbitrational awards are recognized and "ranked like court judgments" in many countries. In most jurisdictions, the parties have certain mandatory rights of appeal against the arbitrator's award, e.g. challenging the substantive jurisdiction of the arbitrator, his impartiality or the award on the basis that there were serious irregularities in the arbitration procedure.

The parties can contractually enhance the grounds for appealing against an arbitration award, e.g. by agreeing on a right to appeal on the grounds that the arbitral award is based on an error of law. However, the parties should be aware of the fact that opening the gates for a revision of arbitration awards, will most probably lead to a prolongation of the entire dispute resolution process. Taking into account the enormous sums at stake in large scale projects, there is a certain probability that the party who has lost the case in arbitration will resort to an appeal against the award, hoping to be successful in the next instance. Rising costs and increasing frustration are the consequences. Thus, the parties should consider whether a system combining adjudication and final settlement in arbitration as second instance provides them with sufficient legal protection and comfort.

When selecting arbitration as (one) means of dispute resolution the parties, should keep in mind that institutions like ICC provide procedural rules for the arbitration process as such, but do not provide rules for taking evidence. The following example shall illustrate a potential pitfall with regard to taking evidence:

Example:

An Austrian Employer wanting to invest in the US has agreed to an EPC contract with a US construction company. The parties have agreed on arbitration proceedings and US law as applicable law. When serious disputes arise about outstanding payments, the responsibility for delays and the quality of the works, the parties decide to refer their disputes to an arbitration board of three arbitrators. Being used to a civil law legal system and civil law rules on proceedings, the Austrian Employer believes himself to have a fair chance to win (in the arbitration), as the claim documentation the US company has produced in pre-arbitrational negotiations seems to be quite "inadequate" to build a respective case. Furthermore, the Austrian Employer believes to be experienced in court and arbitration litigation, as it has already conducted such proceedings in civil law countries. From these proceedings in the past, the Austrian Employer knows that the rules on taking evidence prohibit one party to investigate the other party and to explore the other party's documents that the investigating party has not yet at hand. Hence, the Austrian Employer believes that the Contractor will not be able to produce evidence for its claims.

The Austrian Employer is startled, when it is summoned by the Contractor's US law firm to take part in a comprehensive discovery procedure, according to US

law, requiring from the Austrian Employer to disclose and submit a bulk of claim relevant documents that the Austrian Employer actually wanted to conceal, as the documents support the Contractor's view rather than the Employer's view. The Employer's legal counsels have to explain that under US law, there are far more chances to produce evidence for a claim than there are in most civil law procedural codes. As the parties have not agreed on rules for taking evidence, the US rules on taking evidence apply because the parties have agreed on US law in general.

Here, the IBA Rules on the taking of evidence in international arbitration issued by the International Bar Association provide a balanced approach that the parties may choose.

3.23.3 Example EPC Contract Wording

A typical wording for a choice of law and dispute resolution clause might read as follows:

a) Drafting Example

(1) In the event of disagreement between the parties as to the performance of the Work, or the interpretation, application or administration of the Contract, the Contractor shall perform the Work as directed by the Owner's Engineer. All differences between the parties not resolved by the decision of the Owner's Engineer and all disputes and claims of either party arising out of the Contract and its *execution* shall be settled in accordance with the Dispute Resolution Procedure as set forth in the following provisions of this Clause XX [Dispute Resolution].

(2) The parties shall make all reasonable efforts to resolve all disputes and claims by negotiation and agree to provide, without prejudice, open and timely disclosure of relevant facts, information and documents to facilitate these negotiations.

(3) The Parties hereby agree to establish a Dispute Adjudication Board ('DAB') in accordance with the Dispute Board Rules of the International Chamber of Commerce (the 'Rules'), which are incorporated herein by reference. The DAB shall have [one/three] member[s] appointed pursuant to the Rules. All disputes arising out of or in connection with the present Contract shall be submitted, in the first instance, to the DAB in accordance with the Rules. For any given dispute, the DAB shall issue a decision in accordance with the Rules.

(4) If any Party fails to comply with a decision when required to do so pursuant to the Rules, the other Party may refer the failure itself to Arbitration under the Rules of Arbitration of the International Chamber of Commerce (ICC). If any Party sends a written notice to the other Party and the DAB expressing its dissatisfaction with a decision of the DAB, as provided in the Rules, or if the DAB does not issue the decision within the time limit provided in the Rules, the dispute shall be finally settled under the Rules of Arbitration of the International Chamber of Commerce

by one or more arbitrators appointed in accordance with the said Rules of Arbitration.

(5) All disputes, claims and differences not settled as provided for in this Clause XX [Dispute Resolution Procedure], arising out of or in connection with the Contract shall be referred to and finally resolved by arbitration in accordance with the ICC Rules. The arbitral tribunal shall be composed of 3 arbitrators, one appointed by each party who shall select the third who shall act as chairman of the arbitration tribunal. The location of the arbitration shall be [City/State]. *The language of the proceedings shall be English.*

(6) This Agreement (and any disputes or claims arising out of or in connection with its subject matter or formation, including non-contractual disputes or claims) shall be governed by national law to the exclusion of any conflict of laws, rules or any international conventions such as the United Nations Convention on Contracts for the International Sale of Goods (CISG). National law shall also apply for the taking of evidence in proceedings pursuant to sub-clauses (1) to (5). [Alternatively the IBA Rules could be selected]

(7) This clause XX shall survive and continue to apply despite any termination or other form of cancellation of this Contract.

b) Drafting Example Explanation

No. (1) appoints the Owner's Engineer as first instance dispute resolution institution. If there is no Engineer, the parties may consider agreeing on an emergency arbitrator, which many recognized international arbitration rules provide for.

If the dispute is not resolved by the Owner's Engineer, no. (2) obliges the parties to seek an amicable solution for their dispute at any stage of the project, or at any stage of escalation.

If negotiations are stuck or fail, then nos. (3) and (4) assign the dispute to a Dispute Adjudication Board (DAB). A DAB is a fast-track and, above all, "fact oriented" procedure for resolving disputes, especially construction disputes (c.f. above chapter 3.23.2b (iii)). In practice, there is a high likelihood that the parties obey the verdict of the DAB, so that long-lasting and expensive arbitration proceedings can be prevented.

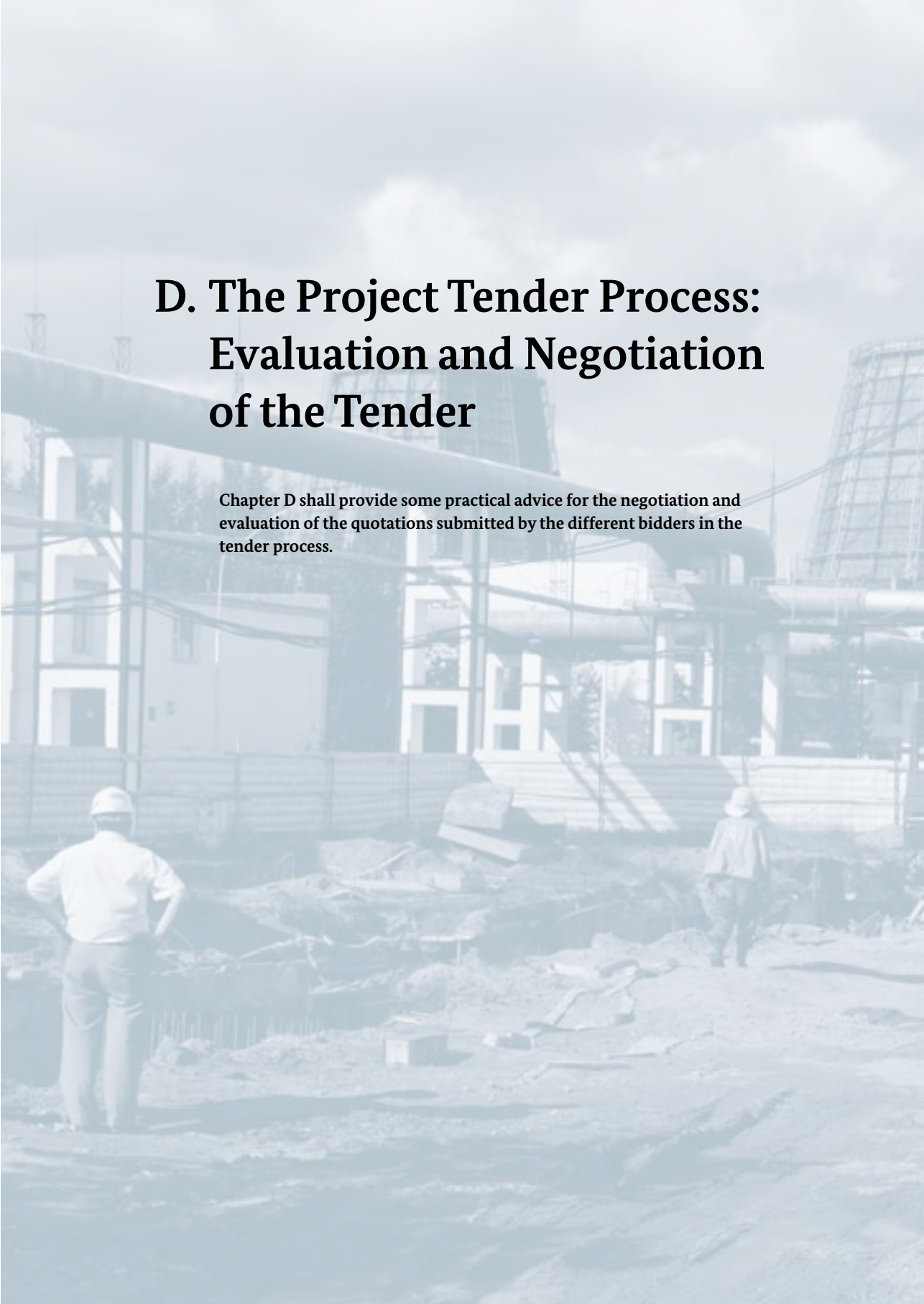
No. (5) assigns a dispute that is still unresolved to an arbitration tribunal for final settlement.

Finally, no. (6) contains the choice of law clause determining which national law shall apply and has to be applied, e.g. by the arbitration tribunal.

No. (7) protects the choice of law provisions and the agreed dispute resolution system against a potential termination of the contract. If this provision was missing, the national conflict of law rules of the country in which a party starts proceedings in the national courts, would decide on the applicable law.

D. The Project Tender Process: Evaluation and Negotiation of the Tender

Chapter D shall provide some practical advice for the negotiation and evaluation of the quotations submitted by the different bidders in the tender process.



1 Negotiations with Bidders

The negotiation phase is a crucial part of the tender process. The negotiations aim at reaching a common understanding of the scope, risks and particularities of the project and –shall lead to an agreement on the commercial conditions of cooperation between the Employer and the EPC Contractor.

1.1 Preparation for the Negotiations

As soon as the Employer has received the quotations, the respective departments in the Employer's organization will check the relevant clauses of the terms and conditions and the relevant appendices. Prior to inviting the bidders for clarification meetings, the Employer should collect its departments' main findings and secure an intense exchange of information. If, for example, the quality department has detected major changes made to the quality attachments, the commercial and legal team should be informed accordingly, so that they are alert and cautious when negotiating the quality-related EPC provisions with the pertaining bidder.

The next step will then be to prepare a negotiation schedule in order to structure the negotiation phase. Experience has shown that a tight negotiation schedule, with few buffer periods between the negotiations with the different bidders, is often less effective than a more relaxed schedule. The reason is that negotiations are progressive and iterative processes. Once initiated, they tend to develop towards a continuing dialogue between Employer and Contractor, in which each answer to a question that has been brought up during the meetings needs time for preparation. As a thumb rule, each day of negotiation requires two to four days of post-processing the results.

1.2 Clarification Meetings

Experience has shown that – regardless of the volume of the tender documents – a lot of information that bidders need to have, is not yet provided in the tender documents. Usually, the bidders have some fundamental questions as to the project or the contractual concepts that should be answered prior to the in depth negotiations. It is worth having a clarification meeting with each bidder, in order to clarify the key aspects and milestones of the project first. Often, some of the remarks bidders have noted in their quotations are already settled after the clarification meeting.

1.3 Negotiations

The negotiations should not start too early in the day . This is in order to give each party the opportunity to internally align and mentally prepare for the negotiations.

The meeting room should be equipped with a pointer and a flipchart and if possible, a big whiteboard. These tools help visualize concepts and to structure ideas. The parties will often reach common understanding of some of the issues more easily once they have illustrated their concerns or ideas. The difficulties that may arise due to the fact that the parties communicate in English or in another language that may not be their mother tongue, should not be underestimated. This is why tools like flipchart and whiteboard are all the more important to help the parties express themselves.

Structure helps staying focused! Each day of negotiation should start and end with a short summary of the issues on which a common understanding has already been reached, and an outlook on the items that will be tackled within the next hours of negotiations. Also, the discussions should not start with the most critical issues, as a disagreement on these might "block" the parties for the rest of the day! It is always easier to tackle a critical issue after achieving consensus on less important items. The negotiation atmosphere is likely to suffer tremendously and it will become harder to reach an agreement, even on the less important issues.

2 Evaluation of Quotations and Contract Award

The tender phase closes with the evaluation of the Contractors' final bids (also called "best bids" or "best offers") and the award of the EPC contract to one of the competing companies. The following sub-chapters shall briefly illuminate the evaluation process and the final award.

2.1 The offer evaluation process in general

The offer evaluation process starts with the submission of the offers and ends with a selection of a preferred bidder to be awarded the contract. The offer evaluation must be prepared and executed in an objective and transparent way based on predefined criteria in order to avoid later doubts about the legality of the process. The criteria for evaluation may either be kept secret or shared with the bidders. Or, some criteria is shared, while other criteria remains undisclosed. Inevitably, this is a strategic decision to be made by the project team under consideration of the respective market situation and the applicable procurement law.

Providing no information about the offer evaluation criteria to the suppliers during the tender process has the advantage that the suppliers will generally provide a bid which is generally optimized without focusing on specific criteria only. Since the suppliers are not aware of the criteria that are *crucial and essential* for evaluation, they seek to bring an offer which is optimized in a balanced manner, i.e. all potentially important criteria are treated equally in design and planning. However, the suppliers have only little chance to optimize the bid according to the Employer's real needs.

Example:

If the Employer has enormous amounts of coal that can be used only on the spot and cannot be sold on the world market, the consumption of the plant is less important for him compared to other criteria as e.g. electrical output.

This could lead to additional need for clarifications and negotiations at a rather late stage in the contract negotiations, in order to ensure that the Employer's needs are met.

If the Employer shares information on all criteria, and especially their weighting and importance for the evaluation, the bidders will be able to optimize their offers exactly in accordance with the Employer's requirements. However, sharing criteria comes with two potential disadvantages. First, some of the bidders who do not see

themselves in a good position to be awarded the contract after having seen the offer evaluation criteria might step out. This limits competition without real need to do so. Second, depending on the nature and technology of the project, the knowledge of the relevant criteria might create a temptation for the bidders to technically optimize their plants to meet the criteria, disregarding however, long term factors like tear and wear, and shortening long time maintenance intervals and the like.

Another possibility could be to give the bidders some guidance on the criteria, which form the basis of the offer evaluation. This does not mean that the bidders receive each and every evaluation criterion and its weighting, but they are provided with information on the areas of focus for the evaluation (e.g. CAPEX optimized; performance optimized; OPEX optimized). The advantage of this model is that the bidders have some orientation. This approach combines the advantages of both methods described before, and while simultaneously reduces the disadvantages.

In any case the Employer should start early with the evaluation. The earlier the evaluation starts the earlier intermediate results are available. The results should also be used to prioritize resources on favorable bidders. To be able to do this it is essential to have a tool in place which is constantly fed with the evaluation and negotiation results, starting from the first offers received and constantly updated until the contract is awarded.

Note that intermediate results and stepwise evaluation in parallel to the negotiations is only possible if there are no restrictions imposed by the relevant procurement law. Especially for public tenders by state owned companies in Mongolia, the possibility of negotiating in parallel with the bidders is still limited. In these cases the classic approach remains to negotiate first with the bidder who has made the best financial offer and only if those negotiations fail, move on to the second best offer. In the long run, it remains to be hoped that future legislation allows a more flexible approach, in order to achieve better procurement results for authorities and state owned companies.

2.2 The different dimensions of evaluation

Usually, the Employer's procurement organization uses an offer evaluation tool with different dimensions to be considered for the contract award decision making process. Compared to day-to-day procurement activities, acquisition of large infrastructure projects is much more complex. This should also be reflected in the offer evaluation tool. The tool should have at least the following dimensions, which will be explained in more detail below:

- technical evaluation
- commercial evaluation
- evaluation of other requirements

- project economics evaluation

For each dimension, sub-criteria are defined that result in a scoring (e.g. 1-5). The scoring is then multiplied with the weighting of the different dimensions and results in an overall scoring for the different offers. For each of the dimensions, the Employer should define a weighting based on the Employer's priorities. Usually, the evaluation of the project economics, i.e. the global view on all criteria resulting in an NPV (Net Present Value), has the highest priority.

For the evaluation itself the Employer needs to mirror the negotiated result against its requirements. Depending on the deviation (positive or negative) it should define a scoring. The Employer should ensure that there are sufficient sub-criteria per dimension, not to have the evaluation of one single sub-criterion overruling all the other sub-criteria.

In addition to the multiple sub-criteria, the Employer should also define no-go criteria, i.e. criteria that must be fulfilled to the satisfaction of the Employer, as otherwise the bid will not be contemplated further. The no-go criteria are usually of technical character. They will later form the absolute performance criteria in the contract. They need to be met in order to later obtain all required authorizations and legally operate the works. If one of the no-go criteria is not fulfilled, the Employer should focus his negotiation effort on this topic. This, of course, is also a point with regard to the negotiation strategy. If the overall evaluation shows that one bidder is not in a favorable position to be awarded and a couple of other bidders in a better position are still "in the race", the Employer should immediately suspend the negotiations and focus on the remaining bidders in order to utilize his resources ideally. If the bidder is in a favorable situation, the Employer should target him for a solution. If no agreement is reached, the Employer should consequently dismiss the bidder from the further negotiation process.

2.2.1 Technical evaluation

The technical evaluation is based on a comparison of bids and the Employer's Requirements. The sub-criteria can be clustered as follows:

- Absolute guarantees and performance guarantees
- Performance data
- Materials proposed
- Plant life time
- Maintenance concept

The clusters above need to be split in different sub-criteria that reflect the technical criteria of the type of works.

One factor influencing the technical evaluation is the level of detail of the specifications. If there are detailed specifications, the Employer can easily compare its requirements with the bid. In this case, the Employer can take all its stipulated requirements as input for the evaluation. On the other hand, if the specification is rather functional, the Employer basically only has the performance criteria against which it can challenge the offers. Therefore, the technical evaluation of a tender with a functional specification is less complex than one with a detailed specification. However, it does not give such a detailed picture of the offer as an evaluation on the basis of a very detailed specification.

2.2.2 Commercial evaluation

For the commercial evaluation the criteria should be defined prior to receiving the offers in order to ensure an objective, transparent and compliant offer evaluation. The commercial evaluation refers to the terms and conditions and can also consist of no-go criteria and criteria for evaluation. Sub-criteria could be grouped as shown below:

- Sharing of risks
- Liquidated damages (performance & delay LD)
- Payment schedule
- Termination conditions
- Bonds & Guarantees
- Insurance concept
- Tax concept
- Change of scope of works
- Bill of articles and conditions

In the draft terms and conditions, the Employer has stipulated its requirements towards the sub-criteria shown above. *This means that the draft terms and conditions are the baseline for the evaluation, because they reflect the Employer's initial requirements.* In order to detect the gaps between what the Employer has asked for (draft terms and conditions) and what the Contractors are willing to consent to (the negotiated terms and conditions), the Employer, for example, could take all paragraphs per group above and compare each paragraph with the negotiation results. In the evaluation, the Employer should benchmark the negotiation results on these items compared to its initial requirements. Depending on its negotiation strategy and targets, the result from the negotiations, i.e. the final bid, might to some extent fall short of the initial requirements.

2.2.3 Evaluation of other requirements

In this part of the evaluation, the stipulations made in the appendices are evaluated. These are basically requirements on:

- HSE requirements
- Quality planning and assurance
- Commissioning, testing and acceptance
- Reporting
- Documentation
- Project schedule

In all these appendices stipulations define deliverables, duties and rights of the Employer and the Contractor. Some of these stipulations can again be mandatory and therefore no-go criteria, others are criteria for evaluation.

2.2.4 Economical evaluation

For the economic evaluation a comparison of net present values (NPV) is the most common approach. To do this analysis, the Employer needs to combine the following information:

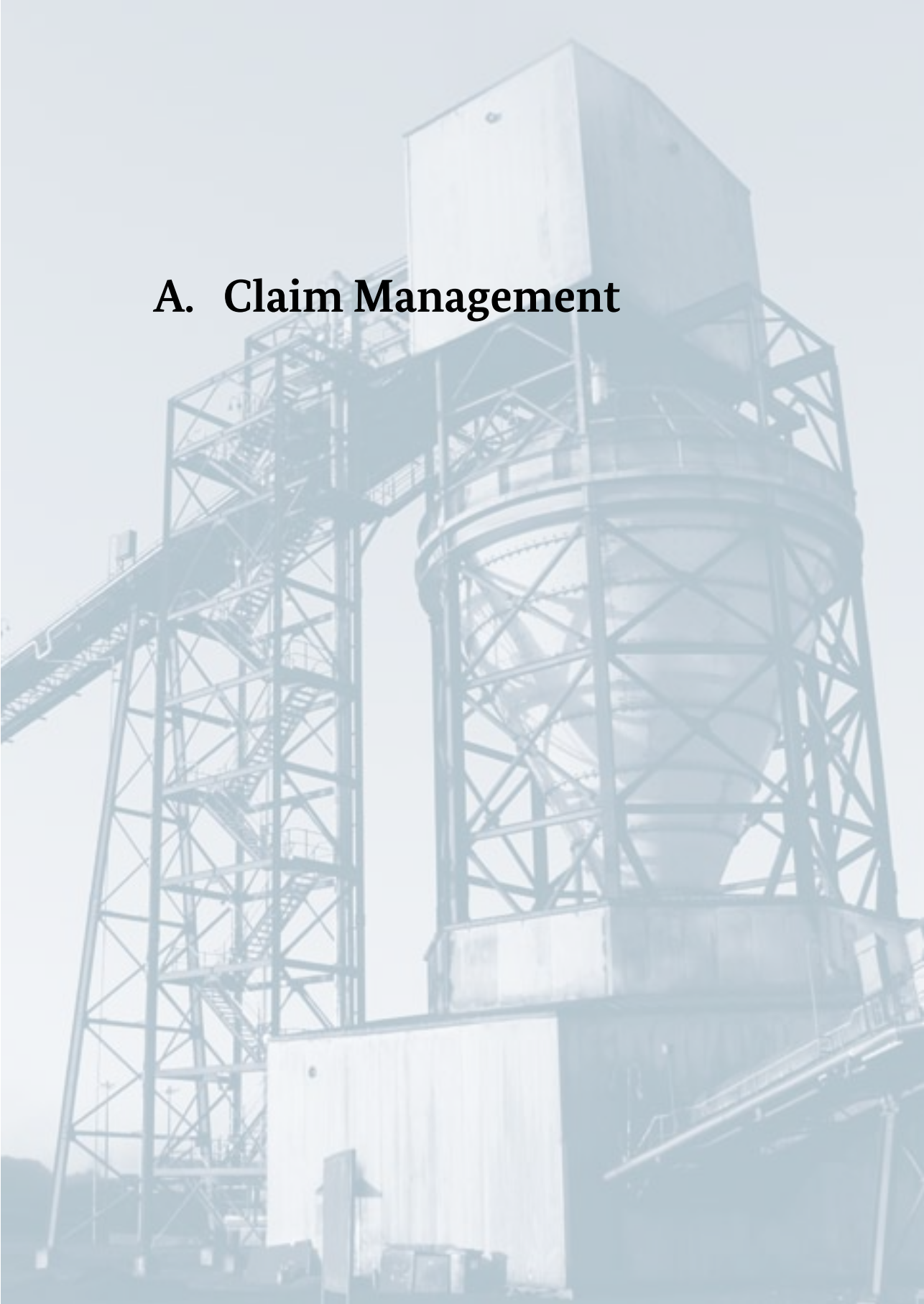
- Investment cost of the works
- internal costs for project execution
- operating and maintenance costs
- other costs
- earnings
- payment schedule for the investment
- lifecycle of the works
- costs for demolition/removal (if applicable)
- other discount factors

Based on the information above, the Employer should be able to perform a comparison of NPVs. The NPV analysis usually has the strongest impact on the contract award proposal because it reflects a basic business case, whereas the other dimensions (except the no-go criteria) have only limited influence.

2.3 Final step: Combining the evaluation results

The evaluation for each dimension should be prepared by the Employer's respective competent departments. The procurement manager is responsible for merging the results for the different dimensions into an overall evaluation. This overall evaluation should be kept secret. All project team members who are informed about the economic or the overall evaluation should sign a confidentiality agreement prior to receiving this information, because spreading this confidential information may impact the Employer's negotiation position extremely negatively.

A. Claim Management



1 Claim management in general

A saying in the construction business goes as follows: “As soon as the contract has been concluded, the fight on site begins!” Even if real (project) life (mostly) is not as bad as this saying might suggest, any construction project requires a professional claim management. However, the term “claim management” should not be misunderstood as “arming” against the contract partner, but should be taken as active process monitoring and handling of any issues that may occur on site, in accordance with the mechanisms provided by the EPC contract.

Note that the day-to-day processes on site tend to develop their own dynamics and the EPC contract, that everybody has focused on during the negotiations, takes a back seat in people´s awareness. Problems on site will be dealt with “somehow” instead of being resolved according to the rules that the EPC actually provides. Experience demonstrates that small problems not properly solved in accordance with the EPC contract potentially grow and create even bigger problems and bigger losses! Claim management (also “contract management” or “change management”) shall prevent exactly that from happening, by continuously applying the EPC contract provisions to events happening on site. “Claim” in this respect means a right to demand something (i.e. to do extra work, to expedite the works, to pay for extra costs, to pay damages, to grant an extension of time, etc.) from the other party due to non-compliance of that party with its contractual obligations.

2 Preventive and operative claim management

Once the EPC contract has been concluded, the responsibility shifts to the contract and claim management team, which is usually part of the project execution team. However, the operational claim managers should be already involved at an earlier stage in the negotiations in order to utilize their hands-on experience for the good of the contract. That means that claim management has two dimensions. In the first dimension, the claim management is involved at the project planning and negotiation phase in order to detect possible sources for later claims. In the second dimension, the claim managers will manage the actual claims that have been brought forward by the Contractor and will handle any change order together with the procurement team in order to have it negotiated and implemented as swiftly as possible with the Contractor.

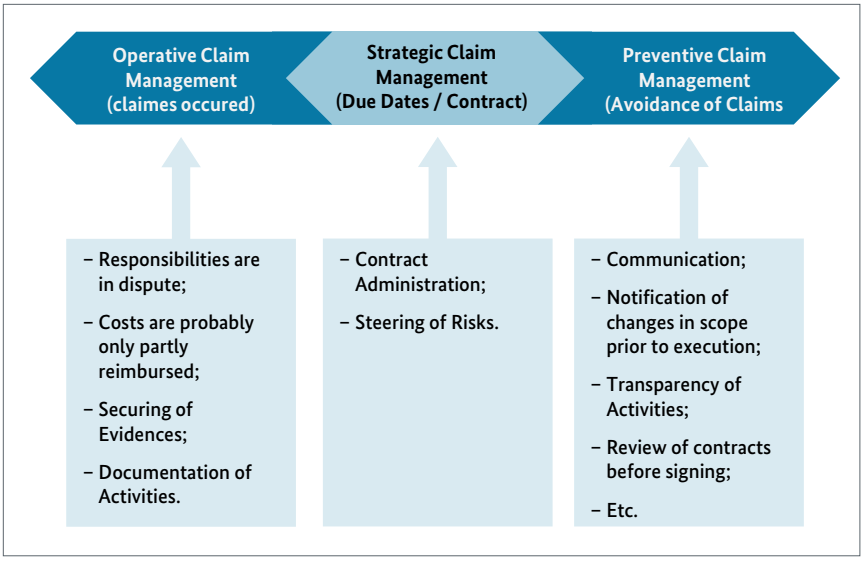


Illustration 29: Claim Management Approaches

3 Operative claim management

Operative claim/contract and change management is based on three major principles:

- No money shall be spent without the agreement of the other party.
- Each party shall do the utmost to minimize any damage.
- Deviations from the contract are only possible by mutual consent.

It is the violation of one or more of these principles that usually leads to a claim, and in the worst case, to a legal dispute between the parties. It is in this situation that the operative claim management becomes necessary for the employer, in order to ensure that money is only paid for ordered works that are free of defects.

Unlike the preventive claim management, the operative claim management should be situated directly on site in order to be continuously present throughout the works. The claim manager or the claim team should be part of the core team on site. This physical presence ensures that the claim managers are at the place where claims arise and can establish the necessary contacts to the Contractor's project manager and the project managers of the different sub-contractors. Note, that the Employer's personnel should always direct the official communication to the Contractor's personnel as the sub-contractors on site do not have a contractual relationship with the Employer.

The scope of works for the operative claim management has two different directions: firstly, the avoidance of unjustified claims brought forward by the Contractor and secondly, the identification and execution of the Employer's rightful claims against the Contractor for breach of contract.

In order to fulfill this task, the operative claim management needs to cooperate closely with the time scheduling team in order to have a clear picture of any potential or existing delay. Further, it needs to continuously take evidence of the actual progress on site in order to mirror it against the progress data that the Contractor delivered to the scheduling team. Also, the claim management needs to continuously check, in cooperation with the quality control department, whether the delivered works are of the contractually agreed quality. If in any of these cases a deviation between the contract and the factual situation occurs, the claim manager has to react immediately, inform the Contractor in writing about the problem and require him to remedy the breach within a specified time period. Further, additional evidence needs to be collected, e.g. pictures, reports, witness statements and experts' opinions, in order to secure the Employer's legal position in a potential legal dispute.

3.1 Claim Manager's Tools

For the claim manager it is essential to have *accurate and comprehensive* documentation on each of the claims. Therefore, he should set up a claims register into which he feeds all relevant information on:

- Employer's claims against the Contractor (breaches of contract)
- Contractor's claims against the Employer
- Potential claims against the Contractor (opportunities)
- Potential claims of the Contractor (risks)

The claims register should include:

- a short description of the claim
- date of detection/announcement
- official communication
- related documents/references
- probability of occurrence of a damage/loss caused by a detected nonconformity of Contractor's performance (deviation of performance from the contractual obligation)
- potential impact (costs/time)
- recommendation on how to proceed
- expert opinions
- status in the process of claims handling
- root cause

The claims register should be updated regularly and shared with the project team.

Besides the claims register, the claim manager should establish a document management system where all documents related to a claim are filed. There are IT solutions available, but another solution could be a filing on a net drive, to which also other project members have access.

3.2 Detection of potential claim sources

During the tender preparation phase, the claim manager is involved in the anticipatory claim management to minimize risks resulting from unclear and improper specifications and stipulations. This preventive work should be continued during the project execution phase, by means of constantly reviewing the project progress and related contractual documents. In the case that the claim manager detects a claim source, he should take the following actions:

- Inform and consult the project team to evaluate the risk / opportunity (probability and impact)
- Develop a strategy jointly with the project team
- Develop specific action plan based on the agreed strategy
- Align the actions with the project team and start implementation

Depending on the type of claim potential (incoming or outgoing), the actions could be risk mitigation measures or measures to place a claim towards the Contractor.

Another strategy could also be to undertake nothing. This can be appropriate if the Employer expects the Contractor to raise justified counter claims, which exceed the Employer's claims in value. Therefore, the Employer should perform an analysis of consequences prior to raising claims.

3.3 Handling of incoming claims (Contractor's claims)

Claims are usually handed in to the contract manager since he is the single point of contact for all official communication. He should then forward the claim letter to the claim manager. The claim manager then takes several steps:

Step 1: Initial claim evaluation to identify which project team members need to be involved in the claim handling.

Step 2: Documentation of the claim in the document management system and claims register.

Step 3: Distribution of statement of claim and relevant documentation to and allocation of work packages for the identified project team members.

Step 4: Identification of impact on other Contracts (e.g. to pass the claim through).

Step 5: Collection of expert opinions from project team members.

Step 6: In case the claim is justified, the claim manager should verify whether the height of the claim (costs / additional time) is reasonable.

Step 7: Preparation and alignment of a claim strategy together with the project team (rejection or acceptance).

Step 8: Preparation of response to the claim.

Step 9: Approval of claim response and submittal to Contractor.

If the Contractor accepts the rejection, the Employer should request this acceptance in writing from the Contractor. *Written confirmation is necessary in order to have proof that the specific claim has been settled and that such settlement has been agreed.* Usually, the Contractor will confirm his claim by submitting an additional claim letter. Remember the rule of experience (see above E.1) that small problems grow and tend to produce even bigger problems, it is recommended to settle a claim as

soon as possible. The reason for this is that a construction project is executed in consecutive steps. If, for example, the concrete for the foundations has been poured and the walls have been erected on that foundation, it is difficult to prove that the iron concrete reinforcement has been poorly done. Hence, it is worth dealing with problems (claims) right away as long as the progress on site still allows for a proper fact finding. Furthermore, competent staff will leave the project upon completion or even before, i.e. before the final claim negotiations are concluded. However, their know-how will be necessary or at least helpful to reach an agreement on the claims.

Depending on the volume of the claim, the impact that a rejection / acceptance of a claim may have on the project's successful implementation (i.e. quality, time and cost! See above B 1), the settlement of such claim may render it necessary to change the contract. If, for example, the Employer desires to change the design of the already planned industrial plant and the Contractor agrees to the desired change, the Contractor will claim to be granted an extension of time and extra costs for the implementation. As the project schedule and the price are essential parts of the EPC agreement, the parties will need to set up a written amendment agreement to this end. In such amendment agreement the Employer should make sure to include a "linking clause" that ties the amendment to the other EPC contract provisions that are not changed.

Example: "The parties agree that all provisions of the EPC contract shall apply to this amendment agreement, unless expressly changed by the provisions of this amendment agreement."

Such a linking clause is necessary in order to make sure that all the Employer's EPC rights and remedies – particularly with regard to the warranty rights – apply to the works and services agreed upon in the amendment.

Another outcome could be a tradeoff: The Employer is willing to partly *satisfy* the Contractor's claim (because it is not able to reject the claim), under the proviso that the Contractor concedes with regard to another claim (which the Employer holds against the Contractor). If this approach is chosen, it should be clearly and mutually documented which claims are settled by the payment.

3.4 Handling of outgoing claims (Employer's claims)

The Employer's claim managers should continuously monitor the works and processes on site in order to detect potential contract breaches related to time or quality as early as possible. This is important in order to safeguard the Employer's legal position against the Contractor. For any deviation from the contractual scope, (e.g. the Contractor shall deliver sheet metal of a thickness of 5 millimeter, but orders sheet metal of 3 millimeters) may result in a claim that the Employer may

bring forward. If the Employer's claim managers and quality insurers should fail to detect the quality failure, the Employer would still pay the agreed EPC price, but would receive poorer quality! The claim manager's role is to sensitize the project team to detect, document and report on contract breaches. The claim manager is responsible for collecting the information and for proposing actions.

The process steps to be taken are basically the same as for incoming claims, but there are some specialties:

Step 1: Detection of contract breach by project team member and reporting to the claim manager.

Step 2: Initial evaluation of claim potential (costs, time and quality).

Step 3: Documentation of the claim in the document management system and claims register.

Step 4: Identification of project team members to be involved in the claim handling.

Step 5: Distribution of relevant documentation and allocation of work packages to the identified project team members.

Step 6: Collection of expert opinions from project team members.

Step 7: Detailed evaluation of claim potential and impact (costs, time and quality).

Step 8: Depending on the overall claim situation: Preparation and alignment of a claim strategy together with the project team. For example, the project team should contemplate the suitable point in time when to address the claim to the Contractor. Furthermore, the team has to weigh the result of step 7 above (impact and value analysis of the claim), against the consequences of a potential delay in the progress of works, if for example more investigation and inspection activities are necessary in order to document the claim.

Step 9: Preparation of the statement of claim.

Step 10: Approval of statement of claim and submittal to Contractor.

The explanations and recommendations given for incoming claims (i.e. settlement in writing, potential necessity to amend the contract, etc.) apply to outgoing claims to the same extent.

Index

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