

Lesson 1 International Construction Projects and International Construction Contractors

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- # PART I

PART I

INTRODUCTION

The definition of international project has evolved for the past twenty years. It was once defined as one undertaken by an enterprise outside its home-country, for example, firms from one country building under contract in another country. However, this definition is not appropriate nor is it sufficient to depict the workings of the international market today. This definition should include projects in home country but involving foreign firms as competitors. There exists a construction market where construction work is undertaken by the international construction system comprising firms operating throughout the world. Due to the location specificity of construction projects, construction industry is "local" by nature in terms of climate, regulations, political, institutional and social conditions that exist in a particular locality. This inadvertently gives competitive advantage to home-grown firms over foreign contractors in terms of language, culture, taxation charges, currency restrictions and project logistics in terms of securing networks of local suppliers and sub-contractors.² The international construction market has been estimated to be about USD 3,000 billion annually, and around one-third of this figure has been undertaken by the non-national construction system.

The international construction market has been dominated by contractors from a few developed countries. An analysis was done on the figures depicted in the annual Engineering News-Record (ENR)® survey on the top 30 international contractors during 1999 to 2000 worldwide. Fifty-eight contractors were listed at least once in this group during the period; the highest number was American contractors, followed by Japanese, French, British, and German, some firms which do not belong to developed countries have also made significant participations in the international market.

Lesson 1 International Construction Projects and International Construction Contractors

Learning objectives

After learning this lesson, you will be able to:

- (1) know about the status quo of the major players in the international construction market;
- (2) understand the prerequisites for competitiveness in the international construction market;
- (3) identify the determinants of success for international construction.

The definition of international project has evolved for the past twenty years. It was once defined as one undertaken by an enterprise outside its home-country, for example, firms from one country building under contract in another country. However, this definition is not appropriate nor is it sufficient to depict the workings of the international market today. This definition should include projects in home country but involving foreign firms as competitors. There exists a construction market where construction work is undertaken by the international construction system comprising firms operating throughout the world. Due to the location specificity of construction outputs, construction industry is “local” by nature in terms of climate, regulations, political, institutional and social conditions that exist in a particular locality. **This inadvertently gives competitive advantage to home-grown firms over foreign contractors in terms of language, culture, taxation charges, currency restrictions and project logistics in terms of securing networks of local suppliers and sub-contractors.**① The international construction market has been estimated to be about USD 3,000 billion annually and around one-third of this figure has been undertaken by the international construction system.

1 International players

The international construction market has been dominated by contractors from a few developed countries. An analysis was done on the figures depicted in the annual **Engineering News-Record (ENR)**② survey on the top 30 international contractors during 1999 to 2000 worldwide. Fifty-eight contractors were listed at least once in this group during the period; the highest number was American contractors, followed by Japanese, French, British, and German. Some firms which do not belong to developed countries have also made significant participations in the international market.

①译文:本国公司与外国承包商相比,在语言、文化、税务、货币管制以及组建本地供应商和分包商参与项目建设方面都具有天然的竞争优势。

②Engineering News-Record (ENR): 工程新闻记录——一种全球工程建设领域最权威的学术杂志。

Five firms from Korea (middle-income) and China (low-income) were among the 30 top international firms in 1990 - 2000. The number of international firms from middle-income and developing countries such as Brazil, China, Cyprus, Korea and Turkey has increased from year 2000 onwards. **Their firm-specific advantages have access to inexpensive, highly skilled labor proficient in available technology and close geographical, cultural, and language proximity to their markets, in addition to the support from their governments including credits, export guarantees, preferential taxes, and other export development incentives.**^①

2 Prerequisites for competitiveness

In order to succeed in the international market, there are certain criterions for a construction firm to develop beforehand. For foreign firms to break down local companies' advantages there must be some imperfection in the local markets for goods or factors of production, or interference in competition by governments or firms, which separates markets. **The typically large, complex and one-off nature of construction projects means privileged access to key inputs, in particular, skilled labor and capital, are crucial.**^② The United Nations Centre for Transnational Corporations^③ observes that technical knowledge rather than capital investment is the most important barrier to entry and competitiveness in international construction. **Access to the most efficient means of production, cheapest and best building materials and engineering knowledge that may have not been proprietary but had not yet been appropriated by others were instrumental in the early international success factors of European and US contractors.**^④

Like other business enterprises, construction companies choose oversea markets where they have competitive advantage based on firm and national advantages. Firm specific advantages include: the firm's name, which embodies its reputation, experience and expertise; and firm size, which relates to its resources. National advantages include: national currency; geographical proximity to market(s); historical, political, language, cultural and economic relationships between the home and the host countries; foreign direct investment by home country enterprises; and strengths of inter-sectoral linkages within the home country's economy. Internationalizing contractors must possess certain prerequisites, which include the firm's **track record**^⑤, corporate knowledge, communication structures, resources, and risk management capability. Following are the key factors contributing to competitiveness in international construction, namely: human resources and their man-

①译文:企业特有优势包括拥有精通现有技术的廉价劳动力、与本国市场毗邻且文化和语言类似,以及本国政府对信贷、出口担保、税收优惠和其他出口鼓励措施的支持。

②译文:建筑项目大型性、复杂性和一次性的特点意味着能否在工程的主要输入方面占有优势,特别是技工和资本方面,是项目成败的关键。

③United Nations Centre for Transnational Corporations:联合国跨国公司中心——联合国秘书处下的独立机构,任务是处理联合国与跨国公司有关的事务,同时也作为联合国跨国公司委员会的秘书处。

④译文:拥有最高的生产效率,性价比最高的建筑材料,以及虽未申请专利但还未被外人知晓的工程技术,这些都是欧洲和美国的承包商们在早期国际竞标过程中成功的重要因素。

⑤track record:业绩

agement; technology; and government's **incentives and disincentives**.^① Management expertise is considered the most important because of the peculiarities and problems of overseas projects.

3 Determinants of success for international construction

The construction industry is one of the largest job creators in developing countries and has become highly competitive with the advent of globalization. Project success in the construction industry in most developing countries is measured by the **"golden triangle" parameters of time, cost and quality**^②. The high number of project failures suggests the existence of underlying critical success factors which have not been identified. Achieving project success is becoming more important in the highly competitive construction industry. Large and complex construction projects are becoming more difficult to complete successfully in developing countries. The success factors can be grouped into four categories which are referred to as the **"four COMs"**, i. e., **comfort, competence, commitment and communication**.

3.1 Comfort

The comfort component emphasizes that successful projects include the involvement of **stakeholders**^③. This includes both primary stakeholders who have a legal relationship to the project (e. g., subcontractors) and secondary stakeholders who do not form a direct part of the project, but influence decisions (e. g., **community forums**^④). The needs of stakeholders have to be managed and influenced in a manner that ensures project success. It is essential that a competent project manager be appointed. **Such an individual should possess both technical skills, which include being a subject matter expert and having an in-depth knowledge of structures, and "soft" skills, which include team management, emotional intelligence, transformational leadership and conflict management.**^⑤ The availability of resources is a further critical factor. A resource management plan needs to be developed in conjunction with all relevant stakeholders. Competition for resources is a common phenomenon in projects. Unexpected developments during the course of the project must be carefully managed in terms of resource planning. It must be ensured that there is adequate funding throughout the project. A financial plan, which takes into account the **project activity schedule**^⑥, needs to be developed. Finally, there must be comprehensive contract documentation. It must be ensured that all relevant stakeholders enter into contractual agreements regarding activities and performance during the course of the project. Cost, time and quality parameters need to be specified so that performance can be assessed.

①incentives and disincentives:奖惩措施

②the "golden triangle" parameters of time, cost and quality:由时间、成本和质量形成的“金三角”

③stakeholder:项目关系方

④community forum:社区团体

⑤译文:(项目经理)既应通晓技术,并具有“软”实力。通晓技术是指充分掌握该工程领域的知识,并且对结构有深入的了解;“软”实力包括团队管理、高情商、变革型领导才能和冲突管理等。

⑥project activity schedule:项目进度计划

3.2 Competence

The competence component identifies the following four aspects as being central to successful project management in the construction industry. Firstly, it is the utilization of up-to-date technology. Adopting new technology and utilizing it to its full potential has become critical in achieving a competitive advantage in the construction industry. The construction industry has witnessed significant technological developments in recent years. Selecting the appropriate new technology and optimal utilization is key to project success. Secondly, there must be proper emphasis on past experience. **Tacit knowledge**^① plays a key role in this regard. In addition, project members should be encouraged to document tacit knowledge gained from the project in order to prevent mistakes in subsequent projects. Thirdly, there must be competent teams in place, implying that staff members must have the necessary skills. This requires a comprehensive skills analysis that should reveal gaps in skills. Finally, the aspect of whether the **bids are awarded**^② to the right project manager/contractor needs consideration. Other considerations when selecting contractors include company track record, quality management, health and safety, and technical proficiency.

3.3 Commitment

Commitment emphasizes the support of top management, commitment to the project, clear objectives and scope, and political support. The support of top management goes beyond the provision of funds and making resources available. Commitment to the project is very closely linked to **a sense of collectivism, rather than individualism**^③. An environment needs to be created, in which team members experience job satisfaction and are, therefore, motivated to be part of the team. Optimal performance by team members is important. Having clear objectives and scope are key in providing direction to team members. Objectives must be clear and scope should be as simple as possible in order to avoid “**grey areas**^④”. It is inevitable that changes will occur during the course of the project. Flexibility and adaptability are, therefore, central to achieving success. Finally, political support is important for project success, given that a large proportion of projects are public projects. To this end, support from non-governmental organizations and the ruling party is important.

3.4 Communication

Communication plays an important role in leading, integrating people, and taking decisions to make a project a success. There must be shared project vision, where the project manager identifies the interests of all relevant stakeholders and ensures that there is **buy-in**^⑤ to the project. Once the project objectives are set and the scope clarified, there must be constant update as the project progresses. Progress on activities assigned to individuals or groups needs to be monitored with a view to

①tacit knowledge: 隐性知识

②award bids: 授标

③译文: 集体主义而不是个人主义意识

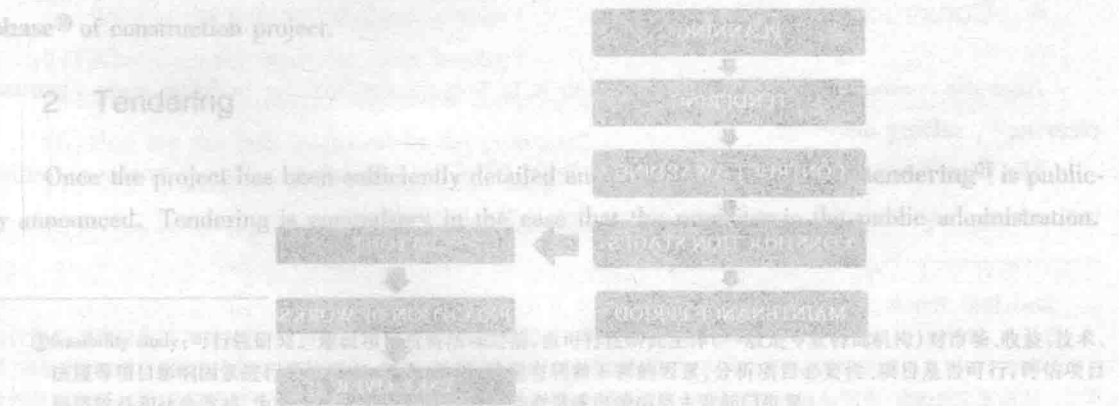
④grey areas: 灰色地带 (指界限不明的区域)。

⑤buy-in: 买进, 补进, 益处

achieving overall goals. These updates must be communicated to the relevant parties. A detailed communication plan is necessary for the effective dissemination of information. To this end, frequent project meetings are necessary. Apart from consulting with the community, local direct involvement is a key element for project success. This could include sourcing materials from local suppliers and employing local residents. It is advisable to use an influential community member as a **liaison**^① between the project manager and the community. Finally, proper **handover procedures**^② need to be developed. This is an important consideration, given that the construction industry is being increasingly viewed as a service industry.

Questions for discussion

- (1) What's the definition of international project?
- (2) Where are the players in the international construction market mainly from? Why?
- (3) What are the prerequisites for construction firms to succeed in the international market?
- (4) Why do construction companies choose to compete in the overseas construction markets?
- (5) How is project success in the construction industry measured in most developing countries?
- (6) What are the determinants of project success in international construction?
- (7) What are the four aspects the competence component identifies as being central to successful project management in the construction industry?
- (8) Why does communication play an important role in project success?



①liaison: 联络人
②handover procedure: 移交程序

Lesson 2 Construction Project Stages

Learning objectives

After learning this lesson, you will be able to:

- (1) grasp the major construction project stages;
- (2) understand the role of each stage of a typical construction project.

The execution of any **civil works**^① or construction project (or the improvement of already existing ones) begins long before the machinery starts to operate at the worksite. **Prior to this is a laborious process which starts when a necessity to be met is considered to exist, either to improve the public services or to satisfy private needs (e.g., The need for a road is put forward for the improvement of communications between two towns, etc.).**^② Then, it shall be necessary to study the different possible alternatives, the economic cost and the social and environmental impacts of the construction work. Eventually, the most adequate alternative shall be adopted. This process can take months and even years, so that the **promoter**^③ can be either private or the **public administration**^④. The construction project stages are shown in Figure 2-1.

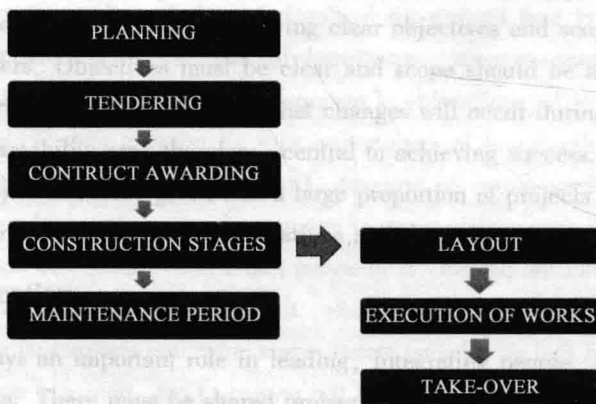


Figure 2-1 Construction Project Stages

①civil works: 土木工程, 土建工程

②译文: 在此之前还有一个复杂的过程, 首先要考虑是否改进公共服务或满足特殊需求(如对道路的需要是缘于改善两个城镇往来交通状况等)。

③promoter: 业主。“业主”的其他表述方法还有 client, employer, developer 等。

④public administration: 公共机构

1 Planning

The needs to be covered and the objectives to be achieved are defined in this stage.

The first step to take is to do a **feasibility study**^① to solve all the physical, economical, environmental and perhaps political questions put forward.

The study starts with the collection of all the necessary data for the design of a solution to such need, which can be **topographical** (measurement of the real surface area of a piece of land), **hydrological** (pluviometry of a basin, etc.), **statistical** (road traffic, etc.) or others.^②

In this stage, the **consultant engineer**^③ must work together with other professionals (**financiers**^④, etc.) and national or local authorities with decision making power, in order to study the social and economic implications, as well as the environmental impacts of the project.

Once this study is approved by the promoter, the elaboration of the **project draft**^⑤ is entrusted to an **engineering consulting company**^⑥ that will carry out a first study on the project to be developed. It is in this phase when the **competent bodies**^⑦ make a decision on, for example, the route of the road^⑧, etc. In the further phases, the project will be defined in full detail.

During this phase there is a great advance in constructive details, cost determination, construction progress chart and project execution budget.^⑨ In this phase, onsite investigations are essential in order to detect specific difficulties in relation with the site geology, and the environmental impacts shall be detailed, including physical, biotic and social environments. In general, it is in this phase when the final solution is chosen, and it will be detailed in the **definitive design phase**^⑩ of construction project.

2 Tendering

Once the project has been sufficiently detailed and specified, the work's **tendering**^⑪ is publicly announced. Tendering is compulsory in the case that the promoter is the public administration.

①feasibility study: 可行性研究。建设项目投资活动之前,由可行性研究主体(一般是专业咨询机构)对市场、收益、技术、法规等项目影响因素进行具体调查、研究、分析,确定有利和不利因素,分析项目必要性、项目是否可行,评估项目经济效益和社会效益,为项目投资主体提供决策支持意见或申请项目主管部门批复。

②译文:可行性研究首先需要收集为解决需求问题而进行设计时必需的所有资料,包括地质资料(如测量一片土地的实际表面积)、水文资料(如盆地的降雨量)、统计资料(如道路交通量)和其他资料。

③consultant engineer: 咨询工程师

④financier: 出资方,投资方

⑤project draft: 项目草案

⑥engineering consulting company: 工程咨询公司

⑦competent body: 决策机构,决策方

⑧route of the road: 路线

⑨译文:此阶段将更进一步确定项目的建造细节、造价、工程进度和实施项目的预算。

⑩definitive design phase: 最终设计阶段

⑪tendering: 招标

However, in the case of a private promoter, the public tendering procedure can be disregarded and **bids**^① can be requested directly from several competing contractors.

In general, tendering documents comprise the following: *Sets of administrative clauses, particular clauses* (contracting, prices, project execution time frames, method of payment and conditions to be fulfilled by the contractor) and *Sets of technical specifications* (technical features of the project, scope, documents included, previous studies, tests, basic documentation to be used, scales, number of copies, degree of completion of layouts, progress charts, project units including prices and, all in all, the technical requirements which must be met by the project in order to be accepted by the public administration).^②

The companies interested in the accomplishment of the project place their bids in compliance with the **afore described sets**^③. In these bids, the tendering companies commit themselves to start and execute the works according to the specifications, time period and **budget setout**^④. Alternative solutions can also be added to the **initial proposal**^⑤ specified in the wets (or lists) of conditions.

3 Contract awarding

The promoter **evaluates the different bids**^⑥ in function of the budget, experience, technical and financial guarantees, environmental studies, quality certificates, etc. and the **bidder**^⑦ submitting the best bid will be awarded the construction contract.

The **supervision**^⑧ of works shall be carried out by the same project designer or a different one, as determined by the promoter.

4 Construction

After the contract is awarded, the first job is to prepare the land for building upon (**ground clearing**^⑨, **setting out**^⑩...).

The **plots**^⑪ are then marked out with the **layout**^⑫ of the foundations. This is known as setting out, which is an essential step before proceeding to the next phase.

①bid: 投标, 投标书

②译文: 招标文件一般包括以下几部分: 管理条款文件、专用条款文件(合同、价格、进度、付款方式和承包商需要履行的条款)和技术规范文件(项目技术特点、范围、应包含文件、前期研究、试验、将要采用的基本文件、比例、文件份数、场地布置完成情况、进度计划表、项目分项及价格等。简而言之就是公共机构在接收该项目前认为项目必须满足的技术要求)。

③afore described sets: 上述文件

④budget setout: 预算安排

⑤initial proposal: 原招标建议

⑥evaluates the different bids: 评标

⑦bidder: 投标人

⑧supervision: 监理, 监督

⑨ground clearing: 场地清理

⑩setting out: 施工放样

⑪plot: 地块

⑫layout: 设计, 布局

The project construction may take from months to several years. So, during the construction period, the promoter pays the agreed **amounts**^① to the contractor at regularly scheduled times according to the **work progress**^② certified by the **supervising engineer**^③.

The payments of **insurance premiums**^④ for large construction projects are sometimes agreed in a similar way: payments in advance for the coming year. For simpler control, as a general rule, the regular payments are determined on the total insurance premium.

5 Take-over and maintenance period

Construction Works are regarded as “completed” after the Construction Management certifies that they have been completed in accordance with the contract and after signature of the so-called **provisional acceptance certificate**^⑤. The contractor’s **contractual liability**^⑥ ends at that very moment, although it can be extended during the “maintenance period”, lasting between six and twelve months. **Within this period, the contractor is obliged to carry out, at his own expense, any correction or repair considered necessary, besides rectifying all defects, faults or flaws in the construction works.**^⑦ After signature of the **final acceptance certificate**^⑧, the contractor is exempted from all contractual liability.

Questions for discussion

- (1) What needs to be done before the machinery starts to operate at the worksite?
- (2) What are the main construction project stages?
- (3) What is the purpose of planning stage?
- (4) What does the tendering stage involve?
- (5) What do the tendering documents comprise generally?
- (6) How are the bids evaluated by the promoter?
- (7) What is involved in the construction stage?
- (8) What is the legal significance of the take-over and maintenance period?

①amount: 金额
②work progress: 工程进度
③supervising engineer: 监理工程师
④insurance premium: 保险费
⑤provisional acceptance certificate: 临时竣工验收证书
⑥contractual liability: 合同责任
⑦译文: 在此期间, 承包商除需自费修补所有缺陷外, 还应修改或修补由于工程施工产生的其他故障或瑕疵。
⑧final acceptance certificate: 最终竣工验收证书

Extensive Reading 1: 国际工程承包行业

随着当前全球经济一体化的不断深入,国际工程承包行业已经发展成为国际贸易领域内的一个重要分支。当前,我国国际工程承包行业从整体上看已经具备了相当的规模,但是相对于国际工程承包的市场发展趋势,我国国际工程承包行业发展还处于初级阶段。然而在国际工程承包行业新的发展趋势下,我国的国际工程承包行业发展也存在一些尚待解决的问题。因而,探寻国际工程承包市场发展之路,如何使我国的企业在国际竞争中立于不败之地,已变得愈发紧迫。

1 国际工程承包行业发展趋势

1.1 工程承包模式的转变

近年来,国际工程的发包方越来越重视承包商提供综合服务的能力,传统的设计与施工分离的方式正在快速向总承包方式转变,DB(设计—施工)、EPC(设计—采购—施工)、PMC(项目管理总承包)等一揽子式的交钥匙工程模式以及 BOT(建设—经营—转让)、PPP(公私合作模式)等带资承包方式业已成为国际大型工程项目中广为采用的模式。承包商不仅要承担项目的设计和施工、运作,还要承担工程所需的融资。国际承包方式的这种新变化,要求承包商必须实现设计和施工结合,设计和前期的研究结合,后期的设施管理和物业管理结合。单纯的工程施工业务利润将逐渐降低,承包业务的开展已朝着项目前期和上游方向发展,利润重心向产业链前端和后端转移。

1.2 项目融资方式的变化

目前我国的国际工程承包业务的主要领域是工程建筑领域,同时它也是大多数发展中国家吸引外资的最大部门之一。除极少数国家的政府不需要项目承包商带资承包外,绝大多数工程承包项目都需要承包商通过带资的形式来进行项目承包。带资承包(在海外投资)也有利于国际承包商渗透到当地市场,承揽当地未在国际市场公开招标的项目。与带资承包需求相适用,国外大的工程承包企业的融资能力不断增强。国际上大的工程承包公司都拥有雄厚的资金实力与融资能力,与世界主要的出口信贷机构、多边金融组织、商业银行及资本市场有固定的业务往来。为其在承包大型复杂项目以及降低整体项目融资成本及风险等方面发挥了积极作用。

1.3 科学化、信息化、规范化

随着国际工程承包行业竞争的白热化,各国企业国际承包业务中获取的利润降低,同时也极大地增加了企业的经营风险。因而为了更好地降低企业的运营成本,提升工程效益,加强国际工程承包企业的技术能力的提升,不断加强技术创新,加强国际工程承包业务的信息化

建设,提高技术质量的规范性、安全性、环保性等,已经越来越成为国际工程承包企业参与国际竞争的准入标准。

1.4 寻找新的市场定位

随着国际工程建筑市场的产业分工体系的深化,承包商寻找新的市场定位,是国际工程承包市场发展又一明显趋势。工程管理和工程设计大多是欧美公司;设备国际采购是日本和德国;其他国家公司主要集中在土建领域,一些较发达国家正在向附加值高的领域升级。目前,欧美等大型跨国建筑企业都有自己的技术和专利,在国际工程承包市场上的优势明显;资金实力、技术和管理水平远远高于发展中国家的企业,在技术和资本密集型项目上形成垄断。尽管发展中国家建筑承包商,在国际工程市场中承建的工程项目多是相对简单的劳动密集型项目,但是,在进入国际市场的过程中,越来越多的承包商将要经营计划做出大幅度的调整,寻找新的市场定位。

2 我国国际工程承包行业的发展现状

在激烈的国际市场竞争环境下,我国的国际承包业务正朝着多样化模式发展,国家也加大了对国际工程承包业务的支持力度,积极鼓励国内企业参与国际承包项目工程,以此来提升国家在国际工程承包市场的竞争力。近年来,我国的国际工程承包业务呈现一个快速增长的态势。2012年,我国的国际工程承包业务的营业额达到了1166亿美元,新签合同数额达到1565亿美元,同比增长12.70%和10.00%。而美国麦格劳·希尔建筑信息公司(McGraw-Hill)发布的2012年度Engineering News-Record(简称“ENR”)全球最大225家国际承包商排名中,我国内地企业也有52家上榜。随着国家综合实力的不断提升,行业信息化、现代化进程的不断加快,以及国内工程建筑行业能力的饱和过剩,可以预计,在未来10多年的时间里,我国的国际工程承包业务将会呈现快速增长的发展态势。但是,在不断发展变化的国际工程承包行业的新趋势下,我国的国际工程承包行业的发展仍然存在较多的问题。

3 我国国际工程承包行业发展存在的问题

3.1 工程承包业务整体水平较低

我国国际工程承包行业中的企业整体业务水平较低,主要体现在两个方面。一方面,企业规模较小,经营范围十分有限。除了少数央企和部分发展较快的专业性较强的省市公司外,我国从事国际工程承包运作的企业大都属于中小型企业。虽然这些企业在国内完成了部分资本积累,但是在国际市场上欠缺资金和品牌方面的优势,难以保证所提供产品和服务的质量,而且进一步发展壮大的限制较多。另一方面,当前中国国际工程承包行业仍以粗放型增长方式为主,项目数量的增加是导致营业额增加的主要因素,而项目质量方面的提升难以衡量,且相对于发达国家,改善幅度有限。

3.2 工程承包企业融资能力不足

国际工程承包的业务范围也由以往单纯的工程施工和安装拓展到技术贸易、货物贸易、服务贸易的结合体。若一国缺乏一批具有国际竞争能力和融资能力的工程承包企业,就难以在

国际市场上获得机会。当前,我国国际工程承包企业融资能力欠缺主要体现在:①融资渠道狭窄。国际盛行的项目融资方式在我国还未真正地展开;国有商业银行在向工程承包行业提供巨额贷款时,往往需要担保或者抵押;政策性银行对国际工程承包企业的支持力度也是十分有限。②融资担保困难。对于国际工程承包业务,国际设立的保函专项资金规模较小,而且资金使用程序繁琐、支持范围有限、审批周期较长。③融资成本较高。当前我国针对国际工程承包业务贷款利率为3.8%,比国际通行的工程承包贷款利率高很多。

3.3 复合型国际工程承包管理人才缺乏

人才缺乏是导致我国工程承包企业与国外大承包商差距的另一主要原因,也是当前我国国际工程承包企业发展面临的重要问题。经验丰富的国际工程承包项目经理,工程设计、材料采购、工程施工等各阶段核心管理人员,项目风险评估人员,国际工程融资人员,国际工程合同管理人员,国际工程造价估算人员,国际工程报价人员,国际工程相关法律人员等均均为当前国际工程承包企业严重缺乏的人才。我国工程承包企业要想在国际市场得到持续性发展,就必须按照国际管理行事,必须具备一批懂技术、懂管理、懂外语的复合型、高素质人才,以适应国际工程承包行业的技术标准与规范的要求。

3.4 国际工程承包中的风险问题日益突出

任何工程项目都是风险与收益的复合体。通常,风险会导致工程项目实施失控,如进度延期、计划修改、成本增加等,最终致使工程经济效益降低,甚至是工程建设失败。国际工程项目还有其自身特点,如持续时间长、技术新颖、工程规模大、所处环境复杂等,这些进一步加剧了项目建设过程中的风险。近年来,我国国际工程承包水平虽有所提升,但是还不能与世界发达国家工程承包企业相媲美。此外,地缘政治动荡和国际突发事件也给国际工程承包企业带来了环境上的风险。近几年,一系列针对中国工程人员的恐怖事件在巴基斯坦、阿尔及利亚、尼日利亚等国不断发生。所以,风险问题已经成为影响国际工程承包的重要因素。

4 加强我国国际工程承包行业发展的对策措施

4.1 加强金融保障建设

加强对国际工程业务的金融保证制度的建设,能够对企业开展国际工程承包提供一定的金融支持。我国在金融保障方面的建设还比较落后,与国外完善的金融担保、外汇管理体系的施行还存在一定的差距。因此,加强对国际工程业务的金融保障建设,构建更加完善的融资体系,尽快在外汇金融业务方面与国际接轨,能够有效推动我国企业在国际工程承包业务的发展。

4.2 加强企业自身能力建设

目前,国际上知名的国际工程企业都具有负责从项目的可行性研究到工程项目最后交付使用的全过程承包咨询管理能力。而国内企业在这方面还十分落后。因此,努力提升国内承包企业的承包能力和档次也是一个十分重要的。国内承包企业应该大力加强人力资源建设,积极引进和培养具有项目工程专业知识和国际视野的复合型人才。此外,国内承包企业还要

在管理体制、信息化、规范化建设方面上加强技术创新和理念创新,不断提高企业的经营管理水平,以此来提升国内企业的国际市场竞争力。

4.3 积极采取各种手段打破国外市场准入壁垒

要努力解决国内企业遭遇技术壁垒和市场准入限制的问题。首先,要充分利用我国是WTO 成员国的有利权力,通过国际贸易规定来消除一些欧美发达国家所设置的不合理的市场准入制度和技术壁垒。其次,国内企业还应该对国际工程承包的发展趋势进行实时的掌握和更新,以此来把握国内企业在国际工程承包业务方面的投资趋向。第三,企业还应该对国外市场的准入规则、工程运作模式、产品和服务营销模式等进行充分的了解,在此基础上,通过并购当地企业等方式来打破国外企业所设置的贸易壁垒。

总而言之,在目前发展良好而形势又比较严峻的环境下,我国的对外承包企业必须及时根据国际工程承包业务发展的总趋势,积极应对,不断提高自身的能力和水平,共同推动我国国际工程承包行业的长期健康发展。

动语态所带有的叙述客观性也使得作者的论述避免主观色彩,这种语态在科技英语中非常普遍。科技英语的语态选择往往受到多种因素的影响,如语境的正式程度、作者的主观倾向等。在科技英语中,被动语态的使用频率较高,这有助于突出客观事实和强调动作的承受者。此外,科技英语还常常使用名词化结构,将动词转化为名词,从而使句子结构更加紧凑,信息密度更高。这些语言特征共同构成了科技英语独特的语体风格,使其在专业领域内具有权威性和准确性。

必须通过信件、传真、E-mail 等常规通信手段以及由合同部门起草并经审核的会议纪要,与承包商进行信息沟通。

大量使用长难句是工程英语文献的一大特点。要准确理解长难句,首先要分析句子的主干,即主语、谓语和宾语,然后在此基础上分析修饰成分,如定语、状语等。通过分析句子的结构,可以理清句子的逻辑关系,从而准确地理解句子的含义。此外,在阅读长难句时,还应注意标点符号的使用,如逗号、分号、冒号等,它们可以帮助读者更好地把握句子的层次和逻辑。

原文的句法结构、分属层次及各层次间的逻辑关系,然后在此基础上,按照汉语的表达习惯准确地译出。

在工程英语中,一方面大量使用被动语态,另一方面则大量使用介词短语和从句,使得句子结构复杂,信息量大。在阅读这类句子时,应首先识别句子的主干,然后逐步分析修饰成分,理清句子的逻辑关系。此外,工程英语中还常常使用一些专业术语和缩略语,读者在阅读时应注意上下文,以便准确理解其含义。

例如: "Regardless of whether or not your company is in a bargaining position to meaningfully negotiate those terms before signing on the dotted line, failing to appreciate what it is you are agreeing to can mean the difference between a lucrative project and a messy dispute with damaging financial and reputational fallout."

在签订合同之前,无论该公司是否处于谈判地位,如果不了解你所同意的条款,可能会导致项目出现财务和声誉上的重大损失。

Translation Study 1: 工程英语的特点

工程英语 (Engineering English) 作为科技英语 (English for Science and Technology 或简称为 EST) 的重要组成部分, 已经发展成为一种重要的专门用途英语 (English for Special Purpose)。工程英语文体纷繁复杂。工程英语可以泛指一切工程或技术相关的书面语或口语。借用刘宓庆对科技英语语篇的分类方法, 工程英语可包括: 工程著述、论文和报告、实验报告和方案, 各类工程情况和文字资料, 工程实用手段 (operative means, 包括仪器、仪表、机械、工具等) 的结构描述和操作描述, 有关工程问题的会谈、会议、交谈的用语, 有关工程影片、录像等有声资料的解说等。从所涉及的领域来看, 工程英语涵盖了土木工程英语、机电工程英语、电子工程英语、信息工程英语等。在词汇、句型和语篇等层面上, 工程英语既有科技英语的很多共性, 又存在一些与众不同的特征。

工程专业术语指的是那些在工程领域中具有专门意义的词汇, 通常这些词汇还具有日常用义。如 concrete 一词在日常英语中指“具体的、有形的”, 而在工程领域中指“混凝土、固结的”; flare 普遍的意思是“闪光、闪耀”, 而在工程中指“火炬、火舌、喇叭天线、照明弹”; tender 一词的基本词义为“嫩的、温柔的、柔软的”, 而在工程中则具有“标书、投标、偿付”等意思。

1 多名词化结构

为使行文简洁, 工程英语中大量使用表示动作或状态的抽象名词或具有名词功用的动名词形式以及名词短语结构。如 the inspection and acceptance of light concrete wall panel (轻混凝土墙板验收); removal and erection of moving scaffold (移动式脚手架的搭建拆除), the generation of heat by friction (摩擦生热) 等。

2 多长句和逻辑关联词(logic connectors)

工程英语中一方面大量使用名词化结构以及悬垂结构来压缩句子长度, 另一方面为了充分说明事理, 也常常使用一些含有许多短语和分句的长句, 并辅之以逻辑关联词, 如 hence, consequently, accordingly, then, however, but, yet, also, on the contrary, as a result, furthermore, finally, in short, therefore 等, 以使行文逻辑关系清楚、层次条理分明。例如:

Regardless of whether or not your company is in a bargaining position to meaningfully negotiate those terms before signing on the dotted line, failing to appreciate what it is you are agreeing to can mean the difference between a lucrative project and a messy dispute with damaging financial and reputational fallout.

在合同签字之前, 无论该公司是否处于合同谈判的有利地位, 如果不熟知合同内容, 将可能产生两大截然相反的结果, 一是项目盈利, 二是陷入难以解决的纠纷当中, 导致经济及名誉上的损失。

3 多用一般现在时和完成时

一般现在时和完成时在工程英语中常见。这是因为前者可以较好地表现文章内容的无时间性,说明文章中的科学定义、定理、公式不受时间限制,任何时候都成立;后者则多用来表述已经发现或获得的成果。如:

A kick-off meeting is intended to review all the technical and commercial features of the contractual package and to remove any potential impediments to job execution.

开工会旨在审查合同标段的所有技术商务特点,排除施工中的潜在阻碍。

4 多被动语态

总体而言,英语中的被动语态要比汉语多,在工程英语中尤为突出。工程英语的语旨是要阐述与工程相关的各种客观事物的本质特征,描述其发生、发展及变化过程,表述它们之间的联系,所涉及的主体通常是客观事物或自然现象,被动语态也就得以大量使用。此外,被动语态所带有的叙述客观性也使得作者的论述避免主观色彩,更显科学性。与这一特点相适应的是工程英语中少用第一人称和第二人称。即使非用不可,也常常采用它们的复数形式来增强论述的客观性。例如:

Communication with contractors shall be maintained through general correspondence (letter/fax/e-mail) and through minuted meetings which are initiated and controlled by contracts department.

必须通过信件、传真、E-mail 等常规通信手段以及由合同部门起草控制的会议纪要,与承包商保持信息沟通。

5 经常出现长难句

大量使用长难句是工程英语文献的一大特点。要正确理解和翻译这类长句,须首先弄清原文的句法结构,分清层次及各层次间的逻辑关系,然后在忠实于原文的基础上,按照汉语的表达习惯准确地译出。