Construction Cost Effectiveness Task Force

Guide for Global Project Delivery

February 1999

The Business Roundtable
An Association of Chief Executive Officers Committed to Improving Public Policy

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Guide for Global Project Delivery

A White Paper from THE BUSINESS ROUNDTABLE
February 1999

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I. INTRODUCTION

Purpose

The Construction Cost Effectiveness Task Force of The Business Roundtable believes a need exists for information on the various factors involved in planning and executing capital projects in an international location. This report represents the product of that effort.

This study is intended to represent an initial overview of the many different issues confronting U.S. firms as they invest in overseas operations. Global factors impacting any investment decision in new facilities can be quite complex and vary significantly from region to region and industry to industry. They are also highly dependent on the sponsoring firm's specific requirements. This report serves as background information and provides a number of checklists to prepare team members as they begin the process of developing a project approach and implementation plan for overseas investments.

The United States is a major player in most industrial markets on a global basis. As the U.S. domestic economy has matured, U.S. firms have been aggressively pursuing international markets, low-cost producer status and manufacturing locations in proximity to the emerging third-world markets. Often, the most attractive locations from a labor cost standpoint are those countries with the least-developed legal systems, frequent political instability and consequent higher levels of risk. Thus, the planning and feasibility phases and risk mitigation strategies must be well executed.

Evaluation of the front-end factors in selecting an international location and planning the project development and execution must include not only all of the issues influencing the establishment of the new facility, but also the ongoing operational environment, the flexibility to change directions, close or sell the facility, and an exit strategy.

Thorough preparation, intimate knowledge of the destination site factors and effective project teams have enabled most companies to be quite successful in their international investments. This report does not by any means discourage such plans. If there is a single overriding message, it is that *Owners must invest in quality front-end planning and data gathering.* Major potential risk factors should be prioritized and mitigation strategies developed. Firsthand knowledge of the specific site conditions and business environment is essential. Blind reliance on internal skills in establishing international programs is highly risky. Locating the needed resources with firsthand experience in the subject country is a must.

Corporate Location Trends

As the world picture becomes increasingly democratized and international firms race to exploit new opportunities, there are major shifts in popularity of destination locations from one region to another. Despite typically being ranked as the most difficult country in the world in which to invest, China is predicted to land more foreign projects than any other country over the next several years. Europe has declined in popularity and faces continued competition from emerging economies. South America currently is ranked the fastest growth region for foreign investment, with Argentina, Brazil and Chile leading in popularity for new investments. The pace of investment in some Asian countries, such as India, Vietnam, Malaysia and Indonesia, has slowed somewhat. Eastern Europe, Russia and the former Soviet republics remain difficult environments and have fallen in popularity.

The following table presents the results of a survey of 100 major global firms with definite plans for new international facilities.

Global Investment Plans

Country	% of 1996 Respondents Considering Investing	% of 1995 Respondents Considering Investing	Rank 1996	Rank 1995
China	34%	27%	1	1
Brazil	20%	5%	2	26
Chile	19%	4%	3	27
Argentina	18%	4%	4	27
Germany	17%	24%	5	3
Malaysia	16%	13%	6	10
India	16%	15%	7	7
Poland	14%	18%	8	5
United Kingdom	14%	27%	9	1
Indonesia	13%	7%	10	20
Former Soviet Republics	13%	10%	11	14
South Africa	12%	13%	12	10
United States	12%	13%	13	10
Vietnam	11%	14%	14	8
Thailand	11%	10%	15	14
France	10%	16%	16	6
Singapore	9%	10%	17	13
Spain	9%	6%	18	24
Czech Republic	8%	18%	19	4
Mexico	7%	8%	20	19
South Korea	7%	7%	21	20
Netherlands	7%	14%	22	8
Australia	7%	—	23	—
Philippines	7%	7%	24	20
Belgium	6%	10%	25	14
Japan	6%	10%	26	14
Hungary	5%	10%	27	14
Italy	5%	—	28	—
Russia	4%	6%	29	24
Turkey	4%	—	30	—

Source: *Corporate Location* September / October 1996

The competition among global firms to penetrate new markets and the aggressive pursuit of these companies by various countries and regional trade groups make for a highly dynamic situation.

Location Factors

It comes as no surprise that the attitude of governments was cited as the most important influence on a cross-border location decision. Political risk continues to be a very serious consideration, ranking higher than factors such as labor costs.

Factor	Importance
Government Attitude	1.7
Skills	1.8
Political Risk	1.9
Taxation Levels	1.9
Road Links	1.9
Labor Flexibility	1.9
Currency Stability	1.9
Telecommunications	1.9
Access to a Major Trade Bloc	2.0
Labor Costs	2.0
Access to Suppliers	2.1
Energy Costs	2.1
High Productivity	2.2
Financial Incentives	2.2
Air Links	2.3
Land Costs	2.4
Moral Issues	2.5
Sea Links	2.5
Train Links	2.5
Availability of Local Partners	2.6
Ability to Speak Foreign Languages	2.6
Appeal for Expatriates	2.7

KEY:
1 = Crucial
2 = Important
3 = Somewhat Important
4 = Unimportant

Source: *Corporate Location* September / October 1996

Site selection requires a great degree of specialized expertise. Most Owners require third-party consulting assistance in evaluating international sites. The leverage in downstream impacts of the investment in front-end studies can be highly significant.

Partnering

Joint ventures (JVs) are the most popular method of gaining entry into new markets, particularly developing ones, and offer distinct advantages over looser alliances. In locations such as China, Brazil or Eastern Europe, nearly all foreign investment is by joint venture.

Not all entries into emerging markets involve JVs, and many JVs have proven unworkable. Partnering or licensing can gain access to markets faster than formal JVs and create a two-stage process that eventually may lead to the desired JV relationship.

Firms that select the JV option must choose carefully. Gaining solid background information on the potential partner is essential and, in some locations, can be difficult. Trade associations, banks, chambers of commerce, commercial databases and consultants are valuable sources of information. However it is done, exhaustive research is essential.

Important factors that might be included in a JV checklist include the following:

Joint Venture Checklist

Factor	Factor
• How good is the fit between the two companies?	• Do we agree on image, community and environmental policies?
• What is the other company offering that we lack?	• Has this partner formed JVs before? What is their track record? If they have not, the JV probably will take longer to set up than one with an experienced partner.
• What can they teach us?	• Do we get on as people? Is the chemistry there?
• Does the project tie in with their core business, and do they rely on it for profits or even survival?	• Are we reasonably confident their management will be competent over the long term?
• How fundamentally committed is this partner to the venture?	• Is our management geared up to the extra burden of running a new JV company?
• How do our time scales compare on startup?	• Are we kidding ourselves that we can do more as a team than we really can? Are we letting up on rigorous business analysis in favor of friendly faces?
• What kind of returns do we each expect and over what time?	• How easy will it be for this partner to withdraw or avoid responsibilities if things go wrong?
• What are our respective attitudes and financial health status (liquidity, risk aversion, dividend policies, currency management, etc.)?	• Are we sure that if this JV goes ahead, it will not clash with either party's existing business or links with other companies?
• What resources do we each possess (financial, capital, technology, management, etc.)?	• Does this company have other areas of business that might, at some future date, present an opportunity for our expansion?
• Will we be able to work through problems together?	• What will it cost if this project collapses compared to not doing it at all? What if the partner teamed up with our main competitor?
• Can we work together, both in terms of management philosophy and production methods?	

It is important to set up an experienced multifunctional team for the initial study that will lead into JV negotiations. Depending on the nature of the business, the team should include management, production, finance, legal/tax, personnel, engineering and someone well versed in the culture that is being entered.

In most third-world areas, forming a JV generally involves commitment by the U.S. party to a fixed cost for the facility, at least as far as the foreign partner is concerned. Thus, the U.S. Owner may unwittingly get committed to project technology, project execution, total project cost and the implementation schedule. In the end, the U.S. Owner will own the risk of remedy for any of these aspects. Thus, it must be recognized early that the JV is a business relationship that has basis in fixed agreements for implementation. It is vital to have Owner technical experts and project personnel involved early and continuously.

By the time negotiations start, the following should be known:

- What you are prepared to give and how far the other side can go to meet your demands
- What technical risk can be assumed
- Acceptable risk of technology loss
- Ownership of cost beyond agreed levels
- The ideal management structure of the new company
- The preferred size of your equity stake
- Where the company will be located
- What the nature and extent of the business will be.

Note: It usually will take from one to two years to set up the typical JV!

Project Execution Team

Most Owners who are investing in international programs are working with much smaller in-house staff resources than might have been the case in the past. This comes at a time when the complexities of international projects and the pace of change are accelerating.

In U.S.-based work, Owners have many viable choices of contractors and suppliers well qualified to execute significant capital programs. Most of the project parameters are well recognized, and the Owner/contractor/supplier relationships are well established. Often, alliances have reached fairly efficient multientity teams accustomed to working together.

The international scene, however, is quite different. Many new factors come into play, not the least of which are language, cultural, legal, governmental and political considerations. The risks often are multiplied.

The ability to deal with the many issues involved narrows the choices of contractors and suppliers and the number of qualified Owner in-house managers prepared for these challenges. Seldom can engineering organizations in developing countries execute program design and construction without major oversight by Owner companies.

The challenges are manageable and being met by most major Owner organizations with considerable success. The composition, however, of the total project team usually is not the same as for U.S.-based work and involves new players in specialized areas such as site selection, procurement, logistics, legal/tax matters, financing and human resources.

Owners should not skimp on the front-end studies and should invest whatever resources are appropriate. The cost penalty for failing to plan well is far disproportionate to the added initial costs. As the project team is filled out, contractor and supplier qualifications for working in the specific location in question must be evaluated carefully, down to the particular individual assigned.

Existing Versus New Facilities Choices

Gaining access to new markets through direct investment in grass roots facilities may or may not be the optimum approach or fulfill market timing requirements. Many Owners have opted for partial manufacturing offshore and final assembly in the new location. Others have bought or leased existing space, contracted for production, or purchased a local manufacturer to speed the process. However, U.S. Owner standards typically are such that older facilities and equipment may not meet present or future standards.

Obviously, there is no single best approach to all locations, and Owners will use a range of options.

Labor Issues

Local labor capabilities and availability of qualified management and technical personnel in most emerging markets are normally significantly different from U.S. locations. Construction safety and facility quality are major risks. Owners will need to spend in-country time assessing the local conditions. Requirements for the construction program may be very similar to those for the new facility. Expatriates probably will be required to lead the initial stages of both the construction and new business operations, but long-term Owners should develop in-country expertise as soon as possible and give local personnel significant responsibility in the success of the new facility.

Planning for the recruiting, selecting and training of personnel for the new facility is an essential element in early stages of the project. Local recruiting firms, technical schools and international consultants commonly are used to execute this responsibility.

Laws regulating employment can complicate matters considerably, particularly where termination indemnities are involved.

Report Contents and Path Forward

Global investments by U.S. companies will continue to accelerate as new markets and opportunities arise. The role of The Business Roundtable in supporting U.S. businesses in these endeavors will evolve and require updating on an ongoing basis.

This report covers a number of subjects that Owners will be addressing in international work, but it does so on a broad-brush basis. It is expected that Owners will have questions and needs that may not be addressed or are covered only briefly.

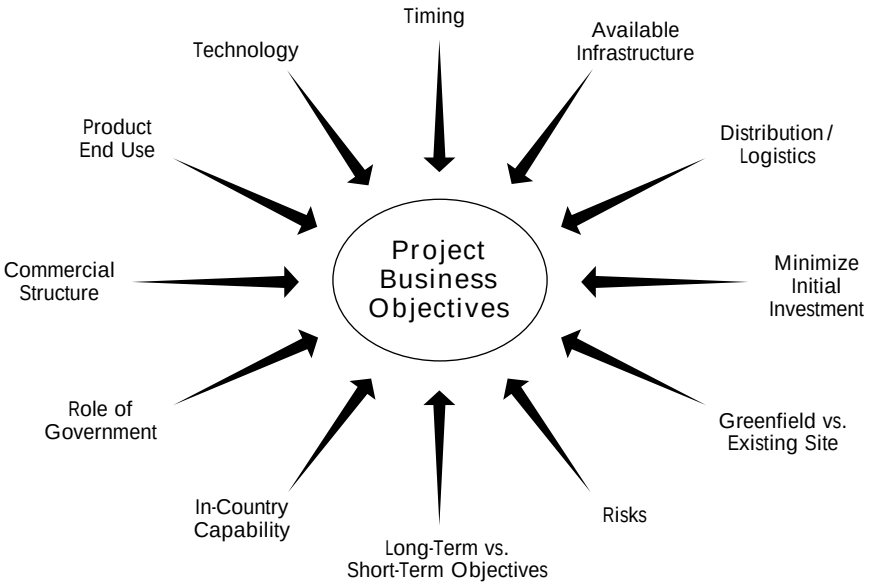
There is no question that virtually any aspect of global project execution covered in this report would require an in-depth study to be comprehensively documented. It will remain the challenge of The Business Roundtable members to determine what further research is merited and initiate the appropriate efforts.

II. Project Business Objectives

Overview

U.S. Owners are pursuing overseas opportunities aggressively as they bring their products and services to new markets. As production has moved offshore, Owners have had to adopt new business strategies that impact how new facility programs are implemented.

Project planning begins with a careful analysis of the Owner's project business objectives. Market timing, technology options, JV/equity partners and financing approaches all affect the decision-making. This section discusses some of the more important project business objective issues that typically must be addressed in shaping the final project approach.



Critical Project Business Objective Issues

Type of Technology

Choice of technology could be divided into two activities: reoccurring and nonreoccurring technology. Nonreoccurring technology may be the use of specific building techniques, equipment and systems that are not readily

available at the chosen location. They would be used until project completion and startup and then returned. This use of technology most likely would result in the use of outside contractors and produce limited technology transfer.

The issue of reoccurring technology would be the system chosen for the plant production equipment. In many cases, the selection of technology may be driven by labor costs or the ability of the infrastructure to support the sophisticated requirements of the production equipment. This technology level may result in significant technology transfer to the operating country.

The choice of technology for new offshore investments should involve careful consideration of the required support and infrastructure for high-tech operations in low-tech countries and the protection of proprietary technology. It may be unwise to introduce the very latest technology in locations where local skills or legal protection are limited. Network thoroughly with other Owners operating in the target country. There is much information available that can be shared only verbally.

Timing

Timing plans should be developed that identify all aspects of the business cycle from product concept through the final decommissioning of the manufacturing facility. Some of these timing issues can require more attention in international work than in U.S.-based projects and include:

- Licenses to operate
- Permits to construct
- Government-sponsored infrastructure improvements
- Permits to employ and pay wages
- Export/import permits.

Marketing, sales and advertising timing must be adjusted for international business conditions and planned to support the product launch.

End Use of Product

The expected market area and capacities of the product should be determined early in the business concept phase as they will be a factor in the selection of the

manufacturing location. Manufacturing for export and future market segments also should be considered when establishing locations of new manufacturing sites or planning the expansion of existing sites.

Commercial Structure

The commercial structure, including local JVs, may be driven by risk assessment, business decisions or governmental requirements. The use of an existing manufacturing entity can provide a number of advantages. However, the practices and agreements of the existing business may restrict the freedom to structure the new business in the most advantageous manner. Tradeoffs are expected.

The commercial structure of the new business is a critical element in the business planning process. A wide variety of approaches are possible. However, to embark without a specific partnership or local support may result in unacceptable delays in launching the new business.

Role of Government

In most global ventures, it is expected that governmental involvement will be significant. The governmental operations of most developing countries tend to control most aspects of business commerce in the country. In addition, government service in these countries tends to draw the best and brightest of the population during the development of a business-driven economy.

The business development practices of the government, as well as the tax and import/export regulation activities, have a great deal of influence on the advisability of locating a manufacturing concern in its jurisdiction.

In-Country Capability

Determination of the critical skills necessary for operation of the facility and identification of the available local resources to meet those needs impacts the site selection and shapes the work force selection and development process. Expatriate involvement in training and initial operations is common. In developing countries, management often faces a significant training cost up front for local personnel and then the challenge of retention as these resources become

more marketable. These human resource issues need careful analysis in the project planning process.

Long-Term Versus Short-Term Objectives

Short-term objectives could include product to market at the proper volume, cost of production and quality. Long-term objectives could include introduction of new products, distribution growth to new markets, expansion of production due to market growth and the possible relocation of other activities (e.g., engineering, marketing, sales, etc.) to the new location.

Risks

Fundamental to success is assembling the necessary resources to implement an international program. Owners must not approach international work as business as usual. Lack of sensitivity to the critical success factors can be fatal.

Risk assessment typically is more complex in international projects. Site selections take into account the major factors such as government stability and political risks commonly experienced in developing countries. Managing the execution of international facilities projects involves controlling multientity teams often of different nationalities with differing standards. Supplier performance may not meet expectations. Proprietary technology must be protected. Legal remedies may be minimal. Assessing and mitigating these risks is achievable with thorough planning.

The following presents a brief overview of typical risk factors and mitigating strategies.

Risk Factors and Methods of Control

Risk Category	Risk to be Controlled	Method of Controlling	Party Accepting Risk
Construction	• Cost overruns • Completion delay • Technology	• Fixed-price contracts • Completion guarantees • Proven technology • More equity	• Contractor/equipment supplier • Sponsor
Operating Risk	• Plant performance unsatisfactory • Force majeure	• Performance guarantees • Engineers' reviews • Turnkey contract • Insurance	• Plant operator/sponsor • Equipment supplier
Supply Risk (Transportation Risk)	• Resource cost increases	• Supply contract/term • Contingency reserves • Verify quality before and throughout construction • Analyze transport alternatives	• Input supplier
Market/Output Risk	• Demand/price falls for project output • Competition	• Fixed-price contract • Take or pay • Throughput • Transportation	• Output buyer
Regulatory Risk	• New laws (e.g., environmental)	• Clawback agreement (i.e., previous earnings distributions recalled)	• Sponsor
International Risk	• Currency swings • Political risk • Language	• Currency hedge • Political risk insurance • Composition of project consortium	• Bank or financial institution • ECA/private insurer/lenders

Greenfield Versus Existing Site

Existing sites can provide many benefits in speed to market, trained staff, existing licenses and permits, trained management staff, and import/export experience. Unfortunately, existing sites many times are sited poorly or not adaptable to the lean, flexible manufacturing system required. The decision to make the primary capital investment for a greenfield site should consider existing manufacturing capability, transportation and utility infrastructure, work force availability, and business development (e.g., market access).

Greenfield sites are a viable way to bypass local JV risks, especially in developing countries where the JV partner contributes very little.

Minimize Initial Investment

Decisions to minimize investment to reduce initial risks are driven by market volume projections, governmental or currency stability, and business decisions based on risk factors related to operational logistics. Later expansion plans also may consider each of the above issues as the maturing of the product, manufacturing staff and country unfold.

Distribution/Logistics

Analysis of the required raw and finished product distributions should be compared to the country's ability to provide a system of intermodal transportation, raw and finished product warehousing, and distribution. Tax, tariff, market growth and product life, including future products, also should be considered.

Available Infrastructure

The review of available resources (e.g., power, water, waste disposal), timing of the growth of those resources and risk of interruption must be considered in the business decision. Lack of reliable local power is common in some areas. Infrastructure costs to support the new facility can be major factors and should be raised in negotiations with the local governmental and industrial development authorities prior to final site selection.

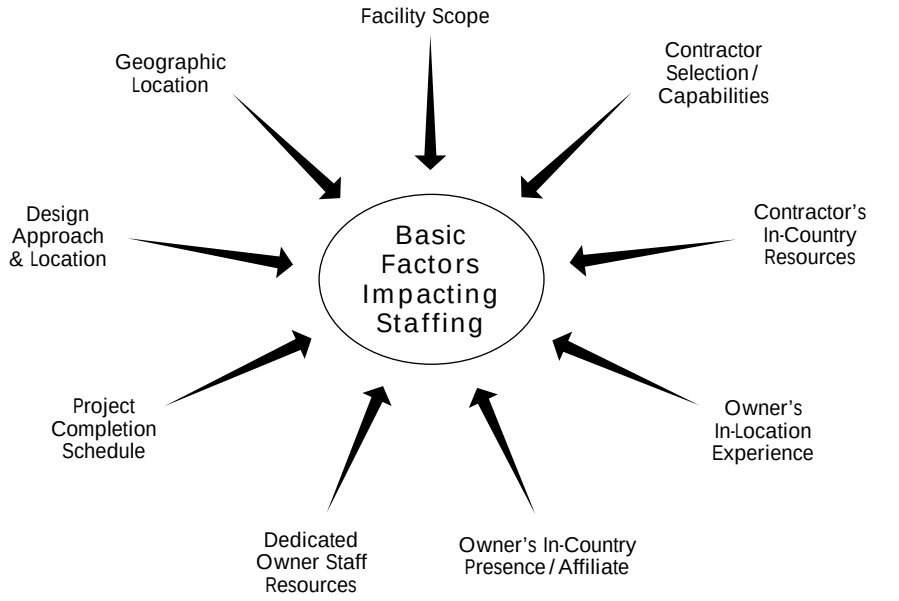
Information Sources

- *Craighead's Country Reports*
- The Economist Intelligence Unit
- International Siting Consultants
- Major Accounting Firms with International Offices
- National Trade Data Bank
  U.S. Department of Commerce Country Commercial Guides
- U.S. Department of State

III. STAFFING

Overview

Staffing decisions for international projects have a major impact on the final results achieved. Overseas assignments, often in developing countries, place personal demands on managers that require both experience and maturity. Language and cultural challenges are common. Family issues can complicate the manager's performance. Ideally, Owners seek individuals who have both the management and technical expertise as well as the specific in-country experience for the project location. In most instances, a core expatriate team is required, and expatriate costs are significant. Owners can mitigate these issues through training and development of personnel from the destination location. However, this training must take place well ahead of the project mobilization.



Critical Staffing Issues

The project organization and staffing requirements for international projects are functions of the scope, approach and geographic location of the project. Minimization of staff cost, as always, is a driving factor; unfortunately, an

uninformed or overzealous local approach to staffing decisions repeatedly has doomed otherwise viable projects. Tradeoffs are required between the experience and knowledge of key expatriate individuals and the cost benefits and understanding of in-country resources. Bringing promising in-country personnel to the U.S. or other Owner offices for training prior to the project mobilization can be an effective option.

Factors affecting the staffing strategy include the following:

- Cultural compatibility of Owner/contractor staff with local personnel
- Facility scope, schedule and technical requirements
- Owner's in-house capability (e.g., engineering, project management)
- In-country technical and management resources including a JV partner
- Availability of contractor staff experienced in the destination country
- Destination country stability, living conditions and cost of living
- Ability to identify expatriates willing to perform in the local environment
- Technical implementation capability of local staff.

Factors in Selecting Expatriate Personnel

The following factors should be determined when considering expatriates for project teams:

- Human factors such as personal flexibility, language capability, travel interest, family situation, health, schools requirements, etc. *(These are the primary source of success or failure in the assignment.)*
- Government restrictions on the use of foreign personnel
- Requirements for work permits
- Immigration regulations, including family work restrictions
- Availability of housing, schools, food, transportation, communication and medical/dental services
- Laws regarding dress, travel and currency restrictions
- Language requirements
- Local tax provisions/tax equalization
- Legal benefits required to be paid employees (e.g., travel time, sick leave)

- Political stability and climate
- Personnel security issues
- Allowances for living costs, hardship, workweek, etc. paid for by other firms in the geographic area
- Provision for ongoing U.S. or local social security and insurance costs.

The ease or difficulty in determining this data will be determined by the remoteness of the project location, whether or not the Owner has recent experience working in the area and whether or not there is a local affiliate organization in the country in question.

Early Planning Is Important

Given the complexities of international projects, early planning and development of staffing strategies are important. The size, structure, roles and assignment durations for the project team may change and evolve as the project is developed, but an initial plan is needed as early as possible. Staffing plans should be made well in advance of actual need dates to avoid delays in project team mobilization and to allow for relocation and any language or other special training required.

A further consideration in early planning is to determine at what stage of the project to bring in key managers from the contractor organization(s). Early alignment and integration of the Owner team with key contractor personnel can enhance substantially the planning and execution efforts.

Sources of Personnel

Determination of the staffing requirements involves not only consideration of the scope, schedule and location of the project, but also the division of responsibilities among the various entities in the project.

Typical sources of personnel include the following:

- Owner's organization
  - Headquarters or central engineering personnel
  - Division operations or regional personnel
  - Local affiliate personnel
- Consultants
  - Local in-country personnel
  - Hiring of other expatriate or local personnel
  - Contract staff from U.S., international and local contractor organizations.

The role of the project manager is key in international project work. This individual and the core project team should be selected from the permanent staff of the Owner. If the Owner does not have an ideal candidate, they should hire one. *Compromise equals failure!* Ideally, all project team personnel should have the requisite skills and experience on similar projects or in the destination country. Typically, the use of Owner and/or contractor expatriate personnel for at least key management positions is required. These individuals should have as much knowledge as possible of local laws, customs and business practices.

Expatriate Administration

In many cases, the project team will consist of personnel on assignment, away from their home locations. When relocated to a foreign country, an employee often experiences both highs (e.g., increased responsibilities, world travel, additional income) and lows (e.g., absence from family and friends, personal risk, career concerns in being away from the home office).

The assignment of personnel outside of their native country is complex and requires a clear-cut understanding between the employee and employer. In addition, it is important that there is an effective process for assisting expatriates in getting assimilated quickly into their new work location.

Assignment Agreements

Misunderstandings about assignment conditions are mitigated by a written assignment letter of agreement between the employee and employer.

Some details may vary between individuals, based on the employee's country of origin and job level, but consistency should be sought in assignment conditions. Items to be included in such an agreement are:

- Job description
- Family/single status
- Expected duration
- Work hours
- Compensation, including premiums, overtime provision, completion bonus, etc.
- Benefits, including health plans, unemployment insurance, disability coverage, etc.
- Physicals, visas, passports and other processing costs
- Special allowances such as home maintenance, living accommodations, furnishings/utilities, transportation, etc.
- Shipment/storage of household goods
- Schooling provisions
- Vacation entitlements
- Taxes and tax equalization programs
- Reassignment after project.

Orientation

Team orientation, including families, is essential, and organizational team-building efforts must be planned early in the project. In today's project execution environment, team personnel have diverse backgrounds and varying qualification levels for their assigned roles. The project manager is required to fill the role of leader and facilitator in molding an effective task force.

In-Country Personnel

Availability and qualifications of in-country personnel vary dramatically depending on the project's geographic location. During the in-country phase of the project, staff planning and training will have to be provided for the new facility. Key local individuals who will manage and operate the facility ideally are brought in during the construction of the facility and may be involved in the project.

Regardless of statements of capability, certain developing country resources are incapable of program management and timely execution. Owners must identify the real skill level available and complement with their own staff as required.

In-country staffing requirements are met through various means, including the local engineering and construction organizations, technical schools and agencies — both government and private — and through the assistance of the other entities involved in the project, including the overall general contractor. Offshore training may be required and should be initiated early in the project. Travel restrictions, immigration regulations and economic/social issues may be barriers. In some cases, specialized assistance from human resource consultants may be appropriate.

Information Sources

- Country-Related Books

  There are numerous country-related books for target destinations that can be extremely helpful.
- *Craighead's Country Reports*
- The Economist Intelligence Unit
- The Internet

  The information available varies in quality and content from country to country. Generally, the Internet will eventually be a valuable source. However, experience in accessing information on the Internet is required to yield the most valuable results.
- National Trade Data Bank

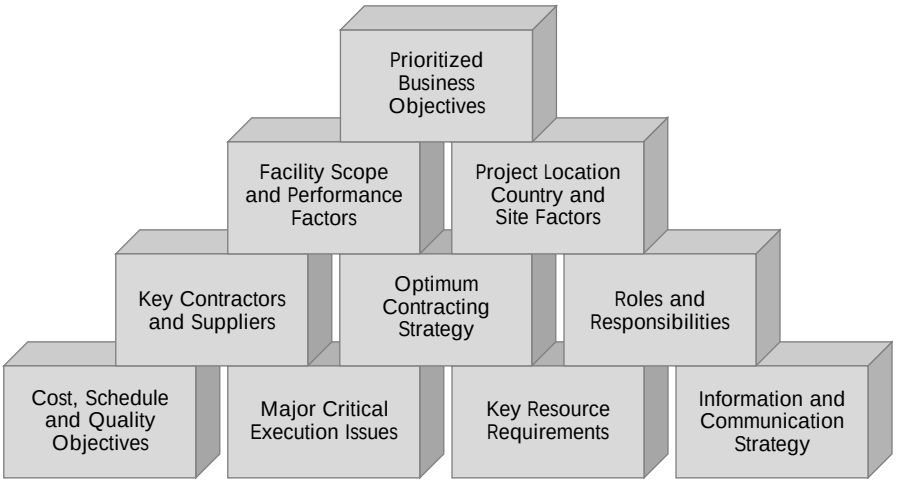
  U.S. Department of Commerce Country Commercial Guides
- *Personnel Journal*

  Trade journal that regularly publishes articles on global staffing issues

IV. Project Implementation Plan

Overview

Success in international projects is highly dependent on the quality of the front-end data-gathering phase. Owners must gain firsthand knowledge of the destination location parameters early in the project planning phase. The investment in thorough front-end planning is essential. Further, this effort should include the key players who will participate in the project implementation, including the Owner, JV partners and prime contractors.



Critical Implementation Plan Issues

Probably the greatest area of risk is underestimating the importance of thorough front-end planning. It is essential to have accurate on-the-ground knowledge of the conditions at the site. Owner and contractor teams must spend adequate time in the destination country to gather information vital to front-end planning.

Resources, capabilities and approaches used in construction, contracting, regulations and cultural issues all complicate the in-country execution phase and introduce factors not present in a U.S. project.

Early involvement of the key contractors and suppliers in the planning phase can contribute greatly to the smooth transition from the planning stage to project implementation. Quite often Owners will hire a qualified international contractor to act as the program manager. The contractor can be most effective when brought in as early as possible in the planning phase. *The goal is a supporting total team culture* with common goals and objectives.

When combining the local factors with the challenge of integrating multi-entity and multilocation teams normally required for major international projects, the demand for thorough planning becomes apparent. A successful project is achieved only when all of these dynamics are well orchestrated to meet the Owner's project objectives for quality, safety, cost and schedule.

Project Implementation Planning

Implementation planning involves integration of the program objectives, multientity project team members, project site considerations and the business objectives driving the new investment. Implementation planning is begun well in advance of the execution phase.

Implementation planning accomplishes the following:

- Selects the courses of action that have the highest probability of meeting project objectives
- Provides a broad foundation for the development of detailed planning and project procedures.

Project Implementation Plan

A project implementation plan is a realistic plan for the project that complements other project and contract documents. It is a living, working document prepared early in the project and evolves as the project moves from one stage to another. It focuses the attention of the project team on the critical issues.

Obviously, no two Owners or contractors use precisely the same approach to project execution. Many different forms may be effective. The essential requirement is that the project implementation plan represent a mutually shared set of goals, procedures and responsibilities within the total project organization, clearly stated and revised to reflect the changing conditions.

The objectives of the plan are:

- To document the Owner's business objectives, priorities and philosophy for the project
- To define the roles and responsibilities of the principal organizations involved in the execution phase
- To highlight critical execution issues (potential problems and opportunities) and to outline actions to mitigate the risks
- To provide a baseline for cost estimates and schedule
- To identify the optimum contracting strategy.

Aligning for a Common Vision

International projects challenge the traditional project organization and communication concepts. The geographic factors, in-country factors and pace of the typical project come together to compound the normal challenges of capital projects.

An effective tool to address these challenges is the project team *alignment process.* During the initial stage of the project, key team members, including the contractors and key suppliers, join the Owner in a series of alignment sessions to define the project goals, responsibilities of the team members and critical factors for project success. This open sharing of perspectives can prevent conflicts that can adversely impact project success.

Alignment strategies must recognize cultural differences. The degree of openness and communication varies considerably in international settings. However, all team members must understand project priorities and key objectives.

Contents of a Project Implementation Plan

The following presents one approach to the project implementation plan. Its main advantage is its proactive approach to managing project risks. There are five primary elements to the plan. They are:

- Owner's prioritized venture plan/business objectives
  (Note: *Prioritizing* is key.)
- Roles and responsibilities of the major parties
- Major critical execution issues
- Contracting strategy
- Project background information.

A brief explanation of these sections follows.

Owner's Prioritized Venture Plan/Business Objectives

In this section, the Owner specifies goals and objectives for the project. Each objective should comprise one key factor and be stated concisely, such as:

- Attain a reliable facility with a high service factor
- Minimize operating costs
- Complete the work on schedule

Typical objectives often are based on:

- Capital cost
- Schedule
- Construction safety performance
- Facility quality and maintainability
- Returns on investment
- Origin of resources
- Environmental factors
- Socio-economic factors.

The objectives must be prioritized. Parameters for measuring success must be specified.

If project priorities change in the course of execution, this section of the plan may need to be revised and reissued.

Roles and Responsibilities of the Major Parties

Clear definition of the roles and responsibilities of the Owner's and contractors' organizations is critical to the project's success.

The elements in the Owner's organization may include, for example, different business lines, a local affiliate, a central engineering group and a central procurement group. It is imperative to assign responsibility for planning, basic design, cost estimating, preparation of technical specifications, contracting, accounting/audit activities, etc. among these groups. Also to be delineated are the authority/approval levels for commitments, expenditures, changes and invoice payments.

The organization of the project team should be addressed, including which of the Owner's organizations will fill project team positions. On large, complex projects in which multiple organizations are involved, it is beneficial to include a communications plan among the organizations.

Major Critical Execution Issues

This section focuses on identifying "critical issues" that have the potential for causing significant deviations from the Owner's objectives. Critical issues are very specific to each project. A critical issue for one project may not be important on another project. As such, all key project principals should be involved in identifying these issues, and they should be reviewed and updated throughout the project.

For maximum effectiveness, each critical issue should be reduced to a single page in the project implementation plan, following a simple format:

- A concise statement of the issue, including why it is a problem/opportunity and the potential impact on the project's objectives
- A statement of a proposed strategy that will mitigate the problem (or capitalize on the opportunity)
- A step-by-step action plan to attain the strategy (Each step should be specific, identify a target completion date for the step and note who has the responsibility.)
- The basis for this item in the project cost estimate and schedule.

An example of a critical issue write-up is included as Attachment A to this section.

Contracting Strategy

A well-thought-out contracting plan is prepared and included in the project implementation plan. This plan defines all of the contracting approaches, evaluates them with respect to the approaches and project objectives, and recommends the optimal contracting program (e.g., number/type of contracts, potential bidders, timing of key contracting activities, commercial terms).

Project Background Information

This section contains summary-level, supplementary information that gives a capsule view of the project. It typically includes items/topics such as:

- Project scope (e.g., major units and operating parameters)
- Project status
- Latest cost estimate (e.g., total installed cost, detailed engineering hours, field hours)
- Milestone schedule
- Project environment (e.g., politics, technology, materials, equipment)
- Resource requirements (e.g., finances, technology, materials, equipment).

Timing

Project implementation planning should begin shortly after inception, when an initial budget estimate is to be made. While some items may be very preliminary, all will have bearing on the project cost estimate and schedule. Hence, an early project implementation plan should be produced well before funds are appropriated for the project.

As the project progresses, the plan should be updated to confirm objectives, add or clarify roles and responsibilities, identify additional critical issues, and reflect current contracting approaches. After contract award, the plan should be updated for issue to the prime contractor.

Information Sources

- Construction Industry Institute
- Independent Project Analysis (IPA), Inc.

ATTACHMENT A
SAMPLE CRITICAL ISSUE WRITE-UP

ISSUE: Government Permitting ISSUE NO. 010

CATEGORY: Construction

STATEMENT OF THE ISSUE:

The process of obtaining the numerous government permits required for construction of the ABC Project is complex and demanding. It will require a well-planned effort by the Owner, the prime contractor and the project management team.

Both the local municipality and state administration have strong interests and extensive permitting authority in the areas of safety and environmental control. Several laws and regulations are related to the construction and operation of the ABC Project. Each law requires government approval for the portion of the project it affects prior to the start of construction. A detailed listing of these laws is in the project files (#15.01 Environmental Permitting).

While the permitting system is complex, it is well documented, and the times required for government approvals are reasonably predictable. However, some requirements may become more severe in light of the recent difficulties experienced at the XYZ plant.

ENABLING OBJECTIVE:

Ensure that all required government permits are obtained in a timely fashion so that project completion is not delayed.

ACTION PLAN:

Step	Action By	When
• Develop a detailed plan for permitting, including complete identification of all required information, a schedule of submissions and responsibilities for each submission.	Local Affiliate Environmental Affairs Manager	March 1, 19xx
• Submit final permitting applications to authorities.	Local Affiliate Environmental Affairs Manager	May 1, 19xx
• Check on status of applications monthly. Report any deviations from plan as soon as possible to the project manager.	Contractor Engineering Manager	

BASIS OF COST ESTIMATE/SCHEDULE:

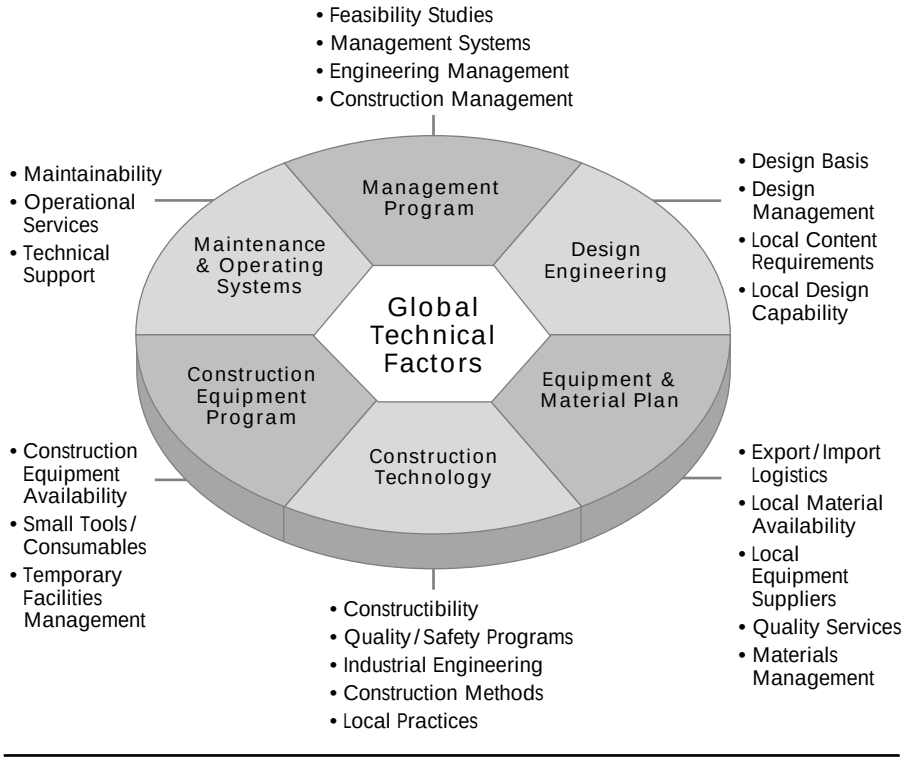
Permitting is on the critical path. Milestones will be met without payment of cost premiums.

OVERALL STEWARDSHIP BY: Project Manager

V. Technical Issues

Overview

The technical issues surrounding execution of international projects differ from those of U.S.-based projects in a number of significant ways. Transferring a U.S.-based process to an international site can involve tradeoffs and limitations that arise from the destination country resources and technical sophistication. These factors must be taken into account during the earliest stages of the project.



Critical Technical Issues

During the conceptual stage of the project, the factors specific to the final site location, such as local content, availability of suitable suppliers for equipment and ongoing support, and local codes and standards, will establish certain parameters guiding the overall design approach. International procurement of major

equipment can offer cost and quality advantages. Offshore vendor choices may result from suppliers who offer attractive commercial considerations.

On the other hand, local content regulations and the need for ongoing technical support may well lead to in-country sourcing, particularly for noncritical materials and supplies. Furthermore, the project financing plan may involve considerations of in-country procurement based on local government guarantees or grants.

These alternatives often will have a significant effect on the design approach. The tradeoffs to achieve the optimum balance of cost, quality and schedule while maintaining the desired performance are the primary technical issues that must be addressed.

Technology

Use of less than fully proven in-service process designs, equipment or materials is risky at any time. In a foreign or remote location, the risk is compounded and generally to be avoided by selecting well-proven designs, equipment and materials. Similarly, scaleup of pilot plants or smaller volume units or equipment to much larger sizes is also very risky.

Overly complex designs should be avoided. For example, sophisticated control and alarm systems, when not maintained in a finely tuned state, often end up being bypassed due to tripouts and reliability problems.

For some process or other manufacturing plants, it often can be cost effective to reuse designs from prior projects with adaptation to the local conditions. Similarly, it may be worthwhile to consider relocating all or portions of a plant to the new location. These measures can save significant “time to market” and overall costs.

Local Issues

In locations where the project must rely on supporting infrastructure to be built/maintained/operated by local government agencies or local firms, great care needs to be taken to ensure the desired project outcome can be achieved.

In some instances, new project Owners unexpectedly must finance infrastructure development/completion. This could include access to roads, airstrips, power, water, etc. and involve major additional costs.

Construction and operating permit needs, importation requirements, etc. must be known in detail — not only what the laws/regulations say, but also how these are applied in practice. Delays and added costs frequently arise due to late appreciation of these requirements.

Management Programs

Feasibility studies and early planning for international projects must be well executed and include careful consideration of the country factors that affect the final cost, schedule, quality and performance of the facility.

The use of modern program/project management technology to develop a project program that meets the Owner's needs, as well as the local business, cultural and technical requirements, is essential to the success of any project.

Some key elements of global program technology include the following:

• Feasibility Studies	• Market/financial analysis • Political, business security conditions • Location and siting studies
• Management Systems	• Master/implementation planning • Master budget/schedule • Project controls programs
• Engineering Management	• Global engineering • CAD/communication systems • Global procurement network
• Construction Management	• Constructibility and design reviews • Preconstruction planning • Construction implementation.

Design Engineering

The design engineering plan must incorporate consideration of the origin of the front-end package, the location and requirements for preliminary engineering and related studies, and the detailed design that may be done in the destination country or a regional design office. For major global work, these design activities may include 3D CAD systems with multiple design offices and vendors linked to a central design model.

Selection of the design approach may include consideration of low-cost engineering locations for front-end or detailed design scope elements.

To take advantage of low-cost engineering resources, a complete front-end engineering package is critical prior to transfer of the detailed engineering effort to a low-cost engineering resource. Low-cost engineering resources often have difficulty dealing with change, which has a resulting negative impact on the project cost and schedule.

Low-cost engineering resources require a very clear definition of their work responsibilities to be used effectively. It also may be beneficial to integrate their resources into the front-end engineering package development to ensure an effective transition into detailed engineering.

Key Parameters

In general, some of the key parameters that must be considered from a technical standpoint are as follows:

- Design Basis
  - New or adapted design
  - Scope packaging / modularization
  - Standard International Units (SIU)
- Design Management Program
  - CAD / communications
  - Design transfer process / expatriates
  - Liability / risks / responsibilities
- Local Requirements
  - Codes / standards
  - Environmental restraints
  - Permitting / approval process
- Local Capabilities
  - Consultant / contractor sources
  - Design experience / capability
  - Technical support services.

Modularization

Modularization can provide significant advantages for international projects, particularly where the process equipment requires technology and fabrication capabilities that may not be available in emerging countries. Use of a modular approach must be decided early in the planning process.

The advantages of modular design and construction may include any or all of the following:

Cost Savings

Shop fabrication is more efficient than field construction due to the controlled environment. Routine supervision is increased. The potential for errors is reduced. Compact modular design is material efficient; modules require less piping, conduit, wire and other hardware. However, there are both positive and negative potential cost impacts. Lower costs of labor and higher productivity in the shop environment can decrease the cost, while increase in design and material (structural steel) costs may have an opposite effect.

Quality Control

Maintaining comprehensive quality control, particularly in underdeveloped countries, can be more difficult in the field than in a shop environment. Shop programs have more constant supervision. The environment is controlled, protected from the weather and site contamination. Shop fabrication personnel may be more skilled. Material storage, handling and control can be superior.

Schedule Issues

Overall plant design and construction schedule can be optimized. Parallel shop fabrication and site preparation activities allow compaction of overall schedule. In-shop testing of equipment allows quicker checkout and startup at the site.

Reduced On-Site Labor and Support Needed

On-site labor for erection of modules requires less-skilled construction workers. Interference with operations and ongoing construction is reduced. On-site inspection, material handling and security demands are fewer.

Modularization has been used in international projects for single systems up to entire processing plants. Where regulations and in-country conditions will permit, modularization can be an effective approach.

Maintenance and Operational Systems

For global projects, planning of startup, maintenance and operational programs should be introduced at the earliest possible stage. The implementation of new technology and processes into the local arena will involve developing programs that mesh with the local culture and assist in identifying, recruiting and training the local staff and work force. Some aspects of such programs include the following:

• Operator Programs	• Program development • Operational systems / automation • Staff / worker training / capability assessment
• Maintainability	• Assessment of current capability in previous installations • Input to design • Design review
• Maintenance Programs	• Program development • Maintenance systems • Staff / worker training
• Technical Support	• Services required.

Material/Equipment Sourcing

Maximum use of available local materials can be cost effective. Duties, tariffs, taxes and transportation have a significant effect on both the cost and timely delivery of imported goods and materials. Identification of local material sources and confirmation of quality and delivery are essential early activities. For imported materials, access to an effective global procurement network and delivery system is required.

Sourcing decisions may require multidiscipline teams that take into account in-country supplier capability, local content regulations, financing options, delivery issues, and quality control and ongoing support considerations.

Aspects of material and equipment sourcing may include the following:

• Local Material Use	• Building methods and materials • Sources of materials • Delivery logistics and cost
• Local Equipment and Systems	• Availability, quality and cost
• Quality Services	• Local standards and practices • Material quality/standards • Quality assurance/quality control services • Testing services
• Materials Management	• Global materials management system • Material planning and management tools • Bar coding and data exchange technology • Import/export logistics.

Construction Technology

The in-country approach to construction, including equipment and construction technology, must be considered in the approach to the design and project execution. Imposing U.S. construction approaches in emerging countries may not be cost effective when local practices can meet the needs. Often, the availability of construction labor resources can be a deciding factor. Where qualified craft resources are limited, modularization may offer advantages.

Considerations in construction technology include the following:

• Constructibility	• Review of local construction methods/practices • Construction input to design
• Quality	• Inspection and testing programs • Safety program • Loss prevention/security program
• Industrial Engineering	• Work process analysis • Logistics, traffic and facility management • Material handling and equipment use
• Construction Methods	• Improved methods/practices • New construction technology • Training.

Construction Equipment/Programs

In many global locations, local subcontractors have limited financial resources, unsuitable equipment, and ineffective control of construction equipment and small tools. The provision of major construction equipment, small tools and consumables, and on-site facilities by a major engineering and construction (E&C) contractor will improve subcontract mobilization, enhance subcontractor coordination, increase equipment utilization, and reduce mobilization and construction execution costs.

Some elements of such a program are noted below:

• Construction Equipment	• Equipment scheduling/utilization • Maintenance and fueling • Supervision/operator training
• Small Tools/Consumables	• Bulk procurement/warehousing • Inventory/issue control • Tool repair/training
• Temporary Facility Management	• Camp management • Office/temporary facilities • Site security
• Rent/Purchase Options	• Rent equipment and tools • Rent/option to buy • Purchase/retain or resell.

Information Sources

- International Design/Build Contractors
- International Siting and Consulting Contractors

VI. CONTRACTING

Overview

Contracting approaches for all projects must support the overall Owner objectives; incorporate consideration of the country's laws and practices; and provide the Owner with the appropriate level of management control over the cost, schedule, quality, technical and legal considerations.

Global Project Contracting Factors/Options

- Project scope/schedule factors
- Project financing strategy
- Financing agency requirements
- Process well-defined or evolving
- Risk sharing between Owner and and various project participants
- Country's legal, business environments
- In-country joint venture (JV) partner issues
- Local contractor capability/practices
- Government regulations
- Currency issues/repatriation of profits

Critical Contracting Factors

Many factors enter into the contracting approach. What is the Owner's philosophy toward risk sharing among the Owner and contractors? What is the financing plan, and what guarantees are required by the financing institutions? Does the Owner have alliance relationships with key contractors? Is the process well defined or evolving? How aggressive is the project schedule? Is there an in-country JV partner? What incentives are being provided by the destination country?

The pace of today's business is driving Owners toward new approaches that can accommodate considerable uncertainty while still retaining protection for the Owner within an acceptable window of cost and schedule. The variety of available contracting options is wide. It is likely that no two Owners will approach international projects in exactly the same manner.

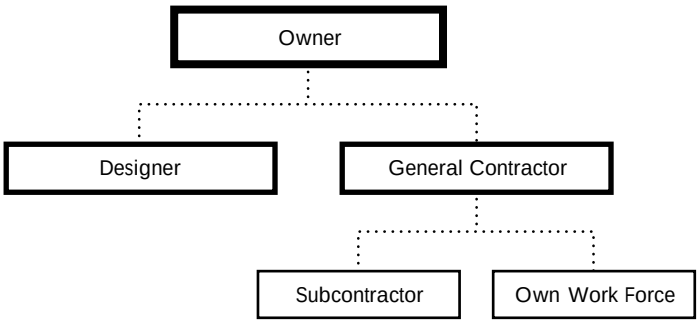
Overall Project Delivery Approach

One of the earliest decisions impacting contracting is the approach the Owner will take in the overall management of the design and construction programs. Presented below are schematics and brief comments on the more common approaches.

Owner as Program Manager

One frequent approach is for the Owner to retain the total role of program manager and select two firms that work under the Owner's management: (1) the design firm and (2) the general contractor.

Traditional Approach



- Separate designer
- Single general contractor
- Numerous subcontractors
- Fixed-price, unit-price guaranteed-maximum or cost-plus fixed-fee construction contract
- Negotiated professional fee for design services

This approach places the direction of the design and construction in the hands of the Owner. The Owner team is required to take a very active role in all aspects of the work.

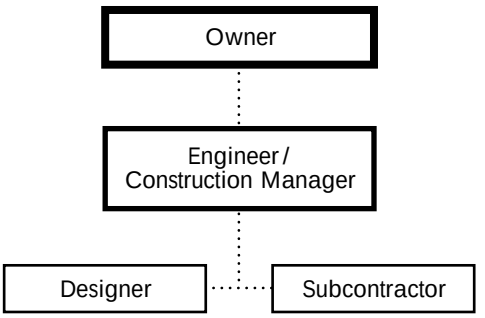
Engineer/Construction Manager

Another frequently used approach is for the Owner to contract for the services of an engineer/construction manager. Under this scenario, the contractors themselves perform the design and execute the construction program through subcontractors, typically on a multiple lump-sum contract basis. In a variation, the Owner contracts directly with the subcontractors, and the construction manager (CM) manages their work.

An additional variation of this involves the Owner's contracting directly with a process design firm while the CM handles the facility design or architectural/engineering (A/E) services. In this case, the CM provides overall design coordination.

The following diagram illustrates the CM approach:

Design/CM Approach



- Single firm is responsible for both design and construction, and it executes the design
- Fixed-price or negotiated individual construction contracts or subcontracts
- Fixed-price, guaranteed-maximum-price or cost-plus-a-fee design-construction contract

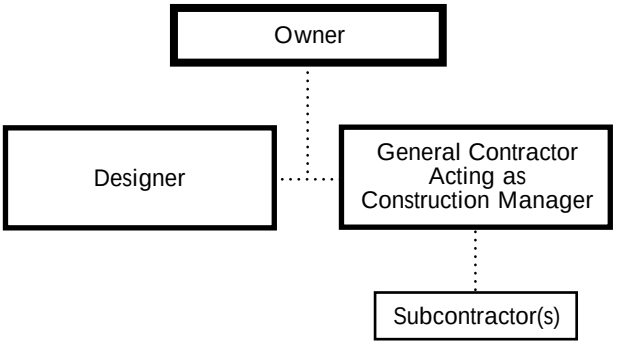
Note: An alternative to this approach has the subcontractors contracted to the Owner but managed by the CM.

As noted in the diagram, the Owner may award the subcontracts and assign them to the CM to manage.

Professional Construction Manager

When the design is provided by a separate design firm contracted to the Owner, the project may take on the form of professional construction management.

General Contractor as Construction Manager



- Three-party team of Owner, separate designer and general contractor acting as a construction manager
- Fixed-price or negotiated independent subcontractors
- Construction manager usually acting as agent for Owner
- Negotiated professional fee for construction management services with cost reimbursemen for subcontractors
- Negotiated professional fee for design services

In this case, the CM specializes in construction expertise and acts as design liaison, but the CM does not manage design.

A variation of this involves the Owner's contracting directly with the subcontractors. In this case, the Owner may delegate responsibility for managing those contracts but retains the legal relationship.

Contractor as Program Manager

In large international programs, the Owner may elect to hire a contractor to act as the overall program manager. In this case, the program manager operates as the Owner's representative. The Owner contracts directly with the design firm(s) and one or more general contractors, and the Owner assigns these contracts to the program manager for execution.

The demand for the services of a program manager has arisen in cases where the scope or timing of the program is such that the Owner's organization is not able to provide the necessary services.

The program management function may involve the total coordination of planning, feasibility studies, conceptual estimates, process design, A/E services, procurement, construction and even maintenance.

There are a number of advantages to this concept, including the following:

- Relieves the Owner of management and coordination responsibilities
- Provides guidance and direction to all parties to achieve the overall goals of the Owner
- Provides support in the development of the scope of work, budget and schedule
- Provides bid packages development for consultants, the architect/engineer and construction contractor(s)
- Supports the development of lump-sum or guaranteed prices for various services
- Provides a single source of contact for all project entities on behalf of the Owner.

Typically, the program manager is a major international contractor with in-house capability in design and construction, as well as in-house services for project support, such as planning, estimating, procurement and contracts.

When contracting with U.S.-based firms for international work, the Owner typically uses the same approaches as in domestic work, such as fixed fees, lump sums for certain services and incentive programs of various kinds. International work may not change the contract philosophy in any fundamental way with the designer and constructor.

On the other hand, the contracting approaches used for the in-country services may be quite different from those used in the United States. Government regulations regarding the role of a JV partner can have an impact. Tax laws can be such that to avoid certain import duties or VAT taxes, the in-country JV entity may be the contracting legal entity for certain services.

Other issues exist in the expectations of Owners with in-country subcontractors as to the effectiveness of traditional U.S. contract terms. There may be both a lack of commonality in understanding of terms and conditions and their impacts, and no viable enforcement agencies in developing countries.

Contracting approaches come into play when considering lump-sum contracts, typical in many international locations. The contract documents and scope must be detailed carefully to provide the expected results. Contracts also may include unit pricing to allow for scope changes and schedule acceleration needs.

Work breakdown approaches are often another critical issue. Area versus discipline approaches may differ widely depending on the location of the project.

All of these considerations will require on-the-ground front-end planning by the Owner team. In-country JV partners or agent arrangements can be useful or necessary depending on the location. In-country legal counsel or other consulting services also may be required.

Information Sources

- *Craighead's Country Reports*
- International Banking, Accounting and Legal Firms

  Many of these firms provide excellent country-specific reports covering various aspects of business and commerce. Information on taxes, duties, local content, legal remedies and systems is available.
- National Trade Data Bank

  U.S. Department of Commerce Country Reports

VII. PROCUREMENT

Overview

The procurement strategy and approach in international work can have a major impact on the project's cost, quality and schedule results. Procurement, as it is interpreted in this section, refers to the purchasing and logistics activities involved with materials, supplies and equipment, and it does not include services such as engineering, program management, construction and subcontracting, which are addressed in the contracting section of this document.

Procurement Planning

- Equipment, materials, supplies requirements
- Supplier availability — global, United States, in-country
- Logistics considerations
- Quotas, local content, other local issues
- Financing and incentives considerations
- Long lead items/schedule impacts
- Purchasing documentation and terms
- U.S. and site government regulations
- VAT taxes and duties
- In-country purchasing office
- Protecting proprietary material

Critical Procurement Issues

Procurement in international projects typically involves many complexities. In addition to U.S. regulations, the local, regional and country government bodies all have jurisdiction. The capability of local resources, cultural issues and even climatic conditions can add challenges. Beyond this, there are all of the logistics issues associated with procurement of equipment and materials from global suppliers involving quotas, duties, customs clearances, transportation, scheduling, invoice payment, currency, etc., which must be addressed.

Typically, Owners are going to need additional expertise, including specialists in various government and legal matters, financing, logistics, freight forwarding, export packing, and customs.

Procurement personnel will be involved from the earliest stages of the project through startup and plant operations. An in-country procurement office should be considered highly beneficial. This can be staffed with an expatriate, a local hire or a contractor.

Purchasing Execution

The purchasing plan development typically will involve the Owner and contractors. This team approach will maximize the collective experience, local knowledge and leverage of all the project team members in global procurement.

Material Sourcing

For projects outside the United States, generally there are three sources for purchasing material, supplies and equipment.

- Global Suppliers — These firms are well-established companies based in the major industrial countries and may themselves be multinational. When purchasing from these firms, it is often on an ex-works basis, and generally the burden of import falls on the Owner. Large capital equipment purchases lend themselves to this type of sourcing.
- Key Suppliers with Local In-Country Presence — Many large multinational firms with whom Owners or contractors have established relationships have sales offices all over the world. In addition, some will have parts and service capability and may have a manufacturing presence. A key concern in dealing with new sales offices and possibly new factories is to ensure that they understand the project requirements. A detailed review should be made of the project needs with the supplier's in-country personnel who will do the work. Do not assume they understand your requirements at the new location simply because the U.S. representatives understand your needs. This procurement approach provides numerous benefits, such as cost effective source qualification, dealing with known standards for quality and having an established relationship with the firm should problems arise.

- Local Procurement Office — As stated above, a local procurement office can have a major impact on the project. If the project is large enough, having an Owner or contractor expatriate purchasing person as part of the in-country project team provides oversight and input into a number of key areas beyond the buying activity. Items such as transportation, materials management and scheduling also benefit. Alternatively, it may be decided to hire a local person on a temporary basis. In this case, the individual may be retained to become part of the permanent plant organization. But whatever avenue is chosen, *the Owner must monitor the purchasing activities.*

- Local In-Country Sourcing — *The use of in-country sources can be the area of greatest opportunity and greatest risk.* The items below are intended to position the Owner to minimize the risk of this approach and identify the opportunities available.
  - Benefits of Using Local Personnel — Knowledge of local suppliers, insight into markets, and familiarity with local laws and customs, as well as the ability to take advantage of market anomalies, are all benefits expected from this approach. Establishing relationships benefits future projects as well.
    - Expediting — Expediting is a high-priority item. If you are working in a country other than a major industrial nation, the local view of "on time" may not meet the project needs. The use of local personnel provides insights into local customs and norms. Consider in-country expediting, telephone and supplier visits from your local or field office. Even if you consider this unnecessary, it's a way to keep communication channels open and information flowing.
    - Quota, Local Content Requirement, Tax Relief — There may be government requirements that a given percent of the project be procured locally, or there may be an incentive to procure locally to promote in-country growth. Because these generally are developing countries, expect that these firms may not be as sophisticated as international firms or those used for domestic projects. The likelihood of quality, delivery or performance issues is generally higher.

- In-Country Support — Development of an approved list of in-country suppliers gives you a head start in procurement. Information about local sources may be available from in-country trade groups. To the extent possible, ask for lists of suppliers with experience and capabilities aligned with your needs. Additionally, firms that you plan to do business with may be a source of information for developing a suppliers list. Some other considerations are government-sponsored industry groups, regional or local commerce organizations, and regional or local development boards.

Government incentives may be offered to promote or enhance development by purchasing from a certain area. These incentives may not be involved with the initial government project approval, but should be pursued separately when appropriate.

- Procurement Included in the Construction Subcontract — A common method of material procurement for projects is to include material requirements in the construction subcontract. This approach almost always is used for consumables and can be expanded to include building materials. An additional consideration is expanding this list to include commodity-type items, low-value components and noncritical items. If the firm is local, you will be tapping into the local market using experienced people. There is some risk in the quality and timeliness of the deliveries for this approach. However, if the additional material is not of a critical nature, then this may be a consideration.

Purchase Order Content and Sample Checklist

The purchasing execution checklist that follows as Exhibit 7-1 is written to apply to purchases from global sources, with key suppliers that have a local presence and local sources. From this list there are several items that deserve special attention:

- Currency Selection — Consider that a currency other than the national currency may be most advantageous to use for a particular purchase.
- Payment Terms — The primary concern is the type of assurances that can be provided by the supplier that the order will be completed and meet the requirements of the specification. To cover these risks, the following are applicable:

- Bank Guarantee — Consider a bank guarantee on all advance or progress payments on any order. This will not protect against lost time if the supplier fails to fulfill the order, but it will provide for prompt repayment of all the funds paid to the supplier.
- Retainage or Performance Bank Guarantee — Via an irrevocable letter of credit. Such a guarantee is available to help ensure that warranty and performance obligations are met. The ability to enforce a warranty or claim or to obtain service is sometimes difficult. The ability to hold funds until satisfied or call in the funds from a bank provides an incentive not available through the legal system or good will.

- Delivery (INCOTERMS) — INCOTERMS are recognized international standards detailing the buyers' and sellers' responsibility for shipments. There are a wide variety of these terms, such as CIF, CFR and EX WORKS. If your order takes advantage of this protocol, both parties then know and understand their obligations. In addition, for in-country requirements or import rules, there may be marking, labeling or tagging requirements that must be met. Finally, because the delivery itself may be an issue, liquidated damage for late delivery should be considered.
- Terms and Conditions — It is critical in international work to get an Owner staff counsel with international experience involved in the terms and conditions. If this is not available in the Owner's firm, consideration should be given to obtaining a local law office that has commercial experience.

All details should be negotiated up front and documented in agreements so there is a complete understanding between the parties. Agreements should cover scope and technical items as well as commercial items. An acknowledged copy or signed contract is the confirmation that agreement is reached. If dealing with a foreign government, the Owner should get documents ensuring the agency has the jurisdiction and authority to act in the capacity it represents. Just because one section of the government agrees, that approval may not be sufficient. Governments exist on local, regional and national levels. Generally they are not coordinated, and all must be satisfied. Finally, it may be advisable to consider the United Nations Convention on Contracts for the International Sale of Goods as a

reference for terms and conditions. This is a good starting point, although it is not used widely.

- Commercial Considerations
  - Arbitration — Consider arbitration as a method for dispute resolution. Often the court system and laws are unclear or nonexistent. Even if you end up with a favorable ruling, enforcement may not be possible. However, this approach is more acceptable for contracts between multinational firms doing business in a foreign country.
  - Proprietary Material/Nondisclosure Agreements — Owners should have local patent, know-how and trade secret laws examined. They should know who is getting the technology and be aware of how they have treated proprietary information in the past. Owners have very little recourse once the technology has been compromised. Often laws are poorly written, and enforcement, even if laws are well written, is typically poor or nonexistent.

Note: Be very wary of using your latest technology.

Logistics Execution

Depending on the extent of global procurement required for the project, logistics can become an area where the wrong approach can result in considerably higher costs incurred from items such as transportation, duties and taxes. Perhaps even more costly can be delays in delivery, causing missed market opportunities from the production of the new facilities.

Managing logistics issues can require specialized expertise. International firms already may have the in-house staff accustomed to dealing with the details, or they may require third-party services. These details may include country of origin, inland freight, consolidation, export packing, container "stuffing," freight forwarding, ocean freight, air freight, customs clearance, destination country inland freight, etc. Vendor evaluations may include logistics issues, monitoring vendors and implementing corrective actions when necessary.

The scope of this report is not intended to deal with the many detailed issues in logistics. Exhibit 7-2, which follows, enumerates many of the logistics subjects and provides brief comments on each.

Information Sources

- Bureau of National Affairs (BNA)
  International Trade Reporter Manuals with country import documentation and other requirements
- Duty and VAT Rates
  International Trade Administration (ITA)
- *Harmonized Tariff Schedule of the United States*
  Classification system used by most industrialized countries on imports
- *INCOTERMS 1990*
  Reference book on export goods classification codes published by the International Chamber of Commerce in Europe
- National Trade Data Bank
  U.S. Department of Commerce Export Controls

Exhibit 7-1

Purchasing Execution Checklist

Item No.	Subject	Description
1	Drawing Schedule	Has a detailed drawing schedule been developed, including submittal dates and approval time?
2	Delivery Penalties	Have liquidated damages for late drawings or deliveries been considered?
3	Terms and Conditions	Does the supplier accept your standard terms and conditions?
4	Warranty Coverage	Is an extended warranty period required?
5	Special Warranties	Are there specific performance guarantees (power, efficiency, pressure drop, etc.)?
6	Performance Penalties	Have liquidated damages for performance (warranties) been considered?
7	Spare Parts	Have present and future spare parts prices been agreed upon?
8	Special Tools	Are special tools required? Are they included in the scope? If not, are prices agreed upon?
9	Manuals	Have the manual requirements, including the price (if any) to be paid, been agreed upon?
10	Scope Options	Have scope of supply option prices, including escalation terms, for future items been agreed upon (e.g., spares)?
11	Prices	Are prices firm or subject to escalation? What validity is there to the supplier's offer?
12	Escalation	Have the specific methods for escalation calculation been agreed upon? Is an example available for inclusion in the order?
13	Currency	What is the best currency for the transaction? Is the price subject to currency fluctuation? Have currency options been considered? Is it necessary to hedge the currency?
14	Payment Terms	What are the invoice payment terms?
15	Payment Schedule	Are progress payments required, and if so, what work is to be completed prior to each payment?
16	Cancellation Schedule	In the event of termination, are the cancellation costs known? Is there a schedule estimated with maximum amounts payable at set intervals?
17	Inspection	Have source and site inspection procedures and schedules been established?
18	Tests	Is the supplier required to perform any tests on the finished product, and if so, will you witness the tests? Are the test procedures and tolerances agreed upon for any acceptance tests?
19	Shipping Point	What is/are the shipping point(s)?
20	Title and Risk Transfer	Where will title transfer occur? Are there specific point/packaging requirements (e.g., export)?
21	Freight Payment	Who pays the freight, and how is it to be paid?

Exhibit 7-1 Continued

Purchasing Execution Checklist

Item No.	Subject	Description
22	Carrier Selection	Who is the carrier to be, and do you want to be consulted?
23	Carrier Permits	Are special transportation permits (heavy, wide, etc.) required, and who is responsible? Who pays?
24	Duties	Who pays for duties (if any)?
25	Insurance	If ocean shipping is involved, who provides and pays for insurance?
26	Installation/Startup Service	If required, have prices or rates for these services been agreed upon?
27	Training	If required, have prices or rates been agreed upon? Is any training included in the scope of supply?
28	Acknowledgment Copies	Will the supplier sign and return the acknowledgment copy of the order?

Exhibit 7-2

Logistics Planning

Subject	Considerations
Freight Forwarder	The export-oriented freight forwarder can provide services from minimal support of Owner staff to total logistics control from domestic sites to third-country sources to final facility site.
Custom House Broker	The import-oriented company provides import customs clearance services and inland transportation. This company is an agent of the importing country's customs office. Consider the freight forwarder's agent in-country if they specialize in project cargo and have a good reputation in the marketplace.
Consolidator for Ocean and Air Freight	The warehousing company receives shipments, sorts, export packs and prepares packing lists, loads containers, and transports equipment to port or airport. Often integrated with freight forwarders.
Local Motor Carriers	Provides transport equipment between inland points and piers. Selected by Owner, freight forwarder or custom house broker.
Third-Party Project Logistics Firm	These integrated companies provide freight forwarding, custom house brokerage, consolidation, and pier pickup and delivery. Some provide good service but are seldom good at all functions.
Long Lead Equipment	Matching long lead equipment scheduling from the supplier and shipping times involved with the job schedule is critical. One ship transportation vs. several sailings? Container vs. break bulk?
Consolidation	This can encompass a number of activities, including improved packing, inspection before shipping, sorting components to improve site sequencing, reducing number of shipments for better costs and easier customs clearance, etc.
Direct Site Shipment by Supplier	You may achieve both cost savings and operational savings. Consideration of INCOTERMS sales terms is important. Owner and freight forwarder need to be involved to monitor shipments.
EX-IM Bank Financing	If EX-IM Bank is involved, their requirements may constrain your choice of ocean carriers. They prefer U.S. flag carriers. They delegate the monitoring and managing to the Division of National Cargo, Maritime Administration of the U.S. Department of Transportation. If you violate the requirements of EX-IM, they can refuse to make payment.
Trade Agreements and Other Destination Incentives	These may reduce your cost. Several international agreements permit certain items fabricated in certain countries to get reduced duty treatment. Freight forwarders should be able to advise you on duty issues. Owner representatives need to research other incentives in the destination country.
Duty Elimination	Some countries will permit duty reduction or elimination for certain items imported into their country. Owner custom house brokers can get information for you.

Exhibit 7-2 Continued

Logistics Planning

Subject	Considerations
Duty Drawback	There may be ways to save duty expense when equipment is sourced internationally, moved to the United States or other nation for additional manufacturing, and subsequently moved to the destination country. One method is called drawback and the other temporary import bond.
U.S. Government Export Controls	The U.S. government has restrictions on what exporters can ship to foreign countries. An export license is required to ship some equipment into certain countries. Your freight forwarder may be able to help, but the liability remains with you, so pick a qualified forwarder.
Import Quotas, Controls	Some destination countries have quotas and controls on imports of certain items. The importer must apply for and receive a license. Your custom house broker can advise you.
Equipment List	Obtain an equipment list with description, origin, weight, length, width, height, dimension and weight as shipped, value, drawings if special bracing and packing is needed, etc.
Export Ports	Which ports are best? The decision will be based on equipment list, carrier type and schedule. Then seek requests for quotes from ocean carriers for ports that are likely.
INCOTERMS	Published by the International Chamber of Commerce in Europe. Their manual is available in English through their U.S. affiliate, ICC Publishing, Inc., 156 Fifth Ave., New York, NY 10010.
Shipment Valuation for Importation Purposes	Use the following in determining fair value: transaction value (purchase price plus value added between purchase and INCOTERMS FOB value), add value of any assists, packing paid by buyer, selling commission paid by buyer, royalty or license fee paid, and proceeds to seller from subsequent resale.
Harmonized System	Most industrialized nations use this system of classification. There is only one correct classification for any shipment in this system. It is defined in the *Harmonized Tariff Schedule* of the U.S. International Trade Administration (ITA). The importing country's customs service will look for fraud in forms of (1) undervaluing shipment and (2) describing the shipment as something other than what it is to reduce duty exposure.
Duty and VAT Tax	These can be significant. To obtain an approximate duty and VAT tax, the shipment must be classified. This will result in a harmonized code. Freight forwarders can assist in classifications. For rates, contact the ITA. They employ country specialists. The destination country will determine the duty and VAT based on what is in each shipment. When duty is due, they usually charge on INCOTERMS CFR value, but some charge on FOB or EXW.

Exhibit 7-2 Continued

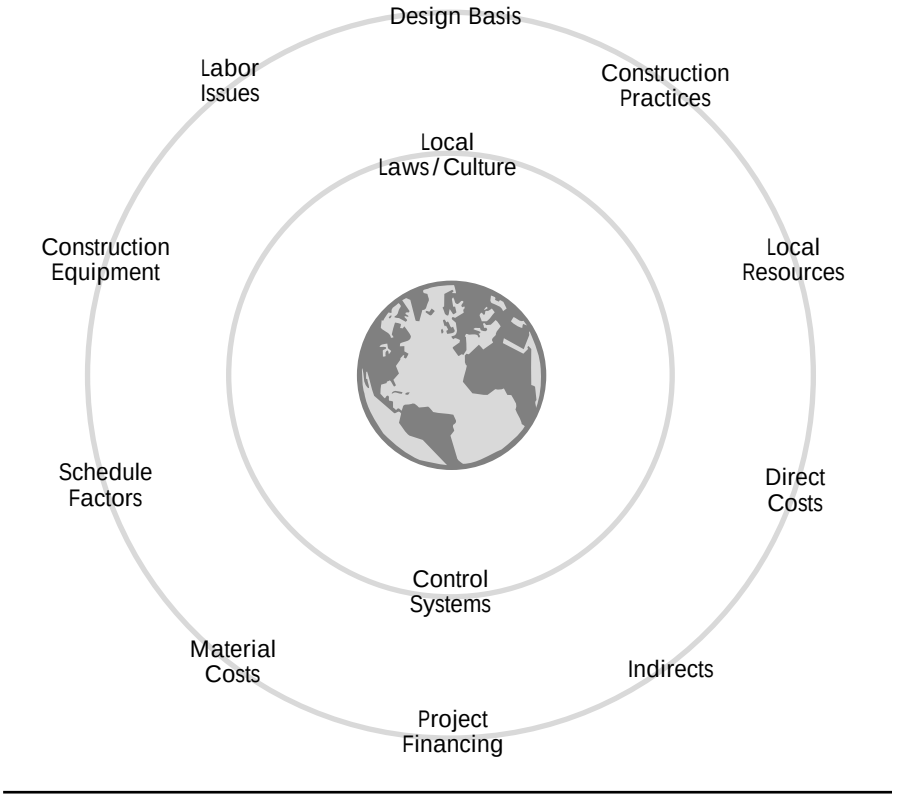
Logistics Planning

Subject	Considerations
Dimensional Tradeoffs	There is a tradeoff between shipping fewer, larger components versus many smaller pieces. Assistance of specialists is required to analyze.
Ocean Freight Alternatives	Break bulk/heavy lift, container ship service options (20 foot, 40 foot, etc.).
Ocean Cargo Bookings	Oral commitments are considered binding, so do not agree to any ship sailing schedule and price until you are sure you can accept both. Once you have accepted a price and lay days, your cargo must be there, or the carrier can charge demurrage up to $10,000 per day. Also, the ship has the right to sail without your material, and you still pay the quoted freight cost. You may need a maritime attorney to help negotiate the ship booking.
Air Freight Alternatives	Air service for urgently needed materials may be necessary for schedule purposes, but at a high cost.
Documents	Commercial invoice, packing list, shipper's export declaration, ocean bill of lading, airway bill, certificate of origin, import document and others may be required. The Bureau of National Affairs (BNA) International Trade Reporter Manuals present an overview of the country's import documentation and other requirements. See your freight forwarder.
Insurance	You will need to insure your ocean and air cargo shipments. In ocean and air freight, carrier loss and damage liability is almost nil. If the ship sinks, for instance, ocean carriers expect the shippers to reimburse the ship owner for their ship! This is included in the insurance.
Receiving at Destination	Upon receipt, the site must check off the packing list to see that all items were shipped. Shipments must be stored in a secure area.
Rush Shipments	If shipments are needed urgently at the site, arrange through the custom house broker to preclear the shipments through customs.

VIII. PROJECT CONTROL

Overview

Establishing project control in international work requires experience and knowledge of the unique parameters that will impact the work in the particular country in question. Lack of detailed in-country information is the greatest risk for cost increases and schedule delays. Given the many new parameters experienced, Owners must be prepared to build in both cost and schedule contingencies that would not be typical on U.S.-based projects.



Critical Project Control Issues

Accurate information on the in-country factors that will impact the project and its incorporation into project planning and implementation is critical to project success. Complicating the task is the lack of reliable in-country infor-

mation sources, communication barriers, standards and cultural matters, and the geographic separation of the entities.

During the planning phase, critical issues must be identified that could have a major impact on the project. Project team experience working in the specific location in question is certainly important. Selection of key players on the management team (both Owner and contractor personnel) takes into account the areas of risk needing to be carefully managed, such as:

- Design standards at the new location
- Craft labor qualifications and availability
- Wages and burdens
- In-country contracting approach
- Subcontractor qualifications
- Tax issues
- Local material resources
- Import/export logistics
- Permitting.

Managing the associated risks is certainly feasible but requires being aware of those factors most likely to have a major impact and providing appropriate management control.

Control at the site in many areas will be less dependent on cost, quality and scheduling systems that are normal in U.S. work and much more dependent on hands-on management, often from expatriates working closely with the in-country subcontractors and suppliers.

Typical Differences in International Project Control

Project control typically includes planning, scheduling, estimating, cost control and quality. In projects overseas, every one of these areas will be impacted with different conditions and realities that require different approaches from those used in U.S. projects. In many developing countries, Owners are faced with construction approaches and equipment that are very rudimentary. Typical unit rates required may be far worse due to more crude methods and less-modern equipment. U.S. contractors and Owners cannot

expect to convert local personnel to U.S. methods in many cases. Owners have to adapt to foreign cultures and then evolve toward more modern techniques. The impact is more hours, more supervision to achieve quality, more rework, and more time and cost associated with testing and checkout at startup.

Although local subcontractors may be contracted to provide schedule information, progress reports or quality checks, they may have none of the tools to comply. More control and reporting tasks fall back on the managing contractor, at more cost.

Project estimates may have to include line items that normally are not experienced in U.S. work. For example:

- A project in the Pacific region shipping equipment from offshore experienced a 20 percent loss of loose items shipped with equipment like motors, controls, etc. through theft at the dock.
- Working in the Philippines, one project experienced 14 typhoons in one year.
- On another Pacific region project, the project had to finance the upgrading of the electrical utility supplying the site to ensure reliable power. The local governing body expected the project — not the government itself — to fund this improvement.
- An international project working in a third-world country had to air freight parts needed to achieve systems checkout at the end of the job to maintain schedule as local supply was not available.
- Contracts were awarded to subcontractors on a third-world project on the basis that the subcontractors were to provide quality assurance/quality control, planning, scheduling and safety. It became apparent the local subcontractors had neither the experience nor personnel to provide the support needed. The managing contractor had to increase its work force to handle these issues at added cost.
- Pipe erection on a major project was awarded to an in-country subcontractor. The subcontractor was remiss in reporting and ran an unacceptable radiography/NDT program, which resulted in the managing contractor's having to take over the work and add 30 expatriates to perform the work at significantly increased cost.

In many cases, apparent low local labor wages cause Owners to expect low project costs, which are not realized because of low productivity and high expatriate overhead costs.

Design Concerns

Preparing a design that minimizes the potential for increased costs requires experienced architects and engineers familiar with the local codes and regulations at the chosen site. Increased costs can occur when projects are designed to standards that are common in the United States but not required or accepted in another country. Occasionally, foreign countries may have standards that are more stringent than design norms in the United States. Overdesign and underdesign can increase the cost of a project significantly.

Local construction practices should be considered in the design of any project. Techniques should be eliminated that require special equipment, materials or labor (e.g., wall construction requiring specialized scaffolding in countries where scaffolding is not readily available or super flat specifications for concrete floor finishes where the specialized equipment is not available).

Where possible, avoiding high-tech designs in low-tech countries can eliminate unnecessary costs associated with procuring specialized equipment and training the local labor force (i.e., use standard designs that are easier to construct to obtain the desired quality instead of a high-tech design that utilizes techniques that are unfamiliar to the local work force).

In developing countries, the design leadership is weak. Further, true cost and schedule control is not practiced, only cost and schedule reporting. Additionally, creative, intuitive technical application is lacking. These issues must be recognized and provisions made to offset the gaps.

Schedule

Schedule costs are influenced by factors such as the following:

- Local labor practices
- Proficiency of skilled trades
- Cultural influences, such as local calendars, customs and language

- Government restrictions
- Local construction methods.

The contractor or Owner may have to provide daily monitoring of progress and productivity, as well as prepare the schedule reports. Local contractors often do not have the tools or experience to maintain the systems normal for U.S.-based projects. Schedule compliance is often difficult given the conditions and work habits in developing countries. Thus, sophisticated schedule control systems may not achieve the desired results. Much closer supervision and hands-on monitoring in the field are required.

Direct and Indirect Costs

Labor

In an international market, it is important to determine the size and proficiency of the labor force. Many areas of the world lack the resource pool of typical skilled trades found in the United States. Workers in these areas lack the necessary skills required for performing installations such as electrical, mechanical piping, welding, structural steel erection and masonry. Consequently, a specialized labor force may need to be imported, affecting the project cost. Wages for unskilled labor may be low, but there is usually a high turnover rate associated with this type of work force, which adversely affects the project schedule. Underestimating these labor factors could result in excessive labor costs and schedule delays.

Material

Control of material costs on international projects requires workable specifications containing readily available material from local sources and proper schedule considerations for specialized items that require importation. Flexibility is the key element in ensuring minimal cost impacts arising from the provision and supply of material. It is also necessary to investigate and verify the requirements for taxes and importation duties and the restrictions concerning material transportation in controlling material costs.

Construction Equipment

In developed countries, mechanized earth-moving equipment, generators, portable hand tools, lift equipment and transports may be readily available with a skilled and trained work force. This typically allows for reduction in construction project schedules and results in higher construction quality. In regions where this type of equipment is not used or available, traditional labor-intensive construction techniques are necessary, resulting in longer schedules and added project costs.

Salaries, Burdens, Project Indirects

Indirect costs include salaries, payroll burdens, temporary offices and other project "overhead" costs. To control these costs, an understanding of the local wage-rate structure and required payroll burdens such as benefits, social security and insurance costs is mandatory. Knowing the local market for indirect costs will allow for accurate budget projections and cost controls.

In estimating the indirects, the cost of expatriates is usually a significant line item.

Project Budget

Determining an accurate project budget requires a detailed projection and estimate of all costs associated with the project. An accurately established budget is important to any project. However, international projects can increase the level of project unknowns dramatically.

Estimates usually fail when scope of work is ill defined or estimators are forced to provide assumptions outside their area of expertise. It is important the appropriate discipline resources (e.g., environmental, structural, mechanical) be used to provide project criteria, even when conceptual in nature.

The following list of issues will provide a starting point on which to define budget estimate parameters:

- Appropriate level of project scope/criteria development (e.g., site, building, process)
- Accuracy of cost data and use of appropriate information sources (e.g., wages, productivity, local conditions)

- Estimator experience
- Use of a formal estimate risk analysis
- Regional construction market factors
- Domestic/foreign government requirements
- Domestic vs. foreign design/engineering/construction issues
- Taxes and insurance impacts
- Logistics (site location and infrastructure/shipping)
- Extent of local content requirements and acceptable local supplier availability
- Labor (e.g., availability/productivity, union/nonunion)
- Impact of schedule requirements and contract terms/methods
- Monetary factors (e.g., escalation/exchange rates/financing)
- Level of domestic fabrication
- Owner's costs and experience level.

Contingency

Due to the unknowns experienced in international work, contingency allowances in the control estimate are typically larger than would be the case in U.S. projects. Certainly, when seeking board approval for international work, adequate allowances need to be included for such items mentioned in this section and elsewhere in this report.

Project Finance

Factors affecting project finances are cash flow, currency payments and inflation. In many underdeveloped countries with poor credit resources, significant initial cash payments are required to secure material contracts and subcontractors. Appropriate planning is necessary to estimate cash flow requirements for a project budget. Because of high interest and finance charges on local currency, projects in underdeveloped countries may require bidders to provide complete project financing with a single lump-sum payment at the completion of the

project. This requirement will affect project costs adversely if not properly understood.

Inflation is another significant factor in project finance costs. Protecting project funds from currency inflation by holding moneys in stable currencies such as dollars or Deutschemarks is a typical method of controlling inflation costs. Sometimes windfalls can occur when the inflation of a local currency increases in the middle of a project and the project funds are held in a stable currency. Proper planning of project financing allows a company to take advantage of such windfalls and avoid potential budget problems caused by inflation.

Information Sources

- *Craighead's Country Reports*
- *Hanscomb/Means Report*
  Hanscomb Associates, Inc.
- National Trade Data Bank
  U.S. Department of Commerce Export Controls
- Richardson's Engineering Services, Inc.
  International Construction Cost Factors Report

IX. LABOR

Overview

Labor issues in international work are among the most critical cost impacting areas Owners must address. Many areas experiencing significant industrial and commercial development are in countries where the labor resources and infrastructure to support the type of quality and productivity that U.S. firms are accustomed to is simply nonexistent.

In some developing countries, labor is plentiful but skills are rudimentary, requiring much higher levels of expatriate supervision on the part of the prime contractor and Owner. In major project work in undeveloped countries, significant importation of labor may be required. This often brings together laborers from different or conflicting cultures. Language issues are compounded. Housing, camps, food service, transportation and other logistical complexities are introduced. With all of these issues playing a role, it is clear the labor approach is one of the high-impact factors in international construction and must be managed appropriately.

Critical Labor Issues

Local conditions and practices vary dramatically from region to region and within specific countries in those regions. Preliminary studies by the Owner, working with a local overseas affiliate or carried out by a qualified location consulting firm or an international contractor, can be critical in evaluating the construction environment and optional approaches.

As with other aspects of the total design, construction, staffing and startup of a new international facility, it is important for the Owner to bring the key contractors and consultants into the planning stage as early as possible. Furthermore, care in getting the parties aligned early on as to the critical project objectives is absolutely vital.

Some of the basic factors that the Owner and contractor must consider regarding labor include questions such as the following:

- What is the prevailing approach to construction in the site location?
- What are the skills of the local labor force?
- What craft training is required?
- Is foreign labor being imported?
- What restrictions exist regarding the use of imported labor?
- What government/union considerations are there?
- What social/cultural issues impact the use of imported labor?
- What local contractor resources are available? What are their previous projects and results?
- Are the local construction organizations private or government run?
- What quality, productivity, safety and cost results can be expected with local labor? Imported labor?

Global Construction Typically Requires Increased Owner Management Attention

Virtually every major U.S. firm that has constructed facilities outside of the United States has its own "war stories" regarding challenges involved in international projects. When all of the cultural, language, political, economic, legal and human factors are brought to bear in a labor-intensive situation such as construction, the conditions in third-world and other international locations can be challenging, to say the least.

Construction laborers often are not trained in U.S. standards or methods. Supervision at times is not prepared culturally to achieve quality or schedule expectations and may not have a good understanding of the quality standards

of the Owner. These standards even may be written into the contracts, but that does not ensure understanding or compliance. The language may well be totally ignored or not understood. Enforcement tools, including legal remedies, may have no effect.

This means much greater involvement of contractor and Owner management. Often the managing contractor has to intervene at the point of work with "hands-on" supervision to execute the work successfully.

Often the global contractor will have to bring in experienced craft management and support for quality assurance and quality control. Craft labor and supervision may have to be backed up with additional contractor resources trained in U.S. systems. Reporting systems for cost, quality, safety and schedule control will need to be monitored and managed.

Welding may be substandard. Locally supplied components may not meet specifications. Construction equipment may be rudimentary. In some areas with high unemployment, there may be rules that require manual approaches when machinery could do a better job.

The experience of all contractors must be evaluated thoroughly during the contractor selection process. In addition, the Owner's management team should be as thoroughly familiar with the conditions at the site and in the country in question as possible. Front-end orientation and then ongoing monitoring are essential, particularly in emerging countries.

Labor Factors and Their Significance

The discussion that follows gives an overview of the impact and significance of the major labor factors involved in global construction.

Labor Availability

Labor availability and the sources of labor are significantly different between one region and another. In India and China, for example, labor is abundant but may not be trained in modern Western construction methods. The issue becomes methods rather than availability.

In the Arabian Gulf, on the other hand, the issue is limited indigenous labor resources, and labor typically is imported from other areas with all of the

attendant issues that this entails, such as housing, recreation, etc. Camp planning is critical in these locations.

Assessing the availability and qualifications of the labor resources well ahead of time is important so that appropriate measures can be set in place to achieve the end results. Recruiting, establishing skill levels and, in some cases, training craft laborers are as important in global work as they are in the United States. However, the status of the construction industry in many countries is such that testing, training and certification of skill levels are still minimal.

Labor Costs

The cost of labor is always a major factor and, in global work, a major variable from one location to another. The final cost may involve all of the following factors:

- Base wages
- Overtime
- Bonuses
- Statutory taxes, etc.
- Benefits, including insurance, retirement, holidays, etc.
- Productivity
- Workday/workweek rules
- Shift premiums
- Overheads, markups, fees
- Tool and equipment charges
- Protective clothing
- Safety equipment
- Food
- Transportation
- Housing
- Recreation
- Site adders for remote sites, weather, etc.

In remote locations, camps need to be constructed to house the work force. This is an area of critical importance to the project because it can directly affect workers' health, safety and productivity. Camp facilities and infrastructure can amount to 15–20% of the capital cost of the construction project.

Free provision of transportation, food, accommodations, recreational facilities and other services is normal in many third-world locations.

Lump-sum competitive bids, when feasible, may cover the majority of the work. But the labor costs associated with accelerated schedules, design scope changes, field changes and other changes require contract provisions that clearly state the labor cost and burdens for this work. Scope changes on international work may significantly exceed U.S. averages. An understanding of what to expect up front can be a career-saving policy!

In some areas (China, for example), competitive bidding may not be available if the work simply is assigned to a particular Design Institute or Construction Brigade. An effective mechanism for change orders for cost and schedule may not exist. Changes are negotiated at the end of the project, which can be somewhat arbitrary.

Quality

Quality and schedule adherence are very often the major challenges in international work. When it comes to quality, to achieve a reliable facility with performance comparable to U.S. or equivalent international standards and to control and document the progress toward these standards requires special attention in many areas of the world.

Owners should be aware that the level of quality assurance/quality control staffing by the managing contractor must be assessed carefully so proper provision is made for the field monitoring, reporting and testing that is necessary to achieve the quality expected.

Simply including provisions for subcontractors to adhere to published standards and contract language is no guarantee of the results. To expect legal remedies after the fact to compensate for substandard performance often is not even feasible, much less satisfactory. Laws and enforcement agencies may not exist, and subcontractors simply may ignore the contract language.

It should be noted that in many parts of the world, particularly the Asia-Pacific region, construction is accomplished using multiple subcontractors, who in turn will subcontract their work vertically at an arm's-length relationship. That is, they will assume little or no responsibility for the work performance of their subcontractors. The result is the managing contractor must provide greater supervision of the quality and schedule performance.

The time and place to achieve quality are while the work is taking place. This means more field engineers and quality inspectors, more testing and testing tools, and managing contractor provision for the systems and procedures to record and ensure adherence.

Welding standards often are defined poorly. Equipment and assemblies procured in-country require careful shop inspection and prequalification of the

vendors. Concrete, pipe, vessel, structural steel and electrical standards vary widely across the globe.

U.S. and international codes often are known and should be used. In-country codes may reference or be modeled after such codes. The issue in construction is to see that the field work meets those codes. Training and certification of craft labor are a work-in-progress in many areas. Furthermore, supervision is no better prepared than the craft workers in many cases.

Productivity & Methods

Labor productivity in international work is affected by all of the basic factors such as working conditions, supervision, training, tools and equipment use, weather, etc. In many areas where new investment is likely, such as South America, China, Indonesia, India and the former Eastern bloc, these contributing factors add up to lower productivity, which may be one-half to one-third the U.S. standard for comparable work.

On top of the usual factors, one must consider legal and language issues, housing, cultural and political matters, and the general environment of conducting business. Local subcontractors in most regions are getting accustomed to Western Owner and contractor needs and expectations. However, when planning and estimating work in an overseas location, Owners and managing contractors need to tap into available information sources to develop realistic project plans and cost estimates.

One of the productivity issues is that valid measurement and reporting practices often are not in place. Subcontractors may not have the systems and training necessary to meet Western standards. The reality may be the work is bid on a lump-sum basis, and the Owner may have little impact or involvement in productivity. Contracts must be tailored to the area, and provision made for feasible productivity measurement and improvement programs. Incentives and favorable site working conditions do have an impact in many areas.

Qualified supervision is often a problem. The Owner or managing contractor may have to add sufficient field personnel from their own organization (expatriates, in many cases) to work alongside the subcontractor foremen to maintain quality, schedule and productivity.

Construction methods in countries where labor is abundant may be far behind U.S. practices, with a resulting effect on labor required, quality and schedule. Further, government restrictions may prevent off-site fabrication or importation, which would be preferable to site fabrication and erection. International contractors are introducing improved methods whenever feasible. In-country and international associations that educate and communicate improvement in construction methods have a challenge to impact global construction methods.

Support Requirements

Depending on the location, logistics and available services, the degree of support required for the construction labor force can vary considerably. Transportation, housing and meals are often an added expense when building in remote locations. Site selections may be made to avoid these issues when feasible. However, there may be no alternative.

Legal Requirements

Labor law is another area involving considerable differences in approach among countries. Political, business and cultural variations abound, and labor laws are based on different legal codes and statutes. A sound knowledge of the labor law relative to employers and worker conditions and any union representation is essential. In reviewing labor laws, the following items should be addressed as they may impact either the Owner or the contractor(s):

- General employer requirements
- Worker compensation/social security
- Employment and wages
- Work hours, workweek
- Vacations, holidays
- Health care, insurance
- Safety and security
- Union rules
- Right-to-work laws
- Residence and tax liabilities
- Visas, work permits
- Security clearances
- Travel restrictions.

Local legal counsel is usually an important provision. The Owner's local partner can be very beneficial. In addition, the managing contractor's experience in the area can be an important factor.

Cultural Matters

In working around the world, there is a great need to be aware of the cultural differences that prevail at each location. Language restraints, education levels, ethnic and ethical concerns, local religious practices and general attitudes of the work force must be treated with understanding and sensitivity.

In dealing with cultural matters, the following items should be addressed:

- Language capabilities/requirements
- Education levels
- Training resources and approaches
- Nationality and ethnic mixes and attitudes
- Work ethics
- Religious practices
- Acceptance of foreigners
- Women in the workplace
- Government-imposed cultural practices.

Failure to address these issues and showing intolerance of traditional practices can lead to serious job site problems.

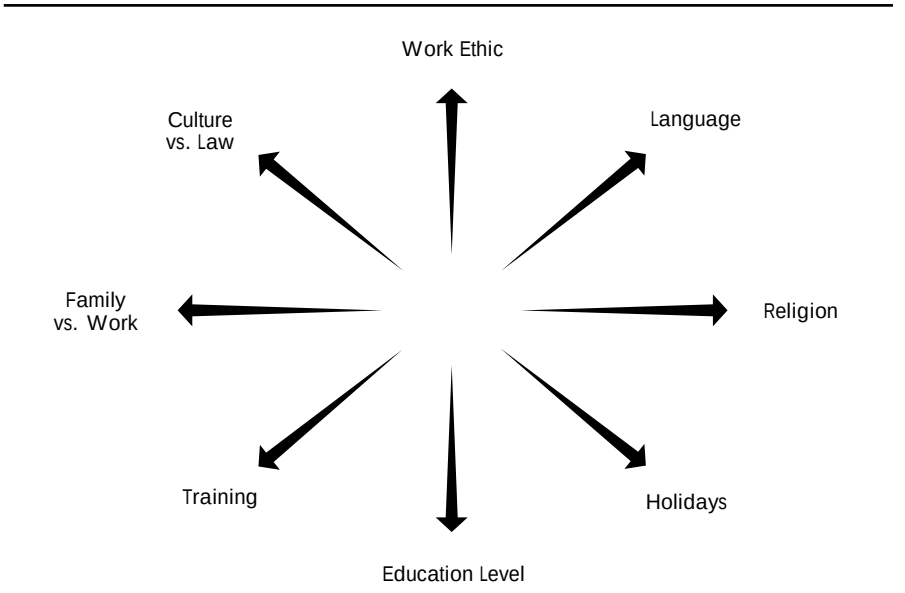
Information Sources

- *Engineering News-Record* (ENR)
  ENR publishes quarterly reports for both domestic and international construction costs. One of these reports includes costs per square foot for many locations around the globe.
- Major Accounting Firms
  A number of major accounting firms, such as Ernst and Young, produce country reports containing a wide range of information, including some data on labor issues.
- National Trade Data Bank
  U.S. Department of Commerce Country Reports
- Organization Resources Counselors, Inc. (ORC)
  ORC provides cost-of-living information for international sites.
- R.S. Means and *Hanscomb/Means Report*

X. Cultural Issues

Overview

In planning and executing any construction endeavor outside the United States, attention to cultural issues, such as language, politics, ethnicity and religion, is vital. There are over 187 countries located on seven continents in the world today. What separates one country from another is its culture. Lack of sensitivity to or awareness of the respective cultural issues of a particular region or country can result in serious cost and schedule impact. Assuming U.S. approaches to supervision, motivation, safety, productivity, discipline and religious practices are appropriate in international project work is a common cause of international project problems.



Critical Cultural Issues

Providing cross-cultural training for the project team will increase effectively the team's awareness of cultural issues and reduce cultural barriers. Transferring the key personnel from the host country to the Owner's regional offices and vice versa for cross-training and orientation is a highly effective approach.

Another effective approach is to select contractors with experience in the country. Their experience working with local subcontractors, local and imported labor, and local Design Institutes or consultants is vital to the project's success. Supervision style, safety issues and quality standards all relate to the local culture. Virtually every aspect of doing business in an international location will be impacted by cultural differences from the United States.

The following cultural issues are typical:

- Work ethic
- Acceptance/conflict over ethnic differences
- Language/dialects
- Local religious practices, prayer needs and shrines
- Holidays/work interruptions
- Educational level difference
- Training differences
- Negotiating differences
- Local/national government influence differences
- Family vs. work — "Live to work or work to live"
- Acceptance of expatriate supervision
- The role of agents or partners
- Culture vs. law.

Expatriate staff members who are key to project success often have difficulty with their families on overseas assignments where the cultural differences are significant. Failure to deal successfully with these issues can lead to the loss of the key employee or serious impacts on the project. Owners should prepare not only the employee but also the spouse and dependents through appropriate orientations.

Language

Although English may be considered the *de facto* business language in many countries, the general population in areas such as China, Asia, Africa and Central Europe does not speak English readily. A significant understanding of

the native language is critical to the success of any international project. This should include the following:

- The precise language and dialect spoken in the area of the project
- The availability of interpreters and level of experience with construction terminology
- The availability of translators for contract documents, manuals and correspondence
- The availability of software programs providing translation services.

Government

Government regulations are often more complex in international work than in the United States. Adhering to the government requirements of a foreign country requires a thorough understanding of and working relationship with the host government. Engineering codes, environmental regulations, construction licenses and permits, real estate transactions, and importation issues may require interacting with multiple government agencies.

Religion

There are five major religions in the world today. These religions influence the culture of a nation and contribute to the success of any international project. Religious observance of holidays, practices and beliefs influence the project schedule, budget and organization. To minimize the negative impact, the following should be considered:

- The religious calendar observances may affect the project schedule or cause interruptions in the work (e.g., Countries in the Middle East and Asia do not celebrate a Christmas holiday. Work and material delivery schedules have to be adjusted, especially if materials or labor are being supplied from predominantly Christian countries.).
- Religious beliefs and practices often will impact the project. Verify if a religious leader, such as a priest, rabbi or shaman, is required to fulfill religious beliefs and practices. Japanese and Asian cultures usually perform a religious

ceremony dedicating the land and designated materials prior to commencing any construction activity.

- Sometimes religious shrines or symbols are required for display to comply with particular beliefs or customs. In Mexico and other Christian countries, religious shrines are required to satisfy beliefs of guardianship and safety.
- The differences or conflicts of different religions in a particular region may have an impact on the work force or the project.

Customs

A country's traditions and customs can affect the outcome of a project. Investigating the customs of a region is required during the planning phase of a project to avoid any surprises that may result in additional costs or delays. In Mexico, for instance, it is customary that the company provide hot meals for the work force, even though it may not be legally enforceable.

In many areas, work habits are quite different from those in the United States. Workers may not have anywhere near the same level of understanding of taking individual responsibility for action. Their culture may have instilled a habit of saying, "It's someone else's responsibility, fault, etc." There may be differences in the level of stress to which they are accustomed.

Labor motivation, money, safety, performance recognition, team building — such measures need to be considered in a way that fits the local culture and contracting/subcontracting practices.

Annual work patterns are another factor. In some countries, workers go back to their villages for crop planting and harvesting. These practices must be respected and incorporated into the project planning.

Bringing several key individuals from the destination country into a regional or U.S. office of the Owner for orientation and training can be a vital step. Planning this in advance, so that these key individuals may have several months or longer in the United States, truly can pay significant dividends, not only during the construction phase but also after startup.

Local individuals who are trained by the U.S. firm in preparation for the project and plant operation often are lured by other firms offering sweeter compensation packages. U.S. firms can mitigate this issue by giving these

individuals opportunities to visit and work in various other offices of the Owner through job rotation.

Information Sources

- *Craighead's Country Report*
- The Economist Intelligence Unit
  Country Reports
- National Trade Data Bank
  U.S. Department of Commerce Country Reports
- *Personnel Journal*

XI. ETHICS

Overview

For U.S. businesses operating overseas, business ethics can be a major issue of concern.

The Foreign Corrupt Practices Act (FCPA) was enacted in 1977 (and amended in 1988) in response to revelations during the Watergate hearings of questionable payments being made by U.S. multinational corporations to induce foreign officials to use their influence to affect government decisions relating to their business. One payment led to the resignation of the Japanese prime minister. Investigations by the Justice Department, the Securities Exchange Commission (SEC) and the Internal Revenue Service of alleged bribery and improper payments found such practices to be more widespread than previously believed. At least 450 companies, including more than 100 of the Fortune 500, admitted making questionable foreign payments.

Our standards of acceptable business behavior are influenced by our democratic principles, religious freedom, free-market economics, puritan morality, Western culture and English law traditions. The rule of law, the sanctity of contracts and belief in our system of justice are dominant features of our business ethics. In many other countries, however, particularly third-world and developing countries that do not share the same heritage or beliefs, personal relationships, power and influence dominate business decisions.

Behavior unacceptable in the United States may be viewed as not only acceptable but also essential to survive in other parts of the world. From the point of view of foreign cultures, our norms and way of life are anathema, and they object to and may resist any effort on the part of U.S. companies to impose our ethical standards on them. To them, we are not sensitive enough to their norms, religious beliefs, political and economic systems, and philosophies and are too monastic and self-righteous in our personal beliefs.

Somewhere between these extremes, U.S. companies operating abroad need to strike a proper balance, with due regard for the cultural, religious, political and economic beliefs and realities where they are doing business, without compromising their own personal beliefs or violating our standards of acceptable ethical behavior. The FCPA is an attempt to strike such a balance, at least in part.

Competing on a Level Playing Field

One of the purposes of the FCPA was to create a level playing field for U.S. multinational companies competing for business abroad. However, because U.S. firms face stiff competition from companies headquartered in countries that have very different laws and levels of tolerance regarding business ethics, questionable practices continued to flourish after the enactment of the FCPA, often to the perceived disadvantage of U.S. firms. Although many countries either have no antibribery statutes or ban bribery at home but not abroad, an increasing number of countries (in particular, European countries) in recent years have adopted or are in the process of considering legislation similar to the FCPA. U.S. firms engaging in overseas operations need to be especially wary of the practices followed by foreign competitors, JV partners and other entities involved in construction projects so as not to become involved, directly or indirectly, in prohibited practices.

The Foreign Corrupt Practices Act

The FCPA is limited legislation: It does not outlaw all "bribes" or all payments to foreign officials. The act has two components — antibribery provisions and record-keeping requirements.

The antibribery provisions of the FCPA apply to (1) corporations (issuers) whose securities are registered with the SEC and publicly traded; (2) corporations that have their principal place of business in the United States and are organized under the laws of a state of the United States (domestic concerns); (3) individuals who are citizens, nationals or residents of the United States; and (4) officers, directors, employees, agents or stockholders of issuers and domestic concerns, acting on their behalf. Thus, the FCPA does not apply to foreign corporations, including foreign subsidiaries of U.S. companies; to foreign citizens residing abroad; to foreign officials who are recipients of improper payments; or to foreign intermediaries or conduits through whom improper payments are made (unless they can be characterized as "agents").

The FCPA prohibits the "corrupt" use of the mails or any means or instrument of interstate commerce in furtherance of an offer or payment of money or anything of value to a "foreign official" or to a foreign political party, party

official or candidate for foreign political office for the purpose of (1) influencing any act or decision of such foreign official in his official capacity in violation of his lawful duty or (2) inducing such foreign official to use his influence with a foreign government or instrument to influence any government action or decision or to assist an issuer or domestic person in obtaining, retaining or directing business with or to any person.

As noted above, the FCPA by its terms only applies to U.S. companies or persons who are subject to U.S. jurisdiction, and only if the mails or any means or instrument of interstate commerce is used to effect the payment of a bribe to a foreign official. Thus, payments made outside the U.S. by foreign persons or entities not subject to U.S. jurisdiction, without use of the U.S. mails or means of interstate commerce, or to a person who is not a foreign official (e.g., a procurement official of a private corporation) are not prohibited by the anti-bribery provisions of the FCPA, although the record-keeping provisions may be implicated by such conduct. The FCPA does not allow a U.S. company, however, to take advantage of these limitations by adopting a "head in the sand" approach to bribery; the U.S. company may violate the FCPA by making an improper payment through a subsidiary or third person if it had actual knowledge that a payment was made illegally or if it consciously disregarded the substantial certainty that such a payment was made.

In general, the FCPA does not prohibit "facilitating or expediting" (i.e., "grease") payments, the purpose of which is to secure the performance of "routine government action," which is defined to mean an action that is ordinarily and commonly performed by a foreign official in (1) obtaining permits, licenses or other official documents needed to do business in a foreign country; (2) processing government papers (such as visas and work orders); (3) providing police protection, mail pickup and delivery or scheduling inspections associated with contract performance or the transit of goods across the country; (4) providing phone service, power and water supply, loading and unloading of cargo, or protecting perishable products or commodities from deterioration; or (5) actions of a similar nature. The term "routine government action" specifically excludes any decision by a foreign official to award or influence the award of new business or the completion or progress of existing business.

Finally, the FCPA sets forth a number of defenses to a claim by permitting a person charged with a violation to demonstrate that the challenged payment was either (1) lawful in the foreign country or (2) a reasonable and bona fide expenditure (such as travel and lodging expenses) directly related to (a) the promotion, demonstration or explanation of products or services or (b) the execution or performance of a contract with a foreign government or agency.

Accounting and Record-Keeping Provisions

Under the FCPA, issuers of securities registered in the United States and all of their majority or wholly owned subsidiaries, wherever located, whose financial statements are consolidated with their U.S. parent company, must:

- Make and keep books, records and accounts that, in reasonable detail, accurately and fairly reflect the company's transactions and dispositions of assets
- Devise and maintain a system or internal accounting controls sufficient to provide reasonable assurances that:
  - transactions are executed in accordance with management's general or specific authorization
  - transactions are recorded as necessary to:
    - permit preparation of financial statements in conformity with generally accepted accounting principles or any other criteria applicable to such statements
    - maintain accountability for assets
  - access to assets is permitted only in accordance with management's general or specific authorization
  - the recorded accountability for assets is compared with the existing assets at reasonable intervals and appropriate action is taken with respect to any differences.

The terms "reasonable detail" and "reasonable assurances" are defined to mean "such level of detail and degree of assurance as would satisfy prudent officials in the conduct of their own affairs."

The FCPA was designed to maintain the basic integrity of the internal record-keeping and control systems of public companies by imposing substantive requirements directed toward these subjects. Under the current requirements, it is possible, at least theoretically, to violate the FCPA by the lack of adequate records or controls, even if no improper transactions have occurred as a result of such deficiencies and even if published financial statements are not inaccurate. Therefore, issuers should consult with their auditors to be sure that their systems for maintaining books and records and also their internal accounting control systems are adequate to meet the FCPA standards.

Two additional rules have been adopted by the SEC to supplement the FCPA statutory provisions. One rule prohibits any person from directly or indirectly falsifying or causing to be falsified any book, record or account subject to the FCPA record-keeping provisions. This rule applies, as indicated, to any person and is not limited to directors or officers.

A second rule prohibits directors or officers from making, directly or indirectly, any materially false, misleading or incomplete statement to an account in connection with an audit or any filing with the SEC.

When Is a Company Criminally Liable?

Companies that violate the antibribery provisions of the FCPA can be fined up to $2,000,000 for each violation, and an officer or director who commits a willful violation can be fined up to $100,000, imprisoned for not more than five years or both. This fine cannot be indemnified by the company. Civil penalties also may be imposed. Violations of the record-keeping and accounting provisions are subject to the same penalties and fines as other violations of the federal securities laws.

No criminal penalties are available for violations of the accounting sections unless acts are taken knowingly to circumvent the accounting requirements such as by deliberate falsification of books and records to hide “slush funds” or “kickbacks” to evade internal controls requirements.

What To Do as a Manager

U.S. firms should educate their employees about the application of the FCPA to the conduct of their business abroad. Companies should promote ethical business conduct, issue written guidelines for employees to follow and make clear that violations of the law will not be tolerated. Employees stationed overseas should be able to differentiate between improper payments and appropriate "facilitating" payments or fees to obtain routine government action.

Cultural and language differences can complicate the equation, as can the presence of foreign competitors or local businesses operating unethically. Reporting such conduct to the proper authorities may or may not be feasible, depending on the locale. Legal counsel should be consulted whenever a question arises as to the potential application of the FCPA. Payments to high-level government officials of any kind should be avoided. Before any payment is authorized, care should be taken in considering its purpose and effect, the amount involved in relationship to the nature of the action sought or services to be rendered, whether the action is one requiring the exercise of discretion, and the prevalence and propriety of the practice under local law or custom.

Potential "red flags" requiring further investigation or consultation with counsel include:

- Payments of large commissions
- Payments to one or more individuals who do not render substantial services
- Payments labeled "miscellaneous expenses," particularly if paid from cash funds
- Dealing with a foreign agent known for illegal transactions
- Agents with close connections to foreign governments at high levels
- Payments made to third parties or in third countries for no obvious purpose.

If a bribe is requested, the U.S. firm should discuss the situation with its local business contacts to see if there are ways to deal with the issue legally.

Information Sources

- *The Ethics of International Business*

  Donaldson, Thomas. *The Ethics of International Business.* Oxford University Press, 1989.
- *International Journal of Purchasing & Materials Management*

  "The Foreign Corrupt Practices Act Revisited: Attempting to Regulate Ethical Bribes in Global Business," *International Journal of Purchasing & Materials Management*, Vol. 30, No. 3, Summer 1994, p. 15. ISSN 1055-6001.
- *Journal of Business Ethics*

  Regular articles regarding the subject of international business ethics
- National Trade Data Bank

  U.S. Department of Commerce Legal Aspects of International Trade Terms and International Business Practices
- "Values in Tension: Ethics Away from Home"

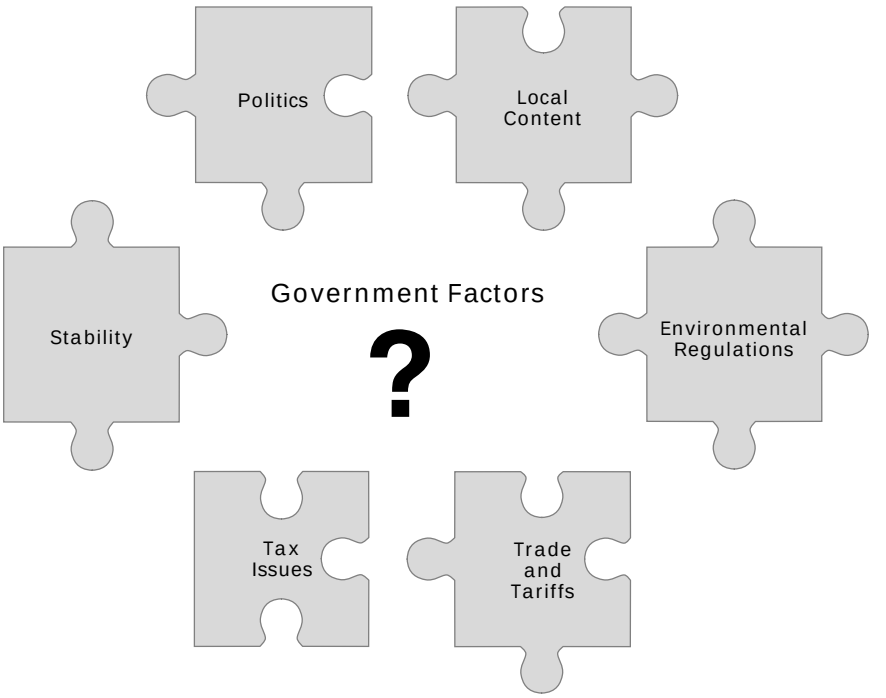
  Donaldson, Thomas. "Values in Tension: Ethics Away from Home." *Harvard Business Review,* September/October 1996, p. 48.

XII. GOVERNMENT

Overview

Local government influences on international projects play a fundamental role in determining the risks, rewards and feasibility of investing in an overseas location. Increasing the risk of government influence is the fact that many of the most active areas for new investments in industrial facilities are in emerging countries where the government policies may change direction quickly.

A key factor in planning an overseas project is to establish contact with appropriate government agencies and key players well ahead of selecting the final location and project approach.



Critical Government-Related Issues

Politics

In many areas of the world, the political realities within the government system have a major impact on a project's success. U.S. locations have various levels of government organizations that may have jurisdiction. Various local, city, county, state and national entities may have requirements that must be complied with. Overseas project locations should be assumed to have similar situations.

Owners are advised to recognize not only that such organizations will demand certain input, but also that every location at a given time will be unique in what each group demands from the project team.

The in-country experience of the prime contractor can be a strong selection criterion. Established relationships with the government agencies can be extremely important.

Stability

Owners and their construction partners must be aware of the business/political climate within the project country and consider it when making key project decisions. Some items to evaluate include:

- What project issues will be affected by upcoming elections?
- Has the economy been such that unrest realistically may be anticipated?
- Is the existing government sufficiently strong to withstand insurgencies?
- Does national history lend itself to government instability, and to what extent?

Indications of stability and risk can be obtained from the U.S. State Department and local embassies and consulates.

The lack of stability also likely will have an effect on attracting expatriates and families.

Tax Issues

Every project, regardless of location, is affected by tax laws. Preproject budget planning must identify the tax repercussions.

Many owners carry in-house staffs to work continuously with tax issues. Others keep outside sources such as tax consulting and accounting firms on retainer for this purpose. When considering a project outside of the United States, an Owner must find expertise specific to the particular country in which the project is located. Most major U.S. E&C contractors have in-house legal and tax departments with global expertise that can be helpful. Consulting firms also provide these kinds of services.

Understanding the tax laws, recognizing the existence of "tax holidays," being aware of tax exclusions, and evaluating the potential effects that may come into play when U.S. and project country tax laws intermingle are considerations that Owners need to study. Import duty rates need to be understood also for both the project and the ongoing facility operation.

Trade and Tariff Considerations

In executing a non-U.S. facility project, equipment and materials likely will need to be shipped into the project country. Some of these are raw materials with fabrication to be performed in-country. Others are prefabricated systems or sections of systems, often modularized. Also, certain specialized equipment may not be available in-country.

Recognition of trade and tariff issues is essential and can have a significant impact on project costs. Knowledge of how these considerations are affected by trade pacts (e.g., the Argentina/Brazil/Paraguay/Uruguay/Chile Mercosur Agreement) can lead to large cost savings. Project teams must explore the possibilities and the impact they will have.

Environmental Regulations

Recognition of environmental issues continues to grow. The acceleration or deceleration of this growth is a function of the political, economic and social climate in any country at any given time. However, the move to "green" issues continues to move forward rather than backward.

In many nations, environmental regulations have become strict enough to be considered a key element of project cost and execution. Owners who fail to

account for these regulations open themselves up to the possibility of severe budget overruns, schedule slippages and damage to local relationships.

Local Content Requirements

Many forward-thinking developing countries are campaigning continuously for global firms to construct facilities within their borders. New facilities mean job creation, tax-base enhancement and prestige. The offering of significant incentives to Owners is often a key determinant in the final location decision. Owners should explore this area fully. U.S. Owners should not, however, think that these nations are looking to serve merely as colonial territories that get nothing from these ventures for other in-country interested parties.

Owners need to ask questions, such as the following, regarding local content requirements when making location decisions:

- What are the requirements relative to the construction project itself?
- What are the requirements relative to postconstruction facility operation?
- Are sufficient resources available to meet these requirements?

Any Owners who fail to address these issues could experience major trouble down the road. The worst-case scenarios include projects that ultimately cannot be completed or a facility that eventually cannot be used. Therefore, the questions need to be asked — and answered — prior to commencing the project.

Miscellaneous Issues

Local, regional, state/provincial and national governments and their laws and ordinances have the potential to affect profoundly a project's schedule and budget in other areas as well. Project teams in the early planning stages are advised to consider these areas:

- Permitting
- Financing laws
- Contractor restrictions
- Equipment allowances
- Intellectual property rights
- Other regulations on Owners, engineers, contractors, suppliers, etc.

Information Sources

- The Economist Intelligence Unit
  Country Reports; Country Risk Analysis; and Investing, Licensing and Trade Conditions Abroad
- National Trade Data Bank
  U.S. Department of Commerce Country Commercial Guides and Country Reports on Economic Policy and Trade Practices

XIII. ECONOMICS

Overview

Economic factors play a major role in Owner decisions to invest in overseas locations. They are issues that not only affect the initial cost of the facilities, but also have long-range consequences on the profitability and viability of the investment.

Economic Factors Impacting the Global Project

- Project financing approach and options
- U.S. and destination country government grants and guarantees
- International lending agency participation
- Currency exchange issues
- Inflation risk protection
- Destination country political/economic stability
- Destination country legal system viability
- Capital repatriation restrictions
- Currency denomination in contracts/protection and options

Critical Economic Issues

Economic factors must be given thorough consideration during the early stages of the project. This discussion refers to the impact of these issues on the financing and building of the facility and not on the long-term business operation. The economic issues cover a broad range of factors and play a central role in many aspects of an international project.

Evaluation of these factors and their impact on issues such as location selection, cost estimates of the facility, project financing, and actual design and construction of the facility will involve a multidiscipline team from the Owner's organization.

This team would include finance, legal, engineering, operations, marketing and executive-level representation. International lending institutions should be consulted, as well as major international accounting firms; U.S. and destination country government agencies are likely to be involved.

Global Project Financing

U.S. corporations are focusing significant portions of their capital programs on international sites. The competition for these projects among various nations and locations is intense. Project financing sources often play a major role in deciding where a project is built, who provides the design and construction, and where major equipment will be procured.

Both the U.S. government and the destination country's federal, regional and local governments may be involved. Project financing risks often require participation by the U.S. or destination country government agencies whose terms and conditions play a major role in the structuring of the deals.

Frequent players in insuring and financing international projects are the U.S. Government Export-Import Bank (EX-IM), the World Bank, the U.S. Government Overseas Private Investment Corporation (OPIC) and major international banking institutions. These public and private organizations all provide services to U.S. businesses considering investments overseas. Each has its own methods of evaluating risk, contractual requirements and lending objectives. Projects failing to meet the risk hurdles of private lending institutions may qualify for federal loan guarantees. Through OPIC and other agencies, the federal government assists private industry in developing a presence in emerging markets through a variety of funding and loan guarantee programs.

The financing package for major international projects can be a highly complex set of agreements involving a number of participants in project debt and equity, including the following:

- Private international banking institution — debt financing
- World Bank — debt financing
- U.S. federal government agency (OPIC, etc.) — loan guarantees
- Destination country federal government — grants/tax incentives
- Capital equipment manufacturer — design/build/own/operate portions of facility
- Destination country JV partner — equity
- International contractor — equity.

Debt financing institutions will consider a wide range of economic issues and risks in evaluating international projects.

Risks involved in project finance that must be considered include the following:

- Construction risk — delays, cost overruns, contractor performance, technology and force majeure
- Operating risk — technology, management, performance, operating and maintenance
- Supply risk — raw materials and/or energy availability, increase in cost, poor quality, and transportation risk
- Market risk — demand for resulting product to ensure sufficient cash flow; demand, competition, pricing, etc.
- Regulatory risk — environmental issues, government acts and tax law changes
- International risk — sovereign actions affecting import duties, licensing requirements, expropriation, war, etc.

There are mitigating alternatives to address each of these risk areas. To the extent the Owner has implemented these mitigating provisions, the attractiveness of the project to potential equity or debt financing entities will increase.

Federal and International Agency Involvement

There are a number of federal agencies that are involved in supporting U.S. business in investing and exporting to overseas countries. Among those most frequently involved are the following:

- OPIC — The Overseas Private Investment Corporation (OPIC) is one of the federal agencies involved in providing risk insurance for U.S. companies investing in international projects. Operating in 140 countries, OPIC fosters U.S. global competitiveness by offering financing, investment insurance and other investor services. OPIC's political risk insurance enables banks to play an active and profitable role in third-world markets without assuming unacceptable risks or incurring incremental cross-border exposures. OPIC and its bank clients have worked together for years to develop approaches and mech-

anisms for doing business abroad under OPIC protection. OPIC is involved in risk protection for currency conversion in projects where the in-country bank has guaranteed conversion on fixed-term deposits from the local currency back to dollars at the end of the term.

- Export-Import Bank (EX-IM) — EX-IM is an independent U.S. government agency that helps to finance and facilitate the export of U.S. goods and services. EX-IM helps U.S. exporters in three ways:
  - Will consider helping private lenders meet rates or will offer competitive financing directly to foreign buyers of U.S. goods and services when foreign governments subsidize their companies' exports by offering buyers below-market, fixed-rate financing
  - Assumes risks beyond those that can be assumed by lenders and exporters in financing the production and sale of exports
  - Provides financing to foreign buyers of U.S. goods and services when private lenders cannot or will not finance those export sales
- World Bank — The United States and other countries contribute funds to the World Bank for the purpose of aiding developing countries. The World Bank participates in international projects through loans, loan guarantees, currency exchanges and other funding matters.

These are but three institutions involved in global projects. There are literally hundreds of public and private entities participating in global development. The Owner's in-house financial advisors and financial institutions and consultants are charged with developing the optimum participation and project financing strategy.

Currency Exchange and Interest Rate Risks

Global projects are subject to risks in currency exchange and interest rate fluctuations that are far more volatile than in U.S. projects. A project's profitability and debt service ability can be affected severely by "environmental risk": the risk that a project or company's performance will be affected by unanticipated changes in the economic environment that lie outside the control of the project.

Recent years have seen the kinds of unprecedented fluctuations in the economic environment that can lead to severe cash flow difficulties even in well-established corporations. The risks are especially pertinent to highly leveraged project financing.

Capital markets have moved away from simply forecasting risk to managing risks. This has been possible through the development of the swaps and options markets, including those in the following table.

Currency and Other Hedging Strategies

- Interest Rate Risk
  - Financial Futures (1975)
  - Interest Rate Swaps (1982)
  - Interest Rate Options (1982)
  - Interest Rate Forwards/Forward Rate Agreements (1983)
- Foreign Exchange Risk
  - Forward Contracts on Foreign Exchange
  - Foreign Exchange Futures (1972)
  - Currency Swaps (1982)
  - Options on Foreign Exchange (1982)
- Commodity Price Volatility
  - Futures on Contracts for Commodities (Oil 1978, Metals 1983)
  - Commodity Swaps (1986)
  - Commodity Options (1986)

Multinational Sourcing of Products and Equipment

Where the project involves major pieces of equipment and significant quantities of material, and assuming the in-country requirements can be met, international procurement can take advantage of government programs in various countries that are designed like EX-IM to promote exports. Special financing arrangements, as well as currency exchange, risk mitigation and other protections, can be included in such contracts.

In some cases, a vendor not only may sell the equipment, but also may design, build, install and operate it at the new site. This is becoming a factor in automotive and power projects, for example.

Currency Payment Terms

Contracts for services and equipment involved in the project can be written to include terms and conditions covering optional repayment currencies, provision for inflation, currency exchange and payment insurance. These can have a major impact on the costs involved and must be evaluated carefully during the procurement program.

Repatriation Plan for Funds to United States

In developing countries, in-country regulations may curtail the new entity from taking local currency revenues to repay the sponsoring entity or lending agencies and suppliers. It will be important for the Owner to negotiate appropriate terms with local governing bodies or, if not possible, to obtain insurance coverage or U.S. agency protection for this eventuality. Currency conversion issues enter into this problem as well and must be covered.

Contractor Financing Services

A number of major international contractors offer project financing assistance and, in some cases, take equity positions in the project. These firms are often familiar with the U.S. government agencies involved in funding and insuring risks in international work. They also have contacts with the major private lending institutions and can assist Owners in shopping for the best terms.

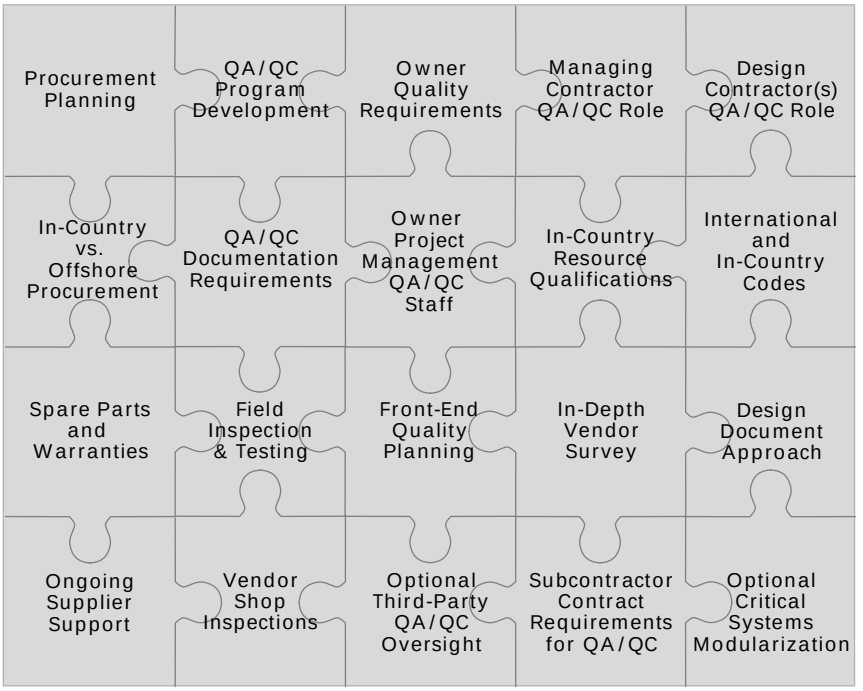
Information Sources

- Export-Import Bank of the United States
  Business Development Group
- Overseas Private Investment Corporation

XIV. QUALITY

Overview

Through careful front-end planning and analysis, Owners can achieve quality in international work comparable to the quality of work done in the United States. The knowledge and in-country contacts of the contractors, design firm and other specialists involved in the project are essential. However, there is no substitute for the Owner team's spending appropriate time in-country to gain firsthand knowledge of the available resources and results achieved by others in establishing new facilities in the country in question.



Note: QA/QC = quality assurance/quality control

Critical Quality Issues

The extent and criticality of the quality program for international work will depend on many different factors. The quality requirements of the products or services to be produced by the new facility have a significant impact. The

geographic location and status of in-country development and resources contribute significantly to the quality oversight demands.

When projects are executed in developed countries, and in the United States in particular, a certain level of quality is attained via the use of known and established vendors and contractors. Even in these cases, however, quality assurance/quality control programs are instituted normally. When a project is executed either in a developing country or in a remote part of a developed country (e.g., Alaskan North Slope), the importance of an effective quality assurance/quality control program is magnified.

This program may involve a range of issues from design standards to local codes, availability of qualified construction labor and management resources, and supplier qualifications.

Materials and Equipment

International projects present a number of challenges in procuring materials and equipment that meet Owner needs. Standards and interchangeability of parts can be a problem. Vendor quality and testing procedures may be lacking. Codes and specifications may sound the same but be interpreted differently by the supplier than was intended in the design documents.

Front-end planning during the design stage and even during the site selection stage is important. Critical equipment needs should be identified. Vendor surveys should be carried out to assess in-country resources, costs and delivery issues. A total procurement plan must be developed to integrate the offshore procurement program with the in-country program, giving due consideration to regulations regarding local content, importation and transportation costs, and ongoing vendor support requirements.

In some geographic locations, fabricators and suppliers are available who are licensees of well-known U.S. firms and familiar with applicable codes and regulations. In these cases, customary Owner and contractor quality assurance/quality control programs may be sufficient with little or no modification. However, this may be the exception rather than the rule.

Many countries are adopting recognized international codes and standards to help ensure predictable levels of product quality. Certification by the International Standards Organization (ISO) to their ISO 9000 level is

becoming more and more prevalent. But ISO 9000 does not guarantee the quality of the product. It merely means there is an established and documented program that is followed in the work processes.

The U.S. ASME codes for pressure vessels are used commonly. In Italy there is the ANCC Code, in Germany the DIN Code, in Japan the JIS Code and in the Netherlands the Stoomwezen Code. The British Standards (BS) are used extensively throughout the British Commonwealth.

Assessing the capability of local vendors and the quality of their products may be more of a challenge in less-industrialized countries. Site surveys usually are required, but they may produce only preliminary indications of quality if the following conditions exist:

- There are no national quality assurance standards
- The country is in transition from a centrally planned economy to a market-based economy
- There are limited examples of contractors who have purchased equipment or materials locally
- There are concerns over second- and third-tier suppliers.

If the new facility is a manufacturing plant, the Owner will have to establish sources for raw materials and components and thus has a need for survey information that may relate to the needs of the construction program. Coordination of these needs can be beneficial.

Local vendors may be unable to provide detailed specifications, drawings and data that large contractor engineering departments are accustomed to receiving. In such cases, time and money must be spent in accepting or rejecting materials, and perhaps even in equating and approving national standards.

It is sometimes possible to adapt locally produced materials to conform to project specifications. However, this usually results in either accepting an alternate product or agreeing to an alternative manufacturing method. The former usually means lowering quality standards and leads to additional design changes; the latter may add significant cost to the normal material price.

Industries in foreign countries that operate without compliance to any recognized code also may lack effective inspection (quality control) programs. In these situations, a proactive project inspection function must be established to ensure

the quality of materials produced and received. This function could help to establish standards that local manufacturers would use as production standards. Ensuring compliance to quality standards may be time consuming, may require extra staff, and must be reflected in project cost estimates and schedules.

Both expediting and inspection services may be subcontracted if not capable of being performed in-house by the managing contractor or Owner personnel. While certified inspectors are not available locally in all geographic areas, much international inspection is performed by U.S. inspection agency personnel.

Special attention should be paid to items affecting health and safety. Stringent specifications should be used and enforced by the inspection group. This enforcement should include witness testing of key items.

Importing material offers an alternative source to local procurement (to the extent permitted by the host country). The quality of equipment and materials purchased from other countries can be controlled satisfactorily by one of the following approaches:

- Contracting inspections and documentation requirements to specialty firms
- Using Owner or contractor personnel from their respective home locations
- Using Owner or contractor personnel based in the source country.

However, national policies in the project site country to develop local resources through technology transfers may force manufacturing into less-qualified local companies by refusing to grant import licenses for certain items. As noted above, this will necessitate an increased level of attention to the quality and delivery aspects of an order.

Whatever the source country, inspection of materials and equipment upon arrival at the work site should be done to certify their condition. This will help mitigate field rework by preventing installation of deficient items.

Quality in the Field

Based on evaluation of the labor and supervision in the location in question, the Owner, managing contractor and design engineering team may choose to use modularization of certain systems and assemblies. To be effective, the decision to modularize must be made during the early planning stage of the project. Modularization frequently is used even when the system is being purchased and

fabricated in-country for better quality control. However, regulations regarding local content may limit this option.

Subcontractor surveys should be carried out and the results evaluated during the planning stage of the construction program. Contract documents must be tailored to the local practices but should contain tight requirements for compliance with the project quality program and results expected.

The Owner or managing contractor will need to monitor the field operations and, where necessary, place quality control specialists right at the point of work since the supervision of local contractors often is not familiar with nor skilled at managing work to typical U.S. standards.

Documentation must be planned. Again, the subcontractors may not have the experience to provide the appropriate documentation. This places more responsibility on the managing contractor.

Code stamps and testing practices vary widely around the globe. Many countries now are using international standards comparable to or the same as U.S. standards. However, different vendors may claim they are following the same standard but produce very different results. Shop inspections are important. Care in these efforts can save considerable time and expense at the site.

Required spare parts, equipment warranties and after-sales support should be spelled out clearly in the vendor purchase orders. Increased purchase of spare parts may be prudent in some locations. In regard to after-sales service, it may develop that the supplier has limited technical personnel. If so, this gap will need to be filled from other sources.

Information Sources

- American National Standards Institute
- American Society of Civil Engineers
- American Society for Quality Control
  Quality Progress Magazine
- Construction Industry Institute
- Design and Construction Quality Institute
- ISO 9000 Series
  The International Organization for Standardization

XV. SAFETY

Overview

Safety practices in international work vary greatly from the developing to the more highly industrialized countries. Most U.S. Owners today are committed to the value and importance of safe working conditions. As these same firms invest increasingly in overseas locations, they are bringing the lessons learned in the United States to these countries. However, achieving the understanding and commitments necessary for a zero injury standard will require not only appropriate contractual language and effective written project procedures, but also more importantly training and close supervision at the site. Cultural differences must be understood and communication adjusted for these differences.

Measurement and reporting of contractor and Owner safety results in international work is becoming more common. Managers are evaluated not only on their U.S. results but also on the international component. Industry support of zero injury standards, regardless of location and recognition, and reward for accomplishing these goals are vital.

Critical Safety Issues

Owners have supported safety proactively as a culture. The Business Roundtable report *Improving Construction Safety Performance*, published in 1982, was an initial step to establish Owner standards for safety performance. In 1991, the Construction Industry Institute published the report *Managing Subcontractor Safety* and in 1993 issued the report *Zero Injury Techniques*. These have had significant influence on what Owners expect from contractors and on contractor selection criteria.

Working conditions, government regulation and safety training in many developing countries are significantly behind those in the United States. Achieving results comparable to U.S. standards requires clearly defining the expectations in contracted obligations for the managing contractor and in turn for the subcontractors and then using training and vigilance to reinforce these requirements. Zero injuries and incidences always should be the goal, regardless of the location.

The fundamental building block in a successful safety program is the principle that all injuries and accidents are preventable. The evidence that accident-free projects can and are being achieved in emerging and third-world countries makes it clear that safe working conditions in global work are feasible. The standards for Owners and contractors should be the same, regardless of the site.

Modeling an Effective Global Safety Program

There are many valid models in place in both Owner and contractor organizations that have proven effective. The principles that follow outline a program proven effective in both domestic and international work.

Management and Employee Commitment and Accountability

Senior-level commitment of management, up to and including the board of directors, to appropriate environmental, health and safety (EHS) standards and communication of this commitment is vital. Compliance with this commitment and applicable laws is the responsibility of every employee and contractor acting on the Owner's behalf and should be a condition of employment or

contract. Management in each division is responsible to educate, train and motivate employees to understand and comply with this commitment and applicable laws.

Resources, including research, development and capital, must be deployed to meet this commitment in a manner that strengthens the business. Regularly reporting to the public on global progress in meeting this commitment is essential.

Safety Beliefs

The fundamental safety beliefs are:

- All accidents/injuries are preventable
- The primary motivation for managing safety is that management does not want people injured
- The welfare of the employee is priority number one — safety is good business, and safety is the first priority
- Working in a safe environment helps improve morale and productivity.

These beliefs are used to drive EHS performance for all entities on projects, including contractor organizations. They apply to an engineering office, construction site or operating facility.

Fundamental Safety Principle

The fundamental safety principle is that all injuries and accidents are preventable. This principle is shared by all project organizations, regardless of employer. It provides the basis for managing global EHS processes. It establishes the expectation, regardless of where the project is being built or by whom.

The following strategies are used to drive the principles:

- Management accountability/involvement
- Global safety processes
- Safety professionals
- Line organization responsibility
- Safety procedures
- Safety management system.

Management Accountability/Involvement

Safety is integrated into line management and shared by individual employees. Employees are responsible for their own safety and the safety of their co-workers. Managers and supervisors are held accountable for safety performance. The safety records of their organizations are considered first in the evaluation of personal performance.

While contribution to profitability is important, line organization management understands that business concerns will never excuse a lapse in safety.

Global Safety Processes

Safety processes, procedures and performance are managed on a global basis. Safety goals for project organizations (including construction) are set on a global basis. Records are maintained globally, without regard to location. Performance is evaluated continuously against those goals. Company management reviews and audits performance regularly. Trend analyses are performed and resources are deployed to address trends when necessary.

Safety Professionals

Construction safety professionals support line management in implementation of safety programs. These professionals work with their own employees as well as contractors to establish safety practices and procedures for each site. Safety professionals are networked to other Owner safety professionals as well as to professional societies. They leverage their expertise to the contractor organizations.

Line Organization Responsibility

Safety is a line organization responsibility. Individuals, both company and contractor, are held accountable for their safety actions. It is a condition of employment. The line organization sets and continuously reinforces the standards to be realized and shares in the accountability.

Implementing the Principles

Safety principles remain the same globally; how they are executed depends on the local culture and environment. For example, fall protection must be part of

all construction plans whether the project is on the Texas Gulf Coast or in China. On the Texas Gulf Coast, commercially available scaffolding material that meets specifications is readily available. In China, scaffolding might be made of a more readily accessible material. It may look different and be constructed of different material, but the principle to provide fall protection is maintained.

Safety Procedures

The collective knowledge and experience of many professionals over a great number of years is maintained in the Owner's construction safety procedures. These provide the basis to execute decisions in alignment with the safety requirements of the Owner. The procedures are used around the globe and maintained on a continuous basis. The global Owner construction safety procedures are supplemented to cover local site-specific and country-specific requirements.

Safety Management System

Auditing, training and accident investigations are key elements of a successful safety management system. The Owner/managing contractor audits safety performance of the job site. The audits ensure safe work procedures and practices are being followed. Formal auditing reports should be written.

Managing contractor and subcontractor safety requirements are detailed in the contract documents. The Owner and managing contractor may agree jointly on and publish the safety procedures for the site. Contractor selection criteria will include a proven record of safety performance. Major international contractors have published safety performance measurements that are used in the selection process.

Subcontractor safety performance in developing countries may be more difficult to determine. Many countries do not have the traditions of measuring safety performance. It is important for the Owner to insist that the managing contractor research and determine prior records that are available on subcontractor performance.

It is highly likely that considerable safety orientation and training may be required to bring subcontractors up to the expected standards. Close moni-

toring also will be required. Recording and reporting safety performance may be new to the subcontractors but should be insisted upon. More up-front work in planning/communication will be required.

Serious accidents or incidents of high potential should be investigated, regardless of whether or not an injury occurred. Investigations are conducted to uphold the principle that all accidents and injuries are preventable. *Why* the incident happened and *how* it could have been prevented are identified and widely shared with other Owner project organizations around the world.

Six-Step Contracting Practice

1.	Contractor Selection	Safety is a criteria when considering contractors for bid.
2.	Contract Preparation	Contract documents specify safety requirements.
3.	Contract Award	Contract award includes assessment of contractor's ability and intent to comply with safety requirements.
4.	Operation and Training	Plan work, assess risks and establish hazard control. Provide safety orientations before starting work. Work with the contractor to develop capability.
5.	Audit and Monitoring	Safety performance is monitored regularly by an audit team of Owner and contractor personnel. Work can be stopped and the contract terminated if necessary.
6.	Postcontract Evaluation	Evaluation of contractor performance includes the safety database established to provide feedback to Step 1.

Linking Employee Recognition to Safety Success

Many large companies are realizing that to be truly effective and gain competitive advantages, safety must be integrated into the company's strategic goals, operations and culture. One way of sending the message that safety is an important part of business operations and employee performance is by instituting reward and recognition programs. By proactively encouraging better performance and increasing interest in safety, companies provide an incentive for continuous improvement and innovation, both of which are critical for sustained competitiveness.

Both rewards for past performance and incentives for future superior performance have their place. Specifics vary considerably, but the principle of recognition for safety performance is applicable in all situations, regardless of the location. Safety-based incentives for contractors and subcontractors often are

included in Owner contract terms. They have proven effective in both domestic and international work.

Information Sources

- Corporate Environment, Health & Safety Reward Programs
  Report Number 1146.96-RR
  The Conference Board
- *Improving Construction Safety Performance*
  CICE Report A-3, January 1982
  The Business Roundtable
- *Managing Subcontractor Safety*
  Report 13-1, February 1991
  Construction Industry Institute
- *Model for an Owner Safety Program*
  CICE Report, November 1988
  The Business Roundtable
- OSHA
- *Professional Safety Magazine*
  American Society of Safety Engineers
- *Safety + Health Magazine*
  National Safety Council
- *Zero Injury Techniques*
  Report 32.1, May 1993
  Construction Industry Institute

XVI. SECURITY

Overview

Planning for international work must include careful analysis of the security issues for project personnel, the construction site and the operating facility. Many projects have experienced major security problems from individual acts, political unrest or wars.

Security must be considered in the planning stage of an overseas project. Security features for the planned facility must reflect the local environment. An employee security briefing program should be prepared for employees and their families on overseas assignments.

Security Planning

Expatriate and Family

- Briefing for overseas assignments
- Travel security considerations
- Neighborhood and residence selection criteria
- Emergency/evacuation planning
- Destination country security practices/ employees and families

Workplace

- Perimeter planning
- Access controls
- Response to facility threats
- Employee emergency responses
- Business continuity planning
- Business travel security issues
- Contingency evacuation planning

Critical Security Issues

The concept of safety has changed dramatically in recent years. Areas that once were totally safe now may be subject to random acts of violence. One cannot rule out security problems anywhere in the world today. To address these issues, most major corporations establish a crisis management group that typically includes senior executives, the corporate security director and legal counsel. Outside security consultants familiar with local conditions often are hired to develop appropriate company and employee security policies and practices and to review the facility security plan.

Security planning for international projects must be given senior-level consideration, regardless of the site location. Security may involve local law enforcement, private agencies and U.S. government representatives.

Security planning is not a one-time event. Plans must be reviewed and updated regularly.

Principles of Security for Expatriate Personnel

Detailed security instructions for expatriate personnel should be prepared and included in an orientation prior to the overseas assignment. Family members also should be included. Security policies are tailored to each situation. However, the following are typical of the personal security practices used by many Owners:

1. Planning Prior to Trip

- Arrange for a responsible person to access your records in the United States.
- Photocopy critical items such as passports, travel documents, etc.
- Restrict your itinerary to those who need to know.
- Travel as an individual — avoid use of company name.
- For travel in high-risk countries, use different routes from time to time.
- Arrange to be met. Use only your name, not your company name.
- Have a backup plan if meeting arrangements fail.

2. At the Airport

- Confirm flights. Arrive early. Proceed as soon as possible through security, customs, etc. to controlled area.
- Restrict your farewell. Airports are targets for terrorists.
- Remain alert. Avoid commotions. Avoid large plate-glass areas.
- Be prepared to be searched. Ensure papers identifying your company are not prominently in view.
- Penalties for carrying drugs are severe. Do not carry.
- Never accept packages from anyone unless you are certain of the contents.
- If you are not met, do not wait around airport external area. Take an authorized cab to your office or hotel.

3. At the Hotel

- Avoid ground-level rooms.
- Check fire exits carefully. Double lock your room.
- Identify visitors before admitting them.
- If persons claiming to be officials ask you to accompany them, verify their credentials.
- Keep sensitive documents in hotel safe or with you.
- Use care in informing others of your movements over the phone.
- If there is a history of bombings in the city, avoid ground-level restaurants that directly face areas of public access.
- Ask the hotel for safe jogging routes and avoid routine.

4. Travel to Office or Job Site

- If you are not being met, use a hotel cab.
- Exit and enter from an area that is “safe” (office parking lot, etc.) and close to the hotel entrance.
- Keep windows nearly closed and doors locked.
- If you are in a city with known risk and traveling by foot, be accompanied by someone.
- Be prepared to implement changes in routine (timing, method of travel).

5. Recreation

- Follow local advice on areas to avoid.
- Keep knowledge of plans restricted. Don't make leisure time a predictable routine.
- If using a hired car, check exterior and backseat before entering.
- Watch for motorbike or bicycle thieves.
- Carry local coins for public phones and know how to use them.
- Avoid crowds or any unusual activity — leave the area.
- If you feel threatened, don't ignore your instincts. Go to a safe haven such as a hotel or police station.
- Don't carry more cash or valuables than you need. If accosted, give them up without a fight.

6. General Matters

- Do not photograph sensitive installations.
- Observe country prohibitions on alcohol.
- If an incident occurs, turn over valuables and documents on demand. Obey instructions. Do not try to escape unless you are confident of success.
- Report thefts to police and obtain a police report for insurance purposes.
- If arrested, do as you are told. Remain calm. Achieve outside contact to the embassy, the local official with whom you are dealing or a friend.
- Provide basic information on yourself.
- Pickpockets operate in crowded areas. Be alert. Beware of commotions — these often are staged while your pocket is being picked.
- Pickpockets may resort to violence if pursued.

7. Riding in Cabs

- From a hotel, use cabs called by the hotel.
- On the street, use cabs in familiar areas of city.
- Avoid cabs with obscured license plates.
- Prior to entering, make sure doors are equipped with interior opening handles and normal locks.
- Check for a meter. If there is none, do not enter.
- Be wary of flagging your own cab on street, particularly after dark.
- Do not enter a cab with people other than the driver inside. Object strenuously if the driver attempts to pick up others. Leave the cab if the driver persists.

8. Security on Street

- If you are walking from the hotel, check for a safe route.
- Inform someone you trust of your plan and when you expect to return.
- Walk in the middle of the sidewalk rather than close to the curb.
- Never carry large sums of cash or showy jewelry.
- Always carry some form of ID. A copy of the front page of your passport will suffice.
- If you carry your passport, keep it in your front pocket or jacket pocket.
- If you are approached or followed by a suspicious person, cross the street or change direction and go to nearest police officer or police station or enter a busy restaurant.
- If you are being followed while walking past someone in a car, turn around and go in the opposite direction.
- Never get out of a car for anyone other than a uniformed police officer or a plainclothes officer with proper ID.

Residence Considerations

The following checklist of items can serve as a guideline in evaluating a residential neighborhood:

Residential Neighborhood Assessment Checklist

- Streets in good condition. Sufficiently wide to permit easy driving. Adequate lighting. Several routes in and out of neighborhood. Two-way traffic.
- Other employees or expatriates living nearby.
- Local police and fire protection adequate within 10-minute response time.
- Little pedestrian traffic. Little on-street parking.
- Homes with visible security measures in place.
- Apparent income level suggesting that security is taken seriously.
- Apartment building:
  - Resident concierge
  - Controlled access to lobby
  - Well-lighted public areas
  - Controlled off-street parking
  - Third to sixth floors preferred — above street and accessible for fire rescue
  - Neighbor watch program
  - Neighbors security conscious.
- Single-family housing:
  - Property well defined with hedge, fence or wall
  - Layout permitting easy entrance with vehicle or on foot
  - Adequate on-street lighting
  - Secure parking available
  - Avoid locations with vacant lots — subject to criminal activity.
- Cluster housing — may provide greater security.
- Basic housing considerations:
  - Solid wood exterior doors
  - Exterior doors with deadbolt locks
  - Exterior doors with 180-degree door viewers
  - Exterior doors with hinges on inside
  - Adequate entrance lights to light area of exterior door.

Security Guidelines for Family Members

The following are items for consideration in planning for family security:

- Each family member should be familiar with basic security procedures.
- Do not set a pattern or routine for shopping, religious services, family outings or carpooling children to school.
- Know location of family members at all times. Determine causes of delays or unforeseen absences immediately.
- Encourage family members to check in before departure and after arrival.
- Do not reveal information concerning travel or other family plans.
- Avoid local disturbances.
- Children:
  - Do not talk to or accept anything from strangers
  - Remain with a parent or go to store clerk if lost
  - Do not go anywhere without a parent's permission
  - Do not accept packages or letters from strangers
  - Know key phrases in the local language
  - Let someone know your location at all times.
- Parents:
  - Teach child never to get into a car or go into a house without permission
  - Never leave child alone in public place
  - Teach child a code word known only to family or close friends to indicate child is safe in event of kidnapping
  - Keep a list of emergency numbers and show children where they are
  - Train children not to give strangers information over the phone
  - Teach children to keep doors locked.

Vehicle Preparedness

The following are suggestions on vehicle selection and preparedness:

- Have a vehicle that blends in with local passenger car environment.
- Choose a color appropriate to country.
- Have tinted windows.
- Choose a model slightly larger than most others.
- Ensure adequate road clearance for conditions.
- Make use of garages with attendants rather than unattended lots.
- Have theft devices such as ignition cutoff switch, steering wheel or gas pedal locking device and a car alarm system.
- Keep emergency equipment in trunk.
- Keep vehicle locked when unattended.
- Do not leave registration papers in the car.
- Have a cellular phone in the car.

Kidnapping/Extortion/Arrest

Corporate security officers should detail the planning and actions to deal with these situations. These typically are confidential.

Emergency Evacuations From the Overseas Location

These procedures are intended to establish a set of contingency plans for the withdrawal or evacuation of staff and dependents in the event of an emergency situation. The approach that follows is illustrative only and would be adapted for the Owner's particular policies and procedures.

The emergency plan is phased to deal with situations as they develop as follows:

• Phase I	Alert Stage — Warns individuals of instability.
• Phase II	Limited Action Stage — Increased preparedness for evacuation, includes those preparations made for conditions of increased tension or instability that could lead to partial or complete evacuation of expatriate employees and their dependents.
• Phase III	Evacuation Phase — Final preparation and/or evacuation includes those preparations made for conditions in which the decision to evacuate is imminent, has already been made or is under way.
• Stand Fast	Holding Pending Evacuation — If evacuation is not considered prudent. Under this concept, expatriates and their dependents would remain in their quarters (or other designated location) for an extended period of time until tension abates.

Phase I — Alert Stage

Routine collection and assessment of information about local and international events are in progress. Sensitive documents should be identified to remove or set aside for future destruction. Potential staging area for expatriates and dependents selected. Liaison with key multinational firms and U.S. embassy. Evacuation priorities established. Alternate routes checked.

Phase II — Limited Action Stage

Initiated when situation has reached a level of tension or instability that could lead to partial or complete evacuation of expatriates and their dependents. Contents of departure kits are examined and reviewed. Inventory of household effects prepared. Normal work routines continue, but travel clearances and exit

visas, if required, are obtained. Programmed destruction of documents to begin when appropriate.

Phase III — Evacuation Phase

This phase is initiated when the situation has deteriorated to the point that a decision to evacuate is imminent or has been made. The assumption is that total withdrawal will not meet active resistance from authorities. Decisions are made regarding evacuation of personnel to a preselected staging area prior to proceeding to international airport or other departure site.

Stand Fast — Holding Pending Evacuation

This is a special phase to delay evacuation in the event that the situation indicates evacuation is not prudent at the moment. Employees and dependents remain in their compound or quarters awaiting further instructions. Adequate food and medicine should have been kept on hand to support such an eventuality. Instructions to proceed may be transmitted by radio or phone.

Methods of Transportation

Detailed information on transportation methods should be prepared and information distributed to employees in case of emergencies. The options include:

- Scheduled airlines
- Nonscheduled (chartered) airlines
- Sea transportation
- Land transportation.

Carriers serving the area should be kept on hand with contacts for each noted. Capabilities to respond to evacuation requirements should be identified.

Land transportation in times of emergency usually is not recommended. However, sources of vehicles in times of emergency should be identified. Primary and alternate routes should be selected. Security arrangements should be made with local authorities if possible. Communications should be provided

for lead and rear vehicles in convoys. Establish coordination with United Nations agencies and other agencies where possible.

Business Continuity Team

Delegation of duties within a business continuity team will facilitate reacting to emergencies. Such roles as continuity coordinator, administration, medical, security, financial, public relations and legal duties should be assigned.

A decision as to whether the business can continue to operate must be made. Alternate sites should be identified if continuing at the current site is prohibited. Communication with clients, employees and the Owner's regional representative is vital.

Information Sources

- Control Risks Group
- *Craighead's Country Reports*
- Destination Country's U.S. Embassy
- The Economist Intelligence Unit
  Country Reports
- National Trade Data Bank
  U.S. Department of Commerce International Trade Guides and Country Commercial Guides
- U.S. Department of State
  Overseas Security Advisory Council

APPENDIX

American National Standards Institute
11 West 42nd Street
New York, NY 10036
Telephone: (212) 642-4900

American Society of Civil Engineers
345 East 47th Street
New York, NY 10017-2398
Telephone: (212) 705-7220

American Society for Quality Control
Quality Progress Magazine
611 East Wisconsin Avenue
P. O. Box 3005
Milwaukee, WI 53201-3005
Telephone: (800) 248-1946

A/E&C Division
17595 Harvard, Suite C215
Irvine, CA 92714

American Society of Safety Engineers
Professional Safety Magazine
1800 East Oakton Street
Des Plaines, IL 60018-2187
Telephone: (847) 699-2929

Bureau of National Affairs (BNA)
International Trade Reporter Manuals
1231 25th Street, N.W.
Washington, DC 20037
Telephone: (800) 372-1033

Information on overseas country import documentation requirements.

Construction Industry Institute
3208 Red River Street, Suite 300
Austin, TX 78705-2650
Telephone: (512) 232-3000

Control Risks Group
Washington, DC, Telephone: (703) 893-2883
London, England, Telephone: 71-22201522

London-based security and intelligence consulting firm. Provides clients with political analyses of global hot spots. Steers companies clear of hijacking risks and other menaces to air travel. Handles hostage situations and fraud prevention.

Corporate Environment, Health & Safety Reward Programs
Report Number 1146.96-RR
The Conference Board
845 Third Avenue
New York, NY 10022-6679
Telephone: (212) 759-0908
FAX: (212) 980-7014

Corporate Location Magazine
Euromoney Publications plc
Nestor House
Playhouse Yard
London, England EC4V5EX
Telephone: 44-0-171-779836

Craighead's Country Reports
Craighead Publications, Inc.
P. O. Box 1253
Darien, CT 06820-1253
Telephone: (203) 655-1007

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Each report covers important topics ranging from a general country orientation to details about the economic and political developments, social and business customs, business and financial services, health and safety concerns, visas, permits and predeparture regulations, neighborhoods and housing, schools and social organizations, and costs of goods and services among other subjects. *One of the particularly valuable features included in each report is a bibliography that lists current and recent books and articles on that country.*

Design and Construction Quality Institute
1015 15th Street, N.W., Suite 802
Washington, DC 20005
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Duties and VAT Cost
Harmonized Codes for Duty and VAT Rates
International Trade Administration (ITA)
U.S. Department of Commerce
The Herbert C. Hoover Building
14th Street and Constitution Avenue, N.W.
Washington, DC 20230
Telephone: (202) 482-2000

The Economist Intelligence Unit
European Business Publications Inc.
P. O. Box 891
Darien, CT 06820
Telephone: (203) 656-2701
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- Country Profiles
- Country Reports
- Country Risk Service
- Crossborder Monitor
- Financing Foreign Operations
- Investing, Licensing & Trade Conditions Abroad
- Market Atlases
- Regional Newsletters
- World Outlook

Engineering News-Record
Two Penn Plaza
New York, NY 10121
Telephone: (212) 512-3549

The Ethics of International Business
Donaldson, Thomas. *The Ethics of International Business*, Oxford University Press, 1989.

Experts Abroad
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Colorado Springs, CO 80906
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Firm that provides on-site professionals to assist international corporations in conferences, accommodations, liaison with clients, research into market trends, communications equipment and other services.

Export-Import Bank of the United States
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Hanscomb/Means Report
Hanscomb Associates, Inc.
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The *Hanscomb/Means Report* is a joint effort of R.S. Means and Hanscomb Associates. The report provides a single source for comparing construction costs across the globe. The report provides useful information such as the International Construction Cost Index. This index is based on an Owner-built, Owner-occupied manufacturing facility. It includes 26 items for all trades to represent all building construction items. The prices are trade contractors' in-place prices including labor, material, equipment, overhead and profit. The factor includes a stated exchange rate for each country, which can be updated or adjusted by the Owner, to derive a more current index figure. A base city is selected in each country and compared to the cost in Chicago, IL.

Harmonized Tariff Schedule of the United States
U.S. International Trade Commission
U.S. Government Printing Office
Telephone: (202) 205-2000

Covers imports that should be charged duty. Used by most industrialized countries.

Improving Construction Safety Performance
CICE Report A-3, January 1982
The Business Roundtable
1615 L Street, N.W., Suite 1100
Washington, DC 20036
Web site: www.brtable.org
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INCOTERMS 1990
ICC Publishing, Inc.
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Reference book published by International Chamber of Commerce in Europe.

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International Journal of Purchasing & Materials Management
"The Foreign Corrupt Practices Act Revisited: Attempting to Regulate Ethical Bribes in Global Business." *International Journal of Purchasing & Materials Management*, Vol. 30, No. 3, Summer 1994, p. 15. ISSN 1055-6001.
National Association of Purchasing Management
2055 E. Centennial Circle, Suite 22160
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Journal of Business Ethics
Cluwer Academic Publishing
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Norwell, MA 02061
Telephone: (781) 871-6600
Regular articles regarding the subject of international business ethics.

Managing Subcontractor Safety
Report 13-1, February 1991
Construction Industry Institute
3208 Red River Street, Suite 300
Austin, TX 78705-2650
Telephone: (512) 232-3000

Model for an Owner Safety Program
CICE Report, November 1988
The Business Roundtable
1615 L Street, N.W., Suite 1100
Washington, DC 20036
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National Safety Council
Safety + Health Magazine
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Itasca, IL 60143-3201
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National Trade Data Bank
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Examples of information on the NTDB include:

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- A Comprehensive Guide to International Trade Terms
- Country Commercial Guides
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- International Business Practices
- International Labor Statistics
- International Price Indexes
- Key Officers of Foreign Service Posts
- Legal Aspects of International Trade and Investment
- Market Research Reports

- NAFTA Information
- Organizations Conducting Standards-Related Activities (information on national, regional and international organizations that participate in standards-related activities)
- U.S. AID Business Information
- U.S. Global Trade Outlook.

Occupational Safety and Health Administration (OSHA)
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Means is well known for providing construction cost information in the United States. Means also offers various other services for both U.S. and international locations.

Richardson's Engineering Services, Inc.
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"Values in Tension: Ethics Away from Home"
Donaldson, Thomas. *Harvard Business Review,* September/October 1996, p. 48.

World Trade Press
Country Business Guide Series
1505 Fifth Avenue
San Rafael, CA 94901
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(800) 833-8586

Zero Injury Techniques
Report 32.1, May 1993
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Austin, TX 78705-2650
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