

How to Ensure Success in Overseas Projects

Managing risk in EPC contracts – the Hitachi approach

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Global recognition of risk

- There is a wide recognition of risk and its effects throughout industry and a general trend toward better, more robust, and more standardised risk management tools.
- ISO 31000, ISO 31010 and ISO Guide 73, issued in 2009, provide the first international standard for risk management.
- The Institute of Risk Management (IRM) also publishes standard risk management templates copies of which can be downloaded free of charge from the IRM website (www.theirm.org):
 - A Risk Management Standard (©IRM: 2002); and
 - A Structured Approach to Enterprise Risk Management and the Requirements of ISO 31000 (©AIRMIC, Alarm, IRM: 2010).
- These are a tiny sample of the thousands of books, studies, papers and articles available on the subject of risk management.

Regional importance of risk

The power industry similarly recognises the importance of understanding and managing project risk; Powergen has a dedicated risk management caucus and 2011 saw several papers presented on risk related topics, including:

Title
Challenges and opportunities in Power Project Financing
Risky Business – Insurance and Technology in Asia’s Power Sector
Construction, Power and Infrastructure Asia
EPC Challenges and a Way Forward
EPC Execution – the Path Forward
Navigating Procurement Risks and Challenges in Asian Power Projects
Risk Management in Turkish Electricity Industry

Examples of projects that exceeded initial cost estimates

Project	Location	Completed	Initial estimate	Final cost	% increase
Suez Canal ¹	Egypt	1869	FRF 200 million	> FRF 4 billion	2,000%
Sydney Opera House ²	Australia	1973	AUD 7 million	AUD 102 million	1,350%
Big Dig, Boston ³	USA	2004	USD 2.6 billion	USD14.8 billion	470%
Darlington Nuclear Power Plant ⁴	Canada	1993	CAD 3.9 billion	CAD 14.4 billion	270%
Channel Tunnel ⁵	UK / France	1994	GBP 4.9 billion	GBP 12 billion	145%
Dubai Metro ⁶	UAE	2009 (partial)	AED 15.5 billion	AED 28 billion	80%
Flamanville 3 Nuclear Power Plant ⁷	France	Ongoing	EUR 3.3 billion	EUR 6 billion	80%
Olkiluoto-3 Nuclear Power Plant ⁸	Finland	Ongoing	EUR 3.7 billion	EUR 6.4 billion (estimated)	75%
Braka Nuclear Power Plant ⁹	UAE	Ongoing	USD 20 billion	USD 30 billion (estimated)	50%

Fundamentals: what is risk?

ISO 31000:2009 defines risk as

‘the effect of uncertainty on objectives’.

Examples of construction risk

- Cost increase
- Health and safety
- Schedule
- Quality
- Labour availability / disputes
- Scope uncertainty
- Unforeseeable conditions
- Design change
- Regulatory change
- Foreign exchange fluctuations
- Teaming / culture
- Price fluctuations
- Material and plant availability
- Force majeure
- War
- Logistics
- Taxation
- Local laws, customs and language
- Environment
- Weather and climate
- and **MANY OTHERS**

Examples of areas with increased risk (uncertainty) in non-domestic projects

- Cost increase
- Health and safety
- Schedule
- Quality
- **Labour availability / disputes**
- Scope uncertainty
- **Unforeseeable conditions**
- Design change
- **Regulatory change**
- **Foreign exchange fluctuations**
- **Teaming / culture**
- **Price fluctuations**
- **Material and plant availability**
- Force majeure
- **War**
- **Logistics**
- **Taxation**
- **Local laws, customs and language**
- **Environment**
- **Weather and climate**
- and **MANY OTHERS**

Potential effects of risk

- Increased cost;
- Delays to completion;
- Reduced performance;
- Non-compliance with applicable laws and regulations, the contract, and/or with internal policy and regulations;
- Suspension and/or cancellation.

So, it is therefore necessary for uncertainty and risk to be **identified, managed** and **reduced**

This is achieved through **RISK MANAGEMENT**

What is risk management?

The identification, assessment, and prioritisation of potential risks followed by a coordinated and economical application of available resources to respond to (treat) those risks.

- Risk management is both a **system** and a **process**.
- Risk management *system* means the company policy, plans, procedures and organisation for managing risk.
- Risk management *process* is the application of the system to individual projects and risks.
- Policies, plans and procedures are often bespoke to the organisation but international standards and guidelines do exist, e.g. ISO 31000 and 31010 and ISO Guide 73.

The risk management system

- The company risk management policy sets out the objectives of and responsibility for risk management within the business.
- Risk management plans and procedures describe in detail how the policy is to be implemented including issues of scope and applicability, human and other resources, information inputs, record keeping, and reporting.
- Operating divisions and individual projects will often have their own risk management policies, plans and procedures subordinate to those at corporate level.

The risk management process

- The continuous **identification**, characterisation, and assessment of risks to the project objectives.
- Assign responsibility for individual risks to competent “risk owners”.
- **Assess** vulnerability to specific risks in terms of magnitude and probability.
- Identify and develop options for treating risks.
- Prioritise and implement risk **treatment** options based on company policy and project strategy.
- Systematic post-action **review** to ensure that risk treatments are effective.
- AND, **report** on the status of total risk and individual risks to the appropriate management level at each stage.

The risk management cycle



Risk treatments

- There might be hundred of ways in which a specific risk may be treated and these will differ between risks and between similar risks in different circumstances.
- It is however generally accepted that all of these treatments fall into one of four broad categories:
 - **AVOID**; for example by not participating in a particular contract.
 - **TRANSFER**; for example through risk allocation in the contract or through insurance.
 - **REDUCE**; implement measures to reduce the effect or frequency / probability of the risk.
 - **RETAIN**; accept the risk and establish a contingency.
- Risk treatment strategies often combine more than one of these categories; for example TRANSFER a risk to an insurer but RETAIN the amount of the excess on the policy.

Risk management in Hitachi

- Hitachi recognises the need for systematic risk management to ensure the success of projects, both for Hitachi and for its customers.
- In 2009, Hitachi established a new division to develop and support risk management activities across the whole of the global Hitachi group in accordance with the core principle of **ONE HITACHI**.
- This division developed standard risk management tools and also provides risk management support to operating divisions and individual projects all over the world.
- Hitachi continues to develop and improve its risk management activities and capabilities through **education**, through the use internal and external **experts**, and through **partnerships** with leading global companies.

Hitachi risk management activities

- Risk management for EPC contracts begins at the project inception stage with the establishment of the Project Team and the appointment of a **Risk Manager**.
- The Risk Manager and the Project Team continuously review the project to identify risks.
- Identified risks are assigned a **Risk Owner**, an expert either from within the Project Team or external to the project, who analyses the risk and develops treatment options.
- The Project Team review individual risks and treatments with the Risk Owner and select the most cost effective treatment strategy, a process which often involves the client.
- Risk identification, analysis, treatment, review and reporting continues throughout the entire project lifecycle.

Lessons learned

- Lessons learned are a key benefit of the risk management process allowing future projects to leverage previous experience, both good and bad.
- Hitachi systematically gathers lessons learned from projects through internal and external audits, questionnaires, and interviews with the key project personnel.
- This information forms part of the Hitachi corporate knowledge base and is used to improve risk management and project management systems and processes.

Hitachi lessons learned

- Examples of lessons learned from Hitachi risk management activities include:
 - **Teaming**; this includes the client, contractors, subcontractors, end consumers, the local population, and other project stakeholders. Hitachi has established global and regional partnerships in key sectors including power, e.g. Hitachi-GE, Hitachi-BGR.
 - **Knowledge**; country specific and industry specific expertise are crucial to identifying and treating risk and successful project delivery. Hitachi employs both internal and external experts on a range of subjects.
 - **People**; the project management team is fundamental to the success of the project. Hitachi appoints qualified and experienced project managers and project staff for each project. Hitachi is committed to the personal and professional development of all its employees.
 - **Information**; project systems should provide sufficient information in sufficient detail to allow project managers to identify and respond to problems early. Hitachi has robust systems to monitor projects at every stage.

Conclusions

- Risk and risk management is becoming more widely recognised and understood within this and other industries.
- Risk will always be present in projects but can be managed and reduced.
- Identifying and managing major project risks is the key to delivering a successful project for all participants (client, contractor, consumers, and the public) – the “win-win” scenario.
- Hitachi recognises the importance of risk and risk management and is committed to being a **global leader** in terms of its risk management activities and will continuously develop its systems and resources in order to maintain that edge.

Questions?

References

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