Strategic Risk Factors in Projects

Norwegian Center for Project Management

Trondheim, Sept 5, 2007
Consider Kashagan (per WSJ 8/28/07)

- Shell operator for Exploration – logistics challenges etc.
- 2001: Eni=operator, 1st Oil 2005 – lack of benchmarks for estimating
- issue of artificial islands delays project
- 2004: new plan approved, 1st Oil 2008, $10G
  - LQ too close to treatment plant, weak $, lack of benchmarks, inflation
  - Cost of drilling rigs, “soaring steel prices”, lack of engineers, PMs
  - Kashagan: deny permits, project on hold, fire Eni

RISK FACTORS:
- Reservoir: H2S, pressure (“costly stress-resistant pipes”)
- Location: Caspian freezes 5 mo./yr. (“rig-wrecking ice-packs”), cold winter, logistics, 10’WD
- No export pipeline
- Environmental: beluga, sturgeon, seals (no spills!) – permitting issues
- Partners: strong, misaligned, dsyfunctional
- Kazakh government new at this …
Questions:

- Were these really Black Swan risks?
  - Could they have been predicted?
  - If so, why weren’t they?
- If you were the Kazakhs, would you fire Eni? If so, why? If not, why not?

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The Industry Today

- Poor project performance is not acceptable when capital markets are looking for predictability & strong returns
- >50% of execs are dissatisfied with project performance (eg 40% of projects overrun) – more-so than ever
- … cannot afford to miscalculate capital project risks – yet do not have a good grasp of how to manage (them)

Source: Capital Project Execution in the Oil & Gas Industry – Booz Allen Hamilton
Trends in Capital Project Investment & Complexity

Sources of data:
Majors: COP, CVX, RDS
Independents: DVN, APC
Escalation adjustments per CERA "Upstream Capital Cost Index"

Projects in 2007 portfolio characterized by more hostile locations, higher levels of technology (e.g., ultra deep-water, deep oil sands, alternative energy), longer time to first oil, empowered NOC partners seeking greater control, and non-OECD locations.
Is Escalation the Culprit?

Cost Index
(2000=100)

Q3–2005: 126
Q3–2006: 167
Q1–2006: 148

Risk Resolution
A Look Outside Our Industry

• Mega-project performance has historically been poor

• Consider Infrastructure Projects
  – Cost overruns of 50 – 100% are common
  – Main causes\(^1\):
    • Underestimated ("appraisal optimism")
    • Risk analysis assumes "everything goes according to plan"
    • "Delusion" is often necessary for projects to proceed

• How do these conclusions compare with oil & gas megaprojects?

1: "Megaprojects & Risks" – Bent Flybjerg
So What is the Problem Here?

A. Lack of “Front – End Loading”?
B. Ineffective organization?
C. Management does not want to hear bad news?
D. Outdated approach to Capital Project Risk Management?
E. ALL of the above?
CAPEX Predictability Requires A New Approach

HAVE: Conventional Project Management

NEED: Strategic Risk Management

Executive Management

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How Can We Improve?

A. Lack of “Front – End Loading”?
   - We have stage-gate processes – do we use them?
   - Are they “facilities - centric” or do they provide cross – functional integration?
   - Are they used consistently – with discipline?
How Can We Improve?

B. Ineffective organization?

How do project organizations need to change?
- New or different roles & responsibilities?
- New or different skills?

How do corporate organizations need to change?
- New or different roles & responsibilities?
- Stronger governance?
Enterprise Risk Management: The Risk-Driven Project Delivery System

The PROJECT DELIVERY SYSTEM delivers each of the competencies required to predictably execute the project portfolio:

CAPEX Portfolio Characteristics

CAPEX VaR™

Competency Requirements

The PROJECT DELIVERY SYSTEM delivers each of the competencies required to predictably execute the project portfolio:
How Can We Improve?

C. Management does not want to hear bad news?

How does management’s view of projects and project teams need to change?
Managing Risks at the Right Level

Authority / Accountability

Management

e.g.:
- Project definition
- Contractor performance
- Pricing
- Logistics

Risk Resolution

Governance

PMT

Tactical

Strategic

e.g.:
- Management intervention in PMT tactics leads to internally driven risks

e.g.:
- Political
- Global economic trends
- Partner / NOC issues
- Organizational alignment

Risk Resolution

e.g.:
- Unmitigated strategic risks become tactical problems for PMT
So What is the Problem Here?

D. Outdated approach to Capital Project Risk Management?
All Risks Must Be Considered

Definition Risks + Performance Risks → Estimate (incl. Contingency)

Background Risks + Enterprise Risks → Risk Exposure

Risk-Conditioned Investment Value
Strategic vs. Tactical Risks

**TACTICAL RISKS** (ranged around the deterministic estimate & schedule; managed at the project level)

<table>
<thead>
<tr>
<th>Definition Risks</th>
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<tbody>
<tr>
<td>Risks associated with the degree of technical and planning definition</td>
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<table>
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<tr>
<th>Performance Risks</th>
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<tbody>
<tr>
<td>Risks associated with owner and contractor performance</td>
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**STRATEGIC RISKS** (outliers; managed at the executive level)

<table>
<thead>
<tr>
<th>Background Risks</th>
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<tbody>
<tr>
<td>External outliers e.g., SCOPE-related: new or unproven technology, edge of experience” engineering solutions, prototype components MARKET-related: extreme market conditions &amp; trends, LOCATION – related: undefined site conditions, uncertain government regulations &amp; requirements COMMERCIAL – related: business deal issues, partner relationship risks</td>
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<tr>
<th>Enterprise Risks</th>
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<tbody>
<tr>
<td>Internal outliers e.g., RESOURCE-related: lack of project engineering and management resources with requisite skills and experience GOVERNANCE-related: inefficient of misguided governance model PROCESS-related: inadequate or inappropriate project development and execution work processes</td>
</tr>
</tbody>
</table>
Risk Framing - Improving VOI for Executive Decision-Making

Decision Process
- Risk Discovery
- Risk Analysis
- Decision Parameters
- Risk Management

Decision Support Methodology
- Risk Taxonomy
- Risk Scenarios
- Project Risk Indicative Modeling System™ (PRIMS™)
- Risk Frames
- Risk-Conditioned Investment Value™ (RCIV)
- Business Resilience

“The goal of forecasting is not to predict the future but to tell you what you need to know to take meaningful action in the present”

Paul Saffo, HBR, July-Aug 2007

“VOI”=Value of Information

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Risk Framing Shapes Capital Project Outcomes

Development Phase
(Feasibility -> Pre-FEED -> FEED)

Execution Phase

Risk Framing

Preliminary RCIV*

TOTAL PROJECT COST

Risk Exposure

The "First Number"

The Project Budget including Contingency

Sanctioned RCIV*

CAPEX VaR™

Risk Exposure

Strategic Risk Actions

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Managing All Project Risks

- Subsurface – Reserves Risk
- Drilling – DRILLEX Risk
- Facilities – CAPEX Risk
- Operations – OPEX Risk
- Business – NPV Risk

Risk Resolution

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