

Do you really understand the risks to your project investment?

C. Twigge-Molecey and Eleanor Gill



CIM Toronto

April 2013

Issues Vary



<http://www.desdemonadespair.net/2010/04/open-pit-mine-devours-peru-town.html>

Developed countries
Vs
Developing Countries

Form of government
Legal system
Physical location
Technology
Skills Levels
Financing
Civil Society
Community Expectations



http://benmuse.typepad.com/arctic_economics/2008/06/canadian-diamonds.html

The Bottom Line

Earn and maintain the
licence to operate + Operate profitably



Managing Project Risks



Project Responsibility

- Technology
- Cost and schedule
- Operability/Reliability
- Environment
- Construction Impacts

Operator's Responsibility

- Safety
- Social + Cultural
- Political
- Long term impacts

Why do Projects Fail?

WHAT IS FAILURE?

- More than 10% over budget
 - More than 3 months late to start-up
 - More than 1 year late to full production
-
- Different Design Approaches
 - Different Contracting Approaches
 - Different Social + Cultural Issues

The Technical Failures

43 projects

\$21 billion capital

- 16 bankruptcies and total write downs
- Distribution
 - > \$500 million 38%
 - \$100 to \$500 million 51%
- NOT scientific sample – well publicized

Failure Factors

- Poor (no) project phasing 70%
- No team continuity 63%
- Turn-key fixed price 42%
- Major new technology 50%
- Front end issues 40%
 - Budget cuts without scope cuts
 - Scope changes generally
 - Key data ignored (pilot plants or geology)

All failures had multiple factors

Phasing Issues

Present in 70% of poor outcomes

Problems due to:

- Late equipment information
- Late input of permit conditions
- New team member inputs
- Late test work results
- Late resource data

Proper phasing (FEL) controls these risks

Front End Loading Framework



Risks in Turnkey Contracting

First need to establish “status” of technology.
McNulty Classification for technology “status”:

Type 1 Well proven, similar scale

Type 2 Well demonstrated parts to be integrated at similar scale

Type 3 Adaptation to new scale or circumstances

Type 4 New: First-time implementation

Turn-key Contracting Only Suitable for Type 1,

Why?

Minimal technology risk

Types 2, 3 & 4 **will** have start-up issues

At start-up – want cooperative group

- Turn-key contracting inhibits getting
 - Right experience
 - Right time
- Guarantee validity issues with intervention

The Risk is Always the Owners

Markets and clients

Shareholders investment

Match responsibilities to appropriate expertise

Remember project intellectual capital is

2-3 % lifecycle cost for:

- Testwork or R&D
- Engineering
- PM&CM

And it governs the outcome of 100%

Increased Profitability by Technology Development

- Higher level of risks
- 50% of failed projects had new technology
- **But** all had other factors:
 - 50% were also **turnkey**
 - 50% were not **properly phased**
 - > 25% had **skipped** scale up or **test work**
 - 25% ignored or misinterpreted **pilot work**
 - 50% had limited or no **team continuity** through phases

Technology Development

Development is risky but often necessary

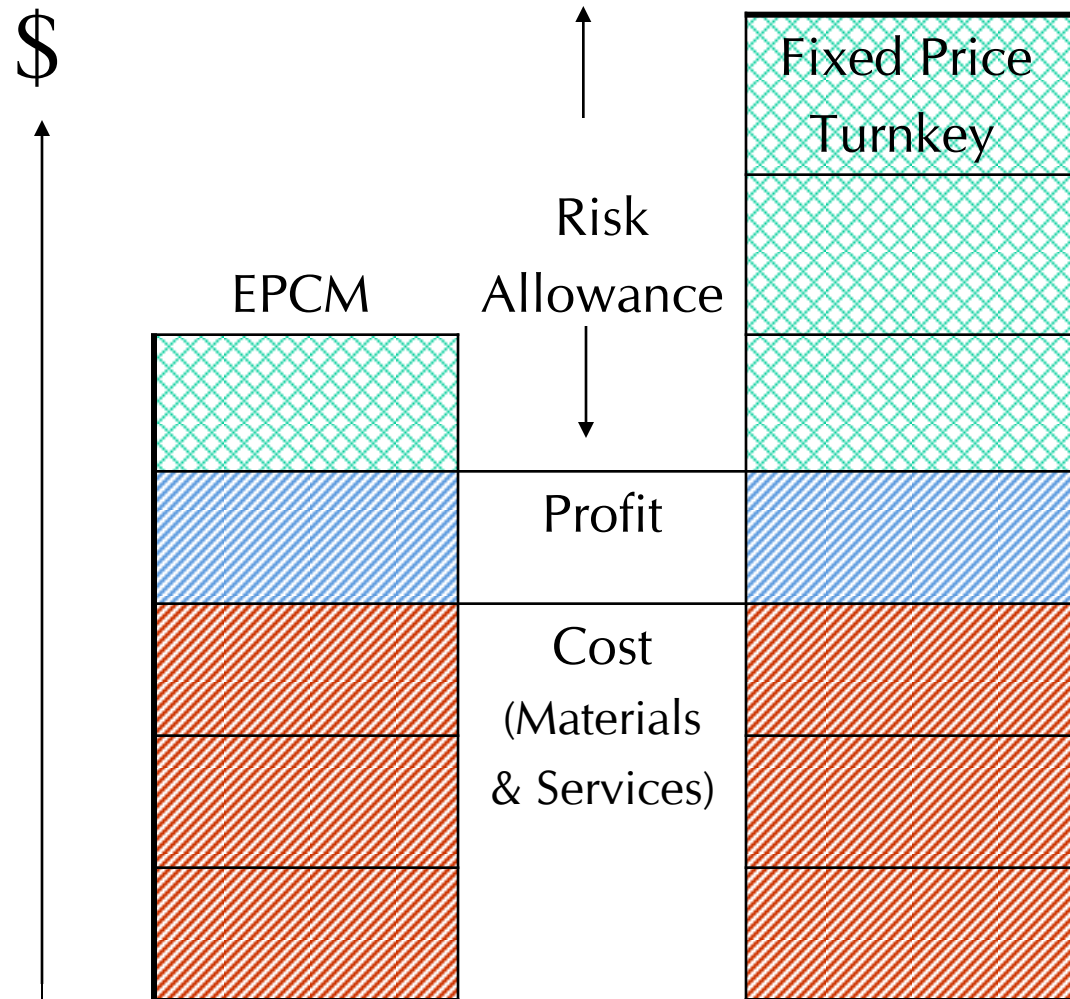
Why not follow proven methodologies?

- Stage gating or phasing
- Multi-disciplinary team reviews
- Team Continuity

Key Concerns

- Missing hidden gems
- Project momentum
 - Careers at risk
 - Egos
- Turn-key contracts incompatible with controlled stage gating.

Turnkey is Expensive



Typical in Developed World

- Local by regulation
 - Engineering
 - Civil Structural
 - Electrical
 - Construction Labour
- Local by Choice
 - Procurement
 - Contractors
 - Single discipline
 - Multi discipline



**And there are the
Social issues:**

Meridian, Esquel Gold Project Argentina



Community Concerns

- Impact on environment
- Communication of benefits
- General mistrust of company



Cost of not seeking a “social license to operate”

- Public referendum
- Open pit mining banned
 - Value of lost reserves: **\$1.81 billion***
 - Value of lost revenue: **\$14 million/month***

Metallica, Minera San Xavier Mexico



Community Concerns

- Impact on local ecology and water resources
- Cyanide spills
- Threat to cultural heritage

Cost of not seeking a “social license to operate”

- Environmental Permit revoked'
- Forced closure of mining offices
- Losses reported in first year and project withdrawn



Some recent stresses

- Minas Conga.....delay
 - Rio Blanco.....on hold
 - El Morrow.....delay
 - Fenix (Guatamala)..on hold
- and
- Pascua Lama.....delay

Paying attention to CSR issues

- Due Diligence of Projects
- Environmental Impact Assessments
- Environmental Management Systems
- Aboriginal Relations
- Social Impact Management
- Follow International Standards and Guidelines:
 - Equator Principles
 - IFC Social & Environmental Performance Standards
 - ISO14001
 - SA8000 SA800
 - Global Reporting Initiative (GRI)

CSR Principles (PDAC e3 Plus)

- Adopt responsible governance & management
- Apply ethical business practices
- Respect human rights
- Commit to project due diligence and risk assessment
- Engage host communities and other affected and interested parties
- Contribute to community development and well-being
- Protect the environment
- Safeguard the health and safety of workers and the local population

Other expectations – Integrating CSR into Project

- Meaningful Consultation
- Impact Benefit Agreements
 - Local development
 - Sustainable community
 - Long term skills development
 - Ownership
- Local jobs + procurement opportunities
- Capacity Building & Trades Training
- Community Development
- Preservation of cultural traditions and heritage
- Contracting Options
- Building Project & Integrated EPCM Teams



Other expectations - International Finance

- Equator Principles compliance (required by international banks)
 - Equator Principles Financial Institutions represent 80% of global project finance
- Revised 2011 IFC Performance Standards
 - Free, Prior, and Informed Consent (FPIC)
No longer “Consultation”
 - Human Rights
 - Climate Change

The Message

- Understand, manage and mitigate
 - Technology risk
 - Construction risk

Phasing

- Social risk
- **There are no shortcuts**

Thank You