

# A Company Risk Management Methodology

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# Content

- Deals with approach to the overall risks facing a company
- Covers major risks and uncertainties
- Includes the many projects a company may have
- Will look at case where the company has many physical assets
- May go into greater depth than high level assessment by senior company executives

# Essential Requirements

- A corporate risk strategy
  - Signed off by the MD or CE
  - A written policy
- Consistent high level support

# Classes of Risk

- **Uncertainty**
  - A lack of knowledge about the parameters being modelled (e.g. Variation in estimated project costs)
- **Variability**
  - The effect of random or unforeseen events (e.g. Events that occur that are not included in estimated project costs)

# Constraints

- Organisational culture/human factors
- Communications
- Information may be incomplete or non existent
- Assessments may not have been done (work not done, gaps)
- Information will be speculative in the longer term
- Surprises

# Typical Areas of Uncertainty

- New projects
- Operating plants/facilities
- Shutdown plants/facilities which may cost major sums to decommission

# Defining Uncertainty

- If project uncertainty has not be defined then on a project basis we can use:
  - Project novelty
  - Design status
- Can use for both capital and operational uncertainty

# Project Capital Cost Risk

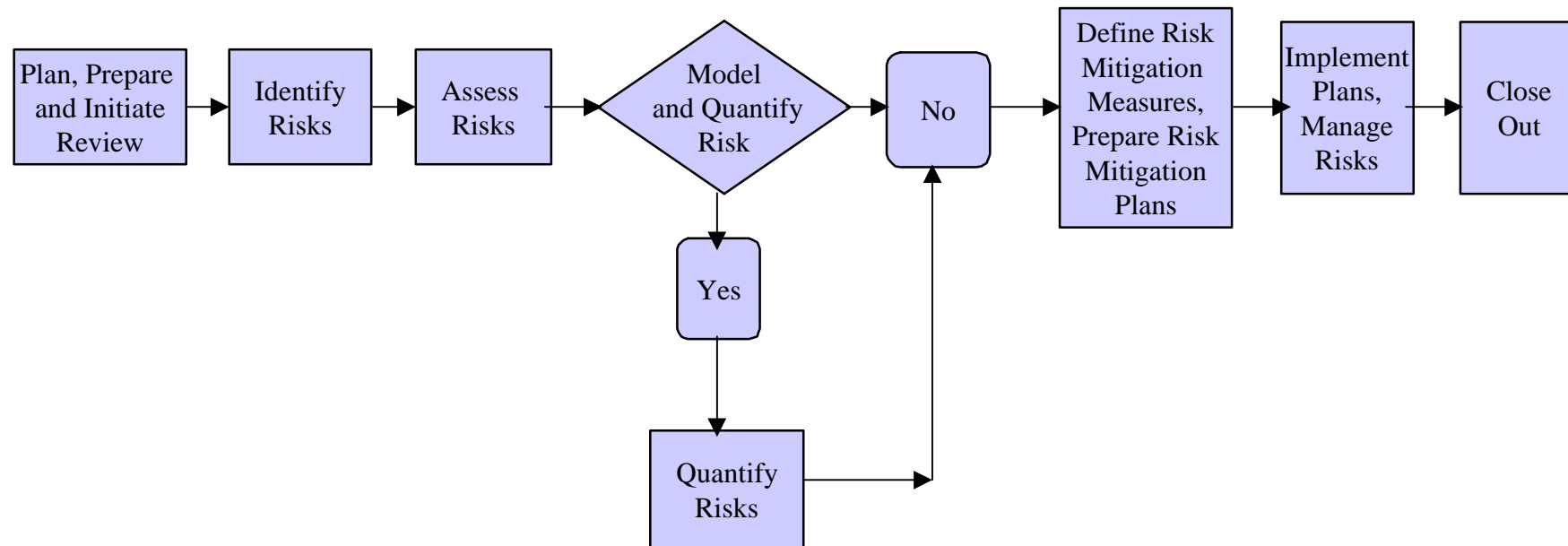
<b>Project Novelty</b>	<b>Indicative Uncertainty</b>	<b>Project Design Status</b>	<b>Indicative Uncertainty</b>
Bright Idea	-50% to +100%	No Design	-50% to +100%
Research	-30% to +80%	Initial Outline (Pre Planning)	-30% to +80%
Pilot Plant	-20% to +50%	Outline (Planning)	-20% to +50%
Small Scale Production	-10% to +20%	Detailed Design	-10% to +20%
Operating Plant	-5% to +10%	Full Design	-5% to +10%

# Quantitative Assessment

- Define level of aggregation/disaggregation
- Will be at a higher level than for a detailed project uncertainty analysis
- Use Monte Carlo calculation

# Risk Process

- Define in traditional ways - major risks only
- Review and challenge



# Typical Areas of Risk

- New projects
  - Viability, acceptability, cost and time risks
- Operating plants/facilities
  - Capacity and quality risks
- Shutdown plants/facilities which may cost major sums to decommission
  - Environmental (chemical, radioactivity, subsidence)
- Company risks

# Overall Risks

- Human resources
- Public relations
- Societal risk/risk perception/culture
- Regulatory/legislative
- Political
- Economic (market conditions and financial)
- Security (physical and information)/safety

# Other Factors

- Common risks across many projects
  - Internal
  - External
- Interrelated risks
  - Two or more interrelated plants
  - Supply chain

# Risk Identification and Assessment

- Need to define a structure into which risks can be placed
- Divide into areas, groups of plants and then plants
- Use company structure if suitable
- Need to recognise other structures are possible and take this into account

# Example of Risk Structure

Level 1	Level 2	Level 3
Central Functions	Security	Industrial Espionage
		IT Security
		Terrorist Attacks
	Societal Risk	Major Incident
		Environmental Protest
Operating Plants	Plant X	Supply Chain
		Outage
		Dependence on Plant P
Shutdown Sites	Site A	Decommissioning
		Ground Remediation
		Waste Disposal
		Re - Use

# Advantages of Structuring

- Aids understanding, otherwise risk register seems a big mess and difficult to understand
- Assists in identifying gaps that individual divisions or business units may not recognise
- Aids the identification of further risks
- Assists in defining double counting, dependencies and correlations
- Provides an auditable trail
- Records thought processes at the time

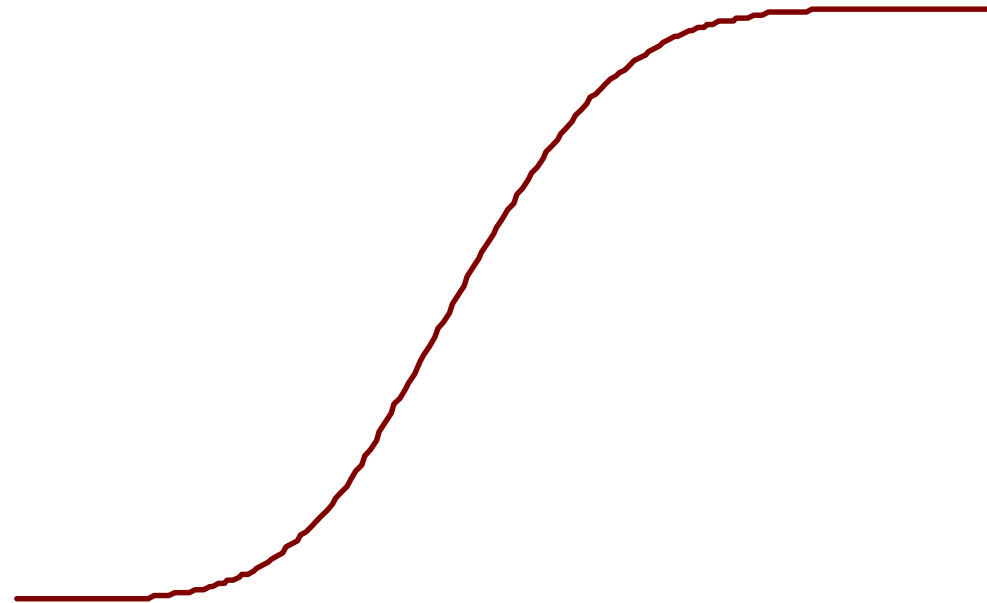
# Quantitative Assessment

- Assess the probability and impact of each risk either:
  - Individually using risk specific data
  - Using some general guideline
- Perform Monte Carlo analysis using standard software

## Cumulative Distribution

**Probability**

**Impact**



# Risk Management

- Company risk management plans
- Risk management is the responsibility of those who can do something about it
- Everybody has the responsibility to contribute to risk management
- Need to:
  - Keep the number of plans to a reasonable level
  - Stop them becoming too bland e.g. by specifically defining a few of the largest risks in each area

# Risk Management Types

- Risks come in two types:
  - Direct, that is those that a company can influence directly (e.g. project or operational risks that the company can affect directly)
  - Indirect, that is those risks that the company cannot influence directly (e.g. regulatory and political risks). These are risks that are under the control of others
- The type of risk determines how it is managed
  - Direct risks can be managed by taking direct action to manage the risk
  - Indirect risks need to be managed if possible by acting through others e.g. Regulators or the Government

# Risk Mitigation

- Reduces cost of risks occurring
  - Cost of risk mitigation must be less than cost of risk
- Methods of risk reduction
  - Reduction or elimination
  - Transfer/Insurance
  - Avoidance
  - Pooling/Absorbing
  - Reducing Uncertainty

# Presentation

- There may be a large number of risks at a company level
- Even with a good risk register structure gaining a good understanding may be difficult
- Presentation is thus important
- Presenting the results of Monte Carlo analysis presents particular problems

# Some Presentation Techniques

- Probability impact grids
  - These give an overall view of the probability impact relationship of the risks from low/low to high/high
- Risk ranking
  - A few (no more than ten) of the largest risks are presented in order to concentrate attention on the management of the largest risks
  - A rule of thumb guideline such as the 80/20 rule may be followed to limit the number of risks



END

Any Questions?