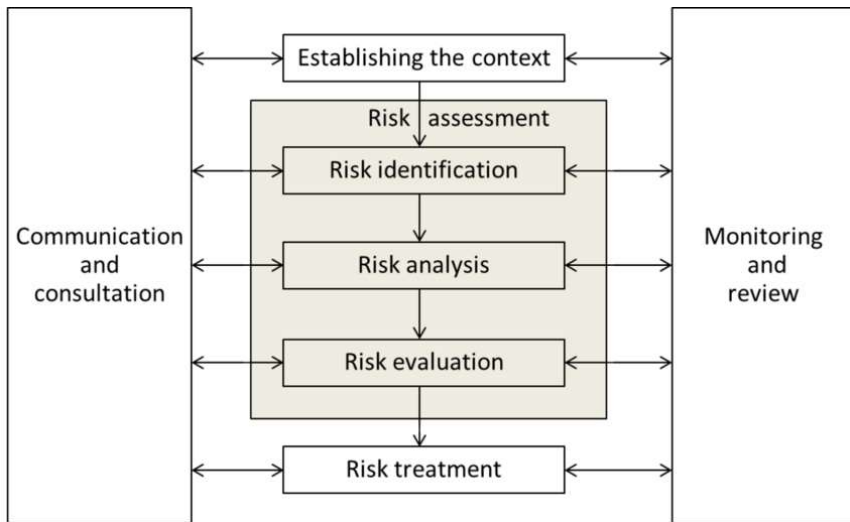


Risk Management in Power Project (4000MW) during conceptual stage of the project.

By; Abhijit Dubey, Project Control Professional

I have been focussing on Project life cycle management from concept to commissioning for the mega projects and how risk management should be adopted in early phase of the project.

Risk Elements under ISO 31000



The Context for the 4000 MW Ultra-Mega Power Project

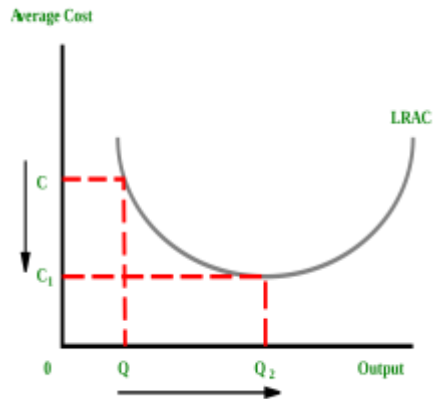


What is Risk and how can it be identified

- *Risk is an effect of uncertainty over objectives (ISO 31000)*
 -
- For Ultra-Mega Power Project (4000MW), following risks have been identified :
 - Plant Performance Risks
 - Business Risks
 - Fuel Risks

Intention of the project

- Providing electricity to consumers at minimum cost.
- Estimated Cost of generation per unit of KW of electricity= \$0.04 (due to economies of scale).



Why Risk Management Process is important during initial phase of the project

$$\text{Risk} = \text{Likelihood} \times \text{Consequences}$$

Time and Influence



	Consequence				
Likelihood	Insignificant	Minor	Moderate	Major	Severe
Almost Certain	Medium	High	High	Extreme	Extreme
Likely	Medium	Medium	High	Extreme	Extreme
Possible	Medium	Medium	High	High	Extreme
Unlikely	Low	Medium	Medium	High	High
Rare	Low	Low	Medium	High	High

Plant Performance Risk- Negatively Impact Power plant reliability

- i) **Risk Element-** Thermal Water cracking in boiler.
- **Risk Control** - use of oxygenated water treatment.
- ii) **Risk Element-** Slagging (*Slag is molten ash and incombustible by-products that remain following coal combustion*)

Risk Control- use of oxygenated water chemistry and non-slagging coal.



Clean Development Mechanism (CDM)- **As a risk control measure for Environment risk**

- **Annex 1 country** such as Australia have emission caps.
- Assist **non annex countries** in implementing projects that reduce pollution.
- **Here's how it will benefit Australia (Annex1 country) ?**

Developing country
Earns carbon credits
(CER)

Sold to
Annex 1
country

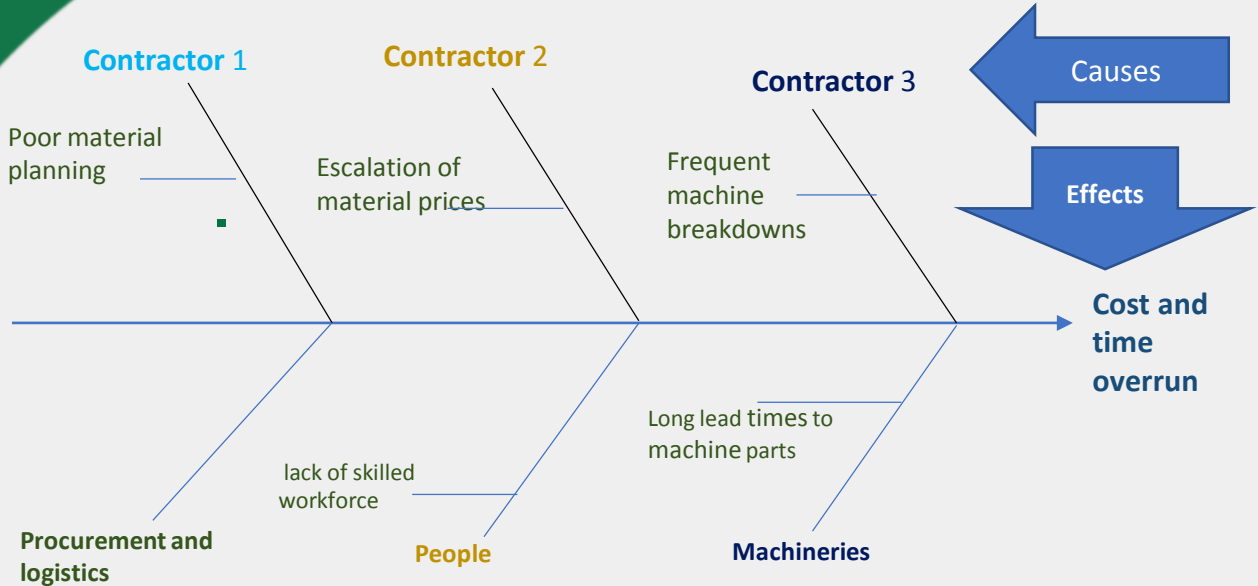
Allowing Australia
to comply Kyoto
commitments

New Delhi, India

Integration risks in power project in india

- Ultra-Mega Power Project is a capital intensive project (set up cost= \$4,106,968,000).
- ➤ **Power Finance Corporation** (subsidiary-Government of India) designed *Special Purpose Vehicle* (SPV) to carry out bidding process.
- **Contract type** : Fixed price contract, Design and Build Contract. Awarded work packages to different contractors.
- Exposes project activities to **Integration Risk.**

Integration risks- Fish Bone



Contractor 1+2+3 = Results compounding effects

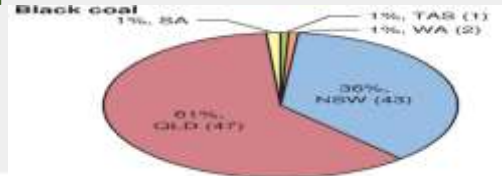
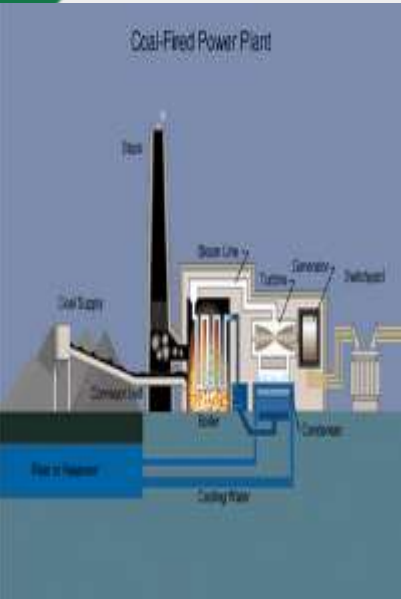
Fuel Risk Assessment

- For maximum power plant reliability- BLACK COAL required.
- **Most Indian coals** are **High in moisture content** and cannot create enough steam pressure to rotate turbine blades.

- **Risk Control Option :**

- **Fuel Supply agreement with Australian Government-** Mitigate fuel risk by importing from QLD and NSW.

- **Less Pollution:** Helps maximising the plant efficiency through complete coal combustion.



Learning Insights for Project Control Professionals to do Risk Management

Risk is **inevitable**
regardless of the magnitude
of the project. ■
Risk will be inherited.

- i) Identify, Manage and ultimately control Risks.
- ii) Risk Management is strategic(long term) as well as tactical(short-term).
- iii) Reduce exposure to risk once identified by being more proactive.
- iv) Risk Management program is an ONGOING effort and must be addressed during the initial through project maturity phase.



Thank you so much 😊

▪

Q & A ?