

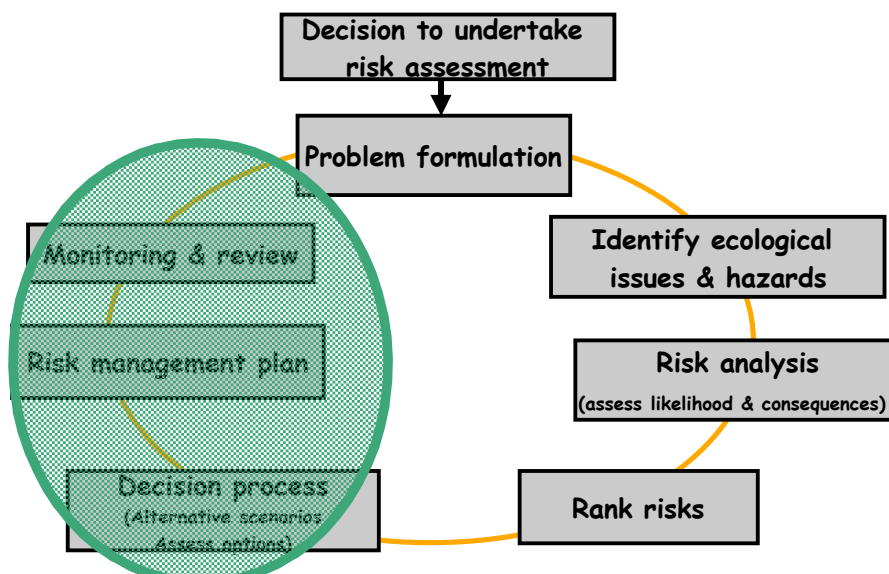
Mekong River Commission

Ecological Risk Assessment Training Program

Risk Management



Risk management process



Risk assessment vs risk management

- Risk assessment focuses on the environmental issues
- Risk management focuses on the hazards

Risk Management

- Purpose
 - To develop a risk management plan to minimise risks to the ecosystem
- What goes into a risk management plan:
 - Ecological risk assessment information (risk priorities)
 - Economic
 - Social
 - Political

Risk Management

- Key questions
 - What ecological assets are most at risk?
 - What hazards most threaten these assets?
 - What management actions are available to minimise these risks?

 - Are these the most cost-effective actions?
 - Are these actions acceptable to the stakeholders?

Decision making process

- Identify plausible options
 - Difficult to predict magnitude of risks in future (20-30y)
 - **Scenario planning** can assist
- Assessing the options
 - Number of techniques available (Burgman, 2005)
 - Multi-criteria decision analysis
 - Management strategy evaluation
 - Bayesian belief networks

Possible actions

- **High risks**
 - Eliminate the hazard
 - Replace hazard (e.g. toxic chemicals)
 - Introduce engineering solution (e.g. fish passage, multi-level reservoir offtakes)
- **Moderate to low risks**
 - Administrative and policy changes - altered planning controls, introduce BMPs
 - Education

Management actions

- **Protection**
 - For ecosystems assessed as being low risk in medium to long-term
 - Evidence that 10x cheaper to protect than rehabilitate
- **Active management**
 - For ecosystems assessed as being at high risk now or in near future
- **Rehabilitation**
 - For systems currently in poor to reasonable condition
- **Low priority for any action**
 - For ecosystems currently in poor condition and at high risk of further adverse *effects*

Prioritization Matrix

Risk of adverse effect	Present condition		
	Good	Reasonable	Poor
Low	P	P/R	R
Moderate	AM	AM/R	AM/R
High	AM	AM/R	D

P = protect R = Rehabilitate AM = active management D = Discard

Implementation of plan

- **Monitoring**
 - Evaluate state and trends of the ecological assets (system improving or getting worse?)
 - Provides info on effectiveness of management actions
 - Improve knowledge base
 - Provides info to refine risk management plan
- **Review and feedback**
 - Adaptive management
 - But how best to do this?