



# Practical Risk Applications for Climate Change



# History

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## Government & University Risk Management Lessons in Adaptation Comfort

- Early adaptors of alternative risk financing
  - Self-insurance, high excess
- Early adaptors of risk management
- Looked at most fads (TQM, QC, carbon credits)
- Early adaptors of new risk funding models
  - Initiative
  - PPPs



# Future

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## Key Macro Climate Risk Management Issues

### 1. Climate Change Mitigation

Stop The Change! (Loss Prevention)

### 2. Effects of Climate Change Mitigation

– (Loss Reduction) Risk Professional Assumptions:

1. Climate will change

2. Human, animals, marine and plant life will somehow adapt to the change

3. The challenge for Australian business is:

– Ensure entity adapts

– Presentation regards #2.

– Ensure entity does not “over adapt”

– Ensure entity does not “under adapt”



# Future

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## Macro Climate Risk Management Issues

3. Adaptation can be effective & efficient or ineffective and inefficient. (This impacts our universities)

As risk professionals our role is assist in ensuring that the accommodation our entities to this changing in the external environments is:

- An effective adaptation
- Minimizes losses in the process
- Minimizes financial impacts over time
- Allows the organisation to continue to meet its strategic and operational goals and objectives regardless of the environmental change.



# Future

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## Climate Changes?

- By 2030 - an increase in average temperature between 0.4 degrees to 2.0 degrees
- More heat waves, fewer frosts
- Changes in ocean currents resulting in more pronounced cycles of droughts and heavy rains
- Substantial reductions in surface water run-off and average rainfall totals
- More severe wind speeds in cyclones, increased storm surges, amplified by rising sea levels.
- Increase in severe weather conditions such as storms, high bushfire propensity days

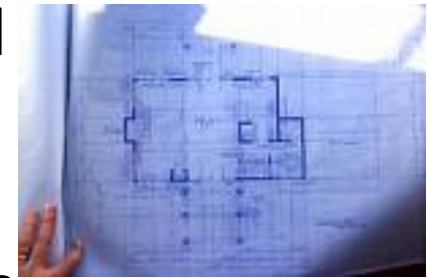
*Source: Aust Greenhouse Office*



# CASE

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## EIF/ Capital Project Western Cancer Research Centre



•Your VC has decided to promote a campus located “West of the Mountains” by building a Cancer Research Facility next to a regional base hospital. There are EIF funds available if the project develops quickly.

•***Nominate 3 Possible Project Objectives for the University and the Commonwealth:***

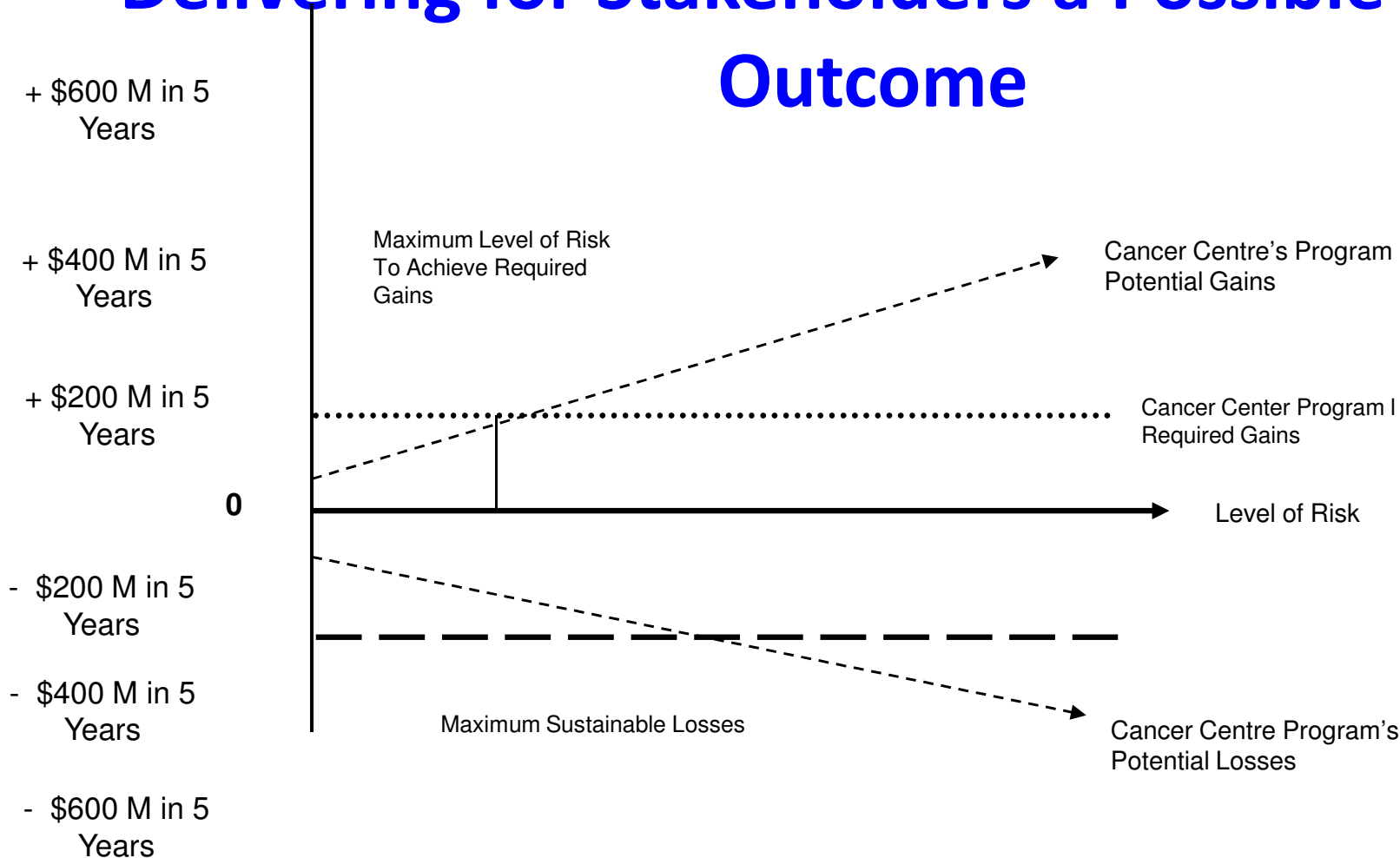
- Stimulate local demand through job creation
- Improve rural health services
- Encourage students to seek higher education away from the coast



# Objectives

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## Delivering for Stakeholders a Possible Future Outcome



Increase Research Revenue  
200% in 5 Years

Walker, *Operational Risk Management* 2001



# Model

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## Climate Change Risk Assessment Process

1. Adopt a Risk Management Framework
2. Develop Climate Change Scenarios
3. Identify Stakeholders
4. Design an Evaluation Framework
5. Apply the Framework to Risks Identified



*Australian Government: Climate Change Impacts & Risk Management*



# Actions

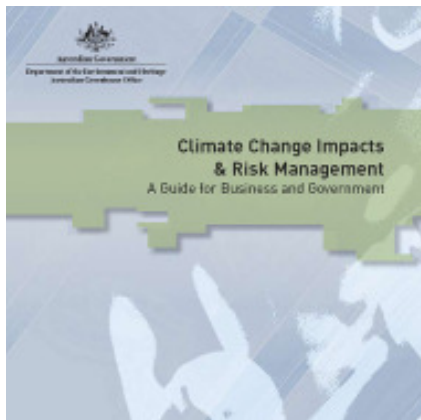
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## Step 1: Adopt a Risk Management Framework

Advise: AS/NZS: 4360 or ISO 31000

Why a Standard Approach to Managing Risk?

What Are Advantages to the University Process?



- Establish Context
- Identify Risks
- Analyse Risks
- Evaluate Risks
- Treat Risks
- Monitor & Review

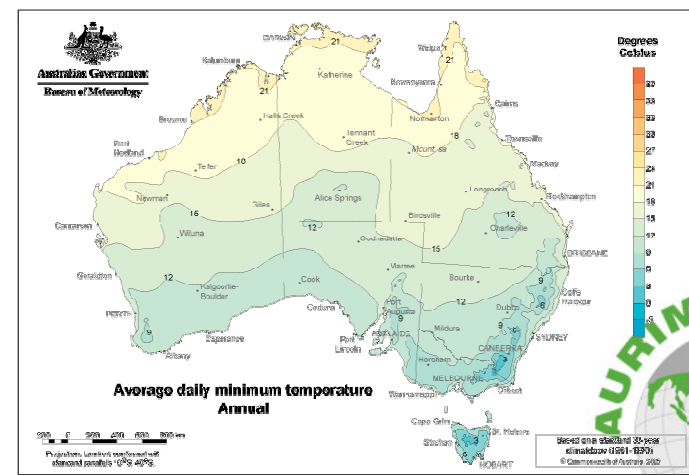
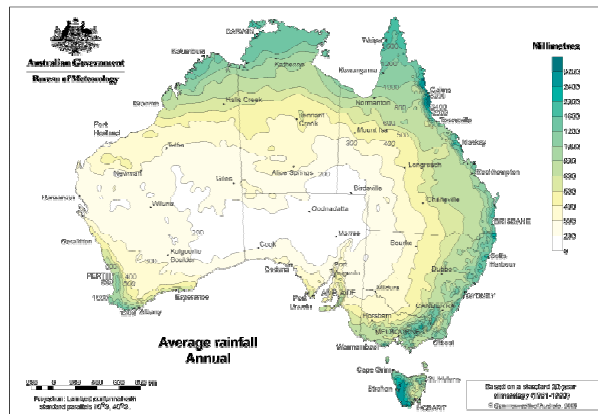


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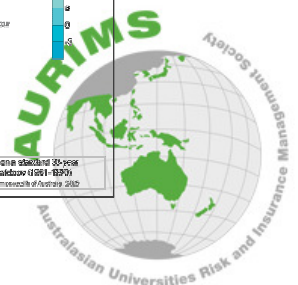
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## Step 2: Develop Climate Change Scenarios

- What can we assume about the climate?
- Will it change?
- Will this change affect our objectives?



Can You Work With Internal Experts?

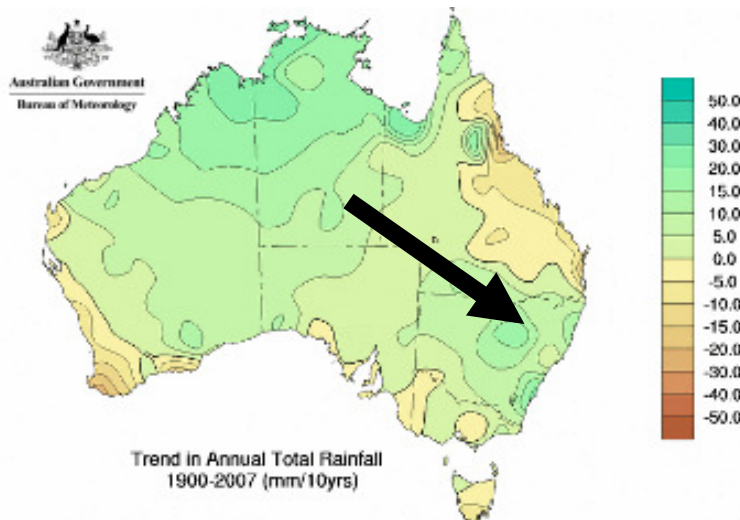


# Actions

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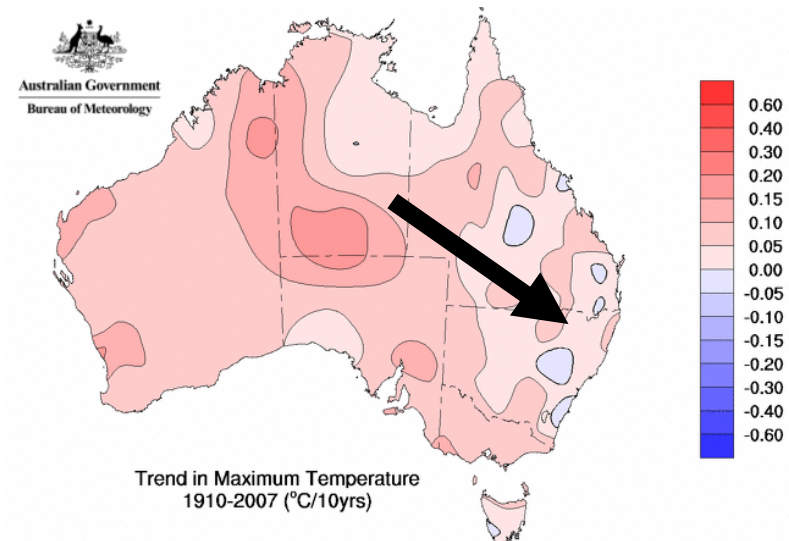
## Develop Climate Change Scenarios (Contd.)

- What will be the most likely scenario for 2038 (30 years in the future)?
  - How can it affect the success of our project?
  - What 2 climate criteria are most important?
  - Where could you find this information?



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Issue 1: 10/02/2008



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Issue 1: 10/02/2008



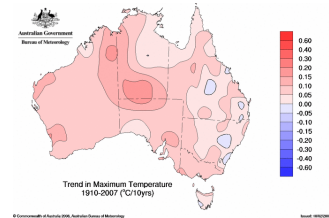
# Question

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## *What is the link between climate change and risk for:*

- Higher Mean Temperatures =

- Neighbours: Increase drought severity, heat stress, crop damage, pest invasion
- Plant: higher cooling costs, product evaporation, power costs, emission requirements



- Decrease Rainfall =

- Neighbours: Increase fire danger, decreased ground water, increased foundation shrinkage, lower crop yields
- Plant: increase demand on water resources, restrictions, ill-will from neighbours for lowering water table.

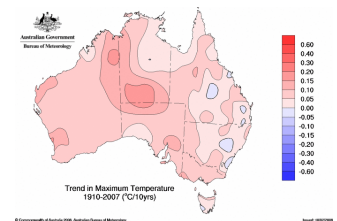


# Ponder

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## Possible Climate Change Impact on Objectives?

- Population (workforce) growth potential in region?
- Affect of temperature on older workers?
- Affect of temperature on plant operation needs?
- Affect of water availability for plant and other regional activities.
- Utility impacts?
- Flooding possibilities?



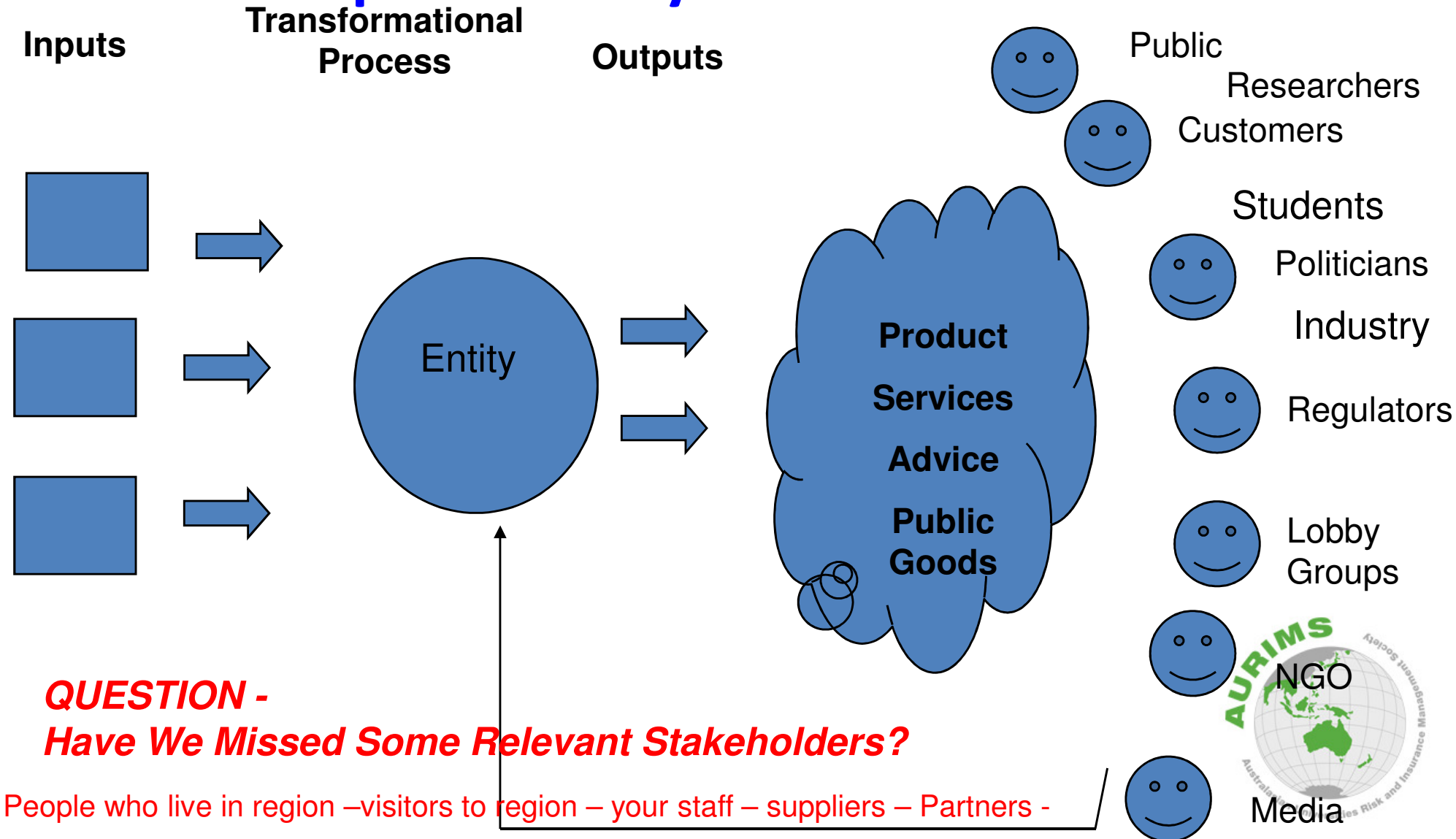
**Top 10 Risk Impacts**

**Project Impact on Unit Risk Profile**

# Workshop



## Step 3: Identify Stakeholders



# Workshop

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## Step 4: Design an Evaluation Framework

- Risk: the possibility of something affecting your outcome.
- It can be expressed in terms of:
  - Consequence (if the risk should occur) and
  - Likelihood (probability of the risk occurring)
- Need a system which will allow you to rank or prioritise all risk and in this case, climate related risk

**Are We Slaves to the ERM Structure or Can it Serve Us?**



# Workshop

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## Key Objectives of an Evaluation Framework

- This risk process must mesh with other risk initiatives of your organisation.
  - An ERM approach, compliance framework & risk profile
- Must be consistent, standard application
  - Part of all significant projects, strategic planning
- It will compete with all risk treatment expenditures made by the entity.
- Must be expressed in a way which is meaningful to the resource allocators.

**QUESTION -**

***Who Will Act on Evaluation Outcomes?***





# Measure



## Success Criteria for Consequence Tables

Sample Objective: Increase research revenue over 5 Years

40% or greater decrease in research revenue over a 24 month period

20% to 25% decrease in research revenue over a 24 month period

5% to 10% decrease in plant output over a 12 month period

Catastrophic Loss



Moderate Loss

Insignificant Loss



**Table 8: Example – consequence scales for a local authority**

Rating	SUCCESS CRITERIA			
	Public safety	Local economy & growth	Community & lifestyle	Environment & sustainability
Catastrophic	Large numbers of serious injuries or loss of lives	Regional decline leading to widespread business failure, loss of employment and hardship	The region would be seen as very unattractive, moribund and unable to support its community	Major widespread loss of environmental amenity and progressive irrecoverable environmental damage
Major	Isolated instances of serious injuries or loss of lives	Regional stagnation such that businesses are unable to thrive and employment does not keep pace with population growth	Severe and widespread decline in services and quality of life within the community	Severe loss of environmental amenity and a danger of continuing environmental damage
Moderate	Small numbers of injuries	Significant general reduction in economic performance relative to current forecasts	General appreciable decline in services	Isolated but significant instances of environmental damage that might be reversed with intensive efforts
Minor	Serious near misses or minor injuries	Individually significant but isolated areas of reduction in economic performance relative to current forecasts	Isolated but noticeable examples of decline in services	Minor instances of environmental damage that could be reversed
Insignificant	Appearance of a threat but no actual harm	Minor shortfall relative to current forecasts	There would be minor areas in which the region was unable to maintain its current services	No environmental damage

**Table 11: Likelihood (given that the climate scenario arises)**

Rating	Recurrent risks	Single events
Almost certain	Could occur several times per year	More likely than not – Probability greater than 50%.
Likely	May arise about once per year	As likely as not – 50/50 chance.
Possible	May arise once in ten years	Less likely than not but still appreciable – Probability less than 50% but still quite high.
Unlikely	May arise once in ten years to 25 years	Unlikely but not negligible – Probability low but noticeably greater than zero.
Rare	Unlikely during the next 25 years	Negligible – Probability very small, close to zero.

**Table 12: Priority (given that the scenario arises)**

Likelihood	Consequences				
	Insignificant	Minor	Moderate	Major	Catastrophic
Almost certain	Medium	Medium	High	Extreme	Extreme
Likely	Low	Medium	High	High	Extreme
Possible	Low	Medium	Medium	High	High
Unlikely	Low	Low	Medium	Medium	Medium
Rare	Low	Low	Low	Low	Medium

**Australian Government: Climate Change Impacts & Risk Management**



# Reflect

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## Evaluation Points to Consider

- Success is linked to meeting long term objectives.
  - how would success of project & long term objectives met if climate changes? (Social/Financial contract needs provision)
- Success criteria are usually few in number
  - 4 to 6 (e.g. reputation, compliance, financial, etc)
  - Don't only focus on those which relate to build/design period
- If you have an existing RM framework – stay as close to that as possible, but it keep it relevant and meaningful to strategic decision makers.
  - (testing criteria, relativistic, few in number)





# Implement



## Step 5: Apply Framework to Risk Identified

- Use methodology best suited for your corporate culture using your scenario:
  - Establish Context
  - Identity Risks
  - Analyse Risks
  - Evaluate Risks
  - Treat Risks
  - Monitor & Review
- Brainstorming
- Delphi Technique
- Interviews with Key Stakeholders
- Expert facilitators

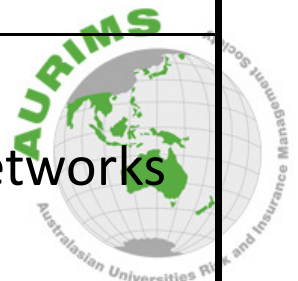


# Control



## Treating Climate Risks

Risk Statement	Treatments
Risk of public outrage & crop loss resulting from perceived lowering of water table from Research Centre development.	<ul style="list-style-type: none"><li>•Water tank program</li><li>•Land purchase</li><li>•Education programs</li></ul>
Risk of failure to attract qualified research staff due to increase in temperatures in community.	<ul style="list-style-type: none"><li>•Regulatory solutions</li><li>•Avoidance:</li><li>•Research:</li><li>•Education/behaviour:</li></ul>
Risk of failure of lab animal feed supplies due to flooding & road closure	Alternative transportation networks or suppliers





# Forecast

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## Key Challenges for Future

- Risk Financing
  - Creating a “value –proposition”
    - current rules of cost/benefit may not apply – need for new “rational” models
- Behavioural Solutions
  - Core issue of climate change mitigation
  - Area of greatest unknown
  - Will be a powerful tool in RM’s arsenal

