



 AUSTRALIAN INDUSTRY GROUP

MANAGING THE RISKS FROM CLIMATE CHANGE: AN ADAPTATION CHECKLIST FOR BUSINESS



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 Department of
Sustainability
and Environment



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Climate Change is Relevant to Your Business

There is increasing evidence that Australia is experiencing significant climate change as a result of global emissions of greenhouse gases from human activities. While the precise change in climate is going to be different for each region, the general trend in Australia is to become hotter and drier and it is predicted the frequency and intensity of storms and bushfires will increase (CSIRO and BOM, 2007).

These changes in climate have significant implications for Australian industry.

The three types of climate change risks that are most likely to impact on business operations and profitability include:

- Resource scarcity and higher input costs (eg: energy, water, raw materials)
- Accelerated deterioration of materials, equipment and infrastructure
- More extreme weather events (eg: heatwaves, floods, droughts, storms)

What Risk Does Climate Change Pose to Your Business?

What is the potential risk and impact of a hotter, drier and stormier climate to your business? Would your business know how to respond if it were threatened by an extreme weather event, such as the bushfires in Victoria in February 2009 or the flooding in Queensland in January 2011?

Even if your business is not directly threatened by an extreme weather event, would you understand the impact on your suppliers, customers, employees, services, resources and markets on which your business critically depends?

Key Benefits of Climate Change Adaptation Planning

It makes good business sense to be proactive in considering and planning for the impacts and opportunities presented by climate change. Benefits for your business include:

- Key climate change vulnerabilities are better understood
- Key climate change risks and adaptation responses are prioritised so that attention and resources can be given to the most pressing risks
- A framework can be established and used to periodically re-assess climate change vulnerabilities as new information becomes available and as your business operations change
- It can give your business a 'first mover advantage' in regard to accessing government funding and research expertise to progress high priority adaptation actions and strategies
- It provides the means to factor climate change into strategic planning and major investment decisions
- It enables participation in public debates and policy advocacy, and demonstrates industry leadership, from a sound understanding of your business position with enhanced credibility
- It enables partnerships and contacts to be developed with climate change specialists and industry bodies that can be drawn upon when progressing adaptation planning.

Climate Change Adaptation Checklist

This checklist has been developed to assist companies to identify and assess climate change risks and adapt to the resultant challenges.

Table 1 outlines a risk management approach consisting of five consecutive steps your business may take in commencing your adaptation planning.

Table 1 Climate Change Adaptation Checklist

Tick	Process	What needs to be done?	Reference for next steps
<input type="checkbox"/>	Step 1: Establish the context	Are you aware of the projected direction and rate of change of key climatic variables in your region? eg. changes in average and extreme temperatures, rainfall, bushfire risks and sea level rise – to mid century and late this century?	To assist, refer to CSIRO and Bureau of Meteorology, Climate Change in Australia, Technical Report, November 2007 or the Victorian Government website (http://www.climatechange.vic.gov.au/regional-projections) <i>Understanding climate change, future climate, regional projections, regional climate change projections</i> , 2010. Appendix A provides additional references.
<input type="checkbox"/>	Step 2: Identify the risks	Have you identified climate change risks and considered the impacts these may have on your business? eg. the three types of climate change risks that are most likely to impact on business operations and profitability include: resource scarcity and higher input costs (energy, water, raw materials), accelerated deterioration of materials and equipment (due to more severe climatic conditions), more extreme weather events (heatwaves, floods, droughts, storms) Climate change adaptation strategies should be considered as part of the annual strategic planning and budget setting process.	Refer to Table 2 below for examples of potential threats to your business
<input type="checkbox"/>	Step 3: Analyse the risks	Have you assessed climate change risks? The level of risk can be determined by assigning a risk likelihood and consequence from a scale of options and then using a matrix that combines these to rate the risk from extreme to low. Consider that the same climatic 'driver' (drought, heatwaves, floods, storms) that causes a single risk to occur could cause multiple risks to occur at the same time, which would have a much more severe impact than risks occurring in isolation.	Refer to Appendix A for examples of likelihood and consequence scales and risk priority matrices. For further information regarding a risk management approach refer to <i>Climate Change Impacts & Risk Management - A Guide for Business and Government</i> , AGO, 2006 for guidance
<input type="checkbox"/>	Step 4: Evaluate the risks	Have the climate change risks been evaluated? Review the list of risks and re-affirm risk priorities and estimates and rank the risks in terms of their severity Assess groups of multiple coincidence risks for their cumulative likelihood, consequence and risk priority.	For further information regarding a risk management approach refer to <i>Climate Change Impacts & Risk Management - A Guide for Business and Government</i> , AGO, 2006 for guidance

Tick	Process	What needs to be done?	Reference for next steps
<input type="checkbox"/>	<p>Step 5: Treat the risks</p>	<p>Have you proposed adaptation actions to treat the extreme and high risks?</p> <p>Adaptation actions vary markedly in their cost, time effort and effectiveness.</p> <p>There is a range of actions that are cheap, easy, quick and non-controversial – such as raising climate change awareness within the business - to difficult and expensive measures – such as abandoning or relocating assets.</p> <p>Only the most extreme risks warrant costly and difficult adaptation measures.</p> <p>Ideally, climate change risks should be addressed within an organisation's existing risk management framework by adding all identified climate change risks to the risk register</p> <p>The risk management framework should assign clear responsibility for management of the climate adaptation plan. In general, 'extreme' risks warrant regular reports on their management to the organisation's board, 'high' priority risks should be actively managed by senior management, 'medium' priority risks should be managed at the operational level and 'low' priority risks should be kept under review.</p> <p>As for other risks, a company should monitor and periodically review its climate change risk assessment and revise its adaptation actions and priorities accordingly.</p>	<p>Refer to the section <i>Climate Change Risks and Possible Adaptation Solutions</i> below</p>

Climate Change Risks, Possible Adaptation Actions and Other Considerations

Step 5 in the climate change checklist involves development of adaptation actions to treat the extreme and high risks identified. Issues which businesses should consider when developing adaptation actions include:

- **Education:** Does the business know enough about climate change and the risks it may pose? Should the business obtain specialised skills to prepare for the future?
- **Resource efficiency:** What opportunities exist to reduce reliance on inputs that are subject to increasing scarcity and/or cost?
- **Contingency plans:** In the event of an incident, what is the business response? Has this been appropriately documented and communicated? Do employees know enough about the impacts of climate change to appropriately respond?
- **Scheduled maintenance/inspections:** How frequently does the business need to assess the condition of its infrastructure? What is the organisation's schedule for preventative maintenance? Is this adequate?
- **Design standards:** Do design specifications need to be upgraded?
- **Upgrade/replacement programs:** Is there a need to upgrade or replace existing infrastructure?
- **Demand management:** What are the organisation's critical assets? What area of the business needs to take priority if resources, such as electricity, are restricted?
- **Monitoring:** Does the organisation have enough data to know how climate change may impact on the business (i.e. flood mapping plans)?
- **Market opportunities:** Does climate change present new business opportunities, eg new building materials, alternative technologies and resource supply?
- **Available support:** Identify sources of funding and other support available to the business. The Australian Industry Group can provide assistance in this area.
- **Enlist support from stakeholders:** Develop and maintain a climate change communication strategy to identify and engage with key internal and external stakeholders to raise awareness of the potential risks of climate change and actions that they can take, in partnership, to adapt to the potential impacts.

Industry case study

Murray Goulburn Co-operative, a world leading supplier of dairy ingredients and retail products, used the approach outlined in the checklist in developing a climate change adaptation action plan. The Murray Goulburn Co-operative Case Study is available at www.aigroup.asn.au.

Table 2 provides some examples of the potential climate change threats to your business and opportunities to minimise their future impact.

Table 2 Potential climate change risks and possible adaptation actions

Risks and things to consider	Impact or threat	Adaptation Options and Opportunities
<p>Resource scarcity and increased input costs</p> <p>What impact will reduced water volumes have on your operations?</p> <p>What is the impact of no water?</p> <p>What is the impact of a 50% increase in water costs in response to water scarcity?</p> <p>What happens if key raw materials double in price due to increased resource scarcity?</p>	<p>Manufacturing, Operations & Assets Reduced availability of water impacting process operations</p> <p>Supply chain Impact of water restrictions on suppliers affecting availability/cost of key process inputs</p> <p>Markets Increased operating costs negatively impacts business market share</p> <p>Current products are no longer desirable due to high water consumption and/or embodied water</p>	<p>Increase resource efficiency of process</p> <p>Identify opportunities to avoid water use altogether e.g. air cooled systems versus evaporative cooling</p> <p>Identify alternative water sources (e.g. recycled water)</p> <p>Assess opportunity to develop new water efficient products or develop a product differentiator</p>
<p>Energy supply</p> <p>What is the impact of a 50% increase in energy costs (i.e. transport, fuels, electricity, natural gas) to the profitability of your business?</p> <p>What happens if there is a blackout at your business?</p>	<p>Manufacturing, Operations & Assets Higher energy costs</p> <p>Interruption to energy supply due to peak energy demands</p> <p>Supply chain Increase in the price of key raw materials as a result of a carbon price</p> <p>Increase in transport costs</p> <p>Markets Increased operating costs negatively impacts business market share</p> <p>Current products are no longer desirable due to high energy consumption and/or embodied carbon</p>	<p>Investigate opportunities to increase energy efficiency</p> <p>Develop long term energy strategies that are not carbon intensive (alternative renewable energy) to reduce exposure to a carbon price</p> <p>Source goods and services inputs that do not involve carbon intensive processes. Work collaboratively with supply chain to minimise impact of carbon price</p> <p>Seek alternative fuels or modes of transport</p>
<p>Increased frequency of extremely hot days</p> <p>Is electronic equipment vulnerable to overheating?</p> <p>What standards have your buildings been designed to? Will this design withstand the projected temperature increases?</p> <p>What is the current capacity of your cooling system(s)? Will this be adequate to withstand more extreme and frequent high temperatures?</p> <p>What is the impact of increasing employee absenteeism due to employee fatigue or illness during heatwaves?</p>	<p>Manufacturing, Operations & Assets Accelerated deterioration of assets, electrical equipment running less efficiently, temperature sensitive equipment damaged</p> <p>Costs associated with having to hire and operate additional cooling capacity</p> <p>Impact on product quality</p> <p>Supply chain Impact on product quality (e.g. damage during transportation)</p> <p>Labour & Human Resources Increased absenteeism due to employees unable to attend work due to fatigue</p> <p>Loss of productivity because of hot working conditions</p> <p>Greater difficulty and cost of recruiting and retaining/attracting skilled workforce due to hot working conditions or regional climate change</p>	<p>Install cooling systems to protect temperature sensitive equipment</p> <p>Opportunity to design infrastructure to new standards that can cope with greater temperature extremes</p> <p>Competitive advantage for businesses that can build in flexibility for the workforce</p> <p>Advantage to businesses that factor climate change into longer term planning, particularly design of key infrastructure and processes</p>



Risks and things to consider	Impact or threat	Adaptation Options and Opportunities
<p>Extreme weather events</p> <p>How well does your current infrastructure manage extreme rainfall events?</p> <p>What would happen during an intense rainfall event?</p> <p>How vulnerable is your business operation if key infrastructure is damaged (i.e. road pavements, ports, bridges, buildings)?</p> <p>Would emergency situations (eg flooding) disrupt the availability of employees?</p> <p>Would insurance cover any damage as a result of a severe weather event?</p>	<p>Manufacturing, Operations & Assets Direct impact of bushfires, floods, intense rainfall, hail, wind and extreme temperatures on assets (e.g. building damage, water inundation damaging electrical systems and equipment, overheating of cooling systems)</p> <p>Vulnerability of assets due to proximity to river, coastal or urban flooding</p> <p>Energy fluctuations or blackouts due to energy supply interruptions</p> <p>Supply chain Direct impact on supply of key materials or services (e.g. raw inputs, components) and/or on product or service distribution</p> <p>Delays in delivery resulting in loss of market share</p> <p>Finance Difficulty in securing investment and/or insurance due to potential impacts of extreme climatic conditions</p> <p>Energy & Resources Disruption to utilities (electricity, water, sewerage) as a result of an extreme weather event (e.g. flood)</p> <p>Labour & Human Resources Additional management time required to cope with disasters</p> <p>Employees unable to attend work during or after extreme weather events because of their commitments to emergency services eg CFA/SES or damage to/loss of their personal property</p>	<p>Opportunity to design infrastructure to new standards that considers climate change impacts</p> <p>Opportunity for business growth in building materials that can withstand extreme weather events</p> <p>Review capacity of existing stormwater system and replace/upgrade</p> <p>Develop flood mitigation plan for vulnerable sites</p> <p>Develop contingency plans to deal with extreme weather events (e.g. back up generators)</p>
<p>Climate change generally</p> <p>What is the likely change in customer expectations?</p> <p>How is government policy likely to change (e.g. introduction of a price on carbon, minimum infrastructure standards, planning permits?)</p>	<p>Markets Decreased demand for carbon intensive products</p> <p>Supply chain Some goods and services could be impacted by global climate change</p> <p>Finance Difficulty in securing investment in business that has not considered the risk of climate change (e.g. buildings that have not been designed for climate change)</p> <p>Labour & Human Resources Training and skill implications (e.g. design, maintenance, engineering skills to respond to climate change)</p>	<p>Opportunity to develop and market products that consider the full life cycle of a product</p> <p>Advantage for early movers to develop new markets and attract customers</p> <p>Develop brand awareness and product differentiation</p> <p>Opportunity to improve work/life balance with flexible working hours and/or working from home arrangements</p>

Further assistance

For further information or assistance on any of the issues raised in this Checklist, contact Ai Group's Energy and Sustainable Business Help Desk on phone 1300 733 752 or email sustainablebusiness@aigroup.asn.au.

See also Industry Adaptation Case Study – Murray Goulburn Co-Operative.

About the parties

The Australian Industry Group

The Australian Industry Group (Ai Group) is a peak industry association in Australia which along with its affiliates represents the interests of more than 60,000 businesses in an expanding range of sectors including: manufacturing; engineering; construction; automotive; food; transport; information technology; telecommunications; call centres; labour hire; printing; defence; mining equipment and supplies; airlines; and other industries. Ai Group members operate small, medium and large businesses across a range of industries. The businesses which we represent employ more than 1 million employees. Ai Group provides practical information, advice and assistance to help members run their businesses more effectively. We ensure through policy leadership that members have a voice at all levels of government, by representing and promoting their interests on current and emerging issues.

Further information is available at www.aigroup.com.au

Murray Goulburn Co-operative

The Murray Goulburn Co-operative (MG) is a world class supplier of dairy ingredients and retail products. It processes over 35% of the nation's milk supply into quality products which are sold on both domestic and export markets. MG manufactures and markets a full range of dairy ingredients including skim milk powder, full cream milk powder, cheese, milk fat products, whey powders and milk proteins.

Further information is available at <http://www.mgc.com.au/>

Department of Sustainability and Environment

The Department of Sustainability and Environment leads the Victorian Government's efforts to sustainably manage water resources and catchments, climate change, bushfires, parks and other public land, forests, biodiversity and ecosystem conservation.

Further information is available at www.dse.vic.gov.au.

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Appendix A

References



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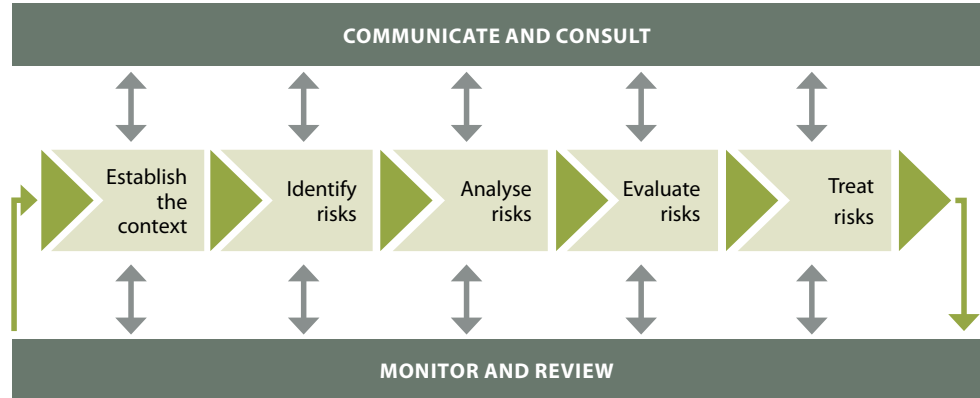
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Appendix B

5 Step Climate Change Adaptation Risk Management Approach and Consequence and Likelihood Scales



5 Step Climate Change Adaptation Risk Management Approach



Risk management process (AS/NZS 4360:2400)

Climate Change Risk Likelihood Scale

Likelihood scale		
Likelihood	Recurrent risks	Single events
Almost certain	could occur several times per year	more than 50% probability per year
Likely	may occur once per year	as likely as not – 50/50 chance
Possible	may occur once in 10 years	less than 50%, but still quite high
Unlikely	may occur once in 10 to 25 years	low probability, but more than zero
Rare	unlikely during next 25 years	negligible, probability close to zero

Climate Change Risk Consequence Scale

		Risk consequence scale				
		SUCCESS FACTORS				
		Shareholder value	Growth	Supply chain	Human resources	Compliance
CONSEQUENCE LEVEL	Catastrophic	Business would have to be wound up	The business would contract markedly placing its long term viability in question	The loss of a key source of supply or distribution channel, threatening the business	Severe shortages of personnel or workplace disruption would make it difficult to sustain operations	Obvious and proven breaches of legal and regulatory requirements, with prospect of corporate or individual penalties
	Major	Shareholder value would decline markedly and necessitate remedial action	The business would contract and require significant remedial action	Disruption of a key source of supply or distribution channel, having a serious effect on the business	Operations would be severely affected by shortages of personnel or poor industrial relations	Significant amounts of management and adviser's effort would be required to answer charges of compliance failures
	Moderate	Shareholder value would stagnate	There would be no growth	Components of the supply chain would require more than normal levels of management attention to protect the business	Parts of the workforce and staff team would require more than normal levels of management attention to protect the business	Formal action would be required to answer perceived breaches or charges of compliance failure
	Minor	Shareholder value would increase but fail to meet expectations	Growth would be achieved but it would fail to meet expectations	Isolated difficulties would arise in the supply chain but would be resolved	Isolated personnel shortages or poor workplace relations would be resolved	Minor perceived or actual breaches of compliance would be resolved
	Insignificant	There would be a minor shortfall in meeting expectation for shareholder value, but they would pass unnoticed	There would be a minor shortfall in growth but this would not attract much attention	Minor issues with the supply chain would pass without any special attention	Minor workplace issues would pass without any special attention	Concerns about compliance would be resolved without special attention

Table adapted with reference to:

- Standards Australia, 2004, HB 436:2004- Risk Assessment Guidelines. Companion to AS/NZS4360:2004 (Table 6.2)
- AGO, 2006, Climate Change Impacts & Risk Assessment: A Guide to Business and Government, 2006, Department of the Environment and Heritage

Climate Change Risk and Consequence Scale

Risk priority matrix							
Likelihood	Almost certain	5	Medium-9	Medium-6	High-4	Extreme-3	Extreme-1
	Likely	4	Low-5	Medium-7	High-5	High-2	Extreme-2
	Possible	3	Low-6	Medium-8	Medium-4	High-3	High-1
	Unlikely	2	Low-7	Low-3	Medium-5	Medium-3	Medium-1
	Rare	1	Low-8	Low-4	Low-2	Low-1	Medium-2
			1	2	3	4	5
			Insignificant	Minor	Moderate	Major	Catastrophic
Consequence							

