

Climate change risk management matrix

Overview

Managing climate change and variability is a challenge for industries and organisations in Queensland. Uncertainties remain regarding the rate of climate change and the scale and distribution of impacts.

The Queensland Climate Change Centre of Excellence ([QCCCE](http://www.climatechange.qld.gov.au/response/about_qccce.html) <http://www.climatechange.qld.gov.au/response/about_qccce.html>) has developed the *Climate Change Risk Management Matrix* as a simple two-dimensional assessment tool to help address these uncertainties.

Through a participatory workshop process engaging with industry, regions and agencies, the *Climate Change Risk Management Matrix* is used to identify positive and negative climate change impacts, adaptive responses, and risk and vulnerability associated with climate change. Using this risk management approach to identify and analyse risks and opportunities helps to plan responses, adaptation strategies and action plans.

The *Climate Change Risk Management Matrix* has now been used in facilitated workshops by sectoral, industry, regional and agency representatives across Queensland.

Workbook

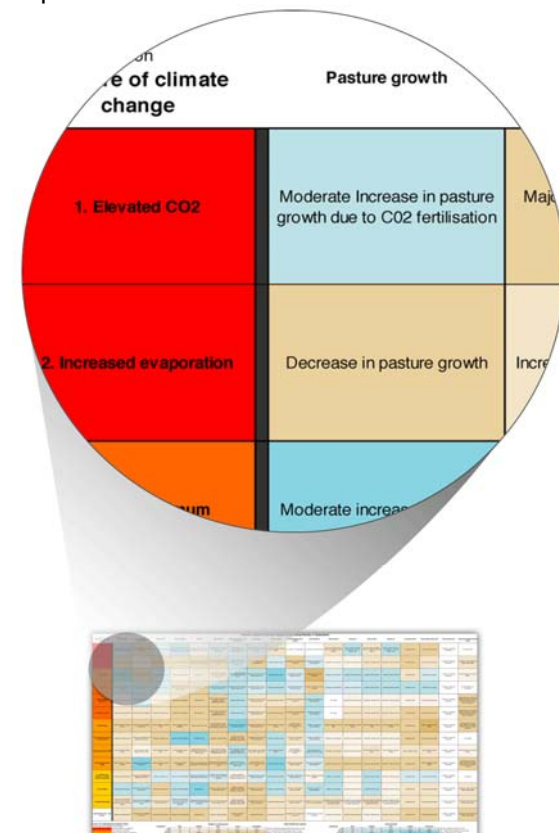
A workbook describes the 'risk matrix' process and has been designed to be a stand-alone product for use by extension providers, industry and regional representatives and consultants.

[The workbook](http://www.longpaddock.qld.gov.au/products/pdf/climatematrixworkbook.pdf) <www.longpaddock.qld.gov.au/products/pdf/climatematrixworkbook.pdf> promotes a risk management approach to climate change adaptation and provides guidance to identifying and managing the impacts of climate change through a structured process involving:

- identifying the important climate variables and elements of the sector/organisation/business most sensitive to climate change
- identifying potential climate change impacts (positive and negative)
- understanding the likelihood and potential consequences of those impacts (assessing risk and opportunity)
- developing appropriate management responses to climate change

- assessing the capacity to implement the adaptive response (adaptive capacity)
- identifying the vulnerability (combination of impact risk and adaptive capacity)
- preparing a statement of risk or vulnerability that is a summary of the whole 'risk matrix' process highlighting areas of highest risk and vulnerability, what can be done, by who and by when; and
- preparing an action plan.

An example of an 'impact risk matrix' is shown below. It illustrates an aspect of climate change (elevated CO₂) and a positive impact on grazing (moderate increase in pasture growth). The colours indicate a positive (blue) and negative (brown) impact and the intensity of the colour reflects the significance of the impact from low to extreme.



A separate 'vulnerability matrix' (not shown here) describes the adaptive responses and illustrates the level of vulnerability with the use of colour shading (purple). Together with the 'impact risk matrix' the 'vulnerability matrix' is used to prepare a risk or vulnerability statement which can then be used to prepare an action plan.



eWorkbook

An electronic version of the *Climate Change Risk Management Matrix* has been prepared and streamlines the assessment process using dropdown menus and self-populating windows.

This [eWorkbook](#) <www.longpaddock.qld.gov.au/products/matrix/downloads.html> is a self-explanatory stand-alone program that enables users to complete a risk and vulnerability assessment in digital form.

The assessment process can be repeated using different climate variable and organisation elements. Each assessment can be saved and recalled for future reference. Report statements and action plans can also be saved in various formats.

The eWorkbook program also contains a pdf version of the *Climate Change Risk Management Matrix* workbook that provides access to background information and definition of terms used.

Helping Primary Producers adapt to Climate Change

The *Climate Change Risk Management Matrix* is a useful first-step to facilitating a better understanding of climate change impacts and fostering a risk management approach to improving decision making associated with the changing Queensland climate at sector, industry and regional levels.

The risk matrix is the primary tool being used in a series of workshops implementing the Queensland Government's *ClimateQ* <<http://www.climatechange.qld.gov.au/whatsbeingdone/climatechangestrategy/index.html>> initiative 'Helping Primary Producers Adapt to Climate Change' <<http://www.climatechange.qld.gov.au/pdf/factsheets/5primary-n4.pdf>> aimed at raising awareness of climate change in the primary production sector and building internal capacity to adapt to climate change.

The participatory nature of the workshop process and the straightforward design of the risk matrix, offers an effective way to share knowledge of the likely effects of climate change and encourage industry to begin to take action.

QCCCE has partnered with the [Department of Employment, Economic Development and Innovation](#) <<http://www.deedi.qld.gov.au/>> (DEEDI) to refine this process originally developed for the grazing industry and make it more widely available in Queensland for other climate sensitive industries, sectors and regions. Workshops are focused on the Grazing and Feedlot, Horticulture, Intensive Livestock, Cropping and Fisheries and Aquaculture industry sectors.

As well as this sector and industry-based approach, regional workshops help bring together a range of organisations in a region to work together, share climate variability and climate change information and collectively address impacts and adaptation strategies at a regional level. QCCCE has demonstrated the usefulness of this tool across Queensland with a range of primary industries, regional NRM groups, local governments, and biodiversity groups.

Independent evaluation of the workshops found that:

- the risk matrix process was highly successful as a mechanism to engage stakeholders in climate change issues and how they can be addressed
- forty per cent of respondents used the risk matrix to help understand risks and opportunities and possible climate change adaptation responses
- one-third of respondents indicated the tool has influenced their approach to climate change.

Using an interactive process with a relatively simple framework and applying it to people's own context is an effective approach in progressing thinking about something as complex as climate change.

Other uses of the Risk Matrix

The World Bank used the risk matrix to develop an on-line learning module and conduct workshops with farmers and water managers in Africa and Mexico.

The Director Climate Change of the Great Barrier Reef Marine Park Authority presented the risk matrix material and process at an international workshop: *Adapting to climate change: a workshop for coral reef managers*.

The University of the Sunshine Coast is using the risk matrix workbooks with students as an example of a practical tool for assessing risk and vulnerability to climate change.

A student at James Cook University used the risk matrix to study the risk and vulnerability of water security in Vietnam.

More information

Queensland Climate Change Centre of Excellence
Department of Environment and Resource Management (ESP) GPO Box 2454
Brisbane QLD 4001
Telephone: +61 7 3170 5504
Facsimile: +61 7 3170 5802
Email: gccce@climatechange.qld.gov.au
Website: <http://www.climatechange.qld.gov.au/>
Website: www.longpaddock.qld.gov.au
Access a pdf of this factsheet or the workbook at www.longpaddock.qld.gov.au