Module 2 –
Setting the Context

1 Expected outcomes of this module

The expected outcomes of this module are that workshop participants will:

- Understand the inherent uncertainty of climate change projections
- Describe and appreciate how climate change may impact the Local Government Area (LGA), council service delivery and council assets/ infrastructure
- Brainstorm, record and agree on the most likely climate change impacts for their council
- Record their assumptions and decisions

Below: Participants completing module 2 at Clarence Valley Council (November, 2009)

2 Resources required for module delivery

Delivery sequence	Deliver after module 1"*Introduction to Climate Change*". Outcomes of this module feed into module 3 "*Assessing Climate Change Risk*"
Delivery time	At least 90 minutes (including 70 minute activity)
Participants	All members of the Climate Change Action Planning Team including: • the Steering Committee • the Working Group Alternatively: • the Working Group
Materials	• A computer (ideally with internet access) • Data projector and screen • Module 2 PowerPoint presentation template • Regional climate change projections • A large (A3-A1) map of the LGA for each breakout group • Coloured marker pens for each group • Assumptions template • Camera to capture documentation on the maps • Evaluation forms (template available)
Assistance	Not required

3 How to complete the module

The following tasks should ensure that the expected outcomes of the module are achieved:

- Lead a discussion on the inherent uncertainty in climate change projections
- Present the likely climate change impacts for the region
- Form breakout groups and get workshop participants draw or describe how the selected climate change projections will impact the LGA, Council service delivery and Council assets/infrastructure
- Ask breakout groups to record their assumptions and decisions
- Gain consensus on how climate change will impact the LGA

Above: Breakout group at Bland Shire Council undertaking the module 2 activity "Drawing out the Impacts" (April, 2010)

3.1 Module preparation

Before the workshop begins, ***the facilitator should:***

- Read *Climate Change in Australia – observed changes and projections*, by CSIRO and the Australian Bureau of Meteorology 2007. This is an 8 page document. A link is provided on the LGSA website: www.lgsa.org.au
- Customise the "Setting the Context" PowerPoint presentation by including climate change projections and a word picture (see 3.1.1) and ensuring minimal repetition with information previously presented (such as in the "Introduction to Climate Change" PowerPoint presentation). Provide an explanation for any confusing or contradictory information
- Consider consulting with external stakeholders who may be able to provide useful information and/or guest speakers
- Prepare printed handouts of climate change scenarios or projections for NSW and any local or regional scale information on climate change projections (see 3.1.1)
- Prepare printed handouts of social information and projected changes such as population increase or decrease
- Prepare a number of large (A3-A1) maps of the LGA. The maps should include features of the area such as any river systems, flood plains, dune systems, bushland, rural areas, industrial precincts, public infrastructure (dams, roads) and private infrastructure (homes, business) without being overly detailed as this may hamper rather than facilitate brainstorming. Ensure that the printed maps can be drawn on with the marker pens (i.e. appropriate paper and pens are used)
- Prepare printed evaluation forms (template available)
- Assemble the required materials (list on page 1)

3.1.1 Preparing information on projections

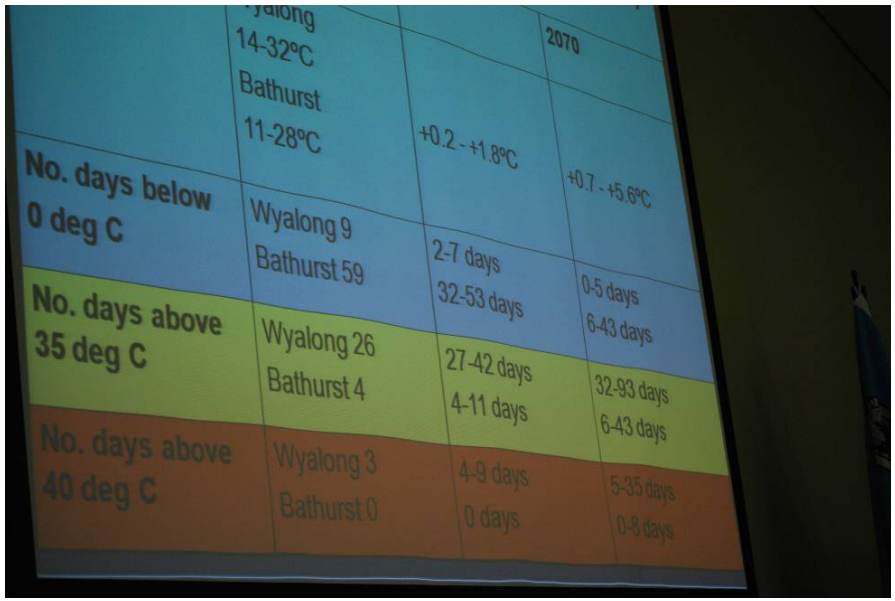
The aim of this module is to help workshop participants picture some of the likely impacts of climate change. Climate scenarios are helpful for imagining what the climate might be like in the future. A climate scenario is a description of a plausible future climate for an area. Scenarios are not predictions or forecasts (which indicate outcomes considered most likely), but are alternative images of how the future might unfold (CSIRO, 2007). They may be qualitative, quantitative, or both.

While scenarios do not ascribe likelihoods, climate projections may be probabilistic. A climate projection is a projection of the response of the climate system to scenarios of greenhouse gas emissions or atmospheric concentrations of greenhouse gas emissions (AGO, 2006). Climate projections are often based on mathematical models. Climate projections depend on assumptions about emissions scenarios and response of the climate system (AGO, 2006). Projections are not predictions. Best available climate change projections should always be used. Projections are available from CSIRO and the Department of Climate Change and Energy Efficiency.

Information provided in a scenario should include the direction of change, the timing and magnitude of change and correlations between changes in two or more parameters. The information provided in a scenario should be plausible (within the ranges of the best available science), consistent and indicate and increase or decrease under the scenario but not both. Scenarios are defined by projections for specific locations and years. In terms of locations, look for projections which are available for locations closest to the LGA. If these are not available, then projections for NSW should be used.

Projections are generally available for the years 2030, 2050 and 2070. In some cases projections are also available for 2020 and 2100. Ideally, both a short and longer term scenario (i.e. 2030 and 2050) should be used to assist in prioritising adaptation actions based on immediacy. It is suggested that one or two climate change scenarios be used. However, using two scenarios may have complications during workshop facilitation as there may be some repetition and workshops times may increase.

The guide, *Climate Change Impacts and Risk Management – A Guide for Business and Government*, (published by the Australian Greenhouse Office in 2006), suggests that climate change scenarios should be made meaningful to the organisation by accompanying the raw 'factual' information of the scenario with a 'word picture' describing the conditions that would be experienced for the scenario. A 'word picture' can be presented in a way that is like telling a story. This is likely to be better received by people who prefer a narrative over facts and statistics.



Above: Climate change projections being presented on screen for the Wellington, Blayney and Cabonne Strategic Alliance (February, 2010)

A word picture can describe the potential consequences of specific weather events. It could be based on examples from the past and explain how such events may become more frequent or more intense in the future. Information from past events may be available from emergency services agencies or local media. For example, the local media might have reported that during a flood, a nursing home was evacuated with 24 elderly residents moved to alternative accommodation. It may also explain roles and responsibilities of various agencies and the quality of their responses.

In describing a past event, consider noting:

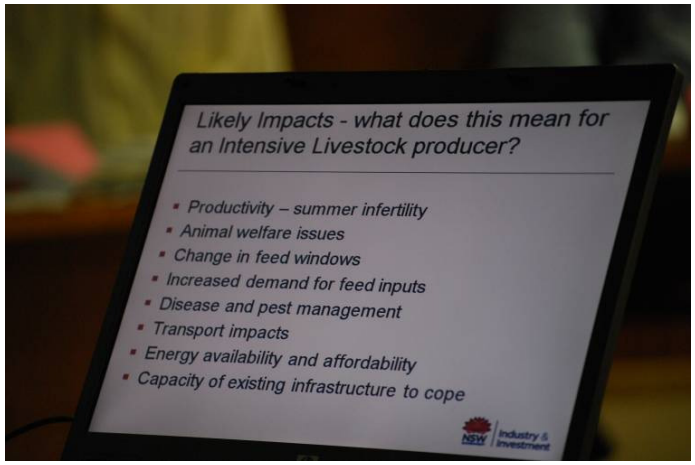
- Financial costs incurred
- Human resources required
- Any 'catch up' period, i.e. time taken to re-establish normal routines
- Effects on the community
- Implications for service delivery
- Related services affected

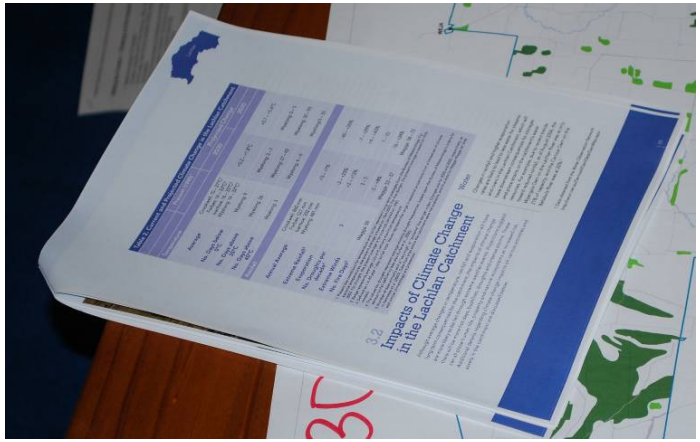
A word picture should include relatively low impact but repeated weather events as well as extreme but infrequent events.

Reporting on incidents that have happened in the past in the local area or region can raise awareness of specific weather and climate risks and likely consequences and can provide a catalyst for further action.

The facilitator and Steering Committee should:

- Determine one or two time horizons for adaptation planning based on local environmental, social and economic considerations and which time horizons would best suit Council's needs
- Work together to select one or two scenarios that are most appropriate for Council





Above: Top: Presentation by the Department of Industry and Investment NSW at Wellington, Blayney and Cabonne Strategic Alliance's workshop (February, 2010). Below: Climate change projections by the CSIRO being used by Bland Shire Council (April, 2010)

3.2 Workshop facilitation

3.2.1 Leading a discussion on climate change projection uncertainty

It is important that the climate change action planning group understands that there is significant uncertainty in climate change projections.

The facilitator should explain that:

Climate change projections have three sources of uncertainty. The sources of uncertainty are:

1 Future emissions of greenhouse gases are unknown. Natural greenhouse emissions may be effected by climate change and global development. Anthropogenic greenhouse gas emissions may be effected by government policy and population growth.

2 The relationship between the level of greenhouse gases in the atmosphere and global warming is uncertain. While the "greenhouse effect" is a known phenomenon, modelling the direct relationship between atmospheric concentrations of greenhouse gases and global warming requires many assumptions.

3 The link between global warming and localised climate change is uncertain. Climate systems are extremely complex and are impacted by many variables. Modelling the localised impact of long term temperature change across all climate variables will generate some uncertainties.

The facilitator should explain that:

- Councils should apply the precautionary principle and not use the lack of certainty as an excuse to delay climate change action planning
- The uncertainty can be managed by regularly reviewing climate change action plans (i.e. adaptive management)
- The risk assessment and adaptation planning should be completed based on projected trends rather than using absolute values

3.2.2 Presenting likely impacts for the region

The facilitator should:

- Present climate change projections for NSW
- Present any projections, benchmarks or information relevant to the local area or region (such as a scenario for the catchment) (as per 3.1.1)
- Provide a narrative of how climate change may affect the local area or region (as per 3.1.1)
- Provide printed handouts of climate change projections for NSW and any local or regional scale information on climate change projections
- Try and avoid getting too bogged down in detailed climate change projections as it becomes confusing and adds little value to the risk assessment process.

The facilitator should highlight:

- Any trends created by climate change (e.g. declining rainfall, increasing temperature)
- The range of potential impacts (e.g. number of bushfire days in Canberra 26-29)
- The current level of climatic impact (e.g. there are currently 23 bushfire days in Canberra)

The facilitator may also consider:

- Providing climate change projections for the most relevant major city or regional centre

The facilitator should explain that:

- The climate change projections are all based on greenhouse gas modelling by the Intergovernmental Panel on Climate Change (IPCC)
- Recent research has found that atmospheric levels of greenhouse gases are accumulating faster than predicted by the IPCC models (for more reading see *Climate Change 2009: Faster Change & More Serious Risks* by Will Steffen)
- It seems likely that climate change projections are conservative and Council should at least plan for the upper end of the projected ranges

3.2.3 Presenting social information

The impacts of climate change will affect and be affected by various social factors including community awareness, expectations, values and culture. For example, increased average temperatures may result in changes in the population in the LGA (whether the increased warmth attracts or detracts people from the area), which would have further economic or social implications. Council will need to consider demographic trends and local vulnerability to climate change in planning a response. The workshop presentation should provide relevant social information, highlighting key issues for the region such as population decline or increase in parts of the LGA.

The planning facilitator may benefit from liaising with their council's strategic planners, social planner, cultural or community development officer to collate useful information. Data is available from the Australian Bureau of Statistics and from various State Government agencies including those responsible for ageing, disability, education, health, housing and transport.

The facilitator should:

- Present social information that relates to developing a local response to climate change
- Provide printed handouts of social information and projected changes such as population increase or decrease
- Encourage discussion on how population and social factors relate to climate change impacts and responses

3.2.4 Getting workshop participants to describe the impacts of projected climate change on Council

This Workshop Package has been designed to assist local councils manage their organisational risks from climate change. Climate change action planning for a council should initially focus on managing the risks for the council's service delivery and the management of council's assets and infrastructure.

One of the challenges of climate change action planning is to get participants to focus on the interaction between climate impact and the council's operational activities. When workshop participants start to consider the impacts of climate change, they often focus on the community, natural assets, businesses and individual residence.

The following exercise should help workshop participants visualise the impacts of climate change and help identify areas in which Council services and assets may be impacted. The output of the exercise will be a list of climate change impacts for the workshop participants to agree upon for use in the risk assessment modules.

Exercise 1: Drawing out the impacts

The aim of this exercise is to get small break out groups to draw the impacts of climate change on maps of the LGA such as the outlined in Figure 1. Maps that indicate features of the LGA such as river systems, flood plains, dune systems, bushland, public infrastructure (dams, roads) and private infrastructure (homes, business) help provide a visual stimulus and generate discussion.

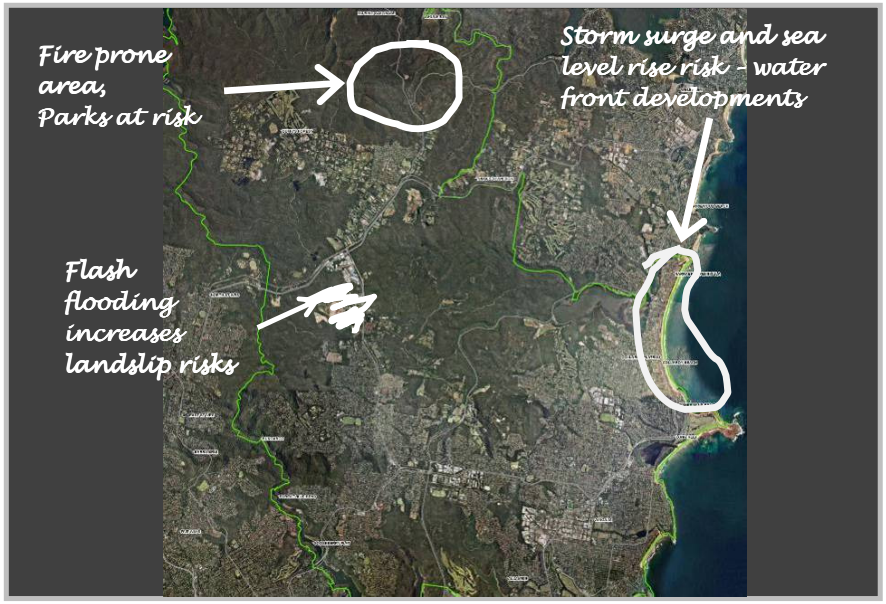


Figure 1: Example mapping of climate change impacts on LGA map (map is for illustrative purposes only and does not depict any real situations)

Ideally participants will indicate first and second order impacts on different parts of the map. For example, participants may indicate that dam levels will decrease due to reduced inflows on the major dam (1st order). They then may indicate increased demand for water on irrigated parks and gardens due to reduced rainfall (1st order). They then may indicate that there is potential for the disruption of water services to residential areas due to an increase in demand and a reduction in supply of potable water (2nd order).

The facilitator should:

- Explain the exercise noting the scope is Council's service delivery and assets
- Break the participants into small groups that contain 3 or 4 people
- Try and assign at least one climate change champion or Steering Committee member to each group
- Provide each group with a large (A3-A1) map of the LGA, a context assumptions template and coloured markers
- Instruct the workshop to select a specific point in the future (e.g. 2020, 2030, 2050, 2070, 2100)
- Ask each group to record the names of the group members and their chosen year on their map
- Ask each group to draw how the projected climate changes discussed in the presentation (and provided as a handout) may impact the LGA

With large groups and/or large, complex LGAs, ***the facilitator may:***

- Choose to assign different climate change impacts to groups (e.g. one group draws the impact of sea level rise, while another draws the impact of increased fire days) **OR**
- Choose to assign different parts of the LGA to different groups (e.g. one group may consider all impacts in Ward A, while another group considers all impacts in Ward B)

The facilitator should:

- Advise workshop participants to try and complete the exercise in 40 minutes

- Advise workshop participants to think laterally
- Ask breakout groups to record their assumptions and decisions in the context assumptions template

Troubleshooting

- If groups are having trouble coming to terms with how climate may impact the LGA, ask them to consider how current natural disasters affect the LGA. Ask them "How does the climate currently impact Council's services and assets (flooding, cyclones, fire)?" "What would happen if flood levels increased or the intensity of the event increased?"
- If groups are working slowly, try and make the process competitive to encourage groups to generate many impacts in the allotted time
- If groups seem overwhelmed by the task, restrict the scope of the task by asking them to focus on just one impact and perhaps one they understand best

3.2.5 Gaining consensus on the likely impacts

An important outcome of this module is to gain some consensus amongst workshop participants on how climate change may affect Council. Later modules on assessing climate change risks will be a lot easier if all workshop participants have a picture of how climate change may affect the LGA.

To conclude this exercise the facilitator should allow 30 minutes for the workshop participants to review the "climate change impact maps" developed by each group.

The facilitator should:

- Ask each group to present their "climate change impact map" to the wider group
- Encourage all participants to respectfully discuss each map following each presentation
- Develop a list of agreed impacts (type of impact, location of impact) on a visible medium (white board, large sheets of paper or typed into the PowerPoint presentation)
- Note areas of agreement and agreed modifications
- Analyse the completed climate change impact maps (during or after the workshop) and note any: common issues across several sections of council (e.g. disruption to IT systems from various impacts flood, fire and heat waves affecting most sections of council); particularly vulnerable service areas or processes (such as council services based outdoors); and locations that are repeatedly affected
- Note all the areas of disagreement on a visible medium (white board, large sheets of paper or typed into the PowerPoint presentation)
- Select a small group of people to work on the areas of disagreement outside the workshop (i.e. follow up research, seek input from senior management and/or local experts)
- Record any assumptions made in gaining consensus in the context assumptions template

The facilitator may also consider:

- Engaging an external expert to review the list of agreed impacts if they are uncertain about the final output of the workshop

3.2.6 Administering the evaluation survey

At the end of the workshop ***the facilitator should:***

- Hand out the evaluation survey and ask everyone to complete the survey before they leave

3.3 Finalising module outputs

Following the workshop the facilitator should:

- Ensure the maps and documentation of the decisions and assumptions have the relevant workshop participants names recorded and file these documents for later reference and potential inclusion in the action plan
- Thank participants for their involvement and contribution to the process
- Circulate the list of agreed climate change impacts for the LGA and facilitate any further deliberation or review if necessary
- Follow up on any issues or questions that were raised at the workshop and not completely resolved or answered
- Make the PowerPoint presentation and any associated materials available to all staff members
- Collate and analyse the results of the workshop survey and circulate a summary of the survey results to workshop participants
- Reflect on the strengths of the workshop and areas for improvement in future workshops and activities
- Brief any members of the Steering Committee or Working Group who were unable to attend the workshop and promote the achievements of the workshop

Above: Workshop participant presenting their "climate change impact map" to the wider group at Clarence Valley Council (November, 2009)

4 The delivery checklist

Task	*Complete*
Led a discussion on the inherent uncertainty in climate change projections	**Yes** / **No**
Presented the likely climate change impacts for the region	**Yes** / **No**
Formed breakout groups and workshop participants drew or described how the selected climate change projections will impact the LGA	**Yes** / **No**
Breakout groups recorded their assumptions and decisions	**Yes** / **No**
Developed a list of agreed impacts as a group	**Yes** / **No**
Saved the list of agreed impacts so that they can be used in the risk assessment workshop	**Yes** / **No**
Administered and collected the evaluation survey	**Yes** / **No**
Finalised module outputs (as listed on page 9)	**Yes** / **No**

5 Useful references

AGO, 2006, *Climate Change Impacts and Risk Management – A Guide for Business and Government.*

CSIRO, 2007, *Climate Change in Australia - Technical Report.*

CSIRO and the Australian Bureau of Meteorology, 2007, *Climate Change in Australia – observed changes and projections.*

Steffen, W., 2009, *Climate Change 2009: Faster Change & More Serious Risks.*

Links to useful resources are provided on the LGSA website (www.lgsa.org.au)