



 Learning Statement 



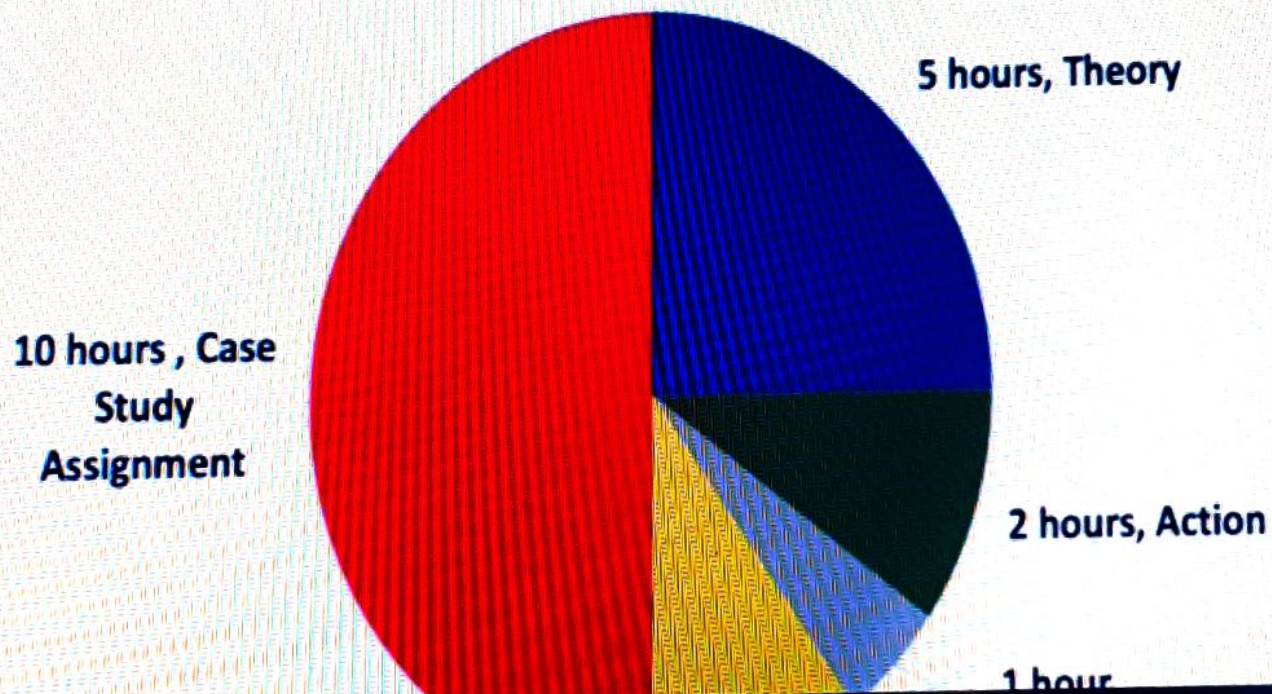
When we look at the world around us, we see things that we don't like, that feel uncomfortable, unfair or wrong, that can make us worried about the future. In this module, we take our first steps as researchers: identifying the problems, concerns and challenges, to which the social sciences can make important contributions.

1. What is a 'problem'? Why should we think about 'challenges' instead?
2. How do humans find solutions to challenges?
3. How do researchers find solutions to challenges?
4. What are wicked problems?
5. Why is Climate Change a 'super-wicked problem'?

break this down is:

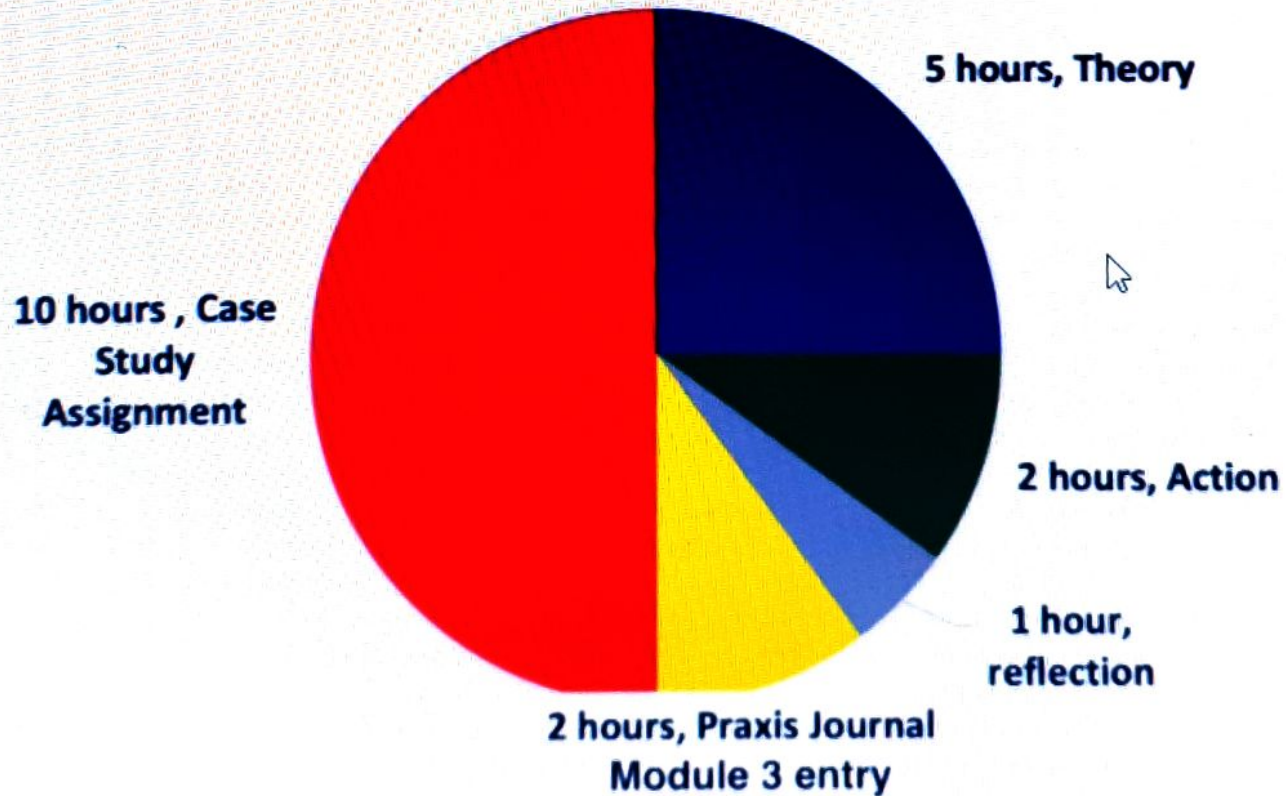
- **Theory:** 5 hours (remember readings should take no more than 20-30 mins, any longer and you are reading too deeply). Choose resources that help you to develop your answers to the module questions. DO NOT EXAMINE EVERYTHING!!
- **Action:** 2 hours (fortnight): CHOOSE ONE of active engagement within the physical / virtual classroom OR completion of the independent-learning task). This earns you 1 engagement mark.
- **Reflection:** 1 hour of self-reflection that helps you to begin to develop your praxis journal module three entry.
- **Praxis Journal:** 2 hours drafting your Module 3 entry. You will need to dedicate some more time for editing as you prepare for the final submission in June.
- **Case Study assignment:** 10 hours (due Sunday March 28th, 11.59pm). See the Case Study assessment page

HOW SHOULD I SPEND MY TIME?



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Climate Change: The Super Wicked Problem

For the remainder of semester, we will be working towards research that explores the impacts and challenges of Climate Change (from the perspective of the social sciences). This section is designed to help you to understand the concept, how it applies to Australia, and why it is such a complex problem.

Key Points from the CSIRO (2020) State of the Climate, <https://www.csiro.au/en/research/environmental-impacts/climate-change/state-of-the-climate>

Impacts on Australia

- Australia's climate has warmed on average by 1.44 ± 0.24 °C since national records began in 1910, leading to an increase in the frequency of extreme heat events.
- There has been a decline of around 16 per cent in April to October rainfall in the southwest of Australia since 1970.
- Across the same region May–July rainfall has seen the largest decrease, by around 20 per cent since 1970.
- In the southeast of Australia there has been a decline of around 12 per cent in April to October rainfall since the late 1990s.
- There has been a decrease in streamflow at the majority of streamflow gauges across southern Australia since 1975.
- Rainfall and streamflow have increased across parts of northern Australia since the 1970s.
- There has been an increase in extreme fire weather, and in the length of the fire season, across large parts of the country since the 1950s, especially in southern Australia. There has been a decrease in the number of tropical cyclones observed in the Australian region since 1982.
- Oceans around Australia are acidifying and have warmed by around 1 °C since 1910, contributing to longer and more frequent marine heatwaves.
- Sea levels are rising around Australia, including more frequent extremes, that are increasing the risk of inundation and damage to coastal infrastructure and communities.

Future

In the coming decades Australia will experience ongoing changes to its climate. Australia is projected to see:

- Continued increases in air temperatures, more heat extremes and fewer cold extremes.
- Continued decrease in cool season rainfall across many regions of southern and eastern Australia, likely leading to more time in drought, yet more intense, short duration heavy rainfall events.
- A consequential increase in the number of dangerous fire weather days and a longer fire season for southern and eastern Australia.
- Further sea level rise and continued warming and acidification of the oceans around Australia.
- Increased and longer-lasting marine heatwaves that will affect marine environments, such as kelp forests, and raise the likelihood of more frequent and



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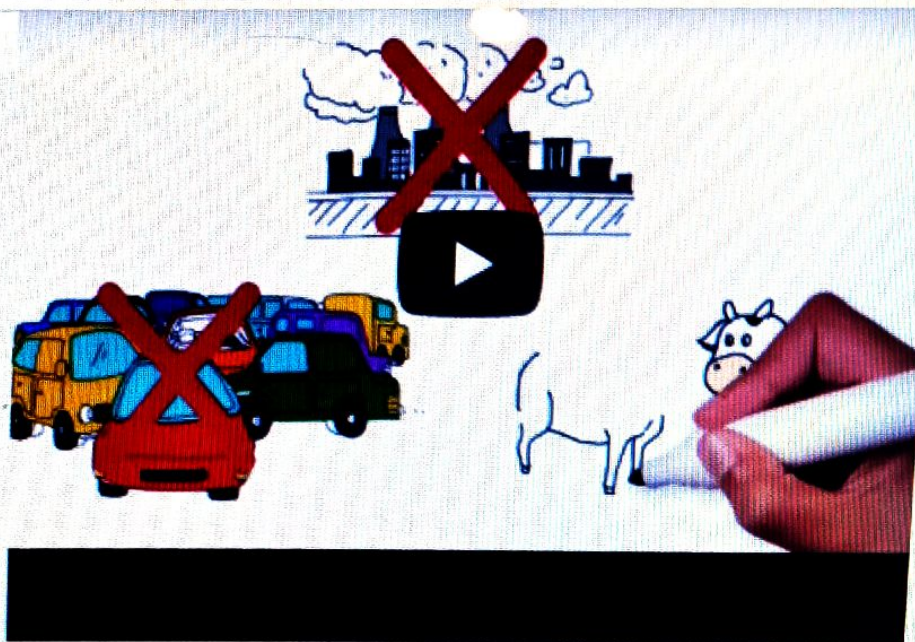
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- A consequential increase in the number of dangerous fire weather days and a longer fire season for southern and eastern Australia.
- Further sea level rise and continued warming and acidification of the oceans around Australia.
- Increased and longer-lasting marine heatwaves that will affect marine environments, such as kelp forests, and raise the likelihood of more frequent and severe bleaching events in coral reefs around Australia, including the Great Barrier and Ningaloo reefs.
- Fewer tropical cyclones, but a greater proportion projected to be of high intensity, with large variations from year to year.

Video

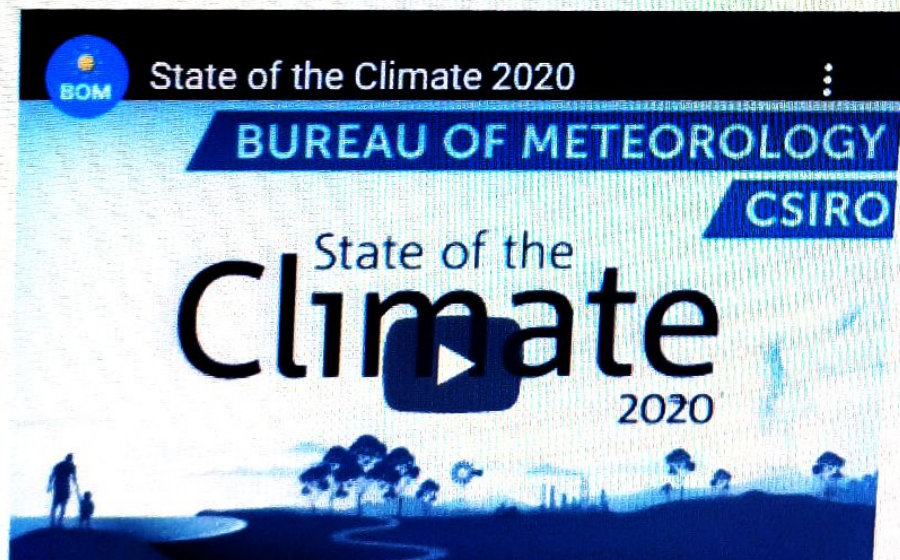




YouTube URL: <http://www.youtube.com/watch?v=XR0CxS6n53U>

CSIRO (2020) *State of the Climate*, <https://www.csiro.au/en/research/environmental-impacts/climate-change/state-of-the-climate>

The biennial *State of the Climate* report series draws on the latest climate research, encompassing observations, analyses and projections to describe year-to-year variability and longer-term changes in Australia's climate. The 2020 *State of the Climate* report is now available.



Following I Can Change Your Mind About Climate, Tony Jones will be joined by Nick Minchin and Anna Rose in the studio for a live one-hour Q&A audience and viewer debate. Additional members of the panel to be announced. Members of the public can get involved in this Q&A in a variety of ways: Take the Climate Change Challenge at www.abc.net.au/tv/changeyourmind from April 2 and register your interest to be part of the live Q&A audience on April 26th. Or go to www.abc.net.au/qanda to register to be part of the live Q&A studio audience. Visit the Q&A website to submit your questions. Viewers can also contribute to the discussion via Q&A's Twitter highlights feed, using #qanda. And follow @abcqanda on Twitter to receive first-hand updates about the program and panel members. - Date of Broadcast: 26 April 2012 21:30

If you have netflix: David Attenborough "A Life on our planet"

see <https://attenboroughfilm.com> for more information

ABC iVIEW also has a number of shows that are useful for developing your understanding (these are free to watch):

- <https://www.abc.net.au/your-planet/>
<https://iview.abc.net.au/show/fight-for-planet-a-our-climate-challenge>
 Suggested Reading

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- Lazarus, Richard J. (2009). 'Super wicked problems and climate change: Restraining the present to liberate the future'. *Cornell Law Review*, 94(5), 1153. <https://scholarship.law.cornell.edu/clr/vol94/iss5/8/>
- Kelly Levin, Benjamin Cashore, Steven Bernstein, & Graeme Auld. (2012). Overcoming the tragedy of super wicked problems: Constraining our future selves to ameliorate global climate change. *Policy Sciences*, 45(2), 123-152.
- Hickman, L. (2010) 'James Lovelock: Humans are too stupid to prevent climate change', *The Guardian*, March 29 2010, <https://www.theguardian.com/science/2010/mar/29/james-lovelock-climate-change>
- The Conversation has a mass of articles related to research around Climate Change, from both environmental and social perspectives (though these are ultimately connected). <https://theconversation.com/au/topics/climate-change-27>
 - You can also 'narrow' your search down by searching their archives for "climate change" and your discipline.

Consolidation Tasks

As confronting climate change has become an ideological (or political/cultural/social) concern, there have been many attempts to identify the types of people who will act and those who will not act. Two of these are:

- The Yale Program on Climate Change Connection - They came up with the Six America's thesis. They use(d) questionnaires and interviews to identify six

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- The Yale Program on Climate Change Connection -They came up with the Six America's thesis. They use(d) questionnaires and interviews to identify six unique audiences within the American public, that each repond to the issues of climate change in different ways
 - you can take the quiz here: <http://climatecommunication.yale.edu/visualizations-data/sassy/>
 - and read more about their project here: <https://climatecommunication.yale.edu/about/projects/global-warmings-six-americas/>
- Another tool that helps people to understand their perspective on climate change (and other environmental issues) is the Ecological Worldview Questionnaire. This was developed by researcher Annick De Witt.
 - Her research confirmed the existence of at least four major worldview-groups in the Western world, which she describes as "traditional," "modern," "postmodern," and "integrative." The existence of these worldview-groups has also been confirmed by work in sociology, the history of philosophy, and developmental psychology. These worldview-groups differ significantly in their political preferences, their attitudes towards climate change, the sustainability of their lifestyles, as well as their positions in 'hot' societal debates such as on the role of biotechnology.
 - you can take her questionnaire here: <https://www.culturalevolution.org/worldview-questionnaire/>

After taking one or both of the questionnaires/quizzes, what have you discovered about your self? Does anything surprise you? Does anything please/disappoint you?

 Action - The Challenges of Anthropogenic Climate Change *Breaking the Problem Down*



Group-Based Learning

The tasks [within this folder](#) are for students who participate in tutorials, either on-campus or online.

List of Tasks in Tutorial

1. What do you already know?
2. Climate Change as a Wicked Problem
3. Mapping out the problem: What impacts does anthropogenic climate change have on *Sydney, NSW, and Australia (or beyond)*? **(You will earn your ACTION engagemark when completing this task)**
4. Literature Review: What do we already know about the impacts of anthropogenic climate change?

What do you already know?

In this task, you will work as a class to brainstorm your collective knowledge of climate change. Some people will know more, and some will be less sure. But all contributions are welcome.

When we do a 'brainstorm', there are no right or wrong answers: we are trying to collect as much information as possible, and perhaps find links between these ideas

If you wish to make notes in this task, then I would suggest noting down points which are newer to you (as these are things you are more likely to forget).

Climate Change as a Wicked Problem

In the theory content, you are introduced to the concept of 'Wicked Problems'. The concept originates from the 1960s-1970s, when people started to recognise the complexity of addressing key social challenges. There are 5 key characteristics of a Wicked Problem:

- Hard to define
- have no definitive goal or end point, and many of them are interconnected
- Many people and perspectives are involved in the solutions
- Every attempt at fixing the problem counts: because you can only 'test' the solution on the real world and real people
- Every wicked problem is unique

In this task we are asking you to consider why (or why not!) climate change can be considered a wicked problem.

Mapping out the problem: What impacts does anthropogenic climate change have on Sydney, NSW, and Australia (or beyond)?



The Module three ACTION ENGAGEMENT mark will be earned by successfully completing this group activity.

Key concepts for this task:

1. **Anthropogenic Climate Change:** in this task we are specifically focusing on how we can investigate the impacts of anthropogenic climate change in Australia. The students in class come from different disciplines, all of which have a different focus on social (and environmental problems). We are aiming to capture this difference.
2. **Mindmapping** is a way of breaking our ideas about topics down. We are highlighting the linkages between different bits of information, either vertically (i.e. a piece of information is a part of a bigger idea), or horizontally (two bits of information that contribute to a larger idea).
 - Mindmapping is based around identifying "nodes" of information or ideas, and then linking these to other nodes of information and ideas.
 - Usually we start with the concept of interest as our central node, and then we branch out to connected or smaller related ideas.
 - Nodes that are "beneath" another node are called "child nodes"
 - Nodes that are at the same level are called "sibling nodes"
 - Nodes don't have to just connect back to the central node - they can also have sideways connections to other ideas

For this task you will be working in groups, using an online mindmapping program: mindmup.com.

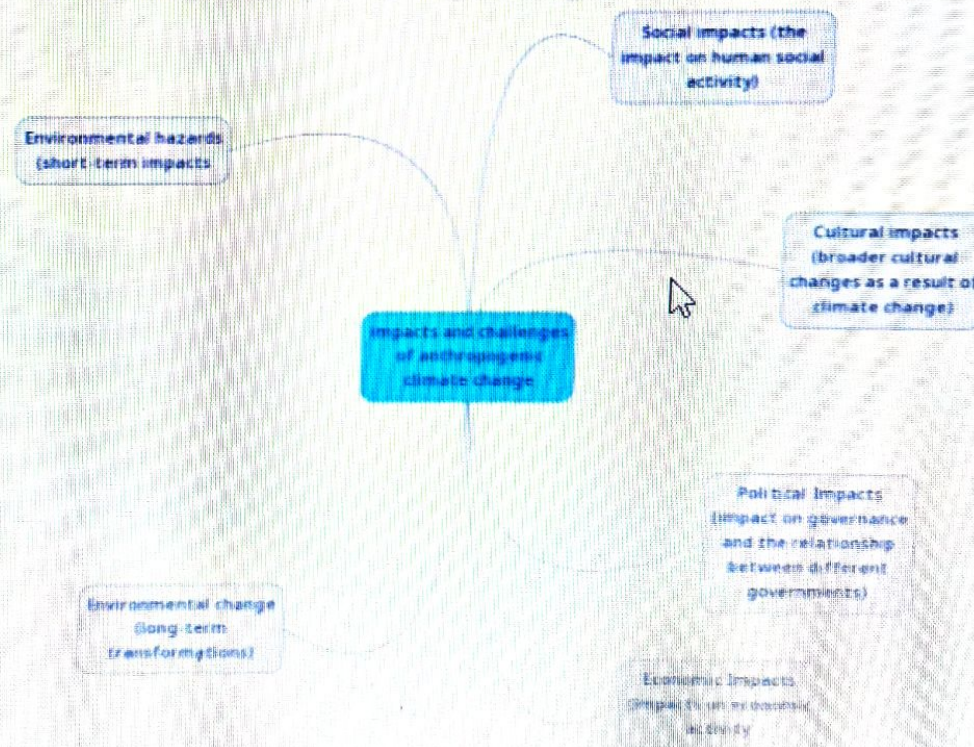
Task process:

1. Your starting point, should be the central node. This is usually a big 'blob' (circle) that you draw/write into the middle of your page. The Central node for this activity is: Impacts and Challenges of Anthropogenic Climate Change.
2. You should then branch out with some "child nodes"
 - Environmental hazards (i.e. short-term events)
 - Environmental changes (i.e. long-term transformations)
 - Social impacts (i.e. the impact on human social behaviour)
 - Cultural (i.e. broader cultural changes as a result of climate change)
 - Political impacts (i.e. impact on governance and relationships between different governments)
 - Economic impacts (impact on economic activity)
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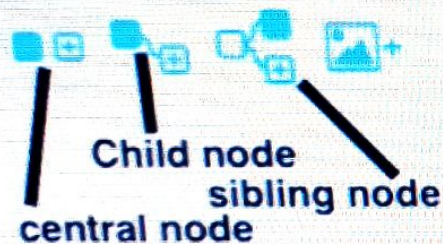
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3. As a small group, you now need to brainstorm (and add to your mindmap as child nodes): what impacts and challenges might fall under each of these headings. Don't forget to think about different perspectives and experiences of people not represented by your group members
4. As a small group, you should then consider: what evidence we have or might need to collect to understand these problems? (add these points as further child nodes)
5. STEP THAT EARNS ENGAGEMENT MARK: Once you are happy with your group's mindmap (and remember this is meant to represent the work you have done in class, rather than something you perfect after class), capture your mindmap as an image (either as a photo, or downloading as a JPEG), and then upload it to your Tutorial groups "discussion board". Please reply to the appropriate thread (Module 3 - Climate Change mindmapping). In your post, please list all group members (first name and initial).
 - o please make sure it is uploaded as an image, as this will help us to easily see it in our class discussion.
 - o Remember: please list all group members (first name and initial) so that we can calculate the ACTION Engagement mark.

Instructions for using mindmup.com:

- Go to the website: mindmup.com
- DO NOT SIGN UP (this requires money - though there is now a free add-on to google drive if the software seems useful to you)
- Choose "Create a Free Map" (the big orange button)
- The map will automatically have a central node as a starting point: You should click in this box (you might have to double click), so that you can change the text to: "Impacts and Challenges of Anthropogenic Climate Change".
- You then have three options to expand your map:
 - o create another central node (or root node)
 - o create a child node
 - o create a sibling node



- There are many other options in this software: you can change the fonts and backgrounds, add images, add text notes etc. The best way to learn how to use it, is just to explore what something will do. You can always 'undo' your action if you don't like it.
- Downloading your image: DO NOT PRESS SAVE (the free version is not helpful here), Instead you have a couple of options under File > Download:
 - o you can download as "mindmup" which creates a file you can later import (and edit)

■ **central node** **sibling node**

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- **Downloading your image:** DO NOT PRESS SAVE (the free version is not helpful here). Instead you have a couple of options under File > Download:
 - you can download as "mindmap", which creates a file you can later import (and edit)
 - You can download as image (this is what we want): there are 3 different image types (that choice is up to you)
 - You can download as a PDF
- Whoever has created and downloaded the mindmap, should email the download to the rest of the group.
-



Literature Review: What do we already know about the impacts of anthropogenic climate change? A↓

In this activity, you will be moving from what YOU (or the class) knows, towards exploring what researchers know about the impacts and challenges of climate change.

A Literature Review is a process where we gather journal articles, books and other 'published' document: this becomes our 'background reading' that helps us to understand:

- What researchers already know (the existing knowledge)
- How researchers explore this topic (i.e. methods they might use, who they talk to, where they have researched)
- What researchers don't know (the gap)

In your small groups, you are going to identify peer-reviewed articles that represent research or scholarly discussion for the impacts of anthropogenic climate change that you identified in your brainstorm. These articles will not address everything, usually they only discuss a small part of the problem).

- Use the library (as this will get around the paywall): <https://library.westernsydney.edu.au/main/>
- To identify useful resources, look for 'peer-reviewed' resources.
- When you identify a potentially useful resource, you should read the abstract of the article (not the whole article), to check that it is in fact useful.
- Note down the author, the date of publication, the title, and the journal info. You should also write one sentence that explains why the resource is useful for their own research (i.e. for understanding the impacts and challenges of anthropogenic climate change). This becomes your 'annotated bibliography' for your research on climate change.