

Global Warming of 1.5°C 2018 Special Report

Intergovernmental Panel on Climate Change

<https://www.ipcc.ch/sr15/>

Table 2.2 | The assessed remaining carbon budget and its uncertainties. Shaded blue horizontal bands illustrate the uncertainty in historical temperature increase from the 1850–1900 base period until the 2006–2015 period as estimated from global near-surface air temperatures, which impacts the additional warming until a specific temperature limit like 1.5°C or 2°C relative to the 1850–1900 period. Shaded grey cells indicate values for when historical temperature increase is estimated from a blend of near-surface air temperatures over land and sea ice regions and sea-surface temperatures over oceans.

Additional Warming since 2006–2015 [°C] ⁽¹⁾	Approximate Warming since 1850–1900 [°C] ⁽¹⁾	Remaining Carbon Budget (Excluding Additional Earth System Feedbacks ⁽⁵⁾) [GtCO ₂ from 1.1.2018] ⁽²⁾			Key Uncertainties and Variations ⁽⁴⁾					
		Percentiles of TCRE ⁽³⁾			Earth System Feedbacks ⁽⁵⁾	Non-CO ₂ scenario variation ⁽⁶⁾	Non-CO ₂ forcing and response uncertainty	TCRE distribution uncertainty ⁽⁷⁾	Historical temperature uncertainty ⁽¹⁾	Recent emissions uncertainty ⁽⁸⁾
		33rd	50th	67th						
0.3		290	160	80	Budgets on the left are reduced by about –100 on centennial time scales	±250	–400 to +200	+100 to +200	±250	±20
0.4		530	350	230						
0.5		770	530	380						
0.53	–1.5°C	840	580	420						
0.6		1010	710	530						
0.63		1080	770	570						
0.7		1240	900	680						
0.78		1440	1040	800						
0.8		1480	1080	830						
0.9		1720	1260	980						
1		1960	1450	1130						
1.03	–2°C	2030	1500	1170						
1.1		2200	1630	1280						
1.13		2270	1690	1320						
1.2		2440	1820	1430						

Notes:

- ⁽¹⁾ Chapter 1 has assessed historical warming between the 1850–1900 and 2006–2015 periods to be 0.87°C with a ±0.12°C *likely* (1-standard deviation) range, and global near-surface air temperature to be 0.97°C. The temperature changes from the 2006–2015 period are expressed in changes of global near-surface air temperature.
- ⁽²⁾ Historical CO₂ emissions since the middle of the 1850–1900 historical base period (mid-1875) are estimated at 1940 GtCO₂ (1640–2240 GtCO₂, one standard deviation range) until end 2010. Since 1 January 2011, an additional 290 GtCO₂ (270–310 GtCO₂, one sigma range) has been emitted until the end of 2017 (Le Quéré et al., 2018).
- ⁽³⁾ TCRE: transient climate response to cumulative emissions of carbon, assessed by AR5 to fall *likely* between 0.8–2.5°C/1000 PgC (Collins et al., 2013), considering a normal distribution consistent with AR5 (Stocker et al., 2013). Values are rounded to the nearest 10 GtCO₂.
- ⁽⁴⁾ Focussing on the impact of various key uncertainties on median budgets for 0.53°C of additional warming.
- ⁽⁵⁾ Earth system feedbacks include CO₂ released by permafrost thawing or methane released by wetlands, see main text.
- ⁽⁶⁾ Variations due to different scenario assumptions related to the future evolution of non-CO₂ emissions.
- ⁽⁷⁾ The distribution of TCRE is not precisely defined. Here the influence of assuming a lognormal instead of a normal distribution shown.
- ⁽⁸⁾ Historical emissions uncertainty reflects the uncertainty in historical emissions since 1 January 2011.

2.3 Overview of 1.5°C Mitigation Pathways

Limiting global mean temperature increase at any level requires global CO₂ emissions to become net zero at some point in the future (Zickfeld et al., 2009; Collins et al., 2013). At the same time, limiting the residual warming of short-lived non-CO₂ emissions can be achieved by reducing their annual emissions as much as possible (Section 2.2, Cross-Chapter Box 2 in Chapter 1). This would require large-scale transformations of the global energy–agriculture–land–economy system, affecting the way in which energy is produced, agricultural systems are organized, and food, energy and materials are consumed (Clarke et al., 2014). This section assesses key properties of pathways consistent with limiting global mean temperature to 1.5°C relative to pre-industrial levels, including their underlying assumptions and variations.

Since the AR5, an extensive body of literature has appeared on integrated pathways consistent with 1.5°C (Section 2.1) (Rogelj et al., 2015b, 2018; Akimoto et al., 2017; Löffler et al., 2017; Marcucci et al., 2017; Su et al., 2017; Bauer et al., 2018; Bertram et al., 2018; Grubler et al., 2018; Holz et al., 2018b; Kriegler et al., 2018a; Liu et al., 2018; Luderer et al., 2018; Strefler et al., 2018a; van Vuuren et al., 2018; Vrontisi et al., 2018; Zhang et al., 2018). These pathways have global coverage and represent all GHG-emitting sectors and their interactions. Such integrated pathways allow the exploration of the whole-system transformation, and hence provide the context in which the detailed sectoral transformations assessed in Section 2.4 of this chapter are taking place.

The overwhelming majority of published integrated pathways have been developed by global IAMs that represent key societal systems

Framework for Effective Local Government Climate Emergency Response



the place to live

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What is the climate emergency and restoration of a safe climate

Climate emergency is understood in two ways:

1. The climate emergency **situation** refers to catastrophic changes to the world's climate caused by human activity and resulting in a loss of a safe climate, which threatens all life on earth.

This aspect of the climate emergency is extensively documented. The science tells us that the earth has warmed, and is continuing to warm, and as a result we face serious consequences for the atmosphere, for weather systems, for human ability to produce food, and indeed for all people and species.¹²

2. The climate emergency **response** refers to a specific approach to tackling climate change, which seeks to mobilise and take action at a **scale** and **speed** that will restore a **safe climate**, with the least possible loss and damage during the transition back to a safe climate.

The target is to provide **maximum protection** globally for all species and all people.

A **safe climate** allows existing and future generations, communities and ecosystems to survive and flourish. We know that the current climatic conditions are not safe for a huge range of species and are increasingly unsafe for millions of people.

A 1.5°C rise is not considered safe, and will not avoid dangerous climate change.³

To restore a safe climate we need a rapid transition to zero emissions across all sectors, as well as the drawdown of all the excess greenhouse gases in the air.

'Business as usual' and incremental or gradual improvements will not be enough.

The technical solutions needed to transition to a zero emissions economy and beyond have been identified by science and research. What is needed now is appropriate political action and rapid implementation of the solutions.



Local government role in the climate emergency response

Local governments are fundamental in the climate emergency response.⁴ Experience is showing that local government is the best place to start government commitment to climate emergency action across the world - with so many councils it has been possible to find communities that are keen to be early movers on the climate emergency. Innovation is also more likely to be initiated at the local government level, because with so much diversity at this level of government different approaches to responding to the climate emergency will emerge. Local governments are also in a good position to network and learn from each other.

A lot can be practically done at a local government level, and councils have a large role in eliminating emissions across their municipality.

Councils also have an enormous legacy and experience in educating and working with their community. Typically, people have much more interaction with a council than other levels of government.

It is a natural progression that local councils can not only provide services and support through a climate change lens, but can also assist with channelling their community's desire for advocacy to state and federal governments.

It is not sustainable, practical or effective enough for the responsibility to lie solely with local councils. State and federal government policy, legislation and funding will have the biggest impact on the climate emergency. At the state and national level, policy changes needed include transitioning to 100%

renewables; ending native deforestation; switching to electric or zero emissions transport; changes to agriculture; and minimum energy standards for buildings. We need a bipartisan approach to the climate emergency to enable the necessary scale and speed of action, such as that which was seen during the World War Two response.

In acknowledging the climate emergency, government authorities (no matter how small) should take responsibility for trying to engage the world in achieving the goal of restoring a safe climate. Since global action is needed, this means a council needs to act substantially via influence rather than via only what it can directly control.

Key processes in effective climate emergency response

Five Key Processes

PROCESS 1

Taking leadership: Declaring a climate emergency

By declaring or acknowledging the climate emergency, your council is recognising the catastrophic changes to the world's climate caused by human activity and resulting in a loss of a safe climate, which threatens all life on earth. Your council is also committing to tackling climate change, by taking urgent action at a scale and speed that will restore a safe climate.

Example:⁵

'That Council recognises that we are in a state of climate emergency that requires urgent action by all levels of government, including by local councils.'



PROCESS 2

Get your house in order: Embed climate emergency action in all council strategies, plans and actions

Council has many levers to reduce greenhouse gas emissions and begin drawing down excess greenhouse gas emissions.

After declaring a climate emergency your council should develop a Climate Emergency Plan. This should outline all actions your council will take to embed a climate emergency response into its operations.

Engagement and advocacy should be a fundamental part of the Climate Emergency Plan.

Actions should include (but not be limited to):

- Switching to 100% renewable energy
- Getting off fossil gas
- Implementing energy efficiency across all facilities/buildings
- Redrafting procurement policy and practices to ensure suppliers to council are using renewable energy and resource recovery
- Embed climate emergency thinking into strategic planning and update planning schemes
- Refocus transport priorities to drive the shift to fossil fuel free transport
- Create a circular economy aimed at zero waste
- Increase your urban forest and/or revegetation activities
- Community education and empowerment to take action
- Increase community resilience to climate change impacts.

Climate emergency action also needs to be embedded across all of council, and reflected in all policies and strategies of council.

Inwards engagement with all staff and units of council is essential, particularly ensuring education and empowerment of managers happens early on.

PROCESS 3

Mobilise and build the climate emergency mandate: Get your community active

The current political situation combined with the climate emergency itself can seem an overwhelming, insurmountable problem, so large that it is difficult to imagine how our individual actions can have effect. By working together we can find the solutions locally, nationally and globally.

Councils can support our communities to take action, through raising awareness about the climate emergency; providing targeted programs to make homes and businesses powered by renewable energy; or mobilising volunteers to spread the climate emergency message to neighbourhoods, families, and workplaces.

Councils can show the community how to become politically active to encourage and motivate state and federal governments to act. Some ways for communities to become politically active are to join a climate action group and contact their state and/or federal member of parliament.

PROCESS 4

Global movement building: Reach out to other councils

Since the first council climate emergency declaration in 2016, we now have two national governments, eight state-level governments and over 600 local governments having declared, and this is rising every week.

The climate emergency movement has gained a huge momentum in a very short time because councils and their communities have been reaching out to engage their peers across their state, nation and globally. The current experience shows that this is a highly effective way of building the movement, and the necessary base of a democratic mandate for climate emergency action.

We now need to act strategically and collaboratively to figure out the key challenge: how we can make an effective and meaningful response beyond the declaration.

You can follow who has declared a climate emergency here: <https://www.cedamia.org/global/>, and reach out to other councils to learn and share.

PROCESS 5

Upwards: Advocate to state and federal government

Councils cannot do the safe climate restoration work alone, and it is state, federal and global levels which will have the most powerful impact on the climate emergency. Collaborative campaigns - involving partners such as other councils, educational institutions, industry groups and community organisations - must advocate for effective action and significant changes to state, federal and international government policy, legislation and funding.



Key challenges for local governments

- The scale and speed required is not the pace government administrations usually move at.
- Moving 'beyond business as usual' when this is not yet reflected across society or at state or federal levels.
- Not having control of all the levers or mechanisms necessary to implement the required changes, and needing policy change at state and federal levels.
- Re-prioritising budgets and resources to address the climate emergency, whilst still needing to deliver essential services and maintaining community support.
- Gaining the community mandate and understanding for a massive prevention program before climate catastrophe is fully felt.
- Embedding the response across the administration, which will take time, education and resources.
- Working in uncharted territory where there is as yet no set plan for how to undertake an effective climate emergency response.

- 1 <http://www.bom.gov.au/state-of-the-climate/2016/>
- 2 Spratt, David (2018) "Beyond urgent: the science of climate warming as existential risk". Presentation to Darebin Climate Emergency Conference <https://www.youtube.com/watch?v=KaEfK-Ml14U>
- 3 Hansen, J., Sato, M., Kharecha, P., von Schuckmann, K., Beerling, D. J., Cao, J., Marcott, S., Masson-Delmotte, V., Prather, M. J., Rohling, E. J., Shkun, J., Smith, P., Laci, A., Russell, G., and Ruedy, R.: Young people's burden: requirement of negative CO2 emissions, Earth Syst. Dynam., 8, 577-616, <https://www.earth-syst-dynam.net/8/577/2017/>
- 4 <http://www.caceonline.org/>
- 5 <http://www.caceonline.org/motions-to-declare-a-climate-emergency.html>

CITY OF DAREBIN

274 Gower Street, Preston
PO Box 91, Preston, Vic 3072
T 8470 8888 F 8470 8877
E mailbox@darebin.vic.gov.au
darebin.vic.gov.au

National Relay Service relayservice.gov.au

If you are deaf, or have a hearing or speech impairment, contact us through the National Relay Service.

Speak your language T 8470 8470

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