



# Climate Change

## FACT SHEET

Climate change is a change in global climate patterns over many decades that has been caused by increasing levels of greenhouse gas emissions, primarily from the burning of fossil fuels like coal.

Climate change is a serious and complex issue, which presents challenges and opportunities for Tasmania.

### What's the difference between climate and weather?

Weather is measured over a short period of time, like your weekly forecast or monthly outlook, and climate tells us about atmospheric conditions over relatively long periods of time.

#### What are greenhouse gases (emissions)?

Greenhouse gases trap heat in the atmosphere and make the Earth warmer.

Those with the most significant impact on global warming are water vapour, carbon dioxide, methane and nitrous oxide. Other common greenhouse gases include ozone and chlorofluorocarbons.

Greenhouse gases are measured in tonnes (T) and mega-tonnes (a million metric tonnes) of carbon dioxide equivalent (Mt CO<sub>2</sub>-e) that groups all greenhouse gases together into a single measurement, based on how much global warming they may cause.

#### What are carbon sinks?

A carbon or emissions sink is a carbon storage reservoir, like a forest, which absorbs more carbon than it releases.

### Where does our information come from?

There is a range of scientific information available about the projected impacts of climate change at the local, national and international levels. The three main sources of information for Tasmania are:

- The [Climate Futures for Tasmania Project](#)<sup>1</sup>
- The [CSIRO / Bureau of Meteorology](#)<sup>2</sup>
- The [Intergovernmental Panel on Climate Change \(IPCC\)](#)<sup>3</sup>

### What are the projected climate change impacts for Tasmania?

The Climate Futures for Tasmania Project found that the following projected changes are likely by 2100. The projections are based on two of the emissions scenarios set by the IPCC. A scenario is a set of assumptions about future greenhouse gas emissions, land use, and other factors that influence climate change.

#### Temperature

Tasmanian temperatures are projected to rise by about 2.9 degrees Celsius by 2100 under the high emissions scenario, and about 1.6 degrees Celsius by 2100 under the low emissions scenario.

#### Frost

By 2100, it is projected that the incidence of frost will reduce by about half. For many areas in Tasmania, the period of frost risk is also projected to shorten from March-December to May-October.

<sup>1</sup> [www.acecrc.org.au/climate-futures-for-tasmania/](http://www.acecrc.org.au/climate-futures-for-tasmania/)

<sup>2</sup> [www.climatechangeinaustralia.gov.au/en/](http://www.climatechangeinaustralia.gov.au/en/)

<sup>3</sup> [www.ipcc.ch/](http://www.ipcc.ch/)



## Rainfall

There is no significant projected change to total annual rainfall for Tasmania under the two emissions scenarios.

However, significant changes are projected in the seasonal cycle. These include:

- increases of 20 to 30 per cent in summer and autumn rainfall along the East Coast; and
- on the West Coast, 15 per cent increases in winter and 18 per cent decreases in summer rainfall.

## Run-off

Run-off is excess water from rain or snow melt flowing over land.

Run-off is affected by changes to both rainfall and evapotranspiration (where water lost from the land surface is both evaporated, and transpired by plants). By 2100 it is projected that there will be a slight increase in the State's total amount of run-off.

However, run-off is projected to decrease markedly in Tasmania's central highlands, and increase in the important agricultural regions of the Derwent Valley and the Midlands.

## Other likely impacts for Tasmania

- An increase in heat waves
- Extreme rainfall events
- Rising sea levels
- River flooding in some catchments
- Drought in some parts of the State

## Where do Tasmania's emissions come from?

Tasmania's emissions per person are among the lowest of any reporting jurisdiction in the developed world. Tasmanians produce about -0.02 T CO<sub>2</sub>-e per person, per year.

## Energy

The energy sector is Tasmania's largest emitter. In 2015-16 emissions from the energy sector totalled 3.98 Mt CO<sub>2</sub>-e. This sector includes the sub-sectors:

- Energy industries;
- Manufacturing and construction; and
- Transport.

Transport is this sector's largest sub-sector emitter at 1.7 Mt CO<sub>2</sub>-e. Unlike other States and Territories, Tasmania's high proportion of renewable energy means the energy industries sub-sector makes a relatively small contribution of 0.48 Mt CO<sub>2</sub>-e to emissions in this sector.

## Industrial processes

The industrial sector includes emissions from mineral and metal processing industries, as well as the consumption of synthetic greenhouse gases used in refrigeration, air-conditioning, and electricity distribution. Emissions from this sector totalled 1.63 Mt CO<sub>2</sub>-e in 2015-16.

## Agriculture

In 2015-16, emissions from the agriculture sector totalled 2.09 Mt CO<sub>2</sub>-e. The majority of the sector's emissions come from the digestive processes of ruminant animals such as cows, sheep and goats which totalled 1.54 Mt CO<sub>2</sub>-e in 2015-16.

## Land use

The land use, land use change and forestry sector in Tasmania has changed from a significant source of greenhouse emissions to an emissions, or carbon, sink. In 1989-90, the sector was responsible for emissions of 10.8 Mt CO<sub>2</sub>-e, and in 2015-16 it was a carbon sink of -8.05 Mt CO<sub>2</sub>-e.

## Waste

The waste sector is only a minor contributor to Tasmania's total emissions. In 2015-16, emissions totalled 0.35 Mt CO<sub>2</sub>-e.



## What can you do?

There are many things you can do to reduce your carbon footprint and prepare for a changing climate.

### At home

#### *Energy efficiency*

Making your home more energy efficient will mean you use less electricity and/or gas to produce the same, or a higher, level of comfort and convenience. This can significantly reduce the amount of money you spend on power and will also reduce your carbon footprint.

Investing in energy saving and efficiency measures can also increase the resale value of your property. Some things you can consider in your home include:

- installing or topping up the insulation in the ceiling, underfloor and in the walls
- insulating your hot water cylinder and pipes
- installing double-glazed windows, or a window film that mimics double-glazing
- using curtains with thick pelmets above them will reduce the amount of heat lost through your windows
- blocking draughts around windows and doors
- consider the installation of solar panels and a solar hot water system to help reduce your household energy costs
- purchasing appliances with high star ratings
- changing your light bulbs to energy efficient LED globes
- waiting until you have a full load before using your washing machine, dryer or dishwasher and save on water and power
- instead of using the clothes dryer, hang your clothes to dry on a clothesline or clothes rack/airer.

#### *Reduce emissions from transport and travel*

Greenhouse gas emissions from the transport sector are increasing in Tasmania, and currently form nearly a quarter of the State's total greenhouse gas emissions.

- Instead of driving, take a walk or ride a bike to the shops and you can reduce your carbon footprint, save money on petrol, and the physical activity is good for your health.
- Use public transport.
- Drive smarter.
- Choose the smallest, most fuel-efficient vehicle that meets your everyday needs.
- Give friends or co-workers a lift. Car-pooling saves fuel, money and reduces greenhouse gas emissions. It can also ease congestion by reducing the number of cars on the road.
- Buying locally-made products not only supports the local economy, but also reduces the emissions generated by transporting goods from where they are produced to where they are consumed.
- Choose environmentally-friendly products wherever possible.

#### *Recycling and waste reduction*

The best way to reduce waste is to avoid buying things you don't need. Plan your shopping carefully and choose items with low or no packaging.

- Reduce your household waste by composting your green waste and kitchen scraps.
- Reduce your single-use plastic by taking your reusable bags to the supermarket, taking a reusable cup to get your takeaway coffee, and refusing plastic straws.



- Choose non-disposable items wherever possible, such as cloth instead of paper towels, reusable razors instead of disposable ones, or handkerchiefs instead of tissues.
- Recycle as much as possible to turn materials that are left over into new products.

### *Create a climate-ready home*

If you are renovating or building a new home, think about how you can adapt your home to minimise climate change impacts such as heatwave, flood and bushfire.

### **Communities**

Working together can make it easier to achieve your goals. You could consider:

- bulk purchasing solar panels or solar hot water for a group discount
- establishing a community garden to provide low-cost, healthy food and
- organising sustainable transport, like car-pooling or a 'walking bus', to take children to school.

### **Schools**

- Make an energy saving plan, detailing things like turning lights off when not needed and regularly checking heating control settings.
- Install climate-friendly landscaping by choosing drought-tolerant plants.
- Consider a kitchen garden to teach students where food comes from.
- Use water wisely by installing water tanks and dual-flush toilets.
- Audit your school rubbish disposal to ensure your recyclables are being separated.
- Start a waste-free lunchbox campaign.
- Install solar panels.

- Encourage students to participate in energy saving and environmental activities.

### **Businesses**

You can cut your business operating costs by reducing energy use and using resources more efficiently.

- Think about setting targets to reduce energy which could be as simple as turning off lights, computers and screens at the end of the day, or installing energy efficient light bulbs.
- Save water by installing flow restrictors on taps and shower heads.
- Reduce waste by reusing waste paper or packaging and using mugs, glasses and crockery instead of plastic or paper.

There are many ways to adapt your business and prepare for the projected changes in Tasmania's climate.

- **Be informed** by connecting with peak industry bodies and checking climate change projections or planned burns for your area.
- **Be prepared** by making a plan for bushfire or flooding ensuring you have adequate insurance and a disaster recovery plan.
- **Take action** by diversifying your products or crops and considering an alternate power source or temporary locations in case one is cut off in a disaster.

Visit the Tasmanian Climate Change Office website for more information on what you can do: [www.climatechange.tas.gov.au](http://www.climatechange.tas.gov.au).