Northern Territory Climate Change Response: Towards 2050



Northern Territory Climate Change Response: Towards 2050 Office of Climate Change, Department of Environment and Natural Resources Northern Territory Government July 2020

Minister's foreword

Our changing climate is a critically significant and defining issue for our generation.

The Northern Territory Government acknowledges the importance of responding to this challenge in a timely and proportionate way.

Warming of the climate system is unequivocal. We need to reduce our greenhouse gas emissions and we need to take action against the impacts of climate change.

The COVID-19 pandemic illustrated the importance of coming together as a community, working alongside experts to inform our response and partnering with community stakeholders to build our path forward. The decisions that were made enabled the Territory to be the safest place in Australia.

Our response to climate change is no different – working together as a community to respond to and manage risk, transform the way we do business, embrace new opportunities and take bold decisions.

Our response to climate change is based upon the acknowledgement that it is not just an environmental issue. If we are not ready, a changing climate will impact water security, health and well-being, major infrastructure, key industries, jobs and our natural ecosystems. The Climate Change Response Policy Framework provides the long-term vision required to protect the Territory and capitalise on the economic opportunities. It is a whole of Government response, ensuring climate policy is integrated across the full breadth of Government responsibility and services. It recognises the importance of all Territorians working together to make the changes that can reduce our emissions, in adopting the new technologies and low carbon industries, in the research and knowledge-building, in acknowledging and learning from Aboriginal Territorians in providing stewardship of the Territory. We will all benefit from taking action.

Our response to climate change also brings new opportunities and benefits for Territorians. The transition to a low-carbon economy underpinned by technology, will not only get us to a netzero emissions future but will also create new jobs and industries, and maintain the Territory's competitiveness.

This framework builds on work already underway and sets the pathway to guide the Territory's response to climate change. However, it is clear from our conversation with the community and with business that people want action. The Territory Government will work with stakeholders and collaborate with the private sector to make sure the ambitious objectives of the Climate Change Response are realised. Government is committed to moving the Territory to a low carbon economy.

The Hon. Eva Lawler MLA

Minister for Climate Change

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1. Climate Change: A challenge and an opportunity

Climate change is a critical challenge for all the world's nations and peoples. The international Paris Agreement set a science-based target to limit global warming to less than 2°C and pursue efforts to limit warming to 1.5°C. The United Nations' Intergovernmental Panel on Climate Change (IPCC) has determined that to stabilise the climate system within a safe threshold for communities, natural systems and the economy, a transition to a low-carbon economy is essential. The longer this is delayed, the costlier and more difficult it will be.

A well-managed transition to a lowcarbon economy can reduce exposure to economic risk, reduce costs, and unlock new opportunities. This aligns with the advice from Australia's leading economic and financial organisations, including the Reserve Bank of Australia (RBA), and is recognised and supported by many businesses and industries.

The Territory Government is committed to taking action on climate change to maximise the economic, social and environmental wellbeing of Territorians. It is essential that the opportunities and benefits of a climate change response are realised while acting to build resilience and minimise the impacts of a changing climate. These benefits can include new industries and local jobs, the diversification and strengthening of our economy, improved health, social, and cultural outcomes, and environmental benefits. Strengthening our economy will provide the confidence and capacity to put in place measures to address the impacts of a changing climate. Investing in measures that build the Territory's resilience is also an investment in maintaining a strong economy.

The Climate Change Response sets a framework for long-term action by the Territory Government, in partnership with all Territorians. In setting policy directions, it is important to understand the unique context of the Territory and how this affects our response.



The Territory Government is committed to taking action on climate change to maximise the economic, social and environmental wellbeing of Territorians.

2. The Territory context

The Territory covers 17% of Australia's land mass and stretches from the tropical Top End to the arid centre of Australia. It is Australia's most sparsely populated jurisdiction, with only 1% of the total population. Almost 60% of Territorians live in the Greater Darwin area, with a further 18% in the main population centres of Katherine, Tennant Creek and Alice Springs. Approximately 30% of Territorians are Aboriginal, with most residing in remote communities.

The Territory has a small economy underpinned by its abundant natural resources – approximately 30% of the Territory's gross state product is generated from our primary industry, mining and tourism sectors. The economy is heavily influenced by external economic conditions, such as commodity prices, exchange rates and population movements.

These differences influence how we respond to climate change. The Territory Government is central to providing the policy and regulatory environments to support our response to climate change, however we are also reliant on private sector partnerships and investment in realising the objectives of the Response. The demography of the Territory means Aboriginal people are key in the development and delivery of climate change action, recognising both the vulnerabilities of our remote communities to the impacts of climate change, as well as the economic opportunities that a transition to a low carbon future can bring.

Our climate

Climate change impacts are already being experienced across the Territory. Over the last century, annual average temperatures across the Territory have increased by 0.5°C in the west and 2.2°C in the south-east. There has been a significant increase in the number of extremely hot days, in both the Top End and central Australia. Climate modelling indicates that these trends will continue.

While average rainfall has remained fairly consistent in the southern parts of the Territory, it has increased in the Top End. Climate models are unclear about trends in annual rainfall, but the intensity of heavy rainfall events is expected to increase across the Territory. At the same time, droughts are likely to be more severe due to increasing temperatures, and more extreme fire behaviour is expected. Tropical cyclones are expected to become less frequent but be more intense.

Sea levels are rising, with the Territory coasts experiencing some of the highest rises in the world. Levels are projected to rise by up to 0.17m by 2030, and by up to 0.85m by 2090, compared to levels across the 1986 – 2005 period. Higher sea surface temperatures and ocean acidification pose significant threats to the marine environment.



population

%

Our emissions

Global warming is caused by increased atmospheric concentrations of a group of gases known as greenhouse gases. There are many different sources of greenhouse gases and it is important to understand these sources, in order to develop effective management strategies. Greenhouse gas emissions are measured using a standard called a 'carbon dioxide equivalent' or CO₂-e.

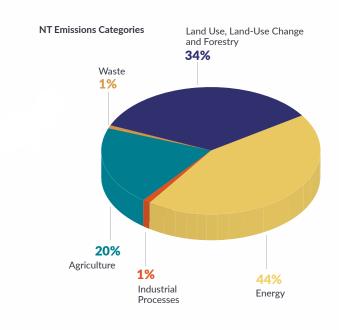
The Territory has a unique emissions profile that reflects its environment and economic context. In 2018, land-based activities were the highest source of Territory emissions. Collectively, Land Use, Land-Use Change and Forestry (LULUCF) i.e. burning of forest land and grasslands, land clearing and the sequestration of CO₂ from land and forests (at 34%) and agriculture (at 20%) accounted for 54% of our emissions. Enteric fermentation, the production of methane through the digestive processes of cattle and other ruminants, was responsible for around 80% of the Territory's agricultural emissions.

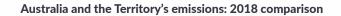
Energy related emissions, including energy production and use, and fugitive emissions, accounted for 44% of Territory emissions, of which 31% was related to the production of electricity.

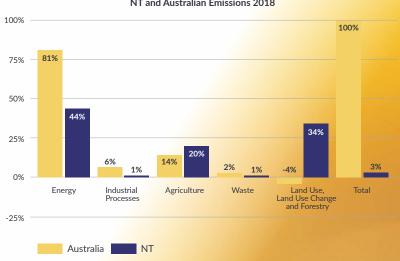
In comparison, energy-related emissions account for over 80% of Australia-wide emissions, and agriculture 14%. The Land Use sector accounts for just 4% of total national emissions, and in some States has a negative contribution, because activities such as forestry result in a net storage of carbon. In the Territory, less than 1% of native vegetation has been cleared, limiting opportunities for carbon sequestration.

Our strategies to reduce emissions must therefore be matched to our emissions profile, and how that profile is projected to change in the future.

The Territory's emissions by sector







NT and Australian Emissions 2018

3. The climate response policy framework

The aim of this framework is to maximise the economic, social and environmental well-being of Territorians while responding proactively to the risks and opportunities of climate change.

The policy framework established in this Response is built around four key objectives:

1. Net zero emissions by 2050

Our objective is to progressively reduce net greenhouse gas emissions in the Territory, with the goal of achieving net zero emissions by 2050. This long-term objective sets expectations about future emissions constraints to help our industries and businesses plan and adapt. Aiming to achieve net zero emissions aligns the Territory with all other States and Territories across Australia.

3. Opportunities from a low carbon future

Our objective is to unlock opportunities for Territorians, industries and businesses in the transition to a low carbon future. The Territory has a natural advantage to be able to capitalise on low carbon opportunities with its abundance of natural assets and resources. By acting early, the Territory will position itself to make the most of the opportunities that are presented as the world transitions to a low carbon future.

2. A resilient Territory

Our objective is to build resilience to climate change in the most vulnerable aspects of the Territory's communities, economy and environment. Building a resilient Territory means understanding the likely future effects of climate change, putting in place measures to minimise negative impacts, and identifying opportunities presented by adaptation measures that may bring an economic advantage for the Territory.

4. Inform and involve all Territorians

An effective response to climate change requires action from industry, business, community and individuals. Our objective is that all Territorians will understand the potential impacts from climate change, know what they can do to contribute to the response, and take advantage of any opportunities it provides.

4. Climate response actions

The Northern Territory Climate Change Response: Towards 2050 sets out the broad policy framework for action on climate change over the long term. Further work will be undertaken to map out detailed strategies and actions under each of the objectives. Some priority initiatives and opportunities are described below.

Net zero emissions

The objective of net zero emissions will be achieved by strategies and actions aimed at reducing emissions, investing in renewable energy and supporting opportunities for carbon sequestration and storage.

The Territory Government will provide a policy and regulatory environment that incentivises and facilitates business and industry investment in reducing emissions.

The Territory Government is also committed to reducing emissions and transition to more sustainable energy sources. This is reflected in the target of 50% renewable energy for electricity consumed from grid-connected installations by 2030 as part of its 'Roadmap to Renewables' (the renewable energy target).

Investing in renewable energy

By 2030, 50% of total electricity used by consumers connected to the Territory's power grids will be supplied through renewable energy sources.

As part of supporting increased electricity generation through renewable sources, the Territory Government is investing in battery storage systems to improve network stability and energy security. These investments range from grants to households and businesses to install local battery systems, to major investments across the public power grids. It is estimated that investing in battery storage systems for the Territory's power grids will reduce the Territory's annual carbon dioxide emissions by approximately 50,000 tonnes.

The Territory Government is working to bring solar energy generation and battery storage to remote Territory communities. This program aims to deliver 70% of energy requirements for remote communities through renewable energy, reducing the Territory's annual emissions by approximately 250,000 tonnes CO_2 -e.



Strategies that respond to the Territory's unique emissions profile will be developed, beyond the opportunities provided by a greater uptake of renewable energy. There are a number of potential opportunities for the Territory to address emissions from the Land Use, Land-Use Change and Forestry (LULUCF) and agriculture sectors, including working with the pastoral industry and researchers to reduce methane emissions from cattle. The Territory Government will encourage broader participation of land owners in Australia's carbon market, through support for the development of new reduction and sequestration methodologies, implementation of a greenhouse gas offsets policy and the production of carbon credits and greenhouse gas abatement opportunities. Expectations for best practice emissions management from major emitters will be established in policy.

The Territory Government will also work with the Australian Government and other Australian jurisdictions to ensure complementary action on emissions reduction and remove any barriers from inconsistent legislative or policy approaches.

Promoting energy efficiency

Being more energy efficient – using less energy to achieve the same outcomes – is one of the easiest ways for Territorians to contribute to reducing the Territory's emissions. Energy efficiency can be as simple as turning off the lights when you leave a room and replacing less energy efficient lightbulbs and appliances with more energy efficient ones.

The Territory Government will continue to support and promote energy efficiency across residential, commercial, government and industrial sectors. It provides grants to assist businesses to reduce energy use and improve energy practices, and regularly reviews its policy settings to ensure appropriate energy efficiency requirements are adopted in the town planning and building sectors.

Supporting the transition to electric vehicles

Increasing the use of electric vehicles in the Territory has the potential to significantly reduce emissions from the transport sector.

The Territory Government will continue to support and promote the use of electric vehicles in the Territory.

There is opportunity to build on the successful autonomous electric vehicle trials at the Darwin Waterfront Precinct, expand the use of electric vehicles by the public sector as well as ensure the right infrastructure is in place to support increased private electric vehicle use associated with advances in electric vehicle technology.



A resilient Territory

Building a resilient Territory is dependent upon our understanding and anticipation of climate change impacts across the Territory. We know that vulnerable Territorians, particularly Aboriginal Territorians living in remote areas, will be disproportionately impacted by climate change with impacts affecting health and well-being as well as livelihoods. Based on the best expertise and most up-todate information available, the Territory can prioritise, invest and take action where it is most effective. The Territory Government will continue to partner and work with industry and research institutes to investigate and apply response measures aimed at buffering the effects of climate change on how business and industries operate.

Working with experts also allows the Territory Government to better adapt the services it provides – protecting its investment in infrastructure provision as well as meeting the health and safety needs of Territorians. The Territory Government is key in ensuring the Territory is prepared for extreme events and the impacts of a changing climate, particularly in respect to our ability to live day-to-day and participate in the economic, cultural and social opportunities of our urban, regional and remote settings. Resilience and adaptation measures will be developed with local councils, regional organisations and community groups to ensure they are tailored to the Territory circumstance.

Actions that build resilience in the natural ecosystems of the Territory, such as reducing the impacts of weeds and feral animals, will continue to be supported. The Territory Government will work with research institutions to understand which ecosystems and ecological processes are most vulnerable, and develop adaptation strategies to minimise climate change impacts where possible.

Improving our urban design

The Territory Government has partnered with the CSIRO, the Australian Government and the City of Darwin to establish the Darwin Living Lab. This 10-year initiative aims to identify measurable improvements in the city's liveability, sustainability and resilience through testing and evaluating heat mitigation measures. It will inform tropical urban design for Darwin and other tropical centres.

The findings of the Alice Springs Heat Mitigation Study are being used to inform cooling and greening techniques throughout the town, including strategic shade structures and native tree plantings in the central business district to create cooler pedestrian pathways.

The Territory Government is also working with the NT Planning Commission to guide how the Territory's planning system responds to the climate change challenge. This may include the development of building design guidelines for the tropical and arid environments.



Supporting land managers to adapt to climate change

The Territory's large land mass and relatively uncleared estate provides opportunities for land managers to improve agricultural practices, reduce greenhouse gas emissions of methane and nitrous oxide, and find opportunities to store carbon in vegetation and landscapes.

The Territory Government provides expert professional and technical advice, and extension services to large land users about on-ground land management activities to manage climate change risks while enhancing environmental and economic productivity. It provides support to Aboriginal Rangers to continue to protect and enhance their country's resilience through its policy settings, grants and other land management programs.

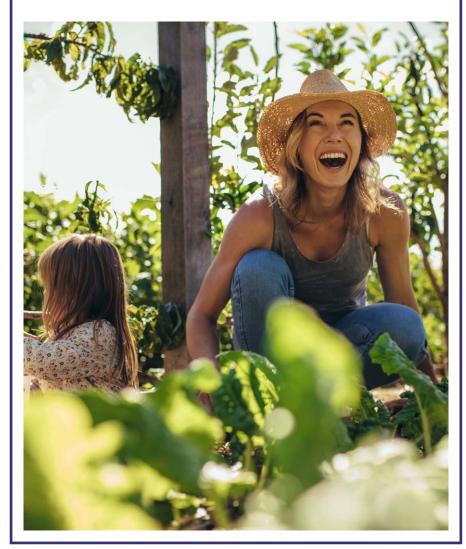
The Territory Government collaborates with researchers and industry representatives to identify and address risks to our agricultural, horticulture, fisheries and biosecurity industries as these adjust to climate change. These programs assist in directing investment and research towards developing and breeding more heat and drought resistant plants and crops, and ensuring ongoing sustainable harvest rates based on seasonal variations and breeding success.

Responding to risks from heat and extreme weather

The risks to Territorians from heat and extreme weather events will increase as our climate changes. Our most vulnerable Territorian's are likely to be most impacted.

The Territory Government is working with researchers and experts to examine the effects of climate change on the health of the community, and to identify strategies to mitigate the health impacts of climate change on our communities and health services. This work includes examining the impacts of heat on work productivity and identifying opportunities to adjust traditional working approaches to ensure the health and wellbeing of workers operating in high risk or labour intensive activities are protected and maintained.

The Territory Government will also ensure public housing policies and strategies incorporate green building design into new social housing. Opportunities to incorporate passive cooling approaches in remote locations will be utilised.



Unlocking opportunities

Low-carbon economic growth is underpinned by the growth of a renewable energy industry in the Territory. With one of the best solar resources in the world and a skilled workforce with experience delivering major infrastructure projects, a low carbon future means new employment opportunities and continued economic development.

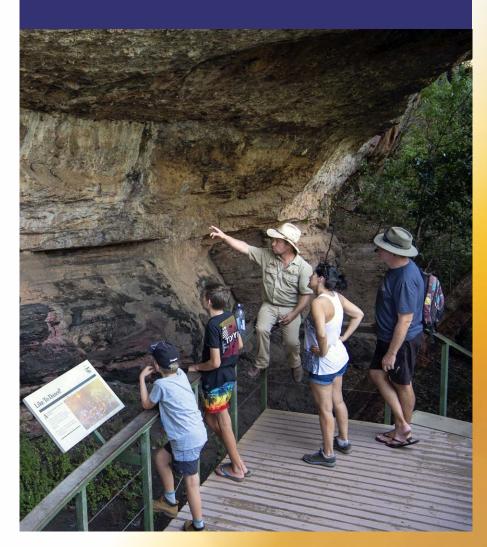
Solar energy is the cheapest form of electricity generation. Facilitating the growth of low cost renewable energy facilitates the growth of low carbon industries in the Territory, such as electrified transportation, green hydrogen production and export, as well as electrified manufacturing and processing plants. Public and private partnerships will be pursued to encourage investment in low carbon technologies and industries in the Territory.

Existing low carbon industries have demonstrated the economic, cultural and environmental opportunities available to Aboriginal communities through land and fire management services, and the establishment of the carbon industry. Growing this industry will support the creation of additional meaningful job opportunities in some of the remotest parts of the Territory. Remote communities will also be able to participate in and share the revenues from renewable energy systems located on Aboriginal-owned land.

Making the best use of our natural assets

The Territory has many outstanding natural assets – from expansive natural environments to minerals that are crucial to innovation and engineering in high technology, renewable energy products, batteries and other products.

The Territory Government will continue to work with the tourism industry to grow the number of tourism products and invest in niche markets targeting ecotourism, while ensuring tourism infrastructure projects build seasonality and climate change variances into their long term resilience and sustainability. To ensure that the Territory's resources are used for the economic benefit of the Territory and provide the foundations to support a low carbon economy, the Territory Government will continue to support resource industries. Greater use of renewable energy to power mining and processing will be encouraged to assist in reducing emissions.



Our solar resources and our proximity to domestic and international markets seeking renewable energy place the Territory in a key position to export renewable energy. The digital economy powered by renewables represents another international market demand available to the Territory.

The increasing production of renewable technologies and batteries is expected to increase demand for minerals, including lithium. Processing these minerals in the Northern Territory, powered by renewable energy, provides further export opportunity.

Building a low carbon industry base using renewable energy sources allows the Territory to promote itself as a renewables innovation centre.

Building our manufacturing and export industries

The Territory has the capacity to generate more solar energy than it requires. This opportunity can be harnessed to deliver net zero emission and low cost electricity to major industrial consumers, establishing a critical global competitive advantage.

With existing energy export infrastructure, close proximity to economies demanding renewable energy and an energy corridor for domestic and international export, the Territory is well placed for the development and export of renewable energy in the Asia-Pacific region. Upgrading the Territory's fibre optic cable network will facilitate improved communication networks, attracting new investment, new industries and new jobs.

The Territory Government will work with investors to grow its manufacturing industry and facilitate a renewable energy export industry.



Growing our carbon farming industry

Carbon farming refers to the opportunity to reduce emissions associated with land management activities and promote carbon sequestration (or storage) from plants and soils. Carbon farming can increase land productivity and provide other important environmental co-benefits.

The Territory has been at the forefront of the Australian carbon farming industry through the development of innovative savannah burning programs to reduce carbon emissions associated with late season fires. The carbon farming industry delivers significant economic, social, cultural and environmental benefits to Aboriginal people across the Territory.

With its extensive pastoral estate and Aboriginal lands, the Territory has an opportunity to expand into other carbon farming opportunities, including those associated with human-induced regeneration (HIR) of native vegetation and herd management to reduce emissions from cattle. The Territory Government will work to improve awareness of the opportunities for carbon farming in the pastoral and agricultural industries and to address policy barriers to carbon farming in the Territory.

Inform and involve

Many Territorians want to know more about what they can do to address climate change and how to prepare for climate risks. The Territory Government is committed to developing strategies and actions that promote and support climateconscious behavioural change.

Business and industry have responsibilities to put in place measures to remain competitive in a low carbon future. Consumer behaviour and economic markets will favour investment in products and commodities with a small carbon footprint. Our policy and regulatory environment will support existing and new businesses and industries to invest in this transition.

To respond effectively to climate change requires the integration of climate policy across the full breadth of Territory Government responsibility. The Territory Government decision making and policy direction will be informed by the objectives described in this framework. The Territory Government will also lead by example and reduce its own emissions, such as from energy usage, transport choices and waste management processes.

Making sustainable choices

A changing climate means being mindful of how we use and manage our natural resources and the services they provide, particularly water. The Territory Government will use water monitoring data, real time weather observations and seasonal data, and projected climate change impacts to manage the sustainable use of water in the Territory.

The Territory Government is undertaking the planning required to ensure that water resources are managed in an ecologically sustainable manner. It is assessing the Territory's water challenges and demand pressures in order to identify appropriate responses to deliver water security. The Territory Government is committed to investing in innovative water infrastructure and supply solutions to ensure appropriate water quality and availability for Territorians.

The Territory Government has also invested in a range of programs designed to reduce water use and improve water efficiency. Territorians can assist by turning off taps, fixing leaks, and investing in water tanks and water reuse systems.

The Territory Government supports energy efficiency initiatives provided by public, private and community sectors to assist businesses and residents across the Territory make sustainable choices.

Understanding the risks

To prepare for climate change we will access the most up to date information and projections of change and impact. The Territory Government will work with business and community groups to identify the key risks to different sectors from a changing climate and facilitate appropriate responses. It will undertake risks assessments for Government assets, critical infrastructure and services, and prioritise actions for response. The Territory Government will provide a climate information hub and resource centre for all Territorians to help them understand and respond to climate change impacts.

To ensure all of the Territory can contribute to the climate change conversation, and adapt and respond to its impacts, the Territory Government will develop and provide access to a range of culturally appropriate educational resources. This will include resources in Aboriginal languages where possible.

5. Delivering the response

This Climate Change Response establishes the objectives and policy pathways for the Territory to achieve net zero emissions, build resilience to the impacts of a changing climate and grasp the opportunities of a transition to a low carbon future.

Responding to climate change is a complex challenge, and this framework is the starting point in a transition that will take decades. The Territory Government will develop a series of time-bound action plans to articulate the key strategies and priority actions the Territory Government will implement to help deliver on the objectives of this framework. The first of these plans will ensure that the Territory Government builds the foundations required for long-term action on climate change in the Territory.

A culture of continual improvement will ensure that plans are responsive to new scientific information, national and international policy settings, advances in technology and new emissions reduction opportunities.

The Territory Government will be accountable for its delivery of the objectives of this Climate Change Response by reporting annually to the Legislative Assembly.

This Response will be reviewed in 2025.

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