

RIVERS TO REEF CLIMATE RESILIENCE ALLIANCE ACTION PLAN



FNQ Regional
Organisation
of Councils



The Rivers to Reef Climate Resilient Alliance of Cairns Regional Council, Mareeba Shire Council, Tablelands Regional Council and Yarrabah Aboriginal Shire Council aims to collaboratively accelerate greenhouse gas emissions reduction, transition to a low carbon economy and build resilience to climate risks. Facilitated by the Far North Queensland Regional Organisation of Councils (FNQROC) thanks to funding from the Queensland Government, the pilot project is part of the Queensland Climate Resilient Councils program, delivered by Local Government Association Queensland.

Collaborating for our region

Our councils encompass diverse multicultural and Indigenous communities, with land uses varying from productive agriculture to urban centres, generating a combined Gross Regional Product over \$13 billion. Our landscapes range from savannahs to low-lying subcoastal ranges but all interface with the Wet Tropics World Heritage Area and are connected by a vast system of wetlands which flow to the Great Barrier Reef. Climate change is recognised as the greatest threat to these renowned natural assets and the environment which underpins our economies. As Reef Guardian councils and communities rich in traditional custodianship of this land and sea Country, this Alliance strengthens our stewardship for a resilient region. We seek to build on the work of the Queensland Government, Federal Government, our Local Disaster Management Groups and the many community members, businesses and industry leaders harnessing opportunities in the global shift to a low carbon future.

Where are we now?



Cairns Regional Council



Mareeba Shire Council



Tablelands Regional Council



Yarrabah Aboriginal Shire Council

- 3MW of solar, saving \$600,000 p/a with a 49% reduction of corporate emissions (on 07/08 levels).
- Climate Change Strategy 2030, Net Zero Emissions and 100% renewable energy corporate targets
- Coastal Hazards Adaptation Strategy
- Smart Green Economy strategic planning

Ground mount solar at a Wastewater Treatment plant, photo courtesy of CRC

- 683KW solar on 9 major facilities, reducing electricity from the grid by 40% and saving \$125,000 p/a
- Climate Resilience Policy
- Sustainability and Environmental Protection Policy

Ground mount solar at a Wastewater Treatment plant, photo courtesy of MSC

- Active restoration and carbon offset activities as part of the Land Restoration Fund
- QLD Climate Risk Management Framework testing
- Draft Natural Assets Framework.

Restoration underway in Topaz, photo courtesy of TRC

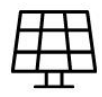
- Micro-grid feasibility study
- E-mobility strategy in development
- Solar street lighting
- Off road pathways to support active travel & e-mobility

Yarrabah E-mobility Day, photo courtesy of Energy Connect.

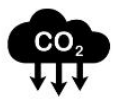
OUR PRIORITIES 1-2 YEARS

CLIMATE MITIGATION & TRANSITION

Support uptake of onsite solar PV



Energy & emissions monitoring



Unpack carbon & ecosystems market opportunities and roles for councils

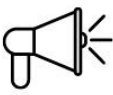


CLIMATE ADAPTATION & COMMUNITY OF PRACTICE

Support councils' climate risk governance arrangements



Build awareness of climate risks and inspire climate action



Cooling our built environment



Disaster management for natural assets

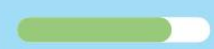


STAGING

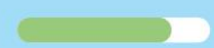
COMPLEXITY

RESOURCING

Act now



Act now



Act now



Ongoing



Act now



Act now



Act now



OUR PRIORITIES 2-5 YEARS

CLIMATE MITIGATION & TRANSITION

Grow Smart Green Economy opportunities



Efficient council managed public lighting



Renewable energy power purchase agreement options



Low carbon council procurement



Encourage low carbon, climate ready housing



Council electric fleet transition options



CLIMATE ADAPTATION & COMMUNITY OF PRACTICE

Heat event management responses



Regional climate risk strategy



Regional monitoring



Refined flood mapping



STAGING

Mid term

COMPLEXITY



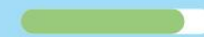
RESOURCING



Mid term



Mid term



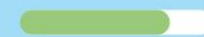
Mid term



Mid term



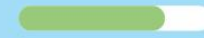
Funding dependent



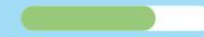
Mid term



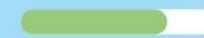
Funding dependent



Funding dependent



Funding dependent



Vision

We have an informed, empowered, prospering community and our ancient natural assets are healthy into the future.

Mission

We are an alliance of Far North Queensland councils working together to manage risks and develop opportunities for our region's climate resilient future. We share information, provide leadership and collaborate on transformational projects which reduce greenhouse gas emissions, enable the transition to a low carbon economy and assist the community to understand and adapt to a changing climate.

Objectives



Collaborate on projects across the themes of climate mitigation, adaptation and transition to leverage opportunities and successes, share learnings and reduce duplication to build capacity.



Grow a community of practice to share information and experiences to enhance awareness, skills and practices across councils, and provide consistent messages across our communities.



Improve governance and foster synergies across councils, demonstrate leadership and support advocacy to integrate climate action into wider regional directions.

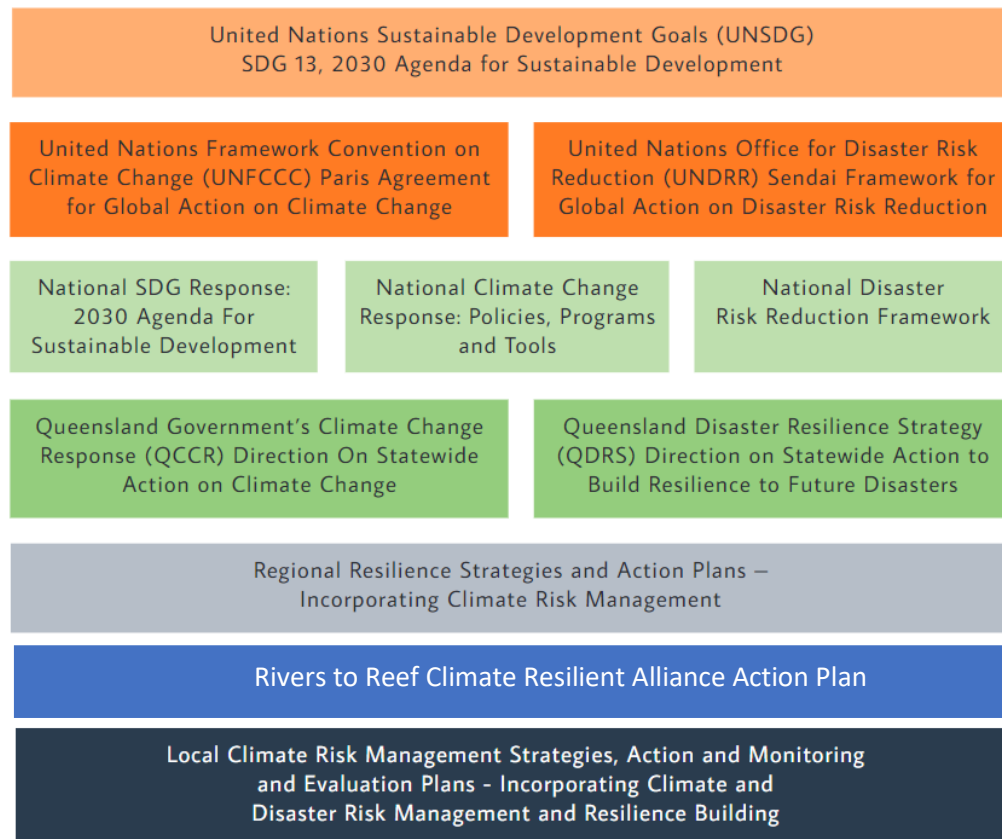


Identify and develop resourcing to enable climate action and ensure timely access to tools and best practices.

Guiding intent and framework

The Alliance is developing its Action Plan to support our councils' climate risk management and the sustainable development of our communities, economies and environment.

It is informed by government policies and industry/sector planning associated with climate risk, particularly the [Queensland Government's Climate Change Response](#) and endeavours to incorporate the Climate Risk Management Framework and Guideline for Queensland Local Government (Pilot Draft) where appropriate.



Overview of the hierarchy framing climate risk management - Climate Risk Management Framework for Queensland Local Government.

The role of local governments

Councils have legislative obligations to address climate risks and foster sustainable development to maintain effective public administration into the future. The *Local Government Act 2009* contains principles (S4(2)) which set out clear expectations whereby risks, such as climate risk are to be managed and addressed. Several pieces of Queensland legislation also specifically require local government to consider, plan for and respond to climate risk:

- *Planning Act 2016 and State Planning Policies*
- *Disaster Management Act 2003* and
- *Waste Reduction and Recycling Act 2011.*

Additionally, through the development of State Management Plans, other legislation may place specific climate change obligations on local government, in particular:

- *Water Act 2000* and
- *Coastal Protection and Management Act 1995.*

Local government also has agreed roles and responsibilities for climate change adaptation to:

- Facilitate resilience in the community and providing local information about risks.
- Work in partnership to manage risks and impacts.
- Contribute appropriate resources to prepare, prevent, respond and recover from climatic impacts.

As agreed by the then Council of Australian Governments' (COAG's) Select Council on Climate Change in 2012.

Action Plan approach

The Action Plan outlines actions for the 21/22 financial year pilot period and up to five years of recommended strategic projects or directions which relate to these initial projects. Member councils have already invested considerable expertise, resourcing and finances in initiatives which complement and inform the projects listed. Member councils voluntarily 'opt in' to these Alliance activities to accelerate further action, reduce duplication and achieve more than what one council could do alone.

The Plan approaches core climate action areas of:

- **Adaptation:** managing physical risks
- **Mitigation:** reducing greenhouse gas emissions
- **Transition:** managing systemic risks and unlocking opportunities in transition to a low carbon economy

Activities of the Alliance are supported by the integration of climate risk management into:

- Project and enterprise risk management
- Disaster management and preparedness
- Pest, fire management and environmental restoration
- Land use planning and urban design
- Infrastructure and resource planning, including water security
- Community and business engagement
- Advocacy and lobbying.



Action Plan development

Timeline



Work to develop this plan as part of the pilot included:

- review of Alliance models
- stocktake of councils' climate risk governance arrangements
- engagement plan
- Terms of Reference
- program logic session
- outlines of 35 project options and rationale
- prioritisation and strategy sessions with Technical Working Group and Executive.

Projects were developed through a process which considered:

- co-benefits for the community, environment, economy or wider region
- potential to support more than one area of climate action
- applicability, capacity or existing momentum in each council
- addressing risks associated with today's climate variability and extremes, as a starting point to tackling risks and opportunities associated with longer-term, more pronounced changes.

These were further refined using grant funding objectives to:

- bring forward action
- provide cost-saving outcomes
- achieve more than what one council could alone



Engagement activities leading up to this included:

- co-design meetings with Alliance Technical Working Group
- small group interviews with each council
- Councillor briefings
- workshops with Technical Working Group and Executive
- updates to FNQROC Board, feedback through FNQROC Technical Committees and awareness building with relevant networks.

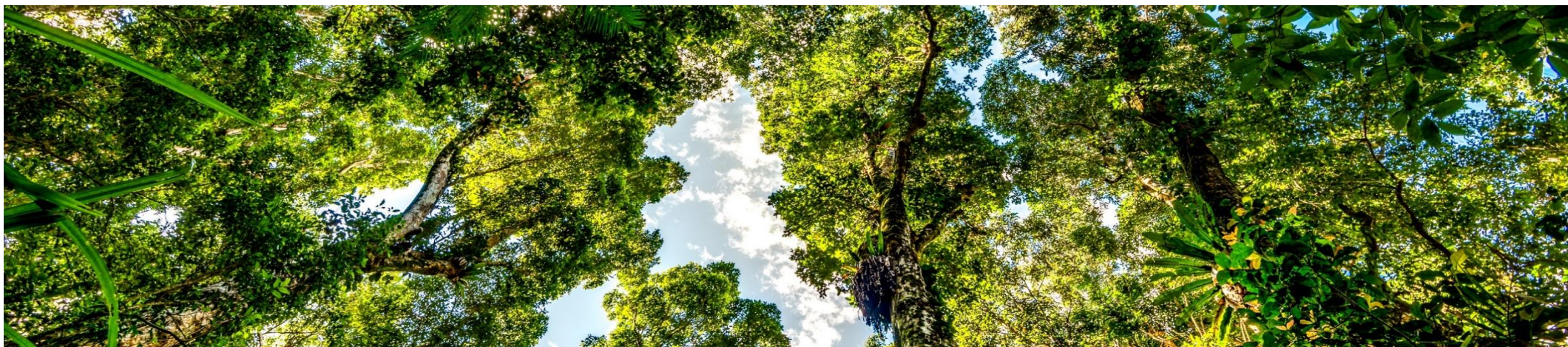
This will be followed by wider stakeholder engagement as per the Engagement Plan, with final recommendations to the FNQROC Board.



Action Plan 2021 -2026

No.	Action	Description	Timeframe	Cost	Complexity	Deliverable
MITIGATION						
<i>Reducing greenhouse gas emissions corporately and in the community</i>						
M.1	Energy and emissions monitoring	Determine a suitable platform to gather corporate energy and emissions data, undertake analysis, monitor financial return and recommend options for efficiencies and renewable energy as per the Emissions Reduction Hierarchy.	2021/22	Low	Medium	- Support review with technical staff, develop networks and provide recommendations to councils.
			2022/23	Low	Low	- Develop and implement standardised reporting and communications processes.
M.2	Onsite solar PV	Share technical expertise, business cases, project planning and procurement documentation to accelerate strategic use of solar PV on council facilities.	2021/22	Low	Low	- Resources shared amongst network of relevant technical staff.
			2021/22	Low	Medium	- Register of proposed projects to support the development of project plans and business cases within relevant councils.
M.3	Efficient public lighting	Share technical expertise, planning and business case resources to accelerate further replacements of council owned and managed public lighting to LED or solar, coinciding with Ergon-led bulk lamp replacement program.	2022/23	Low	Low	- Technical information session to support council officers.
			2022/23	Low	Low	- Technical guidance materials produced.
M.4	Power Purchase Agreements	Support council consideration of the opportunities, risks and benefits to procuring renewable energy from regional generators.	2022/23	Medium	Medium	- Opportunities paper delivered.
		Investigate potential joint purchasing arrangements and governance models, if pursued by councils.	2022-26	Medium	High	- Recommended governance model developed, if pursued by councils.
M.5	Low carbon procurement	Develop a low carbon procurement guide for key council products and services and provide recommendations for the FNQROC Regional Procurement Strategy.	2022/23	Low	Medium	- Guidance materials commenced.
M.6	Electric vehicle charging	Map proposed charging locations and collaborate with stakeholders to attract network-scale investment in charging infrastructure, building on the QLD Government's local implementation strategies.	2022/23	Low	Low	- Options paper for councils to enable private and public investment in EV charging infrastructure.
			2022 - 26	Low	Low	- Investment prospectus or materials produced.

		Support the incorporation of EV ready development into planning and approval processes, considering local law impacts.	2022/23	Low	Low	- Review of guidance materials.
			2022/23	Low	Medium	- Options paper to embed into planning scheme or policy updates.
M.7	Support community, industry and business emissions reduction	Actively extend the reach of energy management programs, such as CCIQEcoBiz through targeted promotion to lessees of council facilities, suppliers and local SMEs.	2022-25	Low	Low	- Marketing plan toolkit developed.
		Investigate and promote funding streams and tools which support emissions reduction and monitoring, including alternate funding mechanisms such as Environmental Upgrade Agreements (EUA).	2021 - 26	Low	Low	- Promote funding opportunities and tools.
M.8	Electric fleet transition	Liaise with fleet managers to investigate electric vehicle transition options and support business cases, including advice for charging infrastructure, management and local servicing.	2022-24	Medium	Medium	- Options paper and relevant guidelines produced.
M.9	Low carbon and climate ready housing	Develop design and retrofit guidelines for low emissions and climate resilient housing to support council delivery, industry engagement and FNQROC advocacy.	2022-24	Funding/ in-kind support dependant	Medium	- Investigate best practice guidelines and advice or develop if required.



No.	Action	Description	Timeframe	Cost	Complexity	Deliverable
TRANSITION						
<i>Managing risks and unlocking opportunities in the global shift to a low carbon economy</i>						
T.1	Smart Green Economy	Build partnerships and develop opportunities to position the region as a 'Smart Green Economy', providing input into the strategic planning study, joint advocacy and engagement efforts.	2021/22	Funding dependant	Medium	- Support participation of Alliance councils in regional strategic planning study.
T.2	Carbon and ecosystem services accounting	Develop a shared understanding of carbon, cultural and ecosystem service credit opportunities for councils, and options to enable these emerging markets. Share learnings of TRC role in supporting a Land Restoration Fund project and the Wet Tropics Restoration Alliance.	2021/22	Low	Low	- Briefing materials produced.
			2022/23			- Study on risks and benefits for council managed land and avenues to encourage industry-led projects.
		Develop a planning and accounting framework for local government owned and managed natural assets and share the learnings of the TRC Natural Assets Management Plan.	2021/22	Medium	Medium	- Finalise pilot, communicate outcomes.
			2022- 24	Medium	Medium	- Make framework available for interested councils.



No.	Action	Description	Timeframe	Cost	Complexity	Deliverable
ADAPTATION						
<i>Managing physical risks to strengthen our communities, the economy and environment</i>						
A.1	Regional climate risk strategy	Support the management of climate risks in LGAs at a catchment level, including on council assets and services, community and biodiversity, with attention to interdependent risks.	2021/22	Low	Low	- High level profile of risk themes to support councils' and community awareness.
		Incorporate learnings from: QRA Regional Resilience Strategies, the QCRC Risk Management Strategy pilot in TRC, emerging Climate Ready Biodiversity Conservation guidelines, Smart Green Economy planning study and the social resilience and climate justice work through the Cairns Alliance of Social Services.	2022-24	Funding dependant	High	- Regional Risk Management Strategy produced.
A.2	Community preparedness for heat events	Education and collaboration for place-based engagement to support preparedness for heat events. Initially targeting at risk communities (focussing on elderly, those in shared housing and/or limited access to affordable cooling) and then domestic animals and vulnerable fauna.	2021 -2023	Low	Low	- Engagement plan developed.
			2022/23	Low	Low	- Pilot event and culturally responsive communications delivered.
A.3	Heat event management responses	Liaise across Local Disaster Management Groups to share learnings from recent heat events, exercises and the Queensland State Heatwave Assessment to support regionally harmonised and locally tailored responses.	2022/23	Low	Low	- Workshop delivered with LDMGs and relevant stakeholders.
		Develop low-cost processes and identify trigger points for councils and LDMGs to compliment QLD Health's management, such as cool refuges for the community, processes for councils' outdoor staff, its sports and events, domestic animal management, affected livestock and wildlife.	2022/23	Low	Low	- Recommendations for heat event management responses delivered.
A.4	Cooling our built environment	Expand on and develop vegetation and urban design guidelines or standards to support passive cooling, shading, species selection (and maintenance), white roofs or streets to reduce urban heat island effects.	2021/22	Low	Low	- Share resources and compile initial investigations.
		Incorporate experiences from the Tropical Urbanism planning policy and research partnerships monitoring heat and humidity in CRC.	2022/23	Funding dependant	Medium	- Cooling vegetation and urban design options.

A.5	Connect climate refugia	Perform gap analysis of available mapping and seek planning advice to protect and connect available climate refugia at a landscape scale across LGAs to support the changing range of habitat for vulnerable terrestrial species.	2022/23	Low	Medium	- Discussion paper for councils to inform strategic planning reviews.
A.6	Disaster management responses for natural assets	Coordinate disaster response planning for natural assets to address vulnerable species and biosecurity risks through FNQROC Codes of Practice in conjunction with the FNQROC Natural Assets Management Advisory Committee.	2021/22	Low	Medium	- Workshop with LDMGs, QPWS and WTMA with a view to incorporate Code of Practice into Local Disaster Management Plans.
A.7	Regional monitoring	Monitor coastal changes in high-risk areas for timely identification of trigger points to implement the Coastal Hazard Adaptation Strategies in YASC & CRC.	2022/23	Funding Dependent	Medium	- Engagement and study of fit for purpose monitoring methods. - Recommendations for councils to support monitoring, including participatory methods (citizen science) and co-design and delivery options with Land and Sea Rangers.
		Monitor changes in climate vulnerable indicator species across LGA boundaries.	2022-24	Funding Dependent	Medium	
A.8	Flood mapping	Enable local risk-based land use and disaster management planning into future, including for coincident events (e.g. coastal hazards), drawing on learnings from the CRC review.	2021/22	Low	Low	- Engage with stakeholders to determine local fit for purpose mapping needs.
			2022-24	Medium	Medium	- Investigate options to integrate mapping in relevant climate risk initiatives, including coastal hazard adaptation strategies.
			2022-24	Funding dependant	High	- Deliver targeted mapping for councils in the Barron River catchment and Yarrabah Aboriginal Shire, with consideration for at risk populations.



No.	Action	Description	Timeframe	Cost	Complexity	Deliverable
COMMUNITY OF PRACTICE						
<i>Working together for efficient and effective local governments into the future.</i>						
G.1	Support governance and capacity to manage climate risks	Deliver education and seek direction from senior management and councillors to foster leadership, effective governance on climate risks and a proactive organisational culture which values continued learning.	2021/22 -2026	Low	Low	<ul style="list-style-type: none"> - Councillor and senior management workshops and briefings to improve awareness, including joint sessions across LGAs, with inspiration from other leading elected representatives. - Share climate risk management related policies.
		Develop an educational suite of resources and trial a climate risk readiness self-assessment tool for areas of council business.	2021/22	Low	Low	<ul style="list-style-type: none"> - Pilot resources through relevant FNQROC Technical Committees (Natural Assets & Animal Management in 2021/22).
G.2	Inspire and accelerate regional actions	Deliver a 'climate action' showcase of leading local solutions, connecting leaders from government, industry and community with researchers, practitioners and councils' own subject matter experts to build momentum and share learnings.	2021/22	Low & In-kind support dependant	Low	<ul style="list-style-type: none"> - Tailored education and awareness building (e.g. online campaign, site visits to council solar PV, regenerative agriculture sites, disaster centres, expert briefings).



ALLIANCE OPERATIONS

Activities	Description	Performance Indicator
Reporting	Develop an Annual Report, present achievements and future work.	<ul style="list-style-type: none"> - Annual report delivered and endorsed or noted by FNQROC Board. - Presentations to councils, senior managers and FNQROC Board on Alliance activities and outcomes.
Funding	Develop resources to support project delivery, proactively identify and facilitate grant opportunities, and support business cases for councils. Investigate sustainable funding models of the Alliance.	<ul style="list-style-type: none"> - Grants applied. - Pilot evaluation report and recommendations beyond pilot period.
Collaboration	Alliance co-design meetings, technical working group and executive meetings.	- Participation of staff and Councillors.
	Support targeted research on climate-related opportunities, risks and impacts in the region.	- Partnerships and support for research initiatives.
	Connect the Rivers to Reef Alliance to other climate alliances and networks.	- Forums and attendance of network events with other pilot and established Alliances nationally.
Capacity building	Share council resources, education and training opportunities between members.	- Online hub of resources and contacts established are regularly updated and promoted.
Support governance	Using the QCRC Climate Risk Governance Assessments and trialling the emerging self-assessment tool, undertake cross-council engagement to track progress and work towards 'intermediate' or 'advanced' scores.	- Annual stocktake of climate risk governance arrangements and recommendations to councils.
Communications	Build and maintain a profile of regional climate action and provide consistent messaging to build awareness of climate risks and opportunities.	- Communications toolkit developed and implemented.
Strategic engagement and advocacy	Represent member interests to relevant stakeholders and policy forums.	<ul style="list-style-type: none"> - Participate in relevant networks including FNQROC, Cities Power Partnership and LGAQ Climate Advisory Group. - Maintain stakeholder list, available for all members.
	Support advocacy and develop formal submissions through relevant consultation processes.	<ul style="list-style-type: none"> - Develop advocacy priorities. - Coordinate formal submissions, delivered by individual councils, through the Alliance, LGAQ or FNQROC as appropriate.

Strategic opportunities for climate action for Alliance councils

Alliance councils identified the following opportunities to progress their understanding of risks, and areas of influence across mitigation, transition and adaptation action areas:

- Building capacity for councils to manage climate risks and unlock opportunities into the future.
- Enabling investment in renewable energy to stimulate employment, innovation and offer a sustainable energy source for future generations, whilst minimising development impacts on existing valuable carbon sinks.
- Supporting the agricultural sector to adapt to climate change, enhance carbon storage, reduce emissions and exposure to transition risks in the global shift to a low carbon economy.
- Growing the Smart Green Economy in Far North Queensland and empower industry, business (and council suppliers) to manage greenhouse gas emissions.
- Supporting a regional approach for low carbon, affordable housing design and construction that is resilient to a changing climate, meets community needs and is culturally responsive.
- Undertaking integrated planning for public transport to connect our urban centres, maximise existing infrastructure like rail and move towards an electric bus fleet.
- Accelerating the transition to efficient LED or solar public lighting.
- Investing and enabling active travel infrastructure to connect our urban centres, improve accessibility and grow nature-based, and adventure tourism opportunities.

Delivery

Activities and detailed project plans will be developed, progressed and implemented by the Alliance in collaboration with stakeholders, as coordinated by FNQROC in conjunction with the Technical Working Group.

Finance

Attracting external funding to support the Action Plan is a core activity of the Alliance. Co-contributions will also be requested for agreed collaborative projects, funded through participating councils, potentially in conjunction with FNQROC and other stakeholders or external funding streams. This will be negotiated by council members and endorsed by the Alliance Executive in line with FNQROC Operational Guidelines and Charter.

Monitoring and evaluation

A monitoring and evaluation framework is currently in development and underpinned by a program logic process. Individual project plans will have their own monitoring and evaluation processes. This Action Plan should be reviewed annually, bringing forward items into the Annual Work Plan where agreed by members.

Appendix

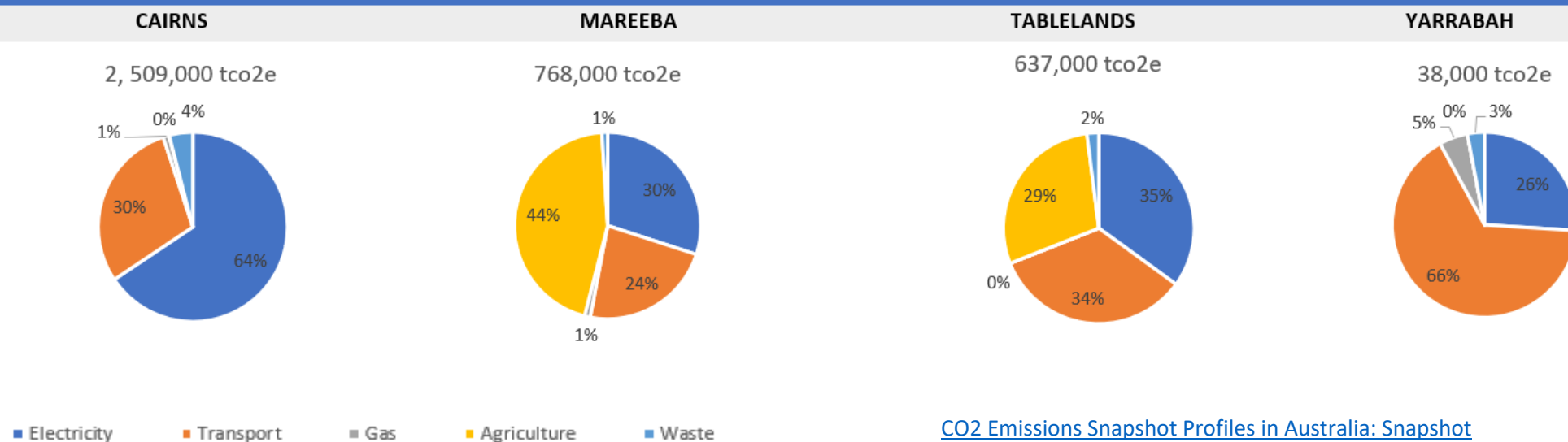
1. Government responses

The [Queensland Climate Action](#) website outlines initiatives which drive the State's future carbon constrained economy and support climate adaptation, including [Sector-based Adaptation Plans](#). Australia's climate change strategies and international commitments to reduce impacts on the climate can be found on the [Department of Industry, Science, Energy and Resources](#) website, with adaptation and climate science on the [Department of Agriculture, Water and the Environment](#) website.

- **Australia's emissions reduction target:** 26-28% below 2005 levels by 2030
- **Queensland's emissions reduction target:** 30% below 2005 levels by 2030
- **Queensland electricity generation:** 20% renewable sources in Nov 21 (target of 50% renewable energy by 2030).

2. Community emissions snapshot and indicators

LGA COMMUNITY-WIDE EMISSIONS SNAPSHOT 2018/19



[CO2 Emissions Snapshot Profiles in Australia: Snapshot](#)






January 2022:

- **Local small scale solar PV installations:** equivalent to 27-33% dwellings in Alliance councils.
- **Electric vehicles:** 23 private and public charging stations and 2,210 electric and hybrid electric vehicles registered across Alliance councils.





3. Regional climate risks: at a glance

Our region is likely to see an increase in the severity and/ or frequency of climate hazards that have 'always been here' but we will also experience hazards in different ways, in new areas and most likely with unforeseen impacts. As a general guide, risks relating to physical climate changes and the transition to a carbon constrained economy are described below:

PHYSICAL HAZARDS - RISK EXAMPLES

Changes in climate	Community	Natural Environment	Economy	Council
 Higher temperatures, frequency of hot days and nights, heatwaves	<ul style="list-style-type: none"> - Increased demand for cooling & associated costs. - Heat stress risks: babies and young people, elderly, those in poorly designed homes and renters, outdoor workers, pedestrians. Reduced air quality and mental health impacts. - Impacts on outdoor sports and events. 	<ul style="list-style-type: none"> - Mortality events, potential extinction of vulnerable species - Changes in biological processes (e.g., reproduction) - Reduced habitat ranges - Increased fuel loads and bushfire risk - Favourable conditions for pests and diseases 	<ul style="list-style-type: none"> - Reduced visitor appeal for districts with minimal cooling and shading due to urban heat island effect - Thermal stress for livestock - Increased need for irrigation due to evaporation - Potential electricity and logistical interruptions (buckling of rail lines, equipment failure) 	<ul style="list-style-type: none"> - Faster deterioration of concrete structures, bitumen, landscaping, requiring increased maintenance or early asset retirement/ upgrade - WHS implications for outdoor staff - Increased use of aquatic facilities, cooling
 Increased bushfire potential (length and severity)	<ul style="list-style-type: none"> - Safety and air quality risks to people and domestic animals - Damage and loss of homes and property 	<ul style="list-style-type: none"> - Ecological change - Challenges to minimise environmental harm in planned burns 	<ul style="list-style-type: none"> - Increased biosecurity risk - Disruption to business and supply chains - Loss of products, crops and livestock 	<ul style="list-style-type: none"> - Pressures on disaster management resources - Damage to assets, land reserves - Reduced windows for planned burns and new areas to manage
 Rainfall variability and more intense downpours	<ul style="list-style-type: none"> - Localised - large flooding events - Damage to private property, building vulnerability exposed over time (e.g., mould, foundations) - Disruption to water services 	<ul style="list-style-type: none"> - Large volumes of flow carry impacts of poor catchment practices through GBR catchment, cause erosion and spread pests 	<ul style="list-style-type: none"> - Disruption to operations, construction, supply chains, logistics and potential lost revenue - Damage to crops and livestock 	<ul style="list-style-type: none"> - Pressure on stormwater infrastructure, potential exposure to liability claims where damage is due to failure - Pressures on disaster management resources and disruption to services - Costs of upgrading or relocating assets outside of hazard areas, updating mapping
 Fewer but more intense cyclones	<ul style="list-style-type: none"> - Damage to private property, public safety, disruption to services, cultural sites 	<ul style="list-style-type: none"> - Direct impact on natural assets - Biosecurity risks - Damage to sand dunes and mangroves 	<ul style="list-style-type: none"> - Disruption to business and supply chains - Loss of products, crops and livestock 	<ul style="list-style-type: none"> - Pressures on disaster management resources - Disruption to services, damage to assets
 Rising sea level, more frequent extremes, warmer and more acidic seas	<ul style="list-style-type: none"> - Risks to public safety - Damage to homes, contents, coastal infrastructure like boat ramps and services, cultural sites and beach access. 	<ul style="list-style-type: none"> - Marine heatwaves and coral bleaching - Calcification - Saltwater intrusion eroding barriers between oceans and freshwater habitats (favouring mangroves) 	<ul style="list-style-type: none"> - Changed productivity in affected locations (fisheries, aquaculture, agriculture e.g., sugarcane) 	<ul style="list-style-type: none"> - Increased frequency and depth of inundation for coastal infrastructure - Costs of upgrading or relocating assets outside of hazard zones, updating mapping in planning scheme

TRANSITION - RISK AND OPPORTUNITY EXAMPLES

Theme	Community	Natural Environment	Economy	Council
 Policy and legal	<ul style="list-style-type: none"> - Council rates contribute to avoidable legal fees, rather than community services. 	<ul style="list-style-type: none"> - Reduced greenhouse gas emissions - Improved monitoring of environmental outcomes 	<ul style="list-style-type: none"> - Potential carbon pricing and reporting obligations - Policy uncertainty and associated investment hesitancy - Emerging border adjustment tariffs placed on exports, reducing competitiveness of trade exposed sectors 	<ul style="list-style-type: none"> - Litigation exposure if risks are inadequately or incorrectly disclosed when exercising a range of statutory responsibilities - Potential carbon pricing and reporting obligations with change of government or policy
 Reputation	<ul style="list-style-type: none"> - Lifestyle changes and growing concerns for future generations. - Increasing expectations of governments in step with national and global progress. - Active community groups. 	<ul style="list-style-type: none"> - Growing interest and coverage in condition of ecosystem health, and environmental management – especially of World Heritage Areas, including UNESCO status listings. - Loss of amenity 	<ul style="list-style-type: none"> - Shift in customer attitudes - Uncertain market signals - Impacts on natural environment and tourist experiences may reduce appeal of destinations - Regional branding opportunities (e.g., Smart Green Economy), aligned skills base and enviable location to attract business investment. 	<ul style="list-style-type: none"> - Shift in residents, visitor, and industry expectations, e.g., to keep pace in reducing emissions, demonstrate leadership and prepare for change. - Unbudgeted financial impacts from physical hazards.
 Market Changes	<ul style="list-style-type: none"> - Changes to insurance affordability due to increasing claims, leading to underinsurance. May also be unavailable in high-risk areas, impacting ability to service home loans. - Core benefits from First Nations-led carbon farming - social, economic, cultural and self-determination 	<ul style="list-style-type: none"> - New credit markets to store carbon, improve biodiversity and ecosystem function (e.g., wetlands and savannah burning, habitat connectivity) - Standardised valuing of ecosystem services 	<ul style="list-style-type: none"> - Changes to insurance in areas with greater risks, narrow range of agricultural businesses covered by insurance products. - Potential increased cost of raw materials, with impacts to supply chains, reduced supply - Meet growing demand for high integrity carbon credits (providing diversification for foresters, farmers, First Nations businesses) and low carbon products and services (e.g., tourism experiences) 	<ul style="list-style-type: none"> - Support or stimulate local economy and emerging industry through procurement, facilitator or partnership. - Potential increased costs of raw materials and products.
 Technology Disruption	<ul style="list-style-type: none"> - Alternative energy distribution models available to communities and remote areas. - Desire for emerging technology 	<ul style="list-style-type: none"> - Nature-based solutions and innovations harnessed in disaster risk reduction. 	<ul style="list-style-type: none"> - Improved efficiencies, innovations and competitiveness to realise cost saving opportunities (e.g., renewable energy). - Demand for critical minerals (e.g., lithium, rare earths, cobalt, manganese, tantalum, tungsten, and zirconium). 	<ul style="list-style-type: none"> - Ill prepared development for electric vehicle charging. - Emerging waste recovery processes and growing volumes for solar panels, batteries.

Note: this is a generally guide only, a regional risk assessment has not been undertaken as part of this process. It also does not describe the extent of risk exposure, vulnerability or adaptive capacity of Alliance councils. Specific projections for each local government area found on the [Queensland Future Climate Dashboard](#) and Climate Change in Australia websites

4. Aligned regional momentum in 2021: at a glance

Emerging

- Regional Resilience Strategies: Queensland Government
- Northern Queensland Renewable Energy Zone: Queensland Government
- Drought Resilience Adoption and Innovation Hub: Australian Government, James Cook University
- Emerging Regional Strategic Waste Framework, Regional Procurement Strategy: FNQROC
- Wet Tropics Restoration Alliance: Various partners
- Reef Alliance: Queensland Farmers Federation and partners
- Smart Green Economy group: Terrain NRM, Cairns and Far North Environment Centre, Wet Tropics Management Authority, Ports North, Cairns Airport, MSF Sugar etc.

Established

- Queensland Government Climate Change Response, Queensland Emergency Risk Management Framework, Queensland Climate Resilient Councils program
- Reef Guardian Councils program: Great Barrier Reef Marine Park Authority
- Climate Adaptation Plan – Accept, Act, Adapt: Wet Tropics Management Authority



Solar toolkit, photo courtesy of Cairns Regional Council

References

Erhart, D., Mackay, S., Onyango, E., Hadwen, W., Mackey, B. 2020. Climate Risk Management Framework for Queensland Local Government. Local Government Association of Queensland.

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Find out more

For more information on Alliance members,
please visit their websites:

[Cairns Regional Council](#)

[Mareeba Shire Council](#)

[Tablelands Regional Council](#)

[Yarrabah Aboriginal Shire Council](#)

Enquiries

Michelle O'Loughlin, Climate Resilient Alliance
Coordinator, FNQROC

m.oloughlin@fnqroc.qld.gov.au



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RIVERS TO REEF CLIMATE RESILIENT ALLIANCE

