

A photograph of an industrial facility, likely a steel mill, at dusk. The sky is a mix of deep blue and purple, with some light clouds. The facility features a complex network of steel structures, including a prominent conveyor belt system that runs diagonally across the frame. Several large cylindrical tanks and other industrial equipment are visible in the background. The scene is illuminated by the ambient light of the sunset and some artificial lights from the facility.

# AusIMM

## Industrial Process Heat & Decarbonisation

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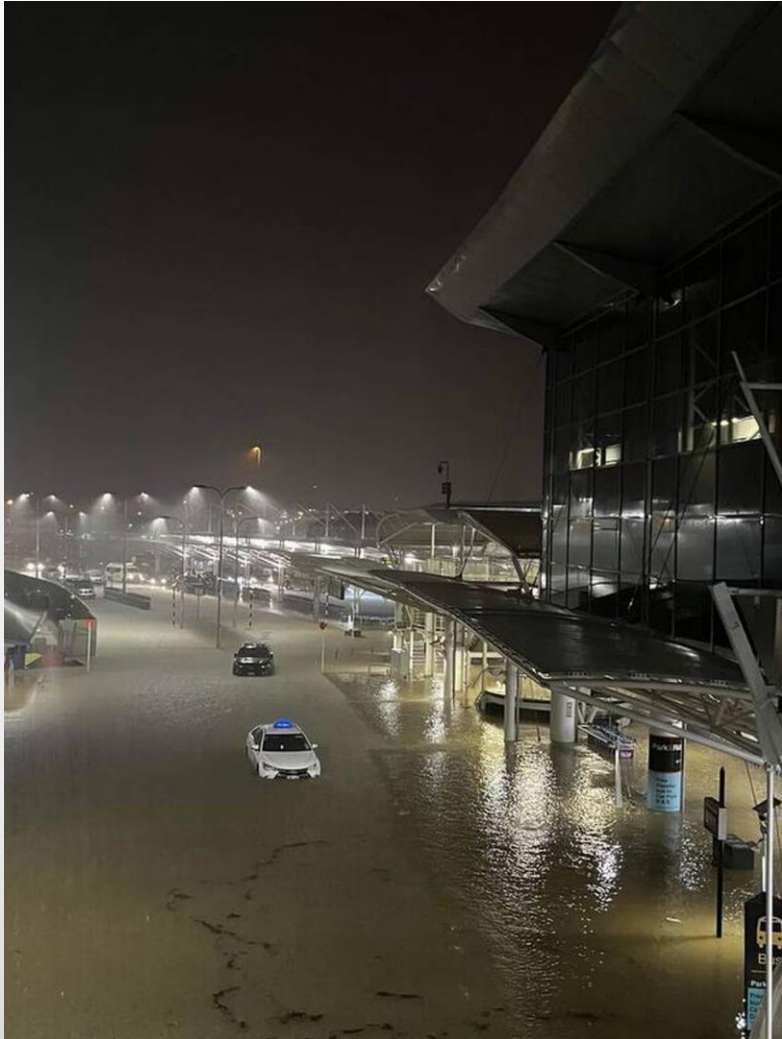
SOURCE: FLYABILITY.COM





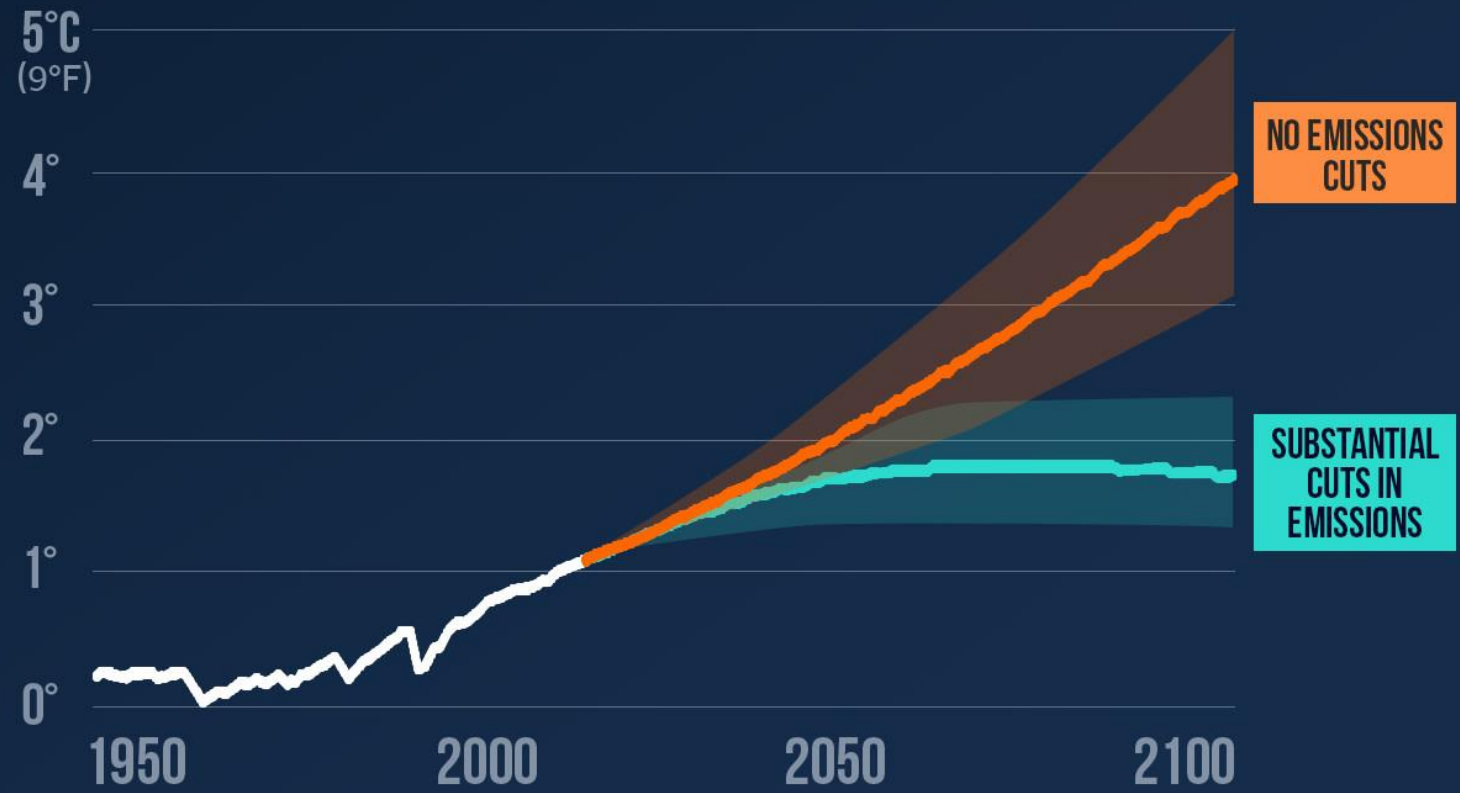
Wildfires through neighborhoods close to the Athens after hottest June and July on record, 12 August 2024

# Auckland floods & Cyclone Gabrielle



# FUTURE TEMPERATURES

WARMING DEPENDS ON CHOICES TODAY



Global surface temperature (°C) anomaly relative to 1850-1900  
High warming scenario: SSP3-7, Low warming scenario from SSP1-2.6.  
Source: IPCC AR6 WG1

CLIMATE CENTRAL

## But why else?

- National Environmental Standard for Industrial Process Heat (NES-IPH)
- Resource Management Act
- XRB/ESG reporting requirements
- Company sustainability targets & social responsibility/social licence
- Demand for lower embodied emissions materials
- Ability to attract capital
- Opportunity to save money



# Objective of the Regulations

*Reduce GHG emissions by managing the discharges to air of GHG from industrial process heat devices*

## Applies to:

- **Carbon-based fuel** from **fossil hydrocarbon origins** and includes: coal, LPG, natural gas, oil, and waste or used oil, plastics and tyres.
- **Devices** such as **boilers, furnaces, dryers and engines**
- **Process heat** is heat used in **manufacturing or processing of raw materials**

# What is not included?

- devices with the main purpose is to generate or transmit **electricity** and devices used for **space heating** of buildings
- **backup** heat devices, (those that operate less than 400 hours per year)
- devices from **low emissions sites** (<500 tonnes of CO<sub>2</sub>-e)





# Processing operations with heat like drying, smelting or refining



# Emissions Plan

Sets out actions and methods to reduce the CO<sub>2-e</sub> emissions including any emissions reduction targets over time.

## Emissions Plan Guidance

Non-statutory

National Direction for Greenhouse Gas Emissions from Industrial Process Heat

March 2024

EECA  
TE TARI TIAKI PŪNGAO  
ENERGY EFFICIENCY & CONSERVATION AUTHORITY



# What's in an Emissions Plan?

- **Energy efficiency** improvements available and whether the improvements will be made.
- A **transition pathway** for preventing and minimising emissions and appropriate emissions reductions targets.
- For new devices, **technically feasible and financially viable** lower-emissions alternatives must be considered.
- A **best practicable option (BPO)** assessment to prevent or minimise discharges from GHGs. (financial implications CAPEX & OPEX vs emission reductions achieved)

# Energy efficiency

- Combustion control
- Waste minimisation
- Process optimisation
- Heat recovery



# Alternative fuels/energy

- RFO & diesel
- Natural gas/LNG
- Biogas/biodiesel
- Wood derived fuels
- Electrification + solar, wind, hydro
- Hydrogen
- Geothermal
- Alternative process?

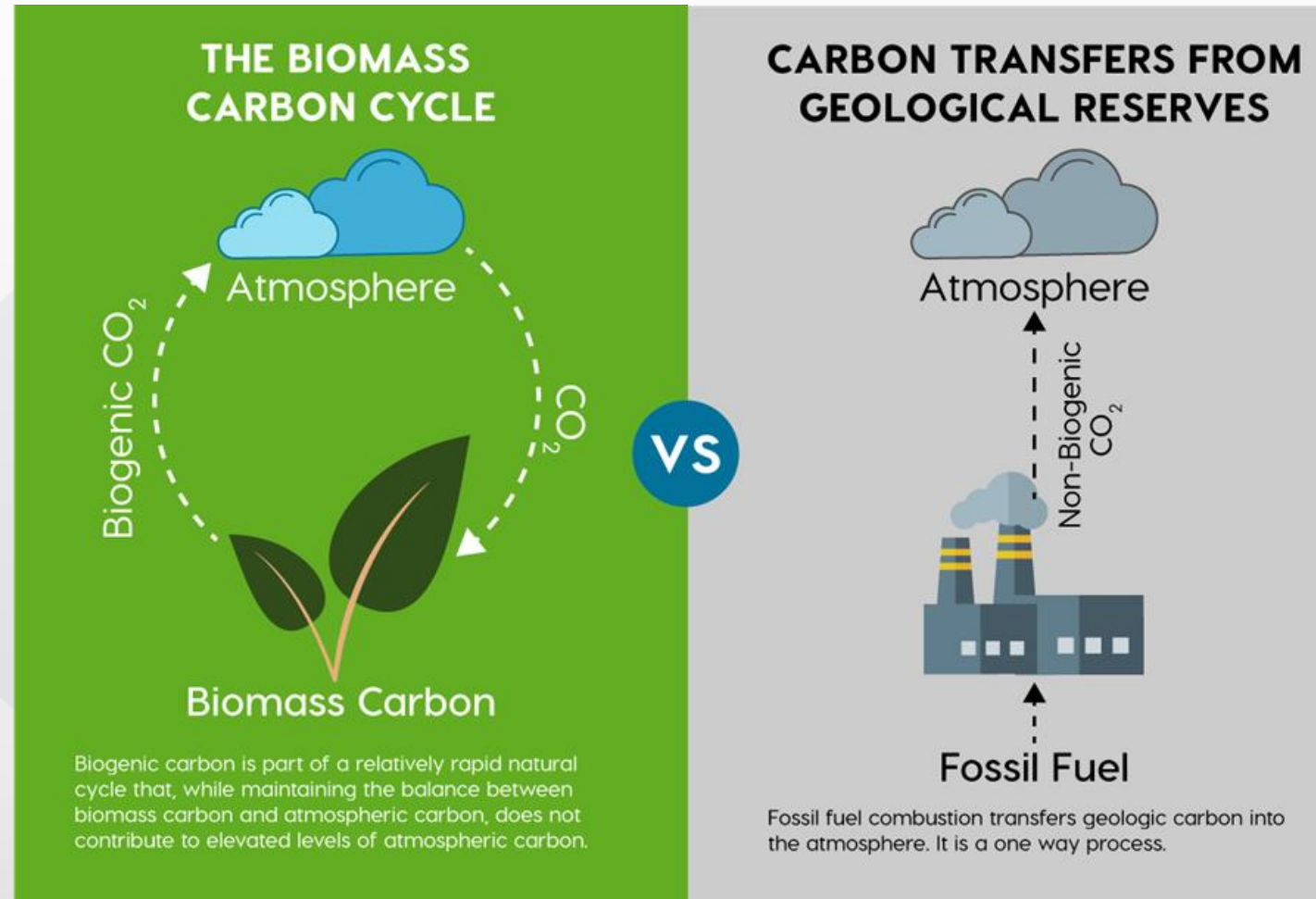
# Why is CO<sub>2</sub> from biomass/biogas OK?

## Non-Biogenic

- Slow cycle, releasing GHGs which have been stored for a long time e.g. fossil fuels

## Biogenic

- Produced or brought about by living organisms.
- Fast cycle between plants and atmosphere.



Source: <https://pbpc.com/carbon-emissions-plant-based-products/>

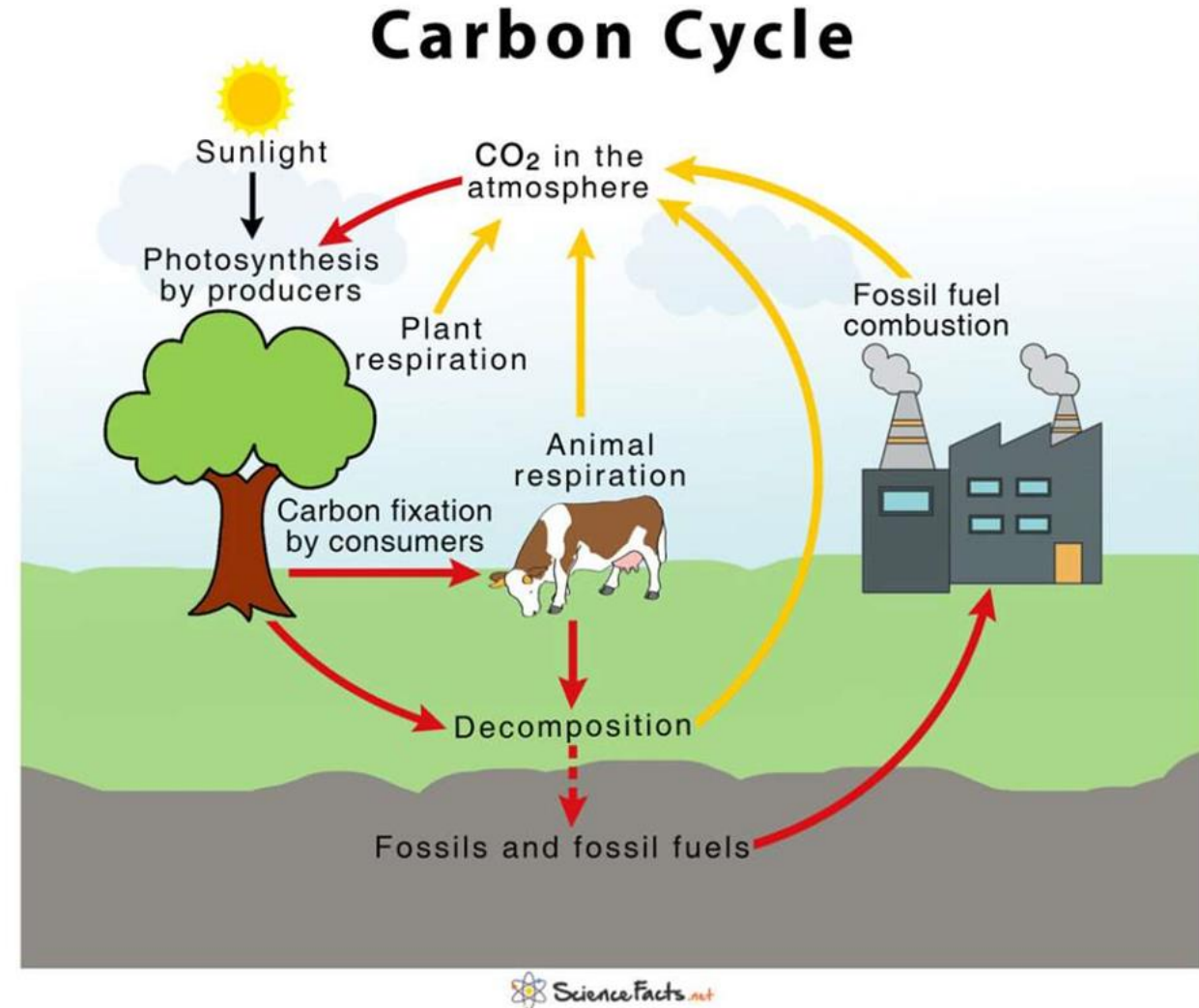
# 'Short' and 'Long' Carbon Cycles

## Short term carbon cycle (10s – 100s yrs)

- Recycles carbon between the atmosphere land and ocean.
- Depends on life, food chains on land and in oceans.
- Temporary carbon store that does not reduce overall emissions.

## Long term carbon cycle (1000s + yrs)

- Operates over millions of years
- Involves the exchange of carbon between rocks and the Earth's surface.
- Only cycle that can remove CO<sub>2</sub> from the atmosphere.



# Technological shift and innovation

- Energy transition is spurring greater demand for minerals needed for low-carbon energy technologies.
- While important to the energy transition the activities risks making a significant contribution to global emissions.
- Investing in innovation is needed to make the necessary materials more available, but also sustainable.



PHOTO: SOURCE STANTEC.COM



# Final thoughts

Do you have a fossil fuel process heat device?

What is your decarbonisation road map?

