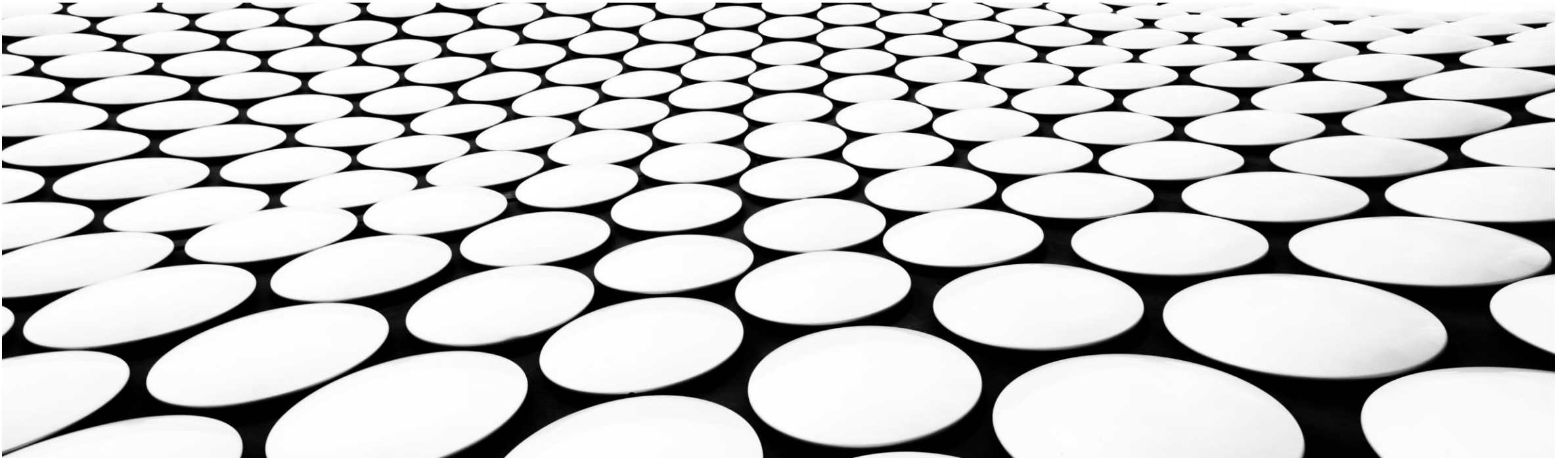


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# CLIMATE CHANGE: NEW SAFETY RISKS, DUTIES & PROTOCOLS FOR HEALTH AND SAFETY PROFESSIONALS

ADDRESSING EMERGING CHALLENGES IN HEALTH AND SAFETY MANAGEMENT

LISA CRAWFORD, GENERAL MANAGER HEALTH & SAFETY, JEMENA & ZINFRA



# JEMENA & ZINFRA – WHO WE ARE

## Our Locations and Assets

### Gas/Electricity

- 1 ActewAGL Distribution Partnership (50%)

### Gas

- 2 Atlas Gas Pipeline
- 3 Atlas Gas Processing Facility
- 4 Colongra Gas Transmission and Storage Pipeline
- 5 Darling Downs Pipelines
- 6 Eastern Gas Pipeline
- 7 Jemena Gas Network
- 8 Northern Gas Pipeline
- 9 Phillip Creek Compressor Station
- 10 Mount Isa Compressor Station
- 11 Queensland Gas Pipeline
- 12 Roma North Gas Processing Facility
- 13 VicHub

### Electricity

- 14 Regulated Electricity Network
- 15 United Energy Distribution (34% Group ownership)

### Renewable Gas Demonstration Projects

- 16 Western Sydney Hydrogen Hub
- 17 Malabar Biomethane Injection Plant

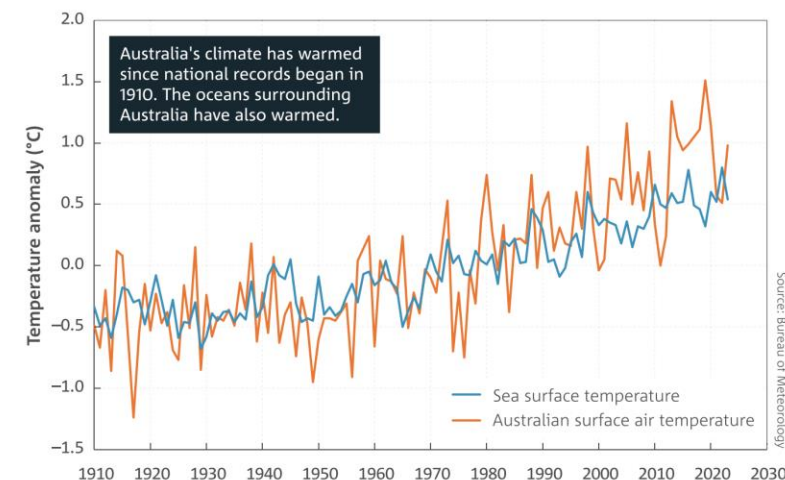
### Zinfra Operations

- 18 Zinfra Operational Locations

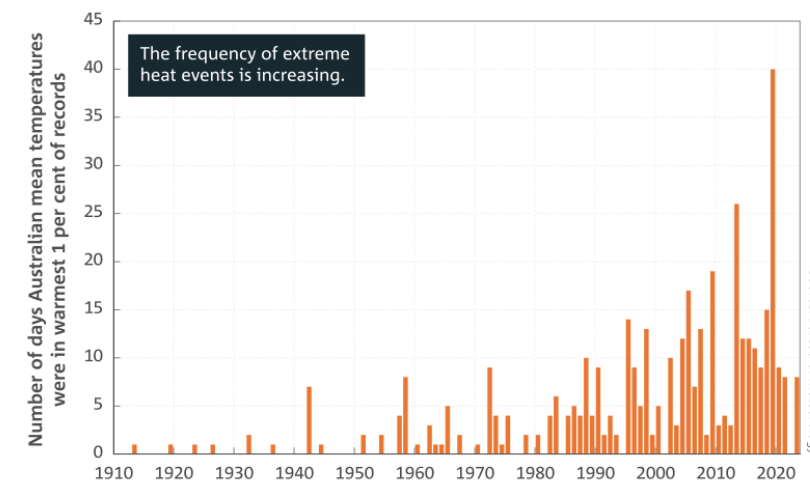


# OUR ENVIRONMENT IS CHANGING

- Australia's climate has warmed by an average of  $1.51 \pm 0.23$  °C since national records began in 1910.
- Sea surface temperatures have increased by an average of  $1.08$  °C since 1900.
- The warming has led to an increase in the frequency of extreme heat events over land and in the oceans.
- Since 1970, April–October rainfall in south-west Australia has dropped by about 16% (with May–July seeing a 20% reduction), while south-east Australia has experienced a 9% decrease in April–October rainfall since 1994.
- Heavy short-term rainfall events are becoming more intense.
- There has been an increase in extreme fire weather, and a longer fire season, across large parts of the country since the 1950s



Anomalies (departures from the mean for the 1961–1990 standard averaging period) in annual mean sea surface temperature, and temperature over land, in the Australian region. Sea surface temperature values (data source: ERSST v5, [www.esrl.noaa.gov/psd/](http://www.esrl.noaa.gov/psd/)) are provided for a region around Australia (4–46 °S and 94–174 °E).



Number of days each year where the Australian area-averaged daily mean temperature for each month is extreme. Extreme days are defined as those where daily mean temperatures are the warmest 1% of days for each month, calculated for the period 1910–2023.



# WHAT DOES THIS MEAN FOR US?

## Climate Risks

There are two main climate risks: physical risks from climate impacts and transition risks from shifting to a low-carbon economy.

## Impact of Climate Risks

Climate risks impact people, communities and investments worldwide, with reputation and social licence significant considerations for industry.

## Infrastructure Vulnerability

Critical assets and infrastructure face risks from extreme weather events disrupting essential services.

# CLIMATE RISK MANAGEMENT APPROACH

## Climate Change Adaptation

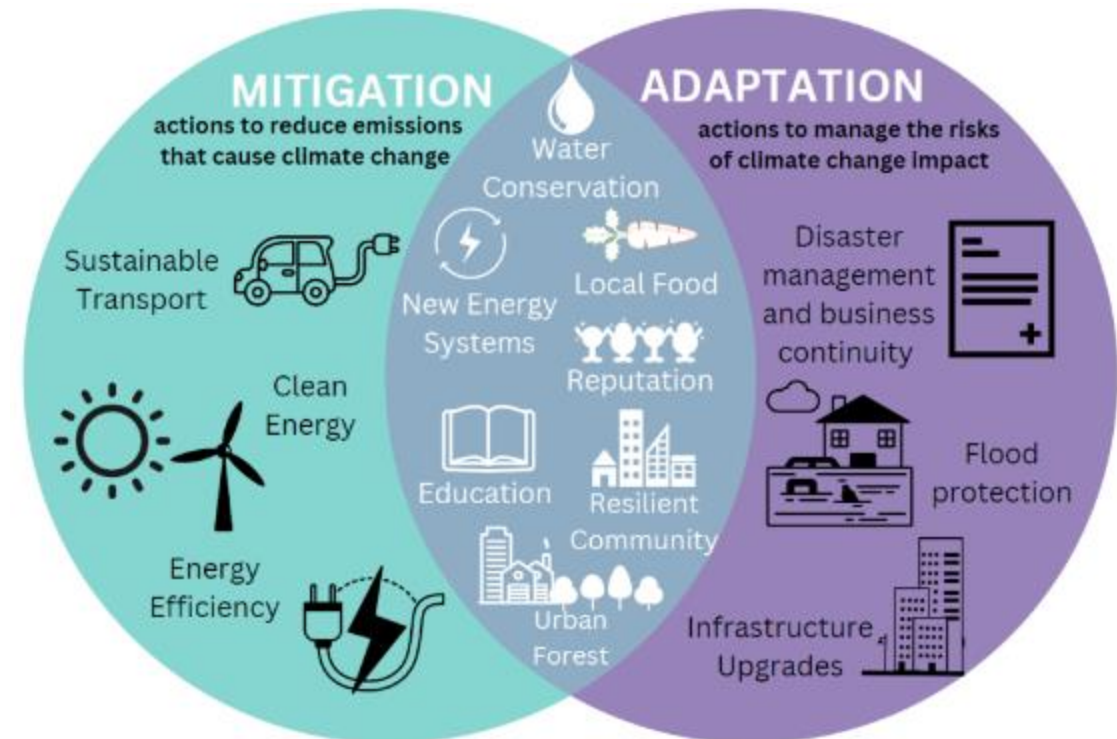
Adaptation involves decisions and actions to reduce negative climate impacts while leveraging potential opportunities.

## Climate Change Mitigation

Mitigation includes efforts to limit climate change by reducing or removing greenhouse gas emissions.

## Geographical and Community Focus

Consider climate risks and opportunities based on geographical locations and communities where operations occur.





# CLIMATE RISK MANAGEMENT APPROACH

## Utilise Existing Frameworks and Standards

ISO 31000:2108 – Risk management guidelines

ISO 14090 – Adaptation to climate change – Principles, requirements, and guidelines

## Leadership and Accountability

Strong leadership and commitment are essential for managing climate change impacts effectively and ensuring accountability.

## Implementation Plan Importance

Implementation plans are critical to delivering adaptation strategies and preparing monitoring and evaluation frameworks.

## Long-Term Monitoring

Due to uncertainties, developing indicators to monitor adaptation progress helps guide corrective actions over time.

Identify	Analyse
<ul style="list-style-type: none"><li>• How is weather information included in decisions now?</li><li>• Has a historical relationship between weather and systems impacts been identified?</li><li>• Are there known thresholds or other parameters?</li></ul>	<ul style="list-style-type: none"><li>• How might weather-related system impacts change under future climate scenarios?</li><li>• How might you assess systems exposure under alternative climate scenarios?</li><li>• Do you need to consider exposure to climate hazards that are ready to quantify?</li><li>• How do we communicate confidence/uncertainty?</li></ul>
Evaluate	Treat
<ul style="list-style-type: none"><li>• Financial Risk</li><li>• Safety Risk</li><li>• Operational Risk</li><li>• Regulatory Risk</li><li>• Reputational Risk</li></ul>	<ul style="list-style-type: none"><li>• Avoid</li><li>• Reduce</li><li>• Replace</li></ul>

# OPPORTUNITY IDENTIFICATION AND BUSINESS PLANNING



## Climate Change Opportunities

Opportunities arise from climate change impacts and proactive actions taken by an organisation.

## Markets and Innovation

New products, services, and emerging markets contribute to sustainability and innovation benefits.

## Business Planning Process

Identify opportunities through structured business planning and investment frameworks.

## Value Chain Integration

Utilise value chains and enabling environments to improve resilience and supply security.

# ASSESSING PHYSICAL CLIMATE HAZARDS

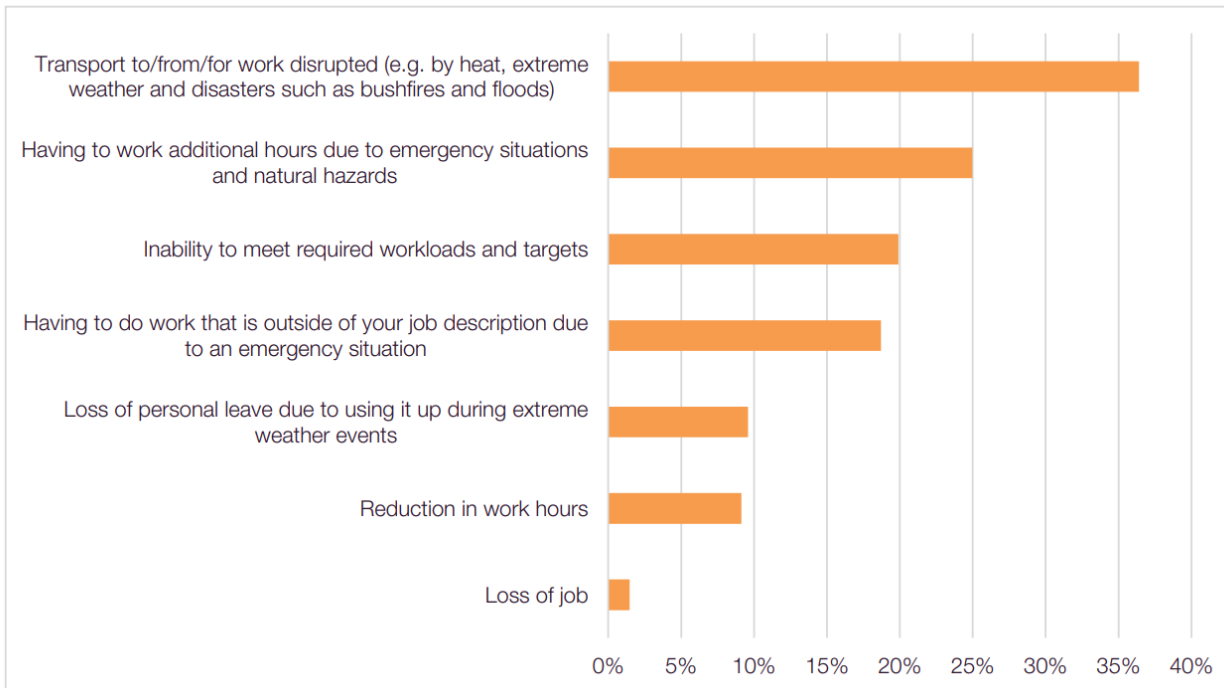
Climate Risk Scenario	Hazard Condition							
	Riverine Flooding	Increased Temperature	Bushfire	Surface Water Flooding	Storm Events	Coastal Inundation	Extreme Wind	
Change	<ul style="list-style-type: none"> <li>Flooding</li> <li>Landslide</li> <li>Erosion subsidence</li> </ul>	<ul style="list-style-type: none"> <li>Increase in days above 35 °C</li> </ul>	<ul style="list-style-type: none"> <li>Longer 'severe fire' weather days</li> <li>&gt; days classified Severe Forest Fire Danger Index (FFDI)</li> <li>Localised bushfires</li> <li>Regional bushfires</li> </ul>	<ul style="list-style-type: none"> <li>Localised flooding</li> <li>Increase in erosion</li> </ul>	<ul style="list-style-type: none"> <li>Tsunami</li> <li>Tropical cyclone</li> <li>Hailstorms</li> <li>Lightning strikes</li> <li>Intense rainfall</li> </ul>	<ul style="list-style-type: none"> <li>Localised flooding</li> </ul>	<ul style="list-style-type: none"> <li>Average increase in wind speed</li> </ul>	<ul style="list-style-type: none"> <li>Increased likelihood of surface runoff</li> <li>Increase in erosion</li> <li>Greater likelihood of dust storms</li> </ul>
Potential Risk	<ul style="list-style-type: none"> <li>Pre-1990 pipelines were buried beneath the riverbed and channel banks. Floods could result in scouring and increased risk of physical damage</li> <li>Customer premise meter sets</li> </ul>	<ul style="list-style-type: none"> <li>Extended high temperatures adversely affect electrical equipment</li> <li>Risk to personnel</li> </ul>	<ul style="list-style-type: none"> <li>Customer premise meter sets</li> <li>Access to sites for response or maintenance</li> <li>Restricted maintenance activity e.g. Hot Work</li> <li>Risk to personnel</li> <li>Risk to fleet</li> </ul>	<ul style="list-style-type: none"> <li>Access to sites for response or maintenance</li> <li>Inundation of equipment in pits</li> <li>Deterioration of assets from ground movement</li> <li>Risk to personnel</li> <li>Risk to fleet</li> </ul>	<ul style="list-style-type: none"> <li>Access to sites for response or maintenance</li> <li>Asset damage / failure</li> <li>Risk to personnel</li> <li>Risk to fleet</li> </ul>	<ul style="list-style-type: none"> <li>Access to sites for response or maintenance</li> <li>Inundation of equipment in pits</li> <li>Deterioration of assets from ground movement</li> <li>Risk to personnel</li> <li>Risk to fleet</li> </ul>	<ul style="list-style-type: none"> <li>Potential access issues</li> <li>Interruption to critical activities e.g. response to asset damage if cannot utilise cranes</li> </ul>	<ul style="list-style-type: none"> <li>Flash flooding</li> <li>Deterioration of assets from heat and ground movement</li> <li>Low runoff disrupting the biodiversity of site</li> <li>Disruptions to surface from build-up of dust</li> </ul>



# MANAGING WORK IN EXTREME CONDITIONS



# THE PSYCHOSOCIAL IMPACT ON WORKERS



Climatic impacts on work (n = 1,165)

## Workers are concerned about climate change

More frequent and intense extreme heat, bushfires and intensifying storms; respondent's region impacted concern levels.

## Workers' health is being impacted

20% of those surveyed who work outdoors have seen an increase in physical injuries due to climate conditions.

## Climate change is stressing and disrupting work in multiple other ways

Altering roles, job security and capacity to get to work.

## Workers want to see action

Increased mitigation action by industry, government and as individuals to reduce greenhouse gas emissions.



# REPUTATION MATTERS

## Community Backlash

Change may be perceived as inadequate, disruptive, or misaligned with local expectations, potentially impacting reputation and social license to operate.

## Attracting and Retaining Talent

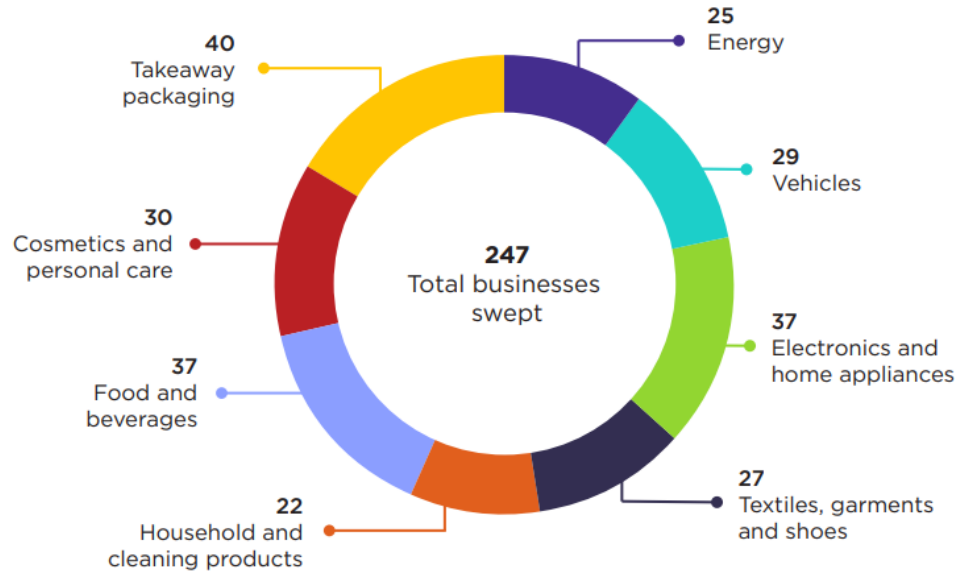
Employee consideration of a company's climate actions and reputation when deciding where to work and whether to stay.

## Considering our Future

Long-term climate adaptation builds organisational resilience and strengthens reputation.



## BREAKDOWN OF BUSINESSES SWEEP



## SECTORS WITH THE GREATEST PROPORTION OF CONCERNING ENVIRONMENTAL CLAIMS



# REGULATORS ARE WATCHING

## Greenwashing

In March 2023, the ACCC conducted an internet sweep of businesses environmental claims. They found some businesses are:

1. Using vague or unclear environmental claims
2. Not providing sufficient evidence for their claims
3. Setting environmental goals without clear plans for how these will be achieved
4. Using third-party certifications and symbols in a confusing way



# NOW WHAT?

## Understanding Climate Risks

Understand your context. Consider transitional, physical and reputational risks.

## Planning and Collaboration

Strategic planning and teamwork are critical to develop adaptive safety protocols. We don't do this alone.

## Leadership in Safety

Strong leadership supports health and safety professionals to safeguard against climate challenges.