



Australian Government  
Department of Climate Change  
and Energy Efficiency

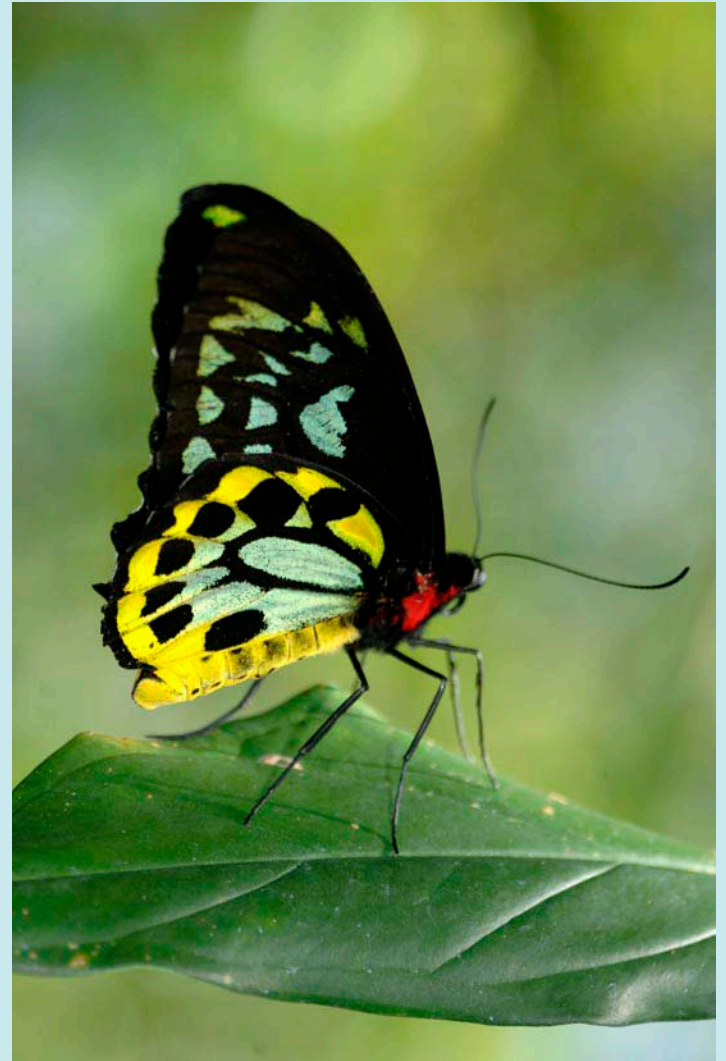
# Climate Change



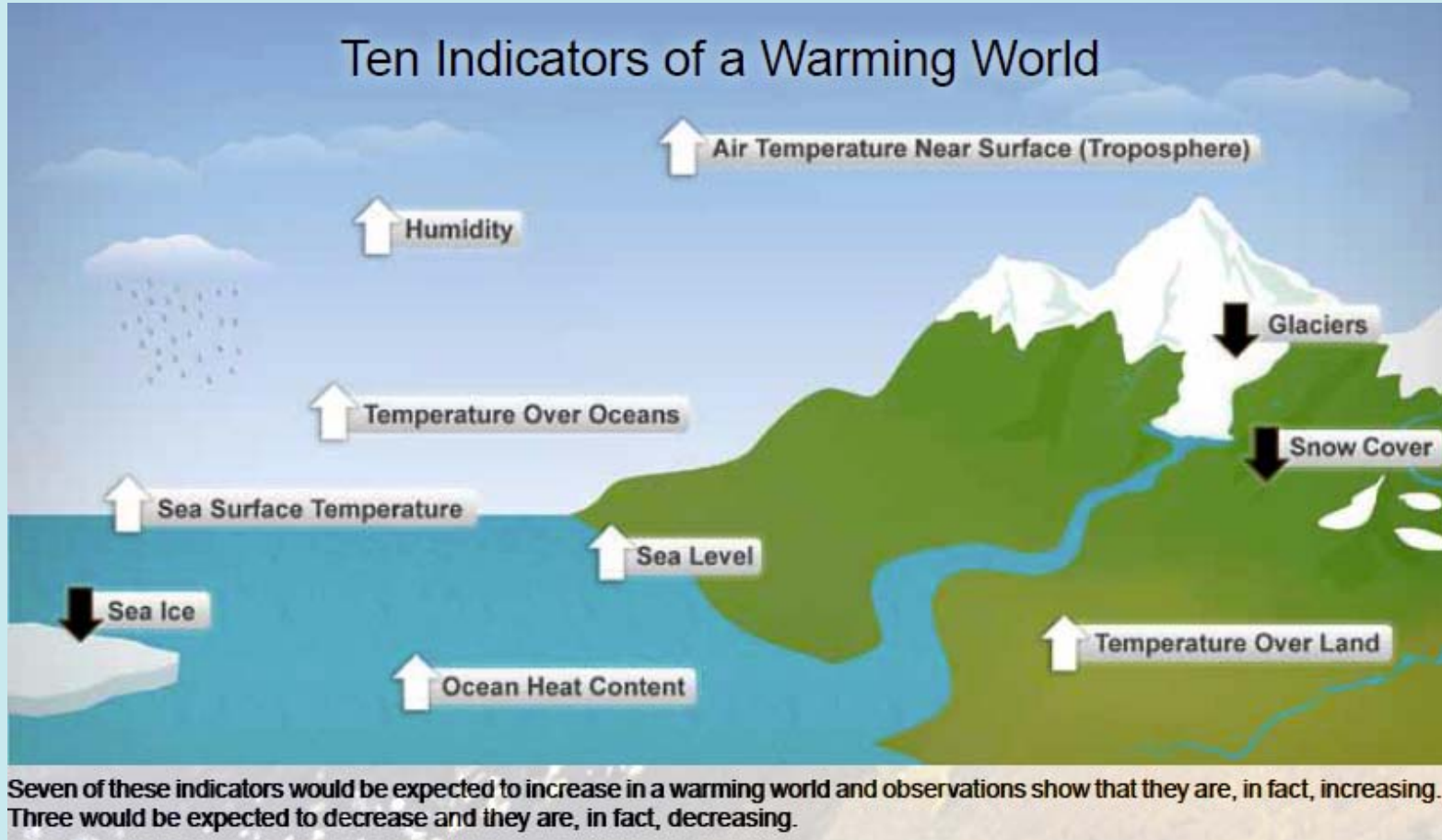
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# THE SCIENCE



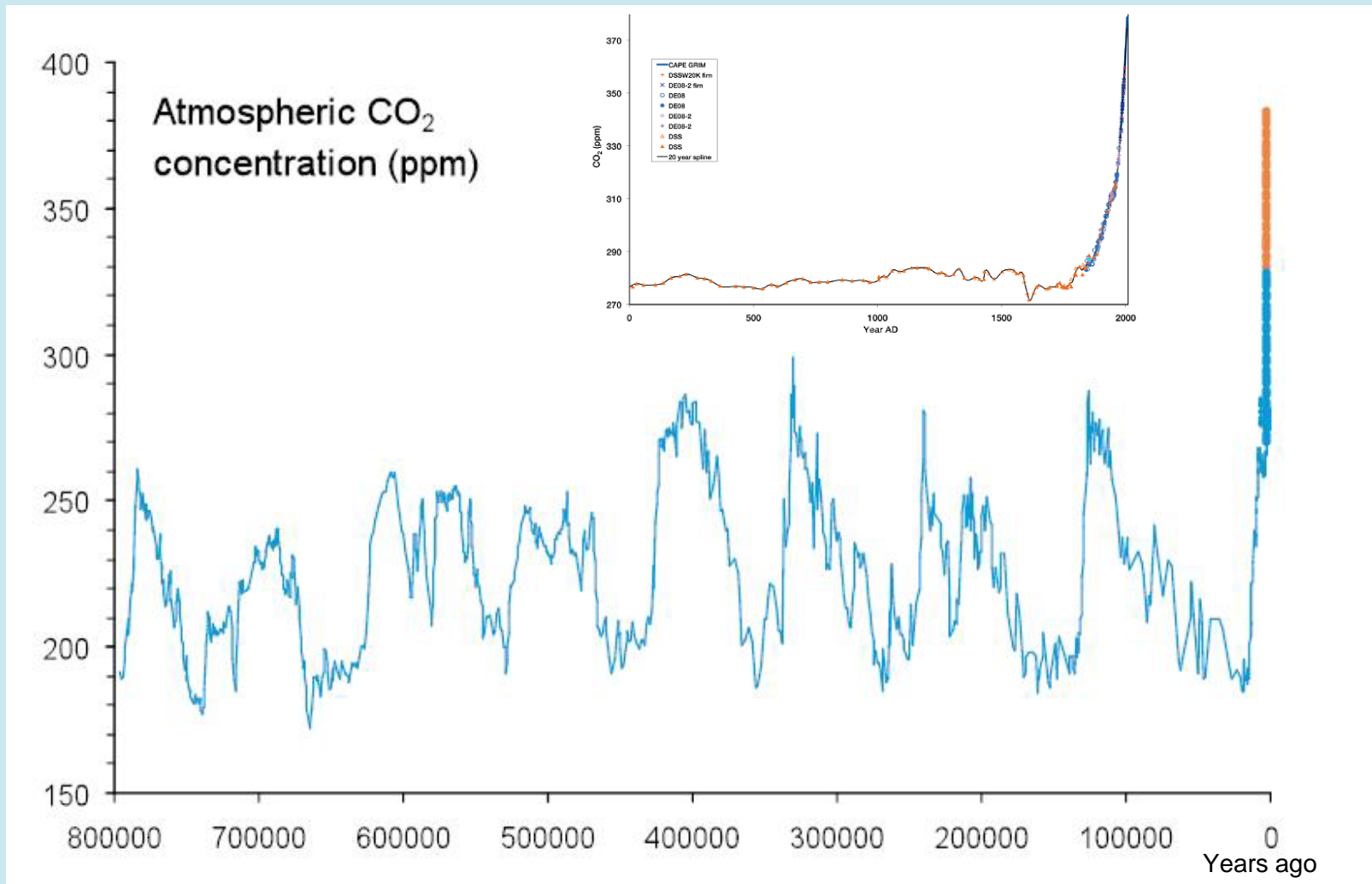
# Climate change science



Source: Ten indicators of a Warming World (NOAA 2010)



# Atmospheric CO<sub>2</sub> concentrations



Source: Atmospheric CO<sub>2</sub> concentration from ice cores in blue (EPICA Dome C: Luthi *et al.*, 2008; Vostok: Petit *et al.*, 1999; Law Dome: Etheridge *et al.*, 1996; MacFarling Meure *et al.*, 2006) and Cape Grim Station, Tasmania in orange (Steele *et al.*, 2007). Inset chart: MacFarling Meure *et al.*, 2006.

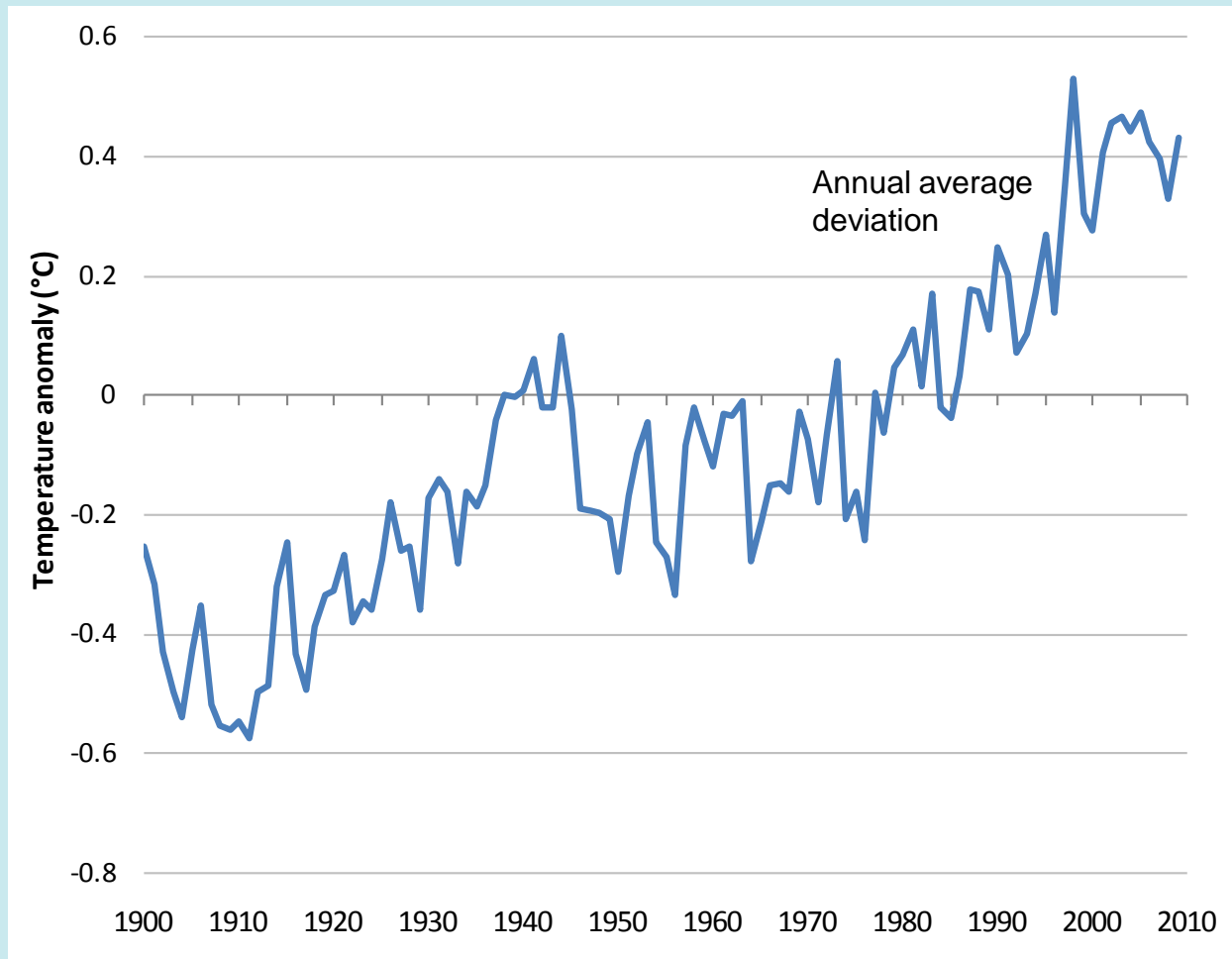


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# Annual average temperature deviations

Anomalies in temperature relative to the 1961-90 reference period mean



Source: Global and Hemispheric Temperature Anomalies - Land and Marine Instrumental Records  
<http://cdiac.ornl.gov/ftp/trends/temp/jonescru/global.txt>



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# Global emissions and warming scenarios

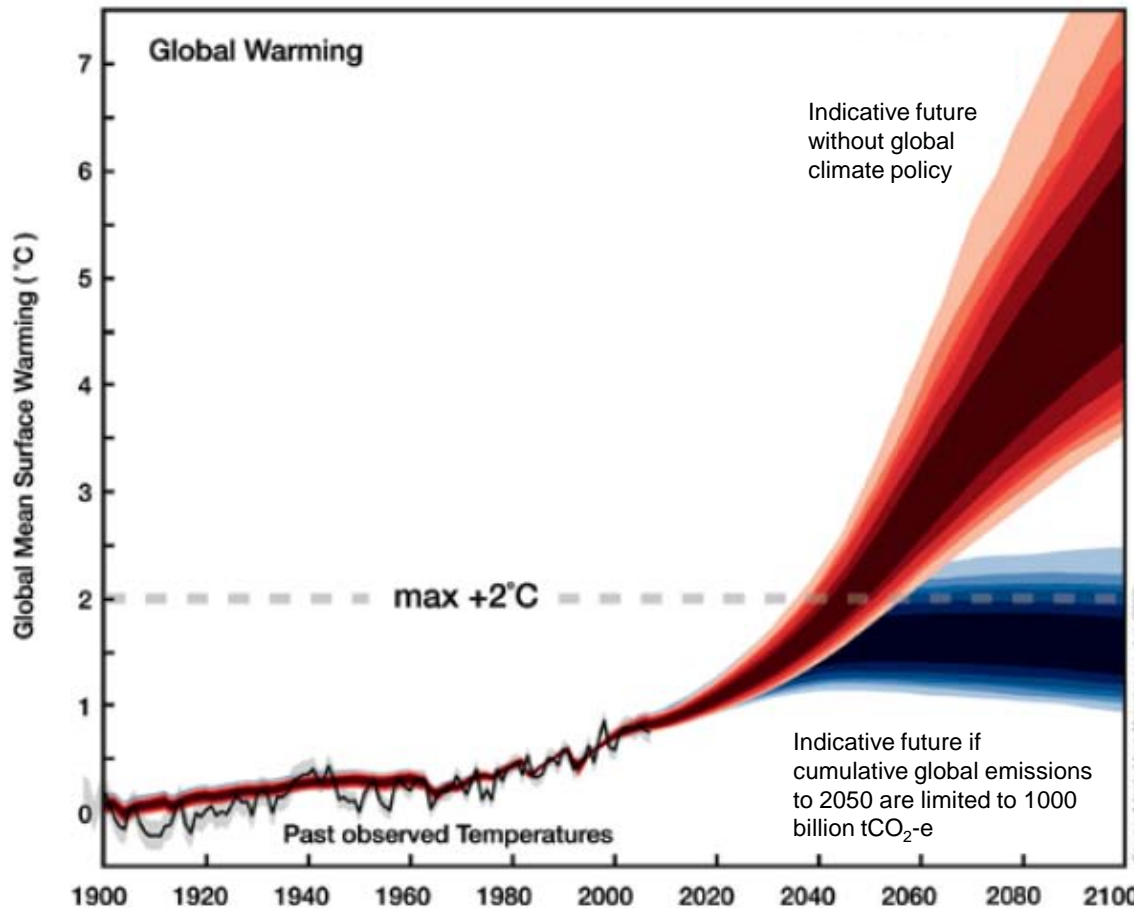
## Median projections and uncertainties of global-mean surface air temperature

Two scenarios are illustrated;

In each case the darkest shaded range for each scenario indicates the most likely temperature rise (50% of simulations fall within this range)

**Red scenario** illustrates potential temperature increases if no action is taken to curb global emissions

**Blue scenario** illustrates potential temperature outcomes if cumulative global emissions between 2000 and 2050 are limited to 1000 billion tCO<sub>2</sub>-e (this requires net global emissions to peak before 2020 and then reduce rapidly to near zero by 2100)



Source: *The Science of Climate Change: Questions and Answers*, Australian Academy of Science, Canberra, 2010.

Adapted from Meinshausen, M. et al. (2009) 'Greenhouse-gas emission targets for limiting global warming to 2°C.' *Nature* 458 (7242): 1158-1162.

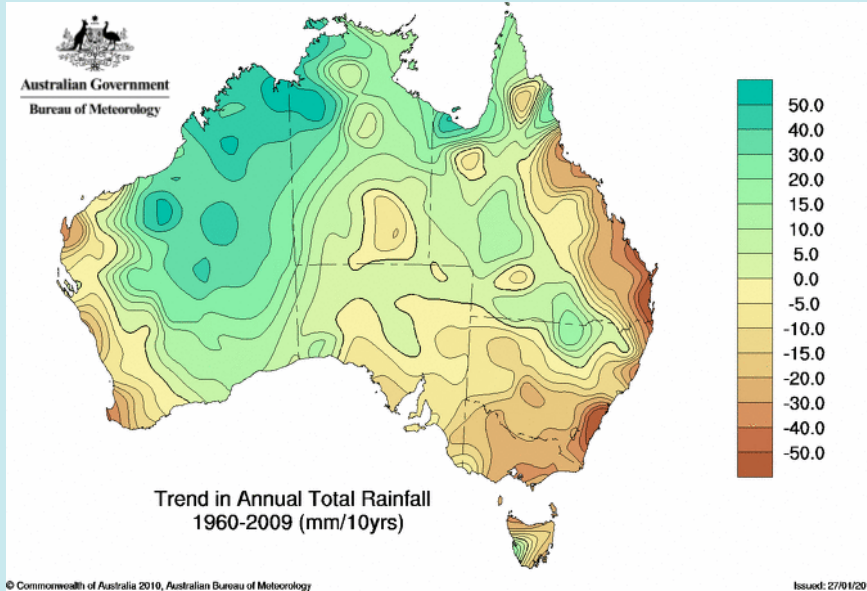


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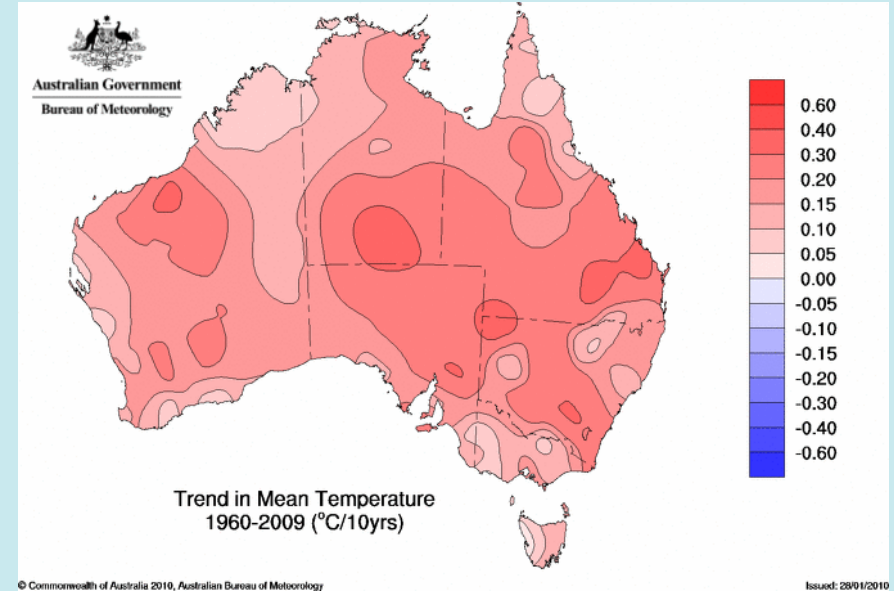
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# Trends in rainfall and temperature across Australia

## RAINFALL



## TEMPERATURE



These charts depict the change in average total rainfall and mean temperature per decade between 1960 and 2009. For example, dark brown areas on the rainfall map indicate that annual rainfall in those areas has fallen by around 50mm per decade since 1960.

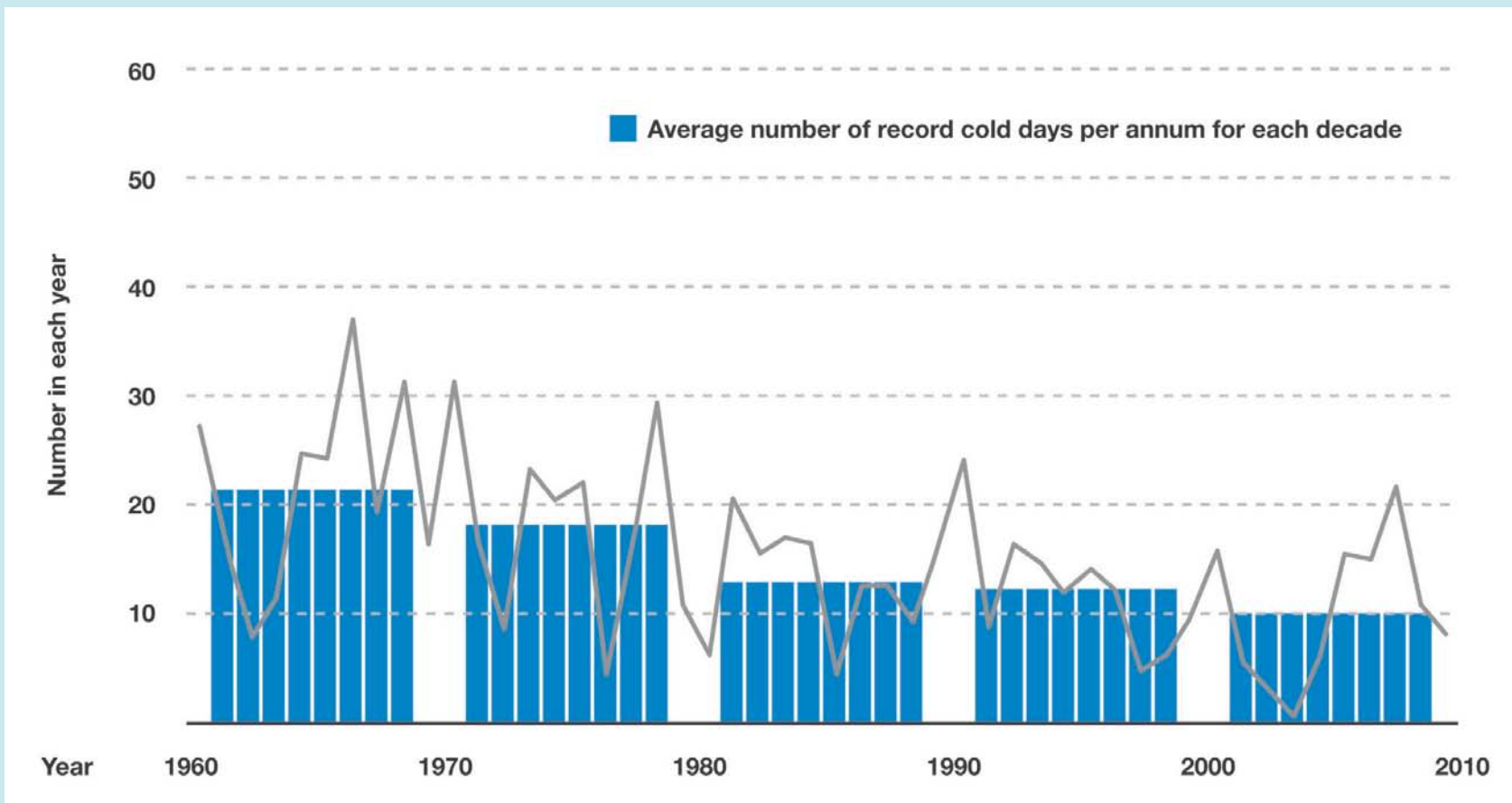
Source: Australian Bureau of Meteorology  
(<http://www.bom.gov.au/cgi-bin/climate/change/trendmaps.cg>)



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# Extreme cold days



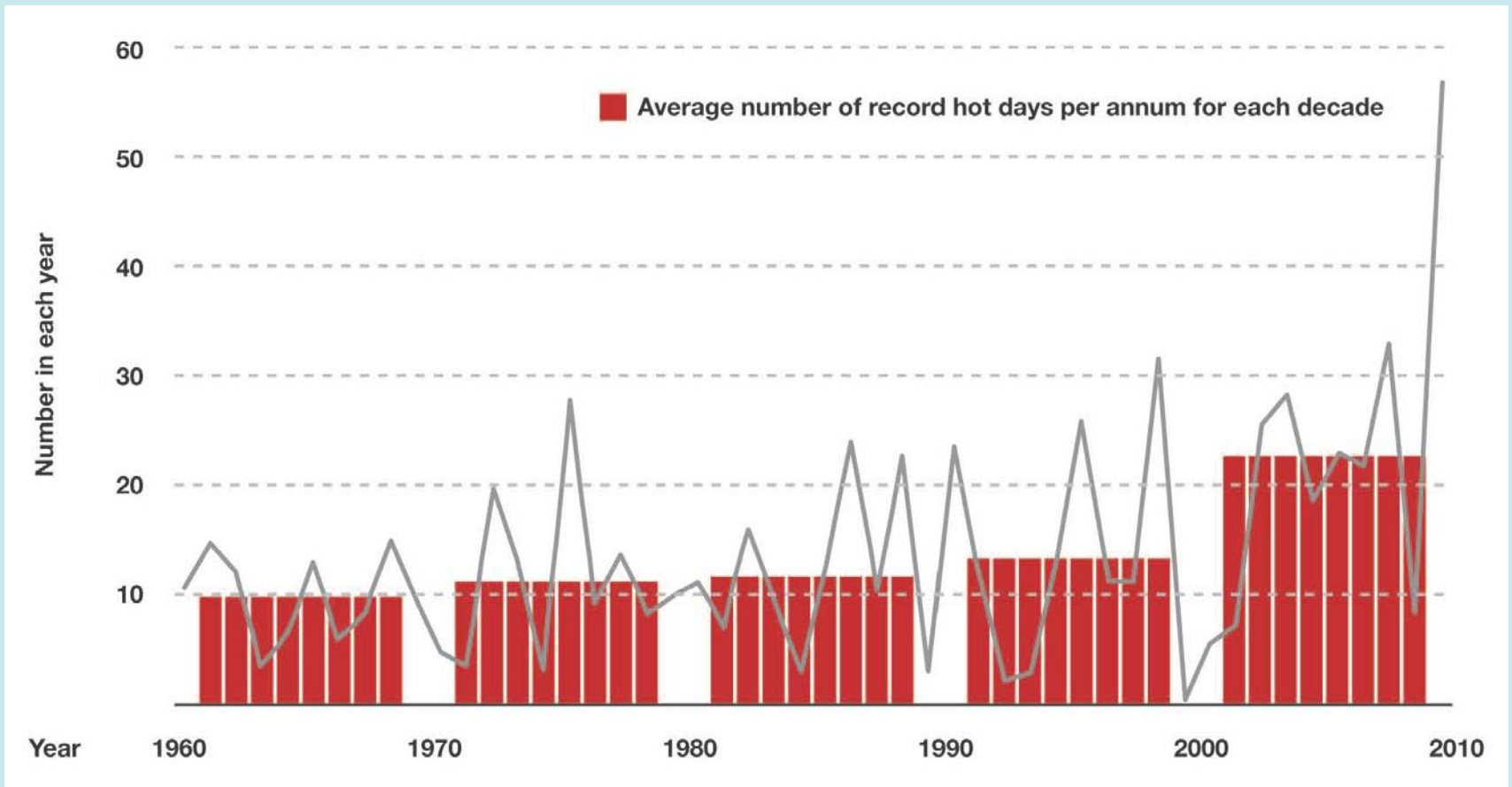
Source: Australian Academy of Science from CSIRO, BOM 'State of the Climate'



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# Extreme hot days



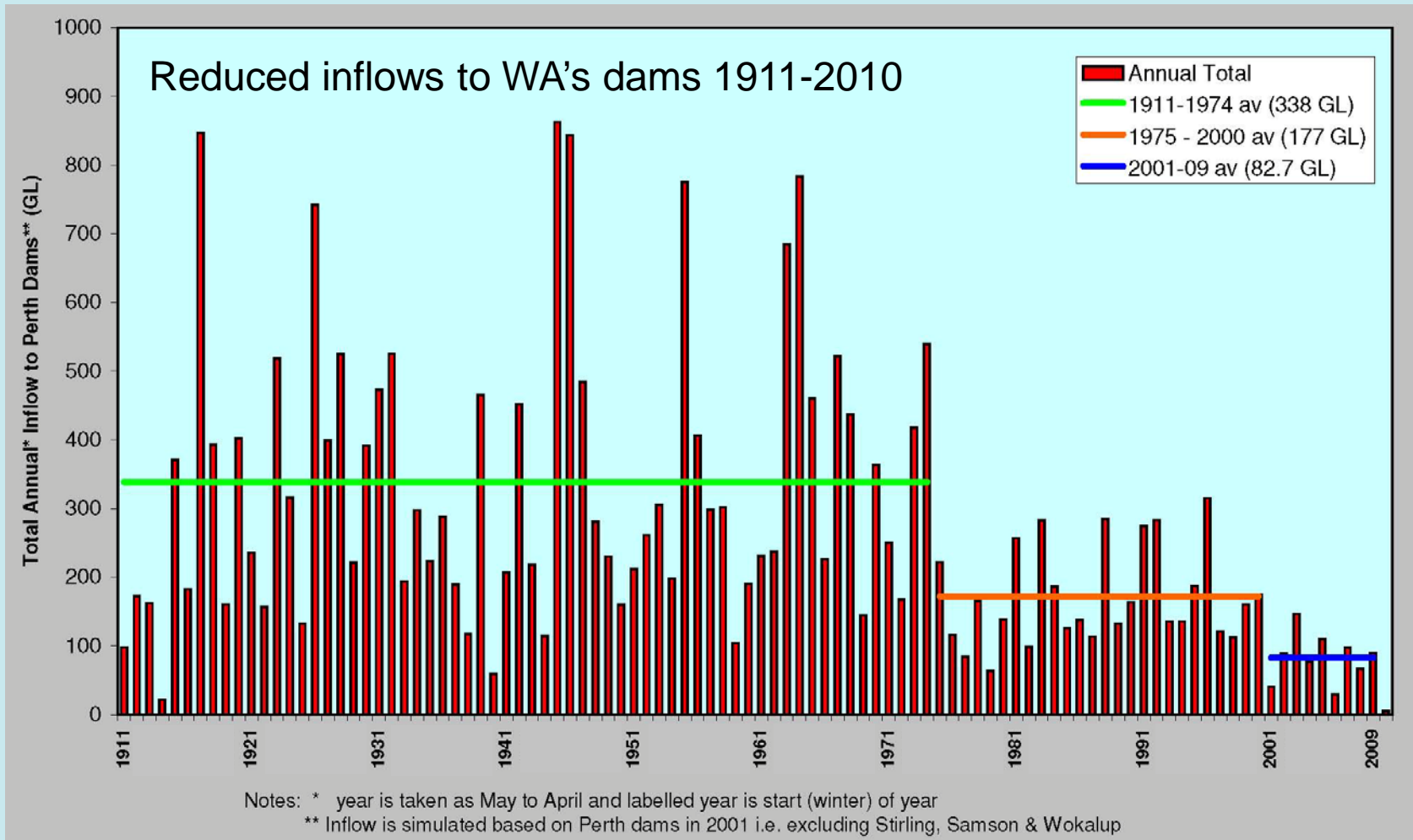
Source: Australian Academy of Science from CSIRO, BOM 'State of the Climate'



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# Water availability in WA



Source: Water Corporation WA  
 ([http://www.watercorporation.com.au/D/dams\\_streamflow\\_large.cfm](http://www.watercorporation.com.au/D/dams_streamflow_large.cfm))

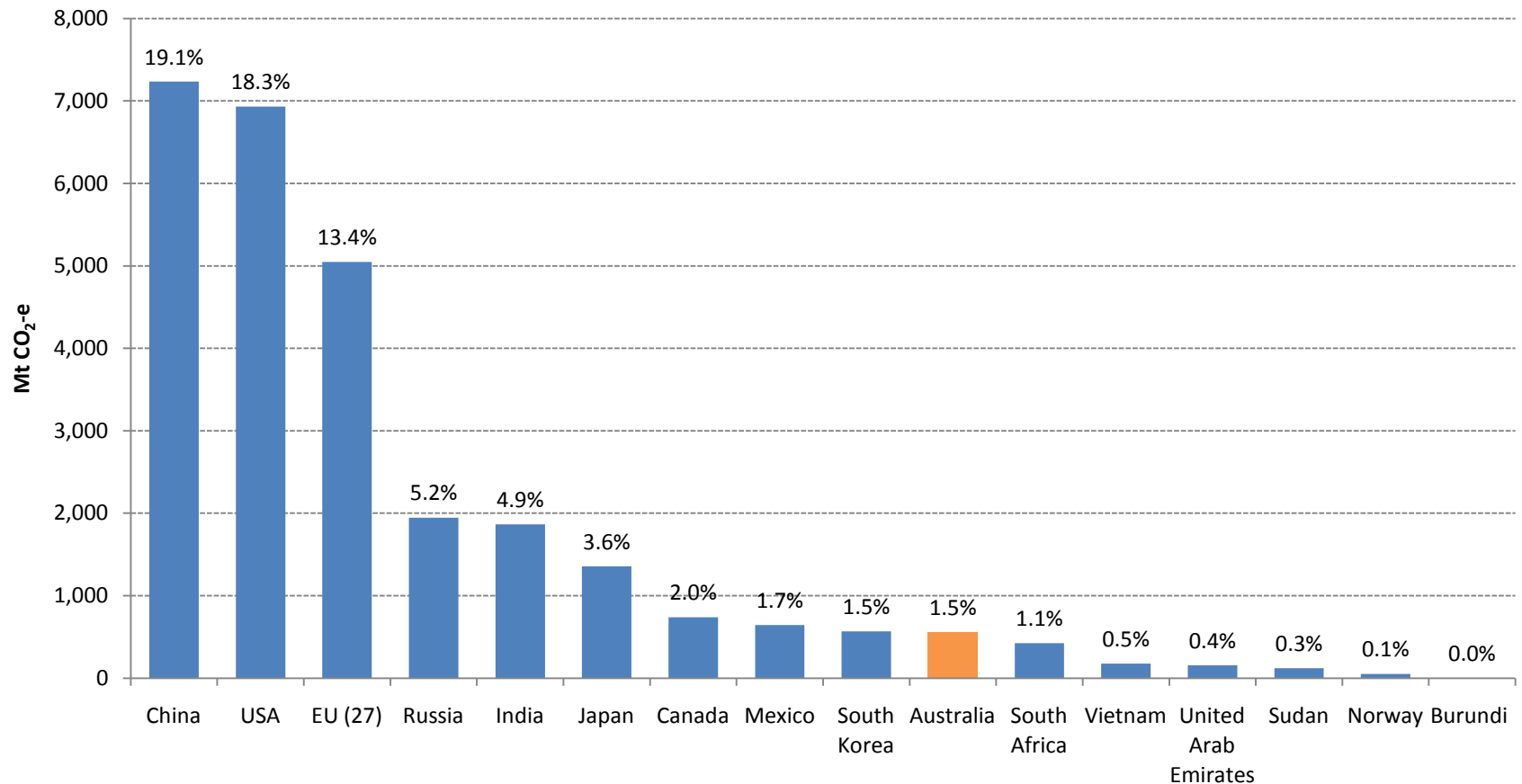




# AUSTRALIA IN THE GLOBAL CONTEXT



# Australia's emissions in the global context



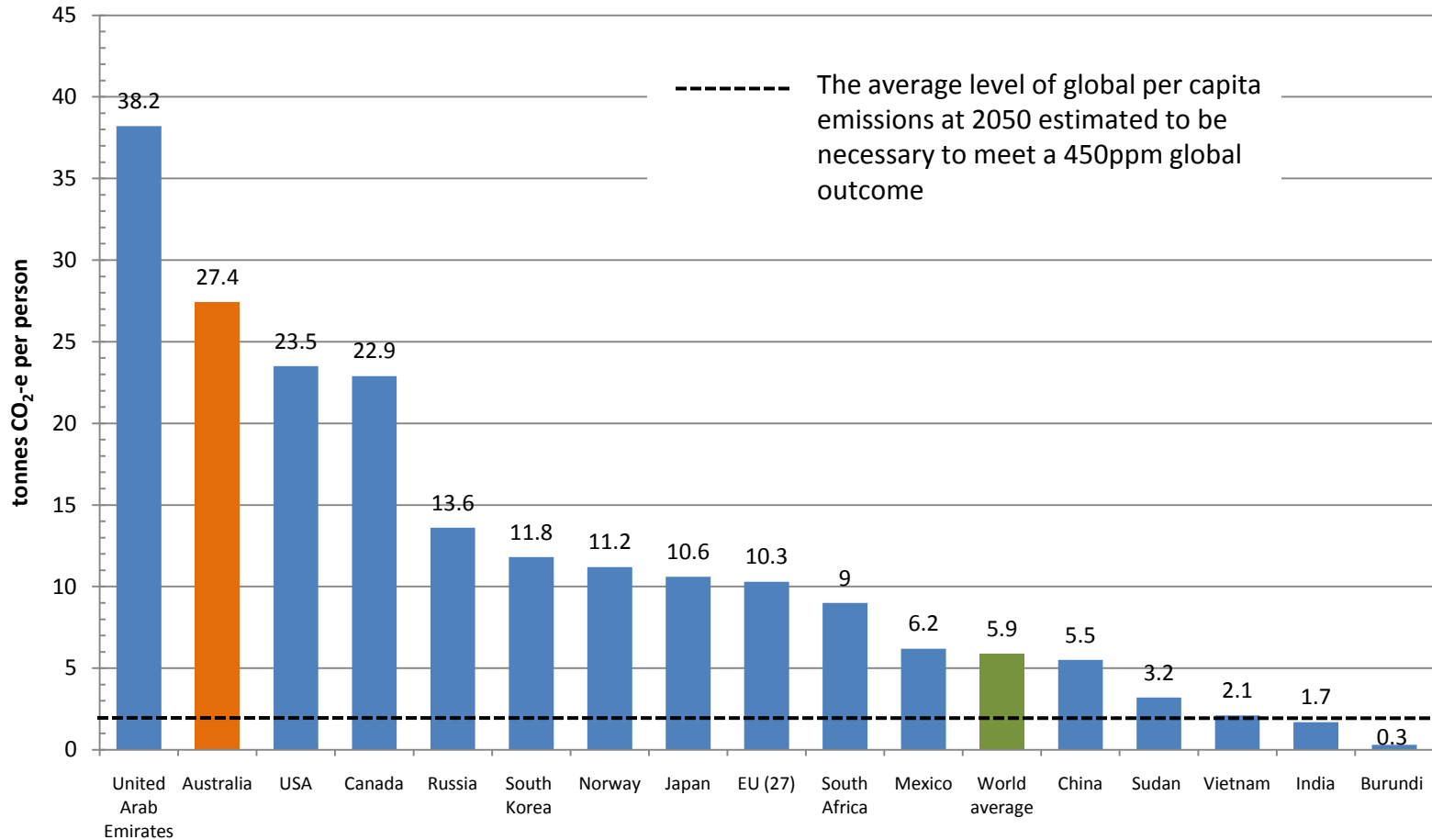
Source: Climate Analysis Indicators Tool (CAIT) Version 7.0.  
(Washington, DC: World Resources Institute, 2010). Total GHG  
emissions in 2005 (excludes LULUCF)



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# Per capita emissions



Source: Climate Analysis Indicators Tool (CAIT) Version 7.0.  
(Washington, DC: World Resources Institute, 2010). Total GHG emissions in 2005 (excludes LULUCF)



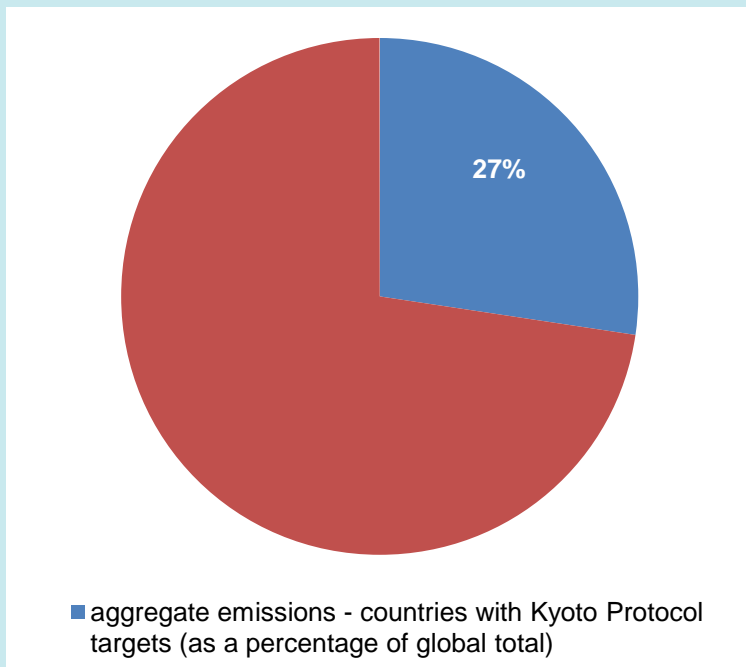
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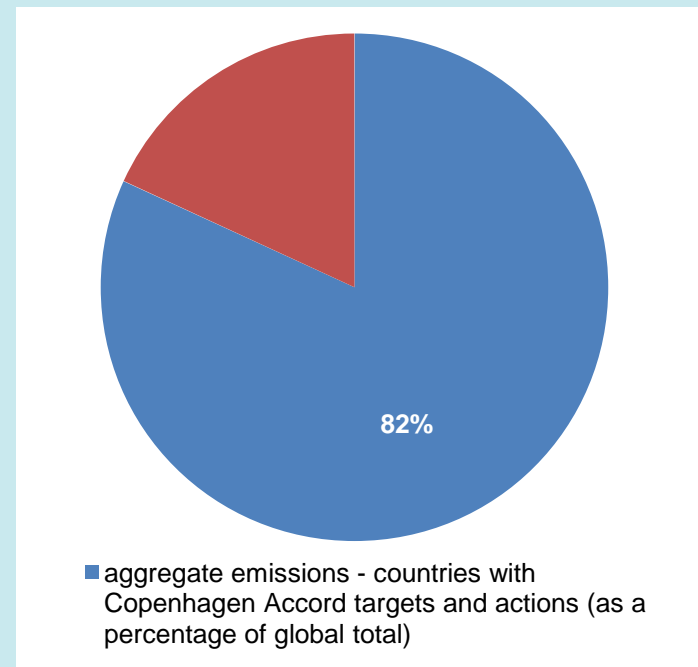
# Enhanced Opportunities for Emissions Reductions

A greater proportion of global emissions are covered by the Copenhagen Accord

## Kyoto Protocol



## Copenhagen Accord



The Kyoto Protocol targets for the first commitment period are legally binding. The Copenhagen Accord pledges are political commitments. The eventual legal character of the Accord pledges are the subject of current UNFCCC negotiations, including whether they will be binding under international law



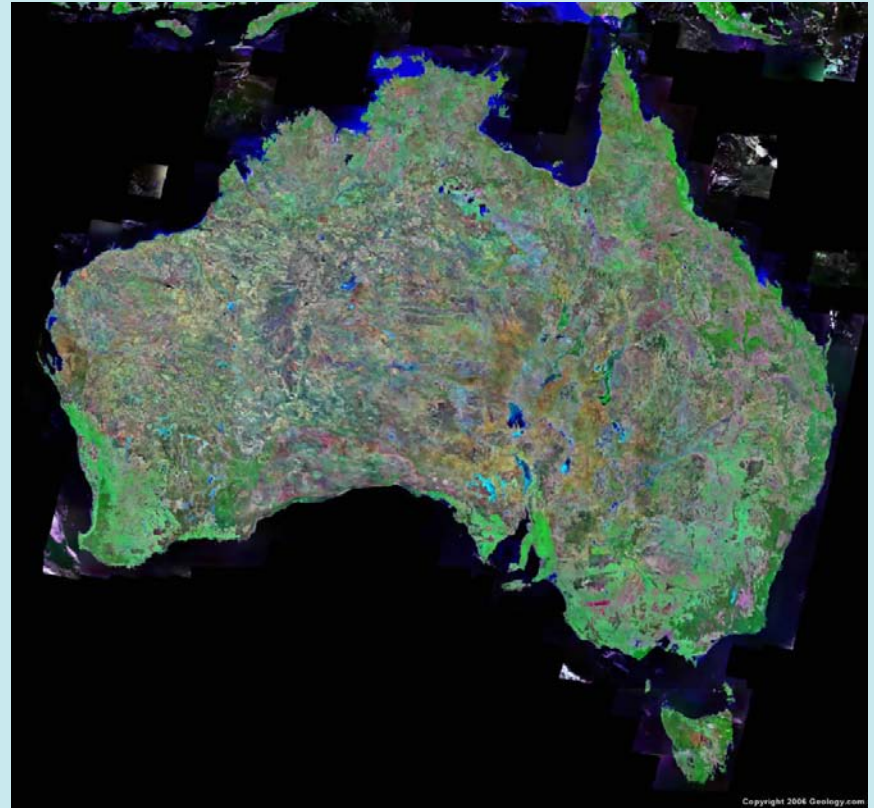
# Parties Supporting the Copenhagen Accord

Afghanistan	Canada	Gambia	Lao People's	Norway	Switzerland
Albania	Cape Verde	Georgia	Democratic	Palau	The Former
Algeria	Central African	Germany	Republic	Panama	Yugoslav
Angola	Republic	Ghana	Latvia	Papua New	Republic of
Antigua and	Chad	Greece	Lesotho	Guinea	Macedonia
Barbuda	Chile	Guatemala	Liberia	Peru	Timor-Leste
Armenia	China	Guinea	Liechtenstein	Poland	Togo
Australia	Colombia	Guinea-Bissau	Lithuania	Portugal	Tonga
Austria	Comoros	Guyana	Luxemburg	Republic of Korea	Trinidad and
Bahamas	Congo	Honduras	Madagascar	Republic of	Tobago
Bangladesh	Costa Rica	Hungary	Malawi	Moldova	Tunisia
Barbados	Côte d'Ivoire	Iceland	Maldives	Romania	Uganda
Belarus	Croatia	India	Mali	Russian	Ukraine
Belgium	Cyprus	Indonesia	Malta	Federation	United Arab
Belize	Czech Republic	Ireland	Marshall Islands	Rwanda	Emirates
Benin	Democratic	Israel	Mauritania	Saint Lucia	United Kingdom
Bhutan	Republic of	Italy	Mauritius	Samoa	of Great Britain
Bosnia and	Congo	Jamaica	Mexico	San Marino	and Northern
Herzegovina	Denmark	Japan	Monaco	Senegal	Ireland
Botswana	Djibouti	Jordan	Mongolia	Serbia	United Republic
Brazil	Eritrea	Kazakhstan	Montenegro	Sierra Leone	of Tanzania
Brunei	Estonia	Kenya	Morocco	Singapore	United States of
Darussalam	Ethiopia	Kiribati	Mozambique	Slovakia	America
Bulgaria	European Union		Namibia	Slovenia	Uruguay
Burkina Faso	Fiji		Nepal	South Africa	Viet Nam
Burundi	Finland		Netherlands	Spain	Zambia
Cambodia	France		New Zealand	Swaziland	
Cameroon	Gabon		Nigeria	Sweden	



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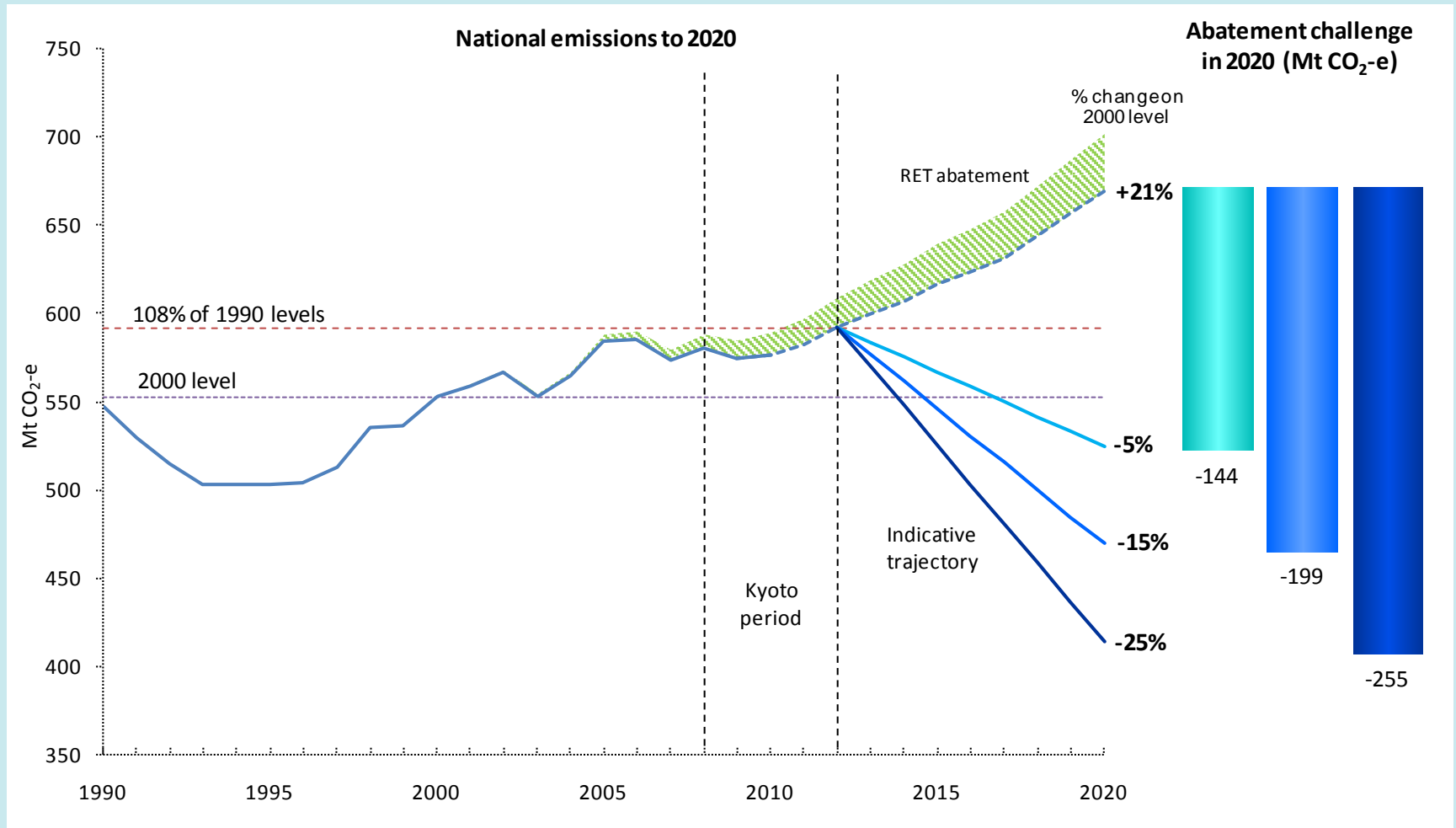
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# AUSTRALIA'S EMISSIONS



# Emissions projections and the target range



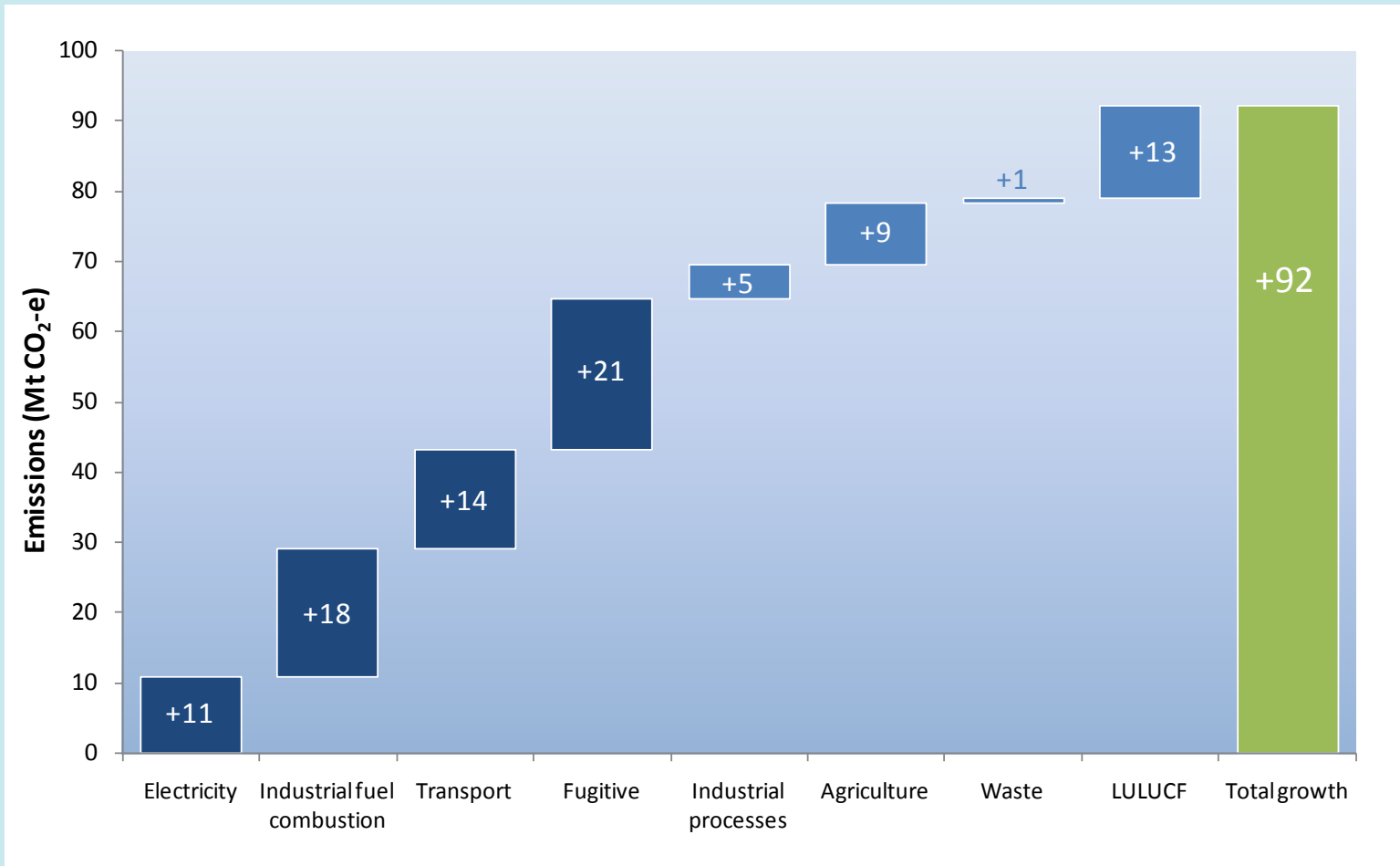
Source: DCCEE 2010



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# Sources of emissions growth

Projected increases in the level of emissions by sector from 2010 to 2020

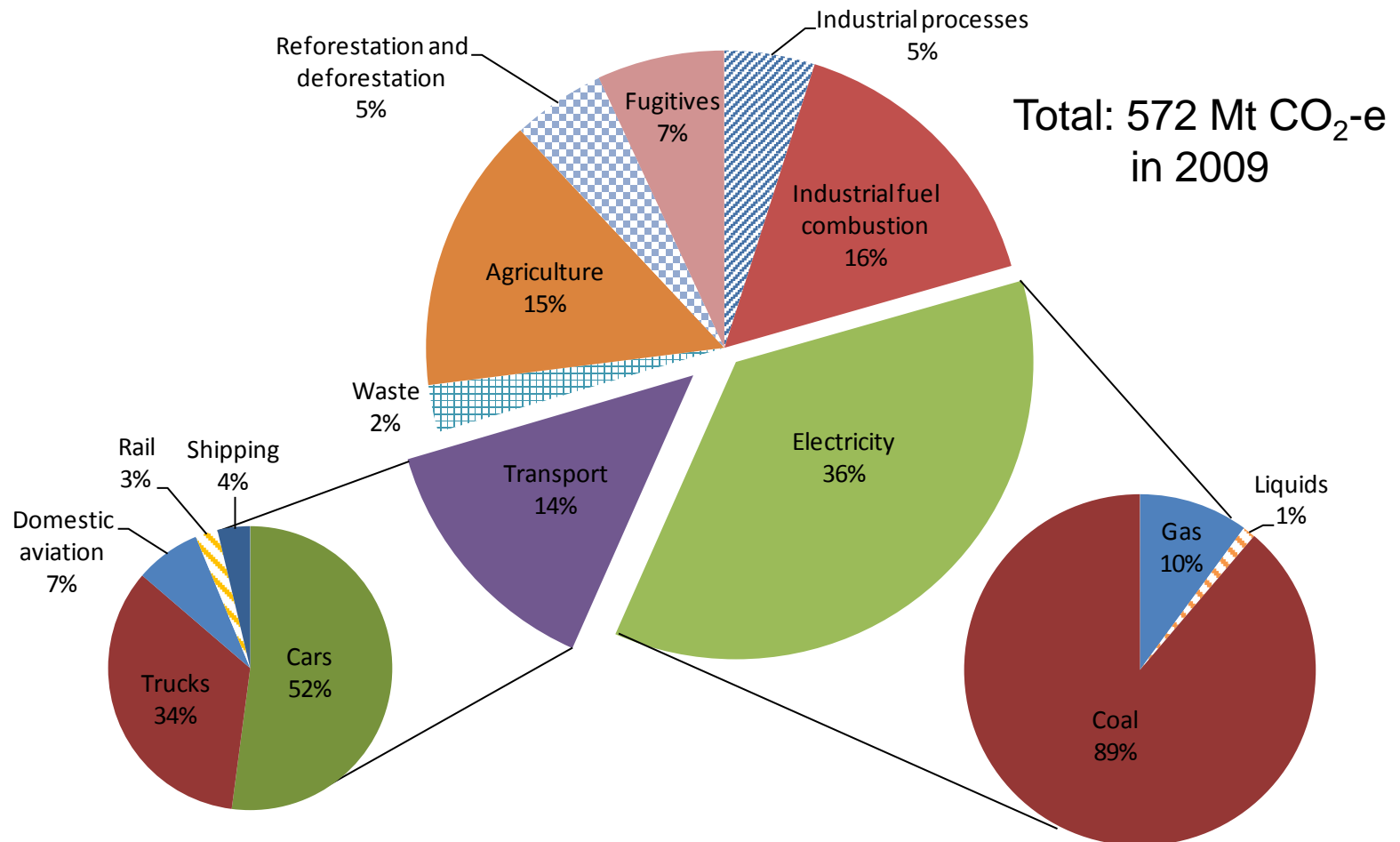


Source: Australia's Fifth National Communication on Climate Change.  
<http://www.climatechange.gov.au/publications/international/nc5.aspx>



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# Australia's emissions profile



Source: National Greenhouse Gas Inventory 2010, DCCEE analysis.  
<http://www.climatechange.gov.au/en/climate-change/emissions.aspx>

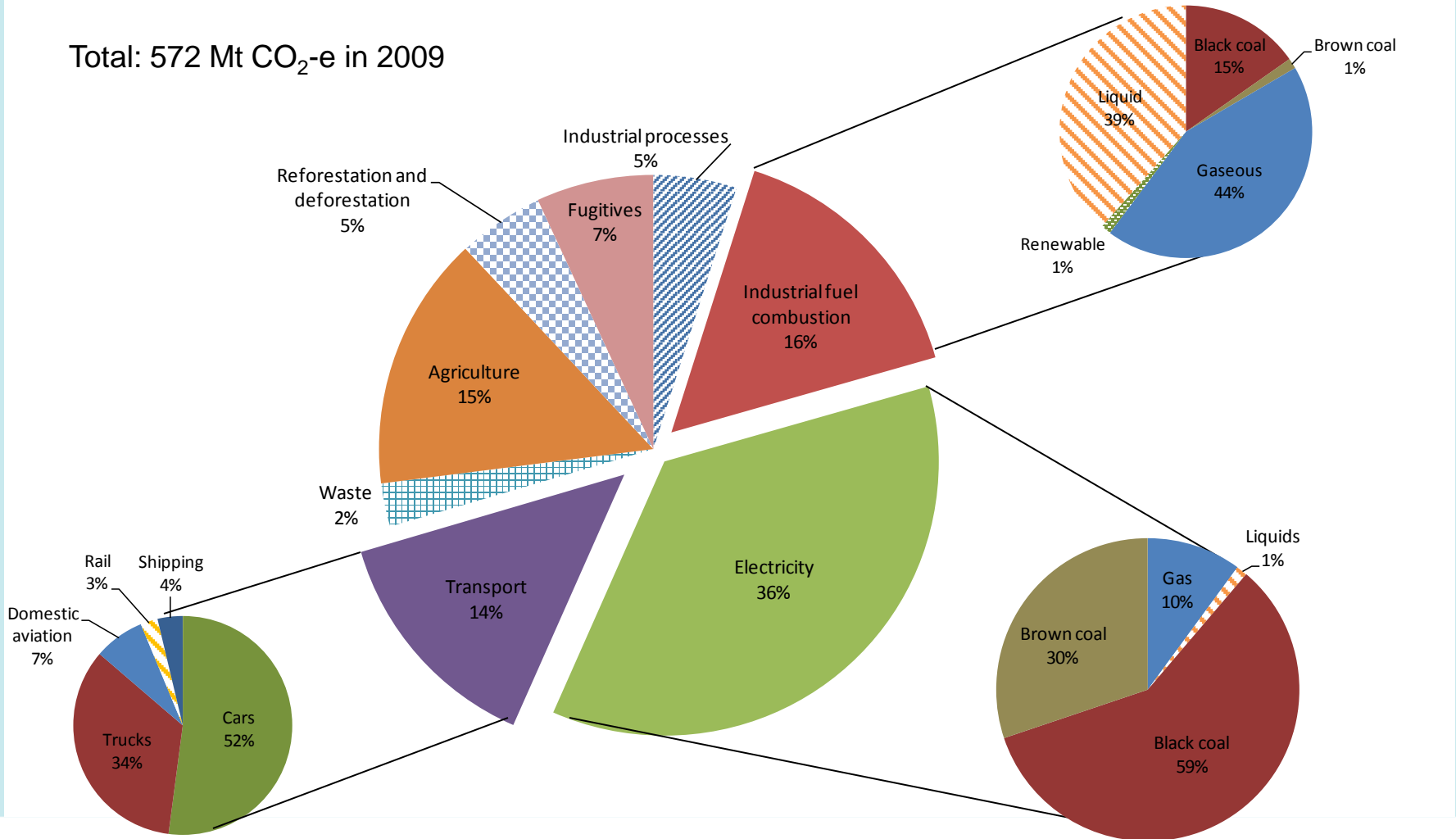


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# Australia's emissions profile

Total: 572 Mt CO<sub>2</sub>-e in 2009



Source: National Greenhouse Gas Inventory 2010, DCCEE analysis.  
<http://www.climatechange.gov.au/en/climate-change/emissions.aspx>



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