Drought, Climate Change and Food Prices in Australia

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Summary

Australia's climate has always been variable and, in particular, prone to drought. Droughts seriously affect agricultural yields and can contribute to spikes in retail food prices. The current drought has been associated with particularly broad and sustained increases in prices.

Over coming decades, the global frequency and severity of drought is likely to increase as a result of climate change. Regional projections suggest that south-eastern Australia will be adversely affected by changes in rainfall patterns, as well as by rising temperatures, which increase the severity of drought. By 2070 there may be 40% more months of drought in eastern Australia, and conditions will be worse in a high-emissions scenario.

The current drought may represent the beginning of this process. Higher average temperatures, due in part to human-caused climate change, have certainly exacerbated its impact . Other changes, such as increases in the severity of storms, will also have adverse effects. The result for Australian consumers will be rises in average food prices and in the frequency and severity of price spikes. For foods such as fresh fruit and vegetables that are supplied mainly by local producers, price shocks similar to those being experienced by Australian consumers during the current severe drought may start to occur every two to four years, rather than once a decade, unless strong action is taken to reduce global emissions.

For internationally traded food products, the picture is little better. Increases in temperatures beyond 2°C, which can be avoided only by immediate action to mitigate global warming, would reduce global agricultural production, particularly in developing countries. For instance, further increases in global grain prices as a result of climate change would put pressure on consumer prices for bread, cereals, meat, eggs and dairy products, all of which depend on grain as a major input.

Some practices that have been proposed as strategies to mitigate the impact of climate change would also contribute to upward pressure on food prices. These include the use of food products such as corn and sugar for the production of biofuels and, to a lesser extent, the conversion of cropland to plantation forests.

The policies that will do most to protect food supplies and hold food prices down are those that avoid more than 2°C of warming, beyond which the ability of agriculture to adapt would be severely tested. Appropriate responses include national and global policies that cut greenhouse emissions by promoting energy conservation, reducing demand for carbon-based fuels, setting medium and long-term emissions-reduction targets, and pricing carbon to achieve those targets.

1 Drought, Climate Change and Food Prices in Australia

Australia has always been subject to extremes of climate – 'droughts and flooding rains'. The costs of drought fall most directly on farmers and rural communities. However, all Australian families are affected to some extent by higher food prices resulting from droughts and other adverse climatic events, such as the destruction of the banana crop by Cyclone Larry in 2006.

The current drought in Australia has been associated with across-the-board increases in food prices. In the two years from September 2005 to September 2007, food prices increased at twice the rate of the Consumer Price Index. Fresh fruit and vegetables have been worst hit, with increases of 43% and 33% respectively.

The ANZ Bank (2007) identifies the drought as a primary contributor to these soaring food prices. However, Australia's drought is occurring in a global context where numerous factors are combining to drive prices upwards.

For grains, unfavourable seasonal conditions have not been limited to Australia, and have also reduced yields across much of Europe, Canada, Ukraine and Russia. Demand-side pressures, including competition from biofuels production and increased demand from major Asian markets, are further contributors, as well as regulatory changes in Europe and Argentina and rising oil prices. These factors together have driven up global grain prices, which ripple throughout the food industries. Products for which grain is a significant price component not only include bread and cereals but also meat, dairy and egg products, for which grain for animal feed is an important input.

In this sense, the current drought is a perfect storm for Australian consumer food prices. Many commentators see no end in sight to the rising prices. The ANZ Bank projects that:

> "In the short term, unfavourable weather conditions, coupled with high world prices for commodities such as grains, will increase input costs for a wide range of fresh and processed foods. The largest price rises are likely for fruit and vegetables and we can also expect significant price increases for products that rely on grains as an input (either directly or indirectly as a feedstock) such as bread, cereals and snack foods, dairy, eggs and meat. For example, the Australian Egg Corporation has warned that the price of eggs will rise by 50 to 60 cents a dozen (or at least 10%)."

The bank concludes that climate change, biofuels production and other factors will lead to a permanent shift up in food prices.

Direct and indirect effects of climate change are a common factor associated with many of the forces pushing food prices upwards. As climate change continues, these forces will intensify. In particular, over coming decades, the global frequency and severity of drought are likely to increase as a result of climate change. Regional projections suggest that south-eastern Australia will be adversely affected by changes in rainfall patterns, as well as by rising temperatures, which increase the severity of drought. By 2070, there may be 40% more months of drought in eastern Australia, and conditions will be worse in a high-emissions scenario. (CSIRO 2007)

This paper assesses the likely impact of climate change on agricultural production in Australia and globally, and some of the implications for food prices in Australia. The implications of alternative policy responses to climate change are examined. The policies that will do most to protect food supplies and hold food prices down are those that avoid more than 2°C of warming, beyond which the ability of agriculture to adapt would be severely tested. Appropriate responses include national and global policies that cut greenhouse emissions by promoting energy conservation, reducing demand for carbon-based fuels, setting medium and long-term emissions-reduction targets, and pricing carbon to achieve those targets.

2 Projections of climate change

In its *Fourth Assessment Report*, the IPCC (2007a,b,c) summarises a wide range of projections of climate change, encompassing different climatic variables, time and spatial scales, models and scenarios. Most attention is focused on projections of changes in global mean temperatures. However, analysis of the impact of climate change on agriculture requires consideration of regionally specific changes in a range of variables including temperature, rainfall and the effects of CO_2 concentrations on crop growth.

Because the global climate adjusts to changes in greenhouse gas concentrations with a lag, some warming (about 0.6ºC by 2100 relative to 1980–90) is inevitable as a result of emissions that have already taken place. Even with aggressive strategies to stabilise atmospheric CO_2 concentrations at levels between 400 and 500 parts per million (ppm), it seems likely that warming over the next century will be about 2ºC relative to 1980–90 (with a standard deviation of about one degree).

So for the purposes of policy analysis, the relevant baseline is expected warming of 2±1ºC under a stabilisation strategy. The outcome under stabilisation may be compared with 'business as usual' projections, in which there is no policy response to climate change, and with a variety of mitigation strategies. The IPCC (2007a) presents a range of 'business as usual' projections, in which estimates of warming over the period to 2100 range from 2ºC to 6.4ºC. Thus, under business as usual, both the expected increase in temperature and the standard deviation of change are higher.

The rate of change of warming (conventionally expressed in degrees of change per decade) is at least as important as the change in temperature levels at equilibrium or over a century. Recent observed warming has been at a rate of about 0.2ºC per decade (Hansen *et al* 2006). Business-as-usual projections imply an increase in the rate of warming over coming decades.

Australia has already experienced an increase in average temperatures similar to that for the world as a whole. According to CSIRO (2007), the best estimate of annual warming over Australia by 2030 relative to the climate of 1990 is about 1.0ºC. The range of uncertainty is about 0.6ºC to 1.5ºC in each season for most of Australia.

Much of this warming will reflect the effect of emissions that have already taken place, and the immediate scope to reduce emissions is limited. Moreover, average temperatures have already increased by just under 1.0ºC since 1950. It follows that a warming of 2ºC, relative to the climate of the mid-20th century, is virtually inevitable. Natural variability in decadal temperatures is small relative to these projected warmings.

From 2030 onwards, the rate of warming depends critically on the way in which energy use develops and on whether action is taken to mitigate emissions. Later in the century, the degree of warming is more dependent upon the assumed emission scenario. By 2050, annual warming over Australia ranges from about 0.8 to 1.8ºC (best estimate 1.2ºC) for the IPCC B1 (low-emissions) scenario and 1.5 to 2.8ºC (best estimate 2.2ºC) for the IPCC A1FI (high-emissions) scenario. By 2070, the annual warming ranges from about 1.0 to 2.5ºC (best estimate 1.8ºC) for the B1 scenario to 2.2 to 5.0ºC (best estimate 3.4ºC) for the A1FI scenario. Regional variation follows the pattern seen for 2030, with less warming in the south and north-east and more inland. In 2070, the risk of a warming of more than 4ºC in 2070 exceeds 30% over inland Australia under the A1FI scenario, whereas under the B1 scenario the warming is likely to be less than 2.0ºC, except in the north-west.

Under the high-emissions A1F1 scenario, the implied rate of warming is between 0.3ºC and 1.0ºC per decade. Rates of increase significantly greater than 0.2ºC per decade will create substantial difficulties in adjustment for agricultural activities. As a broad average, average temperatures increase by about 1ºC for each move of 200 kilometres (or about two degrees of latitude) towards the equator. For any given crop there is a typical range of temperatures suitable for its production. An increase of 0.2ºC per decade implies that the zone of cultivation for a typical crop will move southward by about 40km per decade, requiring continuous adjustment by farmers. An increase of 5ºC, even over 40 years, would be catastrophic, making the climate of the NSW wheat belt more like that of North Queensland.

WATER

In addition to raising average global temperatures, climate change will affect the global water cycle. Higher global temperatures imply higher rates of evaporation and higher atmospheric concentrations of water vapor. Since water vapor is a greenhouse gas, this increase in concentration is an important feedback effect, amplifying the initial impact on temperature of higher concentrations of CO_2.

Globally, mean precipitation (rainfall and snowfall) is expected to increase due to climate change. However, this change will not be uniform. IPCC (2007b, p. 181):

> "Current climate models tend to project increasing precipitation at high latitudes and in the tropics (eg, the south-east monsoon region and over the tropical Pacific) and decreasing precipitation in the sub-tropics."

Finally, climate change is likely to increase the frequency of extreme weather events, including cyclones and severe droughts.

In summary, climate change will increase average flows of water but the most important effect will be to increase the variability of flows over both space and time. Areas that are already wet are likely to become wetter, while those that are already dry will in many cases become drier. The increase in average precipitation will be caused mainly by more frequent events involving very high rainfall, such as monsoon rain associated with tropical cyclones. Meanwhile, droughts are also likely to increase.

In Australia, inflows to the Murray-Darling Basin, the location of most irrigated agriculture, are projected to decline. Severe droughts, attributed in part to climate change, have already occurred in recent years. On the other hand, areas in the wet tropics are expected to receive higher levels of rainfall (Jones *et al* 2007).

Rainfall levels have already declined, and there is evidence that human activity may be responsible, at least in part. Karoly (2003) concludes that recent pressure and rainfall changes in the Southern Hemisphere are likely to result from a combination of both natural climate processes and human influences, including stratospheric ozone decreases and rising concentrations of greenhouse gases. Marshall *et al* (2004) assert that rising greenhouse gas concentrations are an important cause of the climatic changes, which cannot be due solely to ozone depletion.

3 Climate change and agricultural production

Climate change may be expected to have a range of effects on crop yields and the productivity of forest and pasture species. Some effects, such as increased evapotranspiration, will generally be negative, while others, such as CO_2 fertilisation, will generally be positive. Changes in rainfall and temperature will be beneficial in some locations and for some crops, and harmful in other cases. In general, it appears that for modest increases in temperature and CO_2 concentrations (CO_2 concentrations up to 550ppm and temperature changes of 1 to 2°C) harmful and beneficial effects will roughly cancel out for the world as a whole, though some countries will gain and some will lose.

However, since warming of at least 1°C and probably 2°C is virtually inevitable, comparisons between a baseline of no change and an alternative of modest warming are of no practical value. A more appropriate basis for analysis is a comparison between 'business as usual' and a stabilisation option, in which policy responses ensure that the atmospheric concentration of greenhouse gases is stabilised at a level consistent with moderate eventual climate change. Although the latter definition is somewhat vague, a target of 550ppm of CO_2-equivalent gases has been proposed on a number of occasions (Stern 2007). For typical estimates of climate sensitivity, this target implies temperature change of about 0.2°C per decade over the 50 years, with stabilisation at global temperatures about two degrees higher than in the mid-20th century. Even this modest degree of warming will have adverse effects in some areas, probably including south-eastern and south-western Australia.

It is useful to consider three effects separately: the direct effects of higher temperatures, CO_2 fertilisation and effects on water availability. For Australia, the third of these effects is likely to be most important.

The Intergovernmental Panel on Climate Change (2007) summarises a large number of studies of the direct impact of higher temperatures on crop yields. For warming of more than 2°C, the marginal effects of additional warming are unambigously negative. Studies of wheat yields in mid-to-high latitudes, summarised in Figure 5.2b(c) of IPCC (2007), show that the benefits of warming reach their maximum value for warming of 2°C, while at lower latitudes, and for rice, the effects of warming greater than 2°C are clearly negative. For temperature increases of more than 3°C, average effects are stressful to all crops assessed and to all regions.

Increases in atmospheric concentrations of CO_2 will, other things being equal, enhance plant growth through a range of effects, including stomatal conductance and transpiration, improved water-use efficiency, higher rates of photosynthesis and increased light-use efficiency (Drake, Gonzalez-Meler, and Long 1997). However, the estimated relationships are curvilinear, implying that only modest increases in yields can be expected from increases in CO_2 beyond 550ppm. Moreover, temperature and precipitation changes associated with climate change will modify, and often limit, direct CO_2 effects on plants. Increased temperatures may also reduce CO_2 effects indirectly, by increasing water demand.

Water derived from natural precipitation, from irrigation or from groundwater is a crucial input to agricultural production. IPCC (2007b, Chapter 3, p175) concludes, with high confidence, that the negative effects of climate change on freshwater systems outweigh its benefits. This negative finding arises from a number of features of projected climate change.

First, climate change is likely to exacerbate the spatial variation of precipitation, with average precipitation increasing in high-rainfall areas such as the wet tropics and decreasing in most arid and semi-arid areas (Milly, Dunne and Vecchia 2005).

Second, climate change is likely to increase the variability and uncertainty of precipitation (Trenberth *et al* 2003). The frequency and geographical extent of severe droughts are likely to increase by multiples ranging from two to 10, depending on the measure (Burke, Brown, and Nikolaos 2006), and high-intensity rainfall events are likely to become more prevalent (IPCC 2007a). CSIRO projects that by 2070 there may be 40% more months of drought in eastern Australia, and 80% more in south-western Australia. (CSIRO 2007)

Third, warmer temperatures will lead to higher rates of evaporation and evapotranspiration, and therefore to more demand for water for given levels of crop production (Döll 2002). Water stress (the ratio of irrigation withdrawals to renewable water resources) is likely to increase in many parts of the world. Water stress may be reduced in some areas, but the benefits of increased precipitation will be offset by the fact that the increases in runoff generally occur during high-flow (wet) seasons, and may not alleviate dry-season problems if this extra water is not stored (Arnell 2004). There are many constraints limiting the feasibility and desirability of new large-scale water-storage projects, including environmental imperatives, social dislocation and economic cost.

THE RATE OF ADJUSTMENT

While most analysis has focused on estimates of the long-term change in temperature and other climatic variables associated with different projections, it is at least as important to consider the rate at which climate changes. If climate changes more rapidly than natural ecosystems or human agricultural systems can adapt, the results may be catastrophic.

As temperatures increase, climate in any given location becomes more like that previously observed at a point closer to the equator. Conversely, biozones suitable for particular ecological or agricultural systems tend to migrate away from the equator and towards the poles. Hansen *et al* (2006) estimate that the average isotherm migration rate of 40km per decade in the Northern

Hemisphere for 1975–2005 exceeds known paleoclimate rates of change. By contrast, natural biozones have moved towards the poles at an average rate of about 6.1km per decade in the last half of the 20th century, a rate considerably less rapid than that required to match the change in climate (Parmesan and Yohe 2003).

Human activities are more adaptable than natural ecosystems. Nevertheless, adjusting to a shift of 40km per decade will involve substantial continuing costs. For example, Quiggin and Horowitz (1999) note that the optimal service radius for grain-handling facilities in Australia is about 25km. So a facility initially located near the margin of grain production may be outside the zone of production within a decade of construction.

4 Agriculture and mitigation

Agriculture is likely to play an important role in mitigating emissions of greenhouse gases. Cole *et al* (1997) estimate that the agricultural sector accounts for between one-fifth and one-third of anthropogenic climate change, and that changes in agricultural practices could reduce anthropogenic impact by an amount equivalent to between 1.15 and 3.3 gigatonnes (Gt) of carbon equivalents per year. Of the total potential reduction, about 32 per cent could result from reduction in CO_2 emissions, 42 per cent from carbon offsets by biofuel production on 15 per cent of existing croplands, 16 per cent from reduced methane emissions and 10 per cent from reduced emissions of nitrous oxide.

Conversely, efforts to mitigate global warming by reducing emissions of CO_2 and other greenhouse gases, or through the expansion of offsetting sinks, may have a substantial effect on agricultural production

BIOFUELS

Policies aimed at reducing CO_2 emissions are likely to encourage increased use of fuels derived from agricultural sources, collectively referred to as biofuels, either through direct policy mandates (such as that embodied in the US *Energy Policy Act* 2005) or through the market incentives associated with carbon taxes or cap-and-trade systems of emissions permits. The most important single instance is likely to be the use of ethanol, derived either from food crops or from energy crops such as switchgrass, as a substitute for gasoline.

In 2004, about four billion gallons of ethanol (16 billion litres), mainly derived from corn and sorghum, was produced in the US, accounting for about 11.3 per cent of US corn output and 11.7 per cent of sorghum output and replacing about three per cent of US gasoline consumption. These proportions are expected to grow steadily (Eidman 2006). Other possible biofuels include biodiesel, derived from soybean oil, bagasse and other crop residues used as fuel in electricity generation, and methane derived from manure (Gallagher 2006).

Assuming that biofuels are economically competitive with fuels derived from fossil sources, the expansion projected by Eidman (2006) and others would imply the creation of a substantial new source of demand for agricultural output, in addition to existing demands for food. If existing processes were used to replace 20 per cent of fuel consumption, the input required would be equal to more than 50 per cent of the current US output of corn and sorghum.

Expansion of the area of forested land is one of the most favoured methods of offsetting CO_2 emissions (IPCC 2007c) and is likely to play an important role in the future. However, it is important to note that forestry competes with agriculture for land, and that a substantial increase in the area allocated to forestry will, other things being equal, increase the price of agricultural land. These effects must be considered in combination with the possible effects of increasing agricultural production of biofuels.

5 Impacts on consumers

Droughts in Australia are generally associated with increases in the prices of some supermarket commodities, particularly fresh produce. In recent years, droughts in Australia have combined with global climatic and market trends to result in major increases in supermarket food prices across the board.

Fresh produce is generally hardest hit in times of drought. The markets for fresh fruit and vegetables are largely domestic, which limits the ability to compensate for reduced production in drought periods. In 2002-03, for instance, the real gross value of vegetable production in Australia declined by 9% and took several years to recover. (ABARE 2007). This led directly to consumer price increases, with the chief executive of AUSVEG ascribing a 13% increase in vegetable prices to drought conditions and water restrictions (*Sydney Morning Herald* 2004).

Direct drought effects are not limited to fresh produce; honey is among the products that can also be severely affected. In 2003 retail prices for honey as much as doubled over a 12-month period, as domestic Australian production was sharply reduced by drought (*Sun-Herald* 2003).

While drought tends to have an immediate effect on produce, the dynamics for meat products are more complex. Producers tend to respond to drought by destocking, which creates a short-term increase in the supply of meat, which can lower prices during the initial period of the drought. Prices then increase later as the process of rebuilding herds and flocks can take time and creates supply constraints. For instance, during the 2002-03 drought, prices for produce began to rise from mid-2002, but increases in meat prices did not appear until mid-2003. In some instances, consequent food price increases can be dramatic. For instance, over the period 2001–04, lamb production fell by 10%, which the Sheepmeat Council attributed entirely to drought conditions. Combined with increasing international demand for lamb, this lower production led to retail price increases for lamb meat of 50% (Australian Treasury 2004).

For grains, the situation is different again. Most grain commodities, as well as many meat and dairy products, are now part of integrated global markets, so the main driver for supermarket prices for foods made from those commodities is the global price, not local Australian conditions. The price of bread may have just as much to do with demand in China and weather conditions in Canada as it does with the local Australian wheat crop. That said, Australia is a major supplier of beef, grain and milk powder globally, so droughts in Australia have the potential to affect global prices. In the best case, droughts in Australia can be countered by supplies from other countries, leading to no noticeable effect on retail prices for consumers. However, where a drought in Australia coincides with other global pressures on agricultural prices, the net result can be a sharp rise in consumer food prices – as is happening in the current drought.

The different dynamics for various commodities and interaction with global conditions make it difficult to generalise about the behaviour of supermarket food prices during droughts. However, the 2002-03 drought witnessed overall food price rises of 4.4%, nearly twice the increase of the CPI during the same period (2.7%). The Australian Treasury (2004) attributed the increases to the drought.

A similar pattern of price increases is occurring in the current Australian drought. According to ABS measures of food prices, from September 2005 to September 2007 food prices increased by 12%, again double the overall CPI rate of 6%. During this period, consumer prices for bread and eggs increased by 17%, vegetables by 33% and fruit by 43%.

If, as is projected, climate change exacerbates the frequency and severity of droughts and other extreme weather events in Australia, the result will be an increase in average food prices and in the frequency and severity of price spikes.

For foods such as fresh fruit and vegetables that are supplied mainly by local producers, price shocks similar to those now being experienced by Australian consumers may start to occur every two to four years, rather than once a decade, unless strong action is taken to reduce global emissions.

For internationally traded food products, the picture is little better. Increases in temperatures beyond 2°C, which can be avoided only by immediate action to mitigate global warming, would reduce global agricultural production, particularly in developing countries. For instance, further increases in global grain prices as a result of climate change would put pressure on consumer prices for bread, cereals, meat, eggs and dairy products, all of which depend on grain as a major input.

The following table summarises the history of prices for selected food products during recent droughts, and describes the climate change-related pressures on those food prices if temperature increases exceed 2°C.

Food category	Price effect of drought or other severe weather events*	Effect of severe climate change (more than 2ºC global warming)
Vegetables	2005–07: +33%	Locally produced products such as these are vulnerable to price spikes during local droughts. Price shocks similar to those experienced in the current drought may occur every two to four years, instead of once per decade as has been the historical norm. If some producers are unable to adjust to severe changes, permanently elevated price levels could result.
Fruit	2005–07: +43% Bananas 2005-06: +300%	
Honey	2002-03: +100%	
Bread	2005–07: +17%	Bread prices depend in part on global wheat prices. Global wheat yields are likely to decline for temperature increases of more than 3ºC (IPCC 2007). This would increase global prices and is likely to cause permanently elevated prices for bread.
Eggs	2005–07: +17%	For eggs, dairy and many meat products, water and grain for feed are important inputs. As with bread, increases of more than 3ºC would continue to drive up global grain prices, while climate change is likely to decrease water supplies. Dairy that is dependent on irrigated pasture is vulnerable to water scarcity, while native pasture capacity will decline by up to 40% for temperature increases greater than 2ºC (Preston & Jones 2006). Severe climate change is likely to cause permanently elevated prices, with further shocks during periods of drought.
Milk and dairy products	2005–07: +11%	
Meat and seafood	2005–07: +4% Lamb 2000–03: +59% Beef 2000–03: +31%	
All food products	2005-07: +12% 2002-03: +4.4%	
CPI	2005-07: +6% 2002-03: +2.7%	

* Figures for 2002-03 based on comparison of June 2002 and June 2003 prices. Figures for 2005–07 based on comparison of September 2005 and September 2007 prices. Lamb and beef 2000–03 based on comparison of December 2000 and December 2003 prices. Source: ABS, 6401.0 Consumer Price Index, Australia, September 2007.

6 Policy implications

A 'business as usual' approach to climate change will lead to severe damage to the environment and to Australia's agricultural production capacity, with an increase in the frequency and severity of drought.

If this outcome is to be avoided, Australia must participate in a global effort to stabilise atmospheric concentrations of CO_2 and other greenhouse gases at a level consistent with warming of no more than 0.2°C per decade, implying an ultimate warming of no more than 2°C. Some have suggested stabilising atmospheric concentrations at about 550ppm CO_2-equivalent; however, many scientists, the European Commission and the most recent data from the IPCC suggest that stabilisation at about 450ppm CO_2-equivalent is necessary to minimise the risk of exceeding 2°C of warming.

Such a target requires substantial reductions in CO_2 emissions. Typical estimates suggest that developed countries must reduce emissions by 60% to 80% relative to 1990 levels, and must encourage developing countries to hold their own emissions well below the peak levels reached by developed countries in the 20th century. This will entail a substantial mitigation effort.

However, all mitigation options are not equal with regard to food prices. Replacing fossil fuels with biofuels derived from food crops will increase food prices, possibly quite substantially. Similarly, diverting agricultural land to the production of biofuels or to plantation forestry will tend to raise food prices, other things being equal.

The mitigation policies most conducive to lower food prices are those based on increasing the efficiency with which energy is used, and reducing wasteful uses of energy, along with alternative energy sources, such as wind and solar energy, that do not rely on crop-based inputs.

Conclusions

Climate change will affect Australians in many different ways. Recent increases in grocery prices are a direct illustration of the changes that will affect the entire planet if global warming is allowed to continue unchecked. Immediate action to put Australia, and the world, on a sustainable path to the future is essential.

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