

## CLIMATE CHANGE

### *Motion*

Resumed from 13 August on the following motion moved by Hon Lynn MacLaren —

That this Council calls on the state government to —

- (a) note that on 9 May the daily mean concentration of carbon dioxide in the atmosphere surpassed 400 parts per million for the first time since measurements began in 1958;
- (b) note that evidence of warming Western Australian oceans is indicated by the increased numbers of jellyfish, tropical fish and whale sharks observed further south than ever before; and
- (c) explain the changes required to the state government's climate change strategy to reduce the rate of carbon dioxide emissions and to protect WA's unique biodiversity.

**HON LYNN MacLAREN (South Metropolitan)** [2.13 pm]: Responsibility for reducing our impact on the climate falls on each of us, as individuals, families, households, neighbourhoods, local councils, regional groups, states, nations and international entities. This motion asks members to consider what we can do to mitigate climate change in our capacity as state parliamentarians. I ask members to reflect on their roles in their party or caucus, in cabinet, in their electorates, or in their ministerial offices—whatever their role is as a state parliamentarian—and explain how we can face the elephant in the room of climate change. In the days before we were sworn into this Parliament for this term, on 9 May 2013, as noted in the motion, carbon dioxide levels in the earth's atmosphere reached the number—400 parts per million—that scientists and activists had set as a limit to prevent the most terrible impacts of climate change. In anyone's book, that is a global fail for policymakers and industry leaders, and yet barely a peep is heard from this government.

Let us talk about the significance of that 400 ppm figure. The National Aeronautics and Space Administration in the USA rounded up a few of its scientists and asked them what the passing of the 400 ppm figure meant to them. Dr Erika Podest, who is a carbon and water cycle research scientist for NASA, said —

CO2 concentrations haven't been this high in millions of years.

I touched on this in my introductory remarks last week. Dr Podest continues —

Even more alarming is the rate of increase in the last five decades and the fact that CO2 stays in the atmosphere for hundreds or thousands of years. This milestone is a wake up call that our actions in response to climate change need to match the persistent rise in CO2. Climate change is a threat to life on Earth and we can no longer afford to be spectators.

Dr William Patzert, a research oceanographer, put this twist on it —

Scary scorecard: catastrophic climate change 400, humanity zero. Listen to the scientists, vote wisely, beat carbon addiction and put humanity into the game.

As far as human experience goes, we are in uncharted territory now. Never has our species experienced a world like this. It is not a one-off phenomenon either. Every single daily carbon dioxide measurement in April 2014 was above 400 ppm. This is a persistent change to our atmosphere. It is time that we accept, like an unwanted birthday, that we are in a new era. As Ralph Keeling, director of the CO<sub>2</sub> program at the Scripps Institute at the University of California San Diego, said —

The milestone of 400 parts per million is a measure of the rather poor track record of negotiators and everyone else.

I want to look at how climate change will affect Western Australia. If we let greenhouse gas emissions increase temperatures by more than three degrees Celsius, we will need around 34 per cent of additional capital expenditure to provide alternative water supplies. By the year 2070, the south west is likely to see 80 per cent more drought months, and there will be a 140 per cent increase in the intensity of most severe storms. It was shocking this week when we awoke to the news that the Fremantle railway bridge had been hit by a ship. It went out on Twitter at about 10.00 am, and the pictures were startling. Severe storms are going to be a more frequent occurrence, and that is the kind of impact that no-one could have predicted—that our rail system would be put out for several days because of a ship bashing into the railway bridge.

It is not only the slowly rising sea that should concern most people, because we would have seen recently the news about Tuvalu and Kiribati, which are communities very concerned about sea level rise, because they are island countries. The more violent storm surges are dumping larger amounts of water that will take out our infrastructure and erode our favourite places. If we keep the temperature rise to between two and three degrees

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Celsius, we would be looking at a decline in wheat production of almost nine per cent by 2030, and over 13 per cent by 2050. There will be similar declines in sheep meat production. Which farming families want to see their children take on a farm under those conditions? If there is a temperature increase between one and two degrees, Western Australia will see a reduction in mean annual rainfall of seven per cent. There will be a 13 per cent reduction in surface water run-off over the next 35 years, compared with what the previous two generations were used to.

Therefore, members, it matters a lot to keep the temperature increase as low as possible. Research is providing us with more and more evidence of the changes that are occurring. For example, the Bureau of Meteorology's annual climate statement came out in 2013 stating that the sea surface temperatures around Australia were unusually warm in 2013, continuing the long trend that has seen sea temperatures increasing around Australia and globally. Roger Jones, a professorial research fellow at the Centre for Strategic Economic Studies at Victoria University, stated that the biggest shock he got was when he looked at the sea surface temperatures for the south west of Western Australia.

I have with me a satellite-derived map for the temperatures in Jurien Bay and Hamelin Bay. It shows over the months the maximum daily temperatures and how they compare with the daily temperatures for the years 1971 to 2000. This map is one of several pieces of evidence that scientists have accumulated over the past several years to demonstrate that climate change is affecting many aspects of our planet. This is local to us—Jurien Bay—and it shows the rising sea temperatures off our coast. There is therefore plenty of evidence out there. I will be asking members, and particularly in this case the Minister for Fisheries, to comment on the impact on our fisheries of this type of rise in sea temperature.

However, let us look at the Ningaloo Niño, which members may be familiar with. This extreme event in the Indian Ocean, which is called the Ningaloo Niño because of its proximity to the Ningaloo Reef World Heritage site, was driven by the unusual features in the Leeuwin current. The Leeuwin current is the longest continuous boundary current in the world, characterised by warm ocean water flowing from the north sea of Australia southwards along the western coast of Australia. It is the driving force creating the conditions for the unique marine biodiversity in this global biodiversity hotspot, and it was affected by extreme ocean and atmospheric conditions in the Pacific and Indian Oceans during the 2010 and 2011 La Niña. The map I have with me shows La Niña. I seek leave to table the map for the benefit of members who may wish to refer to it in responding to the motion.

Leave granted. [See paper 1792.]

**Hon LYNN MacLAREN:** Thank you, Mr President, and thank you, members.

During the heatwave, water temperatures were more than three degrees above long-term seasonal averages, climbing up to five degrees above for a two-week period at the peak of the event, and causing widespread impacts on marine ecology, including fish kills and coral bleaching. Water temperatures affect the growth, survival, abundance and distribution of most marine species. Rapid short-term temperature rises can be harmful or even lethal to marine organisms, as in the case with coral bleaching and fish mortality, and have potentially catastrophic impacts on marine ecosystems throughout the world's oceans. The Ningaloo Niño is a sharp reminder that we are all connected through the ocean, and that faraway climatic events have an impact on marine conditions more than 10 000 kilometres away in a different ocean. I will quote Dr Ming Feng, lead researcher at Australia's CSIRO, who according to my notes states —

Understanding the factors that influence the formation of events like the 2011 Ningaloo Niño is a vital first step in preparing for impacts from extreme warming events in the future ...

This is especially true in the context of a warming ocean.

The first ever reported bleaching at Ningaloo Reef in Western Australia occurred in 2011, according to Wernberg et al of 2013. Continuing on, I will touch on some of the research behind the motion that we are considering today. Australian seaweed species are being pushed to the brink. According to research led by Assistant Professor Thomas Wernberg of the University of Western Australia's Oceans Institute, modern seaweed communities to the south are becoming more similar to past communities in the north, with several temperate species moving poleward—that is, to the South Pole. The results predict that up to one quarter of species in southern Australian waters might retract towards extinction. The researchers found changes in seaweed communities in both the Indian and Pacific Oceans consistent with rapid warming over the past decades. According to my notes, Assistant Professor Wernberg states —

We found that continued warming might drive potentially hundreds of species towards the edge of the Australian continent beyond which there is no refuge ...

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The researchers believe that although some species may be able to make adjustments to cope with these natural cooling and warming cycles, the predicted rate and strength of warming in the coming decades are likely to force many retreating species further south and beyond the limits of available habitat.

In May last year, *The West Australian* reported sightings of whale sharks, a jellyfish called Irukandji and humpback whales. It states —

Whale sharks off the coast of Perth, irukandji jellyfish at Ningaloo Reef and humpback whales giving birth 2000km from their usual calving grounds have left biologists baffled as they investigate whether an ocean heatwave is to blame for marine life turning up in unexpected places.

I draw the attention of members to the article from *The West Australian*, which they may remember because it was quite striking. The article by Michelle Wheeler was accompanied by a striking illustration of the unusual animals that were sighted in unusual places that they do not normally inhabit.

**Hon Paul Brown:** There are three, four or five species of Irukandji—some are quite big—and they don't even know about some. There's a lot they don't know about. There's a lot that they say they know but there's a hell of a lot that they don't know that they are attributing to what you are attributing it to there.

**Hon LYNN MacLAREN:** Yes, there is more to be learned about our marine life; that is true. Hon Paul Brown might have heard about the massive whale shark that was located off the Western Australian coast two weeks ago. There is a lot in our marine environment that we do not understand yet and science has much to do just to understand the planet as it exists. However, we have been able to mark the changes that are occurring due to climate changes just from what we know about science. These are known species and they are found in different places where they never used to be found; so I note the member's comments.

Among the unusual marine sightings, I mentioned the Irukandji jellyfish. It is usually found around Broome but it is now found far further south. It stung 13 people at Ningaloo Reef in April 2013. The tropical fish proportion at Jurien Bay has doubled. New tropical species have been sighted at Rottneest Island that have never been seen there. Whale sharks have been spotted off Rockingham, City Beach and Floreat. In Albany, humpback whales have been seen giving birth 1 500 to 2 000 kilometres south of their usual calving areas.

I want to touch on what is happening on the land as well as on the sea. There was a quite fascinating study into banksia that demonstrated foresight that the government should take notice of. Research by academics from Curtin University, the University of Tennessee and North Carolina State University simulated changes that will be forced upon 100 local species of banksia, demonstrating quite dramatically that two-thirds of the species are predicted to decline due to climate change. They also found that between five per cent and 25 per cent of species are projected to suffer range losses of 100 per cent by 2080, depending mainly on the climate scenario that they put into the formula.

The message for us here today is that it depends on the climate scenario, but we need to stop the warming rate, and we can stop that warming rate.

Research has shown that, depending on the climate scenario, it will impact our species on land to a greater degree, or a lesser degree, if we can hold it off. The evidence led these researchers to conclude that migration may not be a viable option for most species to avoid reduction in range size or extinction. The research states in part —

Because the diversity patterns for Banksia closely match those for plant species overall and because migration rate was relatively unimportant we suspect these conclusions generalize to the southwestern Western Australian flora as a whole.

Taken together, our results suggest that the future of Western Australia's endemic species in the genus Banksia, and the future of plant biodiversity in southwestern Western Australia generally, may rest largely in the degree to which this region experiences increased drought in coming decades and in the ability of species to tolerate such decreases in precipitation.

The warming of our climate is dramatically changing the face of Western Australia. Our children and their children will not recognise the landscape of our youth, unless we curb climate change now.

The Intergovernmental Panel on Climate Change in its fifth assessment report released a summary for us as policymakers, and in particular for the government of the day, in order to break it down and present a clear message. The summary states in part that continued emissions of greenhouse gases will cause further warming and changes in all components of the climate system. Limiting climate change will require substantial and sustained reductions of greenhouse gas emissions. It is virtually certain that there will be more frequent hot and fewer cold temperature extremes over most land areas on daily and seasonal time scales as global mean

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temperatures increase. It is very likely that heatwaves will occur with a higher frequency and duration. The global ocean will continue to warm during the twenty-first century. Heat will penetrate from the surface to the deep ocean and affect ocean circulation. Global mean sea level will continue to rise during the twenty-first century. Under all scenarios, the rate of sea level rise will very likely exceed that observed during the period from 1971 to 2010 due to increased ocean warming and increased loss of mass from glaciers and ice sheets.

What does this mean for us here in Western Australia? Hotter weather and drier conditions could lead to extreme and more frequent fire behaviour in Perth and its surrounding areas. The fire season will start earlier and end later. The number of extreme bushfire days will increase. Perth will be the most severely impacted city in Australia as a result of water scarcity, with stream flow to Perth's dams set to decrease.

So what am I asking in this motion? The government should explain, firstly, why climate science is not integrated into the proposed revision of state planning policy 3.7, "Planning for Bushfire Risk Management". Then the government should explain why climate science is not mentioned in the proposed revision of "Planning for Bushfire Risk Management Guidelines", the draft of which was released in May this year. Recent experience—I point to the Perth hills bushfire of February 2011—tells us to do better. That bushfire destroyed 71 homes and damaged a further 39, and 517 families were evacuated.

In the subsequent special inquiry, climate change was discussed as a significantly contributing factor. The Public Sector Commission's report stated —

There has to be a point in time when the Government recognises the climate is changing and uses this as a catalyst for reviewing and reforming policies that are affected by climate.

This, along with the predictions outlined by the Bureau of Meteorology, led to recommendation 42 of that inquiry; namely, that the state government recognise the projected changes in climate and potential impact on future fire events. Furthermore, the Bureau of Meteorology told the special inquiry that future projections of rainfall suggest an expected decline of two per cent to 20 per cent by 2030 and of five per cent to 60 per cent by 2070, depending on global greenhouse gas emission scenarios. However, the new policies and guidelines as they are drafted now do not respond to recommendation 42, and they do not incorporate climate change or longer time frames into their planning. That is the impetus for this motion today.

Another problem is nuisance flooding. Last month, a report in the United States looked at the increasing problem of nuisance flooding as coastal sea levels rise. Eight of the top 10 cities in the United States that have seen an increase in so-called "nuisance flooding"—which causes such public inconveniences as frequent road closures, overwhelmed storm drains and compromised infrastructure—are on the east coast, according to a new technical report by the National Oceanic and Atmospheric Administration. The report concludes that any acceleration in sea level rise that is predicted to occur this century will further intensify nuisance flooding impacts over time and will further reduce the time between flood events.

It is harder to see what has been done in our part of the world. But there is a collaborative project to transition us to living in a water-sensitive city. Members may be aware that I have tabled a bill in this house that lays out a planning framework to protect environmental values, provide for an orderly transition of urban development in coastal areas that are vulnerable to storm surge and sea level rise and flooding, and establish processes for people to adapt to climate change impacts in coastal areas. This forward-thinking approach that I have taken in the bill has been adopted already elsewhere to great effect, helping communities to become more resilient in the face of the unpredictable.

The Cooperative Research Centre for Water Sensitive Cities has teams in Brisbane, Melbourne, Perth and Singapore and is currently looking at quantifying the costs of developing and maintaining a water-sensitive city. It is looking at non-market benefits, such as managing stormwater and creating more liveable environments. One of the project's essential participants, Emma Bishop from the Office of Living Victoria, has said —

These policy decisions are likely to have a significant impact on our urban communities through, for example, protecting the health of local waterways and bays, improving public health and well-being, and reducing nuisance flooding and urban heat island effects.

I will now give members a good example that shows how we can act. In Western Australia, the Department of Water is in the process of water reform to bring Western Australia in line with the National Water Initiative. The early steps are encouraging, with the water reform position paper addressing climate change directly as a policy driver, and considering the associated effects as independent, to be taken into account when determining allocation limits of water. Furthermore, this reform will bring into force statutory allocation plans. Those plans will become binding under law when allocating water, as opposed to being guiding documents. For plans such as the Gngangara groundwater areas allocation plan for Perth metro, this is great news. The Gngangara water

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allocation plan is already advanced in its approach to climate change, using adaptive management as a central tool to the water allocation planning process.

With that positive example, I want to wrap up my introductory comments. In this very chamber, we could hear from the Minister for Education about whether he has implemented a Western Australian schools zero carbon policy.

We could listen to the Minister for Mental Health about any action plan to address climate depression. If the minister is not aware of this phenomenon, I point out to her that as long ago as 2011 *The Sydney Morning Herald* covered the issue in an article titled “Mental illness rise linked to climate”. In part, it stated —

RATES of mental illnesses including depression and post-traumatic stress will increase as a result of climate change ...

The paper, prepared for the Climate Institute, says loss of social cohesion in the wake of severe weather events related to climate change could be linked to increased rates of anxiety, depression, post-traumatic stress and substance abuse.

I commend the Climate Institute’s report to the minister, if she has not read it already.

**Hon Helen Morton:** Even from what the member read out, it says “could be”. There is no evidence that it does.

**Hon LYNN MacLAREN:** It was surmised in 2011 that it was possible. If it was possible, minister —  
Several members interjected.

**Hon LYNN MacLAREN:** This is 2014. I hope that part of what the Mental Health Commission and the new, improved Mental Health Bill do is address the contemporary issues facing people today, to which some respond with mental illness. Climate change–induced depression is something that our health system should look into. Is it prevalent in Western Australia? Do we have a plan to address it? It is something that is known elsewhere. The Climate Institute believes it is a reality. I would ask our health professionals to look into it. It could be asked, “Do we have a plan to address it, if it exists?” Look at the situation in Western Australia —

**Hon Helen Morton:** Surely someone else can work out whether it exists or not.

**Hon LYNN MacLAREN:** I believe it exists and the Climate Institute believes it exists. I am hoping that that information gets into the minister’s department and that it looks into it. That is the reason for this motion. I will go on from the other potential responses to this motion by people who were elected to this state government at a time when the parts per million of carbon dioxide reached that critical point. So far, we have not had a proactive response from the government. I mentioned what the Ministers for Education and Mental Health could possibly do.

The Minister for Fisheries’ responsibility is directly related to this motion. I have noted the rising temperatures in our oceans. I would like to know whether the Department of Fisheries has scientifically assessed the impact of warming oceans on our fisheries. It is directly relevant to the job under the Minister for Fisheries’ belt. In his role also as the Minister for Agriculture and Food, I would like to know whether the agricultural sector has a plan to reduce its emissions or to protect food security, as growing regions will shift in response to changing climate. Members of this chamber who can participate in this debate include the former Minister for Environment. She could explain how the drying climate is predicted to push WA’s threatened species into the “risk of extinction” classification. All of these ministers attend party meetings, or they sit in cabinet and they influence the Minister for State Development and the Minister for Energy. These ministers are among those who make decisions that directly impact our emissions profile; whether to approve projects and strategies that increase CO<sub>2</sub> emissions or whether to implement reduction strategies and incentivise low carbon or zero carbon footprint development. That is the nature of the motion I gave notice of more than one year ago. In that time, nothing on the notice paper has been directly relevant to climate change, which is the elephant in the room.

I invite members to address this from their perspective, whether they are a member in a coastal area that is vulnerable to impacts of severe storms and sea-level rise or whether they are a minister who has potential portfolio responsibilities, to prepare Western Australians for this unprecedented challenge. I would like to hear from them in addressing this motion. This is not something that we can leave to future generations. As I said at the beginning, this is our watch. We are elected members of the state of Western Australia at a time when climate change has reached a pivotal point in history. I urge members to rise to that challenge and to use their responsibility as elected members to address this critical issue at this critical time.

**HON RICK MAZZA (Agricultural) [2:45 pm]:** I thank Hon Lynn MacLaren for bringing this important debate to the house. There is no doubt that there are changing climate patterns. What underpins all of that is not really clear. There is certainly a lot of science. A lot of facts and figures were put forward by Hon Lynn MacLaren;

however, there is also a lot of science on the other side of the debate. A fair bit of Hon Lynn MacLaren's speech focused on marine life that has been found in recent times further south than its normal habitat. Some of that could be explained by the fact that we have a very strong Leeuwin current in Western Australia that runs all the way from the Kimberley, south to Esperance and across to South Australia. Anybody who has fished widely would know that that current is particularly strong. Quite often, marine life such as green turtles can be found as south as Cape Naturaliste and those sorts of places. The water temperature of the Leeuwin current is significantly higher than it is closer to shore. Some of that may be explained by the fact that we have a strong Leeuwin current.

European settlement only occurred in Australia over the past couple of hundred years. We still do not know enough about the cycles of things such as the Leeuwin current or weather patterns. They could be long-term changes or it could simply be that the world is constantly changing. We know there have been mini ice ages and ice ages. We also know that dinosaurs once existed. This little blue planet has been through many things over the aeons. It could be that on top of CO<sub>2</sub> contributing to global warming, a natural change is progressing all the time within our environment. Professor Bob Carter presented to the Pastoralists and Graziers Association last year. I had the pleasure of listening to that presentation by him. One thing he said is that CO<sub>2</sub> could be doubled in the atmosphere next week but the change to the temperature would only be something like 0.003 degrees. It has been explained to me that it is a bit like being under a blanket—putting another blanket on will not double the temperature when a person is asleep. We could increase CO<sub>2</sub> and it would not necessarily have a massive effect on the temperature of our planet.

I do not think Hon Lynn MacLaren touched on what we can actually do about CO<sub>2</sub>. We have this *Chicken Little* effect about the sky falling, so what do we do? We have the CO<sub>2</sub> problem and the earth is warming. What do we do about it? Everybody here drives a motor car. We have a manufacturing industry. The world is hungry for the use of fossil fuels. Renewable energies are being worked on all the time but they are not quite sufficient to meet the world's hungry appetite for CO<sub>2</sub>-type manufacturing and other things. I do not think there is yet an answer, but I think with a measured view and more science, we might eventually get to the point that we rein in levels of CO<sub>2</sub>. I do not see that slowing down any time soon in the current situation. That is my contribution to this issue today. I would like to hear from others on it.

**HON STEPHEN DAWSON (Mining and Pastoral)** [2.50 pm]: I too rise to make a contribution on Hon Lynn MacLaren's motion this afternoon that this Council call on the state government to note a range of things and to explain the changes required to the state government's climate change strategy to reduce the rate of carbon dioxide emissions and to protect Western Australia's unique biodiversity. Hon Lynn MacLaren is absolutely right about each of the three things that she raises in her motion, and I agree with them. I make the comment today, as I did recently during a motion moved by Hon Robin Chapple, that it is important that we in this place, and in fact the Greens' members of this place, acknowledge the disastrous political judgement of the federal Greens on the issue of carbon pricing, which I believe is the most effective way of reducing greenhouse gas emissions. I am not going to go back over the history of the past couple of years, suffice to say that the Greens in the federal parliament had a real opportunity to make a difference on some of those issues. The Greens did not even seek to amend the carbon pollution reduction scheme bills of the federal Labor Party; it voted against them. It is a real shame that happened, but I will leave that point alone.

I find it incredibly disappointing that we have to have a discussion in this place about climate change inaction by the Western Australian Barnett–Redman state government. I note from looking through *Hansard* that Parliaments have been talking about climate change in this chamber and the other place for almost 20 years. In fact, some members of this place were in this Parliament 18 years ago when those conversations started taking place. It is an indictment on this place that we have not moved very far and that it is thanks to inaction, particularly by this government, that we are having this debate today. It is a shame that there are a number of climate change deniers in the state government, because there is general consensus on this matter among scientists and the science community. Even senior leaders in the business community are now saying that this is a real issue and that we should be addressing it. In fact, in the past few days Heather Ridout has made comments on this issue, which I will touch on later.

I did a bit of research on this matter to prepare for my contribution today and found a wealth of information on the internet. Some really good-quality information was published by the former federal Department of Climate Change and Energy Efficiency and the former Australian National Greenhouse Office, which did a lot of great work in this area. It is a shame that the federal government has taken an axe to some of those agencies and refuses to acknowledge some of the problems in the system. We know that Australia generates about 1.5 per cent of global greenhouse gas emissions, yet on a per capita basis, Australia is one of the world's greatest polluters. Those figures are from Carbon Neutral's article on Australia's greenhouse emissions, which states —

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For the year to June 2012, our national inventory emissions per capita were about 24.4 tonnes carbon dioxide equivalent ... per person. Only a few countries in the world rank higher—Bahrain, Bolivia, Brunei, Kuwait and Qatar.

Australia's per capita CO<sub>2</sub> emissions are nearly twice the OECD average and more than four times the world average.

In 2007, Australia agreed to stabilise the country's emissions by ratifying the Kyoto Protocol. However, as a result of recent decisions by the federal Liberal government, Australia is going backwards, and I will come back to that later on.

There are a number of myths out there about climate change. I have heard people say that scientists cannot agree; the jury is still out on this issue. That is absolutely wrong. An overwhelming majority of scientists agree that human activity is largely responsible for recent warming. There is consensus among scientists that the climate is being changed by human activity, in the same way as there is consensus on the existence of gravity and that the earth is round. A number of myths are explained in a good factsheet put out by the Climate Institute, which is what I am referring to. That scientists cannot agree is one myth. There is real consensus in the scientific community. It is real.

Some people say that climate change is just part of natural change. The climate has changed throughout the earth's history, but that is not the same as saying that global warming in today's era is natural. In fact, past changes help scientists understand the sensitivity of the global climate to forces such as the sun, volcanoes and greenhouse gases. I will not go through all of the myths explained in the document by the Climate Institute, but it is a very good reference. These problems exist and they need to be addressed.

Also in preparing for my contribution today, I came across the Australian Collaboration, which is a collaboration of peak national community organisations that represent social, environmental or cultural interests and includes organisations such as the Australian Council of Social Services, Choice—the Australian Consumers' Association—and FECCA, which is the Federation of Ethic Community Councils of Australia. It also includes the National Council of Churches in Australia, the Trust for Young Australians and the Australian Conservation Foundation. The Australian Conservation Foundation is actually the sole environmental group in the Australian Collaboration. The Australian Collaboration, too, has put together some good research documents. A recent document provided by the Australian Collaboration, entitled "Climate change and Australia" states —

Climate change is one of the great issues of our time. According to Sir David King, formerly the UK Government's chief scientific adviser, "climate change is the most severe problem that we are facing today". Science broadcaster, Sir David Attenborough, has recently said: "I was sceptical about climate change. I was cautious about crying wolf. But I'm no longer sceptical. Now I do not have any doubt at all. I think climate change is the major challenge facing the world."

It certainly is. One has only to look at the Bureau of Meteorology, which estimates that Australia has warmed by an average of 0.7 degrees over the past century and which recently announced that 2009 was the hottest year on record in Australia's history. I will not go through much more of this document, suffice to say that it is a good read and it highlights that climate change is a real problem and not only does more need to be done in the federal sphere but also the state has a very important role to play in climate change.

Today in the media one of Australia's most senior climate scientists is calling on his peers to speak up on the global warming debate and not to sit on the sidelines of the political debate. I said earlier that there is consensus now that climate change is a real problem. Some scientists have been reluctant to come out and speak on this issue. Dr Michael Raupach is saying that the scientific community has a real role to play and they should be out there telling people how it is; that this is a real problem. Dr Raupach made these comments to Fairfax Media Ltd today in both *The Age* and *The Sydney Morning Herald* in advance of a speech he will give to the Australian Academy of Science next Tuesday evening. The article is titled "Climate change scientist calls on colleagues to speak up on global warming debate". I should point out that this scientist heads the Australian National University's Climate Change Institute. Ahead of his speech next week, he said —

"To pretend that science, and in particular environmental science, can remain at the side of that debate is simply no longer tenable," he said. "And any statement environmental science chooses to make carries implications about those choices and there is a very important call for the scientific community to be fully engaged in that public debate, fully participating in it."

The article goes on to state —

His speech follows the publication of an opinion piece in *The Australian* by the Abbott government's chief business adviser, Maurice Newman, in which he claimed the world was in a cooling phase, rather

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than warming predominantly as a result of human activity, which the vast majority of scientific evidence has found.

Dr Raupach said Mr Newman's claims fly in the face of every analysis he had seen and the article had been widely discredited after its publication.

I said earlier that certain members of the business community have been vocal on the issue of climate change recently. Obviously, Maurice Newman, the Abbott government's chief business adviser, has not been one of those people. One person who has been vocal is Heather Ridout. Members will know that Heather Ridout is one of the most prominent businesswomen in this country. I think she is currently the chair of AustralianSuper and is a member of the Reserve Bank board. Her comments on climate change were particularly noteworthy. In comments earlier this week, she spoke of the bipartisanship on the issue that existed previously in federal Parliament; however, it has broken down. She said —

Well, look, I think we keep going back over this argument. Both political parties, even though the bipartisanship about the package broke down, they agree the globe is warming and that humans are contributing to it. They agreed with the same target with the same date on it. So why we keep going back and saying—having this debate about whether the science is true is so counterproductive, you know.

In fact, it is not just Heather Ridout who has been making comments.

**Hon Col Holt** interjected.

**Hon STEPHEN DAWSON:** I look forward to Hon Col Holt's contribution, because I am not sure whether he is one of the climate change deniers in the chamber. I certainly hope he is not, but I look forward to the contribution he will make on this debate, whether it is today or next week, because we have four hours to debate this very important motion.

It is not just Heather Ridout who has made comments on this issue in the past week. I am not sure whether members saw *Q&A* this week.

Several members interjected.

**Hon STEPHEN DAWSON:** Many people might have seen news reports about *Q&A* during which Clive Palmer made those disastrous comments about China. However, that is not what I am talking about today; that is a debate for another day. Suffice it to say, I do not agree with what he said. On the same program, Clive Palmer also made comments about climate change. I will quote from the transcript of Monday night's program, because I think it is important that we listen to this comment. Clive Palmer said —

Well, what you'll find next week in the Senate, we're introducing an ETS, which, like Warren says, in accordance with Liberal Party policy, will take effect when our main trading partners have an ETS because it is a global solution. Air moves around the world. So we'll ... stand up in the Senate, putting the ETS before the Australian people and trying to introduce it. Because we have to realise that if we want to trade with other countries and they have an ETS, they won't allow our products to enter unless we have a similar scheme and that's something ...

**Hon Robin Chapple:** That's the Green's model, isn't it?

**Hon STEPHEN DAWSON:** I made comments earlier about the past transgressions of the Australian Greens and I said that I would leave them behind today, as I do not want to dwell too much on the past. I appreciate Hon Lynn MacLaren bringing this motion forward because I think it is a very important debate to have.

I was saying that even Clive Palmer knows that climate change is a real issue. Even Clive Palmer knows that the federal Liberal government has to do more. However, Clive Palmer may not know about the lack of action by the state Liberal government on this issue, but I certainly know it has done very little on this issue since it came to office.

There was another nice article in today's *The Age* and *The Sydney Morning Herald* by Tom Arup titled "Carbon tax will be back, industry believes". It is along the same lines. It states —

Major polluting companies believe a carbon price will be reintroduced in Australia some time in the future, according to the first business survey released after its repeal.

The survey of major Australian energy, mining, construction and manufacturing firms also found that 77 per cent of those who responded did not believe the repeal of the carbon price scheme was likely to reduce their overall costs.

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Led by Deakin University, the study was carried out between April and June this year—before the repeal was passed by the Senate, but when there was a general expectation it would occur.

The survey was sent to 430-odd companies that report their emissions to the federal government annually. About 80 per cent of respondents believed that some form of carbon pricing will return, 55 per cent said that they did not believe it would be easy to participate in the emissions reduction fund, and a similar portion said that the policy did not offer many benefits to their firm. It shows what a shame the actions of federal Parliament have been in the past few months. Businesses are saying that even though the carbon price scheme has been repealed, it will be back soon and they will have to deal with the issue sooner rather than later. It really is a crying shame that the federal Parliament took that action.

I will make some other remarks about the motion before us. I will touch on the fact that in the other place fairly recently the member for Gosnells, the shadow Minister for Environment, asked some questions about the state's climate change unit. He asked what the total budget was for the climate change unit in both the 2012–13 and 2013–14 financial years. In reply to those questions, the Minister for Environment told the chamber that in 2012–13, the annual operating budget for the climate change unit was \$620 000. Then in 2013–14, we see that the base budget has dropped to \$516 000. Some \$620 000 in 2012–13 to \$516 000 in 2013–14. What we see is a drop of \$104 000. So a funding cut of \$104 000 for the climate change unit. Nobody in this place can tell me that any government who cares about this issue or says it cares about this issue would actually slash the funding for the climate change unit, the agency which, on behalf of the state government, is doing the most work on this issue.

I know we have spent an awful lot of time in this place highlighting budget cuts that this Barnett–Redman government has made, but again in the climate change space, no-one can say this government cares about climate change because in black and white, in the record of this Parliament, its members have admitted it has taken funding from this organisation. It is a terrible indictment on this government because I remember that when we were last in government we had given significant funding to the climate change unit. We believed climate change was a real issue—as we still do. We gave it more money and we were expanding its role and I think it is terrible that what we have seen in the past few years is an attack on this area, partly because of the climate change deniers on the government benches. In fact, when I was looking for recent comments or indeed recent media releases or recent anything—that is, recent publications from the government on the issue of climate change —

**Hon Lynn MacLaren:** What did you find?

**Hon STEPHEN DAWSON:** I have to say I struggled to find anything. Over the past few years, very little has been published or said by this government on the issue of climate change over the past few years. In fact, the latest thing I could find was a document put out by Hon Bill Marmion in October 2012, which was the “Adapting to our changing climate” report. There is some good stuff in there; it is a good report. It talks about some actions needed, but I have to say I have not found anything since then. That is almost two years ago, given that we are now in August 2014, since we had a pronouncement from this government on the issue of climate change, and again, that is a really sad indictment of this government. I do wish it would wake up and admit that this is a real problem that needs to be not only addressed but addressed sooner rather than later.

I am aware that there are a number of other people who may want to make a contribution on this debate, but I will say before I conclude my remarks that climate change is real, and that government members opposite should all wake up to that fact. Again, climate change is real. This government needs to do more. The state government has been missing in action on the issue for a long time now, and the federal coalition is hell-bent on taking us backwards. I hope that members in this place, as well as making a contribution to Hon Lynn MacLaren's motion this afternoon or next week, will support this motion because I think it is an important one. It is an issue that we should be leading on as politicians; it is an issue that scientists have to make more comment about; it is an issue that I believe many in the general community care about. With those final comments, I conclude my remarks.

**HON COL HOLT (South West — Parliamentary Secretary)** [3.13 pm]: I will make a short contribution to the debate on the motion.

**Hon Stephen Dawson** interjected.

**Hon COL HOLT:** I will try to concentrate on certain aspects of it. We have heard motions on notice from the Greens previously, and I think with this one they are trying to use its platform and its interest to raise some of the issues that any government faces in any jurisdiction in the world. I think the members of the Greens are saying that climate change is real; it is affecting us all and it will affect the environment of Western Australia, no doubt, so how will we prepare? Will we have some policy settings that actually help us prepare for those eventualities?

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I do not have the answers to those questions, and so far in most of the debates we have had around the environment in this house, I have not heard anyone come up with a total solution to date. But I think this motion is saying, “Hey, let’s put in some resources and let’s actually have a think about this.”

I will not go into the history of whether climate change is happening or not. I accept that our climate is changing, so let us get on with the fact that we need to start preparing to do something about it. I think it is a little unfortunate given the way that our system works that the Greens’ members, who have been elected on a green environmental platform, have a limited voice and a limited opportunity to bring about some policy change at a government level. I think that is a real challenge for us as a society about how we integrate some of the Greens members’ ideas and views into a policy setting with the members sitting on the government benches.

From the perspective of the members from the National Party, who are represented on a platform of regional development and community development in the bush, and doing things for people in regional Western Australia, of which climate undoubtedly plays a part—it is not necessarily a major part—there is a whole range of issues we have to deal with. Although our main focus is about regional people in our regional communities, there is of course an underlying aspect on the environment. Farming operations are heavily reliant on climate and weather conditions. We all know that, and that is why we are trying to put forward some of our policy settings around more availability of water and irrigation to feed our people so that we do not rely purely on the stuff that falls out of the sky, but are trying to drought-proof our farms, our food production systems and our water supplies for urban and regional people. We are putting resources into that, so we are trying to prepare. I think there are many examples of what we are trying to do with that approach.

Concerning the third part of the motion, which explains the changes required to the climate change strategy, I do not have a direct responsibility for that but I am more than happy to have some policy settings that say yes, we need to do more, but what do we need to have input into that strategy to make it a reality? I think this is where members opposite are coming from by putting these motions on the book, so that the whole of the Parliament starts to think about exactly that.

The other challenge for us in this Parliament is that we could be acting in isolation. For our Western Australian government to do something about global warming, I think “global” is the keyword in this matter. I think that is why some people struggle with taking that first step about what to do on a local scale that affects global warming. There are lots of things we can do on a local scale that will affect some of the changes that will happen because of global warming; namely, a potentially drying climate and a catastrophic increase in severe weather events. I think we are addressing some of those sorts of things and waterproofing is just one example. One of the critical steps that we fail to take is when we say, “If we do this here in little old Western Australian or even at a more local level, how does that effect global change on the environment?” I reckon that link is really hard for us as people and as a society. I know we have heard lots of quoted material about what the global scientific community says and I think we all agree with that, but even it has had a real struggle to bring about change at a worldwide, Australia-wide and statewide level. I reckon they are the real challenges for us. I am not making any excuses for why we should not take the first steps; I am just trying to explain from my perspective some of the difficulties with developing policy settings that matter in the long term.

We are only a short-term government elected for four years, so we even struggle within those policy settings to get it right and be more proactive in our ability to react to climate change. I have no problem with supporting or not supporting the motion. As a smaller party in opposition, the Greens use this method to make us think about what we might do in government. It is their way of developing policies or platforms whilst in opposition that can be implemented when they are in government. Thank you very much, but even from the Greens I have not heard enough about the solutions. I know that Hon Lynn MacLaren spent a fair bit of her debating time defining the problem. It would be really good if she put that aside and started defining the solutions, then she can table the documents that any government can pick up and say, “Hey, here is a good idea, perhaps we can go down these steps.” If she does that, then she will have some of my support depending on how it affects the regional communities. It is a balancing act between the environmental, economic and social outcomes, and we cannot divorce the three. In fact, some of the best environmental outcomes have the best economic outcomes as well, which we recognise. However, we must find a balance across all three outcomes. We cannot say that we will do one thing because our world demands it environmentally. We must find a way that impacts upon all three sectors of our community, and is far ranging beyond our state Parliament, the Australian Parliament, and the world’s economies, so that its people can take the next step.

**HON MARK LEWIS (Mining and Pastoral)** [3.22 pm]: I rise this afternoon to contribute to this debate. I agree with a lot of the debate about how climate changes and how what action we must take tends to be the big issue, and it is those solutions that Hon Col Holt discussed earlier.

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I must first confess that I have had a little bit of experience in this area of climate modelling. For those members who do not know, I was part of a pre-eminent climate unit in Queensland's Department of Primary Industries back around 1993 or 1995. At that stage that unit was probably the pre-eminent climate unit certainly in the southern hemisphere with pre-eminent scientists working for it like Dr Gordon Stone, who later went on to almost become a guru in this area. My job in that unit was not to sit on a model or to undertake a lot of the climate science, but to try to validate the outcome of the models. However, I will just step back a bit. That group was set up because a bunch of us who knew how to work the system worked out that we could get a couple of million dollars to upgrade our computers to Cray systems by almost scaring the pants off the Prime Minister at the time, Paul Keating, about the future of climate variability, which is what we called it in those days. We had quite big droughts around that time and money was quite easy to get hold of so we upgraded a few old computers we had into some of the best Cray computers in the world, in fact we got not one but a couple of them. We put a whole bunch of modellers together. They were some of the most brilliant people a person ever did meet, but not necessarily to go out with to the pub for conversation. We also put together some very good scientists who were able to have input into the models. As I said, my job was to try to, in an almost anecdotal way, validate the models. The unit would print out these things and I would try to decipher them and go out to talk with as many people as I could, particularly older people and the older Indigenous people who had long storylines around climate and those sorts of things, trying to see if we could pick up on some patterns by hindcasting.

Hon Stephen Dawson referred earlier to a very good article put out by the commonwealth's Department of Agriculture, Fisheries and Forestry about Western Australian climate facts. Under the heading "Key facts" it reads, in part —

- Climate model projections are tools for understanding how the climate will respond to increased greenhouse gas concentrations.
- Unknown future greenhouse gas concentrations and climate model uncertainty result in a range of projected climates.

Having been involved right from the get-go in this area—I will explain a bit about that later—I am very reluctant to trust models, whether they be climate models, land management models or even a budget. A budget is a model, so my annual budget is a model. I have never got my annual budget to work. The models we talk about on climate projection, other land systems, cattle or whatever, are millions and millions of computations and permutations, yet I cannot even get my annual budget, which is a model, to work. When we start laying out these levels of information within a modelling system, we get mathematical calculations that get awfully scary.

I will now go back a step. As I said, my job was to try to look for some signals, if members like, of climate change. Through this sort of anecdotal hindcasting process, the old Indigenous guys in particular told us about a system out there that comes in about every 25 to 30 years. They would often talk about it in terms of the ants going off the trees and a whole range of signs that tell them that the climate system is changing. When we went back to the unit and plugged the information into the models, guess what? We found a very strong pull on this thing we now call the monsoonal trough. I will go back one step even further. We were probably the first people to really start working on the Southern Oscillation Index or the El Niño Southern Oscillation Index that we now see on weather charts nearly every night. That index was not around in those days and we drove that information and technology along the way to where it is today. We then started to look at other things like the monsoonal influence. I mention this because the motion referred to an increase in the number of jellyfish and other marine life in the area, which is due to the monsoonal influences and the warming currents that come down with it about every 30 years. Hon Rick Mazza mentioned the Leeuwin current. This monsoonal trough is a much bigger body of water that pushes down the Leeuwin current, which then has a heap of other effects. We were fairly involved in studying the Pacific influence but no-one had specifically studied the Indian Ocean, so around 1996 or 1998 the Indian Ocean Climate Initiative project was developed. I was a part of that. In fact, I funded the IOCI to do a range of work to look at the Indian Ocean's influence on our climate. We did a lot of other things in looking at models using a mathematical formula called the linear error in probability space, or LEPS, score, which is a way of lining up models against each other and determining which model has the highest integrity. As it turned out, the Department of Agriculture and Food model and the Bureau of Meteorology model had the highest LEPS score for mathematical reliability. That is probably the best way to put it.

I have had a fair bit of background on this. This is where I started, and it is about the reliability or otherwise of models and our dependence on using models to make multibillion-dollar decisions. I cannot even get my annual budget to work, so I am not going to be betting that sort of money on a model. Members would have heard that in the past five years there has been some conjecture about whether we are actually still warming. The evidence from the HadCRUT4 methodology coming out of the United Kingdom is that we have flatlined since about 1998. Meanwhile, all model projections that I know of have continued to scoot up. That is 15 years in which we have had a break from where the models were telling us we were going to keep going. As someone who was

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involved in this some 20 years ago, I would be starting to worry about those models being accurate. If the satellite temperature does not change—I have some issues with the earth-based monitoring systems—in the next two to five years, I can guarantee that every one of those models will have gone off the radar. They should not go off the reservation for 15 or 20 years. They should be better than that. From my personal experience, I do not trust them.

That does not affect the fact that climate changes, and what do we do about it? There is variability in climate. We know that, and that is why the original unit that I was a part of was called climate variability, not climate change; that is a later phenomenon. One thing that the models do not and cannot do is plug in technological gain, although some of them try. They factor it in by having some sort of factor that indicates technological gain. However, we cannot plug into models these quantum leaps in technology that we get from time to time. Again, they will run off the reservations, because we will adapt. We have always adapted, and we will continue to. As climate changes, we can bet our bottom dollar that farming and the way that we act will change. Sometimes there is quantum change. The phenomenon of silver bullets in agriculture is quite well known—the stump-jump plough and the milking machine made major quantum changes. They will happen in the future. I have some confidence in mankind. We will adapt and invent technology that will reduce our man-made emissions. Whether or not man-made emissions are impacting—obviously they are, but to what degree we do not know—I think leaps and bounds in technology will make that an immaterial argument in the future. There will be no need to discuss it.

The other thing that happens in climate change and climate variability is that there are pluses and minuses. I was interested to hear the members from Saskatchewan one day when they were here. I asked them what they would think of an increase in temperature of two degree in Saskatchewan. They said it would go from minus 41 to minus 39 degrees. The point I am making is that there are pluses and minuses in climate change. Some areas will become more arid and other areas will experience increased rainfall and will therefore be better off for agriculture and food.

I thought I would just rise to provide my personal insight into this. I am not all doom and gloom. I think mankind has shown over its history that we are pretty good at adapting, and that we can manage our way through this. We should not always believe in models. I also give that advice to my accountant, because I never trusted one of my models—budgets.

**HON PAUL BROWN (Agricultural)** [3.37 pm]: I rise to make a short contribution, mostly about some of the things Hon Lynn MacLaren raised in her contribution. A few of the points that she made attracted my attention through the debate. One of the things she highlighted was the recent storm and its effect on Fremantle; she stated that this is obvious evidence of climate change, because of the strong winds and storms, and that this damage is much more frequent than it was some years ago. I can say to Hon Lynn MacLaren that when I was an officer with the agriculture department some 20 years ago—it seems like yesterday—I was in Fremantle on a very stormy and dark night, standing on the wharf looking at containers covered with giant African snails, which is very much a pest in Australia. I had to stand at a 45-degree angle just to keep my spot, if I was lucky. A Russian roll-on, roll-off container ship broke its moorings because of the strong winds and drifted down the harbour towards the rail bridge. The engineers and the staff of the vessel need to be commended for their quick action, because they got the engine started and managed to avoid by some 10 metres the railway bridge and the pilot station situated at the railway bridge. It was a very close call. That was some 20 years ago. I would say that highlighting something like that is very opportunistic. Those events happen all the time and, as I said, that was happening 20 years ago. It is not something that happened in the last couple of years because of anthropogenic stress. I do not disagree with the notion of climate change. I am not standing in this place as a denier of climate change. I am standing here to highlight some of the inadequacies of some of the things that Hon Lynn MacLaren said earlier. That is one point I want to make.

I also agree with Hon Mark Lewis: climate modelling is very uncertain. I would love to see a climate change model that actually stands the test of time. We have been through one model after another—the Indian Ocean dipole model, the El Niño model and the Leeuwin current model. Hon Rick Mazza spoke about the Leeuwin current model, which I believe starts up somewhere in the South China Sea and comes down through the islands of Indonesia and finally ends up around Esperance. I am yet to see a model that actually stands the test of time. For every model that says one thing will happen, I can show another model that says something else. I am not saying this from the view of a climate change denier but from the view of another reputable scientist who will say either exactly the opposite or who will certainly show a different outcome from their model. I would like to see a model that has stood the test of time and was developed five, 10, 15 or 20 years ago. A lot of the models that the United Nations Intergovernmental Panel on Climate Change has put in its climate change report have been refuted over time. There would be a lot more substance behind the claims made if those models could stand the test of time.

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Hon Lynn MacLaren asked what the agricultural sector intends to do for its part in climate change. I can say that the agricultural sector is making a fairly large effort. We recently had a debate in this house about land clearing and some of the technological advances taking place in the agricultural industry, or certainly in the cropping industry. The cropping industry has undertaken to reduce not only its carbon emissions but also spraying and so on that, if we look at the issue in a cumulative sense, have a detrimental effect on the environment. Farmers and the agricultural industry are very aware of the environment.

One of the other technological advances that the agricultural industry in Australia has accepted widely—perhaps “widely” is a step too far—or that is gaining acceptance in the industry and has gained wide acceptance throughout other parts of the world, is technology for genetically modified crops. The availability of GM technology in Canada, the US and other parts of the world such as South America and now here in Western Australia—it has been available in the eastern states of Australia for longer—gives farmers the ability for one-pass spraying, as we call it. They can spray once with a range of chemicals, but especially one particular chemical, and not have to do follow-up spraying in a short period. That is reducing emissions from the farming and agricultural sectors by reducing the amount of time that the cockies, or farmers, spend in their tractors going up and down, backwards and forwards and around and around. That is another way that the agricultural industry is looking to add value to the environment and to reduce climate change. The farming and agricultural sectors are always looking for ways to increase productivity. I am sure that Hon Jim Chown and Hon Ken Baston would say that. I am sure that as a farmer even Hon Darren West, who is away from the chamber on urgent parliamentary business, would say that. Farmers do not want to expend one more litre of fuel on their farms than they absolutely have to. Any technology, whether it be GM technology, auto-steering technology or a range of other things along those lines, that will add to our bottom line as agriculture producers we will happily take up. I think that Western Australia is a world leader in that sort of productivity.

Hon Lynn MacLaren also spoke about sheep flock reduction. I know she was speaking about Kiribati and —

**Hon Lynn MacLaren:** Tuvalu.

**Hon PAUL BROWN:** — Tuvalu. I admit that I had only one ear on that part of the conversation, so I am happy to take interjection on this one. I am always happy to take interjections. We have had a fairly substantial flock reduction in Australia. We have gone from 160 million sheep across the nation down to in the vicinity of 85 million sheep Australia-wide. In Australia that has got nothing, or very little, to do with climate change. Our farming sector has chosen through generational change to move away from massive flocks of sheep, given the previous ups and down and volatility of sheep and stock prices. Some but not all of the new generation of Australian farmers have said that they will go cropping. I do not necessarily agree with that. Livestock is a valued part of any mixed-farming practice, but they have chosen to accept cropping. They have sharpened their pencil, done their sums and have said that they are going to go all crop farm to farm. My in-laws did it. They pulled out all their fences and went with crops boundary to boundary and boundary to boundary with not an animal on the place. That was their decision. They viewed that as an increase in productivity, as they did not have to spend a lot of time with stock. That is one of the reasons we are looking at sheep flock reductions not just in Western Australia and not just in Australia, but also worldwide. However, correspondingly, because of food security issues in Indonesia, China, India and a range of countries that have expanding populations worldwide, there will be very soon, if not now, a very large desire to expand those flocks again. We as a state government—and I am sure Hon Ken Baston can add to this—are looking to encourage that expansion. The ups and downs of sheep flocks do not necessarily have anything to do with climate change. As I said, I was not paying 100 per cent attention to the comments by Hon Lynn MacLaren about Kiribati, but I just thought I would raise that matter. Western Australia has had a very large flock reduction that has very little to do with the Indian Ocean dipole model or the temperature of the Leeuwin current. In fact last year was a bumper crop; the biggest crop that Western Australia has ever produced. We are looking at another bumper crop. Some of the areas that missed out last year are looking as though they will get a good crop. I was going to say God willing—perhaps I will leave it there. God willing, there will be follow-up rains and everyone with a crop in will be able to realise the potential.

We talk about what climate change means and the impact it will have on agriculture. We can see why there is consternation and uncertainty about the impacts of climate change, because one year we have a drought and everyone says that is just greater evidence of climate change, and Western Australia is in a terrible position because we have cleared all the trees and put in crops and we have clear-felled all the heathlands and put it to farming, and the following year we have a bumper crop and no-one says anything. As I said earlier, I am not denying that there is climate change. But there are some real concerns about the way we go about this argument. It is very hard for people who do not have their feet in the sand, so to speak, to gain an understanding of where the truth and the facts lie.

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We are very conscious of the fact that we are waterproofing and droughtproofing our state. I am not intending to put the royalties for regions hat on, but we are looking at trying to increase water production from other sources to alleviate the reduction in rainfall that is very obvious in this state. But there are other issues that we need to look at. I think that where the Greens are conflicted is that they talk about renewable energy and low-emission energy, but not nuclear power. The Labor Party Australia-wide and also the Liberal Party have a party position, and to a certain extent the Nats, although the last time I checked we did not have a party position, it is left up to individual members. The Labor caucus does not know anything about that, but we can take individual positions on this matter —

**Hon Stephen Dawson:** You'd better hope that policy doesn't change!

**Hon PAUL BROWN:** One of the things that the Greens are conflicted about is nuclear power. That is a very low-emission form of energy, widely accepted throughout the world.

**Hon Lynn MacLaren:** There is no conflict.

**Hon Sally Talbot:** That is right.

**Hon PAUL BROWN:** I think they are conflicted, Hon Sally Talbot, because they talk about low-emission energy, or zero-emission energy —

**Hon Ken Travers:** That's not uranium.

**Hon PAUL BROWN:** I am not talking about the mining process.

**Hon Ken Travers:** So it is selective low-emission energy!

**Hon PAUL BROWN:** I am being purely selective in this argument!

The conflict is that the Greens are completely against nuclear power. The Greens' policy has always been against nuclear power. But it should be an option in the mix. I am not saying that we should run out and tear down coal-fired power stations or tear down the very valuable solar panels and the wind turbines. They all play a part in the provision of energy. But nuclear power should also be something that we look at. As I said, I am not looking to run out tomorrow and start digging a hole to build a nuclear power station in this state. But it should also be part of the mix.

**Hon Sally Talbot:** What about nuclear waste disposal?

**Hon PAUL BROWN:** Well, it has to go somewhere.

**Hon Sally Talbot:** Would you accept that?

**Hon PAUL BROWN:** It is not something that I have put a lot of thought into, Hon Sally Talbot. I am just raising the idea of nuclear energy. I will leave the waste disposal to another debate, if Hon Sally Talbot does not mind. I am happy to have that debate, and I am not for one second suggesting to Hon Sally Talbot that I am as well informed as she is about nuclear energy.

**Hon Ken Travers:** That is the problem with having individual views—you do not have a comprehensive response like we do!

**Hon PAUL BROWN:** Yes! Good point, Hon Ken Travers.

Those are some of the things that I wanted to raise in my contribution to this debate. The last piece of the puzzle as far as my time here is concerned is community engagement. We as a state government, and also as a federal government, and down to the local government level, should be looking at how we spend our valuable government dollars on powering our establishments. But the public also has a role to play. We do that with water, and we should do it also with energy. We should always be vigilant and engage with the public to make sure that the public does not get lost in the political toing and froing of what is better and what is worse. The public has a very important role to play here, not just as voices in the debate, but as advocates for change by putting in low-emission light bulbs and turning off appliances at the power point. I am probably an offender in that regard, too, and I understand that we all have busy lives. But the public should also be engaged in this debate and not forgotten.

I will leave my remarks there. We have had a very good debate on this motion and raised some issues that are probably well worth raising. Thank you.

**HON ROBIN CHAPPLE (Mining and Pastoral)** [3.55 pm]: I have a lot of things to say, but unfortunately so many comments have been made that I will have to refer to quite a few of those to start off with. I say to Hon Stephen Dawson that I did come prepared with a complete and utter refutation of what he had to say, but seeing that he was so gentle on me, I will leave it at that.

Several members interjected.

**Hon ROBIN CHAPPLE:** In that case, I will have my go now!

**Hon Ken Travers:** Give it your best shot!

**Hon ROBIN CHAPPLE:** Just quickly, the Clean Energy Finance Corporation as it exists and the current investment in billions of dollars would not be around if we had gone with the original idea of the carbon pollution reduction scheme and had signed off on it, because that would have had a single dollar price on it, whereas the international market now is between \$7 and \$8. There was no mechanism under the original process for an increase above the five per cent CO<sub>2</sub> reduction target that we now have, and we would have been stuck with that had we signed off on the original deal.

**Hon Ken Travers:** And now you've got none of them!

**Hon ROBIN CHAPPLE:** We actually do, because we have got Clive Palmer! He is really quite good. He is keeping a lot of the things that we had.

**Hon Ken Travers:** You're the only party that would line up with him today; I can assure you of that!

**Hon ROBIN CHAPPLE:** Interestingly enough, if the federal government has its way, we would not have anything. That is a very important point, Hon Ken Travers. But the key issue is that before, unfortunately, the federal government came in with its complete dinosaur approach to climate change, we did have a good process in place. Our scheme would have given away fewer permits over time and would have been linked with the European Union, a major trading partner.

If members have any reason to doubt how ineffectual it would have been, they only have to look at what is currently happening with the federal Liberal Party. I must commend the state Liberal Party, because it seems to have some semblance of idea about climate change, whereas its federal colleagues have just lost the plot.

We have talked a lot about science. I have repeated this in this house before. I had a lunch with Dr Karl Kruszelnicki, and we had a long chat about all sorts of things. The important point is that we touched on climate change, and I said to him, rather naively, "I'm a believer", and he said, "What? You're a believer in climate change?" So I apologised, and he said, "No. There are no believers or disbelievers. There is science. We've had a long history of listening to scientists, and it's only now in this generation that, for the first time ever, we actually have doubters about science". So I said, "Sorry. I'll never say I'm a believer again. It is". That was a comment he made to me. We need to look at the Intergovernmental Panel on Climate Change. About 2 000 scientists from 147 nations make up the IPCC. Hon Mark Lewis commented that he does not believe in models; they are always wrong. In fact the IPCC has said that for the past four iterations. Every time it has come out with a prediction, by the time its next report is released its prediction has been found to be woefully wrong because the conditions and the modification to our climate have increased far greater than it had identified. I will come to some of that shortly.

**Hon Paul Brown** interjected.

**Hon ROBIN CHAPPLE:** It was not Hon Paul Brown. I was having a go at Hon Mark Lewis, my colleague from the Joint Standing Committee on Delegated Legislation.

It was very interesting. I will look out for Professor Bob Carter's comments that CO<sub>2</sub> levels could double and have no effect. That is not what scientists from the IPCC have said. I will touch on that shortly.

Many of the things that we talk about, such as model predictions, are consistently being broken by new scientific evidence. Part of my contribution will be about methane. I will deal with the comments about nuclear energy. Uranium mining is the most energy intensive and water intensive of any mining industry. Most of the nuclear power stations that were constructed take about 15 to 20 years to decommission. They are incredibly difficult to decommission and, as an honourable member asked, what do we do with the waste? For the honourable member's information, there is a "no nuclear waste" policy in Western Australia. It was introduced by the Liberal Party after a motion was put forward by the Labor Party, which it did not agree to, but eventually the Liberal Party introduced the "no nuclear waste" policy into Western Australia. At that stage it was proposed by British Nuclear Fuels Ltd, but Pangea Resources wanted to import 20 per cent of the world's nuclear waste to a waste dump that was to be located near Cosmo Newberry. It was to be a 20-square kilometre underground cabin with a dedicated 400-kilometre rail line, 65 dedicated ships and 40 years of deposition. There are bits of climate change involved in all processes too.

**Hon Mark Lewis:** By the way, WDLAC still wants that.

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**Hon ROBIN CHAPPLE:** The Western Desert Lands Aboriginal Corporation do not, but one person from there does. I have had some discussions with WDLAC. One person came out recently from WDLAC and made those statements.

I was dealing with some of the comments that came up during the debate. I am sure my colleague Hon Lynn MacLaren will go into greater detail in dealing with that matter. I turn to the “Summary for Policymakers” of IPCC 2014, in their latest drafts. First-off, I thought I would refer to the “Trends in stocks and flows of greenhouse gases and their drivers”. We heard that the temperature had flatlined. I will read from the report —

**Total anthropogenic GHG emissions have continued to increase over 1970 to 2010 with larger absolute decadal increases toward the end of this period ....**

I want to go back and apprise the house of what scientists do. Scientists will never say something is certain. Scientists have a set of guidelines that deal with probability. The highest confidence possible, in scientific terms, is high confidence. There is also low confidence, no confidence and medium confidence, but the highest category—which is almost like saying “it will be”—is high confidence. That is what scientists say about the decadal increases of climate change. The report goes on —

Despite a growing number of climate change mitigation policies, annual GHG emissions grew on average by 1.0 gigatonne carbon dioxide equivalent ... (2.2%) per year from 2000 to 2010 compared to 0.4 ... (1.3%) per year from 1970 to 2000.

Emissions continue to rise in parallel with temperature. Looking at the temperature charts, there have certainly been flatlines, but looking at the projected and continuing models we see an exponential rise in temperature and greenhouse gases. One of the things we need to —

**Hon Mark Lewis:** An exponential rise in CO<sub>2</sub> but not temperature.

**Hon ROBIN CHAPPLE:** If the member looks at the long-term drafting, it is still exponential. We have blips in the system. In 1985, we went down before we started going up again. If we look at the trend, it is uniform. That is what the IPCC continues to point out. Do not look at a couple of years or a particular time; look at the long-term trends and predictions.

Another point was made at some stage during the debate about ice ages and ice maximums. Interestingly enough, I have a great deal of interest in ice maximums from an archaeological perspective. It tells us a great deal about what goes on with climate. The last ice maximum experienced globally was about 17 000 years ago. Australia became a fairly dry, cold climate. It experienced about 500 years of drought. Australia went from being a fairly lush continent that had a treed area where the deserts now are, to a situation we could actually map through archaeology in terms of digs and petroglyphs that were carved. We can find out what happened in Australia. We also know that during that time the ocean was about 80 to 140 kilometres further out, because the ocean was significantly lower. The ocean arrived, on our current coastal parameters, about 10 000 years ago and progressively rose until about 2 000 years ago. Due to the natural climatic variation, the ocean started to recede around about 2 000 years ago and should still be receding because these are natural flows in the climate associated with climate variability, associated with the 19-degree wobble on this planet. As members know, the earth has a 19-degree wobble. We expose more ocean or more land to the sun and that alters our climate over millennia. After the oceans started to recede about 2 000 years ago, it all came to a grinding halt. Oceans are now rising at exactly the same time as they should be declining. The Intergovernmental Panel on Climate Change says, and this was mirrored, indeed, by the climate spokesperson for the Conservative Party in London a couple of weeks ago, that whilst we must take action, we must stop saying that our footprint, or our emissions are lower or not a high number compared with anybody else. They say we should—excuse the expression—“Cut the expletive,” and that we all have to take uniform responsibility. It is imperative that all governments—whether it is us, India, China or Africa, wherever—take a responsible share of the load. That is not based on population; it is based on trying to reduce our emissions by whatever percentage the government of the day or the international community determines.

The IPCC goes on to state in its policymaker document —

Without additional efforts to reduce GHG emissions beyond those in place today, emissions growth is expected to persist driven by growth in global population and economic activities. Baseline scenarios, those without additional mitigation, result in global mean surface temperature increases in 2100 from 3.7°C to 4.8°C compared to pre-industrial levels (median values; the range is 2.5°C to 7.8°C when including climate uncertainty ... ) (high confidence).

This is about the highest that the international scientific community can go in determining what the likely outcomes are. I really want to go back again and talk about the temperature going up in Australia by one degree

**Extract from *Hansard***

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and what one degree on a hot 45 degree day means. The key issue is that the average temperature of the planet is 15 degrees. It is not pure science; it is averaging. We are talking about an average temperature of 15 degrees.

Debate adjourned, pursuant to standing orders.

*Sitting suspended from 4.13 to 4.30 pm*