

CLIMATE CHANGE — AMELIORATION MEASURES

Motion

Resumed from 21 June on the following motion moved by Hon Robin Chapple —

That the house notes the impact of climate change and gives consideration to measures that may be introduced to ameliorate its damaging and long-term effects on Western Australia's social, economic and environmental prosperity.

HON ALANNAH MacTIERNAN (North Metropolitan — Minister for Regional Development) [1.02 pm]: I am glad that I had been given the chance to have a break in my remarks on this motion because it gives us an opportunity to note that today is the tenth anniversary of the opening and commissioning of Perth's first desalination plant. A question was put to me yesterday by a member of the opposition who asked about potable water supplies for the Perth metropolitan area. I gave an answer on behalf of our Minister for Water, Dave Kelly, which pointed out that in Perth we get just two per cent of our water supply from dams, 48 per cent from groundwater and 50 per cent of our water supply now comes from desalination. That system with two desalination plants is in place because we recognised that what we were experiencing in the lead-up to 2001, when our dams were at a record low, was not just a drought. We were prepared to look at the data, the science and the way the stream flows had been declining so dramatically. They had been declining exponentially, not in just a steady, slow way, particularly since 1975. I remember Geoff Gallop, in particular, taking leadership on this point. We had inherited another Liberal mess—I think there were five deficits in a row—and as we are now, we were trying to rebuild the economy. Although we were in exceptionally constrained financial circumstances, Geoff Gallop recognised that what we had been seeing since 1975 was not a drought; it was systemic climate change and we would not have the ability to serve the needs of our community to keep our people watered and fed if we did not take action. A lot of critics said that it was just a drought and that it would break. The following year, in 2002, the water situation got a bit better, as it did again in 2003. But we did not go backwards because we understood that it was a systemic change. Are we not all glad that we had the foresight that climate change was causing systemic change and creating circumstances to which we needed to respond very differently? I ask members to think about the answer that was given in this place yesterday. I do not know whether Hon Jim Chown has reflected much on the answer, but the fact is that only two per cent of Perth's water supply now comes from dams.

Hon Rick Mazza: Where did you get that figure of two per cent from dams from?

Hon ALANNAH MacTIERNAN: I found that surprising.

Hon Rick Mazza: I asked the question in budget estimates and the answer was 17 per cent. It was still very low.

Hon ALANNAH MacTIERNAN: These are the figures that were provided to me. I have asked for them to be double-checked but for the Perth metropolitan area, Mandurah and the goldfields, they are the percentages for 1 January 2017 to 26 June 2017. Like Hon Rick Mazza, I was surprised by them so we are going back and checking them. I thank the member for the question.

There is no doubt that Western Australia absolutely relies on desalination. In about 2006, when it became obvious that one desalination plant would not be enough, we set the process in place and made the decision to build the second desalination plant. I have been looking for a press release from a former Minister for Water under the previous government in which there was a great declaration that the government had droughtproofed Perth. As I was campaigning during the recent election, I was amazed to find that the aquifer recharge program, which had started in the last years of the previous Labor government and had been the subject of numerous announcements under the Barnett government, had still not injected any water into aquifers. After eight and a half years of that government, its flagship project, the aquifer recharge program, had not seen any water go back into the aquifers. I do not know how it could claim that it had droughtproofed Perth. The Minister for Water has shown us some alarming statistics that the situation in Perth is getting even worse. Over the last five years, there has been another step change downwards in the stream flows coming in. The ability for our dams to provide for us into the future is highly problematic. I ask members to think this through very seriously and not say, "Oh, climate change—like, not very interesting." If Geoff Gallop and the Labor government had taken that position in 2001, we would be in very dire circumstances in Perth today. But we did not. We recognised the fact. We recognised that this was well beyond a drought and that it was something we would have to deal with more systemically. I say to those members on the other side who are concerned about the farming communities, as we are, to make sure that their concern is directed in the right way towards addressing the fundamental problem of climate change, of how we can try to slow it down and mitigate it, and how we can adapt to it, and not randomly bleat about inconsequential stuff. What is going to undermine farming and agriculture in this state? It is indeed

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climate change. I would like to hear some of those members, beyond my good friend Hon Dr Steve Thomas, get up and show us that.

Several members interjected.

Hon ALANNAH MacTIERNAN: Yes, funny things happen at truffle festivals! Hon Diane Evers and Hon Colin Tincknell were there too.

Several members interjected.

Hon ALANNAH MacTIERNAN: It was a good turnout. We also had a couple of members from the other place.

If members are concerned and worried about climate change, I want to see them get up in here and talk about it and say what they will encourage their side of politics to do so that our farmers and horticulturists have a future. I have to say that during eight and a half years in government, there was not a lot of evidence that the Liberal–National government had done anything on climate change or integrated that into its thinking in the way it planned for our future. Indeed, as I may have said once before in this place, we understand that one of the quite numerous agricultural ministers during the last government actually told the department that he did not like the words “climate change”, and he would not like to see this used, and that if we had to somehow or other take note of these massive changes that self-evidently were going on, we would use the rather nicer words “climate variability”. If they used those words, they did not have to confront what the issue truly was.

I want to read some stuff that has come out in the last week from an international think tank—it was not from a left-wing organisation; it was Chatham House—that was looking at choke points in and the vulnerability of the global food trade. Chatham House found —

“While market forces have largely adjusted adequately until now, the capacity of international trade to correct for supply disruptions in a climate-changed world is less certain, ...

“Climate change will suppress growth in crop yields and make harvests more variable.

We discussed that the last time I commented on this motion. The report continues —

“It will threaten the reliability and integrity of the infrastructure on which international trade depends.

That is a grave alert, even from an organisation that is perhaps generally considered to be on the more conservative side of politics.

I noted that during their contributions on this debate, some members were sceptical about the notion of the sea level rising. In that regard, I reference a peer-reviewed journal, *Nature Climate Change*, which this month published an article on the data on the rising sea level. It showed that global sea level rise rates—the rate at which the sea is rising—has jumped 50 per cent from 1993 to 2014. Although there has been a steady increase, what we are seeing, paralleled in many areas, is quite a dramatic rise. Obviously this is averaged out around the world, but in 2014 the sea level rose by 3.3 millimetres—an eighth of an inch—while in 1993 it increased by only 2.2 millimetres. That is the rate at which the sea level is increasing. We are not just seeing steady growth; we are seeing a rapid move forward.

Interestingly, the paper found that the melting of the Greenland ice sheet is a major contributor. In 1993, the melt from Greenland constituted only five per cent of the rise, but by 2014 it was responsible for one-quarter of the rise. This data was based on satellite imagery, measurements taken from around the world and tide gauges. Indeed, as we are seeing the explosion in the number of microsatellites around the world and their far more detailed surveying of the lie of the land and the seas, we will get much more accurate data. I am not sure how many members heard last week about grave concerns about the number of Antarctic ice sheets that are in the process of breaking off, but quite obviously it is not only the Greenland ice sheet that will add considerably to the sea level; melts coming from Antarctica will be increasingly factored in.

We need to understand what the increase in the sea level means for our community and what that will do to areas like Mandurah and particularly the south west coast, and indeed what it will do to Perth. This is no trivial matter. We need to be very cognisant of and understand what is happening and we need to take steps to address it at a macro level. We need to be up there, standing behind sensible people from all sides of politics who accept that this is happening and see the need for us to take global action, but we have to be planning for our future here locally. We have to be asking what infrastructure we will have to put in place to make sure that in five or seven years our community is as protected as it can be against things such as the rising sea level.

I urge members—that is all of us—to take the great example of the leadership Geoff Gallop showed, inspired by many of the people who were advising him, and recognise that this is not a seasonal variability; we are going

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through something that is profoundly different now, and we have to be prepared to make those long-term decisions. In 2001, Geoff Gallop made a decision that was criticised and expensive, but by 2007—10 years ago today—it had absolutely proved its worth. Thank you very much, Madam President.

HON TIM CLIFFORD (East Metropolitan) [1.19 pm]: I rise today to support the motion. I would like to give credit where credit is due and thank Hon Robin Chapple for pointing out that from the late 1980s into the 1990s, we were a lot more forward thinking about reducing our carbon emissions than we are today. It is a bit unfortunate that we are left having to debate this motion because we should be ahead of the game and we should be in a position in which climate change is not just thrown across the aisles of this place as a throwaway item or a political football to score points with.

A few years ago I took the time to take part in an internship looking at climate change and security. I looked at how defence forces across the world are looking at climate change and what issues might come out of it, including what dangers we will face in the future if we do not address climate change. It is kind of unfortunate that in this place, in other Parliaments and for other legislators around the world, the climate change argument has been an echo chamber where we talk about it a lot, but no action is taken. In the background, defence forces of different countries have been working to get ready for the change. Looking at a lot of reports coming out of the United States, we can see that it is preparing for climate change because it knows it will cause serious disruption for western society. We can already see this disruption with people having to move away from the coast following disasters, water shortages, droughts and things like that. In Australia, if we look at the more recent example of refugees being an issue at a federal level, I find it quite galling that asylum seekers have become a political issue. On the other hand, the federal government has been very dismissive of climate change, but it will be one of the major drivers of refugees to the Western Hemisphere. If we think that refugees have been a headline issue in the past, they will become an everyday occurrence as literally thousands of people will come out of South-East Asia seeking asylum because they will not be able to live in their homes or on their lands anymore. These things have been highlighted.

I would like to quote a retired Army major, Michael Thomas, who is now a senior fellow at the Centre for Climate and Security. On climate change, he states —

“I think it’s the defining threat of this century. I can’t think of any other threat that is transforming the planet on this level or scale. It’s such a ubiquitous threat,” ...

It is a threat to our society and people and it is a great terror. That comes from an Army general—a former senior person in the Australian Defence Force. He is saying that if we do not do something about climate change, we will be in trouble.

Only yesterday, an article was published about Australian climate scientists who were talking about their plan to move further south. It might be good for the economy of the south west if more people migrate south, but it will not be very good for the people who are terrified about whether their children will have a place to live in the next century. Climate change is one of the major threats of our time.

In saying that, I think that climate change gives us a great opportunity. It is a fear and a threat, but it will force us to think differently about what we do with our economy and how we shape our energy systems. I am quite passionate about taking on board renewable energy for the Greens. I see energy as a tool to not only drive the economy, but also combat climate change. It will drive down emissions and get us to think about new technologies—destructive technologies, as Hon Dr Steve Thomas talked about last week. I have heard references being slung across the chamber about whether Western Power should be sold or kept in the hands of the government. Whether we like it or not, the disruptive technologies of battery storage are coming. That is great, but I do not believe that selling off Western Power would necessarily solve our problems. It would not solve our problems in preparing for the grid that we need to service the people, or the grid that we need to combat climate change and reduce emissions. Small-scale solar power systems can tap into the grid and large-scale solar thermal plants, hopefully in places such as Kalgoorlie, will be able to service thousands of people in regional communities. They will drive down electricity prices as well as reduce emissions. I look forward to the ongoing discussion around energy policy because I see it as a tool to reduce our emissions and promote a more prosperous society in Western Australia. This includes electric vehicles. A report last week states that the take-up of electric vehicles is only three in 1 000 in WA, which is quite appalling since vehicles are one of the largest carbon emitters in this state. This is something we need to address and encourage investment in electric vehicles as well as infrastructure to service these vehicles. When people drive down Kwinana Freeway to Bunbury, we are already looking at recharging stations and things like that to service these great initiatives.

Hon Dr Steve Thomas: There is one in the south west centre of Donnybrook, right in the middle of the south west.

Hon TIM CLIFFORD: That is great; we need more of them.

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I wish that in the Liberal government's previous two terms it had looked forward and prepared for this because the greatest frustration in the last eight years was that whenever we talked about climate change or whenever we wanted action, there was no talk coming from the previous government about what it was going to do. A number of friends had to put freedom of information procedures in place because they wanted to know whether the government had received a briefing on a report that stated that if we move towards a more renewable future, it will benefit the community. There was a black hole of discussion around climate change. I found that to be totally irresponsible. The government is supposed to serve the people and protect society. I found the level of arrogance shown by the previous Barnett government quite unfortunate. It is funny because the majority of the community wanted action on climate change and felt fairly displaced, and the government was very disconnected to how they felt about this issue. At the federal level, the previous Prime Minister, Tony Abbott, talked about how coal-fired power would benefit us in the future. I would like to see where he got his facts and figures from because that does not make any sense.

Going forward, I look forward to working closely with the Labor Party in the next four years to put forward these great initiatives. I fundamentally believe that if members of this Parliament work together, we can make a lot of great changes for a lot of people in Western Australia. As a part of that, I think my role in this Parliament is to push things along; hopefully, we can push them along a bit quicker than in the past. I believe that we need a climate change minister. The other morning, I heard Hon Dave Kelly from the other place on 720 ABC radio talking about water shortages and how important it is that we address climate change. I am pretty sure he mentioned climate change about 10 times. It showed how passionate he is about the issue. If there is a bit of discussion around introducing a climate change minister, I am pretty sure that he would like the job, judging by how passionate he was on the radio the other morning!

Several members interjected.

Hon TIM CLIFFORD: If it could be given to one of us, that would be great!

When we talk about the grid, we talk about Horizon Power servicing the regional communities and the south west interconnected system servicing the majority of the metropolitan region in the south west, which is where the majority of the population is in this state. A void sits just on the edge of the grid. Farmers and other people in smaller communities want to know whether they can plug into the grid or whether they should go off grid, with battery storage coming up. The other day I read that many farmers are looking at going off grid. A Kukerin farmer spent \$250 000 investing in solar technology to move her yabby farm off grid. Western Power costed joining the grid at \$75 000. Fortunately, Carnegie Clean Energy installed an eight to 20-kilowatt solar photovoltaic system with a 10 to 80-kilowatt lithium battery backed up by diesel generators. This is just one example. There are heaps of these every day. Different people in the community have told us that they are exhausted from the energy and climate debates.

One of my best mates in Bremer Bay is a third-generation farmer. He returned to Bremer Bay to take over the farm from his old man. When he came up, he was just shaking his head. He has had to deal with bushfires and drought, but farmers are dealing with things going wrong in the midwest and other regions. It smacks of complete arrogance to say that things such as water shortages are not happening and that there is nothing going on that is affecting our society and our lands; that nothing is going on to make places inhabitable and making it nearly impossible to grow crops or to look after different communities. I really hope that we can work together on this issue. Hopefully Western Australia will soon get a climate minister and a department to address these issues. By working together, we can put together some ambitious targets to reduce emissions. If we work on the worst-case scenario to protect society, we can achieve some of these great outcomes within the next four years.

HON DARREN WEST (Agricultural — Parliamentary Secretary) [1.32 pm]: This is a very important debate. I thank Hon Robin Chapple for moving this motion. Climate change affects me every day. It is very important that we get a little serious about this. I wonder whether there are still any climate change deniers in the house because there are not many left in the community. Are there any left? It is generally accepted that climate change is a real phenomenon. It is generally accepted that it is caused by the immense release of carbon dioxide from fossil fuels—coal, fuel and gas—and that it has changed the atmosphere. Atmospheric carbon dioxide is now at over 400 parts per million. Those changes to the atmosphere have resulted in a change to our climate. I think that is generally accepted. Former Prime Minister Tony Abbott believes it is “absolute crap” and Senator Malcolm Roberts in the federal Parliament holds a similar view. But, generally speaking, the population has come to terms that climate change is real and that humans have caused it. The next question is: what will we do about it? It is a very good motion that the honourable member has brought forward today so we can talk about that.

I think I still hold the distinction of being the only working farmer in the Western Australian Parliament. I know the member for Roe still runs livestock on his property but has leased out his cropping, so I think that just leaves me. I can tell members now that there are several hundred thousand dollars' worth of seed and fertiliser sitting in

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the ground on my farm waiting for some rain. We have not had a start to this season yet. I am not the only farmer who is affected. There are about 4 000 to 4 500 of us in the same boat. It is very concerning not only financially, but also emotionally and personally. It is a very tough industry. The margins are very low and the risks are very high. One has to wonder sometimes why we do it, but we have to produce food. The world needs food. In a good season, farmers can make a nice return on their investment. Farmers live a lifestyle second to none. That is why it is important to us. In that position, I make special mention of all of those farmers, especially those in the northern wheatbelt. The situation is particularly dire in the northern wheatbelt because the season finishes there the earliest. They generally harvest before the rest, so every day their growing season is reducing and every day from now on there is less chance of returning a profit in the northern wheatbelt. Windstorms up there have blown paddocks away, which is a most depressing sight.

Climate change is a phenomenon that we generally accept is caused by human intervention. As humans, we now have an obligation to deal with the changes we have caused. The central wheatbelt is very dry, especially the eastern wheatbelt where there has been no opening rain. Some areas along the coast have had some rain. I point out that an area in the wheatbelt, probably within about 50 kilometres to maybe 80 kilometres of the coast, in the south west and great southern, has had some rain. When I drove through Dandaragan last week, I saw there were some green paddocks. It was a very late start to the season but there are some green paddocks. The great southern is very dry, although some farmers had some rain recently. The south eastern wheatbelt along the coast is all right, but inland it is very dry and, of course, the south west is particularly dry. The south west bore the brunt of climate change because it once had much higher rainfall than the rest of the state. The amount of rainfall in the south west has dropped the most. In some areas that has not been a particularly bad thing, because there are areas in the south west, such as Cranbrook, that were once considered a bit too wet for broadacre grain growing and farmers down there mainly used to run livestock. They would grow a few oats for sheep feed and gradually, over the years, as the climate dried, an area such as Cranbrook became one of the premium grain-producing areas in the state. In fact, the Co-operative Bulk Handling Ltd facility in Cranbrook has, on occasion, been the largest inland receival point in Western Australia. Climate change is moving the dynamics of farming south, especially grain production, and shifting the balance between grain production and livestock production. In the northern and eastern wheatbelt, there is the possibility of a move back to stock in areas where the rainfall is becoming too unreliable for high-risk cropping operations. There is an enormous problem in those areas with wild dogs that come in from pastoral areas. They can wipe out a mob of sheep in a very short time. We have a bit of work to do there. Livestock is still dependent on reliable rainfall.

I was not here for much of last week as I was away on urgent parliamentary business but I understand that this house has been speaking on this motion for about three and a half hours, yet there has not been a single contribution from the National Party. I think that is bizarre. The National Party represents the electorates that are most affected by climate change. I am flabbergasted that no-one from the National Party has got up to point this out in Parliament. I feel obliged on behalf of the agricultural sector to do that.

Hon Samantha Rowe: They don't care about the regions.

Hon DARREN WEST: It would appear that they do not really seem to mind whether there is climate change or not. I feel obliged to make a contribution on behalf of the agricultural sector.

As I have said, there will be large demand from here on for counselling, financial and mental health services. An awful lot of emotional pain is felt in the agricultural regions every time we get a dry year. Farmers are particularly resilient and are able to battle on through dry seasons. They are able to make arrangements with financiers to increase their borrowings, which is not necessarily a good thing. It ensures that we are able to keep on producing food and making our land productive but it comes at a cost. It is tough on families. Our children see this and do not really get enamoured with the profession, which is a shame. Many young people are draining out of rural areas at a rapid rate. One reason for that is they cannot see a future in agriculture. They prefer to work for another organisation, a corporation or a company, that provides agricultural services or agronomy. They prefer to work in sectors that have some guarantee of an income and a career because there is none in the agricultural sector as a result of climate change in much of the farming areas in Western Australia, particularly those in the north and east and the districts further out from the agricultural sector.

Climate change has been touched on in debate. I note what a rousing contribution Hon Alannah MacTiernan made to this debate. It is so good to have Hon Alannah MacTiernan in the Legislative Council again, and she certainly adds some substance to the debate. Of course, climate change also affects the metropolitan area and I heard Hon Alannah MacTiernan speak about approving the first desalination plant when she was in cabinet and how it was quite controversial at the time. It was built in Kwinana. Desalination plants are very energy intensive. As part of that project, the Emu Downs wind farm near Badgingarra was also constructed. Anyone who drives along the Brand Highway just south of Badgingarra will see the magnificent wind turbines spinning away,

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producing energy from the copious amount of wind in my electorate at certain times of the year. That project was built to offset the energy requirements of the desalination plant.

There was scepticism about that project. When I looked back through *Hansard*, I found an exchange on Thursday, 16 September 2004, between the member for Cottesloe, Colin Barnett, former Premier—thankfully, former—and Dr Geoff Gallop, arguably Western Australia’s greatest ever Premier.

Hon Donna Faragher: You have got to be kidding.

Hon DARREN WEST: This is my contribution. Hon Donna Faragher can make hers in a minute and beg to differ who was the better Premier. If she wants to argue that Colin Barnett was a better Premier than Geoff Gallop, she can be my guest, but I do not think she will find too much support for that notion.

In *Hansard*, the Speaker gives the call in question time to the member for Cottesloe, Colin Barnett, who says —

That is a shameful thing to say in a Parliament.

I presume that something was said across the chamber.

He then goes on to ask his question of the Premier, Dr Geoff Gallop, as follows —

I refer the Premier to comments made on ABC radio today by eminent water expert Professor Jorg Imberger regarding the launch today of yet another government report on the future of water resources in Western Australia. Professor Imberger said —

... this is the last in a long list of reports ... there’s been no action on any of these issues ... and all of a sudden now we sort of make a big spiel about it ... of all the options that were available, or are available, the desalination plant probably doesn’t stack up on an economic basis, it doesn’t stack up on a social base and also it just doesn’t stack up from an environmental basis.

- (1) Will the Premier now admit that his recent announcement of a \$350 million desalination plant, which nobody supports, is simply a panicked, last-minute attempt to address a blatant failure in water planning by his Government over the past three and a half years?
- (2) Will the Premier now admit that the desalination plant, which will emit more than 100 000 tonnes of carbon dioxide or greenhouse gas into the atmosphere every year and is likely to cause significant environmental damage to Cockburn Sound, represents a poor, if not the worst, option to solve our current and future water shortages?

Hon Simon O’Brien: What year was that?

Hon DARREN WEST: That was in 2004. The desalination plant duly opened around 10 years ago.

Hon Alannah MacTiernan: It is the tenth anniversary today.

Hon DARREN WEST: Is it the tenth anniversary today? Thank you, to one who was there.

Hon Simon O’Brien: You should have been paying attention.

Hon DARREN WEST: I do put a lot of research into my speeches and I do not always listen to what is being said. It was 10 years ago this very day.

I am told that the metropolitan area now relies on desalination for one-third of its water supply. How far off the mark was the member for Cottesloe, who actually went on to become Premier, for those who may not remember, and this was the attitude at that time of the coalition government. Members opposite might want to admit that perhaps they were a little bit wrong on that.

Hon Simon O’Brien: Mr Barnett has acknowledged that.

Hon DARREN WEST: The desalination plant has turned out to be a saviour for Western Australia’s water supply. The important thing about the desalination plant is that it does not rely on rainfall. Every other water source that we have ever had relies on rainfall, including the proposed pipeline from the Ord River. Desalination does not require rainfall because we are “girt by sea”—remember, members? There is plenty of sea water. We can now desalinate it efficiently and environmentally safely. All the claims that we would be killing off Cockburn Sound was just a big fear campaign around an initiative and a vision by a Premier who had some vision. It is very important to note that Labor has been acknowledging climate change for many, many years; we believe it exists. I see it firsthand where I work and live. It is real, and we need to ameliorate it; we need to work on it and we need to do it fast. Climate change has an effect on agriculture, as I have pointed out, and perhaps something may come out of this run of a generally tough season in the agricultural sector. The introduction of

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Doppler radar technology—the minister opened the Doppler radars recently—enables a more accurate assessment of climatic conditions. It also allows us to measure soil moisture, which has been one of the very frustrating things about this season. Basically, the darker the colouring on the map, the more soil moisture is stored. On our farm, it is purple, and is really dark. About 80 millimetres of moisture is stored in soil on my farm, but I cannot get enough rain for seeds to germinate to get down and tap into that moisture. That is why many farmers are very frustrated. We are getting more summer rainfall and less winter rainfall right across the state. The dynamics of rainfall are changing as a result of climate change. We have all of this magnificent moisture in the ground that we cannot access. That is what is very frustrating to many of us: the seed is in the ground, it is ready to go, the fertiliser is there; the moisture is down about 10 to 15 centimetres, and we can dig a hole and find wet ground, but it is dry on top. We just cannot get that 25 millimetres of water we need to germinate the seed so that it can push a taproot down into that moisture so that we can use it. That is what is frustrating most of us; we cannot even get that early winter rainfall that we need. One or two inches would set us up for the season. We are coming into July next week and many of us have not had rainfall greater than about six millimetres since that big rainfall event in late February—early March.

We need to act. What do we do? We have to stop burning coal. That is the first thing that we can do. I know that other parts of the world still burn copious amounts of coal. It is the cheapest way to create energy, and I acknowledge that. It is the most efficient and cost effective way to make energy. Gas is cleaner but still emits large amounts of carbon dioxide. There is an emerging technology called renewable energy. Renewable energy and the changes in technology are our way forward. I have asked many times in this house why the midwest of Western Australia is not the renewable energy capital of the world. We have plenty of sunshine, plenty of wind, and the big swells that come in from South Africa. We could harness all the energy from those sources and not need baseload power whatsoever. We would have a mix, if we were able to back that up with battery storage technology. We could do it now, but the vested interests say no. We still have the member for Warringah in the federal Parliament telling us that it is absolute crap. We still have arguments from Senator Malcolm Roberts in the federal Parliament. We still have commentators such as Andrew Bolt who do have some influence, arguing that we should not be doing this. We have some of our mainstream media along for the ride because there are vested interests in not doing this. It is appalling.

Hon Dr Steve Thomas: Precisely when do you think that Western Australia should stop burning coal?

Hon DARREN WEST: We have already started. As the member may know, because it is in his electorate, the previous government spent about a quarter of a billion dollars refurbishing a 1955 coal power station —

Hon Alannah MacTiernan: Which we had closed down.

Hon DARREN WEST: — that we had closed down. We started reducing the amount of coal burnt in Western Australia by closing down Muja AB. The incoming Premier in the Liberal government gave us his views on desalination and climate change, and the then Minister for Energy, who sits across from me now, decided that it would be a good idea to blow \$250 million of taxpayers' money on a 1955 power station and ignore the renewable energy opportunities that were around. The Gallop government had already built the Emu Downs wind farm.

Hon Peter Collier: We doubled renewables in our term of government.

Hon DARREN WEST: Has the member made a contribution?

Hon Peter Collier: What about midwest—the largest solar farm in the southern hemisphere? What about that one?

Hon DARREN WEST: Here we go. The solar farm in the midwest was always designed to be an offset of the Binningup desalination plant.

Hon Peter Collier: Don't you like it?

Hon DARREN WEST: Of course I like it, because it was our idea. We had planned to build a second desalination plant at Binningup, it was always on the drawing board, and the renewable energy offset was always a solar farm in midwest.

Hon Peter Collier: What about the 111 turbines in Merredin?

Hon DARREN WEST: Okay, yes there are 111 turbines at the Collgar wind farm, a magnificent facility. We also have a really nice wind farm in the Mumbida wind farm in Geraldton.

Hon Alannah MacTiernan: But what is our percentage, member, compared with other states?

Several members interjected.

The PRESIDENT: Order!

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Hon Robin Chapple

Hon Alannah MacTiernan: Are we the worst state?

Hon DARREN WEST: I think that may be the case, member, but I do not have those figures in front of me; I can research that.

What is pleasing about this debate is that all of a sudden the coalition thinks it is good on climate change and renewable energy as well. That is heartening; that is a change. That is certainly a change in the member for Cottesloe's views. Maybe we are getting somewhere here; maybe there is acceptance. I am looking forward to the Liberal Party's coalition colleagues, the National Party, making a contribution about what they think, because they are silent. There has been nothing from them in over three and a half hours of debate.

Several members interjected.

Hon DARREN WEST: Yes, urgent parliamentary business!

I want to now talk about the effects on the economy. The agricultural sector is big in Western Australia; it is a big sector. We produce a lot of grain that we export for income into Western Australia. We employ a lot of people who pay taxes and spend their money in local towns. We are looking to do more of that to keep people in regional towns, because the drain over the last eight years has been so significant that an electorate has been lost out of the regions and come to Perth—it has followed where people are moving to. We need to keep people working in regional areas, and the worse this gets, the tougher is our task to keep people in the regions. All of us rely on the fact that it rains and that we have four inches of topsoil that we can grow things in. That is what our existence is about. We all think that we get a little bit important and smart, but we are here because we have four inches, or 10 centimetres, of topsoil and it rains. When it stops raining, we have all got a problem. There are big issues with the economy. Farm lending is rising every year and it does not look like stopping any time soon. It is difficult for people who make a living out of agriculture to get by. We had a relatively good season last year, agronomically, across most of Western Australia, but the price of commodities was extraordinarily low, historically low, last year. Many of us were carting plenty of hay and grain away, but it was not profitable due to rising costs. Despite having had a good season last year, we are not really well set up to keep our heads above water this year. With the opening of the Doppler radar there is the opportunity—this is where I was heading before—to perhaps look seriously at risk management and mitigation for the agricultural sector. I see a tremendous opportunity in income interruption insurance. It has had a variety of names over the years, but essentially most businesses—although agriculture is not particularly good at this yet—can insure against an interruption to their income. Hospitality and transport businesses can insure against something going wrong and causing their incomes to deteriorate. Now with the advent of Doppler radar, farmers can as well. I often remember the comments of the former member Hon Nigel Hallett, who was very passionate about growing the risk mitigation insurance business and industry in Western Australia. We as an industry, and probably the government as well, can work together to put all the pieces of the jigsaw together to encourage farmers to access this insurance product. I was speaking to one farmer who does this and he told me there is quite a convoluted and drawn-out process. The reinsurers wish to see five years of data. That is okay, we can get that. They also want five years of production records, income records and rainfall records so they can make a risk assessment on the farm, just as the bank does. It costs more to insure a car for a younger driver than an older driver, and it costs more to insure risk if a person has more. I think there is a great opportunity here to help the agricultural industry help itself and mitigate its risk. It is a very risky industry. Those in the riskiest areas will of course pay a higher premium for this insurance, but they are the very ones who cannot afford to have a year without income. I think we can do some work around this. I spoke to one farmer about this. The figures are a bit rubbery and he asked me not to give the fine detail, but for example if there is an income of \$500 per hectare from a farm and a farmer wants to ensure that, the insurers will generally insure about 75 per cent of that, so about \$375, as a minimum income, and that will cost around 20 bucks a hectare. For 20 bucks a hectare, if someone gets wiped out, they will get their \$375 a hectare. If they return only \$200 a hectare, they will get topped up to \$375 a hectare. If they get more than \$375 a hectare, they have blown their premium. Why do we insure our workers, cars and houses, and insure against fire and hail, but not against income interruption? I think we as a government can do a lot of work to bring all the players together—the banks, the insurers and the Department of Agriculture and Food, which has a lot of the data. We can work with farmers to help and to collate information. Generally, reinsurers want an upfront fee of \$500 000. They impose a fee to go through the exercise of working through all that data and making a risk analysis because they may not get the business. I would like to talk to them about that because we do not want any reasons for farmers not to take up this insurance. I will talk more about this in future contributions, but it is something I believe in. I will continue the work of Hon Nigel Hallett and Hon Kim Chance before him. This is certainly an issue that Kim was very passionate about and keen to move forward.

There are enormous effects of climate change on native flora and fauna. I noticed driving around my farm that wild trees come out in flower much earlier than we would expect them to. I see trees that may have been there for 300 years just turn up their toes and die as the composition of the soil and water changes. The less freshwater

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put in means there is generally a higher concentration of salty water in the soil. I have seen big old trees down by rivers just turn on their toes and die for no apparent reason after a couple of tough seasons. That is a terrible shame. Some of those big old salmon gums are from 500 to 700 years old. They are magnificent living things. We have certainly had a hand in reducing the lifespan of many of them by perhaps being a bit ambitious on the clearing, but climate change is also certainly having an effect on those magnificent old trees that have stood there for 500 years and all of a sudden find the current climate a bit tough. There has also been an effect on waterways, rivers and catchments. There is not the flushing of waterways that there once was as a consequence of less rainfall, especially in winter.

Climate change does not always mean less rainfall; climate change can also mean a different distribution of rainfall. As I mentioned earlier and as we are seeing, we are having tremendously heavy storms in summer. Sometimes we get up to 200 millimetres in a day—300 millimetres in the case of Ravensthorpe earlier this year where we saw washaways in the paddocks and whole bridges disappear. Climate change is not just about less rainfall; it is about a different distribution of rainfall that has been caused by climate change.

Hon Alison Xamon interjected.

Hon DARREN WEST: The member raises a very good point, hence the term. It used to be global warming, but it is not all about warming; parts of the world are cooling as well. Having said that, photos of the Arctic ice shelf and even Antarctica show that the ice shelves are shrinking because the planet is warming up as a consequence of climate change.

This issue must be driven by the left. I do not have any confidence that the coalition, the conservative side of politics, will ever act on climate change. Federal Labor has a target of 50 per cent renewable energy by 2030. We had better get on with it; we are way behind that at the moment.

Hon Peter Collier: State Labor?

Hon DARREN WEST: No, federal Labor.

Hon Peter Collier interjected.

Hon DARREN WEST: That is our policy federally. I went to the federal conference in Melbourne and voted for 50 per cent renewable energy by 2030 because I think it is important. I have a son who is thinking about going into farming. That is why it is important. The left will need to drive this because, as we can tell, it will not happen from the conservative side of politics. We will keep pumping out carbon dioxide and ignoring the elephant in the room. The parts per million of carbon dioxide will hit 500 then 600. We need to get the stack back down to about 350 parts per million. I think we are a bit late; we should have done this 10 years ago when Geoff Gallop had the idea that we needed to act. That is when we needed to take action, but we have filibustered, put it off and found excuses for 10 years and I think the right would delay it for another 10 years and probably even more.

I thank the honourable member for the motion. We could talk about a lot more. Hon Tim Clifford talked about what a fascinating field energy is and how we can drastically change the mix and dynamics of the energy industry through renewable energy and battery technology. Our energy systems are some of the poorest in the western world and we are not doing very much about them. Our federal government is sitting on its hands and will not act on renewable energy and set meaningful targets and work towards renewable energy and cheaper prices for households. The price of renewable energy is falling while the price of other types of energy is rising and we will hit that sweet spot very soon, so we need to be ready. Germany produces a greater per cent of renewable energy than we do. Go figure! Look at its climate and look at our climate. Germany has understood the need to act. People in Germany are the can-do types. They have always been very clever at finding a way to make things work. They have been creative. We have not been creative because one side of politics that is just not interested.

I thank Hon Robin Chapple for bringing this motion forward. It is something I feel very passionately about, as members can tell. Climate change affects me, my family and my business, perhaps more than it affects anyone else in the Parliament, so I will always stand up and advocate on behalf of the agricultural sector, especially against inaction on climate change. It is time we got on with it and stopped saying that we do not need to do it; it is time we became more proactive and got the job done.

HON AARON STONEHOUSE (South Metropolitan) [2.02 pm]: I thank Hon Robin Chapple for putting this motion forward in a way that encourages debate and discussion. It is good to see. It was pointed out earlier that our solar uptake is fairly low, and not where we would like to see it. Electric car uptake is also low. The reason behind this, of course, is that it is too dammed expensive. I do not think anyone is shying away from that. Fossil fuels are cheaper. Coal is certainly one of the cheapest forms of energy we have.

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Hon Alannah MacTiernan interjected.

The ACTING PRESIDENT (Hon Martin Aldridge): Order, member!

Hon AARON STONEHOUSE: At the moment, coal subsidies are about 86c per megawatt hour. I do not think we should subsidise coal at all, and that is something members on the right side of the chamber would agree on. Gas is subsidised at about 30c per megawatt hour—again, that is no good. However, solar is subsidised at about \$412 per megawatt hour. We are subsidising solar by quite a ridiculous amount. I hear a lot from that side of politics about how they do not like corporate subsidies. However, it seems they are okay with corporate subsidies so long as it goes to their pet projects or to big green corporations.

If we increase taxes on cheap energy or prohibit cheap energy, poor people would inadvertently suffer the most, if not in this country, certainly in other countries. People use coal in places like India, despite it being very bad for their health, because it is cleaner than burning wood or dung, which, in a lot of cases, are the alternatives for those people. We must not forget that. Although coal is not ideal, perhaps for heating a home, it is certainly safer than burning wood or other materials. We also must keep in mind that among other things such as payroll tax and red tape, energy is one of the biggest costs imposed on business, so keeping energy prices low is very important, especially if we want to encourage manufacturing and other industries in this state.

Desalination was mentioned earlier as a great way to tackle declining rainfall or changing rainfall trends. I agree that desalination is something we should continue looking at. However, it is energy intensive, as Hon Darren West pointed out. That is probably the biggest roadblock to using desalination on a larger scale. An easy solution to the energy requirements for desalination would perhaps be nuclear. We are, after all, the third largest exporter of uranium—that sweet yellow cake—in the world. Unfortunately, our government is strangely anti-science when it comes to nuclear.

Several members interjected.

Hon AARON STONEHOUSE: I expected some interjections, so I will point out a couple of stats. I have a couple of stats that some of my friends in the Greens might find interesting. Per trillion kilowatt hours energy produced, the number of deaths from coal is about 100 000. That is the global average. It is due to horrible lung diseases. However, in countries such as the United States, it is significantly lower at about 10 000 per trillion kilowatt hours, so there is a much lower death rate in places such as the US, where they have the Clean Air Act, for example.

Hon Alison Xamon: How can people die from solar?

Hon AARON STONEHOUSE: That is a very good point. Rooftop electricity solar, I think, is about 440 per trillion kilowatt hours, and I think that is mostly from extraction of the minerals used to create solar panels.

On nuclear, if we include Fukushima and Chernobyl, the global average is about 90 deaths per trillion kilowatt hours. That makes it one of the safest forms of energy production in the world. There have been deaths in the past from nuclear energy but nuclear energy creates so much energy at the same time that the ratio of deaths per trillion kilowatt hours is very low. Unfortunately, every now and then someone falls off a wind turbine while doing maintenance, so given the very small amount of energy that wind produces, there are about 150 deaths per trillion kilowatt hours. We need to take into account how much energy the different technologies actually produce compared to the number of deaths attributed to them.

Several members interjected.

The ACTING PRESIDENT: Order, members! Hon Aaron Stonehouse has the call. He is not pausing to take interjections and I think it is getting to the point where he is unable to make his contribution.

Hon AARON STONEHOUSE: Thank you, Mr Acting President. It leads to my next point that it seems almost impossible to hold sensible, reasonable discussion about nuclear energy in Australia. There is a very anti-science sentiment from some people in politics concerning nuclear. It may not be the best solution to our energy requirements but we should at least have a sensible debate about it, especially considering the risk changing climate poses to industry and agriculture. I do not want to debate the science; I am not a science denier. I have an open mind. I want to look at all different forms of technology that might help us tackle this issue. Coal seam gas, for example, is certainly cleaner than coal but we have a government that has an ideological bent against coal seam gas.

We talk about the struggle people in agriculture are facing with reduced rainfall or irregular rainfall patterns. Genetically modified crops can be designed to survive with less rainfall in more harsh climates. Again, with genetically modified organisms, CSG, nuclear energy, and even man-made reefs, we have technology that can

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address these issues. There are many technologies we can look at if we just get beyond our ideology and look at things sensibly and objectively.

That leads to my final point—I will not take much time—and that is the solution to these problems always will be innovation in technology. At the end of the day, the greatest driver of innovation in technology in particular is competition in a free market. Some people on one side of politics may downplay the risks of climate change and people on the other side want to perhaps play it up or try to pull the levers and dials of the economy and manufacture some kind of result, when, really, we should be getting out of the way and letting innovators and entrepreneurs develop the technology we need that will help us in the future.

HON COLIN TINCKNELL (South West) [2.10 pm]: I will be brief. I thank Hon Robin Chapple for bringing this motion. I also mention Hon Dr Steve Thomas and Hon Aaron Stonehouse for their contributions to the discussion. I support their view about open debate. I think that is the problem with this whole discussion. When the left talk to the right, there is no open debate and that is where the problem is. Calling people names because of their view on something does not help the debate.

Climate change is happening. We disagree about the causes, but there should be an open debate on that. People should be talking about that and not being accused or called names. The political pointscoring that goes on with climate change is the one thing that is stopping open debate. We remember Prime Minister Rudd, Kevin 07 or whatever they used to call him; when he was in power, climate change was the biggest issue facing our time. Why did it stop with him? It is because he turned the argument into political pointscoring instead of opening up the debate to be about all forms of energy.

Hon Aaron Stonehouse mentioned uranium and nuclear power. Once again, I agree with him. We should be having that debate in this Parliament and in this state and right across this country. It is a different form of energy. Some people call it renewable energy, but it has been around a long time and the science is improving all the time. We need to look with open eyes at that whole energy source. It is one of the fastest growing energy sources in the biggest countries in the world, which are also doing renewables. They are also increasing their coal and gas use and every other energy. Somewhere in the region of 35 nuclear power stations are being built in India and China and these places and somewhere in the region of 70 others are at the planning stage. That is happening now. We have enormous amounts of uranium in this state and also in the rest of Australia and we need a complete and open debate on it. At least the South Australian Premier, Mr Jay Weatherill, had a royal commission, and that was a good thing. That was the start of the debate in this country. No-one previously had been prepared to have a royal commission and look at the facts and figures.

Many members have talked about desalination. I think it is fantastic that desalination exists, because we would be in a very bad state if we did not have that. But we should be looking at what we will do with those dams. I know Hon Rick Mazza has mentioned to me recently that if the dam water is too salty and cannot be used for other purposes, maybe we should be opening up our dams for recreational purposes. But we need to look at our resources and make the most of those resources. We also need to look at salinity programs. We know there are answers to salinity in the country regions and we could be a lot more productive in our farming regions if we look at some of the canal programs and seriously invest bipartisan-wise in these technologies and see where we can grow this into the future. Salinity is a major problem in this state and we need to make changes in that area.

Another thing I would like to mention is that science is always changing. All the technologies that we see today, including nuclear, are improving all the time. For instance, most of the nuclear reactors around today are either generation 1 or 2, but there are now generation 3 and 4 nuclear reactors that operate completely differently. Some that operate only on nuclear waste are coming online around the world.

We oppose the sale of Western Power. We are not necessarily against all asset sales. But when an asset sale increases the cost of living for low-income workers and pensioners and we have no plan other than to sell it because we spent too much money and got ourselves into a fix, we will oppose that. We are open to discussion on selling the TAB, but we cannot just close down coal-fired power stations with no plan about where we will put those workers and how those people will earn their living in the future. We have seen what a basket case South Australia has become. From this Saturday, South Australia will have the most expensive electricity prices in the whole world. They are in a race to the bottom with Denmark. We do not want that in this state. We need this open debate. When Hon Aaron Stonehouse spoke about nuclear energy, he got the usual reply and that is wrong. We need an open debate. I thank Hon Robin Chapple for opening up this debate because it is important and the political pointscoring needs to leave this debate.

We need to look at the speed of change as we close down old fossil fuel energy sources and open up renewables. Let us hope that renewables grow quickly and that battery storage really is a part of our future. We are all hoping for that, but I think the argument is about the speed of that change. Our number one resource in the world is

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people—not the climate, not the water, and not uranium. It is people. We need to look after them first. I love the way Hon Dr Steve Thomas mentioned that it usually comes from the industry. We need to get the industry involved in decision-making.

It is all about opening up the debate. Let us stop calling people names. Let us stop using this as a political football and let us have an honest, open debate and put everything on the table. Great democracies do that.

HON ROBIN CHAPPLE (Mining and Pastoral) [2.18 pm] — in reply: I take what Hon Colin Tincknell has just said. From the outset, the type of motion that I used is about a debate, rather than “he said, she said”. We tried to do that a number of times. I am sorry that the Nationals did not contribute because the last time we had a similar debate about policy direction, they contributed very well to that debate. I thank Hon Darren West, Hon Alannah MacTiernan, Hon Dr Steve Thomas, Hon Stephen Dawson, Hon Tim Clifford, Hon Aaron Stonehouse and Hon Colin Tincknell for their contributions. I must admit that I was a little concerned when we started going back to the old paradigm of who is right and who is wrong in this debate. But I am very, very proud that everybody in this place acknowledged climate change is real and that we need to move forward in this area.

I will briefly touch on the nuclear issue. Some in this place know that for three years I was the radiation health officer for the Radiation Health and Safety Advisory Council at Yallambie in Melbourne, so I have some expertise in that area. I want to clarify a couple of points. We have had 70 nuclear power plants in the planning stage for the last about 35 years. It is always trotted out by the International Atomic Energy Agency as the way we are going forward. We are about to retire approximately 140 nuclear reactors that have already had a 10-year extension on their life and are due to be wound back. We need a reality check on this. The only nuclear power station that is the new style tier 3 is being built in Norway. That is now some five to six years overdue. It has gone three times over budget and is still not online. There are the fast-breeder reactors. Most of those—there were 70 of them—have been retired. Only one remains in Belarus, and it is used for generating hot water for houses because it was too unstable to do anything else. The American GIF III program was heavily subsidised by the United States government to provide massive subsidies—many billions of dollars—to Third World countries to start a new nuclear program. We have to remember that since 1972 there has not been a new nuclear power station built in the United States, and under the Carter administration they were all being wound back.

Hon Colin Tincknell: Can I say also that I agree with you on those figures—100 per cent. I also worked in the nuclear industry for many years. One of the things I wanted to remind you was just that they are growing in countries like India, China and others.

Hon ROBIN CHAPPLE: We are still waiting for those developments. There is a program, but the net number of nuclear reactors will decline in the future.

I want to leave that aside because I think the key issue is that we have a burgeoning greenhouse gas emission problem in Western Australia. From Hon Dr Steve Thomas to Hon Alannah MacTiernan, all members have acknowledged that. I think the clear imperative for this government moving forward—I love that phrase; it has become some of the pet words, everybody is moving forward these days, but anyway—is to develop a program to address the burgeoning emissions in this state and to try to minimise our energy footprint. Having said that, I think it is very important to note that part of our concern about climate change is emissions. That is where we see we need to have a reduction. In this state in 1990 we produced 52 million tonnes of CO₂ per annum; by 2010 that had risen to some 74 million tonnes of CO₂ per annum for a very, very small state. By 2012 that was sitting at about 83 to 85 million tonnes of CO₂ per annum. Of that, 12 million tonnes came from Woodside Energy, nearly eight million tonnes came from Verve, 4.2 million tonnes came from Alcoa, and 3.7 million tonnes came from Worsley Alumina. The technology is available; I am an engineer, and I really agree that technology leads the way.

Hon Colin Tincknell: Yes.

Hon ROBIN CHAPPLE: We could actually get Woodside to get rid of one component of an element of its emissions that is carcinogenic and accidentally remove, at the same time, one million tonnes of CO₂ per annum; we have that capability. The proposals for Browse Basin, Prelude and the floating liquefied natural gas systems do not have flares because they are dangerous. So they have developed technologies that do not flare. The new Woodside Pluto development on the Burrup Peninsula flares occasionally, because the plant has been developed on the basis of not flaring waste energy. The eight million tonnes that comes out of that one flame on the Woodside facility on the North West Shelf is actually getting rid of energy. Surplus energy is being burnt. How ridiculous! That should be turned into an energy source. It was going to be released as methane, so I am at least pleased that it is being lit. When we consider that that eight million tonnes of CO₂ per annum from one flare on

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a gas plant is almost equivalent to New Zealand's emissions, we realise that we should be doing better than that, and we can. The technology is there to reduce those sorts of emissions. If we reduced those emissions, we would be getting rid of somewhere in the region of 25 million tonnes of CO₂ per annum—almost half our emissions. We have to do it with energy and we have to do it through reducing our footprint, driving electric cars and the provision of electric batteries. We have already seen the massive changes since the battery was introduced by Tesla. In China, better batteries than Tesla's are already being developed. The exponential growth in the technology to resolve our problems is there. I encourage the current state government—I am not putting any blame on anyone; this is not a blame game—to take on board its responsibility as part of the nation and the globe to reduce our CO₂ footprint.

A point that was raised, which I take, is that a number of American generals have recently said that a global water shortage will be one of the most serious things. They actually attribute that as part of climate change, and have said that that is why security systems globally have to address the decline in water supplies and the increase in population. That is becoming one of the drivers in the thinking of the American military, and how climate change could lead to potential conflict and, as we have heard, mass translocation of people and things around that. We really need to address climate change for many reasons.

I am coming very close to the end of my time, and on that basis I urge all members of this chamber to think about climate change and our responsibility to future generations in trying to do the best we can to adapt to or ameliorate the impacts of climate change. That was something I was very passionate about when I was elected in 2001—it was part of my inaugural speech—and, hopefully, I will make a valedictory speech at some stage when I can say that at least we as a state and nation have actually taken on board the responsibilities of addressing climate change. After I have given my valedictory speech at some stage in the future, I hope these benches around me will be filled with other Greens who can carry on the charge I brought to this place in 2001.

Question put and passed.