

Climate Change in Western Australia Issues Paper 2019

Response from the Margaret River Regional Environment Centre

This paper was written by

[REDACTED]

INTRODUCTORY REMARKS

This response is from a very active group, in a region which boasts a number of active, environmentally focused organisations. It is signed off by the committee but many of its members have contributed to the comments below. Overall, we feel strongly that the State Government's environmental actions and objectives, while laudable, fall well short of saying what is needed. This qualified support extends to the document on which we are currently commenting, *Climate Change in Western Australia* Issues Paper September 2019.

The detailed responses we set out below support with specific examples three fundamental responses to the document as a whole.

1. The coverage of the document, we argue, is incomplete. It concentrates disproportionately on the responses to climate change while not putting enough emphasis on the causes which it is within the State Government's power to influence or control.
2. In our collective opinion the document seriously downplays the 'natural' environment and emphasises too exclusively 'the economy' and the human created environment.
3. We think the document is far too passive. It should, using much stronger language, draw attention much more forcefully to the climate emergency which threatens all of us. It should be more specific about the well-understood causes of climate change and what actions we, collectively and individually, therefore must take to minimise both its causes and its consequences in WA.

We are encouraged by WA government backing for major new renewable energy projects. Supporting and expanding WA's production of renewable energy is surely one of the most important things the WA government can do to help to reduce Australia's contributions to climate change. Climate change, or as authoritative commentators are now calling it, the climate emergency, must be addressed globally by all nation states and their subsidiary entities – federated States, Territories and local governments and the institutions and individuals which constitute them.

But we have one very important caveat to this support; we strongly believe that 'natural' gas does not have, nor should it have, *any place* in attempts to develop a coherent and effective response to the climate emergency we face and are beginning to experience. It is a fossil fuel and while the actual burning of it might produce somewhat lower greenhouse gas emissions than burning coal, escapes of the gas during its production, transport and use are greater than these reductions. In addition, locking in large, expensive 'natural' gas projects for many years into the future will reduce the capacity, the finance available and the perceived need to develop the genuine renewable energy sources which are essential to a coherent climate change policy. The WA government's aim should be to reduce *all* greenhouse gas emissions as rapidly as possible.

One of the glaring omissions in this report is a discussion of land clearing in general and deforestation in particular. In particular the logging of native forests and the impacts of prescribed burning to meet what are large, rather arbitrarily determined targets, have a variety of major environmental consequences including influencing our climate both locally and more widely. (Several distinguished contributors to the prescribed burning conference held in Perth in July/Aug 2019 emphasised this point very forcefully.)

Land use changes are one of the major causes of greenhouse gas emissions yet this is not mentioned in *Section 10: Protecting biodiversity*. The emphasis in this section is on developing policies which might alleviate the consequences of climate change. Important as these are, they are less important in our view than implementing measures which would slow the rate of climate change as soon as possible. This is one of those issues which require global action, but this must usually be initiated at a local level. If the national governments of all countries took the actions to confront climate change which the emergency clearly warrants as soon as absolutely possible, then the magnitude of the changes and the consequences would *gradually* be reduced. (Many of them cannot now be avoided.) The effectiveness of national governments' policies depend on what sub-national and local jurisdictions actually do, so the WA government should be supporting local preventative initiatives as well as protective policies.

Related to land clearing are agricultural practices and food production generally. The philosophy, implications and practicalities of regenerative agriculture should be explained – briefly – and the importance of *local* food production emphasised much more than this document currently does.

At a recent 'Climate Summit' held in Margaret River, attended and contributed to by a wide range of representatives from active groups in the region, eleven local projects – which to varying extents are already underway and/or have some financial support already obtained – were selected as priorities on which to focus. We include these in this response to state-wide initiatives to illustrate and emphasise what local groups, supported by local government, can contribute. They add focus to our responses to the State Government's paper.

1. *Assist AMR Clean Community Energy Group to develop the major community renewable energy project it has initiated.*
2. *Develop a community renewable energy power trading and sharing system.*
3. *Support the transition to electric vehicles.*
4. *Support agricultural transition to regenerative farming.*
5. *Incorporate sustainability planning regulations into the Local Planning Scheme.*
6. *Develop and promote programs to think local, buy local, swap, share and recycle.*
7. *Revegetate riparian zones, buffers, shelter belts.*

8. Support the development of new, sustainable and local industries.

9. Provide low carbon public, tourist and school transport.

10. Lobby for changes in environmental policies at the state and federal political level.

11. Coordinate, champion and implement the Augusta Margaret River Climate Action Plan

We are happy to expand on the context and progress of any of these if required.

We now address each of the separate sections of the Climate Change in WA Report. We highlight what seem to us significant **statements** in the report; we set out **our responses** to these statements and briefly give **our reasons** for our responses. We also, where appropriate, make further more general comments.

Minister's foreword

Statement

The very first sentence of the document is "The McGowan Government acknowledges the *challenge* (our emphasis) that climate change poses to the State ..."

Our Response

Just what is or, more accurately, *are* these challenges?

For example: Will the state, in whole or part, become too hot to live in?

Our belief is that, in many parts of the north and interior of the State, this quite possibly will be the outcome.

A second related challenge might be: Will the high temperatures of the near future substantially affect WA's food producing industries?

Our belief is that this almost certainly will be the case; the significant questions then are: which and by how much will particular industries — wheat, wine, wool, dairy, smaller scale horticulture — be seriously affected?

If our beliefs are correct, then the likely consequences for those who live in WA must be set out, however briefly, in this document and the Minister's foreword.

In our opinion this crucially important first sentence should be amended to read something like "The McGowan Government *understands the extreme and severe challenges which a very rapidly changing climate poses to the people of this State. We want ...*"

Some reference to the specific nature of the many changes threatening us should be mentioned here, however briefly, with pointers to the sections of the document in which they are discussed.

Our reasons

Changes along these lines would immediately focus the attention of readers on how *significant* and extremely *urgent* such matters are and persuade them that reading on will be informative and accessible.

Statement

The first sentence continues "... we want to have an informed discussion with the Western Australian community and to decide determine how we move forward to address the risks threats and seize the opportunities that climate change poses."

Our response

The language here should be more direct and clearer. We suggest "... we want to have an informed discussion with everyone who lives in Western Australia and to decide how to respond to the threats and seize the opportunities that climate change poses."

What are the threats (or the risks as the foreword would have it)? As we have already indicated, in our view, they include large tracts of WA becoming uninhabitable and food production being catastrophically reduced as a consequence of increased temperatures and much reduced rainfall.

What *are* the opportunities? Establishing renewable energy industries – manufacturing PV cells and batteries, establishing pumped hydro storages and others – come to mind as immediate obvious objectives.

Our reasons

We believe that the tone of the whole document should escape the sometimes rather bland and anodyne comments which government documents can be accused of. The whole matter is far too urgent and critically important to be missed or underestimated by its readers. The Minister's statement precedes the document but its tone and directness should show exactly what our State Government believes needs to be planned for and why. Its language should be that of the Report itself. The Minister's language should suggest that he understands the issues, knows what has to be done and is personally involved in doing it. He is asking citizens from all round the State to help him. They must be persuaded that they can help and to read on to find out how the government thinks they can help.

Statement

"In August this year, the government announced its commitment to working with all sectors of the economy to achieve net zero emissions for our State by 2050." And later it says: "This paper outlines the key issues facing Western Australia in the transition to a resilient, low-carbon economy ..."

Our response

It is not easy to define exactly what “net zero emissions” means or entails. The caveat word ‘net’ allows that emissions in some areas will continue. But in which ones?

A ‘low carbon economy’ would be a great outcome, but it is not necessarily the same thing as ‘a resilient economy’. Neither term is very precise.

A statement along the lines of the following should be included: ‘The massive changes in energy production needed to reduce its environmental impact will be difficult to identify and quantify precisely and no single endpoint can define accurately what must be done, but all avenues must be pursued and all targets specified. The Government would like your help in doing all this.’

Our reasons

We believe that the whole document, including the Minister’s Foreword, should strive for absolute clarity, avoid ambiguity, explain clearly why individual citizens’ responses are important and indicate what they might be.

In general

Do we get a sense of whether the government is really concerned with specific issues which are extremely urgent and very important, or do they come across as something we have the luxury of time to plan responses to at leisure? Do we have 5, 10, 50 or maybe more years to decide on and carry out what must be done? Will a moderately concerned citizen be persuaded to read on in the hope that statements will be set out in the pages that follow making clear just how desperately serious the threats from climate change are for all of us.

A pointer as to which section(s) answers to such questions might be found in would be helpful.

Does the WA government believe that we are facing an impending catastrophe as serious as the science tells us? Should the government we have elected be preparing us for the Moral Equivalent of War? How is it intending to convince ‘we the people’ that the issues canvassed in this report are among the most important that this or any government faces?

In the section International and National Context later in the Report we read that: “The Government of Western Australia has committed to working with all sectors of the economy to achieve net zero emissions by 2050.”

This presumably implies that renewable energy generation must be at 100% of demand by 2050. Why then are new oil and gas fields still being searched for at great expense? The viability of any found will surely depend on there still being a market for such fossil fuels in 30 years’ time. Why are new gas projects that are likely still to be operating in 3 decades time being planned now?

So, we need some context and more information to assess the magnitude of this task both as a whole and in its constituent parts. Is this provided? Reassurance that it will be in the report that follows would be a stimulus and an incentive for readers to persist.

Introduction

Statement

The opening words to the formal part of the report — arguably the most important of the whole document — read “Western Australia’s climate has changed during the past century ...”

Our response

This is a very passive statement. Nowhere is it even hinted at *why* this has happened. We strongly believe that the cause of the many and various changes should be made absolutely clear both here and in the body of the report. We believe that the words quoted above should be amended to read: “Human activities have markedly changed Western Australia’s climate in recent decades, and the pace and impacts of the changes will almost certainly dramatically increase unless major changes to current policies and practices are made within WA, Australia as a whole, and elsewhere in the world ...”

Our reasons

There are small but influential groups of people who argue, essentially, that the causes of climate change have little if anything to do with human activities, that climate has always changed and by implication always will, and that it is mere hubris on our part to imagine that we can do anything to alter either the direction or the magnitude of the changes already happening. By further implication, the only role of governments is to mitigate the consequences of these inevitable changes in whatever way we can. Such beliefs are both absurd and dangerously irresponsible; this *must* be acknowledged at least implicitly and contradicted clearly and overtly if the document is to have influence among a population potentially confused by very vocal competing, but mostly absolutely absurd claims.

A second reason is that we profoundly disagree with some of the government’s actions, especially its support of the gas industry which will add enormously to Western Australia’s greenhouse gas emissions with a significant flow on effect globally. Any support of *future development* of the gas industry is, we believe, totally unsupportable and unacceptable. This should clearly be stated in a document such as this.

Statement

In the final introductory paragraph we read “... we don’t need to choose between reducing emissions and protecting our State’s economy and industries.” And “we can shift to a cleaner, more sustainable economy ...”

Our response

The words “natural environment and its living components” should be inserted after “protecting” in the first sentence and the words “Consideration for the natural environment in which we live, should be the very first consideration in trying to shift to a cleaner ...” in the second.

Our reasons

Our very strong belief is that it is protection and restitution of our natural environment, the ecosystems, and the animals and plants which constitute them, which should be the very first objective of any plan to react to climate change. This is both an ethical *and* an instrumental claim. Minimizing human impacts on the natural environment are essential for a healthy planet as well as necessary for human wellbeing.

In addition it is worth pointing out that if we don't markedly reduce our greenhouse gas emissions over the whole planet; neither we nor any other country on the planet will have the luxury of 'an economy'.

International and national context

Statement

The opening claim to this section is that "Australia ratified the United Nations Framework Convention on Climate Change Paris Agreement on 10 November 2016 and has committed to reducing greenhouse gas emissions by 26 to 28 per cent below 2005 levels by 2030. Parties to the Paris Agreement aim to limit warming to well below 2 °C above pre-industrial levels ..."

Our response

The report should mention that a number of the most significant international bodies, a number of countries and the majority of climate scientists worldwide believe, and have evidence to support their beliefs, that Australia's reduction levels are manifestly and dangerously below what is needed to achieve the targets stated. One claim at least asserts that reductions from all signatories to the Paris Agreement should be at five or more times (!) the current levels to achieve the stated results. Another widely accepted claim says that we have fewer than a dozen years to achieve zero emissions in order to avoid catastrophic consequences. This latter claim is markedly at variance with the concluding words of this opening paragraph "...that emissions will need to reach net zero in the second half of this century."

The report should also mention that several Australian State Governments have established reduction targets well in excess of those of the Commonwealth Government.

Our Reasons

It has been argued persuasively by many climate scientists that even 1.5⁰C is too high a threshold for safety. After all, it still only predicts a 50% likelihood of avoiding serious consequences. The consequences of about 1⁰C of global warming we are seeing – increases in floods, fires, droughts and serious weather events – should be given a lot more attention.

This section does not suggest that the WA State Government is considering emission level reductions in excess of those of the Commonwealth government. We believe that, in concert with as many State and Territory governments as possible, it should be considering more stringent and more rapid emission cuts. If it does not plan for widely predicted

eventualities now, we feel certain that it will be compelled by events to do so within the next term of State Government. The policies demanded then will necessarily be more draconian and less certain of success.

Statement

“It is broadly accepted that nationally consistent, economy-wide market mechanisms are better able to reduce our greenhouse gas emissions at least cost to the economy. A stable national policy framework for climate change and energy has, however, proved difficult to achieve over the last decade”.

Our response

We strongly disagree. We believe that it is *not* broadly accepted that market mechanisms are the best or most cost effective way to address climate change. Only neoconservative national and state governments, together with many of the world’s largest and most powerful fossil fuel, transport and multinational corporations related to or dependent on them and associated well-funded peak bodies they have established persist with this economic mantra.

Our reasons

Market mechanisms are notoriously inefficient at dealing with externalities. They leave unregulated those corporations that have been most responsible for producing greenhouse gas emissions and that are most likely to opt for the status quo without significant government intervention; they mostly benefit the already wealthy at the expense of the less well-off, which leads to greater inequality. Even if market mechanisms could produce solutions to the climate crisis, a grossly unjust and unequal society would not be acceptable to the responders to this Report. An unequal society would mean (amongst other things) that access to technologies necessary to address climate change (PV cells, batteries, electric vehicles, for instance) would not be available to a large proportion of the population.

Statement

The final paragraph of this section reads that “The Government of Western Australia has committed to working with all sectors of the economy to achieve net zero emissions by 2050. The government’s aspiration creates the overarching framework for the State Climate Policy, ensuring that Western Australia captures the emerging opportunities of the low-carbon transition and secures a competitive economy into the future.”

Our Response

While we support these statements with the strong qualifications and caveats we have outlined above and amplify below, we strongly believe that, as well as ‘the economy’, the ‘natural environment’ and everything living in it deserve prior mention for strong, legally based protection.

Our Reasons

Again, this is justified by ethical as well as practical concerns, although the practical concerns are easier to articulate and no doubt are more widely understood. But that is no excuse for not putting the ‘natural environment’ first.

Issues and opportunities for Western Australia

Statement

In the two paragraphs introducing this section we found the following phrases “... safeguard Western Australia’s economy ...”, “... diversify our economy ...”, “... particularly important for future investment in resource and energy projects, energy networks, low-carbon technologies and the built environment.”

Our response

We were very struck by the total lack of any mention of the non-human living and non-living ‘natural’ environments (rivers, oceans, landscapes, whole ecosystems). Of the eleven issues and opportunities signaled for discussion only one refers to the non-human and non-built environment.

Our reasons

We believe that all non-human living things on the planet should have much more prominent treatment in this document.

Statement

A clear State Climate Policy will provide much-needed clarity for private and public sector investment, ensuring planners and businesses in Western Australia are able to make timely and efficient investment decisions. This is particularly important for future investment in resource and energy projects, energy networks, low-carbon technologies and the built environment. We are seeking input from business, industry, local government and the community on the issues and opportunities in a number of key areas.

Our response

We strongly believe that addressing the climate change emergency MUST come before prioritising ‘the economy’.

Our reasons

There will be NO ECONOMY without a liveable planet. Conversely, if we fix climate change we will, at the same time, produce an economy that delivers a prosperous and fair society, one that is sustainable in the long term.

With this in mind, it is important to emphasise that investment has to be in genuinely RENEWABLE resource and energy projects, and energy networks.

1. Transforming Energy Generation

Statement

The third sentence in this section reads: “Collectively, large- and small-scale renewable generation is supplying 16 per cent of our annual energy needs in the State’s south-west.⁶”

Our response

We believe the following question should be asked and at least approximately answered: 'How can we increase this to a net 100% within the time frame regarded as necessary to reduce GHG emissions in order to avoid very severe consequences?'

Our reasons

Our response could be continued by delivering the answer to the fourth question in the '*Your thoughts?*' section. We believe that something like the following answer should be included: 'The transition has to be as fast as necessary to avoid the possibly catastrophic consequences which many of the climate change models currently predict. Anything less will not deliver by 2030 the renewable energy generation needed for complete decarbonisation. Such a failure, if replicated elsewhere in Australia or the world, leaves the door open to climate catastrophe well before the end of the century.'

Statement

The first sentence of this section reads "Western Australia's energy transformation is already underway. In the State's main electricity grid – the South West Interconnected System (SWIS) – renewable energy supplied by large-scale renewable generators has doubled since 2007".

But then we read, in the section *Energy transformation*, that, despite this, "Emissions in the SWIS have increased by around 16 per cent since 2005."

Our response

This increase may be attributable to population increase or industrial changes (or most likely) a combination of both, but it would help if the government's understanding of why this has happened were included.

Our reasons

In several other countries, e.g. the UK, greenhouse gas emissions have fallen although energy usage has increased. How has this been achieved? One suggestion is greater energy efficiency (of generation, delivery and of electrical appliances). Can the WA Govt do more to advance average efficiency of energy usage alone or in concert with other Australian jurisdictions?

Statement

We are asked in question 1 of *Your Thoughts?* What are the main challenges for decarbonising WA's electricity supply while maintaining reliability, security and safety?

Our response

One challenge, undoubtedly, is the fact that the optimum sites for establishing large scale solar installations (and possibly also wind and large scale pumped hydro) are a long way from the main centres of population and industry where the generated power would be used.

But this challenge contains the seeds of various opportunities, (which are also, in part, an answer to the third question of *Your Thoughts?*).

Our reasons

It is our understanding that the Northern Territory Government has just approved plans and awarded the project Major Project Status, to build a massive 10GW solar farm and a potential 20-30GWh storage facility near Tennant Creek. It would be linked to an Australia Singapore Power Link which would carry, via High Voltage Direct Current transmission, the power to that city state and possibly Malaysia, powering Darwin on the way.

Might something similar, possibly linked to this NT project, in order to maximise scale advantages and minimise costs, be considered for somewhere in the north of WA where solar (and possibly other renewable resources) potential is as high as at Tennant Creek? We believe that thinking on a scale such as this is the only way to achieve what is needed to help Australia to achieve a zero carbon electricity generation, storage and transmission system. It would also, *inter alia*, provide employment, 'jobs', and export income to WA.

In this context we believe that mention should be made of the potential for renewable energy policies and climate change policies to be more closely integrated. For example, a massive new renewable hydrogen production facility has been proposed for Western Australia by Hydrogen Renewables Australia. This suggests up to 5,000MW of combined solar and wind projects to supply the production of low-cost hydrogen at an installation near Kalbarri.

This proposal follows another massive renewables project in WA, also aiming at the domestic and export market. This new project – a 15,000MW wind and solar facility proposed for the Pilbara at the edge of the state's main grid by the Asian Renewable Energy Hub Projects – could make WA a leading producer in a burgeoning global market for renewable fuels, led by Japanese and South Korean investments in new hydrogen fuel technologies. These projects open up opportunities for Australia to tap into abundant resources of wind and solar energy to establish a new export economy at the same time as increasing genuine Australian contributions to global efforts to slow and reverse the adverse effects on global climate resulting from burning fossil fuels.

As the WA government no doubt well knows, but the wider general public probably does not, two organisations, CEFC and ARENA, have been important sources of financial support in developing and expanding projects such as these in renewable energy generation. We feel that, even though these are not State government bodies, they deserve mention as worthy of at least continued and preferably increased Commonwealth financial support; we encourage the WA Government to join with other States in lobbying the Commonwealth Government to guarantee support for these bodies for enough years at levels taking into account inflation and increased opportunities and needs. Such guarantees would deliver certainty to potential investors in large but expensive renewable energy projects. The potential for CEFC and ARENA to support these and similar renewable energy projects in WA is obvious and important.

Cheap wind and solar are the keys to Australia's future prosperity, either through 'green hydrogen' exports that will replace the LNG industry, or so-called 'green metals', with wind and solar providing the cheap power for added value industries. Western Australia is leading the way in this area and we believe that this should be stated approvingly and forcibly.

A prime example is the use of cheap wind and solar to allow refining and processing of manganese metals, as proposed by *Element25* for its Butcherbird project in the Pilbara, or for 'green hydrogen' in steel making. A consortium of Macquarie Group, Vestas, and CWP is proposing a 15GW wind and solar facility in the Pilbara; global giant Siemens and partners are looking at a 5GW wind and solar facility closer to Perth; and billionaire Mike Cannon-Brookes is backing a 100GW solar plant in the Northern territory.

ARENA chief executive Darren Miller has suggested that a target of 700GW of wind and solar (which is 600-700% of Australia's current electricity needs) is achievable which would allow the 'green hydrogen' and 'green metals' prospects to be realised. * He says they should all be linked to the country's main grid to ensure cheap power and no supply gaps. Economist Professor Ross Garnaut and Australian Chief Scientist Alan Finkel have talked and written of the same opportunities.

A final speculative question which might at least warrant asking in order to provoke thought is 'What are the prospects of WA's grid being linked to the eastern grid?'

*** *Australia could aim for 700 per cent renewables ARENA boss, Renew Economy 8/10/2019***

2. Industry Innovation

Before responding to specific matters raised in this section, we feel it important in a paper such as this – inviting ideas and tangential thoughts from WA residents – to reinforce the possibilities that renewable energy projects such as those referred to in the preceding section could open up other major economic opportunities, for example, establishing one or more large battery manufacturing factories. WA has large reserves of the lithium needed for such a project and exploiting it in WA could lead to what many believe would be an ethically responsible boost to the mining industry. This is an opportunity to diversify the range of WA industries, as well as opening another avenue for reducing greenhouse gas emissions and combatting climate change.

Statement

The second paragraph of this section mentions, approvingly, that: "Western Australia's liquefied natural gas (LNG) export capacity will reach almost 50 million tonnes per year in 2019, with emissions from State-based operations increasing as a result."

Our response

It is our belief that gas should be phased out, both as an energy source in WA *and* as an export from WA, absolutely as soon as possible.

Our reasons

Yes, burning gas produces directly less greenhouse gasses than burning coal. But Natural

Gas is largely methane which is a considerably more potent greenhouse gas than carbon dioxide, and methane escaping during production, pipeline transport and use, much reduces or even negates entirely this fleeting advantage. And when methane is burnt, carbon dioxide is produced. These problems are implicitly recognized in the italicized words in the statement to which we are responding. NO increase in GHG emissions is acceptable.

Statement

The fifth question in ‘Your Thoughts?’ asks how the Government of Western Australia could foster clean industries and technologies.

Our response

We believe that emphasising the dangers of not doing so is a start.

Second, we believe the WA Government should vigorously and generously support research in universities and innovative companies that is designed to develop and improve emerging energy technologies. Third, it should provide financial help through loans and subsidies to companies deploying clean, emerging, disaggregated, and renewable energy technologies. And fourth it should at least maintain and preferably ensure that feed in tariffs for electricity generated by roof-top solar and sold back to the grid (i.e. electricity retailers) increase at least in line with inflation. The objective being to ensure that electricity by household PV is maintained at a level which operates as an incentive to households to install new or increased PV generation systems together with domestic scale batteries.

Our reasons

Several of the points we have made above are picked up in the dot points in the Issues and Opportunities sections. We believe they bear repetition and that dot points 3 and 4 in the latter section should be qualified by appropriate words such as “in the short term”, for reasons we have explained above.

3. Future Mobility

Statement

In the section ‘Issues for Future Mobility’, the fourth dot point reads “Australia is one of the few countries within the Organisation for Economic Co-operation and Development (OECD) without mandatory fuel efficiency standards. Without national carbon emission standards there is a risk that our region could become a destination for high-polluting vehicles while other nations progress towards cleaner transportation.”

Our response

We strongly urge the West Australian Government to lobby other States and Territories to make individual or a joint submission to the Commonwealth Government *demanding* that mandatory fuel standards are introduced into Australia. They should lobby companies importing and selling cars and other vehicles into Australia to improve fuel efficiencies and, where electric vehicles are not available, support only those brands of vehicles with much improved fuel standards over those currently available. The WA Government should

consider increasing charges according to size, weight and fuel consumption by internal combustion engine vehicles. And, by whatever means are available, support the importation of electric vehicles into the state.

Our reasons

Cars with more stringent pollution emission standards deliver health and economic benefits to us all. This should be emphasised and the Commonwealth Government shamed into action on this matter.

Statement

The fifth dot point reads “EVs are becoming increasingly popular around the world, driven by rapid technological advances and declining battery costs. However, Western Australia is well behind the global average uptake of EVs.¹⁰”

Our response

Electric vehicles, delivery vehicles, farm vehicles, buses, and others, not just passenger cars, should be mentioned here. The paper should reinforce the message that the advantages of the types of battery used by domestic vehicles are of major and increasing importance for household energy storage solutions and it should briefly explain why.

Our reasons

Fast charge stations are, we believe, one of the keys here and local governments, as well as the State Government, can assist by installing, and possibly subsidising the installation of local fast charge points. But, above all, governments can lead the way by converting their vehicle fleets to electric as the need arises for fossil-fuelled vehicles to be replaced. Both of these initiatives might be trialled initially in Perth and other larger urban areas and, if these trials are successful, rolling them out in the regions and publicising the benefits as widely as possible.

The *sine qua non*, of course is that the electricity which powers any electric vehicle has to be sourced from renewable sources.

[A minor matter in this section is that we could not access one of the significant references provided

Department of Treasury 2019, *Energy Transformation – A brighter energy future*, Government of Western Australia. Available from:

https://www.treasury.wa.gov.au/uploadedFiles/Site-content/Energy_Transformation/Energy-Transformation-Strategy.pdf. [Accessed 2 July 2019].

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4. Regional Prosperity

Statement

The second dot point in *Issues for Regional Development* reads “The State’s lower west coast is a global hotspot for increasing sea temperature which is having a major impact on

fish stocks.¹¹”

Our response

The reference details some of the results obtained to date from a major enquiry. Perhaps some of the clearest consequences deduced from this enquiry could be presented in simple terms, as well as any predictions that might be made as a result of further expected temperature changes.

Our reasons

The reference cited uses rather dense scientific language; communicating the importance this and other climate change consequences to those without scientific expertise in this area of just what is happening and what the WA population want done in response, is part of the point of this whole report.

Statement

The third dot point in this section reads

“Agriculture is the fourth most energy-intensive industry in Australia, and the only industry to experience an increase in energy intensity since 2008-09.¹²”

Our response

The WA Dept of Primary Industries and Regional Development acknowledges that “Agriculture is an important source of greenhouse gas emissions” (<https://www.agric.wa.gov.au/climate-change/how-australia-accounts-agricultural-greenhouse-gas-emissions>), and that agriculture was responsible for 16% of Australia’s greenhouse gas emissions in 2013.

However, they do not take the whole of the industrialised food system into account. It has been estimated* that, worldwide, greenhouse gas emissions from this system account for between 44% and 57% of GHG emissions if all aspects of the system — such as deforestation, transportation, refrigeration, processing and packaging, and waste — are taken into account.

*See www.grain.org/e/5102

Our reasons

At least some of these emissions could be avoided if a greater emphasis was put on growing food locally.

Statement

“Carbon farming presents opportunities ...”

Our response

We support this initiative in principle, especially the practices of

- no broad scale ploughing or tilling the land, and
- no use of chemical fertilisers or herbicides.

In addition, we think the following are also very worthy of favourable mention:

- restoring organic matter to the soil as a matter of urgency;
- diversifying crops rather than planting monocultures;
- integrating crop and animal production;
- incorporating trees and perennial crops;
- incorporating wild vegetation and wildlife corridors;
- reducing our reliance on commodity crops, with a greater emphasis on the production of fresh food that needs minimal processing;
- a moratorium on further land clearing;
- policies that encourage relatively small farms rather than farms owned and managed by agribusinesses;
- encouraging small-scale, distributed biochar production businesses using whatever organic waste is available in each locality;
- A ban on intensive animal production, including especially cattle, pigs and chickens;
- Briefly describing policies that encourage the production of fresh food close to where it will be consumed e.g. urban farms and community gardens

Planning laws might have to be changed to legislate that all new housing developments above a specified minimum size must incorporate community gardens or other food-growing areas.

Our reasons

Essentially, we would like to see, as far as is possible, a shift away from the current globalised industrial food system governed by corporations to local food systems in the hands of small farmers and householders. We recognise that this will have to be gradual and be carefully planned, but we believe it is of the utmost importance.

5. Waste Reduction

Waste is one of the most pervasive and serious environmental issues and yet, because of its dispersed nature and largely 'out of sight' impacts and consequences, one of the most difficult to address. We wonder how the figure of a 2% contribution to WA's greenhouse gas emissions is calculated. Is it just the collection, separation and subsequent movement of waste and the production of greenhouse gases in landfill sites that are counted? What about the emissions generated by growing food and non-food plant materials that are never used, and mining minerals and manufacturing items that are discarded before they are used?

Startlingly high proportions of food are wasted at the point of production. Is a sufficient proportion of agricultural emissions or a high enough proportion of the manufacture of plastics that end up in the world's oceans included in this 2% contribution figure? Why are emissions due to waste increasing? Why are WA's emissions so much above the national average? Are there opportunities for reductions once the reasons for these wastage streams are well known and understood?

We feel that publicity programs have an important role here to encourage people to ‘refuse, reduce, reuse, recycle, reprocess’, and to educate them in the costs of not doing so as well as the benefits of, for example, composting ‘waste’ plant material and food and reducing the ubiquity and level of plastic packaging.

6. Safe and healthy communities

In some ways this section is the summation of all the others: safe and healthy communities can only exist

- with adequate water supplies,
- if their waste is dealt with,
- if they have food that is adequate in quantity, quality and variety,
- and if the average temperatures they experience allow everyday life to continue.

In order to emphasise the complete interdependence of *human and non-human* communities and not to prioritise one above the other, we believe that the heading to this section should read **‘Sustainable ecosystems and safe, healthy, sustainable human communities’**.

We learn in the opening to this section that “heatwaves are responsible for more (human) deaths in Australia than any other natural disaster and will likely worsen with climate change”. In other words, climate change and one of its inevitable components, is already a major hazard for any and all Australian communities.

We think that this point and the increasing frequency of the associated, climate-influenced bushfires should have greater emphasis.

We note that Table 2 of the final Report of the 2019 *Sustainable Health Review* shows that the annual average number of days above 35⁰C in Perth will increase from 28 today to between 43 and 63 by 2090, depending on whether greenhouse gas emissions decline and stabilise to a level of 540ppm or continue to increase at their current rates. The current level is approximately 410 ppm and currently increasing by about 3ppm every year – although that rate of increase is itself increasing – which makes the emissions reductions needed to ensure the lower figure very difficult to achieve. What we need in order to be able to assess the level of risk this poses are estimates of the lengths of future heatwaves. This might be taken to be defined by, say, the number of sequential days above 40⁰C. This is a temperature that is very dangerous for the young, the elderly, and people with chronic conditions. Likely serious adverse consequences multiply the longer such high temperatures persist.

We feel that it is worth noting in the report that in 2018-19 Western Australia experienced its hottest summer on record, 2.52⁰C above average. Marble Bar, for example, recorded 32 days of temperatures at 45 degrees or above during the summer, while Perth had 3 such days.

But, as this report tells us, climate change affects health and wellbeing in numerous other ways, including increasing the chances of the spread of water-borne, airborne and food-

borne infectious diseases, longer and more severe fire seasons, increased likelihood of floods, damaging intense storms. As we indicate in Section 10 below, we are sceptical about the benefits of prescribed burning, although other hazard reduction practices have their place.

We believe that what we are briefly told in this section includes some of the strongest arguments for the WA government to be doing everything it responsibly can and, even more importantly, doing everything within its power to persuade other governments in Australia and around the world, to undertake whatever is necessary to stop the most serious manifestations of climate change as soon as possible. We feel that some of the facts we have mentioned above should be included to strengthen the argument even further.

7. Water security

The first paragraph refers to the WA Government's priority towards creating a more sustainable and liveable environment. Reinforcing the comments we have made earlier, it is self-evident that humans are only one component of any environment, liveable or otherwise; but this point warrants reinforcement here.

The second paragraph in this section refers to using water more efficiently. We believe it should also include the word *responsibly* and recommend planning for both efficient and responsible use.

We believe that the State Government should be doing more than 'encourage' efficient and responsible usage. We believe, for instance, that all new dwellings and commercial buildings should be compelled to harvest rainwater from their roofs and divert it either to individual storage tanks or communal storage schemes. Witchcliffe Ecovillage, south of Margaret River, has included this requirement for all its planned buildings – both the 300 or so residential dwellings and the communal and commercial buildings. The Ecovillage will purify and recycle all the water used and plans to be totally self-sufficient in water. Many other developments in Australia also require domestic and commercial water collection and inject the water thus collected into local aquifers to reuse for irrigation during dry seasons. Recommending or compelling interventions along these lines should be part of the means by which planning authorities can ensure such schemes become widespread.

We believe that there is a strong case for increasing the price of water, and, at least domestically, making prices increase exponentially for households using above certain well researched figures for dwelling size, family size etc. This would increase pressure on all consumers to increase efficient and responsible use. Increased discounts for households that have installed water capture and storage above the minimum level, and for low-income households, could be built in to ensure such increases in water cost do not cause inequitable hardships.

New desalination plants should be developed only as a very last desperate resort in the face of very rapid changes in temperature rise or rainfall diminution; their operation adds considerably to the very cause of the problem they are built to address viz. increased energy consumption, carbon dioxide emissions and consequential atmospheric temperature

increases. They also induce complacency in the population that solutions such as this are risk free and readily available.

Last, but not by any means least, we feel that the photo illustrating the section *Did you know ...* in this section is rather inappropriate. We see 3 closely spaced sprinklers watering (and from the shadows it appears to be during the day) what appears to be a park or reserve lawn.

This is a very profligate use of water. The time may well come when a deliberate policy will have to be adopted of allowing cultivated ornamental lawns to wither and die during hot dry seasons in order to save water for more essential services.

8. Liveable towns and cities

Design and construction guidelines to achieve reduced energy and water consumption are well known around the world. Average uses for both vary widely between regions and countries with otherwise similar climates and demographics. The explanations for such variations lie to a large extent, we think, in differences in the average energy efficiency of our houses and commercial buildings, the efficiency of electrical appliances used within them, inadequate levels of rainwater capture and inadequate appreciation of the looming increased water shortages.

We believe it should be mandatory for all new dwellings and commercial buildings in WA to have double glazing installed, to have minimum levels of rooftop PV generation according to the size of the dwelling, to have specified high minimum levels of insulation in floors, walls and ceilings and for every building to be assessed for its energy efficiency under standard defined usages. As well as being part of planning and building approval requirements, it should be as much an integral part of construction inspections as, for example, depth and efficiency of foundations, safety of electrical installations and bushfire protection levels etc. The possibility of mandating the installation of either solar hot water systems and/or heat pumps for water heating on all or a range of designated buildings should be investigated.

Requirements such as these are standard, well understood and considered unremarkable in many countries. There is no reason that we can see why this should not quickly become the case in Australia.

Information on the energy efficiency rating should be made available to all purchasers of domestic houses and commercial buildings, new or otherwise.

The ability of vegetation, especially medium to large trees, to cool the air and reduce temperature variance in and around domestic dwellings and smaller commercial buildings is well known. Opportunities could be found to publicise these important effects for both individual thermal comfort *and* in reduced energy bills. The possibility of incorporating some minimum number of approved trees, or perhaps some approved area of vegetation, could be considered for the fringes and open spaces within all proposed housing developments.

We are asked for our thoughts on the retention of vegetation, particularly tree canopy, in our cities and suburbs. We suggest that a minimum number of trees of standard final height above, say, 2 metres, be mandated in all multi-dwelling developments, just as at present minimum amounts of open space are mandated for visual amenity and recreation purposes.

The penultimate paragraph in this section reads: “Perth is expected to be up to 2.7 °C hotter by 2030. In eastern suburbs, where vegetation and tree canopy is lower, warming will be even greater.”

To what does this temperature figure refer? Average annual temperature? Average daily temperature for a particular month or season? Average daily *maximum* temperature for a particular month or season? Without a qualifier such as this, quoting a temperature is meaningless. Can the vegetation effect be quantified, even as an approximate estimate? A reference back to section 6 and the statistics it contains might be useful here.

9. Issues for resilient infrastructure and businesses

The very title here is not good enough. We are concerned with the interaction between infrastructure, businesses and all aspects of the environment. Maybe the words ‘Impacts of and ... should be added.

Statement

“Ongoing warming and changes to rainfall across the State have the capacity to reduce the productivity of our primary industries, increasing infrastructure and insurance costs”.

Our response

This statement should read “Ongoing warming and changes to rainfall ... *will* reduce... increasing ... costs. Some of the violent weather events predicted to become both more frequent and more intense will make it difficult if not impossible to obtain insurance for businesses, their activities and infrastructure impossible to obtain and therefore for them to continue to exist.”

Our reasons

The document should be clear, forthright and unambiguous.

Statement

“Projected sea level rise will lead to significant areas of flooding in vulnerable cities and towns, with coastal erosion and damage to low-lying coastal infrastructure.”

Our response

These opening words should be altered to something like the following: “Sea level rise, which according to various scientific projections could be 1 metre or as high as 2 metres by the end of the century, will lead ...”

Our reasons

The consequences which flow from these two possibilities are very different. References 22 and 23 quote a possibility of more than \$226 billion coastal assets at risk at a sea level rise of 1.1 metres by the end of the century. This is cited as a high level prediction from 2011. Computer models and the projections which flow from them have consistently underestimated the speed and magnitude of climate change and its consequences in the past. Recent rigorous scientific assessments carried out since this paper was published suggest that minimum previous projections of sea level rise in many parts of the world suggest that they have been significantly underestimated.

It seems absurd to plan for a 1 metre sea level rise in 8 decades or so when clearly double that would destroy or render inoperative any infrastructure designed and constructed and built at any time during these decades on such an assumption. (Scientists Have Been Underestimating the Pace of Climate Change, *Scientific American* August 2019.)

Our thoughts

We are asked for our thoughts on whether “existing land use management practices should be modified to reduce vulnerability and improve resilience?” Our answer is an emphatic yes. But we would again emphasize that lack of vegetation protection, especially but by no means just, of forests is an important contributory *cause* of climate change. There are therefore two very powerful reasons for imposing stringent restrictions on all forms of land clearing and native forest logging. The reasons for so doing must be clearly and forcefully set out in this document.

10. Protecting biodiversity

We believe that there is a strong case for opening this section with a statement such as “We are in the middle of the Sixth Great Extinction of life on earth. This extinction is unfolding as a consequence of deforestation, loss of habitat due to unsustainable agricultural practices, ocean acidification, and climate change. These are all caused in large, if not total part, by human activities.”

This section is exclusively concerned with the consequences of climate change on biodiversity. We believe that the contribution of land clearing and deforestation to the *causes* of climate change should also be prominently mentioned. The proportion of the whole of Australia covered by forest has fallen from about 30% to less than 16% since European invasion and greenhouse gas emissions from land clearing is about 46m tonnes a year. This document reports in the section Issues for Protecting Biodiversity that “Some local governments in Western Australia’s south-west retain less than 5 per cent of their original vegetation due to land clearing from agriculture, along with urban and industrial development”.

Although WA’s contribution is, of course, only one very small contributor to the overall removal of vegetation from the earth’s surface, this whole disastrous process contributes to both the enormous loss of biodiversity we know as the Sixth Great Extinction and global climate change.

We understand that the Western Australia Government does not gather state-wide data of forest clearance, the only State not to do so. Land-clearing laws were relaxed by the former

Liberal government in 2013; the present government should now reinstate such laws, strengthened if possible, and this document should state such an intention clearly and forcibly.

That the State's South-west is one of only 34 globally recognised global biodiversity hotspots is surely a most important fact and we believe it should be made more widely known and used more forcefully in establishing and enforcing conservation policies. Given the statistics on vegetation loss quoted above, this part of the State is surely a prime candidate for, as the section on Opportunities tells us "Expanding the conservation estate by declaring national and marine parks in areas of high biodiversity in order to help to protect Western Australia's biodiversity." This too should be specifically mentioned we believe.

We strongly support the government's policy of increasing Western Australia's conservation estate – with qualifications. We are asked two specific questions in this section: Adding one fifth to conservation areas sounds impressive, but are the additions enough to "protect our unique wildlife ..."? Are the most significant ecosystems in Western Australia adequately protected? We believe that, though they are a promising start, neither goes far enough and therefore our answers are essentially negative.

Statement

Our biodiversity is under threat from a range of processes including land clearing, reduced rainfall and changed fire regimes, invasive species, disease, grazing and salinity.

Our response

Several of these are direct consequences of human actions and, at least in part, can be controlled by legislation and/or regulation. We believe the link between specific practices such as land clearing and deforestation, controlled burning, livestock densities, and climate change should be made explicit and their effects on climate change overtly considered in decision making.

Our reasons

We are especially concerned about the high levels of annual 'prescribed' or 'controlled' burning carried out in large areas parts at least of our state. We are very doubtful that the negative consequences for biodiversity of such burning are adequately understood. There are powerful arguments against the levels of prescribed burning which currently operate. For example, how can setting an arbitrary annual target for such burning in a specific area be justified on any rigorous ecological, environmental or conservation grounds? In addition there is peer reviewed research which shows that prescribed burning has little impact on future wildfires in the mid- to longer term. Indeed, there is evidence that protecting and conserving our forests can improve their resistance to fire. Funds used for prescribed burning are not available for fast detection of and subsequent efforts to control and extinguish fires which do occur.

*** Great Southern fires: University professors say WA needs 'total rethink' on prescribed burning *West Australian* 26 May 2018**

11. Strengthening adaptive capacity

This is a most important but very information-dense and discursive section. We believe that keeping up to date with new information from a range of institutions as it emerges is one of the difficulties for organisations such as ours. But the very act of keeping up to date can result in information overload. We wonder whether the State Government might post alerts (and possibly Executive Summaries) to City, and Shire websites and/or those of local organisations such as ours, the Margaret River Regional Environment Centre (MRREC), of reports it has prepared or commissioned as they are published. If so, some way of registering such information is needed.

We wonder to just what the phrase “... rebuild scientific capability” in the section entitled ‘Did you know?’ refers. We believe it is not just keeping up with international competition that is important. Rather, it will be the protection of whole towns and the infrastructure that serves them, choosing new strategies which will encourage and facilitate massive changes to our energy and energy distribution systems which are urgently needed. Above all it is likely to be overcoming stubborn denial of climate change reality by powerful forces in our society and getting the acceptance in society of its inevitability and its inevitable consequences which will be the crucial issues in ensuring that, if climate change is as rapid, comprehensive and drastic as predicted, our social structures and our environment will be protected.

We believe that the document on which we are commenting has an important role in achieving these crucial outcomes. We encourage the State Government to consider the criticisms and suggestions we have made and incorporate them into its responses in order to achieve them.